Marine Litter Training – Tonga

Activity report – Sustainable Coast-lines.

August 2023

MARINE LITTER TRAINING – TONGA

ACTIVITY REPORT

SUSTAINABLE COASTLINES

AUGUST 2023

Contents

I. Introduction

Since 2018, Sustainable Coastlines has been delivering a long-term citizen science programme in New Zealand to collect open-access scientific data on marine litter and use it to turn insights into action. The Litter Intelligence Programme, New Zealand's first national litter database, was designed in close collaboration with Statistics New Zealand (StatsNZ) and the Department of Conservation (DoC) to help build a better understanding of the litter problem - because ultimately, we cannot understand what we do not measure.

As part of the "Committing to Sustainable Waste Actions in the Pacific (SWAP)" project, that aims to improve sanitation, environmental, social, and economic conditions in Pacific Island countries and territories through proper waste management, Sustainable Coastlines and its Litter Intelligence Programme is delivering a Pilot Marine Litter Project in five pacific island countries: Fiji, Samoa, Solomon Islands, Tonga, and Vanuatu with the objective to strengthen communities and local authorities' capacity around Marine Litter. In particular, to deliver training and workshops to monitor the evolution of Marine Litter pollution and produce awareness materials to inform and educate on the issue of Marine Litter.

Sustainable Coastlines is providing in person training for communities and associations involved in the implementation of the SWAP Marine Litter Pilot Projects, to enable them to conduct statistically sound beach litter surveys and audits during clean-up activities, and to enable them to record this data using the Litter Intelligence online application for Marine Litter data sharing. The training is being delivered through workshops that provide training on methodology and the use of the online data collection application for recording beach litter data. Additionally, Sustainable Coastlines is working on producing awareness and training materials to inform and educate associations and communities on the issue of Marine Litter involved in the SWAP Marine Litter Pilot Project in Fiji, Samoa, Solomon Islands, Tonga and Vanuatu.

This is the fifth report about the delivery work done in the field as part of the SWAP Marine Litter Pilot Project. In Tongatapu, Tonga, Sustainable Coastlines delivered 2 in person workshops with litter survey and audit activities, and completed a third survey and audit. The report outlines the activities and community groups in Tongatapu that took part in the training workshops and the beach litter surveys and data collected. This report includes the training material delivered, and photos of the field work.

II. Site visit and survey area selection

Sustainable Coastlines (Ben Knight and Te Hira Mayall-Nahi) visited the selected locations (Sopu, Popua) prior to the surveys to assess the area, select the location for the transects, and to undertake a risk assessment.

2.1. Site Scouting Agenda

SITE SCOUTING **Monday 21st August** **Location 1: Sopu / Tongatapu / Tonga** **Location 2: Popua / Tongatapu / Tonga**		
Time (Tonga time)	**Topic**	**Resource Person**
9:30am – 9:45am	Picked up from accommodation and travel to Ministry of Environment and Climate Change Divisions office	Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP
10:00am - 10:10am	Travel to Location 1 - Sopu	Mele Tuakalau, Kailani Tupou and Siua Hakaumotu - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo - SWAP/SPREP
10:15am - 10:40am	Scout site and determine location of survey area	Mele Tuakalau, Kailani Tupou, and Siosiua Hakaumotu - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo - SWAP/SPREP
10:40am - 11:00am	Travel to Location 2 - Popua	Mele Tuakalau, Kailani Tupou and Siua Hakaumotu - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo - SWAP/SPREP
11:00am - 11:20am	Scout site and determine location of survey area	Mele Tuakalau, Kailani Tupou, and Siosiua Hakaumotu - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo - SWAP/SPREP

III. Training Day 1 – LI Citizen science workshop - Popua Beach (West), Tongatapu, Tonga

3.1. Agenda

MARINE LITTER TRAINING Tuesday 22nd August Location: Popua Community / Popua Beach (West), Tongatapu / Tonga		
Time (Tonga Time)	**Topic**	**Resource Person**
11:00am - 11:10am	Meet at Tanoa International Dateline Hotel in Nuku'alofa and travel to Ministry of Environment and Climate Change Divisions office	Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP
11:10am - 12:00pm	Arrive and set up venue/projector etc	Mele Tuakalau - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP
12:00pm - 12:30pm	Welcome and Introductions	Mafile'o Masi - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP
12:30pm - 1:00pm	Lunch	All participants
1:00pm - 1:45pm	Theory Session 1 - Litter Intelligence introduction, how to conduct a survey, Health & Safety	Ben Knight - Sustainable Coastlines
1:45pm - 2:00pm	Travel to Popua Beach East site	All participants
2:00pm - 3:00pm	Practical Session 1 - conduct survey at Popua site	Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines
3:00pm - 3:15pm	Return to office	All participants
3:15pm - 4:00pm	Theory Session 2 - how to conduct an audit	Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines

4:00pm - 5:00pm	Practical Session 2 - audit litter, submit and review data Wrap up / Next steps	Kailani Tupou and Siosiua Hakaumotu (Lead CitSci) - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP

3.2. Attendees

A total of 14 participants attended the Marine Litter Training delivered for Popua on 22nd August 2023, and the registration form of attendees from the community is shown in appendix 1.

The workshop was delivered by Sustainable Coastlines (Ben Knight and Te Hira Mayall-Nahi). Attendee groups were local community members and members of the Department of Environment (MEIDECC) as detailed in appendix 1.

Popua Beach East Litter Intelligence training

3.3. Activities

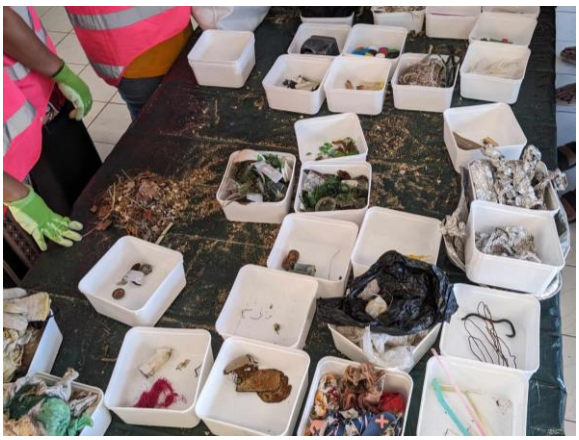
The marine litter training with the Popua community group on how to conduct a marine litter survey and audit. The activities conducted during this day were:

1) Presentation of the Marine Litter Problem;
2) Introduction to the training. The PPT Presentation used for this introduction is attached to this report in Appendix 2;
3) Analysis of the beach selected for the Marine Litter Pilot Project;
4) Setting up of the litter audit and survey area;
5) Picking up of litter from the survey area;

6) Litter audit.

These activities are illustrated below:

Presentation on the Marine Litter Problem	**Analysis of the beach selected for the Marine Litter Pilot Project**
	
Setting up of the litter survey area	
	

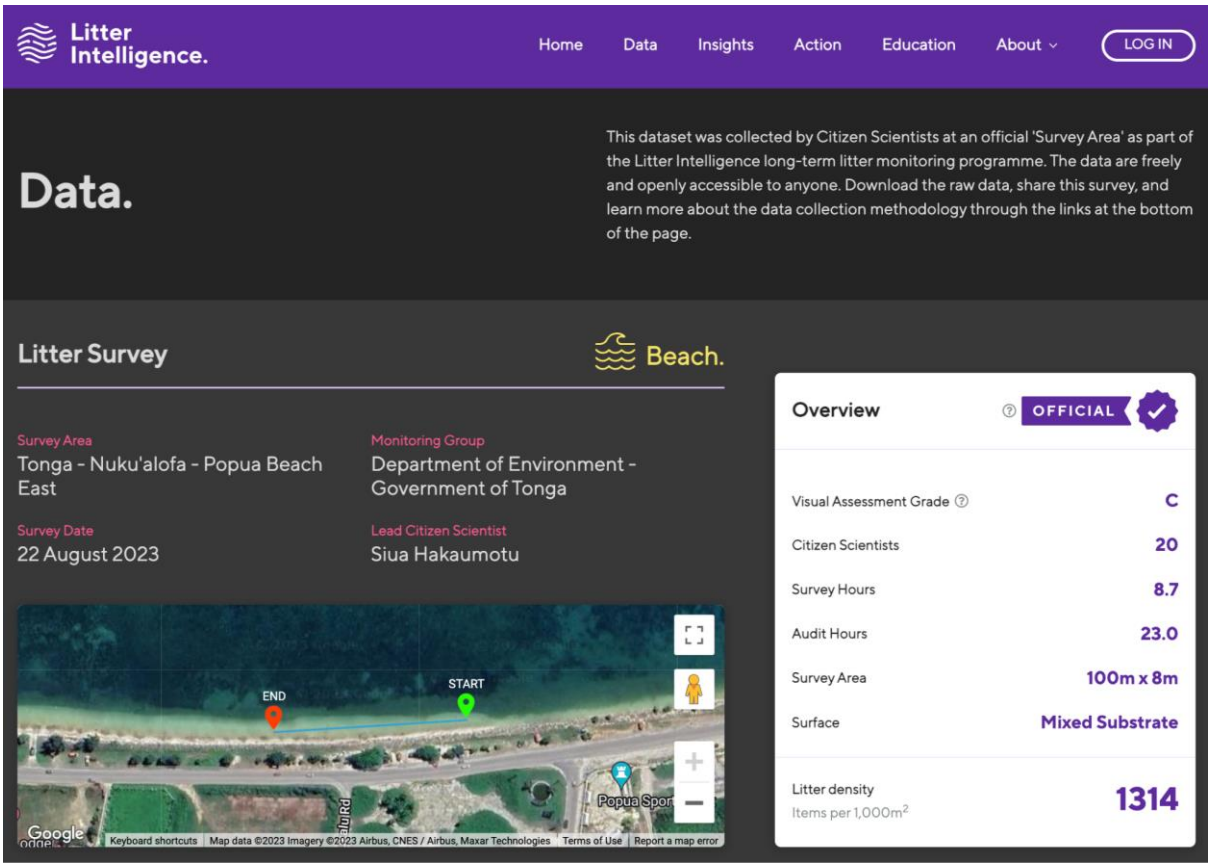
Picking up of litter from the survey area	
	
Litter audit	
	

The results of the training evaluation by the volunteers are attached in appendix 3.

3.4 Results Litter Survey at Popua Beach East, Tongatapu, Tonga

Litter survey data can be accessed through the following link:
https://litterintelligence.org/data/survey?id=2615

- Survey Area: 100m x 8m surveyed.
- Rubbish Volume collected: 100 Litres.
- Rubbish Weight collected: 10.531 Kilograms.
- Litter density of the site: 1,314 Items per 1,000m²


Litter Intelligence.
Home
Data
Insights
Action
Education
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LOG IN
Data.
This dataset was collected by Citizen Scientists at an official 'Survey Area' as part of the Litter Intelligence long-term litter monitoring programme. The data are freely and openly accessible to anyone. Download the raw data, share this survey, and learn more about the data collection methodology through the links at the bottom of the page.
Litter Survey
Beach.
Survey Area
Tonga - Nuku'alofa - Popua Beach East
Monitoring Group
Department of Environment - Government of Tonga
Survey Date
22 August 2023
Lead Citizen Scientist
Siua Hakaumotu
END
START
Google
Keyboard shortcuts
Map data ©2023 Imagery ©2023 Airbus, CNES / Airbus, Maxar Technologies
Terms of Use
Report a map error
Overview
OFFICIAL
Visual Assessment Grade
C
Citizen Scientists
20
Survey Hours
8.7
Audit Hours
23.0
Survey Area
100m x 8m
Surface
Mixed Substrate
Litter density
Items per 1,000m²
1314

IV. Training Day 2 – Litter Intelligence Citizen science workshop - Sopu, Tongatapu, Tonga

4.1. Agenda

MARINE LITTER TRAINING Wednesday 23rd August Location: Sopu / Tongatapu / Tonga		
Time (Tonga time)	**Topic**	**Resource Person**
11:00am - 11:10am	Meet at Tanoa International Dateline Hotel in Nuku'alofa and travel to Ministry of Environment and Climate Change Divisions office	Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP
11:10am - 12:00pm	Arrive and set up venue/projector etc	Mele Tuakalau - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP
12:00pm - 12:30pm	Welcome and Introductions	Mele Tuakalau - Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP
12:30pm - 1:00pm	Lunch	All participants
1:00pm - 1:45pm	Theory Session 1 - Litter Intelligence introduction, how to conduct a survey, Health & Safety	Ben Knight - Sustainable Coastlines
1:45pm - 2:00pm	Travel to Sopu Beach site	All participants
2:00pm - 3:00pm	Practical Session 1 - conduct survey at Sopu site	Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines
3:00pm - 3:15pm	Return to office	All participants
3:15pm - 3:30pm	Afternoon Tea Break	All participants
3:30pm - 4:30pm	Practical Session 2 - how to conduct an audit, audit litter	Ben Knight and Te Hira Mayall-Nahi - Sustainable Coastlines

4:30pm - 4:45pm	Submit and review data Wrap up / Next Steps	Kailani Tupou (Lead CitSci) and Siosiua Hakaumotu Department of Environment (MEIDECC) Ben Knight and Te Hira Mayall-Nahi Sustainable Coastlines Julie Pillet and Memoree Imo – SWAP/SPREP

4.2. Attendees

A total of 13 participants attended the Marine Litter Training delivered for Sopu Beach on the 23rd of August 2023, and the registration form of attendees from the community is shown in appendix 1.

The workshop was delivered by Sustainable Coastlines (Ben Knight and Te Hira Mayall-Nahi). Attendee groups were local community members and members of the Department of Environment (MEIDECC) as detailed in appendix 1.

Sopu, Tongatapu - Training day 2 with community, members of the Department of Environment, and others within the Ministry of MEIDECC

4.3. Activities

The marine litter training at Sopu on how to conduct a marine litter survey and audit. The activities conducted during this day were:

1) Presentation of the Marine Litter Problem;
2) Introduction to the training. The PPT Presentation used for this introduction is attached to this report in Appendix 2;
3) Analysis of the beach selected for the Marine Litter Pilot Project;
4) Setting up of the litter audit and survey area;

5) Picking up of litter from the survey area;
6) Litter audit.

These activities are illustrated below:

Presentation on the Marine Litter Problem	**Analysis of the beach selected for the Marine Litter Pilot Project**
	
Setting up of the litter survey area	
	

Picking up of litter from the survey area

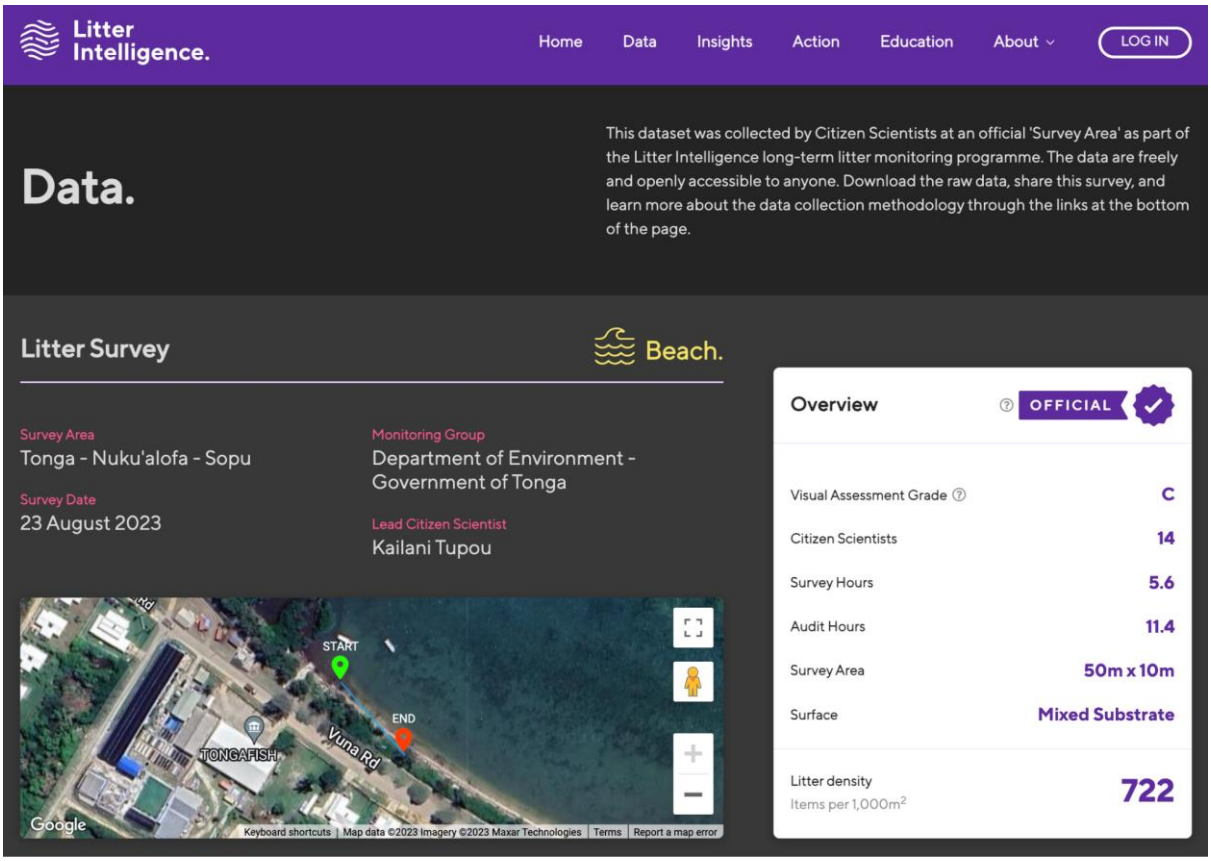
Litter audit

The results of the training evaluation by the volunteers are attached in appendix 3.

4.4. Results Litter Survey in Sopu, Tongatapu, Tonga

Litter survey data can be accessed through the following link:
https://litterintelligence.org/data/survey?id=2619

- Survey Area: 50m x 10m surveyed.
- Rubbish Volume collected: 200 Litres.
- Rubbish Weight collected: 43.686 Kilograms.
- Litter density of the site: 722 Items per 1,000m².



V. Training Day 3 – Litter Intelligence Citizen Science Survey and Audit - Popua Beach East, Tongatapu, Tonga

5.1. Agenda

MARINE LITTER TRAINING Friday 25th August 2023 Location: Popua Beach East / Tongatapu / Tonga		
Time (Tonga Time)	**Topic**	**Resource Person**
1:00pm - 1:15pm	Meet at Ministry of Environment and Climate Change Divisions office	Kailani Tupoua and Siosiua Hakaumotu - Department of Environment (MEIDECC) Te Hira Mayall-Nahi - Sustainable Coastlines
1:15pm - 1:25pm	Travel to Popua Beach West survey site	Kailani Tupoua and Siosiua Hakaumotu - Department of Environment (MEIDECC) Te Hira Mayall-Nahi - Sustainable Coastlines
1:25pm - 2:10pm	Conduct the litter survey / clean up	Kailani Tupoua and Siosiua Hakaumotu - Department of Environment (MEIDECC) Te Hira Mayall-Nahi - Sustainable Coastlines
2:10pm - 2:20pm	Return to office	Kailani Tupoua and Siosiua Hakaumotu - Department of Environment (MEIDECC) Te Hira Mayall-Nahi - Sustainable Coastlines
2:20pm - 3:30pm	Conduct the litter audit	Kailani Tupoua and Siosiua Hakaumotu - Department of Environment (MEIDECC) Te Hira Mayall-Nahi - Sustainable Coastlines
3:30pm - 4:00pm	Review and submit the data Wrap up / Next steps	Kailani Tupoua (Lead CitSci) and Siosiua Hakaumotu - Department of Environment (MEIDECC) Te Hira Mayall-Nahi - Sustainable Coastlines

5.2. Attendees

A total of 3 people, listed in the agenda above, contributed to the survey collection and litter audit of the Popua Beach East survey site on the 25th of August, 2023.

The activity was delivered by Sustainable Coastlines (Te Hira Mayall-Nahi). Kailani Tupou was the Lead Citizen Scientist for this survey, making him now eligible to become a trainer.

5.3. Activities

The marine litter training day 3 on how to conduct a marine litter survey and audit. The activities conducted during this day were:

1) Analysis of the beach selected for the Marine Litter Pilot Project;
2) Setting up of the litter audit and survey area;
3) Picking up of litter from the survey area;
4) Litter audit.

These activities are illustrated below:

Analysis of the beach selected for the Marine Litter Pilot Project	**Setting up of the litter survey area**
	

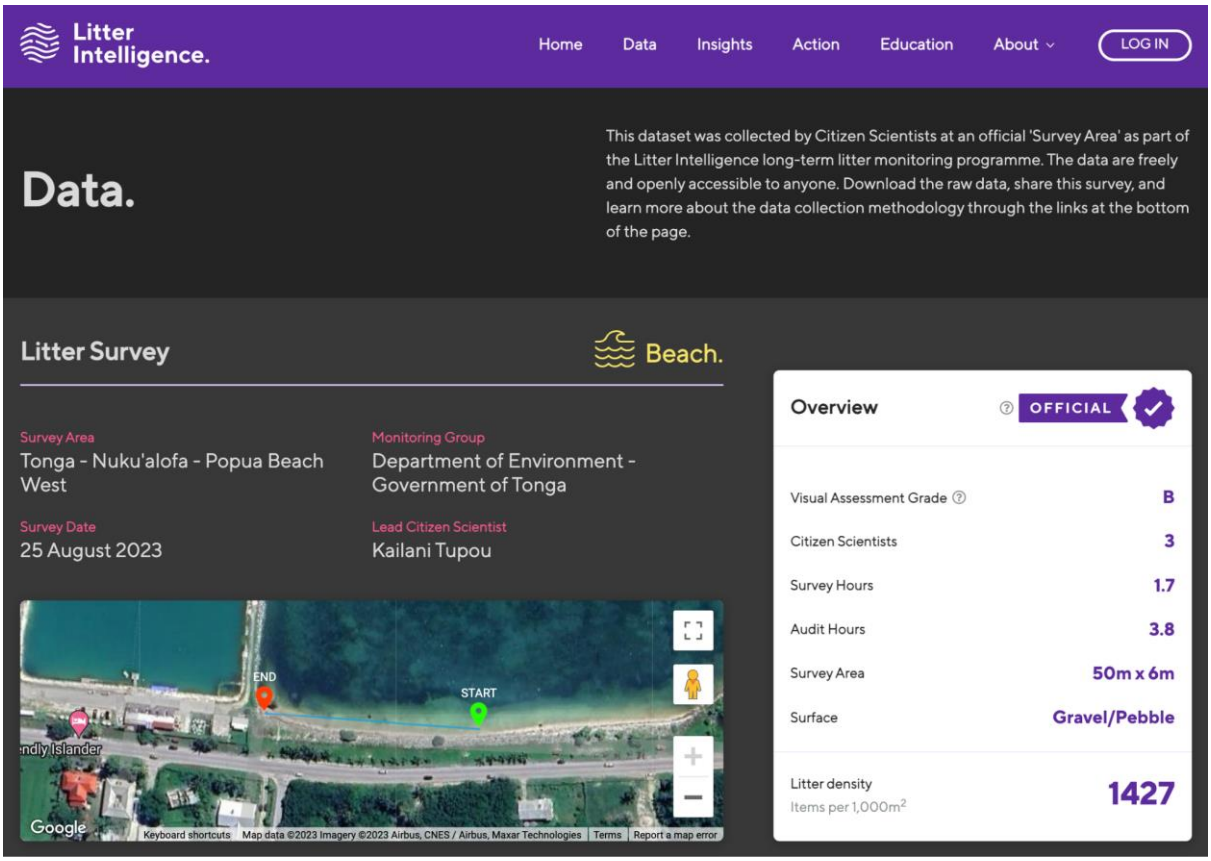
Picking up litter from the survey area

Litter audit

5.4. Results Litter Survey at Popua Beach West, Tongatapu, Tonga

Litter survey data can be accessed through the following link:
https://litterintelligence.org/data/survey?id=2621

- Survey Area: 50m x 6m surveyed.
- Rubbish Volume collected: 50 Litres.
- Rubbish Weight collected: 5.149 Kilograms.
- Litter density of the site: 1472 Items per 1,000m².



VI. De-briefing meeting

An initial debrief meeting was held in person on Friday the 25th August, 2023, between Julie Pillet from SPREP, SWAP Project Coordinator, Memoree Ah Him from SPREP, SWAP Project Technical Assistant, and Ben Knight & Te Hira Mayall-Nahi from Sustainable Coastlines. A second official debrief meeting was arranged online (video conference) on Tuesday the 26th September, 2023 from 11:00 AM to 12:00 PM (NZST), with Julie Pillet from SPREP, SWAP Project Coordinator, Mafile'o Masi & Mele Tuakalau from the Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC), and Te Hira Mayall-Nahi from Sustainable Coastlines.

In these meetings participants discussed: highlights & successes (What worked?), improvement opportunities (What held us back/didn't work?), quick fixes (how could we do things differently?), and actions (what should we do next?).

A photo of the MIRO board used in the debriefing is available in appendix 4.

The main highlights and successes are:

- Participants were highly engaged, especially when it come to being at the beach and taking part on the litter collection activity (survey), participants included a good range of staff from different government departments
- Great organising from the host team - the venue was ideal, participant numbers weren't too big, sites were easy to access and well equipped for training. Excellent support was delivered by the MEIDECC staff.
- Site scouting prior to the trainings proved to be very helpful in selecting Litter Intelligence survey sites, as well as prepare for any future surveys and clean-ups opportunities
- The team from MEIDECC that trained as Lead Citizen Scientists gained knowledge and skills in all points of the Litter Intelligence Programme, including proficiency in the use of the app and one of them currently eligible to become a Trainer
- Sharing food at the beginning of the workshops was a great way to start the events, along with the inclusion of an afternoon tea break between activities as it encouraged cooperation and connection.
- Providing a paper copy of the feedback form allowed participants to provide their feedback during the workshops. Before feedback was requested via email, which did not engage a lot of participants.

The main improvement opportunities, and what held us back:

- Language barriers: The presentation was in English along with the provided resources. Language was a barrier to clear communication. Some participants weren't able to understand technical concepts.
- Timings: The workshops had to start in the afternoon due to tides, and participants found they were less engaged later in the day. On the second workshop day, some participants could not join at the start so the workshop was delayed to allow all participants in the room before starting. This meant the workshop started an hour later than planned. Morning training sessions are preferred by the participants.
- Litter Intelligence data entry - there were app technical issues that were sorted by the SC team. The process of data entry took longer than the sorting and counting process, which meant

some participants who had completed their tasks were disengaged from the data entry process. In general volunteers were not engaged in the data collection in part due to language barriers. This is an opportunity to reevaluate how the delivery of the data entry process can be improved, for example separating teams into groups.

- Sustainable Coastlines staff planning could've been more effective through thorough check for any prior attempts of surveys done in the area to not duplicate effort.
- There was a missed opportunity to materialise a third training due to location restrictions. Clear site selection could have been conveyed beforehand with the local groups to have access to appropriate locations.
- Many participants were elders with limited mobility, despite not being able to participate in the litter collection, they were engaged in the audit process. This presents an opportunity to design and plan workshops that include activities for elders and people with less mobility.
- In general, prior communication for planning between SWAP-SPREP, Sustainable Coastlines and MEIDECC staff would have facilitated to overcome some of the issues that were encountered.

The main quick fixes, how we could do things differently, and the actions, what should we do next:

- The trainees (attendee groups and organisations) did not have enough time to receive the SWAP-SPREP funding needed before the training sessions.
- In preparation for Phase 2, translating all workshop materials to Tonga, including the presentations, resource materials, and feedback forms for better accessibility and communication.

Appendices

- Appendix 1: Registration Forms for all workshops
- Appendix 2: PPT Presentations
- Appendix 3: Training Assessment
- Appendix 4: Debrief Miro Board

Appendix 1: Registration Form for all workshops

Workshop 1 - Popua Beach East				Notes
First Name	Family Name	Email	Phone number	14 participants total
Ana	Paasi	No email available	+676 7200278	
Mecedes	Havea	No email available	+676 7202781	
Sela	Falepapalangi	No email available	+676 8760476	
Losili	Taliauli	No email available	+676 27091	
Kathleen	Falemei	No email available	+676 7797212	
Fakaloloma	Saafi	No email available	No number	
Lora	Ulupano	No email available	+676 8614212	
Kailani	Tupou	ktupou010@gmail.com	+676 7733261	MEIDECC Staff
Siosiua	Hakaumotu	siuahakaumotu@gmail.com	+676 7749450	MEIDECC Staff / CitSci Lead
Mele	Tuakalau	mele.tovi94@gmail.com	+676 7767872	MEIDECC Staff
Mafile'o	Masi	mafileo.masi@gmail.com	No number	MEIDECC Staff
Filimone	Lapao'o	No email available	No number	MEIDECC Staff
Loleini	Kafoike	No email available	No number	
Dorothy	Foliaki	No email available	No number	
Workshop 2 - Sopu Beach				13 participants total
First Name	Family Name	Email	Phone	
Leilani	Tuihalangingie	lanihalangingie@gmail.com	+676 7206886	
Siosiua	Hakaumotu	siuahakaumotu@gmail.com	+676 7749450	MEIDECC Staff
Peta	Koloamatangi	petakoloamatangi@gmail.com	+676 7736872	
Yasmin	Koloi	maria.koloi@police.gov.to	+676 7758265	
Ofa	Faivailo	ofakivv@gmail.com	+676 7724326	
Poli	Faleafa	polifaleafa@gmail.com	+676 7754690	
Loisi	Tongia	loisi.tongia@gmail.com	+676 7207796	
Sulieti	Ofa	juliehufanga@gmail.com	+676 7202362	
Dorothy	Foliaki	doryfoliaki@gmail.com	+676 7748628	
Losipeli	Funaki	losifun@gmail.com	+676 7790115	

Kailani	Tupou	ktupou010@gmail.com	+676 7733261	MEIDECC Staff / CitSci Lead
Mele	Tuakalau	mele.tovi94@gmail.com	+676 7767872	MEIDECC Staff
Patelesio	Fuimaono	patrickfuim6@gmail.com	+676 7777111	

Appendix 2: PPT Presentation

1. Lead Citizen Scientist Training Workshop Slides 2023 Pacific Pilot.pptx

Litter Intelligence.

Data. Insights. Action.

Citizen Scientist Training Workshop

OFFICIAL VERSION 2.0

Litter Intelligence.
Data. Insights. Action.

Today’s agenda

1. **Welcome & Introductions** – 20 min
2. **Programme Background** – 10 min
3. **Equipment Overview** – 10 min
4. **Conducting Your Litter Survey** – 15 min
5. **Working Offline** – 10 min
6. **Health & Safety** – 10 min
7. **Hazardous Waste** – 10 min
8. **Conducting Your Litter Audit** – 10 min
9. **Review & Submit** – 10 min
10. **Questions & Discussion** – 15 min

Welcome & Introductions

Get to know everyone. Your name, organisation, and what motivates you to be here?

Programme Background

Get to know Sustainable Coastlines and the Litter Intelligence programme.

What we do

PURPOSE

REDUCING OCEAN LITTER TOGETHER

IMPACT

60% LESS COASTAL LITTER BY 2030

Approach

WE INSPIRE CHANGE IN MINDSETS, BEHAVIOUR, POLICIES AND PRACTICES, THROUGH COMMUNITY ENGAGEMENT & CITIZEN SCIENCE

REFERENCE

Sustainable Coastlines > Our Impacts
sustainablecoastlines.org/about/our-impacts/

10th

MOST WASTEFUL COUNTRY

URBAN WASTE PRODUCTION PER CAPITA

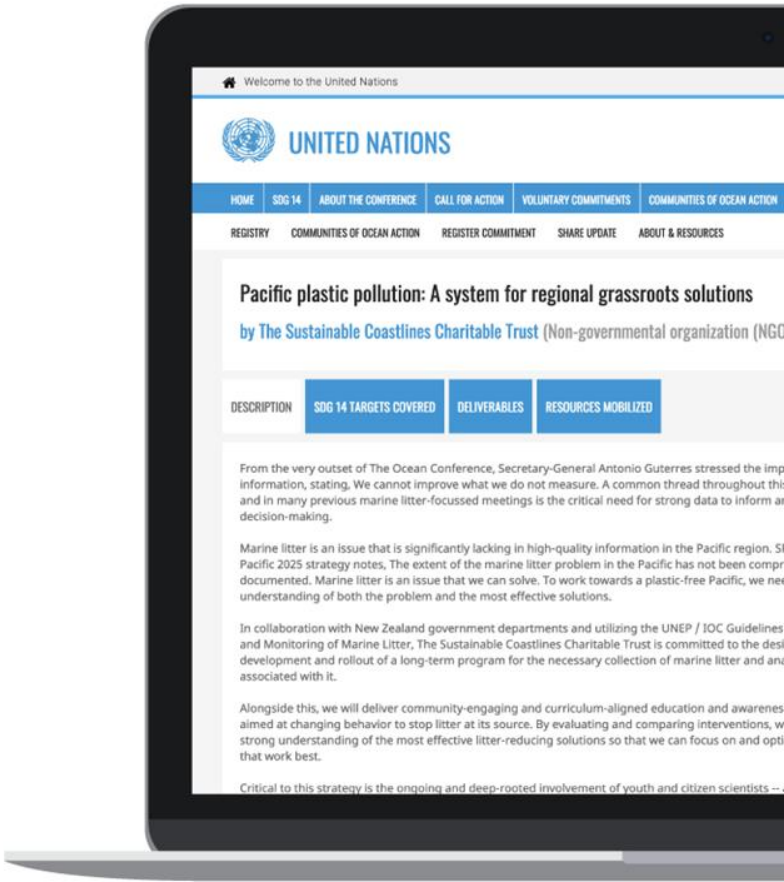
REFERENCE

World Bank "What a Waste 2.0" Report, 2018

We know litter is a problem. Why measure it?

“We cannot improve what we do not measure”

ANTÓNIO GUTERRES, UN SECRETARY GENERAL
THE OCEAN CONFERENCE, NEW YORK, JUNE 2017




sustainable coastlines
Litter Intelligence.
Data. Insights. Action.
PROGRAMME PURPOSE
Inspire and inform better decisions for a world without litter.

Litter Intelligence.
Data. Insights. Action.

Programme Overview

OBJECTIVE #1

Understand the problem

Design & build national litter database

Train & support Citizen Scientists to collect data

Litter data made widely accessible

Data findings inform better decision-making

Data informs more targeted education

Data proves effectiveness of education

OBJECTIVE #2

Optimise solutions

Design & build litter education for curriculum

Train & support Educators to deliver education

Litter education taught throughout school system

Behaviour change reduces litter problem

Litter Intelligence.
Data. Insights. Action.

Our Promise To You

OPEN & FREE ACCESS
TO ALL DATA, FOREVER

IMMEDIATE ACCESS
TO YOUR DATA

SCIENTIFICALLY RIGOROUS
BUT ALWAYS EASY TO USE

Government partners.

Ministry for the Environment
Manatū Mō Te Taiao

Four-year fund for programme design, development and rollout.

Environmental reporting.

Stats NZ
Tatauranga Aotearoa

Co-design of data quality assurance and controls.

Environmental reporting.

Department of Conservation
Te Papa Atawhai

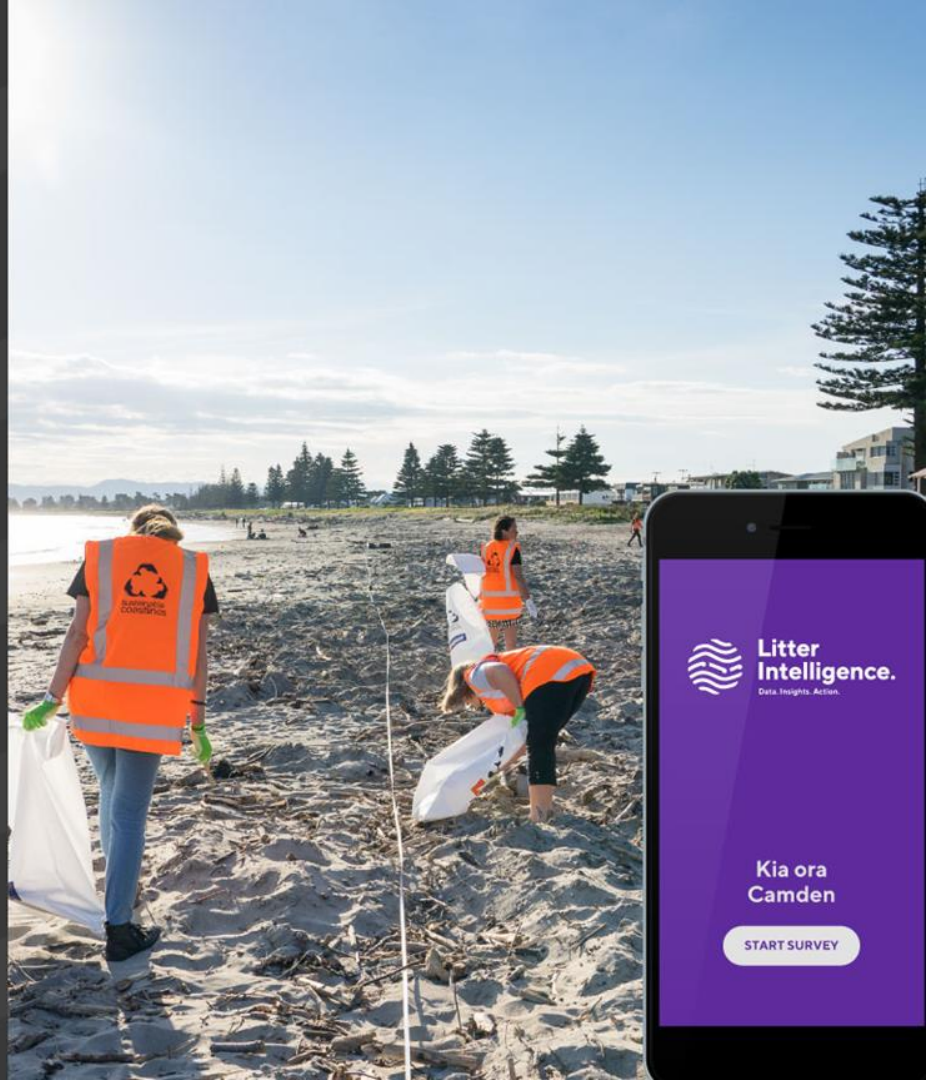
Co-design of localised adapation to UNEP/IOC methodology.

Peer review changes/adaptations to methodology.

Data.

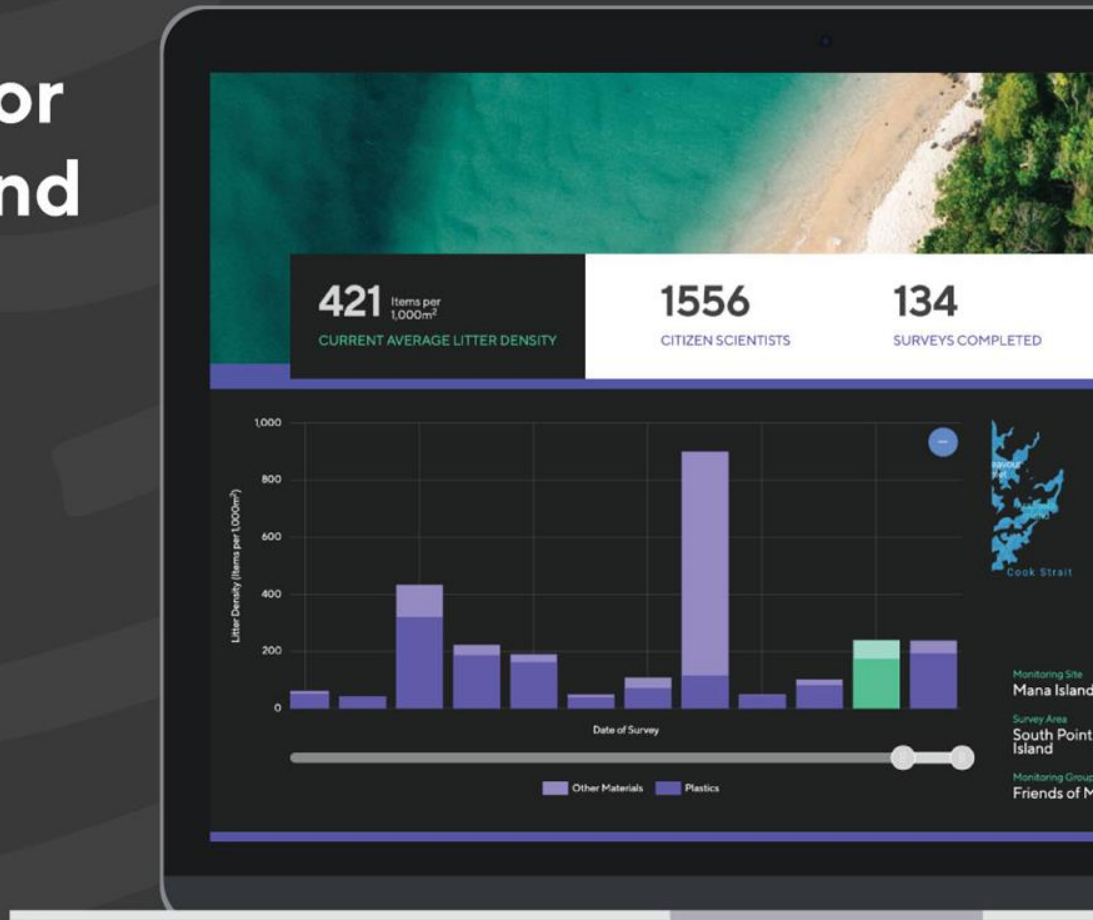
Long-term litter monitoring by trained Citizen Scientists.

Litter Intelligence.
Data. Insights. Action.



Insights.

Smart technology for data visualisation and powerful insights.



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Action.

‘Action Stories’ and schools Education Programme to solve the issue long-term.

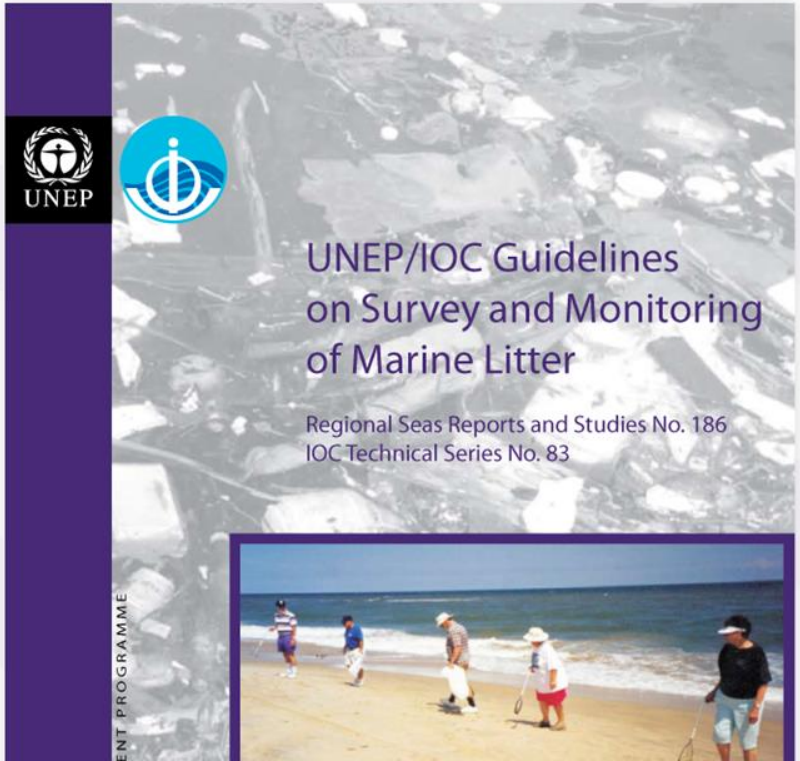
Litter Intelligence.
Data. Insights. Action.

Litter Intelligence.
Data. Insights. Action.

The methodology

Localised adaptation of the **United Nations Environment Program / Intergovernmental Oceanographic Commission** Guidelines on Survey and Monitoring of Marine Litter.

- Measures **litter flux**
- Global comparability
- Reporting on SDGs
- Rigorous, high quality data
- Great for citizen science



Data quality

- Quality Assurance
- Quality Controls
- Data Dictionary
- Open Data Policy
- Data Governance Group
- Privacy & Security

QAQC available at **litterintelligence.org**

SUSTAINABLE COASTLINES CHARITABLE TRUST

LITTER INTELLIGENCE
QUALITY ASSURANCE AND QUALITY CONTROLS

Version 1.0
Prepared by: Camden Howitt, Shawn Elise Tierney, Shelley Butt, Ben Knight
Date: 15 October 2020

Purpose of document:

This document provides an overview of the Quality Assurance measures and Quality Controls that have been established to ensure that the Litter Intelligence Citizen Science programme consistently produces high-quality, credible and scientifically rigorous data.

Our **Quality Assurance** measures are proactive, and include the systems and processes we have built into the Litter Intelligence programme, training and technology that aim to prevent and minimise errors, and ensure data quality.

Our **Quality Controls** are reactive and corrective processes that we have put in place to identify and resolve any data entry/user issues or errors, to ensure the data that appears on the Litter Intelligence platform is robust and can be trusted.

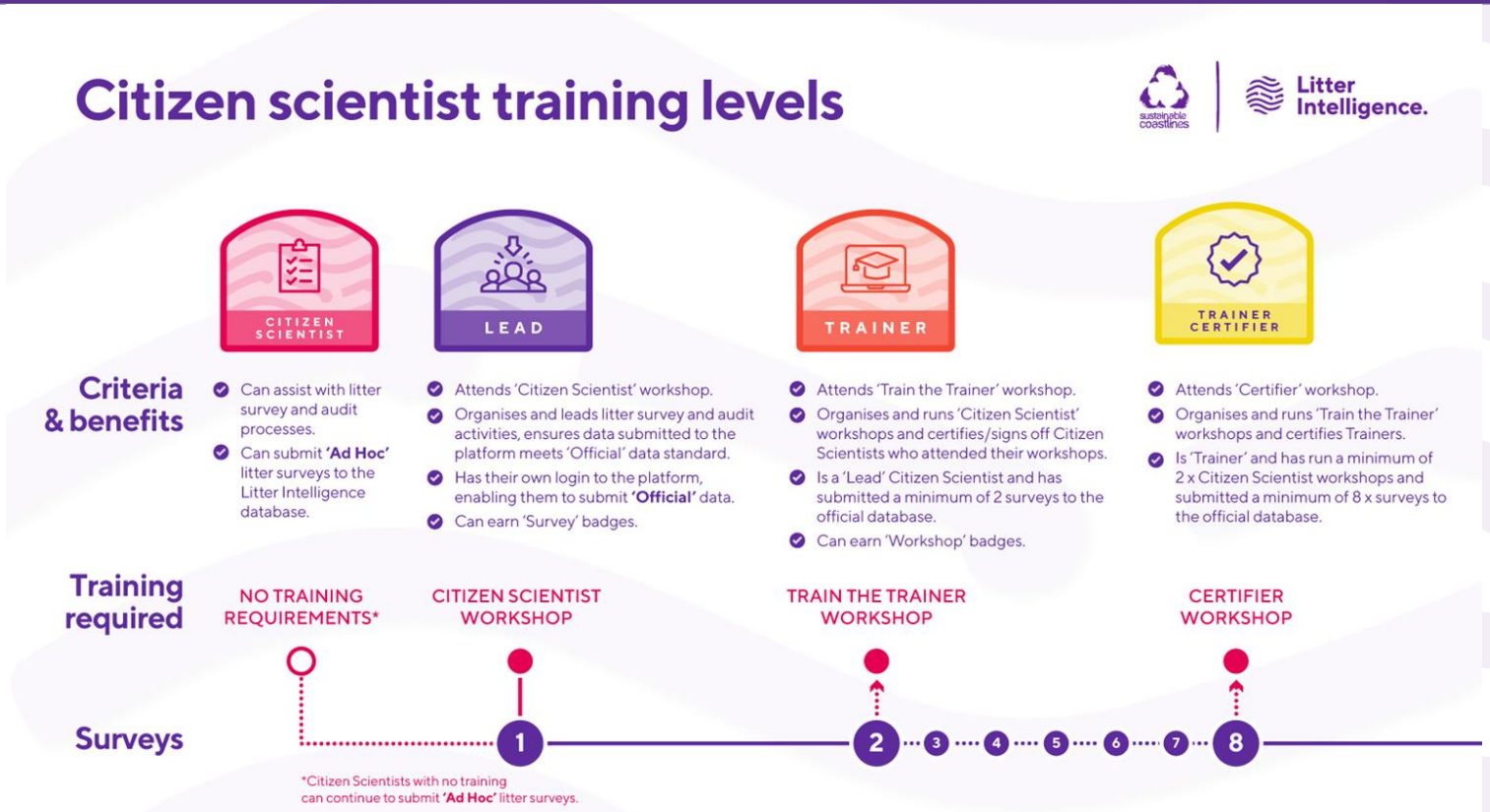
These measures are important for providing ongoing confidence in data collected through this programme, and more broadly to instill confidence and trust in Citizen Science data for the widest audience possible including environmental reporting.

The *Litter Intelligence Data Governance Group* will peer review this document and -- pending changes and approval -- this document will be published on the Litter Intelligence website to add to the credibility and transparency of the programme and its data.

Objectives:

Litter Intelligence.
Data. Insights. Action.

The Training System



Success stories

GOVERNMENT

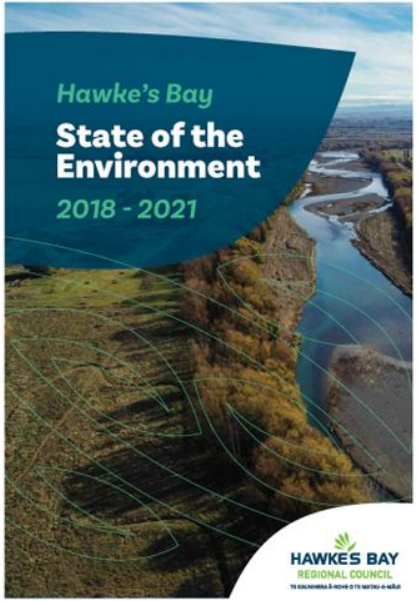
OCT 2019 — NOV 2019 — NOV 2020 — JUNE 2021

"The data set that is being provided by Sustainable Coastlines is a huge advantage to the Ministry for the Environment as a public policy tool, as it shows the areas that are most problematic and highlights to us the things that can be fixed."

HON DAVID PARKER
MINISTER FOR THE ENVIRONMENT

Success stories

LOCAL GOVERNMENT



Litter Intelligence

Globally, plastic has been found throughout coastal and marine environments, even in remote locations like the deep sea. In Hawke's Bay, plastic particles have been found in core samples in both estuarine and sandy beach environments.

Across 35 surveys since 2019, the Litter Intelligence programme[1] has found that plastic is the most common type of litter in the coastal environment, representing 76% of all rubbish items collected (Figure 14-10). Rubber, wood, glass, and ceramic were the heaviest types of rubbish collected, with wood contributing 59% of the total weight of rubbish collected.

Ahuriri Estuary had the highest litter density of the sites in the region, and Waitangi Estuary had the second highest (Figure 14-11). Both estuaries are important habitats for Hawke's Bay's coastal indigenous bird populations (see Biodiversity in Hawke's Bay section).

Figure 14-10: Summary of litter items found in Hawke's Bay Litter Intelligence surveys.

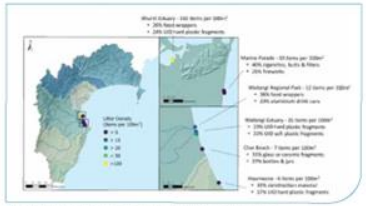


Figure 14-11: Litter density and top litter items at Litter Intelligence survey sites.

[1] The Litter Intelligence programme is an ongoing national citizen science initiative that monitors litter through standardised surveys around New Zealand. It is run by Sustainable Coastlines, established in May 2018 with funding from Ministry for the Environment's Waste Minimisation Fund.

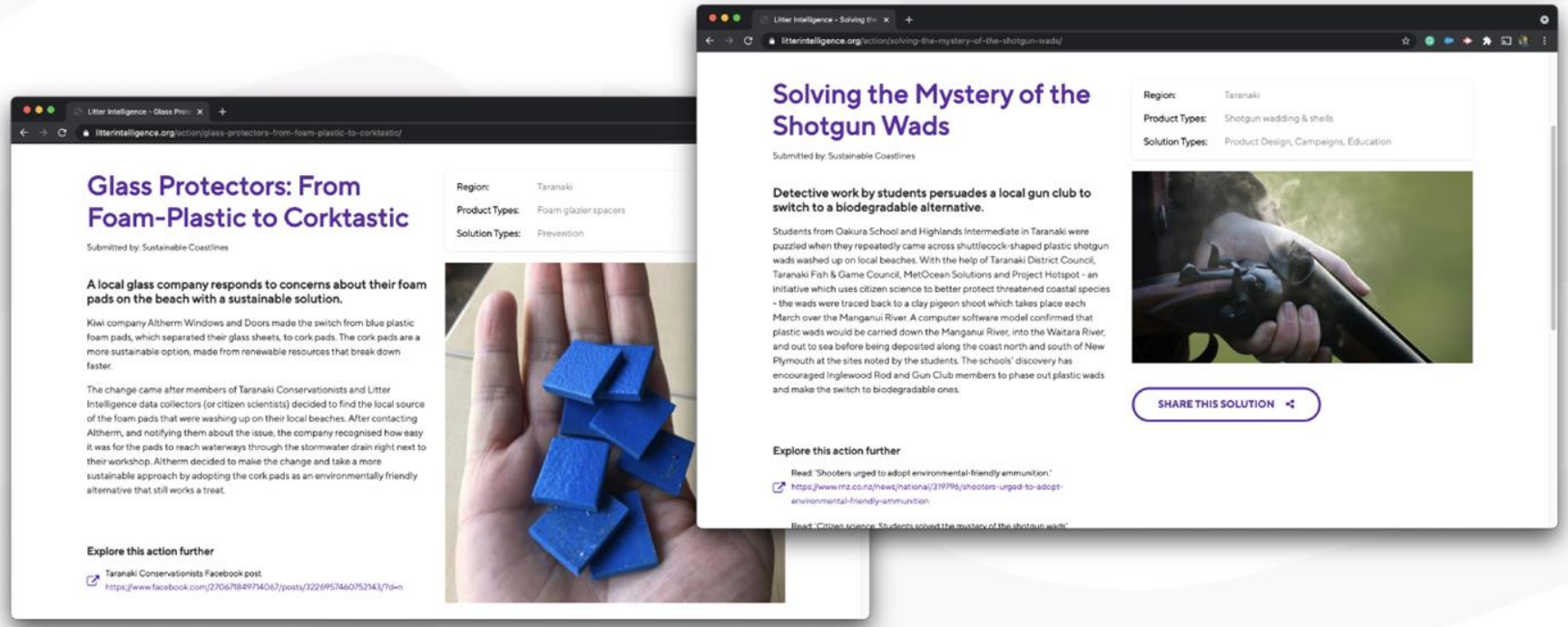
Ahuriri Estuary had the highest litter density of the sites in the region, and Waitangi Estuary had the second highest. Both estuaries are important habitats for Hawke's Bay's coastal indigenous bird populations.

HAWKES BAY
REGIONAL COUNCIL
TE KAUNIHERA Ā-ROHE O TE MATAU-A-MĀUI

STATE OF THE ENVIRONMENT
2018 -2021

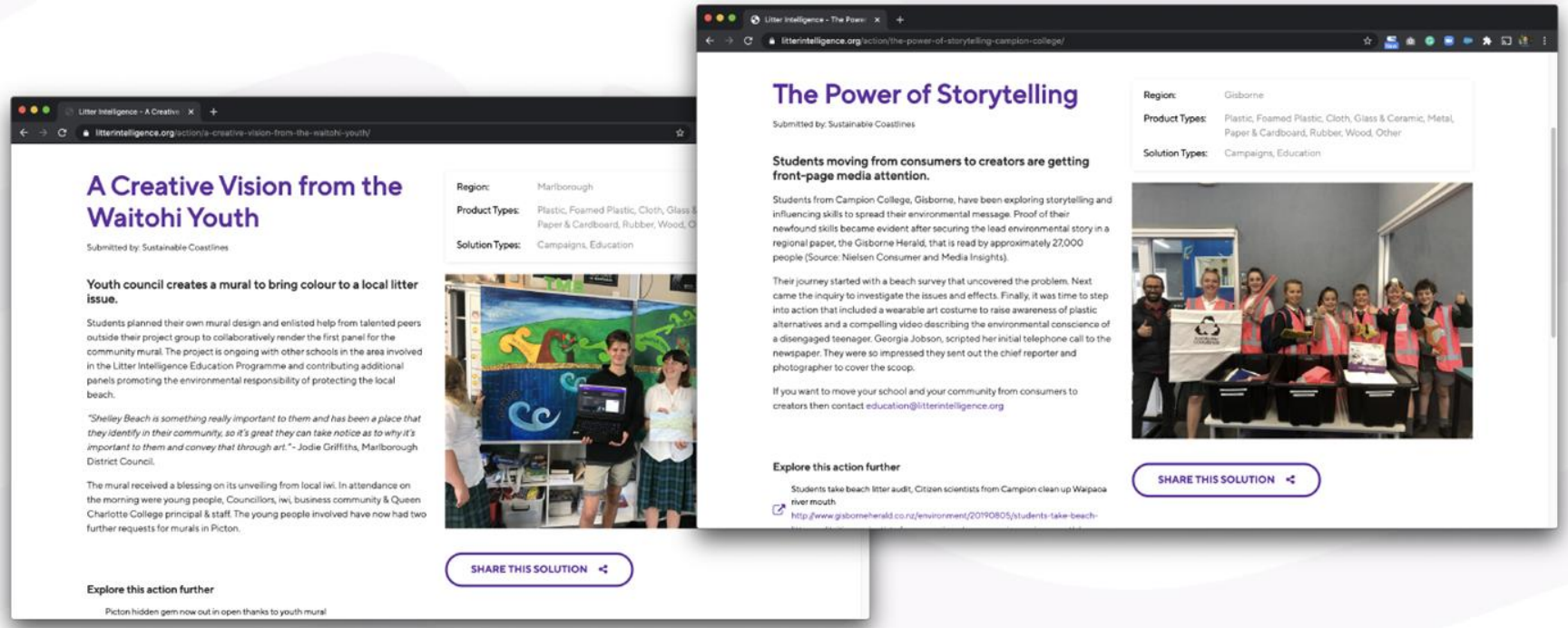
Success stories

BUSINESS



Success stories

COMMUNITY / NON-PROFIT



All Location Types | **New Zealand** | All Litter Types | All Time

Filters

Reset Filters

Beach Freshwater Stormwater

All Location Types

New Zealand Reset

New Zealand

All Regions

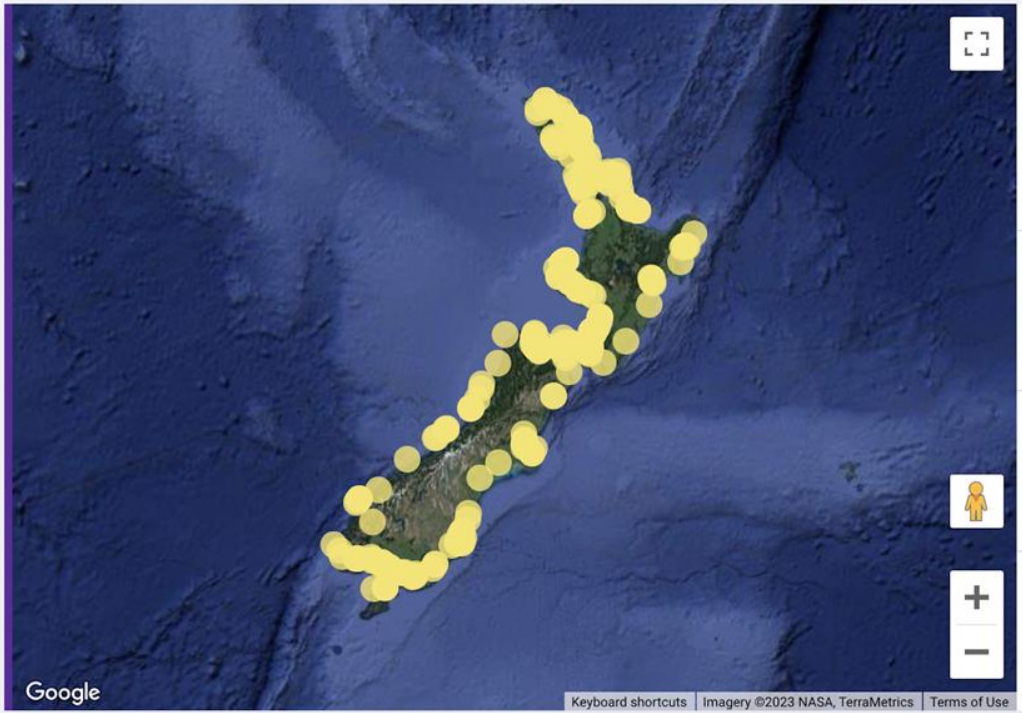
All Survey Areas

Apply Filter

All Litter Types

All Time

Survey Locations



LITTER DENSITY
Items Per 1000m2

Low 0
High 10,818
Average 309

SURVEY AREAS
327

SURVEYS COMPLETED
1,656

VOLUNTEER HOURS
21,478

Filters

Reset Filters

Beach Freshwater Stormwater

All Location Types

New Zealand Reset

New Zealand

All Regions

All Survey Areas

Apply Filter

All Litter Types

All Time

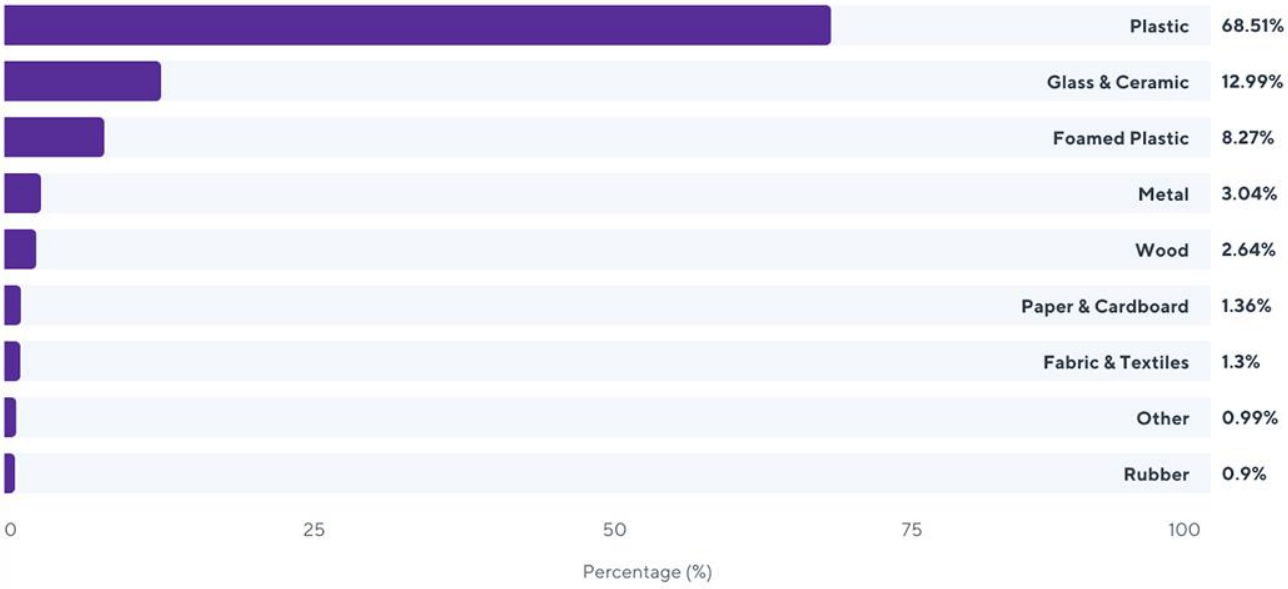
Materials & Products

TOTAL ITEM COUNT
474,003

TOTAL WEIGHT (KG)
10,666.68

PERCENTAGE OF TOTAL ITEMS

ITEMS WEIGHT



Filters

Reset Filters

Beach Freshwater Stormwater

All Location Types

New Zealand Reset

New Zealand

All Regions

All Survey Areas

Apply Filter

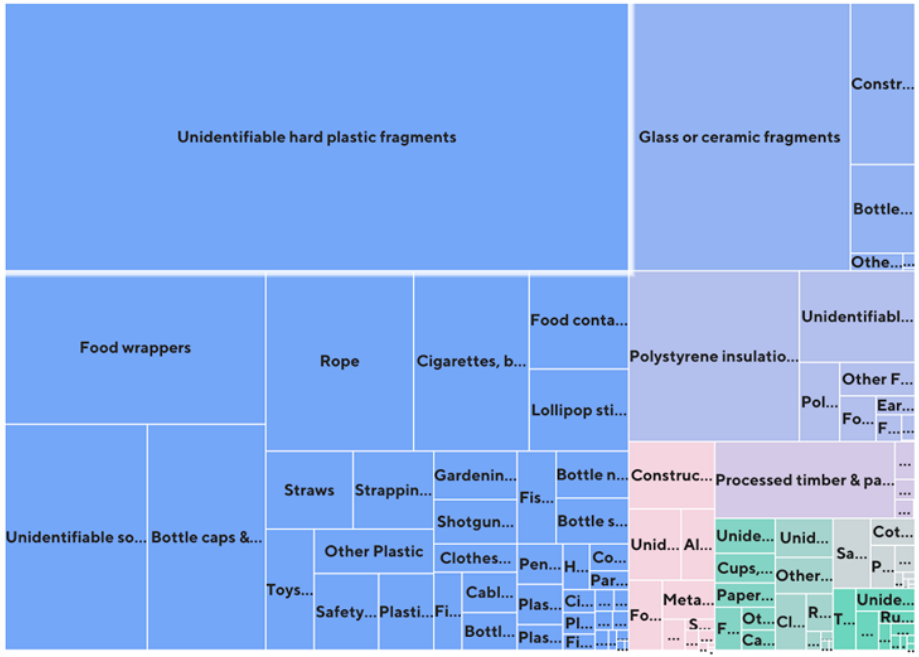
All Litter Types

All Time

Total Litter By Type

TOTAL ITEMS

ITEMS WEIGHT



Plastic	68.51%
Glass & Ceramic	12.99%
Foamed Plastic	8.27%
Metal	3.04%
Wood	2.64%
Paper & Cardboard	1.36%
Fabric & Textiles	1.3%
Other	0.99%
Rubber	0.9%

Filters

Reset Filters

Beach Freshwater Stormwater

All Location Types

New Zealand Reset

New Zealand

All Regions

All Survey Areas

Apply Filter

All Litter Types

All Time

Litter Type

Take Action

LITTER TYPE - ITEMS

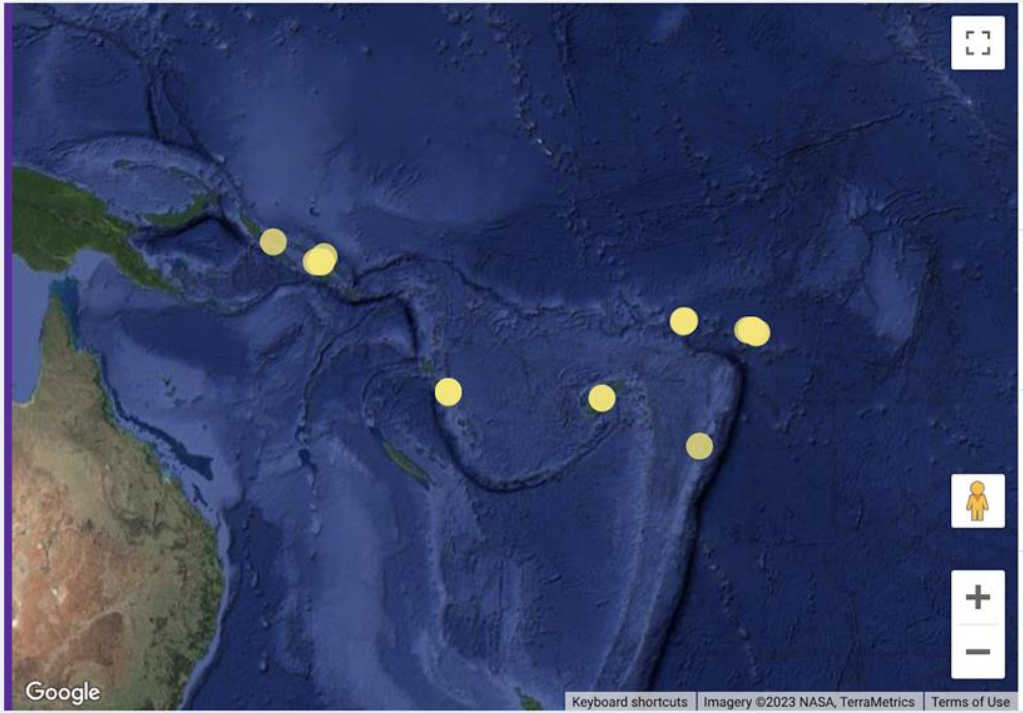
ITEMS WEIGHT

#	PRODUCT	MATERIAL	TOTAL ITEMS	% OF TOTAL
1	Unidentifiable hard plastic fragments	Plastic	134,241	28.32 %
2	Glass or ceramic fragments	Glass & Ceramic	47,635	10.05 %
3	Food wrappers	Plastic	31,779	6.70 %
4	Unidentifiable soft plastic fragments	Plastic	25,732	5.43 %
5	Polystyrene insulation or packaging	Foamed Plastic	23,321	4.92 %
6	Bottle caps & lids	Plastic	21,786	4.60 %
7	Rope	Plastic	21,184	4.47 %
8	Cigarettes, butts & filters	Plastic	16,675	3.52 %
9	Processed timber & pallet crates	Wood	11,188	2.36 %
10	Unidentifiable foamed plastic fragments	Foamed Plastic	8,469	1.79 %

All Location Types
Samoa, Tonga, Vanuatu, Wallis & Futuna, Fiji, Solomon Islands
All Litter Types
All Time

All Location Types
Samoa, Tonga, V... Reset
Samoa, Tonga, Vanuatu, Wallis & Futuna, Fiji, Solomon Islands
All Regions
All Survey Areas
Apply Filter
All Litter Types
All Time
Create Comparison

Survey Locations



LITTER DENSITY
Items Per 1000m2
Low 69
High 74,666
Average 4,064

SURVEY AREAS
27

SURVEYS COMPLETED
29

VOLUNTEER HOURS
1,524

All Location Types

Samoa, Tonga, V... Reset

Samoa, Tonga, Vanuatu, Wallis & Futuna, Fiji, Solomon Islands

All Regions

All Survey Areas

Apply Filter

All Litter Types

All Time

Create Comparison

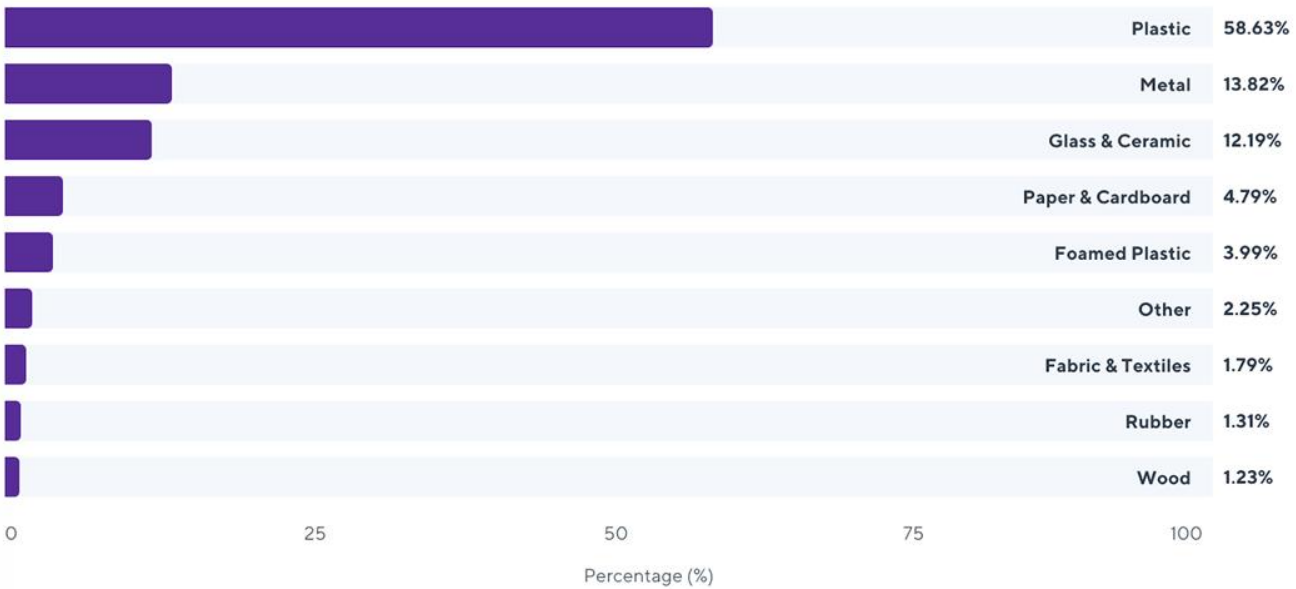
Materials & Products

TOTAL ITEM COUNT
33,584

TOTAL WEIGHT (KG)
1,926.93

PERCENTAGE OF TOTAL ITEMS

ITEMS WEIGHT



All Location Types

Samoa, Tonga, V... Reset

Samoa, Tonga, Vanuatu, Wallis & Futuna, Fiji, Solomon Islands

All Regions

All Survey Areas

Apply Filter

All Litter Types

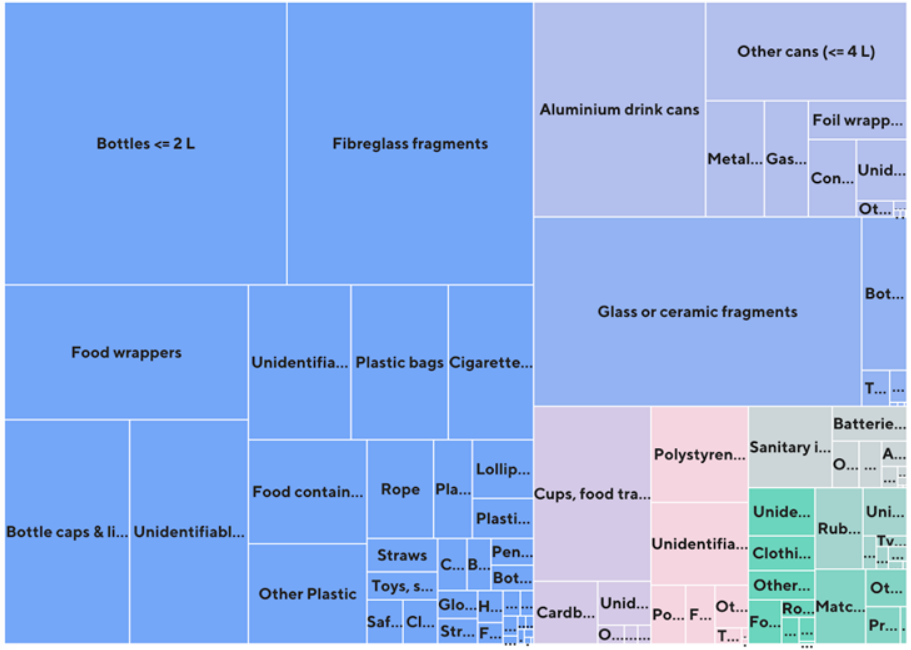
All Time

Create Comparison

Total Litter By Type

TOTAL ITEMS

ITEMS WEIGHT



Plastic	58.63%
Metal	13.82%
Glass & Ceramic	12.19%
Paper & Cardboard	4.79%
Foamed Plastic	3.99%
Other	2.25%
Fabric & Textiles	1.79%
Rubber	1.31%
Wood	1.23%

All Location Types

Samoa, Tonga, V... Reset

Samoa, Tonga, Vanuatu, Wallis & Futuna, Fiji, Solomon Islands

All Regions

All Survey Areas

Apply Filter

All Litter Types

All Time

Create Comparison

Litter Type

Take Action

LITTER TYPE - ITEMS

ITEMS WEIGHT

#	PRODUCT	MATERIAL	TOTAL ITEMS	% OF TOTAL
1	Bottles <= 2 L	Plastic	4,619	13.75 %
2	Fibreglass fragments	Plastic	4,053	12.07 %
3	Glass or ceramic fragments	Glass & Ceramic	3,586	10.68 %
4	Aluminium drink cans	Metal	2,131	6.35 %
5	Food wrappers	Plastic	1,897	5.65 %
6	Bottle caps & lids	Plastic	1,619	4.82 %
7	Unidentifiable hard plastic fragments	Plastic	1,541	4.59 %
8	Cups, food trays & wrappers	Paper & Cardboard	1,184	3.53 %
9	Other cans (<= 4 L)	Metal	1,144	3.41 %
10	Unidentifiable soft plastic fragments	Plastic	914	2.72 %

Equipment Overview

Become familiar with the equipment which makes up the Litter Intelligence kit.

Litter Intelligence.
Data. Insights. Action.

Health & Safety equipment

Litter Intelligence.
Data. Insights. Action.

Survey equipment

Litter Intelligence.
Data. Insights. Action.

Audit equipment

Litter Intelligence.
Data. Insights. Action.

Data sheets

Litter Intelligence.
Data. Insights. Action.

Litter Categories

FOR REFERENCE DURING AUDIT

OFFICIAL VERSION 3.0

How to use this

After your litter survey, take your rubbish to a safe and sheltered location to audit. Categorise your litter according to the categories below, copying the appropriate fields over to your **Audit Data** sheet and recording the count and weight as you go.

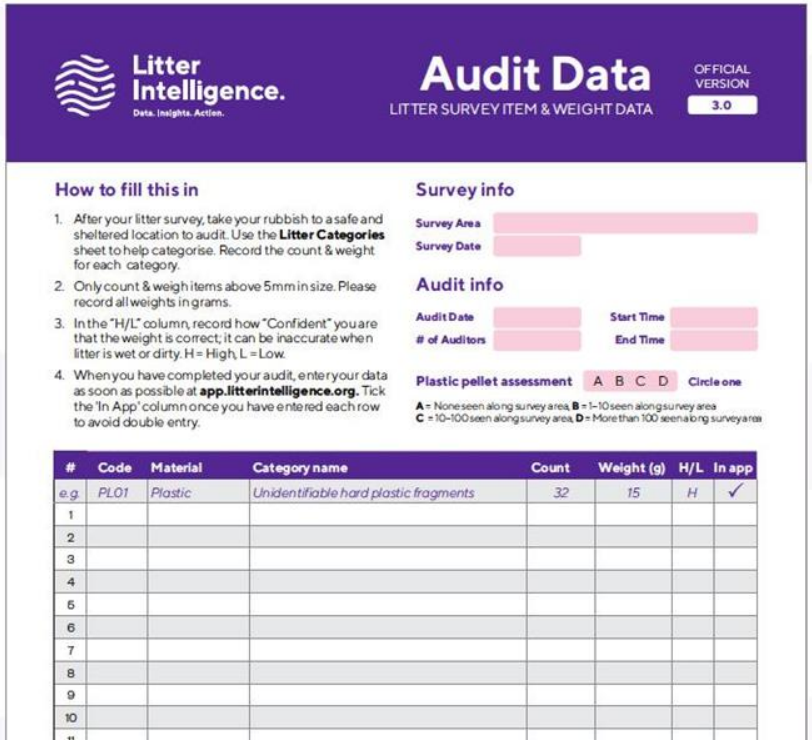
Health & Safety

Important instructions for some litter categories. Look for the icons below in the **H&S** column and follow instructions during your audit.

Biohazard. Only count item, do not weigh. Only trained leaders to touch.

Take extra caution. Only adults to touch.

Code	Plastic	H&S	Notes & Examples
PL24.14	Bacterial habitat wheels		
PL13	Baskets, crates & trays		Includes fish bins
PL01	Bottle caps & lids		Toothpaste caps, nozzles, tops
PL01.01	Bottle neck rings		Milk bottle rings
PL01.02	Bottle seals & tabs		
PL02	Bottles <= 2 L		
PL03	Bottles, drums, jerrycans & buckets > 2 L		
PL24.06	Cable ties & zip ties		
PL10	Cigarette lighters		Vapes, vaping devices
PL11	Cigarettes, butts & filters		Butts, filters
PL24.03	Clothes pegs		
PL12.1	Cosmetics and medical packaging		Inhalers, cosmetics, pill packets, condom wrappers, chapstick. Excludes syringes
PL05	Drink package rings		Six-pack rings, ring carriers
PL22	Fibreglass fragments		
PL17	Fishing gear		Plastic lures, traps & pots, glow sticks, knife handles, snifters, burley pots, berley pots, light sticks, cyalume sticks
PL18	Fishing line		Monofilament line & braid
PL20	Fishing net		



Litter Intelligence.
Data. Insights. Action.

Audit Data

LITTER SURVEY ITEM & WEIGHT DATA

OFFICIAL VERSION 3.0

How to fill this in

1. After your litter survey, take your rubbish to a safe and sheltered location to audit. Use the **Litter Categories** sheet to help categorise. Record the count & weight for each category.
2. Only count & weigh items above 5mm in size. Please record all weights in grams.
3. In the "H/L" column, record how "Confident" you are that the weight is correct; it can be inaccurate when litter is wet or dirty. H = High, L = Low.
4. When you have completed your audit, enter your data as soon as possible at **app.litterintelligence.org.** Tick the 'In App' column once you have entered each row to avoid double entry.

Survey info

Survey Area

Survey Date

Audit info

Audit Date | Start Time

# of Auditors | End Time

Plastic pellet assessment A B C D Circle one

A = None seen along survey area, **B** = 1–10 seen along survey area
C = 10–100 seen along survey area, **D** = More than 100 seen along survey area

#	Code	Material	Category name	Count	Weight (g)	H/L	In app
e.g.	PL01	Plastic	Unidentifiable hard plastic fragments	32	15	H	✓
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

How to Conduct Your Litter Survey

Set up and conduct a litter survey on their chosen beach through the data entry app for a new or existing survey area.

The monitoring process

Litter Intelligence.
Data. Insights. Action.

What are we monitoring?

Litter flux
How fast is litter accumulating at your survey area?

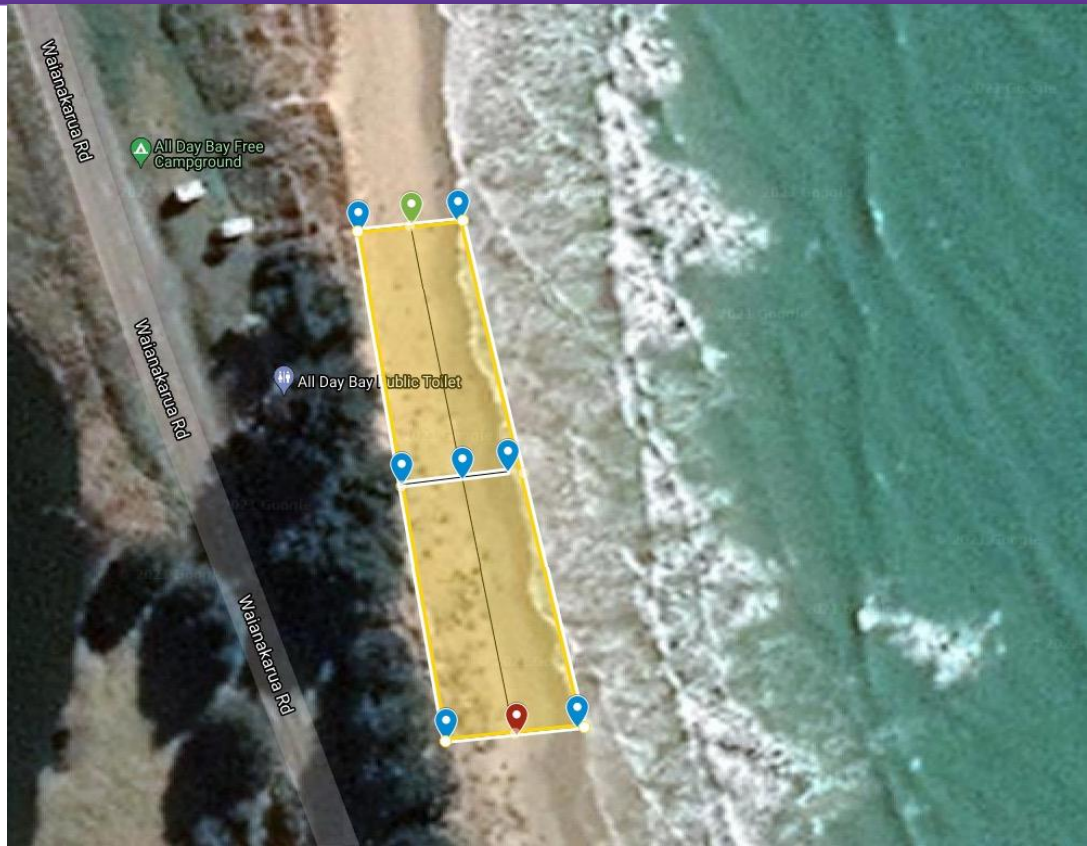
Litter composition
What materials and products is the litter at your survey area comprised of?

Litter Intelligence.
Data. Insights. Action.

Survey area set up

Survey Area:

- 100 metres long
- 20 metres wide, maximum
- Start point is centered in aggregation zone
- Record start and end point GPS coordinates (Green & Red pins)



Litter Intelligence.
Data. Insights. Action.

Identify litter aggregation zone

Litter Intelligence.
Data. Insights. Action.

Mark start point of survey

Litter Intelligence.
Data. Insights. Action.

Measure 10m above and below

Litter Intelligence.
Data. Insights. Action.

Measure out the survey area

Litter Intelligence.
Data. Insights. Action.

Mark out at 50m and 100m

Litter Intelligence.
Data. Insights. Action.

Take three photos

Litter Intelligence.
Data. Insights. Action.

Photo 1: along the survey area

Litter Intelligence.
Data. Insights. Action.

Photo 2: towards the water

Litter Intelligence.
Data. Insights. Action.

Photo 3: towards the beach head

Litter Intelligence.
Data. Insights. Action.

Beach visual assessments

A No litter present

B Predominantly free with some minor instances

Litter Intelligence.
Data. Insights. Action.

Plastic resin plastics

Plastic resin pellets shown here for size.

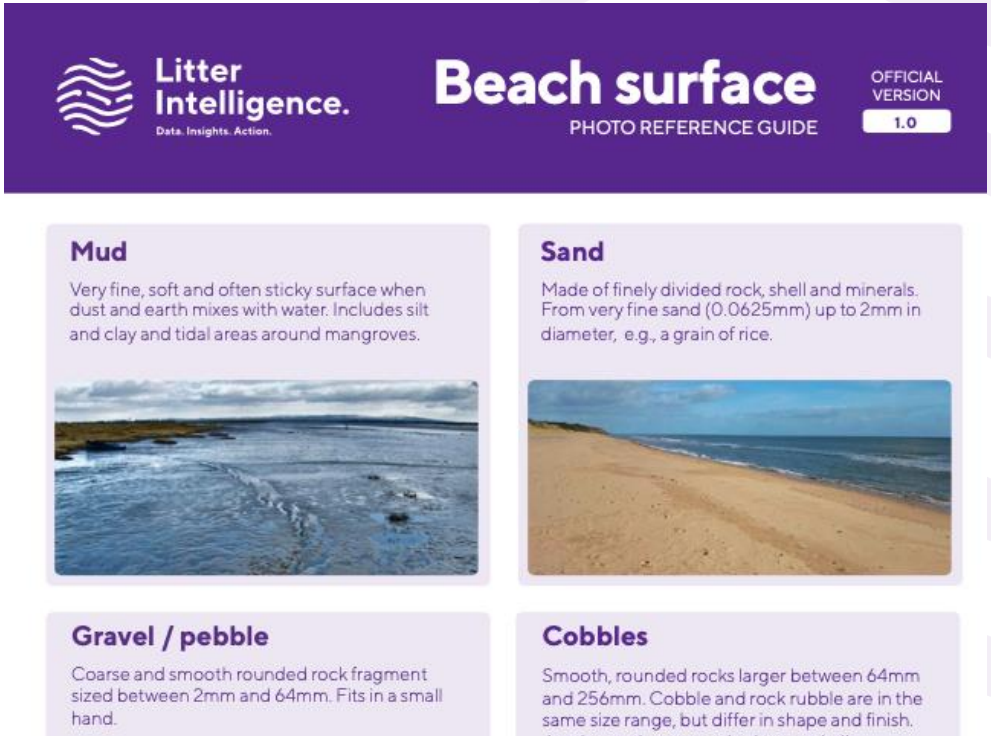
Example of a site with a Grade D rating.

- **A** **None present:** No pellets seen along the survey area.
- **B** **Predominantly free:** 1–10 pellets seen along the survey area.
- **C** **Widespread:** 10–100 pellets seen along the survey area.
- **D** **Heavily affected:** More than 100 pellets seen along the survey area.

Litter Intelligence.
Data. Insights. Action.

Beach Surface

Print and bring along to your survey to help categorise the beach surface.



Litter Intelligence.
Data. Insights. Action.

Record suvey area details

Litter Intelligence.
Data. Insights. Action.

Survey set-up complete

Litter Intelligence.
Data. Insights. Action.

Have surveyors form into a muster line

Litter Intelligence.
Data. Insights. Action.

Complete two full sweeps of the beach

Litter Intelligence.
Data. Insights. Action.

Record presence of large & dangerous items

Working Offline

Become familiar with the process of working in remote areas without mobile reception.

Litter Intelligence.
Data. Insights. Action.

Using your handheld GPS

We have shipped handheld GPS units to each group

- They are all set up and ready for you to use
- Use the handheld GPS to record the start and end point coordinates for any new survey areas
- Use the handheld GPS to locate the start and end point for existing survey areas

Litter Intelligence.
Data. Insights. Action.

Using your handheld GPS

Most handheld GPS units work in a similar way. For the eTrex you can:

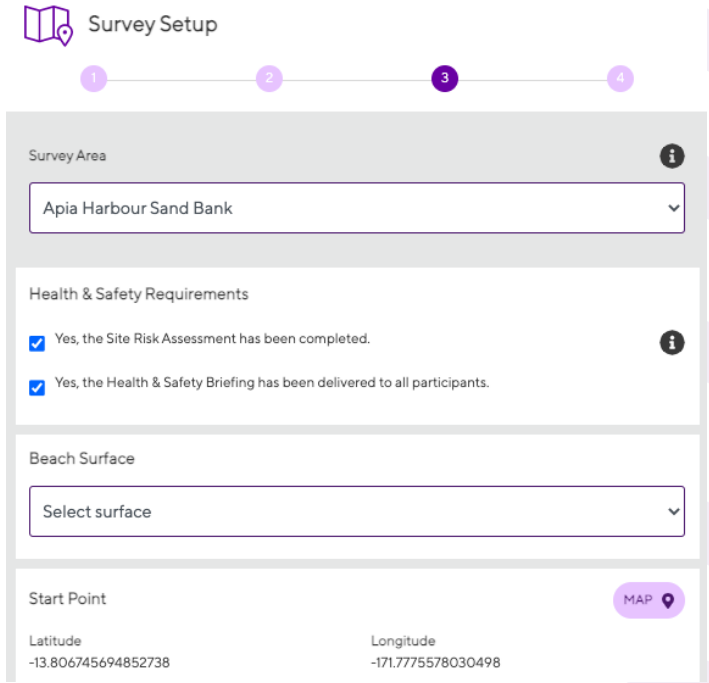
- Access the main menu using button 4
- Toggle between menu options using the toggle (3)
- It's recommended to read the user manual and have a go at navigating the functions prior to your survey

Litter Intelligence.
Data. Insights. Action.

Survey area coordinates

If you are planning to survey an existing survey area:

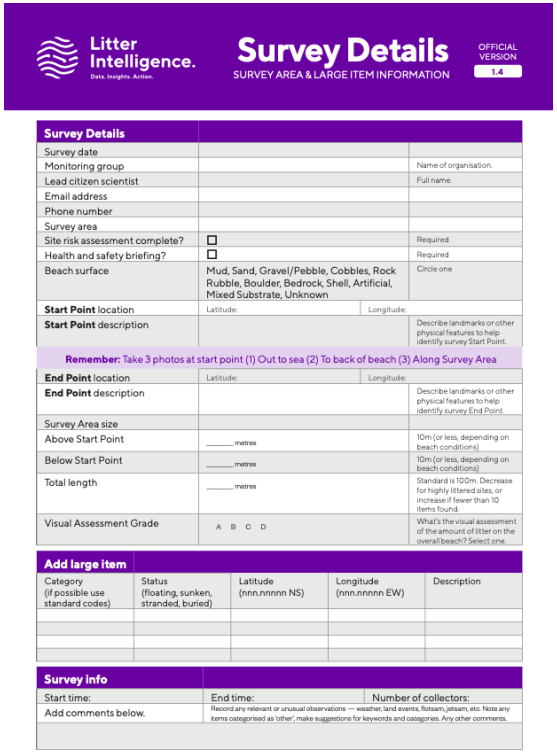
- You can find the GPS coordinates for an existing survey area in the web app.
- Enter these coordinates into the handheld GPS as a new ‘waypoint’ using the ‘Waypoint Manager’ menu.
- Use the handheld GPS to navigate to the start and end point for the existing survey areas.



Litter Intelligence.
Data. Insights. Action.

Recording your survey data

- Use the “Survey Area and Large Items” data sheet to record your survey data manually at the beach
- Enter the survey data into the web app when you are back in wifi or mobile data coverage
- Your data can be entered into the webapp using a mobile device or desktop computer once you are back in wifi or mobile data coverage



Litter Intelligence. Data. Insights. Action.

Survey Details
SURVEY AREA & LARGE ITEM INFORMATION

OFFICIAL VERSION 1.4

Survey Details			
Survey date			
Monitoring group			Name of organisation.
Lead citizen scientist			Full name.
Email address			
Phone number			
Survey area			
Site risk assessment complete?	☐		Required
Health and safety briefing?	☐		Required
Beach surface	Mud, Sand, Gravel/Pebble, Cobbles, Rock Rubble, Boulder, Bedrock, Shell, Artificial, Mixed Substrate, Unknown		Circle one
Start Point location	Latitude:	Longitude:	
Start Point description			Describe landmarks or other physical features to help identify survey Start Point.

Remember: Take 3 photos at start point (1) Out to sea (2) To back of beach (3) Along Survey Area

End Point location	Latitude:	Longitude:	
End Point description			Describe landmarks or other physical features to help identify survey End Point.
Survey Area size			
Above Start Point	_____ metres		10m (or less, depending on beach conditions)
Below Start Point	_____ metres		10m (or less, depending on beach conditions)
Total length	_____ metres		Standard is 100m. Decrease for highly littered sites, or increase if fewer than 10 items found.
Visual Assessment Grade	A B C D		What's the visual assessment of the amount of litter on the overall beach? Select one.

Add large item				
Category (if possible use standard codes)	Status (floating, sunken, stranded, buried)	Latitude (nnn.nnnnn NS)	Longitude (nnn.nnnnn EW)	Description

Survey info		
Start time:	End time:	Number of collectors:
Add comments below.	Record any relevant or unusual observations — weather, land events, flotsam, jetsam, etc. Note any items categorised as 'other', make suggestions for keywords and categories. Any other comments.	

Health & Safety

Understand the processes & procedures to conduct a litter survey and audit safely.

Litter Intelligence.
Data. Insights. Action.

How to assess risk

Risk Assessment Matrix – Rate as Very Low, Low, Moderate, High or Critical

	Very unlikely to happen	Unlikely to happen	Possibly could happen	Likely to happen	Very likely to happen
Catastrophic (Fatal)	Moderate	Moderate	High	Critical	Critical
Major (Disability)	Low	Moderate	Moderate	High	Critical
Moderate (Hospitalization)	Low	Moderate	Moderate	Moderate	High
Minor (First Aid)	Very Low	Low	Moderate	Moderate	Moderate
Superficial (No treatment)	Very Low	Very Low	Low	Low	Moderate

Litter Intelligence.
Data. Insights. Action.

How to manage risk

How you will control the hazard – E or M

Most Effective	E – Eliminate	
	Remove it completely from the event or workspace	If not reasonably practicable:
	M - Minimize	
	Substitute the hazard	Minimize the risk, so far is reasonably practicable, by taking 1 or more of these actions that is the most appropriate
	Isolate the hazard	
	Use engineering controls	
	Use adaptive controls	If a risk remains you must minimize remaining risk, as far is reasonably practicable
Least Effective	Use personal protective equipment (PPE)	If risk remains then minimize using PPE

Litter Intelligence.
Data. Insights. Action.

Health and safety briefing

Asbestos **Extreme caution**

Sharps **Extreme caution**

Coastal terrain **Walk with care**

Bee / wasp nests **Keep away**

Nesting birds **Keep away**

Wear proper H&S gear

Litter Intelligence.
Data. Insights. Action.

Emergency Procedures

- Tsunami
- Earthquake
- First Aid
- Covid safety

sustainable coastlines

Litter Intelligence.
Data. Insights. Action.

Hazardous Waste

Understand how to safely handle hazardous waste & substances found in your survey.

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Data. Insights. Action.

Asbestos Safety

Do not touch!

Extremely hazardous material.

Exterior cladding

Corrugated roofing, guttering and spouting

Decramastic tiles

Piping

Insulation and lagging

Imitation brick cladding

Litter Intelligence.
Data. Insights. Action.

Asbestos Safety

WHAT TO DO IF YOU FIND ASBESTOS OR ASBESTOS CONTAINING MATERIALS (ACM)

- **Do not touch it!**
- Notify our staff immediately.
- Take photographs of the item and note its location.
- Notify the local council of its presence using the app Snap, Send, Solve.

Litter Intelligence.
Data. Insights. Action.

Handling medical sharps

Extreme caution.

High biohazard risk.

Examples of medical sharps.

Watch out for non-obvious sharps like lancets

Wear gloves

Don't put in rubbish or recycling bins.

Don't overfill container

Put it in sharp end first

Litter Intelligence.
Data. Insights. Action.

Handling sanitary items

Only count item. Do not weigh.

Only trained leaders to touch.

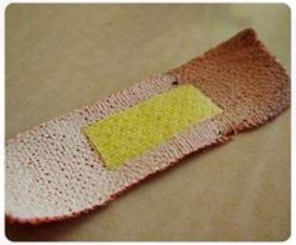
Nappy wipes

Nappy

Toilet paper / tissues

Face masks

Plasters / bandages / sports tape



Condom

Tampon / pads

Tampon applicator

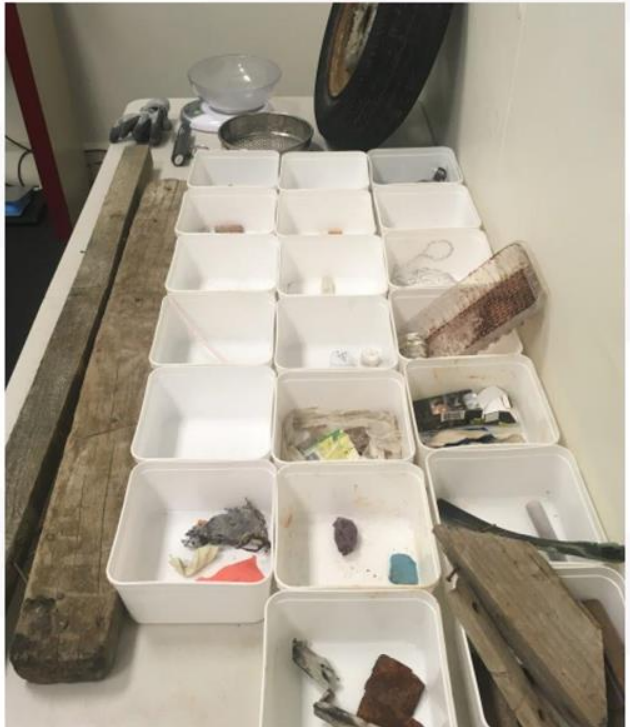

Litter
Intelligence.
Data. Insights. Action.
Let's go to
the beach!

Litter Audit

Become familiar with the audit methodology, the **Litter Identification Guide** and common unusual litter items (+ exercise).

Litter Intelligence.
Data. Insights. Action.

Sort by material then by category



Litter Intelligence.
Data. Insights. Action.

Use sieve to exclude items smaller than 5mm

Litter Intelligence.
Data. Insights. Action.

Count and weigh items in each category, zeroing the scales each time

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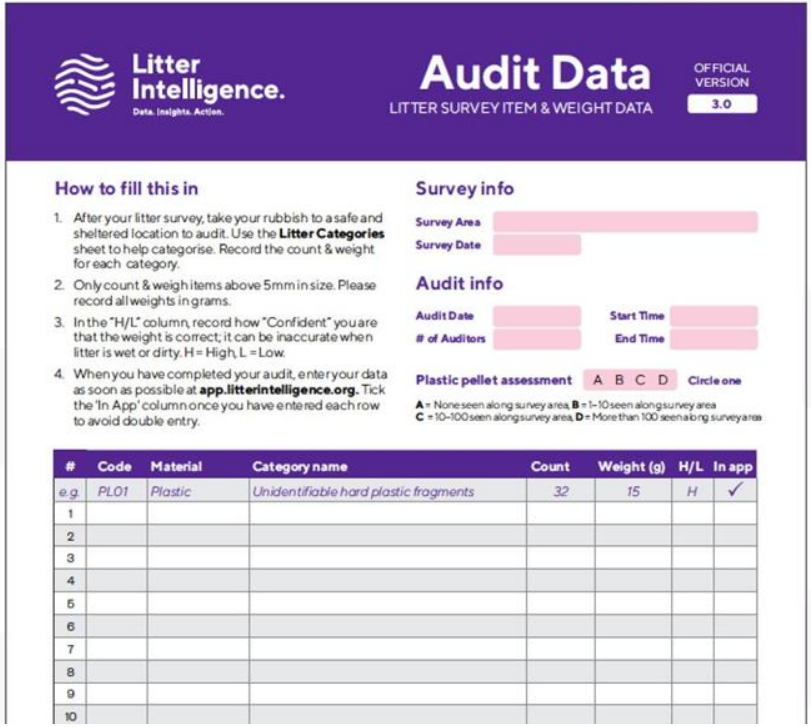
Record on paper and in the app

Litter Intelligence.
Data. Insights. Action.

Audit Data



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Data. Insights. Action.

Audit Data

LITTER SURVEY ITEM & WEIGHT DATA

OFFICIAL VERSION 3.0

How to fill this in

1. After your litter survey, take your rubbish to a safe and sheltered location to audit. Use the **Litter Categories** sheet to help categorise. Record the count & weight for each category.
2. Only count & weigh items above 5mm in size. Please record all weights in grams.
3. In the "H/L" column, record how "Confident" you are that the weight is correct; it can be inaccurate when litter is wet or dirty. H = High, L = Low.
4. When you have completed your audit, enter your data as soon as possible at **app.litterintelligence.org.** Tick the 'In App' column once you have entered each row to avoid double entry.

Survey info

Survey Area

Survey Date

Audit info

Audit Date **Start Time**

# of Auditors **End Time**

Plastic pellet assessment A B C D **Circle one**

A = None seen along survey area, **B** = 1–10 seen along survey area
C = 10–100 seen along survey area, **D** = More than 100 seen along survey area

#	Code	Material	Category name	Count	Weight (g)	H/L	In app
e.g.	*PL01*	*Plastic*	*Unidentifiable hard plastic fragments*	*32*	*15*	*H*	✓
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

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Litter Categories

Plastic

Bacterial habitat wheels
Baskets, crates & trays
Bottle caps & lids
Bottle neck rings
Bottle seals & tabs
Bottles <= 2 L
Bottles, drums, jerrycans & buckets
Cable ties & zip ties
Cigarette lighters
Cigarettes, butts & filters
Clothes pegs
Drink package rings
Fibreglass fragments
Fishing gear
Fishing line
Fishing net
Food containers
Food wrappers
Gardening & farming related
Gloves
Hangers & retail packaging
Lollipop sticks
Cosmetics and medical packaging
Mesh bags
Parking tickets & receipts
Pens & Stationery
Plastic bags
Plastic buoys
Plastic sheeting
Plastic utensils
Plastic vehicle parts
Resin pellets
Rope
Safety & construction related
Shotgun wadding & shells
Strapping bands & tape
Straws
Syringes
Toys, Sport, & Recreation
Unidentifiable hard plastic fragments
Unidentifiable soft plastic fragments
Other Plastic (specify)

Foamed Plastic

Ear plugs
Foam buoys
Foam glazier spacers
Foam sponge
Polystyrene cups or food packs
Polystyrene insulation or packaging
Toys, Sport, & Recreation
Unidentifiable foamed plastic fragments
Other Foamed Plastic (specify)

Fabric & Textiles

Backpacks & bags
Canvas, sailcloth & sacking (hessian)
Carpet & furnishing
Clothing, towels and linen
Footwear & shoes
Rope, line or string (natural)
Other Cloth
Unidentifiable Cloth Fragments

Glass & Ceramic

Bottles & jars
Construction material
Fluorescent light tubes
Glass buoys
Glass or ceramic fragments
Light globes/bulbs
Tableware
Other Glass & Ceramic (specify)

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Litter Categories cont'd

Metal

Aluminium drink cans
Bottle caps, lids & pull tabs
Fishing related
Foil wrappers
Gas bottles, drums & buckets (> 4 L)
Metal vehicle parts
Other cans & containers (<= 4L)
Sharps, needles, lancets, metal catheters
Tableware
Construction material
Unidentifiable metal fragments
Other Metal (specify)

Paper & Cardboard

Cardboard boxes
Cups, food trays & wrappers
Tetrapaks
Fireworks
Paper, newspapers & paper receipts
Unidentifiable paper & cardboard fragments
Other Paper & Cardboard (specify)

Wood

Corks
Fishing traps and pots
Matches and wooden fireworks parts
Processed timber & pallet crates
Wooden utensils
Other Wood (specify)

Rubber

Sports & Recreation
Chewing gum
Condoms
Gloves
Inner-tubes and rubber sheet
Rubber bands
Rubber footwear
Tyres
Construction & Automotive
Unidentifiable rubber fragments
Other Rubber (specify)

Other

Appliances & electronics
Batteries (Household)
Batteries (Non-household)
Boat parts
Cotton buds
Faeces
Paraffin or wax
Personal care items
Sanitary items
Other (specify)

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Data. Insights. Action.

All materials
Broad vs specific categories

Litter Intelligence.
Data. Insights. Action.

Plastic
Bottle tops/lids, neck rings, & seal tabs

Litter Intelligence.
Data. Insights. Action.

Plastic
Fishing related

Litter Intelligence.
Data. Insights. Action.

All materials
Unidentifiable fragments

Litter Intelligence.
Data. Insights. Action.

Plastic
Food wrappers

Litter Intelligence.
Data. Insights. Action.

All materials ‘Other’ category

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Data. Insights. Action.

Cotton buds vs lollipop sticks

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Interactive Exercise # 4

- Visit the Litter Intelligence website and find the Litter Category Sheet and Audit Data Sheets.
- Remember to print and bring a copy of these documents along to your survey.

www.litterintelligence.org/about/beach-monitoring/

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Litter Categories

FOR REFERENCE DURING AUDIT

OFFICIAL VERSION 3.4

How to use this document

After your litter survey, take your rubbish to a safe and sheltered location to audit. Categorise your litter according to the categories below, copying the appropriate fields over to your **Audit Data** sheet and recording the count and weight as you go.

Health & Safety

Important instructions for some litter categories. Look for the icons below in the **H&S** column and follow instructions during your audit.

Take extra caution. Only adults to touch.

Biohazard: Only count, do not weigh. Only trained leaders to touch.

Code	Plastic	H&S	Notes & Examples
PL24.14	Bacterial habitat wheels		
PL13	Baskets, crates & trays		Includes fish bins
PL01	Bottle caps & lids		Toothpaste caps, nozzles, tops
PL01.01	Bottle neck rings		Milk bottle rings
PL01.02	Bottle seals & tabs		
PL02	Bottles <= 2 L		
PL03	Bottles, drums, jerrycans & buckets > 2 L		
PL24.06	Cable ties & zip ties		
PL10	Cigarette lighters		Vapes, vaping devices
PL11	Cigarettes, butts & filters		Butts, filters
PL24.03	Clothes pegs		
PL12.1	Cosmetics and medical packaging		Inhalers, cosmetics, pill packets, condom wrappers, chapstick. Excludes syringes
PL05	Drink package rings		Six-pack rings, ring carriers
PL22	Fibreglass fragments		
PL17	Fishing gear		Plastic lures, traps & pots, glow sticks, knife handles, sniffers, burley pots, berley pots, light sticks, cyalume sticks
PL18	Fishing line		Monofilament line & braid
PL20	Fishing net		
PL06	Food containers		Fast food, cups, lunch boxes, bread bag tags, coffee cups & lids, plastic fish, soy sauce packets, condiment packets
PL07.01	Food wrappers		Candy, muesli bars, candies, lolly wrappers, fruit sticker
PL24.07	Gardening & farming related		Plant bags & pots, hose, plastic pipes, plant label, weed matting, vine ties, tubes, esophagus clip, oesophagus clip, bolus, drench capsule, capsules
PL09	Gloves		
PL24.11	Hangers & retail packaging		Retail packets, coat hangers, barcodes, tags, RFID, hooks, labels, silica pouches, gel sachet
PL24.04	Lollipop sticks		Lolly stick
PL15	Mesh bags		Vegetable, oyster nets & mussel bags, nets, netting, fruit, elasticated mesh
PL24.10	Parking tickets & receipts		Wristbands
PL24.02	Pens & Stationery		Plastic pencils, glue sticks, binders, folders, laminating sheets, clips, vivids

1

sustainable coastlines

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Review & Submit

Understand the post-survey & audit process.

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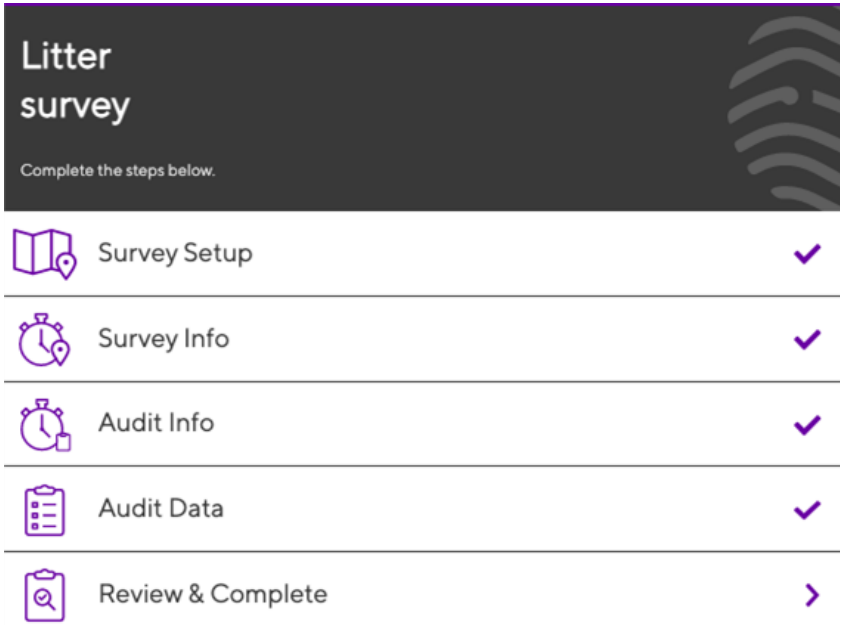
Review your data

- Before you submit your data you'll need to review it in the web app.
- Review your data via the **'Review & Complete'** menu.
- This is an important last step that ensures data quality and accuracy.
- If you find any errors you can edit the data by navigating back to the 'Survey Home' menu and then into the relevant menu from there



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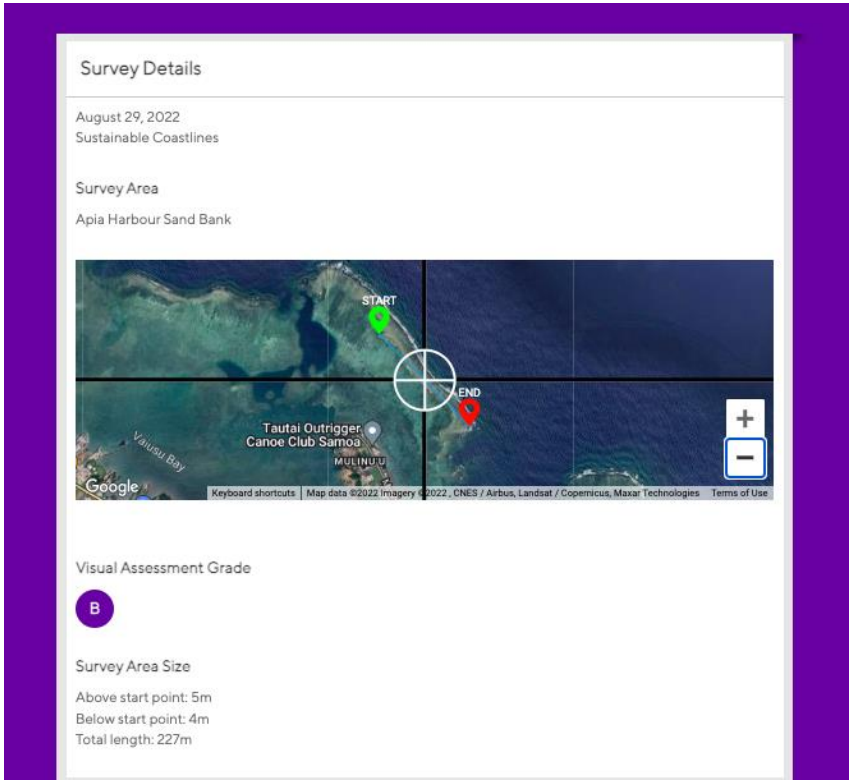
Check Survey Area data

- Is the **Survey Area** displayed on the map correct?
- Is the **Survey Area Size** dimensions correct?

TIP: If you find any errors you can edit the data by navigating back to the ‘Survey Home’ menu and then into the relevant menu from there.



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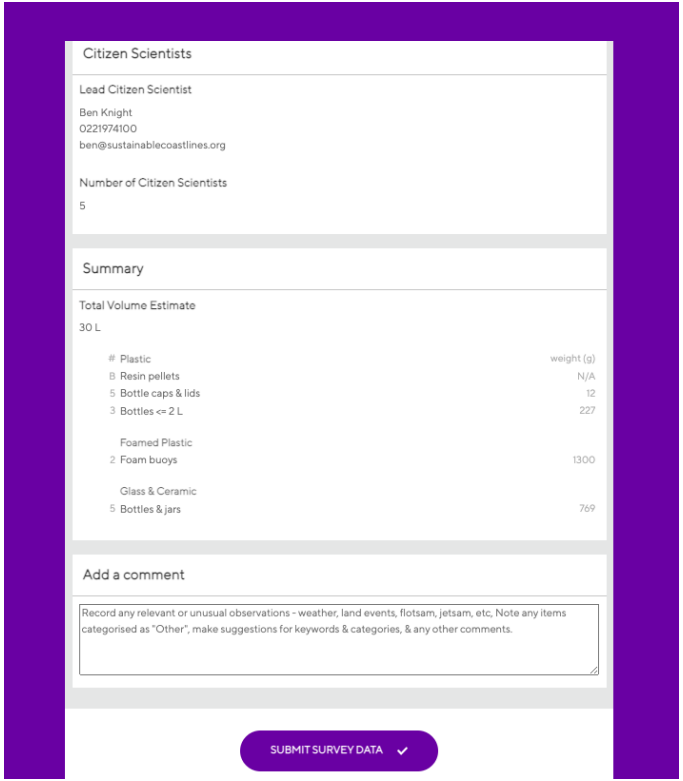
Review the audit data

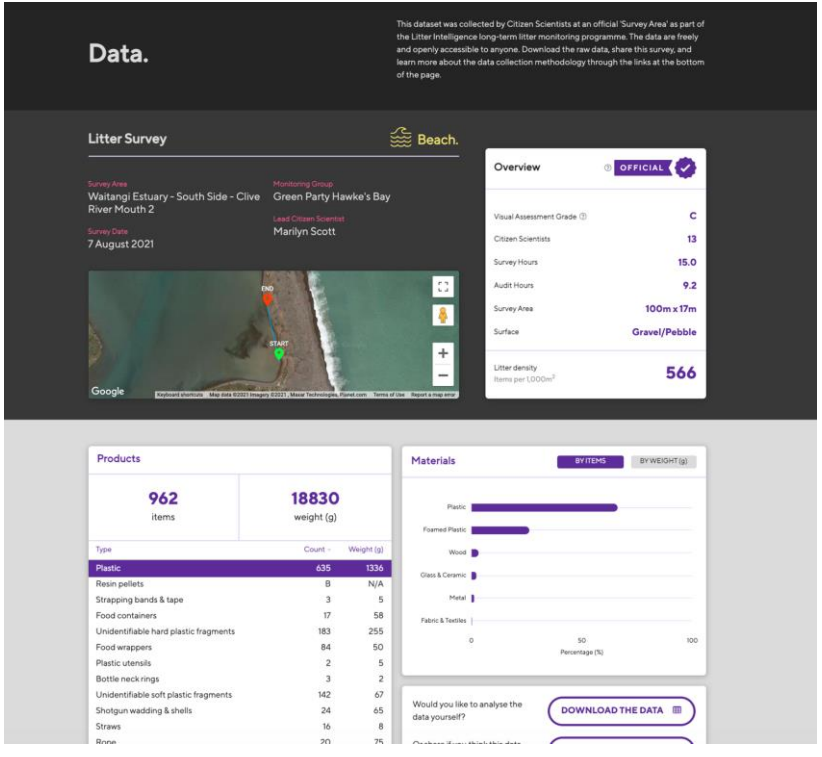
- Check that the **litter categories, counts and weights** are correct.
- Add any relevant **comments** into the comments section.
- Once you have checked your data is correct, submit your survey using the **Submit Survey Data** button.



Litter Intelligence.
Data. Insights. Action.

After your survey

- Contact us with any survey specific queries or issues.
- You will receive an **email with a link to your data.**
- We will follow-up with you to verify the data & make it publicly available.
- Join our Citizen Scientists Facebook group.



Questions & Discussion

Understand any gaps in knowledge from our audience.


Litter
Intelligence.
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Thanks!

Appendix 3: Training Assessment

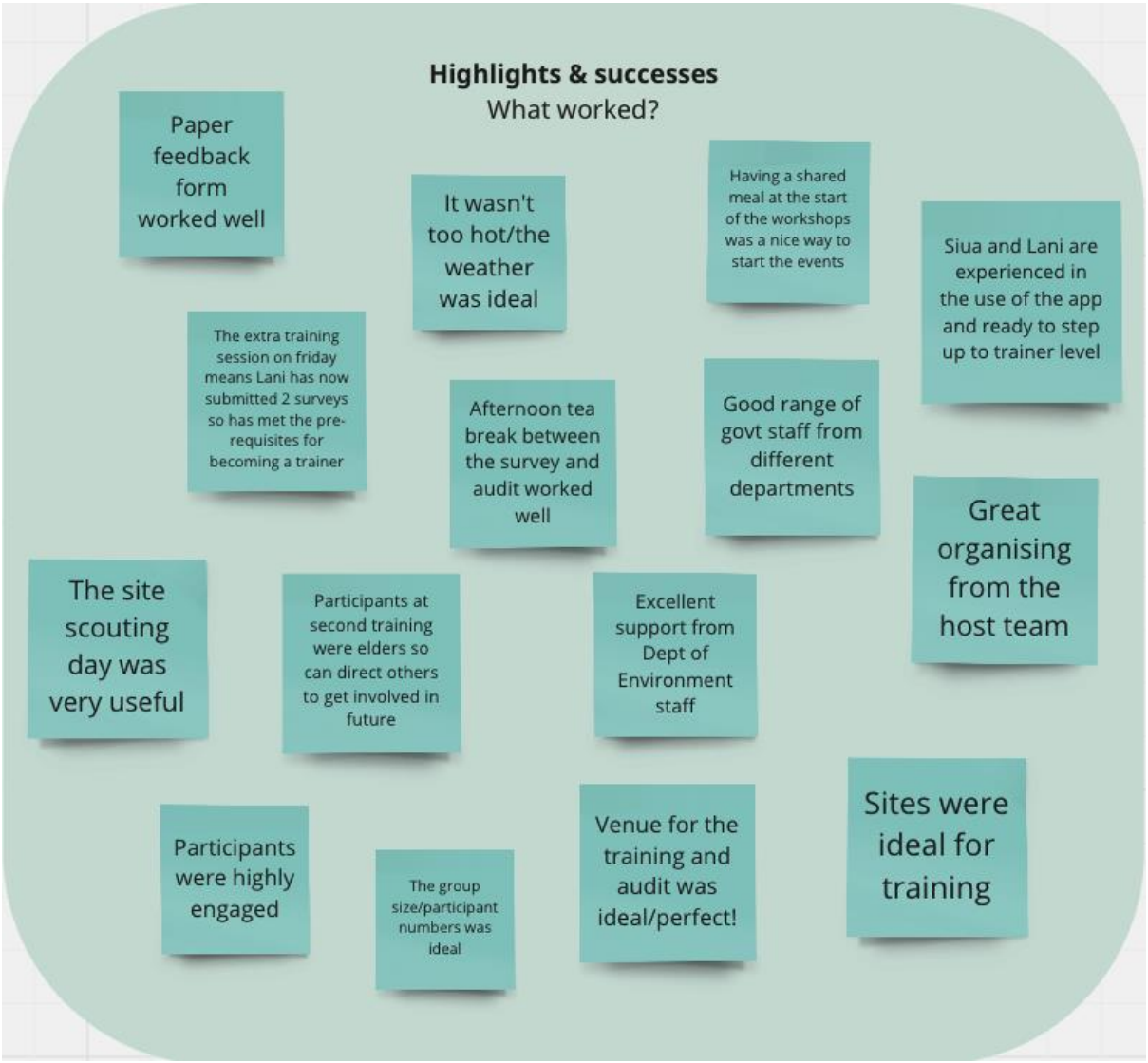
DATE: 22 August 2023

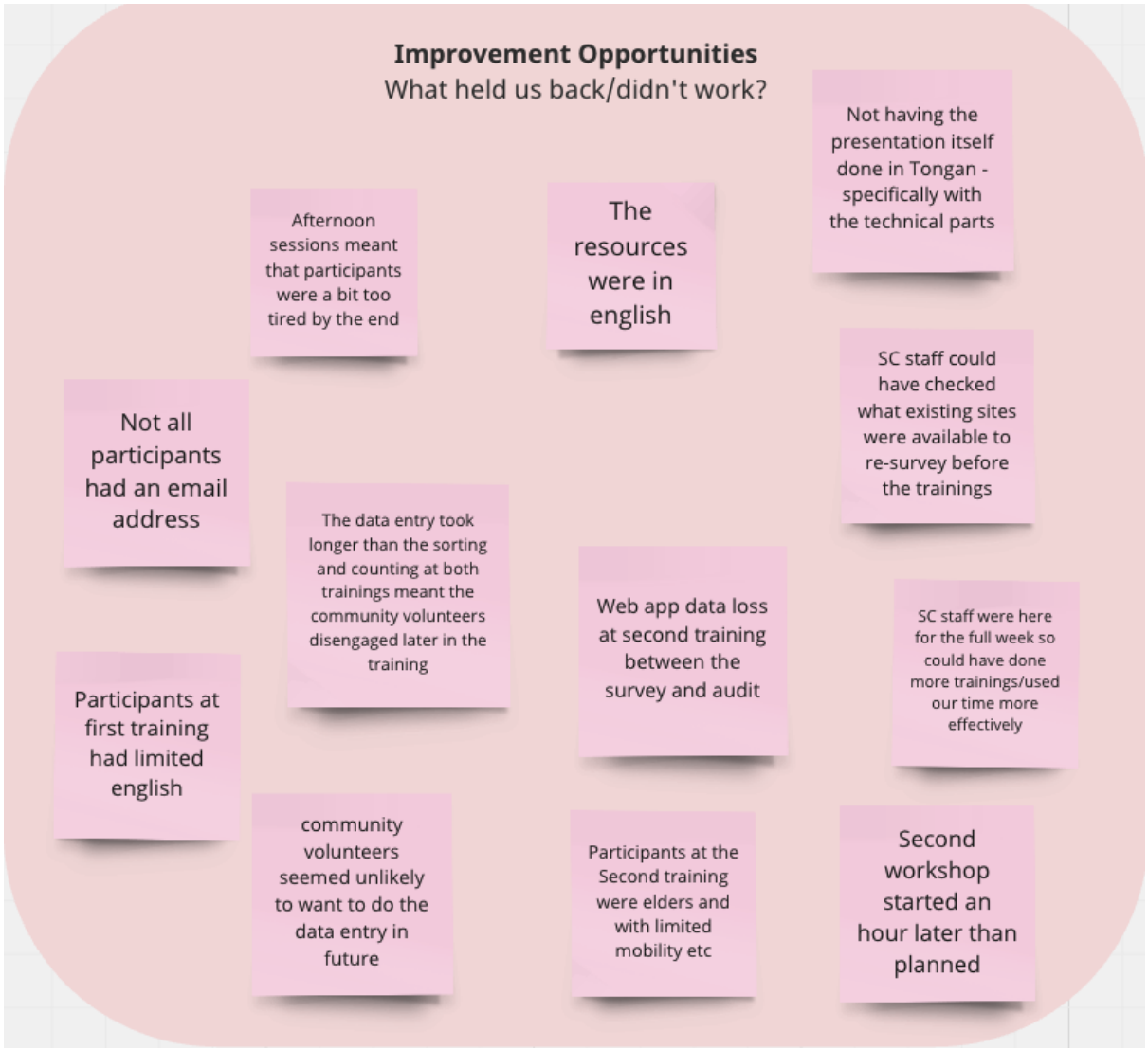
Age Group	Gender	Training Relevance	Confident in Litter Survey	Confident in Litter Audit	Training Information	Comments	Next Survey	Enjoyable Experience	Recommend Activity to others	Improve Experience
35-44	F	s/agree	agree	agree	agree	0	0	s/agree	s/agree	no comment
55-64	F	s/agree	agree	agree	agree	train 1x a month	next year	s/agree	agree	no comment
25-34	F	s/agree	agree	agree	s/agree	0	30/09/2023	s/agree	s/agree	help teach community do same work
25-34	F	agree	agree	agree	s/agree	0	0	s/agree	agree	no comment
35-44	F	agree	agree	agree	agree	no	0	s/agree	s/agree	no comment
0	F	s/agree	agree	agree	agree	no	0	agree	agree	no comment
25-34	F	s/agree	agree	s/agree	s/agree	0	0/01/1900	agree	s/agree	no comment
25-34	F	s/agree	agree	agree	agree	0	6/09/2023	agree	agree	no comment
25-34	F	s/agree	s/agree	s/agree	s/agree	run training 1x month	6/09/2023	s/agree	s/agree	run workshop in community once a month to do survey

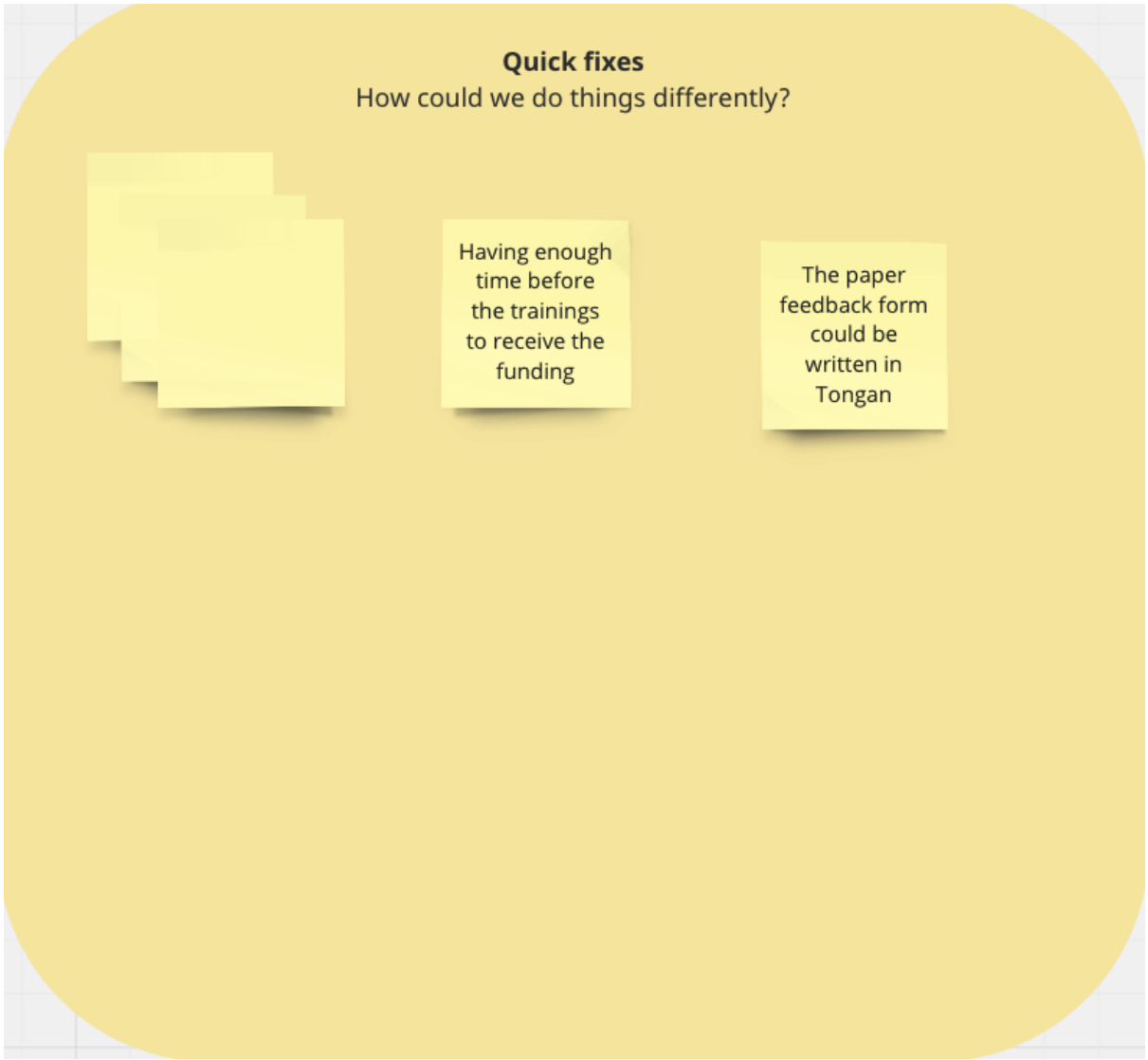
DATE: 23 August 2023

Age Group	Gender	Training Relevance	Confident in Litter Survey	Confident in Litter Audit	Training Information	Comments	Next Survey	Enjoyable Experience	Recommend Activity to others	Improve Experience
18-24	F	agree	neutral	agree	neutral	0	7/12/2023	s/agree	s/agree	Information about clean up prior so better prepared with appropriate safety attire.
55-64	F	s/agree	agree	agree	agree	encourage others to join	7/12/2023	s/agree	agree	providing the kit for the cleaning
45-54	F	s/agree	s/agree	s/agree	s/agree	thank you	7/12/2023	agree	s/agree	more training and exercising
65+	M	s/agree	s/agree	s/agree	s/agree	0	7/12/2023	s/agree	s/agree	no comment
65+	F	agree	agree	agree	agree	thank you	7/12/2023	agree	agree	will start to work with youth in our area and then the community

Appendix 4: Debrief Miro Board




Improvement Opportunities
What held us back/didn't work?
Not having the presentation itself done in Tongan - specifically with the technical parts
Afternoon sessions meant that participants were a bit too tired by the end
The resources were in english
SC staff could have checked what existing sites were available to re-survey before the trainings
Not all participants had an email address
The data entry took longer than the sorting and counting at both trainings meant the community volunteers disengaged later in the training
Web app data loss at second training between the survey and audit
SC staff were here for the full week so could have done more trainings/used our time more effectively
Participants at first training had limited english
community volunteers seemed unlikely to want to do the data entry in future
Participants at the Second training were elders and with limited mobility etc
Second workshop started an hour later than planned


Quick fixes
How could we do things differently?
Having enough time before the trainings to receive the funding
The paper feedback form could be written in Tongan


Actions
What should we do next?
For phase 2, work to create a presentation / materials that can be provided in Tongan
Te Hira to finish the report