

**AUSTRALIAN**  
MARINE DEBRIS INITIATIVE



**AMDI MONITORING PROTOCOLS FOR  
LITTER AND MARINE DEBRIS**

**UNDERWATER**



Australian Marine Debris Initiative Database  
protocols to monitor and collect litter and marine  
debris data at underwater locations

Release date: May 2022



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## Contact

Tangaroa Blue Foundation  
PO Box 1235  
Dunsborough  
WA 6281 Australia

[info@tangaroablue.org](mailto:info@tangaroablue.org)

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## Contributors

Partners of the Australian Marine Debris Initiative (AMDI) who contributed to this document include:

- Tangaroa Blue Foundation - Alexis Farr, Dr Daniel Burns, Jodi Jones, Carly Alexander and Heidi Tait
- University of New South Wales - Jordan Gacutan and Dr Graeme Clark
- University of Tasmania / Adrift Lab - Dr Jennifer Lavers
- AUSMAP / Macquarie University - Dr Scott Wilson and Dr Michelle Blewitt
- Southern Cross University - Professor Steve Smith



# Summary

**Coastal and marine ecosystems are increasingly threatened by marine debris**, which impacts marine species and their habitats at a global scale. Interventions to prevent the escape and/or removal of or marine debris, such as waste management infrastructure, improved regulations, and educational campaigns are most effective when they are informed by the local context. Understanding the abundance of specific debris items and their tendency to disperse enables us to trace the items to their source, to inform effective and efficient management intervention.

**To understand the local context, and measure whether a source reduction plan is working**, long-term monitoring is required. Monitoring refers to surveys performed consistently over regular intervals, using appropriate methods that are adapted to the type of site. Through the use of standardised methods across different site types, monitoring programs provide a greater understanding of marine debris flows from source (e.g. rivers and estuaries) to sink (e.g. the ocean). Regular monitoring also provides a better understanding of the overall debris trends (whether increasing or decreasing) within a management area.

**With the right training and protocols, citizen scientists can perform monitoring**, which will significantly increase the amount of data (both over space and time) to inform source reduction efforts. Tangaroa Blue Foundation recognises the vital role that volunteers and community groups play in improving our understanding of debris at local scales, which is vital to providing the best management solution to the problem.

**This document provides protocols for establishing and performing monitoring at a chosen site.** It includes standardised methods for collecting and recording debris data at different site types, allowing citizen scientists to tailor monitoring activities to a specific site. By establishing monitoring sites, citizen scientists, local councils, organisations, businesses and community groups can help with developing the Source Reduction Plans (SRPs) needed to adequately address the growing challenge of marine debris.

**Throughout this document the terms 'litter' and 'marine debris' will be used to refer to all types of pollution.** Rubbish, pollution, waste or debris will be referred to as 'litter' on land, and 'marine debris' in marine environments.

This document is structured into the following sections:

- The need for monitoring (Section 1)
- Getting ready to monitor (training, site types and site selection) (Sections 2, 3 and 4)
- Monitoring protocols per site type (Section 5)
- Underwater Monitoring
- Collecting and entering data into the AMDI Database (Sections 6 and 7)
- References (Section 8)
- Resources (Section 9).



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# 1. Introduction

*“We are in reach of a whole new relationship with the ocean, a wiser, more sustainable relationship. **The choice lies with us.**” - Sir David Attenborough.*

Environments, cultures and economies are increasingly threatened by marine debris. Each year, millions of tonnes of plastic enter the ocean<sup>1</sup>, travelling from release sources and through geographical land features including on the ground sites, built drainage, inland waterways, estuaries, and coastal shorelines to the ocean.

The removal and prevention of litter and marine debris within the environment is a global challenge, and increasing awareness has led to campaigns at varying scales (from local to international) to reduce litter from ‘leaking’ into the ocean as marine debris. The most effective way of reducing marine debris is to stop litter at the source, through improved regulations and compliance, waste management systems, education campaigns and consumer behaviour change. These interventions are most effective when they are informed by robust data and management can be performed through Source Reduction Plans (SRPs).

Tangaroa Blue Foundation recognises the vital role that volunteers and community groups play in improving our understanding of marine debris, and their contribution to the collection of data and identification of solutions for the future prevention of marine debris.

## The difference between clean-ups and monitoring

Marine debris is human-created waste that has deliberately or accidentally been released into the ocean. Marine debris data can be collected through surveys from community clean-ups or structured monitoring programs.

Community clean-up surveys are the most common approach to litter reduction around the world, due to their accessibility and the flexibility of methods for data collection. Community clean-up activities and litter hotspot surveys are useful to clean the environment and to gain an understanding of debris issues. However, the inconsistency of data collected during clean-ups limits analysis. To understand the flow of marine debris to a location over time, more rigorous and consistent methodologies should be used.

Structured monitoring frameworks aim to create long-term, high-quality datasets using project management strategies that define locations, land types, user types and survey frequency.

Monitoring refers to surveys performed consistently over regular intervals (e.g. every 3 months), using appropriate methods for each different type of site. Through the application of standardised methods across different site types, monitoring programs can provide a greater understanding of marine debris flows from the source (land or waterways) to sink (the ocean). Regular monitoring also improves the quality of existing datasets in a region, which can be used to evaluate the success of intervention and source reduction measures, such as the ban of single-use plastic items, container deposit schemes, or investment in stormwater infrastructure (e.g. gross pollutant traps).

<sup>1</sup> Jambeck, J.R. et al., 2015, ‘Plastic waste inputs from land into the ocean’, *Science*, Vol. 347, No. 6223, pp.768-771 ; Borelle, S.B. et al. 2020 ‘Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution’ *Science* 369 (6510), 1515-1518.



## Citizen scientists and monitoring

Monitoring programs have traditionally been government-led and undertaken by institutional research entities, which can be expensive and time consuming. These limitations leave gaps in the datasets which can be filled by citizen scientists. Citizen scientists can readily support a range of efforts by using standardised data collection methodologies.

Tangaroa Blue Foundation (TBF) supports citizen scientists, volunteers, Indigenous groups, community groups and organisations through the facilitation of the Australian Marine Debris Initiative (AMDI), a network of more than 2,000 partner organisations.

### The AMDI provides:

- a standardised classification system for recording debris,
- a place to contribute and store the data, through the AMDI Database, and
- a way to use the data to facilitate and measure local Source Reduction Plans.

The AMDI supports both small and large-scale debris projects and programs, warehousing a diverse range of data, including clean-up surveys contributed by community and volunteer networks, research and project management organisations and litter management programs both nationally and internationally.

Using AMDI data, you will be able to understand at an itemised and quantifiable level the marine debris signature of your area, and start impactful data-led conversations with stakeholder groups to develop litter and marine debris reduction strategies.

## Purpose of this document

This document provides community organisations, Indigenous groups, citizen scientists, government and not for profit organisations, methodologies and rationale for establishing marine debris and litter monitoring projects, data collection and assessment programs across different land types, locations and settings, from inland to coastal environments.

Supporting scientific analysis of litter and marine debris released into economically, culturally and environmentally sensitive habitats through the provision of standardised field data collection methodologies.



## 2. Training

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### Why is training important?

Regular monitoring gives us a better understanding of the marine debris problem and how best to manage it. However, monitoring is more complicated than standard clean-ups, and to make sure that you understand how (and why) we use specific methods, training on these monitoring protocols is required.

Training is important to:

- familiarise yourself with the monitoring methods relevant to your chosen site.
- ensure that you provide consistent and reliable data to address the marine debris challenge.
- provide a way to interact with other groups that are monitoring similar sites, and share challenges and insights that could benefit the whole community.

### What training is provided?

All citizen scientist volunteers will have the opportunity to complete training with Tangaroa Blue Foundation prior to commencing a monitoring activity. Training will offer volunteers context on the purpose and aims of the work, and provide guidance on the procedures and practicalities of monitoring, data collection and data entry.



## 3. Site Types

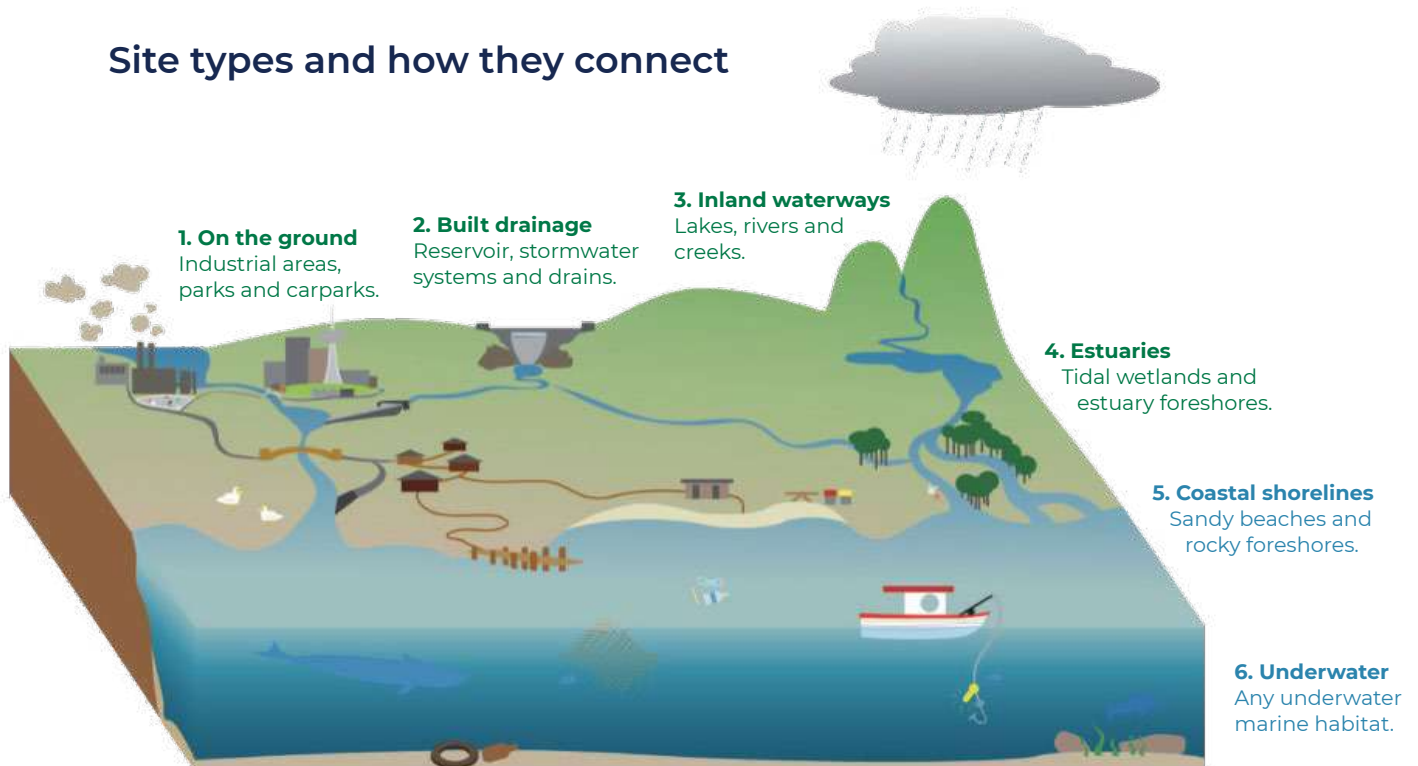
To understand how litter travels from where it is first released (source), to where it arrives (sink), we need to monitor different types of land-use sectors.

We can break down monitoring methodologies and site types based on the stages of a catchment, including:

- On the ground (the point when rainfall hits the ground and flows overland to the next site type)
- Built drainage
- Inland waterways
- Estuaries
- Coastal shorelines
- Underwater.

Litter can be transported through a combination of these stages, or 'litter pathways'. Recording where, how and what kinds of debris move between sites can give an understanding of where intervention points would best be placed along a catchment. The opportunity to prevent, mitigate and remove debris progressively decreases as litter travels towards the ocean. Conversely, the chance of litter reaching the ocean increases the further it travels along the pathway.

### Site types and how they connect





**Table 3.1.** Summary of site types and examples, including things to consider before choosing a site type.

Site type	Definition	Examples	Things to consider
<b>On the ground</b>	Locations where litter is found before entering into the aquatic environment (waterways, estuaries, beaches) or built infrastructure (drainage network).	<p>Areas near waterways:</p> <ul style="list-style-type: none"> <li>■ parks and green spaces</li> <li>■ sports fields / ovals</li> <li>■ open areas</li> <li>■ infrastructure-adjacent areas.</li> </ul> <p>Areas near built drainage:</p> <ul style="list-style-type: none"> <li>■ school grounds (open to public and outside school hours)</li> <li>■ around amenities</li> <li>■ outside shopping centres</li> <li>■ carparks</li> </ul>	<p><b>Do not</b> sample in hazardous areas or on private land, such as:</p> <ul style="list-style-type: none"> <li>■ busy roads / highways</li> <li>■ fenced-off areas</li> <li>■ areas covered under other site type definitions</li> </ul> <p><i>As this site type is the most varied, please consult Tangaroa Blue Foundation for assistance.</i></p>
<b>Built drainage</b>	All parts of the drainage network, extending from drain entry to outfall.	<ul style="list-style-type: none"> <li>■ drains</li> <li>■ gross pollutant traps</li> </ul>	<p><b>Do not</b> open drains or gross pollutant traps owned by the council or a business.</p> <p>This site type is only relevant to people who have permission to access the asset or have partnered with the relevant organisation.</p> <p>Monitoring will most likely be conducted on assets such as Gross Pollutant Traps (GPTs) and debris caught in Stormwater Quality Improvement Devices (SQIDs). When reporting, the data should indicate the type of asset, its make and model.</p>
<b>Inland waterways</b>	Banks of freshwater waterways.	<ul style="list-style-type: none"> <li>■ foreshore / banks of catchment channels, creeks, rivers, and lakes</li> </ul>	<p>Access points may restrict where you can collect data.</p>



<b>Estuaries</b>	Banks of brackish waterways, where freshwater from rivers and streams meets the sea.	<ul style="list-style-type: none"> <li>■ tidal wetlands</li> <li>■ foreshore / banks of estuaries</li> </ul>	Access points may restrict where you can collect data.
<b>Coastal shorelines</b>	Locations facing the ocean (outside estuaries) and immediately adjacent to the ocean.	<ul style="list-style-type: none"> <li>■ sandy beaches</li> <li>■ rocky shores</li> <li>■ other beach types (pebble, mud)</li> </ul>	<b>Do</b> note any factors which may influence debris, including adjacent / underwater habitats (e.g., mangroves, saltmarsh, seagrass) and other built infrastructure (groynes, breakwaters and seawalls).
<b>Underwater</b>	The underwater sector refers to monitoring in <b>marine</b> waters that extend beyond a coastal zone.	<ul style="list-style-type: none"> <li>■ any marine underwater habitat</li> </ul> <p><i>This sampling will be conducted via SCUBA or freediving. Only trained and certified divers should monitor underwater sites.</i></p>	<b>Do not</b> attempt underwater monitoring if you are not a trained and certified scuba diver or freediver.



## 4. Site Selection and Planning

### Site selection

The first step to establishing a monitoring site is the careful selection of a site location, taking into consideration a range of factors. These may include:

- Safety - Identifying, understanding and mitigating risks for a site
- Accessibility - Ensuring land owner/manager permissions and reliable access to the site
- Extent - Bounds of the site (where it starts and stops)
- Data value - Need to fill data gaps and meet the objectives of the monitoring program
- Traffic - Likelihood of intervention by other programs to the site
- Social factors - Potential disruptions to the community
- Cultural factors - Consultation with Traditional Owners
- Environmental factors - Potential environmental impacts from a monitoring program

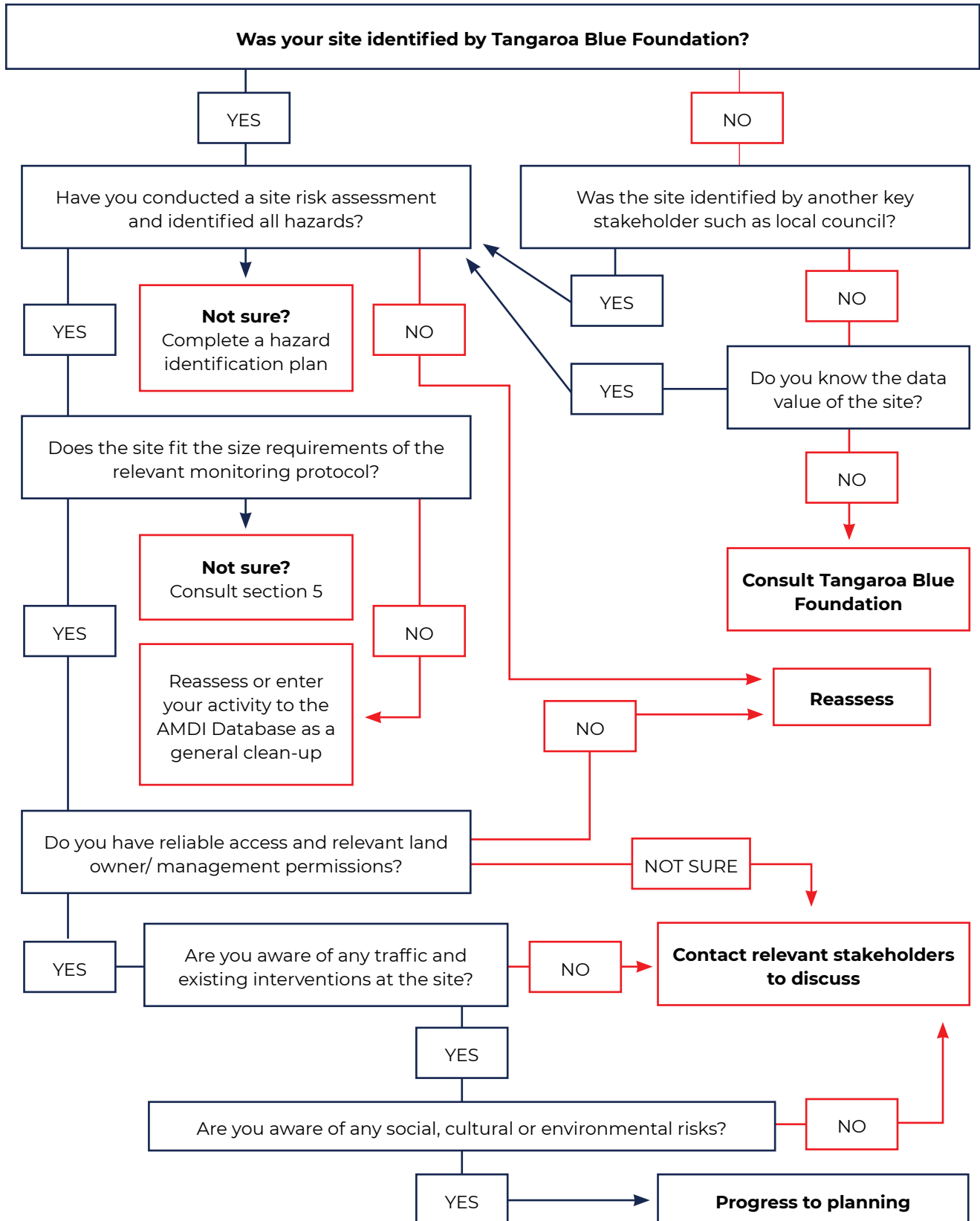
Prior to selecting a site, it is important to understand any limitations you may have to reliably access the site and conduct monitoring in a safe manner. Tangaroa Blue Foundation provides an open list of sites that are ideal for monitoring and you are welcome to adopt one of the sites listed. If you intend to conduct a monitoring activity outside of the sites listed, we encourage you to have an initial consultation with Tangaroa Blue Foundation, to ensure the best possible data quality and that you meet the needs of your monitoring program. This will involve accounting for a wide range of geographical differences, such as population density or proximity to roads and waterways, as well as accessibility issues such as annual monsoonal flooding.

You will also need to consider social and environmental factors at your chosen location: is it a significant cultural site; important to fauna, such as nesting birds; or covered by vegetation at certain times of the year? It is recommended that you consult with the Traditional Owners of the site that you have in mind, prior to planning a monitoring program. Monitoring should not be conducted at locations where your activities could result in harmful impacts on the environment or culturally significant areas.

If your site does not align with the relevant monitoring protocol (e.g., if the site is too small to complete all transects required), you can still enter the data for your activity into the [AMD Database](#) as a general clean-up.

Safety is the number one priority during monitoring, and all risks must be identified, documented and addressed to ensure that you and your participants are safe during your activity. Specific occupational health and safety protocols should be considered, with guidance provided in the Tangaroa Blue Foundation [Work Health and Safety Management Strategy](#).

# MONITORING SITE SELECTION TOOL





## Site inspection

Before conducting any monitoring, you must first ensure you have all relevant approvals to visit your site for an initial inspection. During this site inspection record site characteristics and complete a risk assessment for your activity, including:

- Considering issues that might arise during data collection such as accessibility, landscape transformations over time, and health and safety risks. We recommend you refer to the Tangaroa Blue Foundation [Work Health and Safety Management Strategy](#) for guidance. In particular, refer to Appendix A of the document, *Hazard Identification Plan*.
- Note the existing facilities or programs which may be in place to reduce littering or debris. This will be an important factor when selecting dates and times for monitoring.
- Visually assess the area and the amount of visible litter to get an idea of the time, effort and resources required for monitoring. Decide whether you can sort and itemise the debris on site, or if you will need to do this at another location.

## Preparing the site (initial clean-up)

After the initial scoping of the site and consultation with Tangaroa Blue Foundation, you are ready for monitoring! To ensure that you detect new debris entering the site, you must first establish a baseline by cleaning up as much of the existing debris as possible, noting any debris that is inaccessible (buried, entangled, too heavy etc.). This activity should be included in your monitoring schedule and submitted to the AMDI Database as a general clean-up. Be sure to make a clear note in the data report that it is the baseline survey for your monitoring program. Subsequent monitoring clean-ups will use the protocols described in **Section 5**.

## Survey frequency

The frequency of surveys is site dependent. The minimum requirement for a monitoring site is sampling at quarterly (3 month) intervals, however stormwater asset audits need to be completed at 8-week intervals. For example, you could conduct coastal shoreline monitoring activities in March, June, September and December of each year to account for seasonal changes in variables (prevailing wind, weather, tides etc.). The frequency and approximate dates of your surveys should be kept consistent from year to year.

More frequent monitoring during the initial phases of the project (eg., monthly, every 8 weeks) may be helpful to ascertain the optimal sampling interval for your site. Sites with high amounts of debris flowing in and out of the system can be monitored more regularly, to get a better understanding of the sources of debris. This could be fortnightly or monthly as needed, depending on your capacity and resources. However, it is important to ensure that monitoring activities are spaced at regular intervals so that your dataset can be easily standardised and interpreted. In addition, you may want to target local events (such as outdoor concerts or festivals) and conduct a clean-up of the area before and after the event. If you do complete additional monitoring sessions like this, please make sure to include a note about the event and monitoring activity with your dataset.



## Do I need to monitor the same location every time?

The extent of a monitoring site is defined at the commencement of the monitoring program and should remain consistent over time. However, the sampling within the site may change depending on the site type (consult Section 5). To ensure a robust dataset and avoid bias, follow the specified methodology for the land-use sector you wish to survey. When setting transects, you will select the first starting points for your transects at random. For all subsequent visits, return to the same transect starting points again.

## Changes to the site

Over time, activities (e.g. construction) and access to a site may change. If you have issues with site access, or find that there is something affecting your site that may skew your dataset (e.g., beach nets blocking debris or construction), contact Tangaroa Blue Foundation and we will work with you to determine potential solutions or select another appropriate site and ensure that we track changes in the dataset associated with your monitoring program.



## 5. Methodologies

There are a range of approaches used to monitor different site types. Table 5.1 provides a broad overview of these monitoring methodologies, which will be explained in more detail below.

**Table 5.1** Monitoring methodology used for each site type.

Site type	Monitoring methodology
On the ground	9 x 10m(+)(L) x 2m (W) transects Transects are conducted across 3 area types: Amenity area, Transition zone and Representation area
Built drainage	Gross pollutant traps installed Traps monitored at 8-week intervals, for 6 cycles/ year
Inland waterways	4 x 25m(L) transects, parallel to waterline
Estuaries	4 x 25m(L) transects, parallel to waterline
Coastal shorelines	4 x 25m(L) transects, parallel to waterline
Underwater	4 x 25m(L) x 5m (W) transects, from a boat or shoreline

### Microplastics

AUSMAP microplastic assessments may be conducted at any suitable location in addition to macro litter and marine debris surveys. For more information on completing AUSMAP microplastic assessments refer to AUSMAP, [www.ausmap.org](http://www.ausmap.org)



## 5.1 UNDERWATER MONITORING

Underwater monitoring activities will follow the methodology created by the *Underwater Volunteers NSW*<sup>1</sup>.

**Safety is the number one priority in underwater monitoring.** Underwater surveys conducted by scuba or freediving should only be conducted by competent divers with the necessary qualifications and experience, and always with a partner. There should always be someone on the shore or boat to act as safety support. Consideration should be made of tides and the conditions on the day to ensure that dives are conducted safely.

Before removing an item of marine debris, consider if it belongs in the environment, whether it has become a habitat for animals, or is threatening the health of the marine ecosystem. Any item that is likely to cause harm into the future should be removed, if it is safe to do so. Do not remove anything unless you can do so safely, being mindful of sharp edges and rusty items. If it is not safe to remove a hazardous item, mark its position and arrange for its removal if possible. Carry line cutters, so that if you encounter fishing line or rope entangled around marine life, or on the reef substrate, you can cut and remove the line in sections. It is also advised to carry a rigid container to store any sharp objects found.

The following steps are taken in underwater monitoring:

- Identify sites and assign the type of seabed.
- Prepare a dive plan, which includes identifying a random starting point and transect depth.
- Set transects, either from a boat or shoreline.
- Collect and record litter.

### Equipment required

The equipment required for an underwater monitoring includes:

- SCUBA / dive equipment (as required)
- Tape measure (25m)
- Rigid container for sharp items
- Mesh carry bags (4 for the transects, plus 1 for additional items found)
- Knife, scissors or line cutters
- Compass
- Underwater camera (optional)
- Data recording sheets and pencil, or the AMDI app (on phone or tablet)
- First aid kit.
- GPS or location sharing app (what3words or Emergency plus App)

<sup>1</sup> The original methodology used for this protocol can be sourced at:

Smith, S.D. and Edgar, R.J. A Standardised Protocol for Assessing Marine Debris in NSW Waters, National Marine Science Centre, Southern Cross University, [https://uvnsw.net.au/media/uvnsw/Marine-Debris-Protocol\\_0.pdf](https://uvnsw.net.au/media/uvnsw/Marine-Debris-Protocol_0.pdf)





## Site selection

Underwater monitoring will depend on factors including the type of site, size of the habitat patch, and whether you are completing a shore dive or boat dive. Underwater monitoring should be conducted over a specific seabed or reef type, which may include sandy bottoms, rocky reef, coral reef or kelp forest. If a site contains more than one type of seabed, separate transects should be performed per seabed type.

Identify the type of seabed that you will be targeting, and prepare a dive plan accordingly, noting the depth of water across the site area.

## Setting transects

You will set four transects of 25m (length) x 5m (width), with a total survey area of 500m<sup>2</sup>. To ensure a robust dataset and avoid bias towards specific areas, all transects should be set at random starting points and wherever possible following a continuous habitat. The transect line does not have to be straight, it can bend around reef structures.

## Diving from a boat

Starting at a random point in the open water, four 25m x 5m transects are deployed at radial intervals of 90 degrees. Viewed from above, the transects would radiate out from a central point in the shape of a cross at least 10m apart.



**Image 5.12** - Transects are set at 90 degree intervals around the boat, forming a cross shape\*.



In the case of smaller or fragmented habitats (e.g. a reef intersected by sand) transects may be allocated across the available habitat at least 10m apart.



**Image 5.13** - Transects are allocated across the reef to ensure a consistent seabed type\*.

## Diving from the shore

Starting at the shore, four transects of 25m x 5m can be set either parallel or perpendicular to the shoreline. Transects should be set from a random starting point, at least 10m apart.

Transects running parallel to the shore are useful in cases where the seafloor has a significant slope.



**Image 5.14** - Transects run parallel to shoreline to maintain a consistent depth\*.

\* Image credit: Google Earth



Transects running perpendicular to the shore are useful, for example, when monitoring marine debris along a breakwall.



**Image 5.15** - Port Macquarie, NSW - Transects run perpendicular to the shoreline\*.

## Survey

Debris should be removed from a corridor of approximately 2.5m wide on either side of a tape measure marking the transect length of 25m. Transects should be completed in pairs swimming side by side along the tape measure. Divers should swim slowly, checking under overhangs and in cracks and crevices and looking back regularly from the direction travelled to gain a different search perspective. While divers should always practice good buoyancy control to minimise impact on marine organisms, being too far above the substratum will limit the ability to detect debris.

Collect debris in a mesh bag that will hold items 5mm or greater in size. Place any sharp objects inside a rigid container to avoid injury. Larger items may be used as habitat, in which case they should be noted and photographed (where possible) but not removed. If there is no litter found within the transect mark it as 'zero litter found', as this is still valuable data. After completing the four transects an additional roaming search (up to 30 minutes) should be conducted to provide a more complete picture of the debris load at the site. These items should be recorded separately as a general clean-up in the AMDI Database.

When you or your dive partner has 50 bar of air remaining in your scuba cylinder, both divers must begin a slow ascent and perform a 3-minute safety stop at 5 metres. Plan your dive in this context, for example, plan to have 50 bar remaining after the transect line has been retrieved, rather than starting to retrieve the line when you have 50 bar remaining.

If working in coral dominated habitat minimise direct contact with coral and take care not to break off coral when untangling debris.

When dealing with nets, constantly observe the movement of the net in water surges to avoid entanglement of yourself or your gear. Where nets are severely entangled, they can be cut in sections or noted for later removal.



## 6. Data Collection and Sorting

### What data should I collect?

For monitoring purposes, every item larger than 5mm is counted and classified, noting the specific transect, asset or section as dictated by the methodology. If you do not find any litter, note down that nothing was found - this is just as important as if you found items. Do not add additional monitoring points to your site for litter found in adjacent areas as this will bias the results. Additional areas cleaned outside the monitoring areas should be recorded as a separate general clean-up in the AMDI Database.

### Sorting, counting and data recording

Sort your data as soon as possible following the collection activity. When sorting through the litter, you should find a site that is out of the wind so that items such as food wrappers and paper do not blow away. If you sort and count outdoors, make sure you have an appropriate disposal strategy. If you take the debris home to sort and count, make sure to write the site name, date and transect number on the bags, and secure the tops. If you are counting the debris at a later time, store the bags in a safe place, where children, pets and weather cannot get to them.

Equipment you may need for sorting and counting:

- Marine Debris Identification Manual
- project specific data sheets provided by AMDI or data entry device
- Small tarp and various containers to assist in separating items – especially if you are counting the debris at the clean-up location
- tape measure – for measuring items such as rope and plastic strapping bands
- digital camera – if available - to record an image of the debris once sorted. The site name can be noted with the debris for identification of the site in the photo
- gloves
- sharps container
- dustpan and broom.

### Data records

The Tangaroa Blue Foundation website has several data forms that can be downloaded , however it may be necessary to personalise these to your project and you may be able to directly input the data into the AMDI App.

### Additional datasets information

In addition to tallying the number of items found during monitoring events, some items can be better traced to the source if additional information is collected. These include:

<b>Chemical light stick / Glow stick</b>	Chemical light sticks / glow sticks are located in the “Plastic Items - Fishing” section of the AMDI Database. Record how many of each type of chemical light stick / glow stick you find. Types can be identified on pages 42-45 of the <a href="#">AMDI Marine Debris Identification Manual 2021</a> .
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<b>Strapping bands</b>	Record the colour, width, length, whether the band is cut or uncut and any writing on the band.
<b>Tags</b>	Record what material tags are made from, colour and all writing and numbers.
<b>Foam buoys</b>	Foam floats often have an identification number stamped on them. Record this in the notes column next to your foam buoys entry.
<b>Foreign sourced objects</b>	When you find an item with a label indicating an overseas origin and can decipher some or all the following details, record the type of item, country of origin, brand name, product name and barcode.
<b>Plastic resin pellets</b>	These are pictured in the "Plastic Items - Industrial, Commercial, Shipping & Miscellaneous" section. If you observe plastic resin pellets during your clean-up record a 'yes' in the additional information section at the end of your data entry and whether found in low, moderate or high numbers.
<b>Micro-litter</b>	If you notice other types of micro-litter (items less than 5mm in size) including microplastics, rubber crumb, polystyrene balls or glass shards, please make a note at the end of your data entry and whether found in low, moderate or high numbers.
<b>Unusual beach conditions</b>	If you notice out of the ordinary erosion or exceptional swell conditions make a brief note in the additional information section.
<b>Impacted wildlife</b>	<p>During your surveys you may come across animals that are impacted by either entanglement or ingestion of marine debris. These are important observations that provide information for researchers investigating the scale of litter and marine debris impacts on wildlife.</p> <p>Report injured wildlife to your local ranger, land manager or in the case of seabirds to an available local group such as Australian Seabird Rescue.  <a href="http://www.seabirdrescue.org">http://www.seabirdrescue.org</a></p>
<b>Ghost nets</b>	<p>Ghost nets pose significant danger to marine wildlife and safety issues to vessels through entanglement. Studies into the types and sources of nets are important for addressing the activities and impacts not only on marine animals and ecosystems but the economies of fisheries. Reference the Ghostnets Australia ID Guide:  <a href="https://www.ghostnets.com.au/resources/net-id-guide/">https://www.ghostnets.com.au/resources/net-id-guide/</a></p>

Please refer to the [AMD Marine Debris Identification Manual](#) for recording and sampling these items.



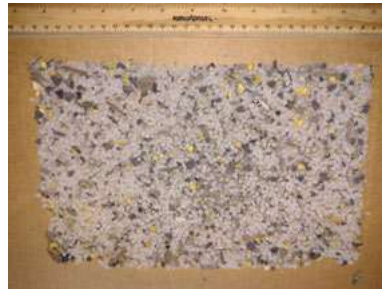
## Subsampling

In the case that you find a large number of small items, such as confetti or polystyrene balls, you can take a subsample of the item. First remove any macro-litter items and then make a square from your micro-litter items on a table, ensuring an even spread and thickness of litter items. Divide your square into segments, and then randomly select and count just one of these segments. Multiply the total number you count by the number of segments in your square.

### Example



Collect your pile of small items.



Set out into a single layer square or rectangle, then divide in smaller segments.



Count one of the segments, then multiply the number by 8 to get the total.

## Microplastic assessment

Microplastics are tiny fragments, pellets or fibres of plastics with a size of  $\leq 5$  mm. Most of them are smaller than a grain of sand and invisible to the naked eye. They are the most abundant form of solid-waste litter and marine debris and have been found in all oceans, on all continents and even in the deep sea where their concentration is now four times higher than in coastal waters. Microplastic surveys may be carried out to maximise opportunities to fill data gaps. Surveys should be carried out where the location lends itself to sampling (i.e. soft sediment) and where there is capacity beyond your meso and macro-litter monitoring activities.

## Disposal of debris

Most non-recyclable debris in small quantities can be disposed of in the rubbish bin, however there are some important points to consider when disposing of debris. To check what can be recycled in your area, contact your local government authority. When placing items in the recycling system, make sure they are relatively clean, uncontaminated and not encrusted with barnacles. If you find you need to dispose of a large quantity of debris, your local government authority may be prepared to assist, but it is best to contact them prior to the event to allow enough time for arrangements to be made.

Toxic or hazardous items (fluorescent light bulbs, chemical light sticks, paint, flammable materials, syringes, etc.) should be handled according to health and safety guidelines, and disposed of in accordance with local government regulations.



## 7. Entering Data into the AMDI Database

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We have helpful videos on the Tangaroa Blue Foundation Youtube playlist [How to use the AMDI Database](#) that demonstrate how to enter datasets into the AMDI Database. However, entering monitoring data requires specific training to ensure that your data is accurately recorded and any additional layers of information are accurately attributed. For this you will need to schedule a data entry training session. Contact [data@tangaroablue.org](mailto:data@tangaroablue.org) to find out about available training dates.

### Reports and data access

When your data is uploaded, the AMDI data team will provide you with downloads of your data. Your report will include an excel spreadsheet that you can use to complete reporting. Please ensure that when you register your project site that your reporting timelines are scheduled with our data team. Our privacy and data collection statements are available on our website. <https://www.tangaroablue.org/database/>.

### Technical support

The AMDI team can offer you technical support, including assistance with site identification and mapping, scheduling, event promotion, equipment supply, uploading data, and providing letters of support. Please contact us for more information at [info@tangaroablue.org](mailto:info@tangaroablue.org).

## 8. References

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Tangaroa Blue Foundation. Marine Debris Identification Manual 2021. Available Online: <https://www.tangaroablue.org/download/30/id-manual/9813/marine-debris-identification-manual.pdf>





## 9. Resources

### Plastic resin pellet (PRP) litter rating tool

Rating 1 No PRP Pollution	Rating 2 Low PRP Pollution Less than 100 PRPs 1-5 PRPs every 5m	Rating 3 Moderate PRP Pollution 100-300 PRPs 10-50 PRPs every 1m	Rating 4 Significant PRP Pollution 300-1000 PRPs 1 PRP every 1cm	Rating 5 Highly Significant PRP Pollution More than 1000 PRPs 2-10 PRPs every 1cm
<p>Tangaroa Blue Foundation   ACN 138 636 521 PO Box 757, Port Douglas 4877 QUEENSLAND, AUSTRALIA <a href="http://www.tangaroablue.org">www.tangaroablue.org</a></p>		<p>This project was funded through the Victorian Government's Litter Hotspots Program.</p>		

### Wildlife impact observation sheet

Date	
Site details / Address	
Latitude/Longitude	
Species common name	
Dead / injured/ entangled	
Injury/entanglement information	
Reported to	

*Injured and entangled wildlife should be reported to the governing wildlife authority in the area.*



## Survey GPS marks or What 3 Words data (Emergency Plus App)

Transect start mark / W3W	Area Type	Latitude	Longitude
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
Other			



# PROJECT SITE REGISTRATION FORM

ORGANISATION AND CONTACT DETAILS	
Organisation/ community group name(s) include all entities and individuals	
Contact person	
Contact details	Email
	Phone
	Address
	Role
	Best contact times
Start date of monitoring program	
End date of monitoring program	
Reporting requirements data downloads required, attach schedule if known.	
Frequency of monitoring. Daily, weekly, Monthly, Quarterly ect	
Type of monitoring activity	
Project Name	
Site Name (Please include traditional landowner names)	
Traditional Landowner Group	
Landowner (private, local government, state government, business)	
Location: Address, GPS points, What 3 Words, etc	
Do you require support? Please provide information of your needs	



MONITORING SECTOR	
SECTOR	DESCRIPTION
On the Ground	
Built Drainage	
Inland Waterway	
Estuary	
Coastal Shoreline	
Underwater	

LOCATION FEATURES	
Adjacent land usage. e.g., shops, beaches, housing, sporting fields, recreational parklands, industrial area	
Describe civil infrastructure information, stormwater outlets, drains, bridges, boat ramps, roadways	
Area Dimensions	
Is the area maintained regularly? By which authority	
What amenities are in the boundary of your survey area? Playgrounds, picnic tables, toilet blocks	
Is the area well maintained and by which authority. What maintenance e.g. mowing and do you know when?	
Access points. Please describe how users access this site, how many entry points and types eg pedestrian, pathway, trail, vehicle	



WASTE DISPOSAL	
How many bins in the area?	
Are waste disposal assets easily accessible, identifiable?	
Are waste disposal assets fit for use and prevent litter from escaping?	
Any other information about your area	

**AREA MAP - GENERATE AN AREA MAP AND COPY ATTACH INTO THIS FORM**

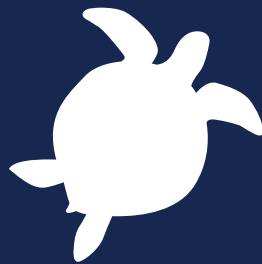
HUMAN INFLUENCES	
Who uses the area?	
What is the area used for?	
When is the area used? (daily, weekly)	
Are events like markets, concerts held in or adjacent to the area?	
What activities occur in the surrounding areas?. Industry, cafes	
Other information	

WHY HAVE YOU CHOSEN THIS SITE FOR MONITORING PURPOSES	
I see litter regularly in this area and want to work at stopping this from happening	
Governing authority target area	
Source reduction target items	
Gather data for attention of authority	
Concern for welfare of wildlife and environment	
Other	



OUTCOMES OF MONITORING	
Who is reviewing your data?	
What is the purpose of your data?	
When	
Where	
Time frame	
What are your goals? Prompts could include producing baseline data set to prove xxx is coming from yyy. Create awareness for a specific pollution issue	

AMD I ADMINISTRATION		
Project Code		
Mapping status		
Data audits		
Services provided		
In-kind		Hrs
Project fee		Hrs
Accepted		By / date



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