LittaTrap™

FoodStuffs Trial

FINAL REPORT & ANALYSIS

Plastic pollution is a major global problem with an estimated 80% of marine debris coming from land. Enviropod developed the LittaTrap in response to this.

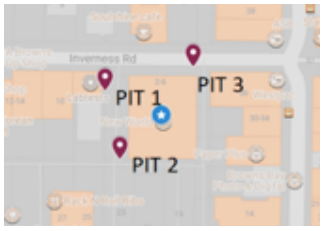
The LittaTrap is an innovative catch basin insert that is fitted into new and existing stormwater drains to capture plastic and other pollutants before they would be washed into the drain and out to the waterways.

In the development of the product, we have identified industries which can be litter "hot spots." Industries such as supermarkets which have a high pedestrian foot count and busy loading zones can have increased litter loading.

Wishing to collect data on supermarket litter loading Enviropod approached Foodstuffs in 2016 to conduct a trial of the LittaTrap to measure the type and quantity of pollutants that would enter the stormwater system via the stormwater drains on their busy sites.

TRIAL SITES

Two trial sites were identified, and an audit was conducted to determine the most appropriate catch basins on each site. The catch basins on each site were chosen to be representative of all the basins on sites; some were picked for high loading (loading zones), and the others chosen for low loading rates. The loading rate is anticipated to vary from basin to basin, and clean to clean. These rates can be influenced by climate, environmental and physical influences, such as rain, wind and traffic volumes.



Pit 1 – Special Parking Zone

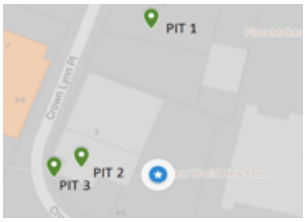
Pit 2 – Parking Area

Pit 3 – Front of Store

Trial site one: New World Browns Bay

Browns Bay New World is situated 400m from the ocean. The existing infrastructure is old and does not have any stormwater treatment and any plastic and pollutants that reach the stormwater system are discharged untreated to Taiaotea Creek.

Three catch basins were identified as appropriate for the trial. The catch basins were chosen to give a represented litter loading and have good access for installation and maintenance.



Pit 1 – Carpark

Pit 2– Tradewaste (not monitored)

Pit 3 – Loading Zone

Trial site two: New World New Lynn

Stormwater from the New Lynn site flows untreated into the stormwater system to the headwaters of the Whau River where it is finally discharged.

Two catch basins on this site were identified as appropriate for the trial — the first situated in the carpark and the other downstream of the loading zone. A third trap was installed to capture trade waste as requested by the owner of the store as the Oil and Grease Trap installed downstream was consistently getting blocked. This catch basin was outside the butcher and continually received a lot of organic material adding to the blockages downstream. This LittaTrap was NOT monitored for this trial.

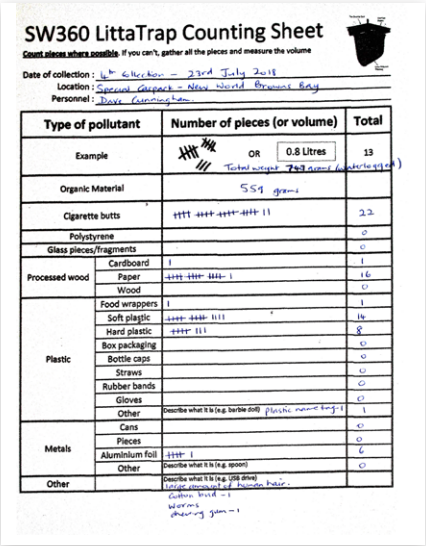
METHODOLOGY

Enviropod agreed to monitor and report on a monthly basis providing quantitative and qualitative data on the type and quantity of gross pollutants captured by the LittaTrap.
Maintenance and monitoring was performed in early hours of the morning (or when it best suited the stores) to minimise any disruption.

DATA COLLECTION

Each catch basin was emptied of its contents, photographed and then sorted using a standardized plastic datasheet that is in use throughout the country.

The data for each catch basin was collated for close to 6 months (168 days) and the quantity of each pollutant was recorded.



SW360 LittaTrap Counting Sheet

Count pieces where possible. If you can't, gather all the pieces and measure the volume

Date of collection : 6th Collection – 23rd July 2018
Location : Special Carpark – New World Browns Bay
Personnel : Boys Cleaning Co.

Type of pollutant		Number of pieces (or volume)	Total
Example		𝍸 OR 0.8 Litres (Total weight 769 grams (with eggs))	13
Organic Material		559 grams	
Cigarette butts		𝍸 𝍸 𝍸 𝍸 11	22
Polystyrene			0
Glass pieces/fragments			0
Processed wood	Cardboard	1	1
	Paper	𝍸 𝍸 𝍸 𝍸 1	16
	Wood		0
Plastic	Food wrappers	1	1
	Soft plastic	𝍸 𝍸 𝍸 𝍸 1111	14
	Hard plastic	𝍸 𝍸 111	8
	Box packaging		0
	Bottle caps		0
	Straws		0
	Rubber bands		0
	Gloves		0
	Other	Describe what it is (e.g. barbie doll) plastic rubbish bag-1	1
Metals	Cans		0
	Pieces		0
	Aluminium foil	𝍸 1	6
	Other	Describe what it is (e.g. spoon)	0
Other		Describe what it is (e.g. 250 litres) Large clump of human hair. Cotton bud -1 Worms chewing gum-1	

RESULTS

A total of 1203 pieces of plastic and other gross pollutants were captured and retained in the trial LittaTraps. These pollutants were stopped from entering the stormwater system and making their way to the Waitamata Harbour. The total caught averages to 523 pieces of litter per catch basin per year.

75% of the litter collected was plastic. (Soft Plastic, Hard Plastic, Food Wrappers, Butts or Polystyrene).

The biggest single source of pollutant was cigarette filters. Cigarettes made up 20% of the total litter caught (243 butts.)

Figure 1 shows the breakdown of the litter caught. 73% was plastic including hard & soft plastic, polystyrene, and cigarette butts. Cigarette butts are the most common form of plastic litter in the world. Globally more than 4.5 trillion cigarette butts make their way into the environment every year. Almost all of them contain a filter made of fibres of cellulose acetate.

Figure 2 shows the composition of the plastic caught. Soft plastic and cigarette butts the top pollutants. We defined soft plastic in this study as soft or flexible plastic. It included fragments of plastic bags and packaging material. Soft plastic is particularly hazardous in the marine environment as UV easily breaks down this plastic into smaller and smaller pieces. Small pieces of plastic are easily ingested by marine animals mistaking the plastic as food. The fragmentation of soft plastic makes them almost impossible to remove once they are in the ocean

These small pieces were predominately found in the catch basins close to the loading zones. In busy loading zones where inward and outward goods are managed accidental littering of packaging can happen. Interesting to note – there were no complete plastic bags caught in any of the LittaTraps.

The data shows there is plastic reaching all the drains regardless of the location and on these two sites, all drains are discharged into a waterway.

FIGURE 1 – Litter Composition

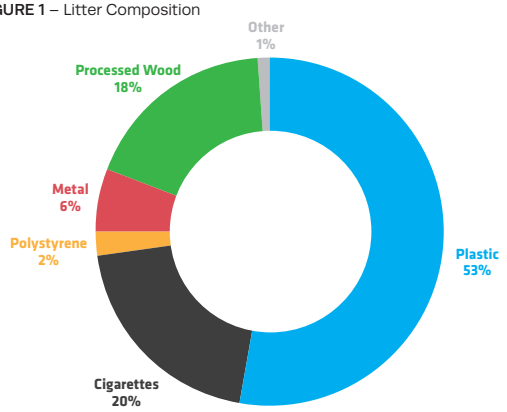
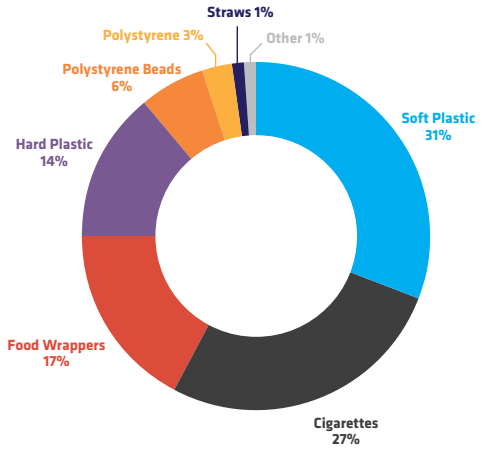


FIGURE 2 – Plastic Composition



NEW WORLD BROWNS BAY RESULTS

Browns Bay had a 33% higher litter loading than the New Lynn site. We assume this could be from the weekend market and higher pedestrian use.

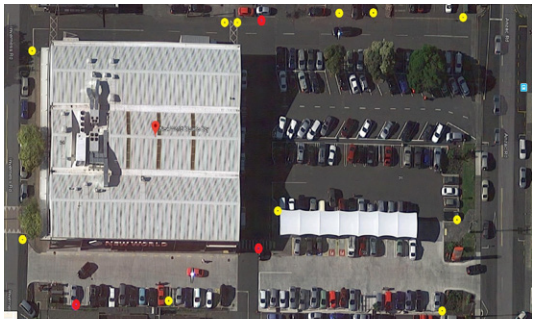
The special carpark had the highest loading with a total of 355 pieces counted. Mainly cigarette butts were found here; possibly this is a smoking area for staff.

NEW WORLD NEW LYNN RESULTS

The loading between the two catch basins was quite similar. The loading zone did have a much higher incidence of plastic wrapping, which is expected in this location.

OBSERVATIONS

The catch basins monitored were only a small percentage of catch basins on each site.



NEW WORLD BROWNS BAY

Browns Bay has a total of 14 catch basins with three being monitored

- Yellow Stormwater drains on site
- Red LittaTrap installed

If all stormwater drains at Browns Bay had a LittaTrap installed, a total of **7322 pieces of plastic and other litter could be retained over a 12–month period**

NEW WORLD NEW LYNN

New Lynn has a total of 13 catch basins with two being monitored.

- Yellow Stormwater drains on site
- Red LittaTrap installed

If all stormwater drains at New Lynn had a LittaTrap installed a total of **6799 pieces of plastic and other litter could be retained over a 12–month period**

NEW WORLD

PAKnSAVE
OUR POLICY: NZ'S LOWEST FOOD PRICES

LIQUORLAND

FOUR SQUARE

900,000

pieces of plastic & litter

Foodstuffs has 421 retail outlets across the North Island. These include New Worlds, PaknSaves, Liquorlands and Four Squares. If 4 x LittaTaps were installed at each store, **Foodstuffs could stop approximately 900,000 pieces of plastic & litter a year from entering the marine environment via the storm drains.**