LittaTraps – Stormwater pollution monitoring

Sarah Neighbours - Wellington EMR team

Overview

- Pollution Problem
- Stormwater360 – LittaTrap
- Case Study – Wilford School
- Integration into EMR programme
  - Protocols and resources
- Challenges
- Future for using the LittaTrap

Taputeranga Marine Reserve

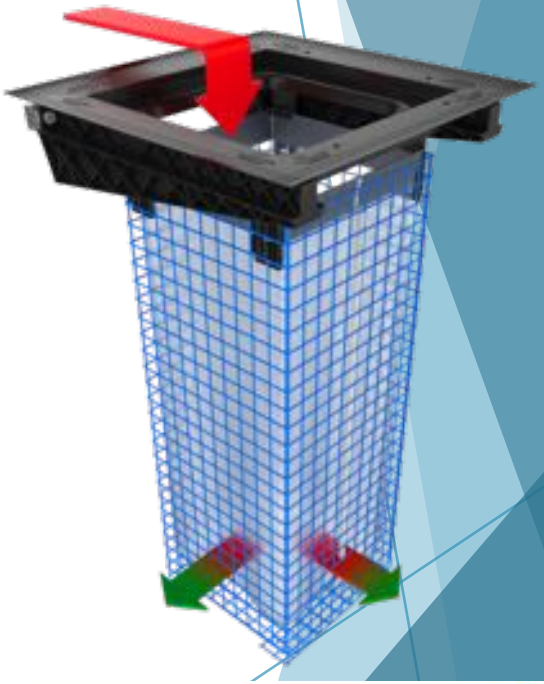
Taputeranga Marine Reserve - Stormwater pollution

Taputeranga Marine Reserve - Stormwater pollution

Case Study: Wilford School - Petone

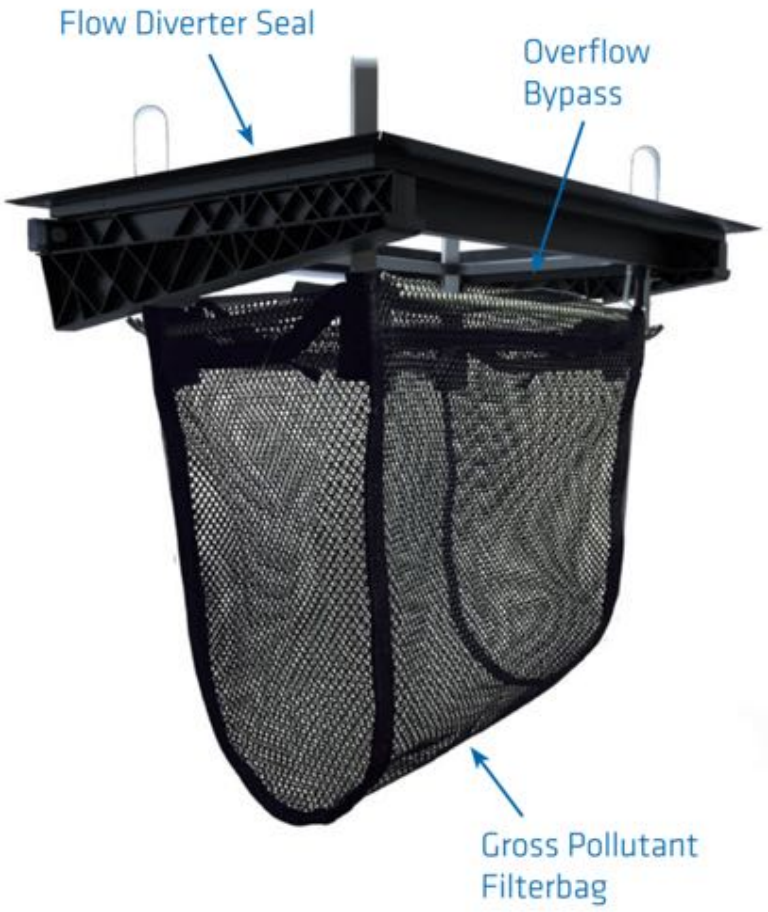
Stormwater360

- Auckland based company
- Deign stormwater infrastructure
- Started off with the enviropod
- Designed the LittaTrap – more affordable, easy to maintain, only captures solid pollutants



Stormwater360®
NEW ZEALAND

What is a LittaTrap

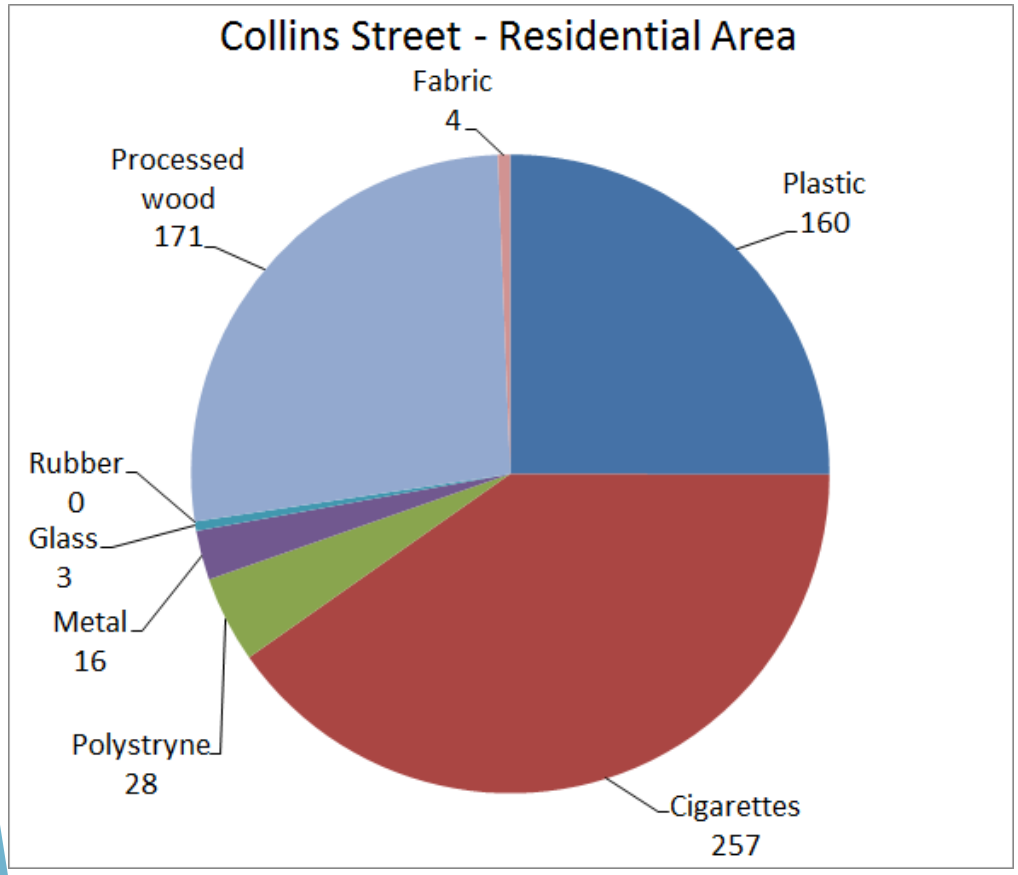


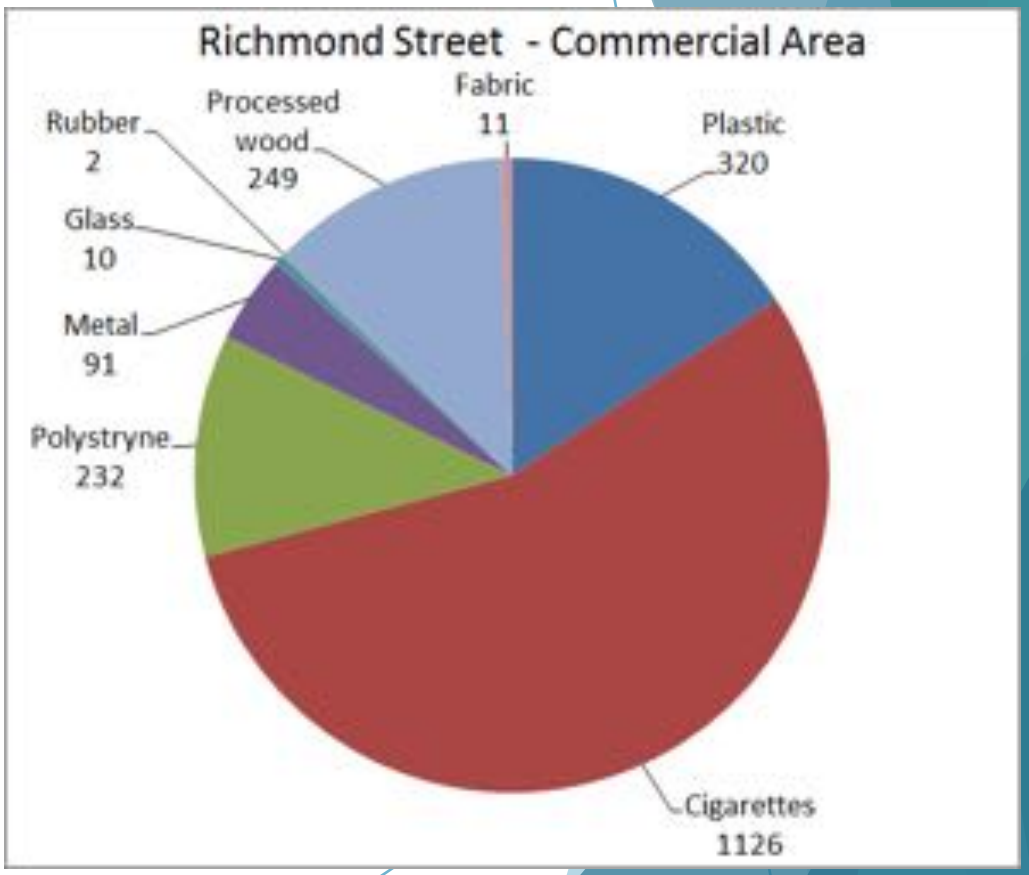
Wilford School – Drain installation

Wilford School – Monitoring and Recording

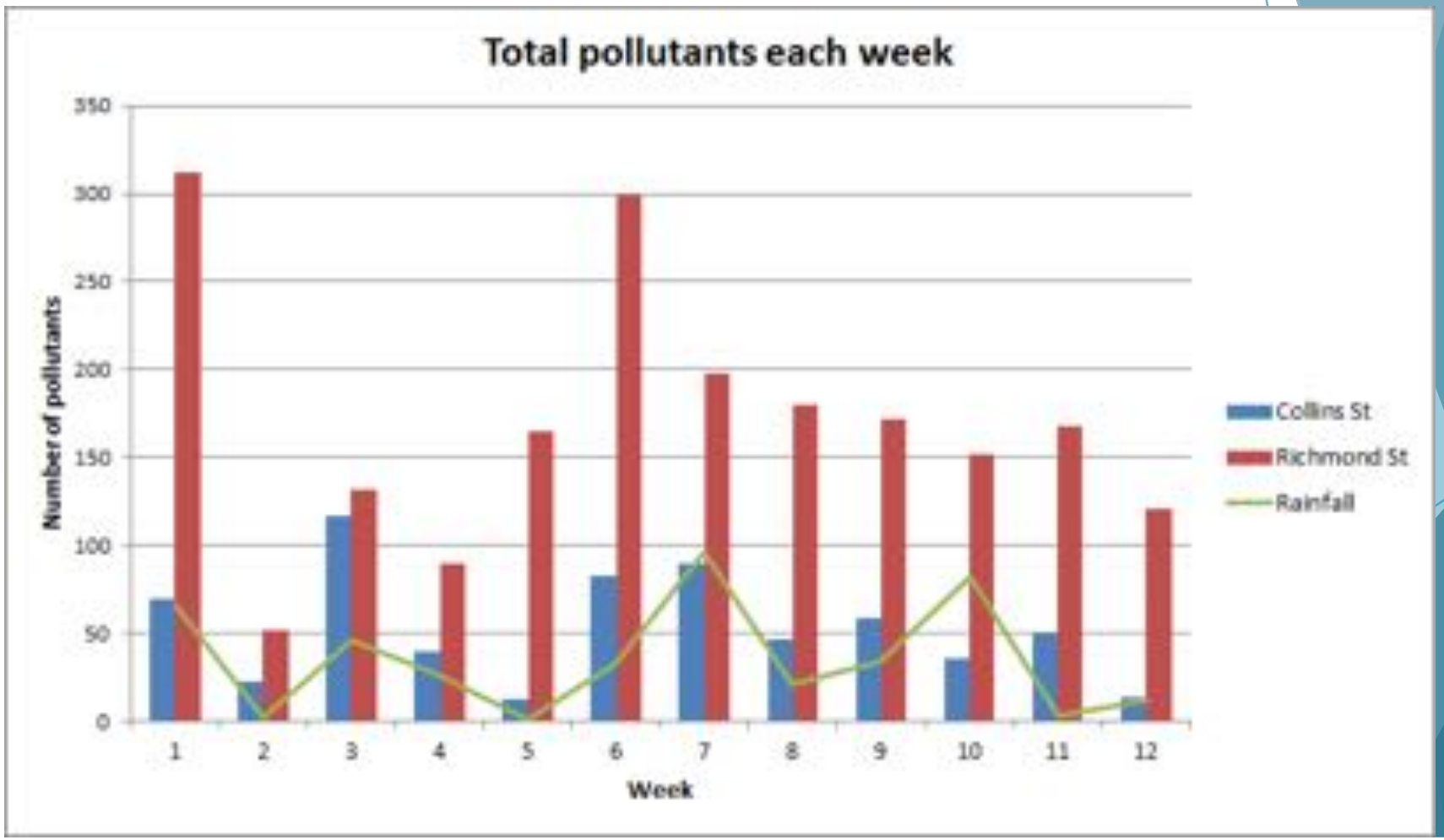
Wilford School – Sharing with community

Wilford School - Results





Wilford School - Results



Scary stuff…

- 2 drains in the 12 weeks collected = 2680 pieces
- There are 93 drains along Jackson Street

Heading down the drains on Jackson street could be...

Each week = 12,774

Each month = 51,098

Each year = 664,274

Wilford School – Promoting behaviour change

Next steps…

- Integration of the stormwater focus into EMR
- Development of monitoring protocols
- Creating resources for teachers

Monitoring protocol

- Outlines the steps
- Health and Safety
- Equipment required

Monitoring the trap:

Safety aspects to be aware of:

- Road cones need to be on the road to alert traffic.
- All students and adults need to be wearing High Vis vest
- You will need to have one adult dedicated to being a spotter person looking out for passing traffic
- Please take extra care when lifting the lid of the sump. This is only to be done by an adult.
- **Make sure not to leave the drain unattended while the lid is lifted**

a. **Students will need:**
   i. Sturdy shoes, gloves, high vis vest, gloves, TWO strong willing adults to lift the drain lid, bucket or plastic bag to empty trap contents into, space for sorting, counting and recording rubbish and a record sheet

b. **Process to be carried out:**

Emptying the trap

   i. Adult to lift drain lid, while second adult is watching for traffic
   ii. Wearing gloves - students to remove basket insert from the trap and carry to the footpath away from the road.
   iii. Empty contents into a bucket/bag. Replace basket back into trap frame, take care make sure the basket is fully into the trap frame.
   iv. Adult to close drain lid

Sorting the rubbish

   v. Back in class (or a space sheltered from the wind), students to sort contents collected.
   vi. Please wear gloves and take extra care around sharp objects. Spread out the rubbish well so these can easily be seen.
   vii. Sort into category piles, count the number of pieces and record on record sheet (appendix 1).
   viii. This information will need to be entered into an excel data entry form (appendix 2). *Preferable on google drive and shared with you EMR coordinator so progress can be tracked.*
   ix. Rubbish collected to be either stored in separate category containers (if wanting to keep to share with community) or disposed of in appropriate bin.

Have students empty the LittaTrap once a week for 4/5/6 weeks (depending on time available).

Results:

- Get students to create graphs to display data collected
  - How much each week? What was the most common pollutant? Was there more rubbish when it rained? etc...
- Get students to think about and research the following:
  - Where is the rubbish coming from? What problems could this have in the marine environment? How long does it take for different pollutants to breakdown in the marine environment? What can we do to change this?
- Have students use their data and new knowledge to create a presentation of some kind (powerpoint, poster, video, game etc...) to be share with the local community.

Record sheet and data entry

Stormwater LittaTrap Monitoring Data Sheet

School:
Class:
Week:
Date:

ITEM	TALLY THE NUMBER FOUND
Household and Personal	
Batteries (household e.g. AA)	
Bleach/Cleaner Bottles	
Cigarette Lighters	
Cigarette Packaging/Wrappers/Cigarette butts	
Clothing pegs / pins	
Clothing, Shoes	
Diapers	
Gardening related	
Household (cosmetics, brushes, etc.)	
Light Bulbs/Tubes	
Medical (asthma inhalers, pill packets etc)	
Pens	
Shotgun Shells/Wadding	
Personal care products	
Toys (including balls, fireworks etc)	
Food Related	
6-Pack Holders	
Beverage Bottles (glass)	
Beverage Bottles (plastic)	

Stormwater EMR LittaTrap Monitoring

School:
Class:

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	TOTAL
Date									
Household and Personal									
Batteries (household e.g. AA)									
Bleach/Cleaner Bottles									
Cigarette Lighters									
Cigarette Packaging/Wrappers/Cigarette butts									
Clothing pegs / pins									
Clothing, Shoes									
Diapers									
Gardening related									
Household (cosmetics, brushes, etc.)									
Light Bulbs/Tubes									
Medical (asthma inhalers, pill packets etc)									
Pens									
Shotgun Shells/Wadding									
Personal care items									
Toys (including balls, fireworks etc)									
Food Related									
6-Pack Holders									
Beverage Bottles (glass)									
Beverage Bottles (plastic)									
Beverage Cans									
Caps, Lids									
Cups, Plates, Forks, Knives, Spoons									
Food Wrappers/Containers									
Lollipop sticks									

Teaching resource

- Clear outline and objectives
- Recommend prep and follow up activities

MARINE RESERVE FIELD TRIP (3 hours)

Snorkel at either *Island Bay or Taputeranga East (back up in strong Northerly)* to explore the links between the land and the sea, and explore human impacts/biodiversity at the site.

Resources Needed

- All items on EMR Permission form for students
- School First Aid Kit
- Enough volunteers to meet safety ratios (1:2 for snorkel, 1:6 for on-shore).

Student Activities: Students will be split into 2 groups at the snorkel site and work with an EMR Coordinator, and then swap over.

Group 1 will be geared up for snorkel session, and have 35-50 mins in-water snorkel. Followed by a break and snack.

Group 2 will do a stormwater impact activities and then return for snack, and gear up for snorkel session.

- Stormwater walk and look at a LittaTrap
- Beach sifting with giant net to find small micro plastics.
- Rubbish collection for taking back to class

Suggested follow up activities from Marine Field trip.

- Complete a **field report** on the snorkel site and the species found.
- **Investigate other human impacts** observed at the snorkel site, and what steps could be taken to reduce or resolve these issues (car washing, green waste, oil etc…).
- Sort rubbish collected and investigate **environment impacts** of each different type. How long do each of these pollutants remain in the environment? Follow up by creating a **visual display** out of what was found.
- Start **brainstorming stormwater related action projects** to be completed during the rest of the term.
- **Micro plastics** video: https://www.youtube.com/watch?v=Bic7QEVRNe4

Integration into EMR

Student engagement – Celebration Day

Challenges

- Council permission and limitations
- Stormwater drain size
- Effectiveness of stormwater drain labels?
- Having clear key messages
  - Promoting behaviour change through increasing community awareness

Future of using LittaTraps with Citizen Science

Thank you for listening