Workshop: LitterWatch and recording litter data in Victoria

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F – Findable
The first step is data being easy to find

A – Accessible
Once the data is found it needs to be accessible

I – Interoperable
Data usually needs to be integrated with other data and able to interoperate with applications for analysis, storage and processing.

R - Reusable
The ultimate goal is to optimise the re use of data, the data should be well described so that they can be replicated or combined in different settings.
Litter Stopper

Recording plastic litter types to allow us to put an end to it.
Getting Started

Litter Stopper is an application designed to easily record and display the results of litter collections. Knowing what it is we are collecting and where it comes from allows us to locate the source to evaluate ways of prevention in the future. Collecting information across various groups onto a common platform is the most powerful way to obtain an accurate understanding of the litter problem.

Instructions
Press 'Start Clean'. If you are a member of either BeachPatrol or Love Our Street, select your appropriate group from the list. Otherwise, select Other Organisation. Please enter the email address for yourself/your group in the bottom box provided and hit 'Next'. This takes you to the 'ABOUT YOUR CLEAN page.

Two timing options are available. Either "Start timer" (and then stop it at the end to record the actual clean duration) OR select 'Begin without timer' and manually enter the clean duration time at the end.
Group Selection

LITTER STOPPER

Select Your BeachPatrol Group

ALBERT PARK
PORT MELBOURNE
ST KILDA
BRIGHTON
SO. MELBOURNE
SANDRINGHAM

Select Your Love Our Street Group

ELWOOD
Port Melbourne
CAULFIELD
MARIBYRNONG
WERIBEE
RIPONLEA
Cape Woolamai
Tell us About Your Clean

Country: Australia
State: Victoria
Post Code: 3207
Type of Clean area, Beach, Street:
- Beach
- No sorting clean only
- Standard BP/LOS Clean
- Full Audit Clean
- Partial Audit Clean

Location:
- Beach
  - CFOB (Bay) Hot spot
- Corporate Clean
  - Litter Hotspot
  - Main Road
  - Park
Other Group Information

Enter the clean date
2019-06-09

Enter your location

Enter your Group's Name

Country
Australia

State
Victoria

Post Code

Type of Clean area, Beach, Street...
Beach

Country
Australia

State
Victoria

Post Code

Type of Clean area, Beach, Street...
Beach

No sorting clean only

Standard BP/LOS Clean

Full Audit Clean

Partial Audit Clean
Timing Options
Collection Types

BP/LOS Std Clean

Full Audit Clean 24 items

Add Note (if desired)

Add Item  Remove Item

Finish Collection

Add Note (if desired)

Add Item  Remove Item

Pause Collection

Finish Collection
Partial Audits and Null Entries
Adding Bulk Counts

To add in a high number of an item, hold down that icon button for 2 seconds

A pop up screen allows you to enter in the number
What is Included in Each Item?

Q. How do I know which category an odd item I find goes into?
Your Time and Effort

Using Timer

TIME AND EFFORT

00:05

Stop Timer

Number of people performing clean
20

Person hours spent on the clean
01:43

Enter Kgs
15

Enter #BP Bags (121)

SUBMIT

TIME AND EFFORT

Enter #BP Bags (121)

5

Length cleaned estimate (in meters)
300

Width of area cleaned, optional,…
10

Enter any special recent Weather or Community events that might impact litter , (opt)

Send to AMDI ?
(Actual data only no text…

SUBMIT
Your Time and Effort

Without Using Timer Option

Enter Time In Minutes
60

Number of people performing clean
10

Person hours spent on the clean
10:00

Enter Kgs
50

Enter #BP Bags (121)
50

Enter any special recent Weather or Community events that might impact litter, (opt)
St Kilda Festival Yesterday

Send to AMDI?
(Actual data only no test)
Where Does the Data Go?

- To the originator
- To AMDI if selected
- [www.litterstopper.com/emaildata](http://www.litterstopper.com/emaildata)

<table>
<thead>
<tr>
<th>Id</th>
<th>Report to Admin</th>
<th>Date</th>
<th>Group name</th>
<th>Organisation</th>
<th>Collection Note</th>
<th>Location</th>
<th>State</th>
<th>Post Code</th>
<th>Country</th>
<th>Area Type</th>
<th>Type of Clean</th>
<th>Total Items Collected</th>
<th>Bot GI</th>
<th>Bot PI</th>
<th>Can</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Report</td>
<td>09-Jun-19</td>
<td>ALTONA</td>
<td>Beach Patrol</td>
<td>Week's worth of waste around town</td>
<td>Altona</td>
<td>Victoria</td>
<td>3018</td>
<td>Australia</td>
<td>Beach</td>
<td>Standard BP/LOS Clean</td>
<td></td>
<td></td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Report</td>
<td>09-Jun-19</td>
<td>WERRIBEE</td>
<td>Beach Patrol</td>
<td>K Road Cliffs</td>
<td>Victoria</td>
<td>3030</td>
<td>Australia</td>
<td>River Banks</td>
<td>Standard BP/LOS Clean</td>
<td>510</td>
<td>219</td>
<td>134</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Report</td>
<td>08-Jun-19</td>
<td>PORT MELBOURNE</td>
<td>Beach Patrol</td>
<td>dog beach to SMSC</td>
<td>Victoria</td>
<td>3207</td>
<td>Australia</td>
<td>Beach</td>
<td>Standard BP/LOS Clean</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Report</td>
<td>08-Jun-19</td>
<td>PORT MELBOURNE</td>
<td>Beach Patrol</td>
<td>North breeze</td>
<td>spirit of tas beach</td>
<td>Victoria</td>
<td>3207</td>
<td>Australia</td>
<td>Beach</td>
<td>Standard BP/LOS Clean</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Report</td>
<td>07-Jun-19</td>
<td>DROMANA</td>
<td>Beach Patrol</td>
<td>dromana beach from ...</td>
<td>Victoria</td>
<td>3936</td>
<td>Australia</td>
<td>Beach</td>
<td>No sorting clean only</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Report</td>
<td>07-Jun-19</td>
<td>ALTONA</td>
<td>Beach Patrol</td>
<td>Esplanada Altona ...</td>
<td>Victoria</td>
<td>3018</td>
<td>Australia</td>
<td>Beach</td>
<td>No sorting clean only</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Report</td>
<td>06-Jun-19</td>
<td>ASPENDALE</td>
<td>Beach Patrol</td>
<td>aspendale beach</td>
<td>Victoria</td>
<td>3195</td>
<td>Australia</td>
<td>Beach</td>
<td>No sorting clean only</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
</tbody>
</table>
# Manual Recording sheet

## Litter Stopper Recording Sheet

<table>
<thead>
<tr>
<th>Item No</th>
<th>Description</th>
<th>Location</th>
<th>Total Pieces of Plastic</th>
<th>Grand Total of Multiple Sheets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bottle caps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bottle lids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bottle plastic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Can metal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Syringes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Wire large &gt; 50 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Wire small &lt; 50 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Large soft &gt; 500 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Small soft 5 to 50 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Micro &lt; 5 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Food wrappers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Food containers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Plastic bags or bits of bags</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Zip Lock Bags</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Straws or bits of straws</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Bottle Tops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Bottle Labels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Coffee cups &amp; lids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Other cups &amp; lids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Ballpoints and bottle caps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Cutlery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Polystyrene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Garbage and fishing gear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Nails</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- Beach/Petrol/Love Our Street
Time to do a Trial

- Download the App - Litter Stopper
- Enter this collected litter
Centre for eResearch and Digital Innovation (CeRDI)

The CeRDI approach:

development of innovative digital solutions that aggregate data and information
to bridge the gap between academic research and government, industry and community needs.

http://www.cerdi.edu.au/
LitterWatch intended to support community data collection and reporting
Important to reduce duplication in monitoring efforts and value-add to existing programs where ever possible

Key technology components:
• Website
• Linked mapping portal
• Administration system for litter data entry, verification and export

Example of how the administration system will function - Waterwatch Victoria
LitterWatch will be
• open source
• publicly-accessible
  (mapping portal)

Community data will be aggregated with agency and other accessible data

LitterWatch will provide a single point-of-access to litter monitoring information
Current litter data available for decision making comes from:
Community monitoring
- Beach Patrol
- Port Phillip EcoCentre
- Caring for our Bays
- Tangaroa Blue

Targeted agency monitoring
e.g. Melbourne Water

Local governments
e.g. City of Port Phillip
Challenges with current monitoring data:

- Accessibility and discoverability – agency data
- Reusability – data sometimes not fit-for-purpose:
  - detailed spatial information may be lacking
  - Different survey methods
  - Variable data structure

LitterWatch aims to ensure that community data is useful for decision making and that community efforts are recognised.

Federation University Honours research project dedicated to testing litter monitoring methods – Hamish Mcdonough

Questions for the audience?
Some of you may be here because you are already involved in litter education, litter audits or litter clean up. Or you may be more generally interested in helping solve our litter problem. [If there is time] we have a few questions:

- Where do you source litter information, facts and figures?
- Do you undertake litter clean ups?
- Are you undertaking litter audits when you undertake litter clean ups? If no – why not?
- If yes – what are you using the data for?
- Are you using a litter audit method from the Port Phillip EcoCentre, Tangaroa Blue, Caring for Our Bays or the LitterStopper app from Beach Patrol? Or something else?
- And if you have data can we store it and show it on LitterWatch?
- Do you store or use litter data?
- Are there particular litter items that you are most interested in?
- How do you see you could use LitterWatch? (Education, Reporting, Funding requests, recruit volunteers etc.)
CeRDI capability: interoperability

End users, e.g. Browser, mobile application, desktop application, groundwater model, etc.
Used by: researcher, community group, farmer, environmentalist, media outlet, agribusiness, etc.

Citizen science
- Landcare, environmental and community groups
- Landholders, farmers, individuals
- Tourists, visitors
- Schools, TAFE, University students
- Clubs, volunteers

Output as:
- Web services (W3C, OGC compliant)

Input as:
- Data, map layers, grids, text and imagery in native format (or web services)

Third party e.g. ABARE, ABS, BOM, CSIRO, EPAs, Unis, ........State base mapping, etc.
Water agencies, research organisations, industry, individuals, etc.

Organisational data
- GIS
- SQL
- Sensors
- Images
- Sounds
- Documents
CeRDI Spatial Data Infrastructure (generalised)

**End users**
- **Browser**
  - Public access, Application login
- **Mobile devices**
  - Browser, applications
- **Advanced users**
  - Consuming services, Developers, modellers
- **Other portals**
  - (Consuming services)
- **Machines**
  - e.g. Precision agriculture

**Applications**
- **Mapserver**
  - WMS Map delivery
- **Geonetwork**
  - Metadata catalogue
- **Database(s)**
  - PHP Application
- **Map Portal**
  - OpenLayers, VicMap API, SLIM API
- **Web Services**
  - WMS/WFS/WCS

**Spatial servers**
- **Administration**
  - Content management
  - Permissions management
  - Documents management
- **Content management**
  - Data input / edit
  - Image input / edit
  - Custom applications

**Data**
- **Raster**
  - Grids/Surfaces
- **Imagery**
- **Base maps**
- **Shapefiles**
- **Documents**
- **Multimedia**
- **Spreadsheets**
- **Database**
  - MySQL / PostGIS
- **Web Service**
  - WMS/WFS/WCS/TMS

**Provision**
- **Raw data**
  - Requiring processing
- **Scheduled updates**
- **Real-time APIs**
  - Sensor telemetry
- **Web Service**
  - WMS/WFS/WCS/TMS

**Custodians**
- **Community**
  - Observations, monitoring, test data, etc
- **Industry**
  - Sensors, data, Spatial layers
- **Research**
  - Spatial layers, data, sensors
- **Government**
  - Spatial layers, data, SLIM API
- **Other agencies**
  - Spatial layers, data

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