Marine Debris Monitoring Program

A guide for monitoring providers

For the Hunter Local Land Services Region
New South Wales

Supported by Hunter Local Land Services
and Tangaroa Blue Foundation

TANGAROA BLUE

AUSTRALIAN
MARINE DEBRIS INITIATIVE

NSW GOVERNMENT
Local Land Services
Hunter

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ACRONYMS

AMDI	Australian Marine Debris Initiative
GPT	Gross Pollutant Traps
LLS	Local Land Services
MDMP	Marine Debris Monitoring Program
SQID	Stormwater Quality Improvement Devices
TAP	Threat Abatement Plan
UVNSW	Underwater Volunteers New South Wales
NPWS	National Parks and Wildlife Service

DEFINITIONS

Container Deposit Scheme (CDS): The NSW Government has announced that it will introduce a container deposit scheme in 2017. The details of the system have not yet been announced but similar schemes in South Australia and the Northern Territory require collection of a monetary deposit on beverage, and/or other reusable packaging at the point of sale. When the container is returned to a redemption centre or the original seller the deposit is partly or fully refunded to the redeemer.

Hotspot: is a location where there is an ongoing and significant level of marine debris / litter.

Key Threatening Process: 'Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris' has been listed as a key threatening process under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Marine debris (or marine litter): is defined as any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment (UN Environment Program, 2009).

Microplastics: are fragments of plastic that measure less than 5 mm (as defined by NOAA).

TAngler Bins: are recycling bins for old recreational fishing line.

1 ACKNOWLEDGEMENTS

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Marine Debris Monitoring Program Background Information for the Program for the Hunter Local Land Services Region, NSW.

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2 ABOUT THIS GUIDE

This document contains a description of the Hunter Local Land Services Region Marine Debris Monitoring Program together with guidelines for setting up a monitoring activity. Background information about the Hunter Marine Debris Monitoring Programme is available in a separate document.

The aim of the program is to provide comprehensive guidelines for monitoring marine debris on a regional basis. They are intended for use by stakeholders involved in regional focus groups which include marine debris within their ambit.

The program will encourage the growth and targeting of monitoring effort over time and the management of the program will be overseen by a group of regional stakeholders representing state and local government, research institutions, environmental organisations and community groups. In the Hunter region an annual workshop involving stakeholder organisations commenced in 2014 and at the 2015 workshop there was consensus that this should continue with a smaller core group meeting more regularly as required and part of its function would be to oversee the establishment of the program.

Section 3 of this document explains the proposed structure for the program while sections 4, 5 and 6 contain a step by step guide to setting up monitoring activities.

A number of forms and worksheets are attached as appendices that assist in the planning and implementation of monitoring activities.

3 DESCRIPTION OF THE MONITORING PROGRAM

The Hunter region marine debris monitoring program offers a structured way of monitoring marine debris within a local land service region and is based on the following considerations:

1. Local communities and organisations within the regional setting provide the majority share of on-ground effort and initiative towards addressing the marine debris issue
2. Communities and organisations are involved in marine debris activities in a variety of locations for varying reasons and objectives
3. To establish a monitoring program on a regional basis requires bringing these groups together and providing a structure for conducting monitoring activities
4. The structure has the following requirements which become the monitoring program elements shown in Figure 1:
    a. the need for a standard terminology for places in the landscape as a whole, describing where litter and debris accumulates and the pathways it follows to the ocean
        i. this provides a whole of catchment basis for learning how to direct attention and develop strategies for places in the landscape where conditions allow for either the accumulation of litter or the release of litter into a pathway to the ocean
    b. results of information obtained from monitoring are an important component in formulating and refining regional marine debris objectives
    c. there are many opportunities available within a region to incorporate monitoring of marine debris in pre-existing and new activities
    d. clearly defining an investigative purpose for data collection improves the decision making around site selection, resource allocation and type of information collected
    e. data collection methodology needs to be consistent and also needs to be suited to the particular type of monitoring being undertaken.

Figure 1. Monitoring program elements

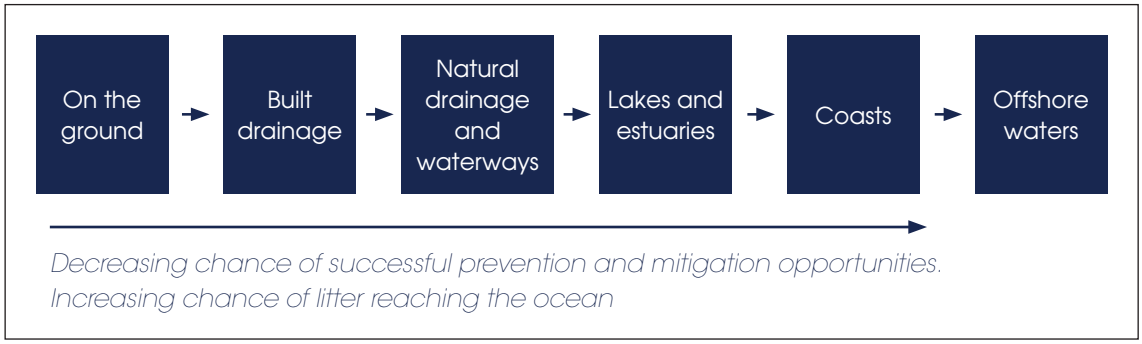
Landscape terminology	**Regional monitoring objectives**	**Data collection activity**	**Data collection purpose**	**Data collection methodology**
Categorising the different parts of the landscape where monitoring takes place	Guided by the TAP and Local needs and decide on by the regional stakeholder group	The various activities supporting the monitoring program objectives	The various investigative purposes for collecting the data at monitoring sites	The kind of data collection methodology and data sheet to be used

3.1 LANDSCAPE TERMINOLOGY

3.1.1 Monitoring sectors

Monitoring sectors are based on the stages water goes through from rainfall hitting the ground and flowing overland along drains and watercourses to estuaries and the ocean. Litter is transported in this flow and there are different conditions in each sector which allow or prevent litter from reaching the next sector and eventually the ocean. The opportunities to prevent, mitigate and remove debris decreases with each step toward the sea and conversely the chance of litter reaching the ocean increases.

Figure 2: Monitoring sectors



The definitions for the sectors are:

On the ground
- This sector includes any location where litter is found prior to entry into the drainage network, waterway, estuary or coastal beach
- The on the ground sector includes parks and open spaces near waterways, estuaries and coastal locations but not banks and shorelines.
- It extends up to the drain inlet but does not include debris caught within Gross Pollutant Traps

Built Drainage
- This sector covers all parts of the drainage network and in terms of debris extends from the debris in Gross Pollutant Traps, through the network and ends at the outfall including debris caught in outfall Stormwater Quality Improvement Devices (SQIDs), if in place

Waterways
- These are channels, creeks and rivers, with or without drain outfalls, which flow into a lake, estuary or the sea
- Waterway banks are included but not adjacent parks or other facilities

Lakes and Estuaries
- This sector covers estuaries (e.g. Hunter River estuary) and the large lake systems such as Lake Macquarie and the Great Lakes.
- Lake and estuary banks and shorelines are included but not adjacent parks or other built facilities

Coast - Coastal locations of any type and immediately adjacent underwater habitats able to be affected by debris from the location e.g. an underwater area affected by litter from an adjacent breakwater

Offshore - for the purposes of this program – is defined as waters beyond the coastal sector as defined in the point above. (Note: State waters extends to 3 nautical miles)

3.1.2 Settings for monitoring activities

Monitoring settings are locations within a monitoring sector where various conditions are in place to allow debris to migrate to the next downstream sector or conversely to impede its migration. It is where litter accumulates and can be intercepted before it is transported into the next sector by changing conditions such as heavy rainfall. The different settings together with examples of the elements assisting or impeding the migration of litter are:

MS1 Litter on the ground and able to migrate to the next sector

- All the locations around the towns and cities leading to the generation of litter because of the direct and indirect activities of people
- All the waste management measures in place to address that litter
- All the points where litter can progress to the next stage of its journey toward the sea

Photo: Wally Smith

Photo: Joanne Zerafa

Photo: Brian Hughes

MS2 Litter accumulating at SQIDs and other locations within the drainage network

- All locations along the drainage network where litter accumulates whether intercepted by SQIDs or banked up due to other causes

Photo: Wally Smith

Photo: Wally Smith

Photo: Heidi Taylor

MS3 Litter on the bank or shoreline at waterway, lake, estuary and coastal locations.

- Litter on banks and shorelines and trapped in vegetation up to the high water mark including recent high flood water levels
- Litter around drain outfalls

Photo: Graham Johnston

Photo: Joanne Zerafa

Photo: Joanne Zerafa

MS4 Litter, abandoned and discarded fishing gear and aquaculture materials in *shallow water*

- Visible surface and subsurface litter such as bottles, plastic bags and fishing line, and abandoned fishing gear and aquaculture materials in the shallows adjacent to the bank or shoreline or in the vicinity of bridges, jetties, moorings and boat ramps
- Litter caught in booms placed in natural waterways

Photo: Wally Smith

Photo: Joanne Zerafa

Photo: Heidi Taylor

MS5 Litter, abandoned and discarded fishing gear and aquaculture materials in *deep water*

- All litter, abandoned and derelict fishing gear and aquaculture materials residing in the benthic regions of waterways, lakes or estuaries and directly adjacent to coastal structures such as breakwaters, jetties, wharves and boat ramps

Photo: Ian Bell

Photo: Liam Platt

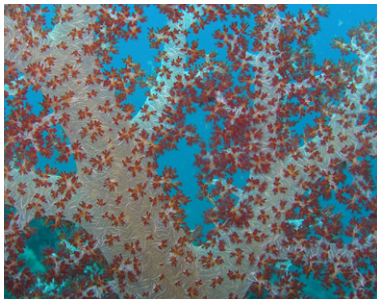


Photo: Heidi Taylor

MS6 Shoreline infrastructure

- Litter, on infrastructure built directly on estuary and coastal shorelines including bridges, jetties, moorings, boat ramps, break walls, marinas and ports

Photo: Wally Smith

Photo: Wally Smith

Photo: Wally Smith

MS7 Offshore surface

- Any assessment of marine debris using trawl or observation methods

Photo: Port Phillip EcoCentre

Photo: Tahn Miller

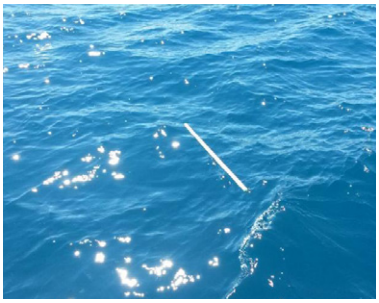


Photo: Dan Hammersley

MS8 Offshore underwater

- Litter and fishing gear in benthic habitats

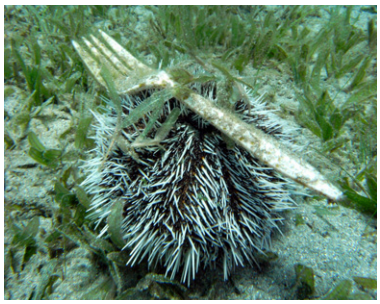


Photo: Kay Wilson

Photo: Margo Smith (CHUG)

Photo: Margo Smith (CHUG)

3.2 REGIONAL MONITORING OBJECTIVES

Landscape terminology	Regional objectives	Data collection activity	Data collection purpose	Data collection methodology

Regional monitoring objectives are guided by the Australian Government's Threat Abatement Plan (TAP) for the impacts of marine debris on vertebrate marine life (2009). The following regional marine debris monitoring objectives are proposed for the Hunter LLS region and will be added to and amended by the stakeholder management group over time as local objectives are identified:

1. Monitor the abundance and type of marine debris in the region using consistent data collection methods
2. Identify the origins of marine debris for source reduction purposes
3. Identify the effectiveness and deficits for actions and infrastructure aimed at mitigating litter
4. Identify the effectiveness and deficits of SQIDs within drainage networks
5. Identify specific areas, types of debris and processes involving wildlife and habitat impacts
6. Address monitoring gaps in the region (a list of unmet monitoring needs will be maintained for the program)

3.3 DATA COLLECTION ACTIVITIES

Landscape terminology	Regional objectives	Data collection activity	Data collection purpose	Data collection methodology

Activities which support data collection in the region include:

1. Clean-ups, including underwater clean-ups and surveys, carried out by community members and organisations
2. Maintenance of litter infrastructure carried out by local government authorities
3. Maintenance of SQIDs carried out by local government authorities
4. Surface trawl – monitoring for microplastics
5. Wildlife rescue and impact activities and observations
6. Observations of plastic resin pellets as part of AMDI clean-ups
7. Hotspot activity – identification and remediation of litter, abandoned and discarded fishing gear and aquaculture materials which accumulate in significant quantities at identified locations
8. Other data collection activities – not listed above

3.4 DATA COLLECTION PURPOSE

Landscape terminology | Regional objectives | Data collection activity | Data collection purpose | Data collection methodology

The data collection purpose for each monitoring site is a brief and specific statement about why the data is being collected. The following statements are devised examples to help you formulate a data collection purpose for your site:

- Collect data from Belmont foreshore to monitor abundance of CDS items
- Collect data from Kooragang nature reserve to identify types of litter impacting habitat
- Survey the foreshore at Big Bay to assess levels of abandoned oyster farming gear
- Collect data at Old Bar Beach to identify local sources of beach litter
- Collect data at Blacksmiths break wall to support litter management measures
- Collect data from the Raymond Terrace river bank to identify source of 20 litre drums

3.5 Data Collection Methodology

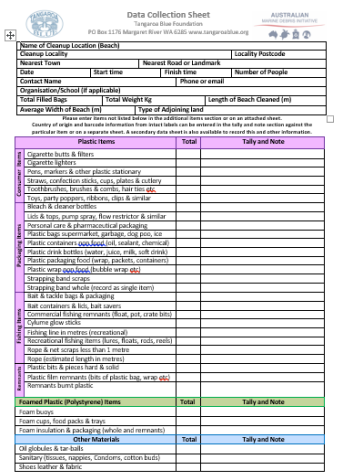
Landscape terminology | Regional objectives | Data collection activity | Data collection purpose | Data collection methodology

Options for the data format will depend on the type of monitoring activity and its purpose and include:

1. AMDI Data Sheet

   Information on AMDI methodology is also available at:

   http://www.tangaroablue.org/resources/data-sheet.html



Data Collection Sheet

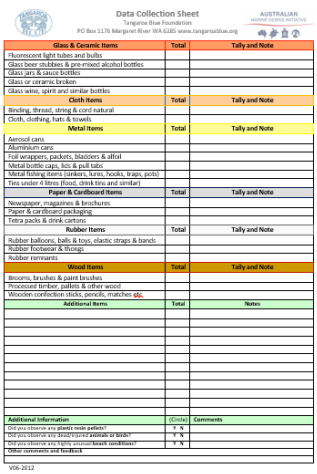
Tangaroa Blue Foundation

PO Box 1176 Margaret River WA 6285 www.tangaroablue.org

Name of Cleanup Location (Beach)	
Cleanup Locality	Locality Postcode
Nearest Town	Nearest Road or Landmark
Date / Start time / Finish time	Number of People
Contact Name	Phone or email
Organisation/School (if applicable)	
Total Filled Bags / Total Weight Kg	Length of Beach Cleaned (m)
Average Width of Beach (m)	Type of Adjoining land

Please enter items not listed below in the additional items section or on an attached sheet.
Country of origin and barcode information from intact labels can be entered in the tally and note section against the particular item or on a separate sheet. A secondary data sheet is also available to record this and other information.

	Plastic Items	Total	Tally and Note
Consumer Items	Cigarette butts & filters		
	Cigarette lighters		
	Pens, markers & other plastic stationary		
	Straws, confection sticks, cups, plates & cutlery		
	Toothbrushes, brushes & combs, hair ties etc.		
	Toys, party poppers, ribbons, clips & similar		
	Bleach & cleaner bottles		
	Lids & tops, pump spray, flow restrictor & similar		
	Personal care & pharmaceutical packaging		
Packaging Items	Plastic bags supermarket, garbage, dog poo, ice		
	Plastic containers non food (oil, sealant, chemical)		
	Plastic drink bottles (water, juice, milk, soft drink)		
	Plastic packaging food (wrap, packets, containers)		
	Plastic wrap non food (bubble wrap etc)		
	Strapping band scraps		
	Strapping band whole (record as single item)		
Fishing Items	Bait & tackle bags & packaging		
	Bait containers & lids, bait savers		
	Commercial fishing remnants (float, pot, crate bits)		
	Cylume glow sticks		
	Fishing line in metres (recreational)		
	Recreational fishing items (lures, floats, rods, reels)		
	Rope & net scraps less than 1 metre		
	Rope (estimated length in metres)		
Remnants	Plastic bits & pieces hard & solid		
	Plastic film remnants (bits of plastic bag, wrap etc)		
	Remnants burnt plastic		
	Foamed Plastic (Polystyrene) Items	**Total**	**Tally and Note**
	Foam buoys		
	Foam cups, food packs & trays		
	Foam insulation & packaging (whole and remnants)		
	Other Materials	**Total**	**Tally and Note**
	Oil globules & tar-balls		
	Sanitary (tissues, nappies, Condoms, cotton buds)		
	Shoes leather & fabric		



Data Collection Sheet

Tangaroa Blue Foundation

PO Box 1176 Margaret River WA 6285 www.tangaroablue.org

Glass & Ceramic Items	Total	Tally and Note
Fluorescent light tubes and bulbs		
Glass beer stubbies & pre-mixed alcohol bottles		
Glass jars & sauce bottles		
Glass or ceramic broken		
Glass wine, spirit and similar bottles		
Cloth Items	**Total**	**Tally and Note**
Binding, thread, string & cord natural		
Cloth, clothing, hats & towels		
Metal Items	**Total**	**Tally and Note**
Aerosol cans		
Aluminium cans		
Foil wrappers, packets, bladders & alfoil		
Metal bottle caps, lids & pull tabs		
Metal fishing items (sinkers, lures, hooks, traps, pots)		
Tins under 4 litres (food, drink tins and similar)		
Paper & Cardboard Items	**Total**	**Tally and Note**
Newspaper, magazines & brochures		
Paper & cardboard packaging		
Tetra packs & drink cartons		
Rubber Items	**Total**	**Tally and Note**
Rubber balloons, balls & toys, elastic straps & bands		
Rubber footwear & thongs		
Rubber remnants		
Wood Items	**Total**	**Tally and Note**
Brooms, brushes & paint brushes		
Processed timber, pallets & other wood		
Wooden confection sticks, pencils, matches etc.		
Additional Items	**Total**	**Notes**
Additional Information	**(Circle)**	**Comments**
Did you observe any plastic resin pellets?	Y N	
Did you observe any dead/injured animals or birds?	Y N	
Did you observe any highly unusual beach conditions?	Y N	
Other comments and feedback		

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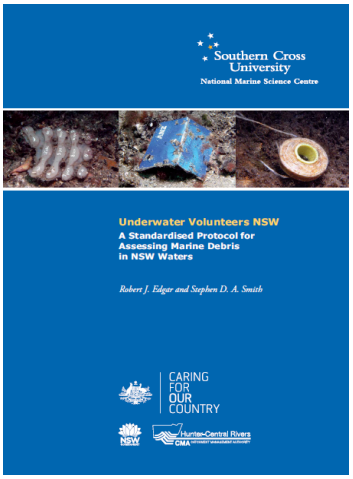
2. UVNSW data collection protocol

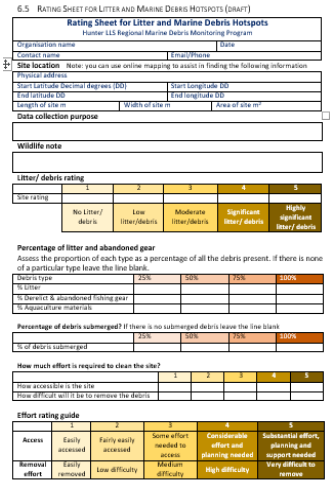
The UVNSW website Data tab also provides access to the Marine Debris Database

http://uvnsw.net.au/data



3. Rating system data sheets

Information on AMDI methodology is also available



6.5 Rating Sheet for Litter and Marine Debris Hotspots (draft)

Rating Sheet for Litter and Marine Debris Hotspots
Hunter LLS Regional Marine Debris Monitoring Program

Organisation name | Date
Contact name | Email/Phone
Site location Note: you can use online mapping to assist in finding the following information
Physical address
Start Latitude Decimal degrees (DD) | Start Longitude DD
End latitude DD | End longitude DD
Length of site m | Width of site m | Area of site m²
Data collection purpose
Wildlife note
Litter/ debris rating

	1	2	3	4	5
Site rating	No Litter/ debris	Low litter/debris	Moderate litter/debris	Significant litter/ debris	Highly significant litter/ debris

Percentage of litter and abandoned gear
Assess the proportion of each type as a percentage of all the debris present. If there is none of a particular type leave the line blank.

Debris type	25%	50%	75%	100%
% Litter				
% Derelict & abandoned fishing gear				
% Aquaculture materials				

Percentage of debris submerged? If there is no submerged debris leave the line blank

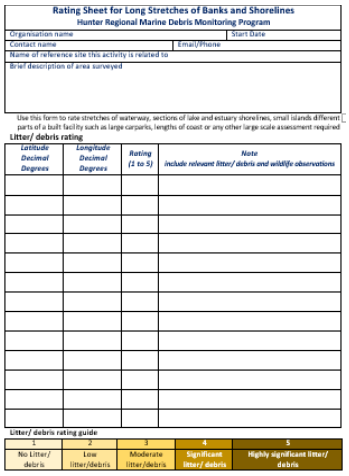
	25%	50%	75%	100%
% of debris submerged				

How much effort is required to clean the site?

	1	2	3	4	5
How accessible is the site					
How difficult will it be to remove the debris					

Effort rating guide

	1	2	3	4	5
Access	Easily accessed	Fairly easily accessed	Some effort needed to access	Considerable effort and planning needed	Substantial effort, planning and support needed
Removal effort	Easily removed	Low difficulty	Medium difficulty	High difficulty	Very difficult to remove



Rating Sheet for Long Stretches of Banks and Shorelines
Hunter Regional Marine Debris Monitoring Program

Organisation name | Start Date
Contact name | Email/Phone
Name of reference site this activity is related to
Brief description of area surveyed

Use this form to rate stretches of waterway, sections of lake and estuary shorelines, small islands different parts of a built facility such as large carparks, lengths of coast or any other large scale assessment required

Litter/ debris rating

Latitude Decimal Degrees	*Longitude Decimal Degrees*	*Rating (1 to 5)*	*Note include relevant litter/ debris and wildlife observations*

Litter/ debris rating guide

1	2	3	4	5
No Litter/ debris	Low litter/debris	Moderate litter/debris	Significant litter/ debris	Highly significant litter/ debris

4. Wildlife data sheet

Note: The wildlife data collection system will be refined over time

Wildlife impact observation sheet (Draft)

Date	*Latitude*	*Longitude*	*Species common name*	*Dead or injured?*	*Injury*	*Reported to:*

4 SETTING UP A MONITORING SITE

The following steps are provided as a guide to setting up a monitoring site including the initial assessment of the area of concern, working out your monitoring purpose, identifying suitable sites and assessing your resource needs.

***Figure 3**: Steps for setting up a monitoring site*

Scoping your intended monitoring activity	**Formulating your data collection purpose**	**Assessing identifying, and selecting suitable monitoring sites**	**Working out a monitoring schedule for the site**	**Assessing your resource needs and capacity**
Forming an overall idea of what you want to do at the site	What you want the data to tell you	Where is the best place to collect the data?	How often do you need to collect the data?	Do you need to look for funding?

4.1 SCOPING YOUR INTENDED MONITORING ACTIVITY

Scoping involves forming the big picture of what you want to achieve with your monitoring activity. The following questions shown in Table 1 are a simple guide for this process and are included in the Checklist for Setting up a Monitoring Site in appendix 7.2.

***Table 1**: Monitoring site scoping questions*

Scoping question	Notes
Which sector will your activity take place in?	See section 2.1.1 of this document for a description of monitoring sectors
Which monitoring setting are you targeting?	See section 2.1.2 for a description and Appendix 7.1 examples of monitoring settings
Is there historic data available for the area?	This can give you a head start on what to target and where to target your monitoring – see Appendices 9.2, 9.3 and 9.4 of the Background information document for the program
Is there an unmet monitoring need that can also be addressed in this activity?	See section 6 for directions to the record of unmet monitoring needs
What is the expected lifespan of this monitoring activity?	This will be affected by your monitoring objectives and data requirements
Which regional monitoring objective/s are supported by this activity?	See section 2.2 for a list of current regional objectives

4.2 FORMULATING YOUR DATA COLLECTION PURPOSE

Scoping	Data collection purpose	Selecting monitoring sites	Monitoring schedule	Resource needs and capacity

Your data collection purpose may include one or a number of perspectives. These may include the following:

- finding the source of litter or debris (either specific items or the whole mass of debris)
- examining how debris is accumulating and or escaping at a particular place
- identifying how debris is impacting wildlife and habitat
- gathering information for planning remediation activities and resource recovery (e.g. eligible containers under the CDS)

4.3 IDENTIFYING, ASSESSING AND SELECTING SUITABLE MONITORING SITES

Scoping	Data collection purpose	Selecting monitoring sites	Monitoring schedule	Resource needs and capacity

Assess the options

Assess the area where the proposed site is or is intended to be located using online mapping.

- **SIXmaps** is an online mapping service administered by the NSW Department of Finance and Services and shows land and property information. It has excellent definition down to 10 metres altitude and the measuring tools are easy to use.
- **Google Earth** is a download available from Google. It has good definition but this declines at close eye altitude. The measuring tools are not as quick and easy to use as SIXmaps. Google maps has a useful place mark system allowing locations to be marked with icons and details stored within the icon. Paths and polygons are also saved as place marks. Linear measurements are available by creating a path but area measurement is not available.

This software enables locations to be assessed within their wider context giving a quick overview of potential litter sources in the locality and upstream, where habitat is situated and how accessible potential sites are. Logistical issues can be anticipated and the software allows measurements of the site to be made.

Identify potential sites

Make a short list of potential monitoring sites so that you can compare them for how well they represent the problem being addressed, ease of access, amount of risk presented to volunteers and degree of difficulty for removing debris.

Select the site/s to be monitored

Choose a site where the problem shows up well (or choose several if necessary) to address the monitoring objective. You may also need to consider carrying out or enlisting a partner to carry out rating surveys to fully address the monitoring objective.

Visit and inspect the proposed site

Visit the site and look for any problems that might arise during data collection such as accessibility and occupational health and safety matters. Visually assess the area and the litter to get an idea of the time, effort and resources needed. Decide whether you can collate data on site or need to do this away from the site.

Register the site

Register the site as a monitoring program site using the Hunter Region MDMP Site Registration Form which is submitted to the Hunter Region MDMP management group. A copy of the form is provided in appendix 7.3.

4.4 WORKING OUT A MONITORING SCHEDULE FOR THE SITE

Scoping	Data collection purpose	Selecting monitoring sites	**Monitoring schedule**	Resource needs and capacity

Decide how often the site will be visited. The factors affecting your monitoring schedule include:

- Data collection purpose
- Availability of material resources
- Availability of volunteers
- Environmental factors such as weather and flooding affecting accessibility

The ideal regular frequency for many monitoring activities is monthly but can also be seasonally or annually. Irregular (opportunistic) clean-up and data collection activity repeated at the same site location, but not directly connected to a defined monitoring purpose, can also serve as a monitoring program activity. These latter sites are a source of background data and information.

4.5 ASSESSING YOUR RESOURCE NEEDS AND CAPACITY

Work health and safety

Prior to any activity check your work health and safety arrangements. If your group does not have a formal policy or you do not belong to a group, contact organisations such as WorkCover NSW. You should have a reasonable idea of any risk involved in your intended activities from the preceding steps in this section.

Resources

A Resource Needs and Capacity worksheet is included in Appendix 7.4. Table 2 shows the cost factors used in the worksheet.

***Table 2**: Assessing resource requirements*

Labour	Materials	Other potential costs
Volunteers	Bags required	Transport to site
Supervision	Special equipment needed	Catering
Travel time		Disposal costs
Administration		
Communication		
Data collating		
Data entry		

5 USING THE RATING SYSTEM FOR HOTSPOTS & LARGE AREAS

You may need to find out more about your monitoring locality and how other processes are affecting your regular monitoring site. Two rating forms have been developed for this purpose.

5.1 RATING LITTER AND MARINE DEBRIS HOTPOTS

Your monitoring objective may require assessing identified hotspots of litter and debris. The Rating Sheet for Litter and Marine Debris Hotspots is used for this purpose and is included in Appendix 7.5. It provides the following ratings:

- a scale of 1 to 5 to rate how much litter and debris is affecting the site,
- a percentage estimate of the proportion of
  - litter
  - derelict & abandoned fishing gear
  - and aquaculture materials

5.2 RATING LONG STRETCHES OF BANKS AND SHORELINES

Your monitoring objective may also require obtaining a quick and comprehensive assessment of a large area such as a waterway, sections of lake and estuary shorelines, small islands, different parts of a built facility such as large carparks, lengths of coast or any other large scale assessment required. The Rating Sheet for Long Stretches of Banks and Shorelines is used for this purpose and is included in Appendix 7.6. It allows for the recording of the litter and debris rating and the GPS coordinates at each chosen location along a targeted stretch of bank, shoreline or wetland.

6 WHERE TO SEND YOUR DATA

***Table 3**: Where to send your data*

Datasheet	Notes	Hyperlink or email address
AMDI datasheet	• Data is entered online • Please carefully read the Guidelines for submitting data prior to using the submission	http://www.tangaroablue.org/database.html
Underwater data sheet	• Contact UVNSW to arrange entry of underwater data to the UVNSW database	http://uvnsw.net.au/data
Rating datasheets	• Rating data can be emailed to Tangaroa Blue Foundation where it will be stored in an Access database • Please keep your hard copies of the rating forms as they are your guide to your further activities	info@tangaroablue.org
Wildlife data	• For mammals, reptiles and birds impacted by marine debris information should be reported to the National Parks and Wildlife Service.	For strandings or injured wildlife contact Enviroline 131555

Also consider keeping a record of your activities and results. A PowerPoint file is ideal for this as you can keep images, notes and results from you data together in one place and have ready access to an overview of your project when needed.

7 APPENDICES

7.1 EXAMPLES OF MONITORING SETTINGS, ACTIVITIES, ACTIVITY PURPOSE AND DATA RECORDING

SETTINGS WITHIN THE ON THE GROUND SECTOR

MS1

Litter on the ground and able to migrate to the next sector



Setting	Data collection activities	Data collection purpose	Data recording
MS1	Clean-ups, litter infrastructure, and maintenance	Remove litter before entering drains. Record number and type of items for management and source reduction purposes	AMDI data sheet, local government records
MS1	Rating the litter potential of a facility	Assess the general litter potential of the particular place - carpark, sports ground etc. to inform further data collection and management actions	MDMP Rating Form using the 1 to 5 scale. Can be one-off, regular or intensive short term collection to establish patterns (e.g. hourly or days of week)
MS1	Rating the litter load at a drain inlet	Assess the amount of litter accumulating in the vicinity of one or several drain inlets at a particular location and whether GPT installed or not to identify input loads into the inlet/s	MDMP Rating Form using 1 to 5 scale

SETTINGS WITHIN THE BUILT DRAINAGE SECTOR

MS2

Litter accumulating at SQIDs and other locations within the drainage network



Setting	Data collection activities	Data collection purpose	Data recording
MS2	Maintenance and clearing of stormwater network infrastructure with or without SQIDs	Assess the amount of litter retained by the SQID and litter escaping the SQID. Assess amount of litter escaping into and out of a drainage section in the absence of SQIDs	MDMP Rating Form using the 1 to 5 scale and a 4 percentage scale to rate natural debris versus litter (25%, 50%, 75% and 100%). Can also be incorporated into existing field maintenance paperwork

SETTINGS WITHIN THE NATURAL DRAINAGE & WATERWAYS SECTOR

MS3

Litter accumulating on the bank or shoreline including around drain outfalls

MS4

Litter, abandoned and discarded fishing gear and aquaculture materials in shallow water

Monitoring Setting	Data collection activities	Data collection purpose	Data recording
MS3	Clean-ups	Remove litter from the banks of the waterway to prevent it entering the estuarine system. Record number and type of items for management and source reduction purposes	AMDI Data sheet
	Hotspot surveys	Locate hotspots where litter, abandoned and derelict gear and aquaculture items have accumulated	MDMP Rating Form using the 1 to 5 scale. Transects are surveyed. Bank walks or water-craft based means are used
	Hotspot remedial actions	Collect baseline information for future monitoring of the hotspot and for source reduction purposes	AMDI Data sheet
MS4	Hotspot surveys	Locate hotspots where litter, abandoned and derelict gear and aquaculture items have accumulated	MDMP Rating Form using the 1 to 5 scale. Transects are surveyed. Bank walks or water-craft based means are used

SETTINGS WITHIN THE LAKE AND ESTUARY SECTOR

MS3

Litter accumulating on the bank or shoreline including around drain outfalls

MS4

Litter, abandoned and discarded fishing gear and aquaculture materials in shallow water

Monitoring Setting	Data collection activities	Data collection purpose	Data recording
MS3	Clean-ups	Remove litter from banks, shorelines and in the vicinity of drain outfalls. Record number and type of items for management and source reduction purposes	AMDI Data sheet
	Hotspot surveys	Locate hotspots where litter, abandoned and derelict gear and aquaculture items have accumulated on shorelines and in vegetation	MDMP Rating Form using the 1 to 5 scale. Transects are surveyed. Bank walks or water-craft based means are used
MS4	Hotspot surveys	Locate hotspots where litter, abandoned and derelict gear and aquaculture items have accumulated in shallow water	MDMP Rating Form using the 1 to 5 scale. Transects are surveyed. Bank walks or water-craft based means are used

MS5
Litter, abandoned and discarded fishing gear and aquaculture materials in deep water

MS6
Shoreline infrastructure

Monitoring Setting	Data collection activities	Data collection purpose	Data recording
MS5	Clean-ups	Remove underwater litter from the lake or estuary to improve habitat. Record number and type of items for management and source reduction purposes	AMDI Data sheet
	Surveys for abandoned gear	Assess amount and type of underwater abandoned gear and aquaculture materials to assist in planning for its removal	Underwater survey rating using the 1 to 5 scale
MS6	Clean-ups	Remove litter from the infrastructure. Record number and type of items for management and source reduction purposes	AMDI Data sheet
	Underwater clean-ups adjacent to infrastructure	Removal where appropriate. Record number and type of items for management and source reduction purposes. Other underwater research	AMDI Data sheet. Other recording as per research objectives

SETTINGS WITHIN THE COASTAL SECTOR

MS3

Litter accumulated on the bank or shoreline including around drain outfalls

MS6

Shoreline infrastructure

Monitoring Setting	Data collection activities	Data collection purpose	Data recording
MS3	Clean-ups	Remove litter from beaches to prevent it entering the sea. Record number and type of items for management and source reduction purposes	AMDI Data sheet
MS6	Clean-ups	Remove litter from the infrastructure. Record number and type of items for management and source reduction purposes	AMDI Data sheet
	Underwater clean-ups adjacent to infrastructure	Removal where appropriate. Record number and type of items for management and source reduction purposes. Other underwater research	AMDI Data sheet. Other recording as per research objectives

SETTINGS WITHIN THE OFFSHORE SECTOR

MS7
Offshore surface

MS8
Offshore underwater

Monitoring Setting	Data collection activities	Data collection purpose	Data recording
MS7	Offshore surface monitoring	Offshore presence of microplastics. Offshore data on meso-debris	Offshore trawl data recording systems
MS8	Underwater clean-ups	Removal where appropriate. Record number and type of items for management and source reduction purposes. Other underwater research	UNSW data sheet. Other recording as per research objectives

All Sectors wildlife impact recording

Relevant sectors plastic resin pellet recording

Monitoring Setting	Data collection activities	Data collection purpose	Data recording
All	Wildlife impact observations	Record and map impacts in the region, identify wildlife impact processes	Record on data sheets, report to NSW NPWS Marine Fauna Event database
All surface	Plastic resin pellet observations	Record and map distribution in the region	Record on all relevant data sheets For specific plastic resin pellet monitoring use AMDI PRP Rating Tool and Data Sheet
All	Other	Not covered above	As required at the time of monitoring

7.2 CHECKLIST FOR SETTING UP A MONITORING SITE

Checklist For Setting Up A Monitoring Site This worksheet simply provides a quick estimate of your capacity and is not a costing sheet	
Scope out your intended monitoring activity *(Section 4.1 of the guide)*	
Which monitoring sector will your activity take place in?	
Which monitoring setting are you targeting?	
Is there historic data available for the area?	Yes / No
Data can be obtained from:	
Is there an unmet monitoring need this activity could assist with?	Yes / No
Brief description of unmet need	
Which regional monitoring objective/s are supported by this activity?	
What is your data collection purpose *(Section 4.2 of the guide)*	
Site/s selected for monitoring *(Section 4.3 of the guide)*	
Site 1	
Site 2	
Site 3	
Site 4	
What is your monitoring schedule for your site/s *(Section 4.4 of the guide)*	
Site 1	
Site 2	
Site 3	
Site 4	
Assessing your resource needs and capacity *(Section 4.5 of the guide)*	
Resource needs and capacity worksheet has been completed?	Yes / No / NA
Finalise your selection	
The site has been visited and visually assessed	Yes / No
A site registration form has been submitted	Yes / No

7.3 HUNTER REGION MDMP SITE REGISTRATION FORM

Hunter Region MDMP Site Registration Form
Hunter LLS Regional Marine Debris Monitoring Program

Organisation name	Date
Contact name	Email/Phone

Monitoring site location

Local Land Services Region		
Local Government Area		
Name of site		
Physical address		
Start Latitude Decimal degrees (DD)		Start Longitude DD
End latitude DD		End longitude DD
Length of site m	Width of site m	Area of site m^2

Place a tick in one monitoring sector box and one monitoring setting box

On the ground				**MS1** Litter on the ground and able to migrate to the next sector
Built drainage				**MS2** Litter accumulating at storm water quality improvement devices (SQIDs)
Natural drainage & waterways				**MS3** Litter accumulating on the bank or shoreline including around drain outfalls
Lakes or estuaries				**MS4** Litter, abandoned and discarded fishing gear and aquaculture materials in shallow water
				MS5 Litter, abandoned and discarded fishing gear and aquaculture materials in deep water
Coasts				**MS6** Shoreline infrastructure
Offshore				**MS7** Offshore surface
				MS8 Offshore underwater

Data collection activity (Build a brief description of the monitoring activity at this site)

Description of the site (e.g. carparl, sports ground) →	Description of activity →	Data sheet to be used →	Purpose for collecting data

Data type	Frequency
Notes	

7.4 RESOURCE NEEDS AND CAPACITY WORKSHEET

Resource Needs And Capacity Worksheet

This worksheet simply provides a quick estimate of your capacity and is not a costing sheet

Item	Needed Y/N	Covered in org budget Y/N	Can be built into existing activity Y/N	Needs to be funded/ provided Y/N
Labour				
Volunteers				
Supervision				
Travel time				
Administration				
Communication				
Data collating				
Data entry				
Number of labour items needed				
Materials				
Bags required				
Safety equipment				
Personal protective gear				
Special equipment needed				
Number of materials items needed				
Other costs				
Transport to site				
Catering				
Disposal costs				
Number of other items needed				

Notes

7.5 RATING SHEET FOR LITTER AND MARINE DEBRIS HOTSPOTS

Rating Sheet for Litter and Marine Debris Hotspots
Hunter LLS Regional Marine Debris Monitoring Program

Organisation name	Date
Contact name	Email/Phone

Site location Note: you can use online mapping to assist in finding the following information

Physical address		
Start Latitude Decimal degrees (DD)	Start Longitude DD	
End latitude DD	End longitude DD	
Length of site m	Width of site m	Area of site m^2

Data collection purpose	

Wildlife note	

Litter/ debris rating	

1	2	3	4	5
No Litter/ debris	Low litter/ debris	Moderate litter/ debris	Significant litter/ debris	Highly significant litter/ debris

Percentage of litter and abandoned gear

Assess the proportion of each type as a percentage of all the debris present. If there is none of a particular type leave the line blank.

Debris type	25%	50%	75%	100%
% Litter				
% Derelict & abandoned fishing gear				
% Aquaculture materials				

Effort rating guide

	1	2	3	4	5
Access	Easily accessed	Fairly easily accessed	Some effort needed to access	Considerable effort and planning needed	Substantial effort, planning and support needed
Removal effort	Easily removed	Low difficulty	Medium difficulty	High difficulty	Very difficult to remove

How much effort is required to clean the site?

	1	2	3	4	5
How accessible is the site					
How difficult will it be to remove the debris					

7.6 RATING LONG STRETCHES OF BANKS AND SHORELINES

Rating Sheet for Long Stretches of Banks and Shorelines Hunter Regional Marine Debris Monitoring Program	
Organisation name	Start Date
Contact name	Email/Phone
Name of monitoring site this activity is related to	
Brief description of area surveyed	

Use this form to rate stretches of waterway, sections of lake and estuary shorelines, small islands, different parts of a built facility such as large carparks, lengths of coast or any other large scale assessment required.

Litter/ debris rating

Latitude 00.00	Longitude 00.00	Rating (1 to 5)	Note include relevant litter/ debris and wildlife observations

Litter/ debris rating guide

1	2	3	4	5
No Litter/ debris	Low litter/ debris	Moderate litter/ debris	Significant litter/ debris	Highly significant litter/ debris

7.7 WILDLIFE IMPACT OBSERVATION SHEET

Date	Latitude	Longitude	Species common name	Dead or injured?	Injury	Reported to:

Protect Our Oceans

Prepared by Tangaroa Blue Foundation
An Australian Marine Debris Initiative Report

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TANGAROA BLUE

AUSTRALIAN MARINE DEBRIS INITIATIVE

NSW GOVERNMENT Local Land Services Hunter