

TANGAROA BLUE OCEAN CARE SOCIETY



2010 SOUTH WEST MARINE DEBRIS PROJECT (SOUTH WEST AUSTRALIA) TECHNICAL REPORT

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Thank you to the following government agencies and organisations for funding and support, enabling us to continue the South West Marine Debris Project.





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1. EXECUTIVE SUMMARY

This year's South West Beach Cleanup targeted sites between Albany on the south coast and Geraldton on the mid west coast. Additional cleanups were conducted further north at Kalbarri and Broome. Cleanups also went offshore to Rottnest Island. The cleanup was the culmination of a busy year of cleanups generating data from a wider geographical region, conducting plastic resin pellet surveys, providing education, presentations and participating in various events promoting marine environmental awareness.

Our formal regular monitoring programme on the capes coast has now expanded to include a south coast site and a west coast site and is being complimented with regular cleanups at additional sites around the coast. These ongoing regular monitoring activities provide important "seasonal" aspects to the data, and as can be seen below, our database is enabling both a broad picture for most of the coast and detailed information about a growing number of cleanup locations.

Mitigation activities this year included the installation of cigarette butt bins and cooperative work with state and local government authorities in Perth which has resulted in initial steps being taken to address the loss of resin pellets into the Swan River.

With support from Coastwest and Keep Australia Beautiful Council, WA, the opportunity to expand the South West Marine Debris Project further throughout Western Australia was undertaken. With the engagement of schools, community groups, industry, government agencies and individuals, presentations and workshops were held along coastal locations around the state highlighting the marine debris issue and working on practical ways that local communities can address this issue on a local level. Through these activities marine debris projects have now successfully been initiated throughout Western Australia.

This year's data is presented in the form of tables which offer a range of information about each cleanup site. The tables show whether the debris originates from local or offshore sources, how the site compares to other sites in the coastal regions, and which categories of debris represent the main problem at the site.

In 2009 we began collecting data on commercial fishing remnants and this year's activities in the mid west coastal region have shown how extensive this group of items is with data currently indicating these remnants making up 36% of all debris on that coast. Other items of interest this year were medical waste believed to have been dumped overboard by a passing ship and some remnants of items used in blasting operations and thought to have originated from the desalination plant construction site near Binningup.

Several cleanups and visits to groynes, jetties and marinas have highlighted such locations as potent point sources for marine debris. Management and housekeeping practices at these locations need to be established or refocused with the aim of preventing this input of trash into the ocean.



2. SOUTH WEST BEACH CLEANUP 2010

CLEANUP SUMMARY - SOUTH WEST BEACH CLEANUP 2010

Table 1 - South West Beach Cleanup 2010- Project Cleanup Summary

Statistic	Cape to Cape 2007	Cape to Cape 2008		South West Beach Cleanup 2009		South West Beach Cleanup 2010	
	Totals	Totals	%* Change Previous Year	Totals	% Change Previous Year	Totals	% Change Previous Year
Number of Cleanups	47	72	53%	74	3%	109	47%
Total Items Collected	19074	26362.65	38%	36702.78	39%	48015.53	31%
Number of Bags Filled	244.5	356.75	46%	372	4%	430	16%
Total Weight Kilograms	1190	1876.45	58%	2480.75	32%	3152.65	27%
Combined Length of Sites Cleaned Kilometres	100.7	157.2	56%	133.5.	-15%	204.22	53%

* The % change previous year figures have been amended for 2008-2009 to correct an error in the 2009 report



DETAILS OF ITEMS COLLECTED

List of Items Sorted by Category

Table 2 - List of Items

End User Items	Total	End User items Continued	
Cigarettes/Filters	3998	Sunglasses/glasses	9
Straws	563	Dummy	6
Tissues	519	Surf Wax	6
Cloth/Clothing	438	Cigar Tips	5
Cups/Plates/Cutlery	299	Cap Visor Plastic	4
Shoes	244	Hats/Caps	4
Confection Sticks	222	Torch	4
Cigarette Lighters	159	Elastic Band	3
Toys	147	Sponge	3
Binding/Thread/String	143	Balloon Ribbons	2
Fishing Floats	123	Clothes Hanger Plastic	2
Plastic Bags Dog Poo	65	CO2 Gas Capsule	2
Balloons	64	Jewellery	2
Hooks/Sinkers	64	Matches	2
Pens/Pencils	62	Stubby Holder	2
Cotton Bud Stems	53	Tools	2
Toothbrushes	47	Backpack	1
Band Aid	45	Bait Mate Spool	1
Fishing Lures	43	Bicycle Pedal	1
Tea Bag	36	Cooler Bag	1
Hair Ties	35	Divers Bag	1
Crockery Remnants	27	Dog Collar	1
Food Scraps	26	Dog Leash	1
Condoms/Wrappers	20	Esky	1
Fireworks	20	Esky Lid	1
Brushes/Combs	18	Flower Wreaths	1
Nappies	18	Razor	1
Recreation Equipment Whole/Part	15	Soap	1
Syringes	13	Surfboard Parts	1
Tampons/Applicators/Sanitary Napkins	11	Tent	1
Drug Paraphernalia	10	Tent Pegs	1
Fishing Rod/Hand Reel	9	63	7629



Packaging items	Total	Packaging Continued	
Paper/Newspaper/Cardboard	1849	Plastic Sheeting/Tarps	33
Plastic Wrap - Food	1527	Tins	29
Aluminium Cans	1296	Hessian Bag	17
Plastic Drink Bottles	1259	Plastic Packaging Accessories	15
Glass Beer Stubbies	966	Oil/Lube Bottles	11
Plastic Bags	816	20 Litre Drums	10
Bait Bags/Packaging	462	Tetra Pack	5
Plastic Containers	396	Poly-net Fruit & Vegie Bags	4
Glass Drink Bottles	320	15 Litre Water Container	2
Plastic Wrap - Non Food	318	55-Gal. Drums	2
Foil	211	6 Pack Rings	2
Tobacco Packaging	117	Plastic Container with food contents	2
Bleach/Cleaner Bottles	88	Plastic Jerry Cans	2
Pharmaceutical Containers	81	Synthetic Cardboard	2
Skincare Bottles/Tubes	77	10 litre Water Container	1
Glass Jars	75	20 Litre Drum Off cuts	1
Aluminium Can Remnants	74	Milk Cartons	1
Cardboard Drink Cartons	74	Poly-weave Bag	1
Aerosol Cans	43		<u>37</u> <u>10189</u>

Industry, Commercial & Recreational Fishing & Farm Items	Total	Industry, Commercial & Recreational Fishing & Farm Items	
Cylume Chemical Glow Sticks	278	Detonator Red Cord	4
Bait Containers/Lids	196	Shotgun Wadding	3
Buoys/Floats	68	Octopus Traps	3
Light Bulbs/Tubes	64	Medical Injection Needle Unused	2
Drift Net Floats	58	Emergency Drinking Water Packs	2
Pallets	52	Detonator Clip	1
Crates	30	Medical Frusemide Injection Capsules	1
Aerosol Can Extruded Blobs	28	Wire	1
Tree Guard	21	Paintbrush	1
Crab/Lobster/Fish Traps	20	Plastic Pipe Irrigation	1
Tags	19	Poseidon Attractor	1
Shotgun Shells	17	Tape Packing	1
Cable Ties	9	Explosives Casing	1
Brooms	9		<u>28</u> <u>899</u>
Tape Packing Roll	8		



Sundry Items	Total	Sundry Items Continued	
Wood	502	Fibreglass	2
Metal	200	Life Jacket	1
Boat Pieces	186	Bitumen	1
Rubber	150	Dust Mask	1
Building Materials	136	Foam Rubber	1
Plastic Large Unidentified Items	79	Gas Bottle LPG 1.5kg	1
Plastic Pipe	52	Gas Cylinder Camping	1
Electrical Cable and Equipment	30	Gutter Guard	1
Ear Plug	29	Plastic Loops	1
Cars/Car Parts	23	Plumbing Fitting	1
Carpet	14	Printer Cartridge	1
Tape Hazard and Marker	10	Sealant Tubes	1
Marine Engine Parts	7	Tape Duct	1
Clothes Pegs	5	Tyres	1
Orange Barrier Fence	4	White Goods	1
Batteries	4	Gloves Rubber	1
Tape Electrical	3		<u>34</u>
Furniture	2		<u>1453</u>

Oil and Tar	Totals
Oil Globules/Tar balls	63
	<u>1</u>
	<u>63</u>

Remnant Items	Total
Plastic Hard Pieces	10945
Glass Broken	3716
Lids/Bottle Tops/Corks	3040
Commercial Fishing Remnants	1728
Plastic Film Remnants	1558
Polystyrene Foam	1476
Rope Scraps	1160
Strapping Band Scraps	289
Plastic Handles	18
Burnt Plastic	6
Fishing Net Scraps	5
Plastic Black Garbage Bag Knot	1
	<u>12</u>
	<u>23942</u>
	<u>180</u>
	<u>48015.53</u>



TOP 20 ITEMS AND MATERIAL COMPOSITION OF ITEMS

Table 3 - Top 20 Items

Item	Total	%
Plastic Hard Pieces	10945	27%
Cigarettes/Filters	3998	10%
Glass Broken	3716	9%
Lids/Bottle Tops/Corks	3040	7%
Paper/Newspaper/Cardboard	1849	5%
Fishing Line - Metres	1760	4%
Commercial Fishing Remnants	1728	4%
Plastic Film Remnants	1558	4%
Plastic Wrap - Food	1527	4%
Polystyrene Foam	1476	4%
Rope - metres	1470.5	4%
Aluminium Cans	1296	3%
Plastic Drink Bottles	1259	3%
Rope Scraps	1160	3%
Glass Beer Stubbies	966	2%
Plastic Bags	816	2%
Straws	563	1%
Tissues	519	1%
Wood	502	1%
Bait Bags/Packaging	462	1%
	20	40610.5
		100%

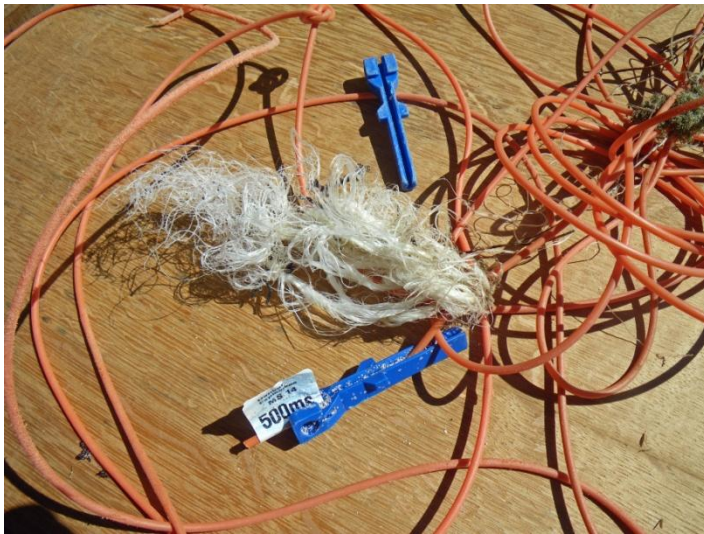
Table 4 - Material Makeup of Items

Material	Total	%
Plastic	36100	75%
Glass and Ceramic	5168	11%
Pulp	2448	5%
Metal	1927	4%
Composite	894	2%
Wood	556	1%
Fabric	493	1%
Organic	175	0%
Rubber	156	0%
Fossil Fuels	64	0%
Un Documented	28	0%
Wax	6	0%
Leather	1	0%
	48016	100%

UNUSUAL ITEMS COMING ASHORE IN 2010

ITEMS FROM BLASTING OPERATIONS

Items (pictured below) associated with blasting operations began turning up in 2009 and were first observed in cleanups at Dalyellup, south of Bunbury (Project Shorelines). During the South West Beach Cleanup additional evidence was gathered to confirm the identity of these items and to confirm they are now migrating down the coast into the Capes region. Their suspected source is from operations at the new desalination plant at Binningup. In retrospect some of these items have been turning up in past years - especially the clips - indicating that coastal infrastructure construction is generally a source for these items. Detonator Shock Tube (Red Cord) and detonator clips are scattered amongst loads of breakwater materials (rocks & boulders) transported from quarries to coastal infrastructure construction sites.



Red Cord (Detonator Shock Tube) with Clip is shown at left with an assortment of clips shown below



Explosives Casing fragments shown at left with unused detonator assembly shown below.



SURVIVAL ITEM



This Emergency Drinking Water Pack was found at Ellensbrook on the capes coast

MEDICAL WASTE

A high concentration of medical items turned up on a remote beach north west of Augusta during September 2010, followed by additional items found at surrounding sites during the South West Beach Cleanup. Amongst these items were a number of ear drop bottles which showed their origin on the label to be India, indicating disposal of the items from a passing ship. Saline Drip Packs, Injection Needles (unused), Frusemide Injection Capsules, Drip Lines, Blister Pack (unknown content), and a Pill Dispenser were also included in the find.



The range of medical items are at left with a close-up of the Frusemide Capsules below. (Frusemide is a diuretic)



PONTOON RAFT

True to recent form, a large item came ashore at Conto Spring on the Capes coast in late August. Its actual identification and purpose remains unknown but among other things it does resemble a pontoon raft.



Pontoon Raft? on the beach at Conto Spring on the Capes Coast



COMMERCIAL FISHING REMNANTS

A marine debris monitoring programme was established in late 2009 (Tarcoola Group) and carried out regular monitoring at Geraldton during 2010. Commercial Fishing Remnants were quickly found to be in very high numbers.

For the whole mid west coast during 2010, commercial fishing remnants made up 36% of all beach debris from 225 cleanups.

Pictured below is a haul of remnants from beaches between Tarcoola and Point Moore, Geraldton (David O'Meara, Tarcoola Group)



Commercial fishing remnants amongst the beach debris collected by the Kalbarri Bushrangers during the South West Beach Cleanup



GROYNES, JETTIES AND MARINAS

Groynes, jetties, and marinas are potent point sources for marine debris. Food and drink packaging, cigarette butts, fishing line, plastic bags, bait bags, paper and broken glass are common items found in abundance at these locations. At Jurien Bay in January of this year a cleanup of the marina resulted in over 10700 items being removed. Numbers and volumes of some items were very high and these were estimated.

Simple housekeeping measures could curb a great deal of this debris. As an example, in the images below from the South Mole at Fremantle, storm water runoff is directed through the points shown at left. Stormwater washes debris into these locations including cigarette butts and packaging shown at right. Installing a trap at these points and emptying it regularly would curb this input significantly.



When these images were taken a strong south westerly wind was blowing. The rubbish bins all along the mole are facing into the wind and as a result the lids are usually open with rubbish inside being sucked out in stronger breezes which occur frequently. A simple reorientation of the bin and or a different lid style would stop this input of debris.

It will be difficult to promote an anti littering message while infrastructure at these kinds of locations is either inadequate or nonexistent.

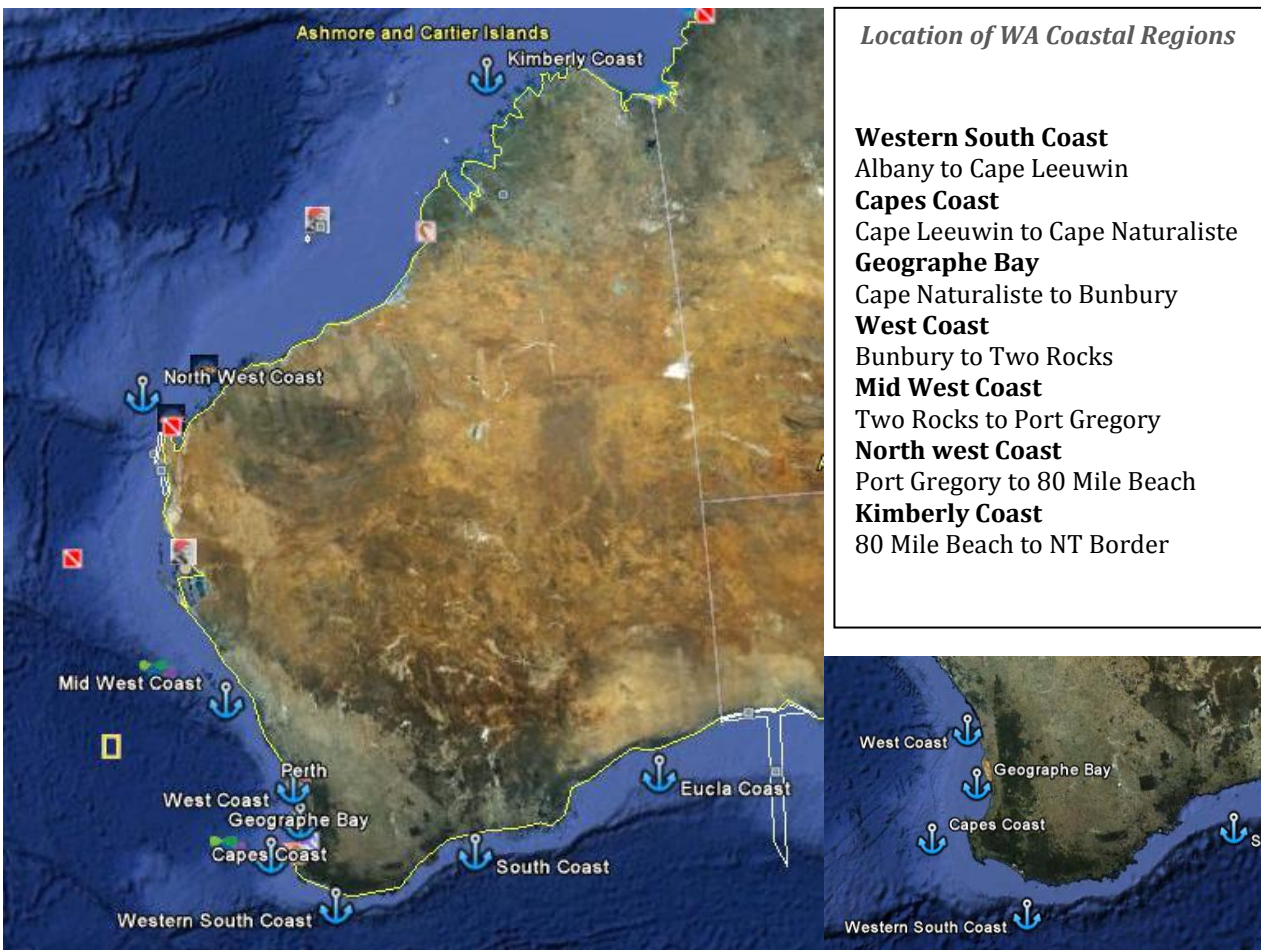
3. WA COAST - SUMMARY OF MARINE DEBRIS DATA

INTRODUCTION

One of our objectives is to summarise beach cleanup data into information which is both useful and useable for the purposes of marine debris prevention and mitigation. With a large volume of data, a wide geographical spread and the need to employ several indicators the task of presenting the information in a reasonably simple format without losing the message is the main challenge. The tables following can therefore be interpreted quickly simply by looking at the "traffic light indicators" which will indicate whether the debris at your beach has a strong litter component or a strong offshore component of debris. If you want to delve further into a site's details then look at the "Analysis Guidelines Table" on page 16 first.




























Sites are in geographical order from east to west and south to north moving down the page - to quickly locate your site go to your coastal region table and then look up your site. Some sites were cleaned more than once and hence some sites are duplicated in the data tables.

The "Long Term Averages - WA Coast" table on the next page gives a quick overview of the state of WA coasts and a context for this year's cleanup. It summarises all the data available for the WA coast in the Australian Marine Debris Initiative (AMDI) database and calculates long term averages for the marine debris indicators. The accompanying Cleanup Pattern tables show how many cleanups occurred in each coastal region by year and the monthly distribution of those cleanups by year.






LONG TERM AVERAGES - WA COAST

Table 5 - Long Term Averages - WA Coast

	Average Density Items/m of beach	Average Litter Index	Average Non Local Index	Average Percentage of Plastic Items	End User Items	Packaging Items	Ind., Comm., Fishing & Farming	Linear items	Sundry Items	Oil & Tar	Remnants	Years of Data
WA Coast	0.19	 0.30	 0.70	 0.87	11%	16%	2%	11%	2%	1%	57%	5
Western South Coast	0.10	 0.38	 0.62	 0.78	7%	16%	2%	7%	2%	0%	66%	5
Capes Coast	0.24	 0.15	 0.85	 0.90	7%	9%	3%	10%	2%	1%	68%	5
Geographe Bay	0.18	 0.68	 0.32	 0.69	19%	34%	1%	21%	2%	0%	24%	4
West Coast	0.28	 0.48	 0.52	 0.78	33%	24%	2%	6%	3%	0%	33%	3
Mid West Coast	0.67	 0.31	 0.69	 0.87	11%	18%	4%	10%	0%	0%	57%	2
North West Coast	0.06	 0.22	 0.78	 0.79	11%	27%	4%	11%	3%	0%	45%	2
Kimberly Coast	0.01	 0.24	 0.76	 0.72	25%	25%	4%	8%	1%	0%	37%	2
Islands	4.94	 0.15	 0.85	 0.76	22%	17%	1%	7%	2%	0%	50%	1

Islands - shows 1 set of cleanups from Cocos keeling Island. Islands refer to offshore islands. Inshore islands such as Rottnest are included as part of their coastal region.

 Low marine debris levels from this source	 Intermediate marine debris levels from this source	 High marine debris levels from this source
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CLEANUP PATTERN 2006 - 2010

Table 6 - Number of Cleanups in each Coastal Region for years 2006 to 2010

	2006	2007	2008	2009	2010
WA Coast	58	151	306	272	193
Western South Coast	13	5	12	18	26
Capes Coast	37	123	124	117	96
Geographe Bay	0	15	152	100	16
West Coast	0	0	8	9	22
Mid West Coast	0	0	0	7	15
North West Coast	0	0	0	3	4
Kimberly Coast	0	0	0	2	1
Islands	0	0	0	4	0

The high level of cleanup activity on the Capes coast shows the ongoing annual cleanup, monthly monitoring and other cleanup activities. The Geographe Bay activity in 2008 - 2009 is the Busselton Jetty monitoring project carried out by Underwater Observatory staff at the jetty (March 08 to March 09).

Table 7 - Number of Cleanups each Month for the Whole WA Coast - years 2006 to 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2006	7.00	7.00	7.00	0.00	0.00	7.00	8.00	7.00	8.00	7.00	0.00	0.00
2007	2.00	12.00	14.00	9.00	11.00	10.00	10.00	8.00	8.00	52.00	9.00	6.00
2008	7.00	15.00	27.00	37.00	24.00	16.00	8.00	8.00	10.00	98.00	28.00	28.00
2009	38.00	43.00	41.00	11.00	14.00	11.00	11.00	8.00	12.00	63.00	8.00	12.00
2010	9.00	11.00	13.00	9.00	8.00	11.00	10.00	11.00	13.00	97.00	1.00	0.00

In this distribution the annual cleanup causes the bias in October while the Busselton Jetty project led to the higher figures in 2008 -2009



GUIDELINES FOR DATA TABLES

Table 8 - Guidelines for Data Tables

		<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 60%;"> <p>Low marine debris levels from this source</p> <p>Intermediate marine debris levels from this source</p> <p>High marine debris levels from this source</p> </div> <div style="width: 35%; text-align: center; font-size: 1.2em; font-weight: bold; color: #800000;"> <i>Guide to Analysis Tables</i> </div> </div>												
Litter Rating	Offshore Rating	Total	Site Length	Density	Litter & Local Index	Non Local Index	End User	Packaging	Ind Comm Fishing Farming	Linear	Sundry	Oil and Tar	Remnants	
		2628	3000	0.88	0.01	0.99	87	109	77	14	30	36	2275	
Guide to Analysis Tables		<p>A red figure in this set of columns indicates a figure which is above the average for all the sites in this coastal region and cleanup.</p>												
								<p>A boxed figure (Red Box) indicates a figure which is above the average for the categories within this particular site.</p>						
		<p>In the example above the density figures and non local index are above the average of all the sites for this coastal region and cleanup. In the categories section packaging and remnants are also above average for this coastal region and cleanup. The red box highlights the remnants category as an above average figure within the site.</p>												
		Total = Total Item			Site length is in Metres			Density = Items per Metre of Beach						
		Litter Index is an estimate of the proportion of debris resulting from littering or other activities at or near the site												
Non Local Index is an estimate of the proportion of debris coming from offshore activities or from oceanic transport of debris														



SOUTH WEST BEACH CLEANUP 2010 CLEANUP DATA TABLES

DATA ANALYSIS TABLE - WESTERN SOUTH COAST

Table 9 - Western South Coast Data Analysis

Western South Coast, Western Australia				South West Beach Cleanup 2010												
Litter Rating	Offshore Rating	Site	Total	Site Length	Density	Litter & Local Index	Non Local Index	End User	Packaging	Ing Comm	Fishing	Farming	Linear	Sundry	Oil and Tar	Remnants
		Nanarup Beach West	163	600	0.27	0.17	0.83	15	21	0	8	4	0			115
		Goode Beach Albany	12	300	0.04	0.46	0.54	4	2	1	0	1	0			4
		Ocean Beach Denmark	419	2000	0.21	0.48	0.52	35	88	0	0	3	0			293
		Denmark Lights Beach and Back Beach	2628	3000	0.88	0.01	0.99	87	109	77	30	14	36			2275
		Parry Beach and Green Pool	1403	8000	0.18	0.04	0.96	53	39	16	40	12	9			1234
		Parry Beach East of Inlet	123.5	2000	0.06	0.05	0.95	7	14	1	18.5	4	0			79
		Parry Beach South of Inlet	217.8	1000	0.22	0.47	0.53	17	25	2	13.8	81	0			79
		Parrys Beach to Hilliers Beach	42	1500	0.03	0.64	0.36	9	7	1	0	0	0			25
		Hilliers Beach	167	1000	0.17	0.29	0.71	13	52	4	5	1	0			92
		Eagles Nest Beach	839.6	1000	0.84	0.02	0.98	16	72	20	32.6	19	0			680
		Mary Anne Beach	244	1000	0.24	0.03	0.97	9	17	10	15	2	8			183
		Nornalup Blue Holes Beach	771	6000	0.13	0.01	0.99	19	73	10	0	24	0			645
		Coodamurru Dentrecasteaux NP	1483.1	8000	0.19	0.09	0.91	70	339	47	289.11	26	2			710
		Malimup Beach Dentrecasteaux NP	452.01	2000	0.23	0.3	0.7	26	91	20	41.01	8	0			266
		Yeagarup Beach Warren River mouth	116.5	100	1.17	0.04	0.96	12	21	6	19.5	3	0			55
		Augusta Flinders Bay to Lookout	176.69	3000	0.06	0.57	0.43	30	78	0	19.69	10	0			39
		Augusta Lookout to Lighthouse	214	1000	0.21	0.76	0.24	34	19	1	5	3	0			152

Low marine debris levels from this source
 Intermediate marine debris levels from this source
 High marine debris levels from this source



DATA ANALYSIS TABLE - CAPES COAST

Table 10 – Capes Coast Data Analysis

Capes Coast, Western Australia			South West Beach Cleanup 2010													
Litter Rating	Offshore Rating	Site	Total	Site Length	Density	Litter & Local Index	Non Local Index	End User	Packaging	Ind Comm	Fishing	Farming	Linear	Sundry	Oil and Tar	Remnants
		Augusta Lighthouse to Quarry Bay	251.46	1000	0.2515	0.16	0.84	16	19	8	3.46	2	0			203
		Skippy Rock Beach	158	2000	0.08	0.03	0.97	20	51	6	0	3	0			78
		Hillview	171	3000	0.06	0.01	0.99	8	12	7	14	0	0			130
		Deepdene	1310	6000	0.22	0.07	0.93	79	213	60	149	10	2			797
		Cosy Corner	137	1000	0.14	0.23	0.77	27	11	26	2	1	0			70
		Foul Bay	157	1000	0.16	0.22	0.78	32	13	1	1	1	0			109
		Hamelin Bay to Bobs Track	481	2700	0.18	0.26	0.74	34	63	16	10	6	0			352
		Boranup Beach	365	5000	0.07	0.13	0.87	26	88	11	32	37	0			171
		South Beach	286	2000	0.14	0.06	0.94	27	60	9	5	5	0			180
		Conto Spring	175	500	0.35	0.31	0.69	29	28	8	32	0	0			78
		Boodjidup Beach	166	4000	0.04	0.44	0.56	21	27	6	60	2	0			50
		Boodjidup Beach 1	47	2000	0.02	0.18	0.82	14	4	1	4	1	0			23
		Prevally - Gnarabup	342	2000	0.17	0.54	0.46	63	105	3	44	32	0			95
		Surfers Point to Rivermouth	43	2000	0.02	0.26	0.74	6	6	2	0	6	0			23

Low marine debris levels from this source
 Intermediate marine debris levels from this source
 High marine debris levels from this source



Capes Coast Continued

Capes Coast, Western Australia				South West Beach Cleanup 2010										
		Margaret Rivermouth to Joey's Nose	28	5000	0.01	0.11	0.89	5	5	0	0	3	0	15
		Gnoocardup Beach	298	3000	0.10	0.04	0.96	18	14	10	25	13	0	218
		Ellensbrook to Lefties	304.3	5000	0.06	0.03	0.97	29	48	15	5.3	2	0	205
		Gracetown South Point to North Point	2299	800	2.87	0.5	0.5	204	269	32	111	95	0	1588
		Guillotine	51	600	0.09	0.11	0.89	9	1	1	0	2	0	38
		Guillotine1	53.5	600	0.09	0.03	0.97	1	4	1	24.5	12	0	11
		Gallows	828.23	2000	0.41	0.03	0.97	42	71	19	13.23	168	0	515
		Willyabrup	42	3000	0.01	0.08	0.92	1	5	3	3	0	0	30
		Moses Rock	385	1000	0.39	0.08	0.92	15	59	20	3	11	0	277
		Quinninup Beach	192	2000	0.10	0.05	0.95	21	17	67	12	6	0	69
		Injidup Point	279	1000	0.28	0.02	0.98	21	18	11	4	6	0	219
		Canal Rocks	523	1000	0.52	0.8	0.2	95	87	2	5	11	0	323
		Smiths Beach	266	1000	0.27	0.15	0.85	29	69	3	11	16	0	138
		Yallingup Beach	209.9	2000	0.10	0.4	0.6	66	66	2	1.9	2	0	72
		3 Bears	746	800	0.93	0.1	0.9	39	22	7	0	29	4	645
		Sugarloaf Rock	158.5	1000	0.16	0.13	0.87	14	19	7	23.5	1	0	94
		Windmills to Lighthouse Beach	830	2000	0.42	0.13	0.87	38	75	25	301	9	0	382

Low marine debris levels from this source
 Intermediate marine debris levels from this source
 High marine debris levels from this source



DATA ANALYSIS TABLE - GEOGRAPHE BAY

Table 11 - Geographe Bay Data Analysis

Litter Rating		Site	Total	Site Length	Density	Litter & Local Index	Non Local Index	End User	Packaging	Ina Comm	Fishing	Farming	Linear	Sundry	Oil and Tar	Remnants
Offshore	Rating															
		Bunker Bay	817	3000	0.27	0.7	0.3	91	128		1		112	19	1	465
		Eagle Bay - Pt Piquet	324	2000	0.16	0.54	0.46	51	109		3		7	29	0	125
		Point Picquet to Gannet Rock	566	1000	0.57	0.72	0.28	97	152		2		104	10	0	201
		Meelup	381	1000	0.38	0.7	0.3	82	230		0		0	2	0	67
		Castle Rock	411	200	2.06	0.67	0.33	172	94		0		35	5	0	105
		Old Dunsborough	173	2000	0.09	0.64	0.36	107	48		0		3	2	0	13
		Dunsborough - Old Dunsborough Boar	594	300	1.98	0.77	0.23	116	229		3		100	20	0	126
		Quindalup YHA	59	1000	0.06	0.82	0.18	6	33		2		16	0	0	2
		Quindalup Boat Ramp	114	1000	0.11	0.65	0.35	33	38		0		28	1	0	14
		Abbey Beach	399	3000	0.13	0.81	0.19	41	306		7		0	7	0	38
		Busselton Foreshore	1349.5	2000	0.67	0.71	0.29	276	615		6		119.5	78	0	255
		Capel Peppermint Grove Beach	806	3000	0.27	0.39	0.61	125	196		3		14	42	0	426
		Capel Five Mile Creek	219	1000	0.22	0.43	0.57	8	103		5		41	5	0	57
		Dalyellup Beach	251	2000	0.13	0.66	0.34	18	162		4		5	15	0	47
		Bunbury BP Beach and Groyne	3796.8	300	12.66	0.76	0.24	378	1440		2		480.8	25	0	1471
		Bunbury Koombana Bay	74	900	0.08	0.53	0.47	13	32		0		0	4	0	25
		Bunbury Turkey Point and The Cut	915	300	3.05	0.8	0.2	183	299		4		256	14	0	159

Low marine debris levels from this source Intermediate marine debris levels from this source High marine debris levels from this source



DATA ANALYSIS TABLE - WEST COAST

Table 12 - West Coast Data Analysis

West Coast, Western Australia			South West Beach Cleanup 2010												
Litter Rating Offshore Rating	Site	Total	Site Length	Density	Litter & Local Index	Non Local Index	End User	Packaging Ina Comm	Fishing Farming	Linear	Sundry	Oil and Tar	Remnants		
	Binningup Beach	2515	5500	0.46	0.31	0.69	94	473	72	190	210	0	1476		
	Mandurah Pyramids Beach	312	1000	0.31	0.49	0.51	50	125	4	19	24	0	90		
	Mandurah Falcon Bay South	254	3000	0.08	0.7	0.3	174	37	0	2	3	0	38		
	Mandurah Falcon Bay Foreshore	786	100	7.86	0.79	0.21	609	33	0	30	3	0	111		
	Mandurah Falcon Bay North	504.5	1000	0.50	0.69	0.31	223	157	0	10.5	6	1	107		
	Mandurah Blue Bay Halls Head	390	920	0.42	0.72	0.28	37	262	3	0	11	0	77		
	Mandurah Silver Sands Henson St	1961	1200	1.63	0.9	0.1	1554	268	2	10	5	0	122		
	Port Kennedy Bridport Point	123	3000	0.04	0.72	0.28	64	25	1	14	3	0	16		
	Kwinana Beach	481	2000	0.24	0.69	0.31	84	145	14	25	33	0	180		
	Coogee Beach	531	2000	0.27	0.57	0.43	138	209	0	56	4	0	124		
	Port Beach	202	1000	0.20	0.44	0.56	54	65	0	1	3	0	79		
	Perth Cottesloe to Swanbourne	635	3000	0.21	0.52	0.48	223	147	3	18	14	0	230		
	Perth Swanbourne to City Beach	576.53	6800	0.08	0.37	0.63	133	207	5	49.53	4	0	178		
	Marmion Marine Park	1735	900	1.93	0.49	0.51	408	424	55	30	46	0	772		
	Yanchep Lagoon	968	2000	0.48	0.57	0.43	149	110	18	130	26	0	535		
	Rottnest Island Thomson Bay	188	1000	0.19	0.75	0.25	143	113	0	7	5	0	92		
	Rottnest Island Thomson Bay	172	1000	0.17	0.56	0.44	21	76	3	4	16	0	42		
	Rottnest Island Pinkies Beach	100	1000	0.10	0.55	0.45	16	50	1	12	3	0	18		
	Rottnest Island Pinkies Beach	62	500	0.12	0.38	0.62	5	26	2	4	1	0	24		

Low marine debris levels from this source Intermediate marine debris levels from this source High marine debris levels from this source



DATA ANALYSIS TABLE - MID WEST COAST

Table 13- Mid West Coast Data Analysis

Mid West Coast, Western Australia			South West Beach Cleanup 2010													
Litter Rating	Offshore Rating	Site	Total	Site Length	Density	Litter & Local Index	Non Local Index	End User	Packaging	Ind Comm	Fishing	Farming	Linear	Sundry	Oil and Tar	Remnants
		Ledge Point Beach	1001	2000	0.50	0.18	0.82	68	150		19		184	16	0	564
		Southgates	71	2000	0.04	0.34	0.66	9	58		2		1	0	0	1
		Tarcoola Beach	10.5	1000	0.01	0.2	0.8	1	5		0		2.5	0	0	2
		Tarcoola Beach to Greys Beach	1583.5	4000	0.40	0.09	0.91	43	114		7		259.5	4	0	1156

DATA ANALYSIS TABLE - NORTH WEST AND KIMBERLY COAST

Table 14 - North West Coast Data Analysis

North West and Kimberly Coast, Western Australia			South West Beach Cleanup 2010													
Litter Rating	Offshore Rating	Site	Total	Site Length	Density	Litter & Local Index	Non Local Index	End User	Packaging	Ind Comm	Fishing	Farming	Linear	Sundry	Oil and Tar	Remnants
		Kalbarri Red Bluff to Murchison River	64	4500	0.01	0.6	0.4	5	40		1		6	0	0	12
		Kalbarri Beach	57	5000	0.01	0.11	0.89	3	5		7		1	0	0	41
		Kalbarri North of Murchison River	287	5000	0.06	0.17	0.83	34	81		22		3	22	0	125
		Kalbarri Eco Beach	50.6	300	0.17	0.01	0.99	4	6		4		9.6	0	0	27
		Broome Eco Beach	90.5	12000	0.01	0.11	0.89	2	24		10		19.5	10	0	25

Low marine debris levels from this source Intermediate marine debris levels from this source High marine debris levels from this source



4. MONTHLY MONITORING

SOUTH WEST MARINE DEBRIS PROJECT 2007 TO 2010

Long Term Averages for Capes Coast Monitoring Sites

Table 15 - Long Term Averages for Capes Coast Monitoring Sites 2007 to 2010

	Average Density Items/m of beach	Average Litter Index	Average Non Local Index	Average Percentage of Items Plastic	End User Items	Packaging Items	Ind., Comm., Fishing & Farming	Linear items	Sundry Items	Oil & Tar	Remnants	Years of Data
Quarry Bay	0.46	0.13	0.87	0.97	5%	7%	1%	7%	0%	1%	79%	4
Foul Bay	0.46	0.14	0.86	0.96	6%	5%	2%	7%	1%	1%	79%	4
Ellensbrook	0.54	0.09	0.91	0.95	2%	3%	1%	24%	1%	0%	67%	4
Injidup	0.12	0.14	0.86	0.94	5%	6%	2%	2%	2%	1%	82%	4
Yallingup	0.34	0.24	0.76	0.94	11%	10%	2%	4%	1%	0%	72%	4

Table 15 shows the debris pattern for the Capes coast. Yallingup reflects the impact of its high visitor numbers in its various indicators. Remnants - mainly plastic fragments (plastic hard pieces) is the main type of debris occurring on the beaches.



Figure (1) Long Term Average - Annual Litter and Density 2007 - 2010

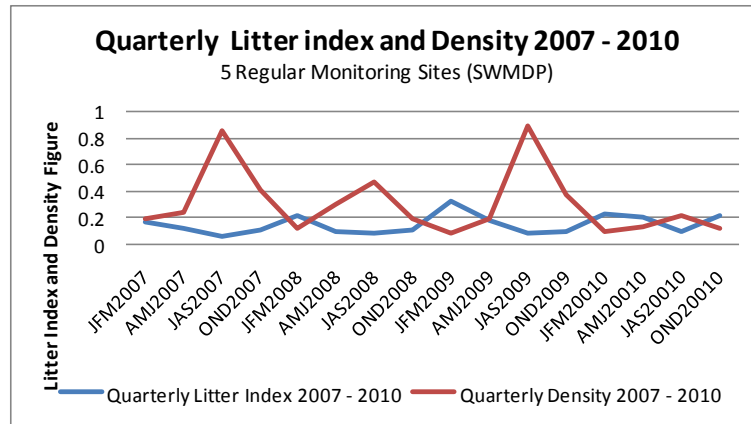
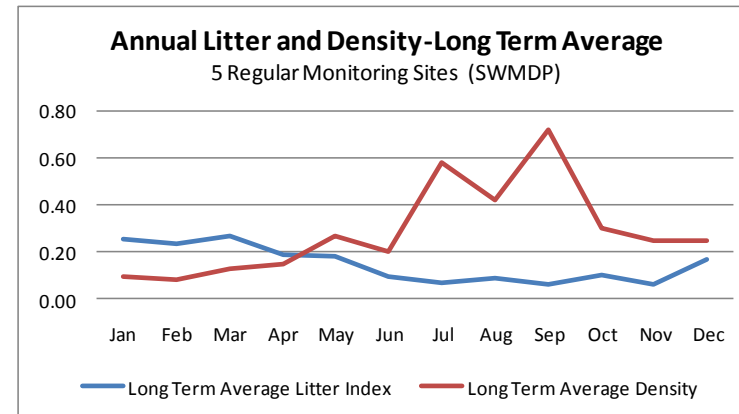


Figure (2) Quarterly Litter Index and Density 2007 - 2010



In Figure (1) above visitor impact as seen in the litter index (blue line) occurs mainly in the January to March period. The volume of debris as reflected in the density figure (red line) and also below in the total figure occurs mainly in the July to September period. The red line also shows seasonal variation. 2007 was marked by winter conditions which caused significant erosion along the Capes coast. 2009 had a prolonged frontal season, while the winter of 2010 was very mild. The annual variations correlate with the strength of the winter frontal activity but there are likely to be additional factors such as the strength and behaviour of ocean currents governing the amount of debris arriving from offshore. Figure (2) above shows the monthly pattern for the monitoring sites of beach visitor impact in mid to late summer and the offshore debris impact in winter.

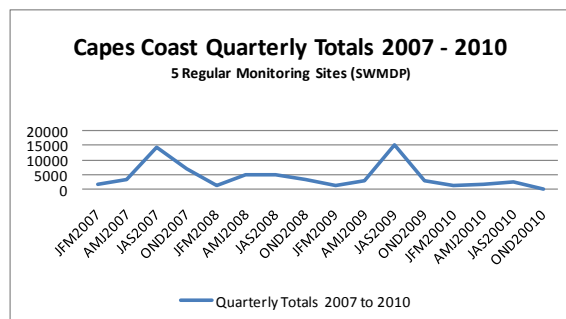


Figure 3 Capes Coast Quarterly Totals 2007 - 2010



Table 16 - Changing Positions of Selected Items within The Annual Top 10 Items - All WA Coast Data 2006 -2010

WA Coast - Movement of Top 10 Items 2006 to 2010									
2006		2007		2008		2009		2010	
Item	Total	Item	Total	Item	Total	Item	Total	Item	Total
Plastic Hard Pieces	5382	Plastic Hard Pieces	28349	Plastic Hard Pieces	17780	Plastic Hard Pieces	31813	Plastic Hard Pieces	18793
Rope - metres	658	Lids/Bottle Tops/Corks	3795	Fishing Line - Metres	3274.1	Rope - metres	7831	Commercial Fishing Remnants	15077
Lids/Bottle Tops/Corks	632	Rope - metres	2481.5	Rope - metres	3016.3	Lids/Bottle Tops/Corks	5373	Cigarettes/Filters	6148
Polystyrene Foam	482	Plastic Film Remnants	2048	Plastic Film Remnants	2968	Cigarettes/Filters	4360	Lids/Bottle Tops/Corks	5900
Plastic Film Remnants	314	Polystyrene Foam	1917	Lids/Bottle Tops/Corks	2868	Fishing Line - Metres	3903	Rope - metres	4513.5
Plastic Wrap - Food	206	Glass Broken	1410	Glass Broken	2587	Polystyrene Foam	2702	Glass Broken	4281
Plastic Drink Bottles	194	Strapping Bands - Metres	1028.6	Cigarettes/Filters	2179	Rope Scraps	2450	Plastic Bags	3622
Fishing Line - Metres	186	Oil Globules/Tar balls	1020	Plastic Wrap - Food	1624	Glass Broken	2187	Fishing Line - Metres	2820.3
Oil Globules/Tar balls	173	Cigarettes/Filters	978	Polystyrene Foam	1468	Plastic Drink Bottles	1958	Paper/Newspaper/Cardboard	2268
Strapping Bands - Metres	172	Plastic Wrap - Food	881	Plastic Drink Bottles	1236	Commercial Fishing Remnants	1950	Polystyrene Foam	2206
10	8399	10	43908	10	39000	10	64527	10	65629

In Table 16 Plastic Hard Pieces remain in the top spot while Cigarettes/Filters moves up the ladder rapidly as data from more populated cleanup sites comes on stream. Rope fluctuates with the strength of the frontal regime in winter as does Oil Globules/Tar balls and Lids/Bottle Tops/Corks. Fishing Line peaked in 2008 with the establishment of the daily monitoring project and October underwater cleanup at Busselton Jetty but has fallen back while the jetty is closed. Commercial Fishing Remnants was placed into the data collection sheets in 2009 to group several similar items. With the mid west cleanups now on stream this item has shot up to second placing as a top 10 item.

5. PLASTIC RESIN PELLETS

During 2010 two plastic resin pellet surveys were conducted. The first survey covered the Swan River from the adjacent beaches at the river mouth to Bayswater. The Swan River survey identified that plastic resin pellets were being released into the river from drains in the Belmont and Bayswater areas. The survey also suggests that there is a growing accumulation of pellets in the drainage and upper river system which will be flushed out in extreme rainfall events. While these pellets remain in the drains and upper parts of the estuarine system they will be accumulating toxins from their surrounding environment. Following the release of the "Plastic Resin Pellets in the Swan River" report the Swan River Trust requested a presentation about the issue from Tangaroa Blue Ocean Care Society which then took place with representatives from the Swan River Trust, Department of Environment and Conservation, Perth NRM and the Cities of Belmont and Bayswater attending. Following this meeting the respective parties have taken initial steps aimed at gathering more information and looking at mitigation strategies. Tangaroa Blue Ocean Care Society will develop a newsletter aimed at providing information about the issue and sharing information between relevant organisations and groups about the logistics of tackling the issue.

The second survey was conducted along the Western South Coastal region. Pellets were found in many locations with the survey highlighting the fact that pellets are migrating into the inlet systems along the south coast. One site - Green Pool near Denmark was shown to have in excess of 1 million pellets on its small beach.



Pictured above at left - Bayswater Main Drain where pellets were found upstream from the river entry and above at right the beach at Green Pool near Denmark where an estimate was made of over 1 million pellets on the beach.



6. VOLUNTEERS AND SUPPORTERS

We would like to make a special thanks to the following people for their ongoing support to Tangaroa Blue's South West Marine Debris Project. With their dedication, hundreds of thousands of pieces of debris have been removed from South West beaches, helping to protect our precious marine life.

You are making a difference!!

Renee Mouritz Liz McGuire Alison Dorn Anita Kelly Dawn Green Lizzy Pepper

To the following groups, thank you for participating in the South West Beach Clean Up and helping us protect our oceans, we look forward to your support again in 2011!

ACTIV Albany
Albany Museum
Allseas
Augusta Regional Environment Centre
Busselton Underwater Observatory & Jetty Staff
Cape to Cape Catchments Group & Volunteers
Coastcare Mandurah
Coastswap
Conservation Volunteers Broome
Conservation Volunteers Perth
Coorow Coastal Youth Group
Denmark Environment Centre
Dunsborough CALC
Dunsborough District Progress Association
Falcon Coastcare Group
Friends of Marmion Marine Park
Gracetown Environment Centre
Gracetown Progress Association
Kalbarri Bush Rangers
Kalbarri Surfrider Foundation Branch
Karridale Primary School
Keep Busselton Beautiful Group
Ledge Point Coastcare Group
Margaret River Senior High School
Margaret River Surfrider Foundation Branch
OceanWatch Australia
Prevelly Penguins
Port Bouvard Board Riders
Project Shorelines Bunbury
Probus Club of Dunsborough
The Underwater Explorer's Club - Perth
WA Seabird Rescue – Mandurah
Walpole Nornalup National Parks Association
West Australian Fishing Industry Council
Wilderness Society
Yeagarup Coastcare Group

To all the individual volunteers, we appreciate your time and efforts in helping us clean up our coastline during the South West Beach Clean Up we hope to have you back again in 2011!!



And thank you for the support from the following organisations and agencies that supported this project through funding, insurance, materials, time, effort and lots of encouragement.
We look forward to working with you again in 2011!

City of Bunbury
City of Fremantle
City of Mandurah
Coastwest
Department of Environment & Conservation – Walpole, Busselton, Pemberton
Department of Fisheries
Keep Australia Beautiful Council, WA
Kwinana City Council
Project Aware
Shire of Augusta Margaret River
Shire of Busselton
Shire of Capel
Shire of Harvey
South West Land and Sea Council
South West Catchments Council
The Dive Shed
Town of Cottesloe

A DATE FOR YOUR DIARIES!!!
WA BEACH CLEAN UP–HELP US CLEAN UP ALONG WA’S COASTLINE
15th & 16th OCTOBER 2011

ATTACHMENTS

ATTACHMENT 1 – CLEANUP SITE LOCATION DETAILS

<i>Cleanup Site</i>	<i>Centre</i>	<i>NRM</i>	<i>Latitude</i>	<i>Longitude</i>
Western South Coast				
Nanarup Beach West	Albany	South Coast NRM	34°59'56.27"S	118° 3'41.51"E
Goode Beach Albany	Albany	South Coast NRM	35° 4'50.92"S	117°56'10.21"E
Ocean Beach Denmark	Denmark	South Coast NRM	35° 1'40.99"S	117°19'50.62"E
Denmark Lights Beach and Back Beach	Denmark	South Coast NRM	35° 1'45.00"S	117°17'39.17"E
Parry Beach and Green Pool	Denmark	South Coast NRM	35° 1'3.37"S	117°12'41.25"E
Parry Beach East of Inlet	Denmark	South Coast NRM	35° 1'17.83"S	117°10'34.28"E
Parry Beach South of Inlet	Denmark	South Coast NRM	35° 2'3.50"S	117° 9'35.68"E
Parry's Beach to Hillier's Beach	Denmark	South Coast NRM	35° 2'34.81"S	117° 9'44.87"E
Hillier's Beach	Denmark	South Coast NRM	35° 2'52.98"S	117° 9'11.98"E
Eagles Nest Beach	Denmark	South Coast NRM	35° 3'2.83"S	117° 8'2.73"E
Mary Anne Beach	Denmark	South Coast NRM	35° 1'51.53"S	117° 4'45.37"E
Nornalup Blue Holes Beach	Walpole	South Coast NRM	35° 0'58.58"S	116°46'52.07"E
Coodamurup Dentrecasteaux NP	Dentrecasteaux NP	South West Catchments Council	34°52'8.75"S	116°13'42.30"E
Malimup Beach Dentrecasteaux NP	Dentrecasteaux NP	South West Catchments Council	34°46'24.30"S	115°58'24.06"E
Yeagarup Beach Warren River mouth	Dentrecasteaux NP	South West Catchments Council	34°39'11.66"S	115°52'50.50"E
Augusta Flinders Bay to Lookout	Augusta	South West Catchment Council	34°21'25.52"S	115°10'1.06"E
Augusta Lookout to Lighthouse	Augusta	South West Catchment Council	34°22'3.98"S	115° 8'53.74"E
Capes Coast				
Augusta Lighthouse to Quarry Bay	Augusta	South West Catchment Council	34°22'7.73"S	115° 8'5.50"E
Skippy Rock Beach	Augusta	South West Catchment Council	115° 8'5.50"E	115° 7'29.27"E
Hillview	Augusta	South West Catchment Council	34°19'11.61"S	115° 5'28.12"E
Deepdene	Augusta	South West Catchment Council	34°17'2.14"S	115° 3'30.40"E
Cosy Corner	Augusta	South West Catchment Council	34°15'28.08"S	115° 1'50.81"E
Foul Bay	Hamelin Bay	South West Catchment Council	34°14'57.01"S	115° 1'47.12"E
Hamelin Bay to Bobs Track	Hamelin Bay	South West Catchment Council	34°12'40.01"S	115° 2'15.85"E



Boranup Beach	Hamelin Bay	South West Catchment Council	34°11'2.79"S	115° 2'6.55"E
South Beach	Margaret River	South West Catchment Council	34° 6'31.76"S	114°59'58.10"E
Conto Spring	Margaret River	South West Catchment Council	34° 4'37.27"S	115° 0'7.50"E
Boodjidup Beach	Margaret River	South West Catchment Council	34° 0'50.09"S	115° 0'3.58"E
Boodjidup Beach 1	Margaret River	South West Catchment Council	34° 0'50.09"S	115° 0'3.58"E
Prevally - Gnarabup	Margaret River	South West Catchment Council	33°59'17.05"S	114°59'27.76"E
Surfers Point to River mouth	Margaret River	South West Catchment Council	33°58'25.20"S	114°59'11.01"E
Margaret River mouth to Joey's Nose	Margaret River	South West Catchment Council	33°57'33.01"S	114°59'8.64"E
Gnoocardup Beach	Margaret River	South West Catchment Council	33°55'46.96"S	114°59'29.58"E
Ellensbrook to Lefties	Ellensbrook	South West Catchment Council	33°53'21.72"S	114°59'4.52"E
Gracetown South Point to North Point	Gracetown	South West Catchment Council	33°51'45.74"S	114°59'17.42"E
Guillotine	Gracetown	South West Catchment Council	33°49'38.49"S	114°59'43.55"E
Guillotine1	Gracetown	South West Catchment Council	33°49'38.49"S	114°59'43.55"E
Gallows	Gracetown	South West Catchment Council	33°49'11.78"S	114°59'52.72"E
Willyabrup	Willyabrup	South West Catchment Council	33°47'28.28"S	114°59'59.34"E
Moses Rock	Quinninup	South West Catchment Council	33°45'36.61"S	114°59'23.14"E
Quinninup Beach	Quinninup	South West Catchment Council	33°44'43.24"S	114°59'25.11"E
Injidup Point	Injidup	South West Catchment Council	33°41'55.60"S	114°58'32.14"E
Canal Rocks	Yallingup	South West Catchment Council	33°40'13.33"S	114°59'49.21"E
Smiths Beach	Yallingup	South West Catchment Council	33°39'29.95"S	33°39'29.95"S
Yallingup Beach	Yallingup	South West Catchment Council	33°38'11.86"S	115° 1'39.18"E
3 Bears	Dunsborough	South West Catchment Council	33°34'55.26"S	115° 0'49.89"E
Sugarloaf Rock	Dunsborough	South West Catchment Council	33°33'37.99"S	115° 0'21.91"E
Windmills to Lighthouse Beach	Dunsborough	South West Catchment Council	33°32'9.19"S	115° 0'25.03"E
Geographe Bay				
Bunker Bay	Dunsborough	South West Catchment Council	33°32'41.11"S	115° 2'18.05"E
Eagle Bay - Pt Piquet	Dunsborough	South West Catchment Council	33°33'42.88"S	115° 4'28.68"E
Point Picquet to Gannet Rock	Dunsborough	South West Catchment Council	33°34'5.02"S	115° 5'7.17"E
Meelup	Dunsborough	South West Catchment Council	33°34'25.30"S	115° 5'15.19"E
Castle Rock	Dunsborough	South West Catchment Council	33°34'43.62"S	115° 5'43.08"E



Old Dunsborough	Dunsborough	South West Catchment Council	33°35'54.03"S	115° 6'14.43"E
Dunsborough - Old Dunsborough Boat Ramp	Dunsborough	South West Catchment Council	33°35'54.03"S	115° 6'14.43"E
Quindalup YHA	Dunsborough	South West Catchment Council	33°37'31.82"S	115° 7'44.73"E
Quindalup Boat Ramp	Dunsborough	South West Catchment Council	33°37'52.71"S	115° 8'53.54"E
Abbey Beach	Busselton	South West Catchment Council	33°39'24.84"S	115°15'12.58"E
Busselton Foreshore	Busselton	South West Catchment Council	33°38'40.32"S	115°20'37.28"E
Capel Peppermint Grove Beach	Capel	South West Catchment Council	33°31'20.71"S	115°30'31.02"E
Capel Five Mile Creek	Capel	South West Catchment Council	33°30'36.39"S	115°31'14.32"E
Dalyellup Beach	Capel	South West Catchment Council	33°24'13.78"S	115°36'6.20"E
Bunbury BP Beach and Groyne	Bunbury	South West Catchment Council	33°18'43.46"S	115°38'7.66"E
Bunbury Koombana Bay	Bunbury	South West Catchment Council	33°19'12.27"S	115°38'48.65"E
Bunbury Turkey Point and The Cut	Bunbury	South West Catchment Council	33°19'10.03"S	115°39'16.33"E
West Coast				
Binningup Beach	Binningup	South West Catchment Council	33° 8'58.24"S	115°41'7.88"E
Mandurah Pyramids Beach	Mandurah	South West Catchment Council	32°35'50.72"S	115°37'57.04"E
Mandurah Falcon Bay South	Mandurah	South West Catchment Council	32°35'0.11"S	115°38'49.09"E
Mandurah Falcon Bay Foreshore	Mandurah	South West Catchment Council	32°34'47.56"S	115°39'11.10"E
Mandurah Falcon Bay North	Mandurah	South West Catchment Council	32°34'32.86"S	115°39'30.02"E
Mandurah Blue Bay Halls Head	Mandurah	South West Catchment Council	32°31'15.52"S	115°42'23.24"E
Mandurah Silver Sands Henson St	Mandurah	South West Catchment Council	32°31'10.72"S	115°43'26.96"E
Port Kennedy Bridport Point	Port Kennedy	Perth NRM	32°22'9.82"S	115°43'6.28"E
Kwinana Beach	Kwinana	Perth NRM	32°14'47.88"S	115°45'27.13"E
Coogee Beach	Fremantle	Perth NRM	32° 6'46.91"S	115°45'46.28"E
Port Beach	North Fremantle	Perth NRM	32° 2'19.08"S	115°44'34.59"E
Leighton Beach	North Fremantle	Perth NRM	32° 1'15.40"S	115°45'3.90"E
Perth Cottesloe to Swanbourne	Cottesloe	Perth NRM	31°59'8.25"S	115°45'8.71"E
Perth Swanbourne to City Beach	City Beach	Perth NRM	31°57'26.01"S	115°45'15.85"E
Marmion Marine Park	Perth Northern Suburbs	Perth NRM	31°52'19.66"S	115°45'4.36"E
Yanchep Lagoon	Yanchep	Perth NRM	31°32'53.87"S	115°37'22.71"E
Rottne Island Thomson Bay	Rottne Island	Perth NRM	31°59'54.20"S	115°32'36.22"E



Rottneest Island Thomson Bay	Rottneest Island	Perth NRM	31°59'54.20"S	115°32'36.22"E
Rottneest Island Pinkies Beach	Rottneest Island	Perth NRM	31°59'20.96"S	115°32'22.02"E
Rottneest Island Pinkies Beach	Rottneest Island	Perth NRM	31°59'20.96"S	115°32'22.02"E
Mid West Coast				
Ledge Point Beach	Ledge Point	Northern Agricultural Catchments Council	31° 6'39.35"S	115°22'13.68"E
Wedge Island	Wedge Island	Northern Agricultural Catchments Council	30°49'7.74"S	115°11'24.86"E
Southgate's	Geraldton	Northern Agricultural Catchments Council	28°48'27.30"S	114°37'13.40"E
Tarcoola Beach	Geraldton	Northern Agricultural Catchments Council	28°47'55.48"S	114°36'54.10"E
Tarcoola Beach to Greys Beach	Geraldton	Northern Agricultural Catchments Council	28°47'2.99"S	114°35'24.87"E
North West Coast				
Kalbarri Red Bluff to Murchison River mouth	Kalbarri	Northern Agricultural Catchments Council	27°43'30.26"S	114° 9'8.52"E
Kalbarri Beach	Kalbarri	Northern Agricultural Catchments Council	27°42'43.64"S	114° 9'23.20"E
Kalbarri North of Murchison River	Kalbarri	Northern Agricultural Catchments Council	27°40'5.70"S	114° 9'13.03"E
Kalbarri Eco Beach	Kalbarri	Northern Agricultural Catchments Council	27°39'42.98"S	114° 9'11.47"E
Kimberly Coast				
Broome Eco Beach	Broome	Rangelands NRM	18°18'36.54"S	122° 7'7.30"E

Note - data was unavailable for a small number of sites at the time of writing this report.