

# Using Data Visualisation to Communicate the Sources of Plastic Pollution in Port Phillip Bay



Cameron Collins, Samantha Comeau, Brendan Gallagher, Gina Visser

# Acknowledgement of Traditional Owners

We acknowledge the Yalukut Weelam clan of the Boon Wurrung language group, traditional owners of the land on which we are located. We pay respects to their Elders past, present, and emerging.



Cameron Collins

Brendan Gallagher

Samantha Comeau

Gina Visser

# Team Members

# Interactive Qualifying Project (IQP)



IQP projects focus on the intersection of technology and society



# Project Statement

Visualise plastic pollution data to communicate the sources of plastic pollution entering Port Phillip Bay.

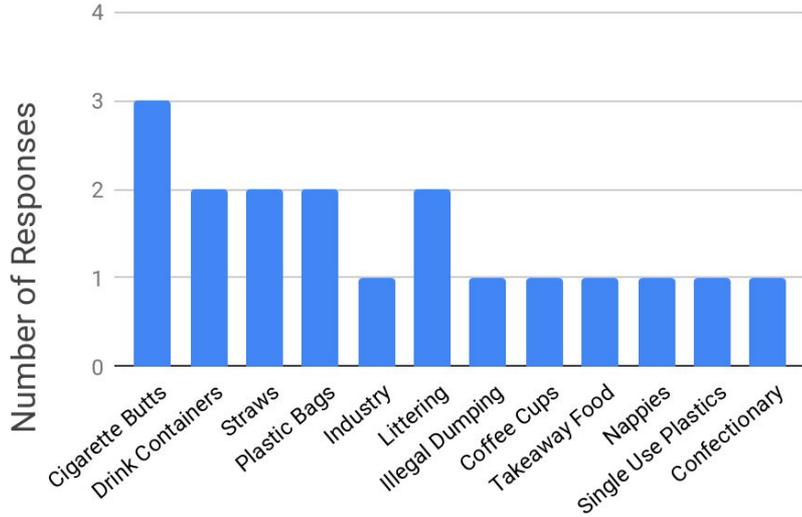
Objectives:

- (1) conduct a case study on GIS mapping softwares
- (2) gather human and environmental data relevant to plastic pollution and the geospatial regions surrounding the bay
- (3) use GIS mapping to identify sources and causes of plastic pollution.

# Interviews Overview

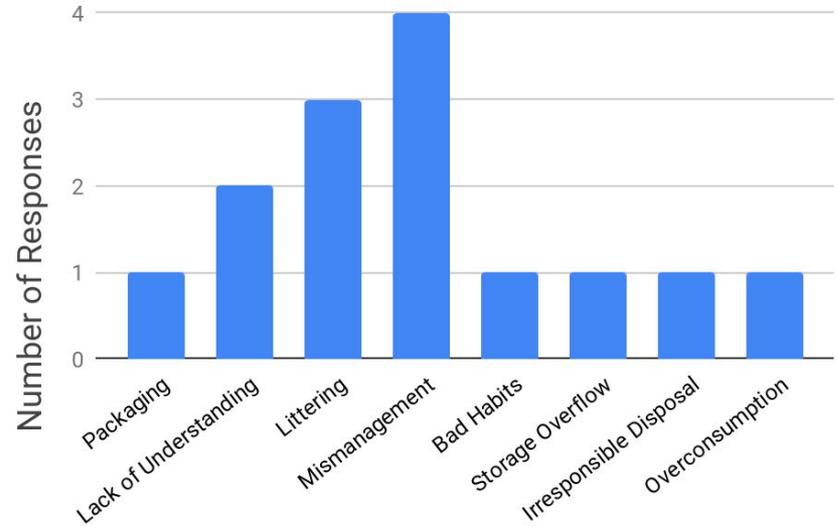
- Interviewed experts in plastic pollution from six organisations
  - Port Phillip EcoCentre
  - Boomerang Alliance
  - Department of Environment, Land, Water and Planning (DELWP)
  - EPA Victoria
  - Scouts Victoria
  - Tangaroa Blue
- Interviewed waste management educators from four councils
  - City of Port Phillip
  - City of Hobsons Bay
  - City of Monash
  - City of Yarra

### Major Causes as Identified by Councils



Major Causes of Plastic Pollution

### Major Causes as Identified by Experts



Major Causes of Plastic Pollution

# Typical Audit Methods

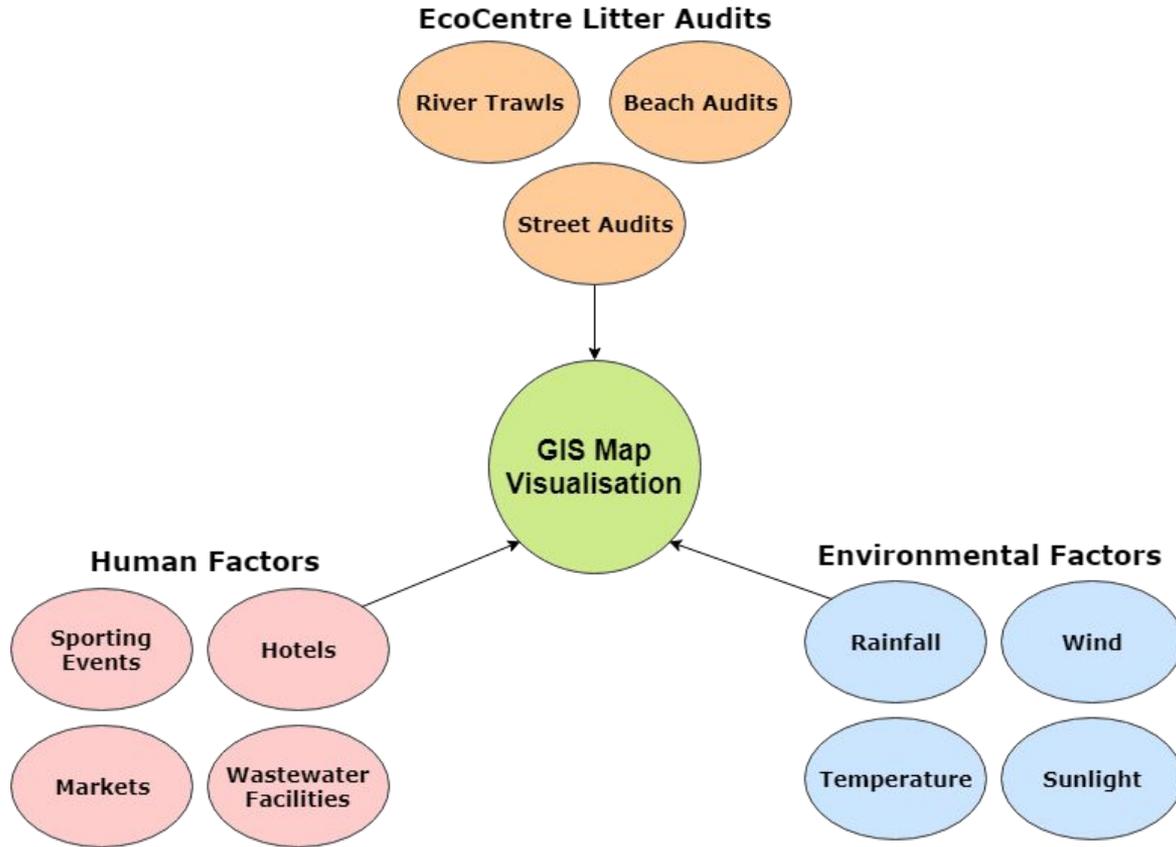
- Many organisations hold beach cleanups and audits
- Different audit methods have different research goals



# EcoCentre Audit Methods

- Capture data from rivers, streets, and beaches
- More rigorous audit method
  - Representative sample
  - Detailed categorisations





# GIS Map Factors

### Upcoming events

EcoCentre summer celebration  
Friday, 7 December 2018 - 4:00pm  
St Kilda

St Kilda Repair Cafe  
Sunday, 9 December 2018 - 2:00pm  
St Kilda

Partnerships & Partnership-based grantwriting  
Friday, 14 December 2018 - 9:45am  
St Kilda

St Kilda Repair Cafe  
Sunday, 10 February 2019 - 2:00pm  
St Kilda

St Kilda Repair Cafe  
Sunday, 10 March 2019 - 2:00pm  
St Kilda

[More events](#)

[Compose tips](#)  
[Manage Events](#)

### Visualisation

Home > Visualisation

[Street](#) [Beach](#) [River](#)

RIVER LITTER AMOUNT

GIS Map    Tons Over Time    Breakdown of Total by Plastic Pollutant

Date: 06/04/2015

Waterway:  JAC,  Manlywarring,  Yarra

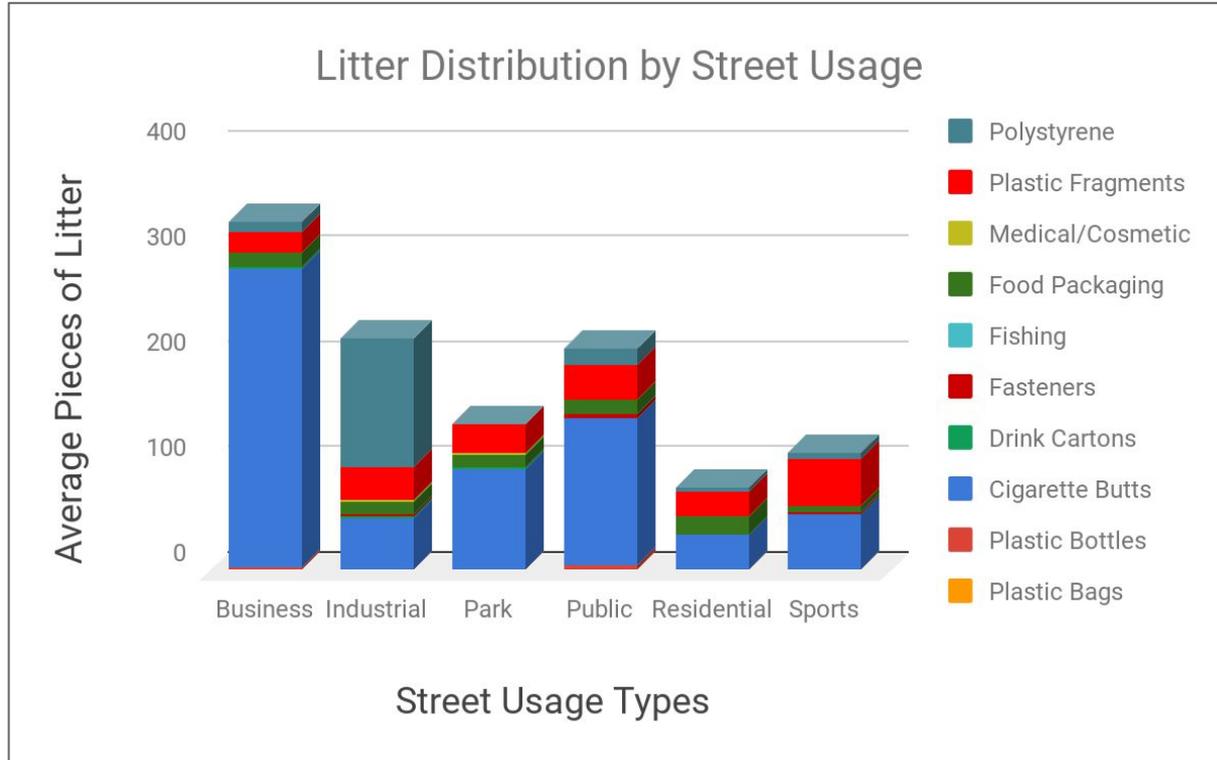
Waterway:  Manlywarring,  Yarra



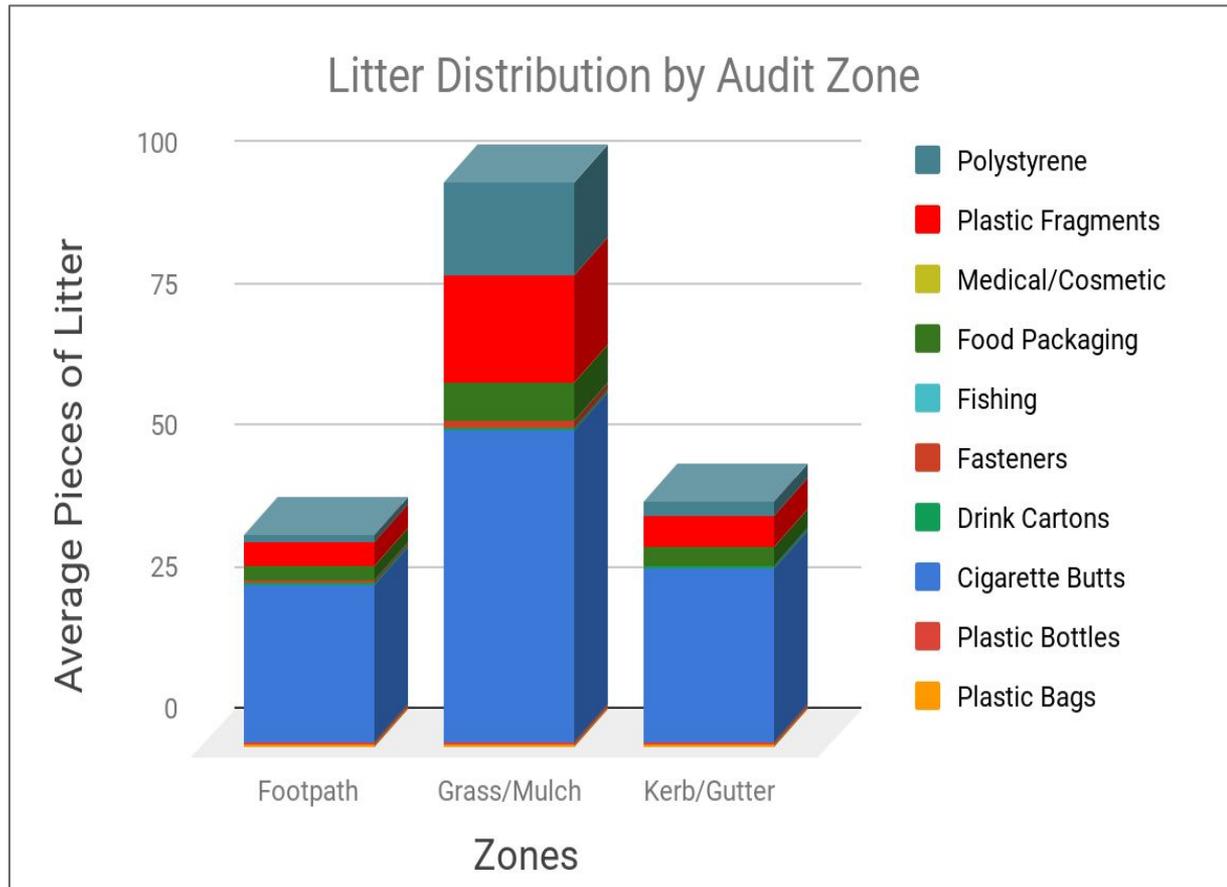
Waterway	Litter
Manlywarring	155



# Street Litter Audit Method



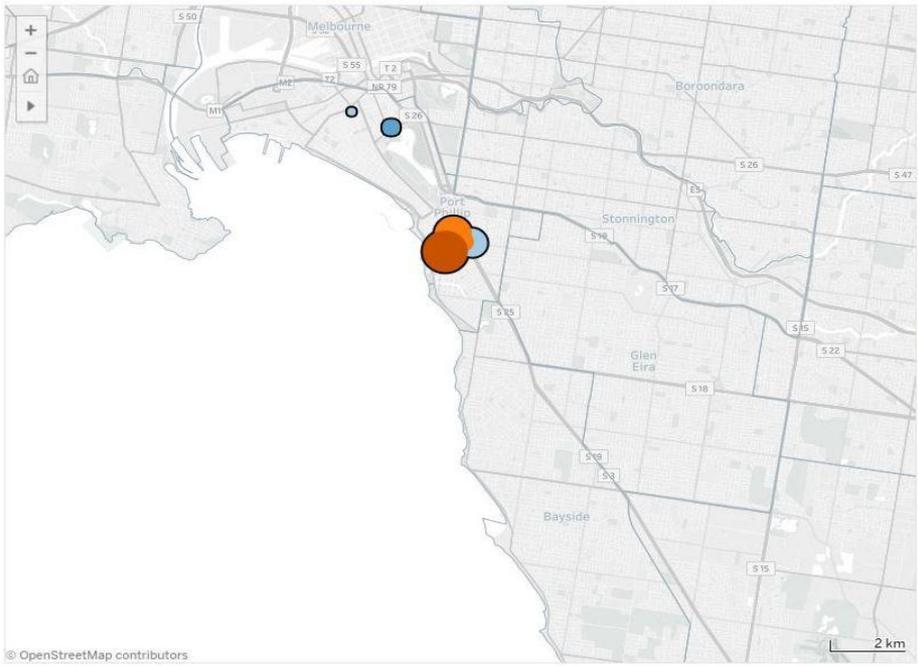
# Street Litter Audit Results



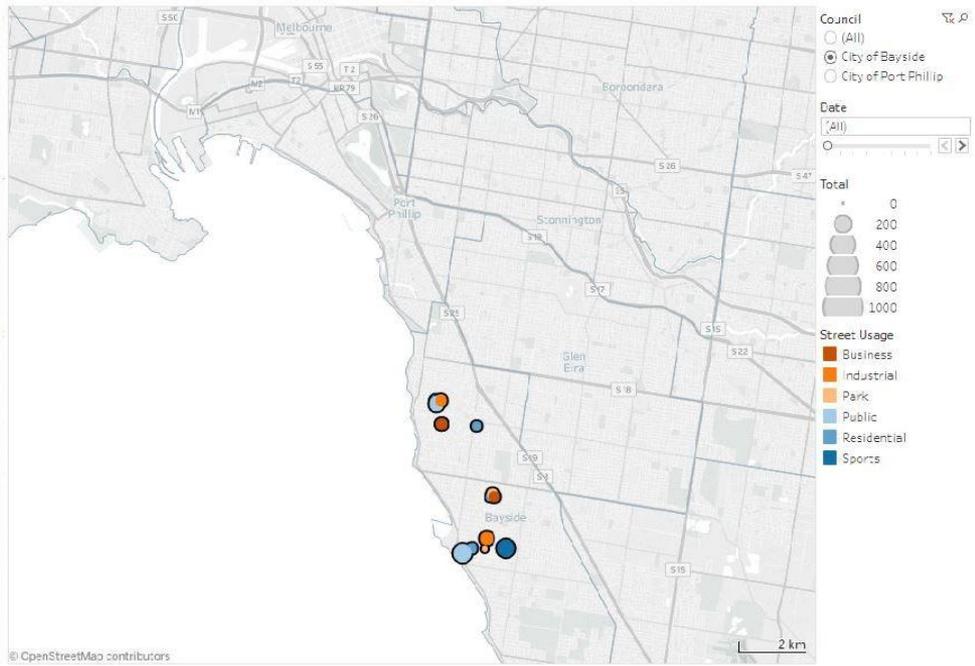
# Street Litter Audit Results

GIS Map   Totals Over Time   Breakdown of Total by Plastic Pollutant

GIS Map   Totals Over Time   Breakdown of Total by Plastic Pollutant



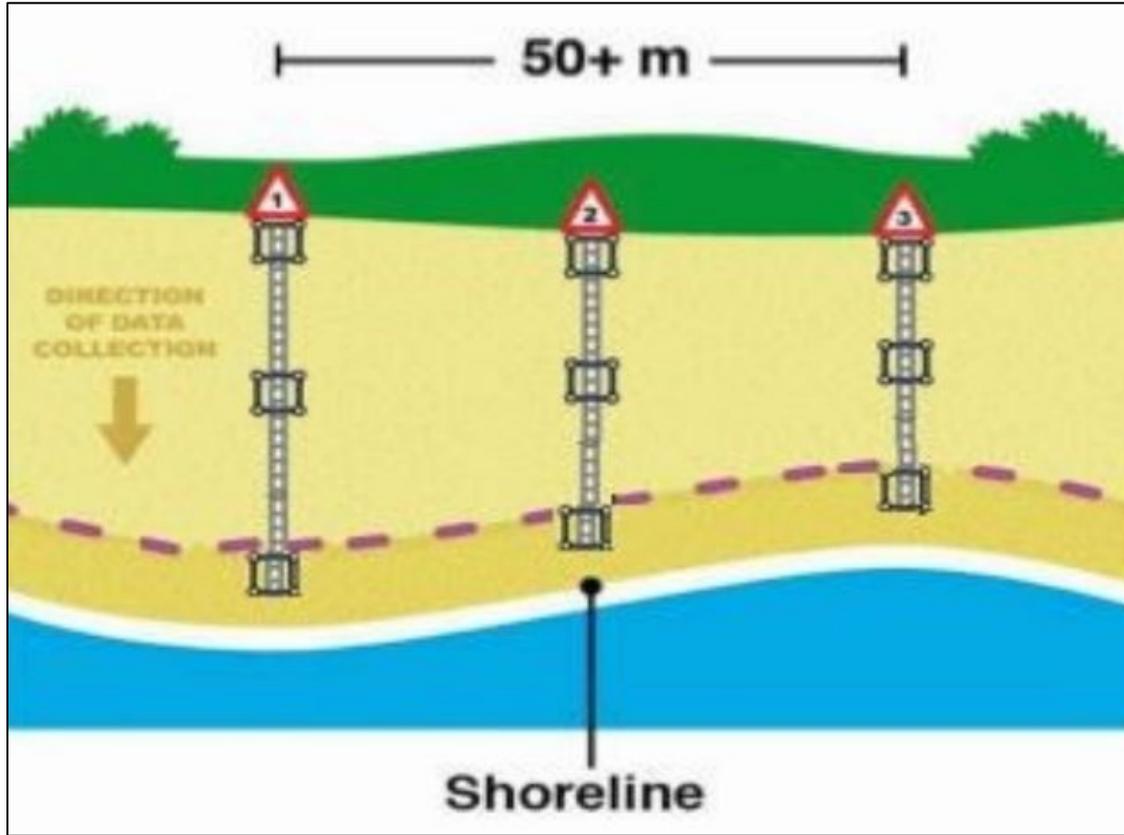
City of Port Phillip



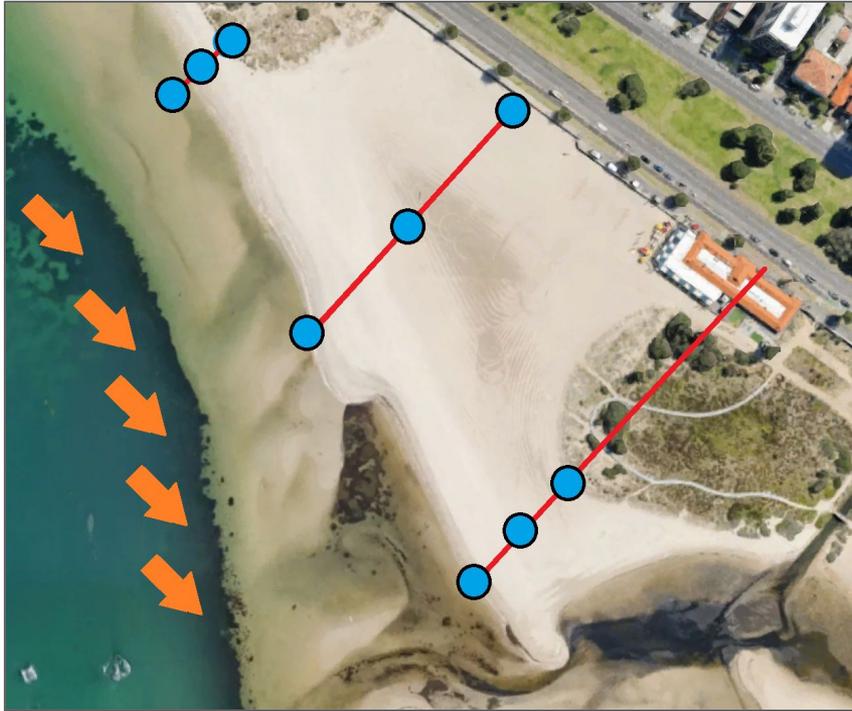
City of Bayside

# Street Litter Audit Results





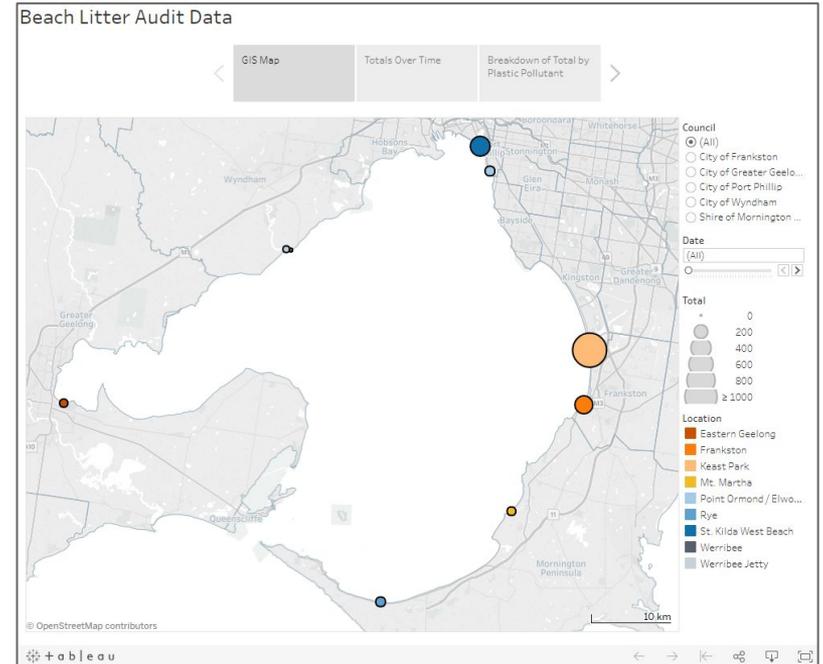
# Beach Litter Audit Methods



# Beach Litter Audit Results

# Beach Litter Audits – Overall Conclusions

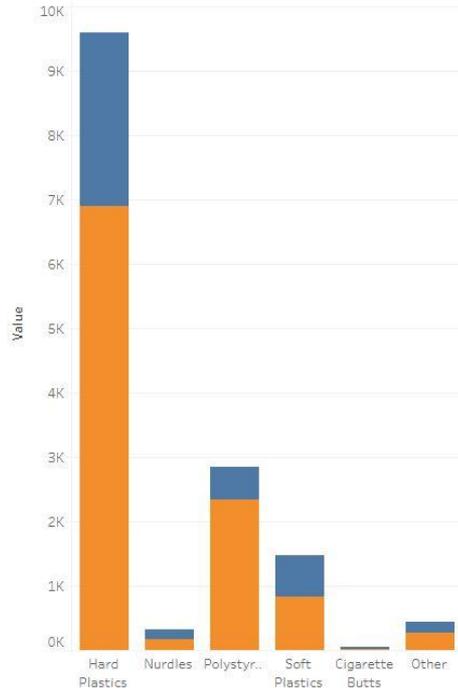
- Wind
  - a. Large items swept into bay
  - b. Degradation occurs
  - c. Fragments wash ashore
- Tides
  - a. Items in bay move with the tide
  - b. Fragments appear according to tidal patterns





# River Litter Audit Methods

GIS Map   Totals Over Time   Breakdown of Total by Plastic Pollutant



Date  
(All)  
O

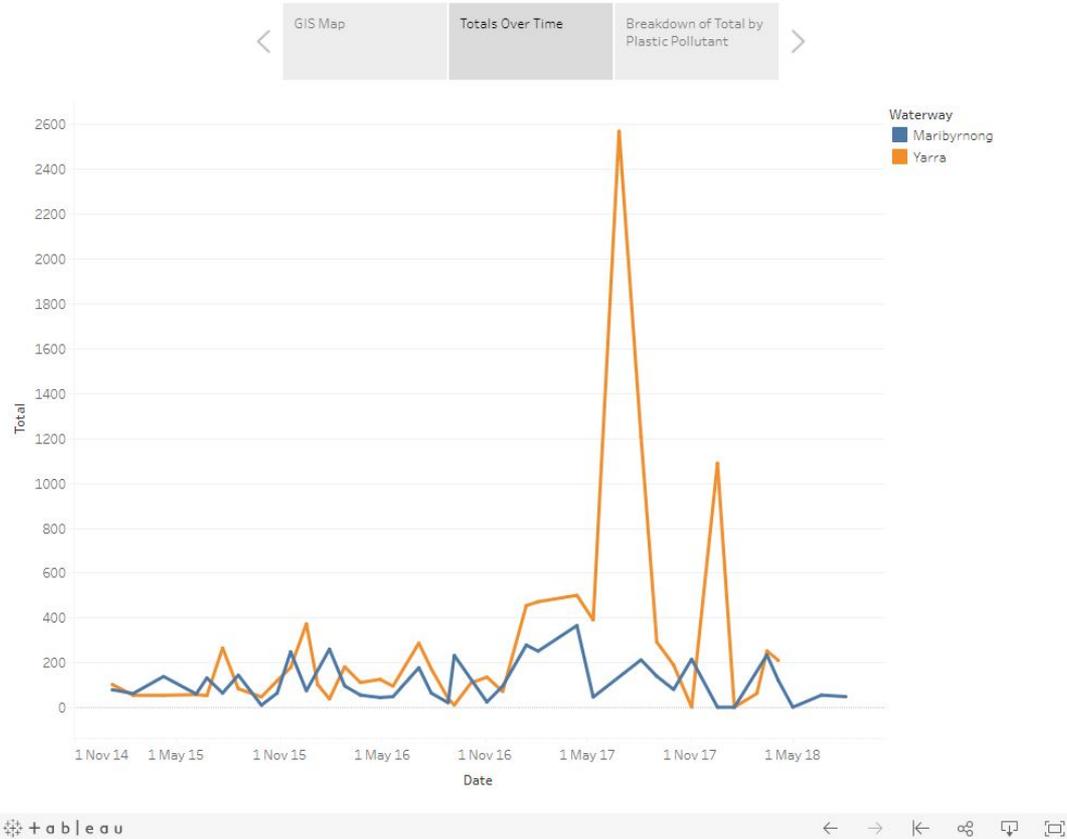
Waterway  
 (All)  
 Maribyrnong  
 Yarra

Waterway  
 Maribyrnong  
 Yarra

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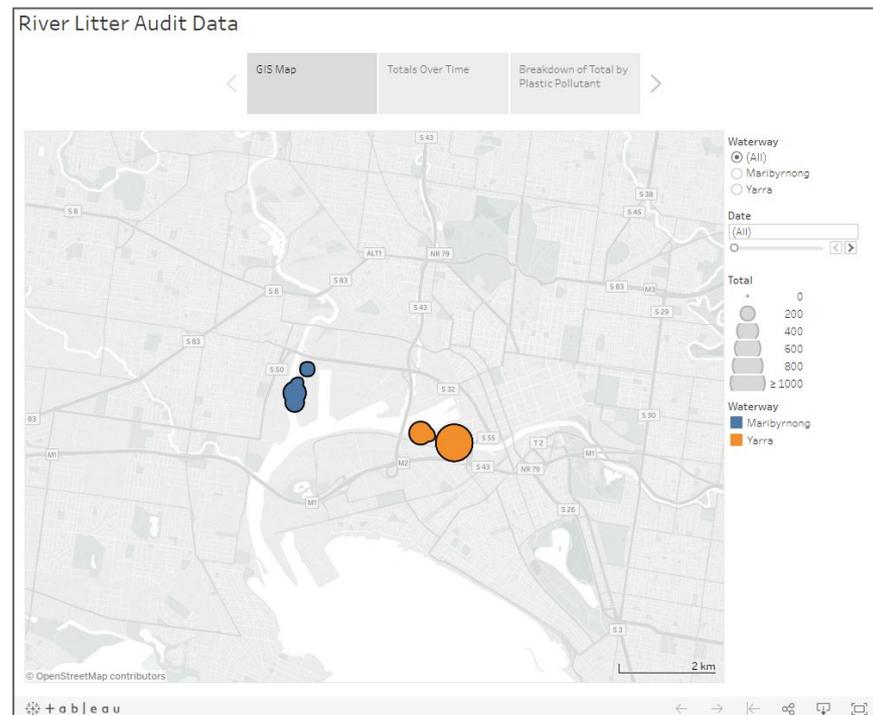
# River Litter Audit Results



# River Litter Audit Results

# River Litter Audits – Overall Conclusions

- Sunlight
  - Longer UV light exposure could break down large pollutants faster
- Rainfall
  - Flush the stormwater drain systems and introduce large pollutants
- Wind
  - Introducing large pollutants from areas alongside the rivers
- Hotels & Sporting Grounds
  - Prevalent surrounding Yarra
  - Spike following summer months





## Sources of Plastic Pollution in Port Phillip Bay

- Continue data collection
- Consistency in audit locations
- More diverse audit sites
- Street audits at businesses along the rivers
- Before and after



Recommendations for Future Work

- These audits provide baseline data
- Can be used to test effectiveness of future studies and regulation changes
- In the future, the visualisations hosted on the site will be used to influence land policy changes



# Looking Forward

Neil Blake, Port Phillip EcoCentre  
Fam Charko, Port Phillip EcoCentre  
Nick Dunstan, City of Port Phillip  
Annette Finger, Boomerang Alliance  
Peter Kennedy, Scouts Victoria  
Randall Lee, EPA Victoria  
Kimberly McDonald, DELWP  
Emily Newton, City of Port Phillip  
Kirsty Richards, City of Yarra  
April Williams, City of Monash  
Shaun Young, City of Hobsons Bay

# Acknowledgements – Interviewees

Neil Blake  
Fam Charko  
Belinda Daly  
David Giles  
Sharron Hunter  
Karen Jones  
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Costanza Rivarossa  
Brigitte Servatius  
Herman Servatius  
April Seymore  
Josh Solomonsz  
Reiko Yamada

Acknowledgements – Special Thanks

THANKS.

PLEASE  
LEAVE YOUR  
FOOT PRINTS  
NOT YOUR  
RUBBISH