

Clean4Shore Program 2016 Report

Hawkesbury River, Brisbane Waters, Tuggerah Lakes

Report by: Graham Johnston – Clean4Shore
Statistics: Tangaroa Blue Foundation



Funded through the: Australian Government's National Landcare Program, Environmental Protection Authority, Australian Government's "Green Army" Program, with support from the following organisations.



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**All photo's used throughout document, have been previously posted on our social media pages and are used by permission by the individuals, schools and groups.*

ACKNOWLEDGEMENTS

During 2016 the Clean4shore program appreciated the financial assistance received to continue the marine debris clean-up. Completing sixty-five field trips involves a great deal of expenditure including coordinator fees, contractor fees for barge hire, fuel, disposal trucks, disposal fees, PPE for volunteers and administration. Without this support Clean4shore cannot operate. Activity reports are completed and distributed to all stakeholders, and interested parties, with data statistics on the litter type, location and weight forwarded to Tangaroa Blue, for collation and possible action plans to be implemented by major stakeholders. Each field trip is posted on social media Facebook, with outstanding results.

The efforts of the volunteer organisations have been remarkable in 2016 participating in 'all sorts' of conditions. The mood has been positive, and 'fun' throughout each activity. Clean4shore wish to recognise these organisations for their efforts.

FINANCIAL SUPPORT

Australian Environment National Landcare Program
Greater Sydney Local Land Services
Hornsby Shire Council
Central Coast Council
Australian Government Department of Social Services
ET Australia & Manpower (Green Army)
Brisbane Waters National Park
Environmental Protection Authority (Tuggerah Grant)
Wyong Council
Macmasters Beach Progress Association
Landcare Australia Limited
Dimension Data
Take 3
Women Making A Difference Network
NSW Environmental Protection Authority
NSW Office & Environment and Heritage
WEX Australia
Toyota Australia
Macmasters Beach Surf Life Saving Club
National Parks Wildlife Service

LOGISTICAL SUPPORT

Wild Harvest Oysters (Simon Funnel barge hire)
Rob Moham's Oysters (barge/crane & truck hire)
Seacoast Seafood's (Peter Offner in-kind barge hire)
Whitton's Oysters (barge hire)
Tangaroa Blue Foundation
NSW Department of Primary Industries - Fisheries
NSW Maritime Services
Brisbane Waters National Parks
Women Making A Difference Network
Wendy Graham - Grant Services
Geoff Steer Towing
Greater Sydney Local Land Services
Hornsby, Central Coast Council Estuary Services

CLEAN-UP PARTICIPATION

Brisbane Waters Secondary College "Bushcraft"
Brisbane Waters Secondary College "Support"
The Glen
North Gosford Learning Centre
Kincumber High School
ET Australia & Manpower (Green Army)
North Lakes High School
Take 3
Buningyong School Dubbo
Dimension Data
ING Direct
Macmasters Beach Surf Life saving Club
Rolland Hassall School Parramatta
Asquith Girls High School
Cheltenham Girls High School (presentation)
Asquith Boys High School
Cherrybrook Technology High School (presentation)
Brisbane Waters Secondary College "The Croft"
Brisbane Waters College "work experience"
The Glen "transition to work training"
Department of Juvenile Justice
Youth Connections
Community Members (clean -up Australia Day)
Kariong Probus Club (presentation)
NSW Litter Convention (presentation)

EXECUTIVE SUMMARY

Clean4Shore provides an organised community based effort to tackle litter and waste on an estuary wide basis. These efforts are an essential part of arresting the decline in health of these systems while at the same time providing community engagement and education.

Commencing in 2010, as a Duke of Edinburgh's Award activity for junior members of Macmasters Beach Surf Club, the Clean4Shore program has expanded greatly, to include school, youth, community organisations, disability services, corporate organisations and the general public. Initial work, along the foreshore of the Hawkesbury River, expanded into Brisbane Waters in 2012. In 2016, Clean4Shore expanded to Tuggerah Lakes foreshores that were cleaned through an EPA grant lodged by Wyong Council.

The programs founder, Graham (Jono) Johnston continues to coordinate the program, receiving valuable support from "barge" operators, Rob Moxham (Hawkesbury) and Simon Funnel (Brisbane Waters & Tuggerah). Stakeholder compliance is essential, with key input from Greater Sydney Local Land Service, Hornsby, Gosford and Wyong Councils (during 2015, Gosford and Wyong merged to become Central Coast Council), National Parks, NSW Fisheries and Maritime (RMS) staff.

In 2016 the program expanded the areas targeted on the Hawkesbury, moving further upstream to Marlow's, whilst reducing the workload in Berowra Waters and Bobbin Head, due to ongoing monitoring by local boat owners. Cowan Creek and Little Wobby foreshores required monitoring with only small items being removed, a good sign. The "horded" rubbish located in Cogra Bay was cleaned through this grant. Emphasis was diverted towards engaging schools in the Hornsby Shire area to participate in this program. A number of schools came to the party. Jono gave a number of presentations about the program and took some of the schools in clean-ups trips. Schools in the shire are invited to participate in this program in upcoming years.

The "hot spots" in Brisbane Waters, especially Fagan's Bay and Narara Creek, were again targeted, and an amazing ten thousand plastic bottles and polystyrene pieces were removed in one field trip alone. Litter removal in the balance of Brisbane Waters was completed, with Kincumber High School becoming involved for the first time.

Tuggerah lakes presented several challenges, most notably the shallow waters that surround this waterway, and the small variance in tides. The engagement of local schools also presented difficulties, being a new and vastly different program for the school's administration to "digest". However, Hopetown Special School and North Lakes High School "thrived" on the program, addressing litter issues in their local waterways. Central Coast Council were highly supportive of the program, through their EPA grant, especially with disposal.

Funding for 2016 was received from the Australian Government's National Landcare Program, Hornsby, Central Coast Council's EPA Grant, "Green Army" Program and corporate funding for Dimension Data and Corporate Landcare. Toyota Finance supplied Clean4shore a WEX credit card, easing the burden on fuel expenses. Corporate Landcare had regulars ING Direct complete a day's work on the Hawkesbury. The Department of Social Service provide a small grant for personal protection and administration equipment.

When the going gets tough those guys from "The Glen", Dimension Data and the Green Army, were willing and able to tackle any task "thrown at them" by Clean4shore. This year's budget allowed a valuable donation, made to "The Glen" and the Green Army teams for their services. Macmasters Beach Surf Club together with young people from North Gosford Learning Centre, Youth

Connections and Brisbane Waters Secondary College continue the efforts to reduce the litter in the waterways.

Through the program volunteers collected a large number of tyres, especially among the mangroves. This year we managed to find Tyrecycle who kindly assisted us with the disposal of the tyres in a sustainable way. Tyrecycle is a NSW company that recycles tyres turning them into kids playgrounds and/or road base. For this the tyres need to be cleaned from mud, sand and marine organisms like barnacles and oysters.

This year's report highlights each individual field trip, volunteer number, and hours, together with the weight of litter collect and disposal options in the areas of the Hawksbury, Brisbane Water and Tuggerah Lakes. Tangaroa Blue has again compiled statistical data, and comparison graph's, highlighting the progress, or not, that the program has achieved.

Areas to target, are also highlighted in this year's report, with more 'cool shots' and "group photo's". The publicity department worked overtime with "hands on" attendance from Federal Member for Robertson, Lucy Wicks and State Member for Terrigal, Adam Crouch, getting 'down and dirty' on the program. Consistent newspaper editorials were well documented and received, with regular "live' radio broadcasts through Scott Levi and Malcolm Poole.

The expansion, and more importantly, accountability of the program, brought Sallie-Ann Macklin and Simone Wylie on board, from "Women Making A Difference Network". We couldn't do the work we do without our grant specialist Wendy Graham, offering guidance and clarity on current and future grants.

Overall, a very busy year, with outstanding results.

Graham Johnston
Project Manager
Clean4Shore

Statistics

Tangaroa Blue Foundation (TBF) has through its Australian Marine Debris Initiative (AMDI) been a partner with Clean4Shore since 2013. TBF collates data collected by the Clean4Shore project and assists the project with statistics for its annual reports. We would like to once again emphasize the importance of the Clean4Shore project. This importance has two aspects.

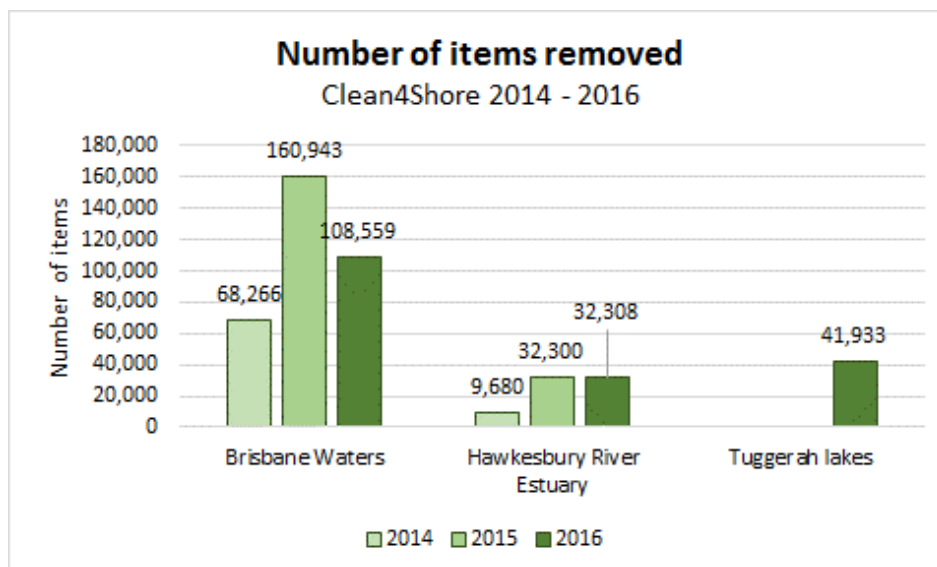
Firstly, Clean4Shore provides an organised community based effort to tackle litter and waste on an estuary wide basis. These efforts are an essential part of arresting the decline in health of these systems while at the same time providing community engagement and education.

Secondly, the data and recorded experiences of the project provide a rich and important source of information for other places facing similar pollution in their estuaries, lakes and rivers and for the ongoing management of marine debris.

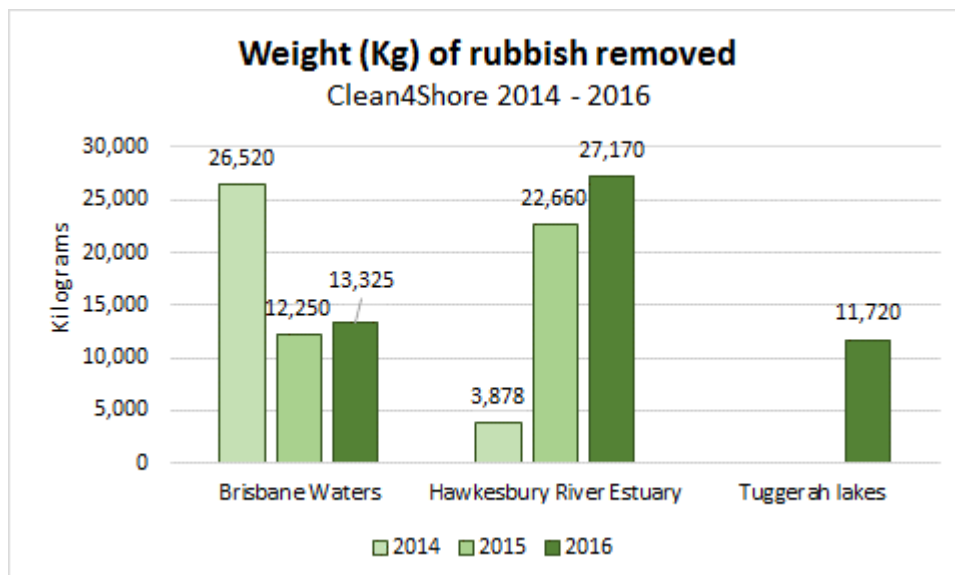
In this year's report an overall project summary will be provided followed by statistics for each area of the estuary; Hawkesbury, Brisbane Waters and Tuggerah Lakes.

Project Summary

	Field trips	Items	Weight	Volunteers	Hours
Brisbane Waters	20	108,559	13,325	218	825
Hawkesbury River Estuary	17	32,308	27,170	223	883
Tuggerah lake	30	41,933	11,720	113	452
Totals	67	182,800	52,215	554	2,160



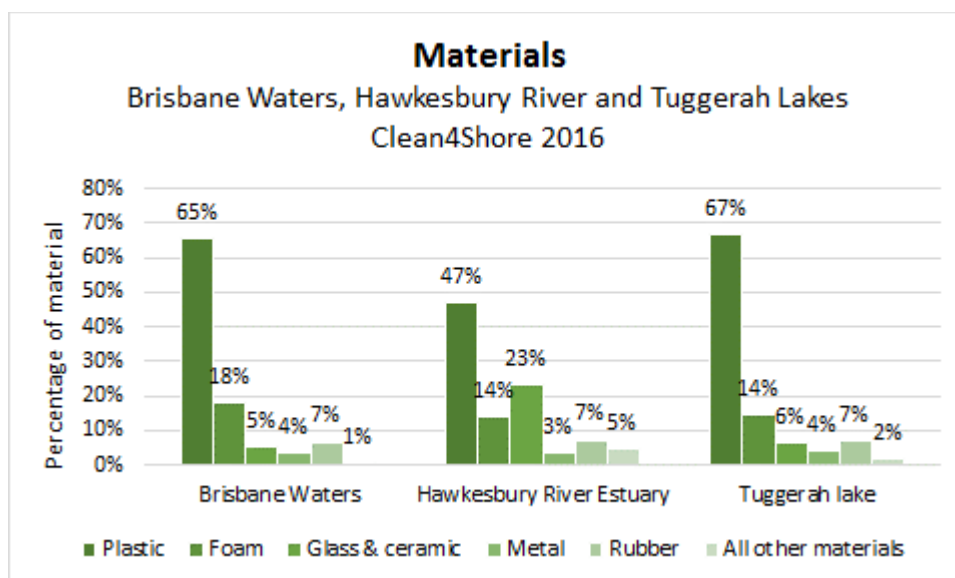
Brisbane Waters (BW) clearly shows very high levels of pollution in terms of numbers of items. The 2015 figure was due partly to rubbish mobilised in the floods of that year but mainly to the concentration of effort in the Fagan's Bay and Narara Creek area.



Weight of debris removed is partly governed by when the project strategically directs resources to the removal of abandoned oyster product, water-craft and pontoons.

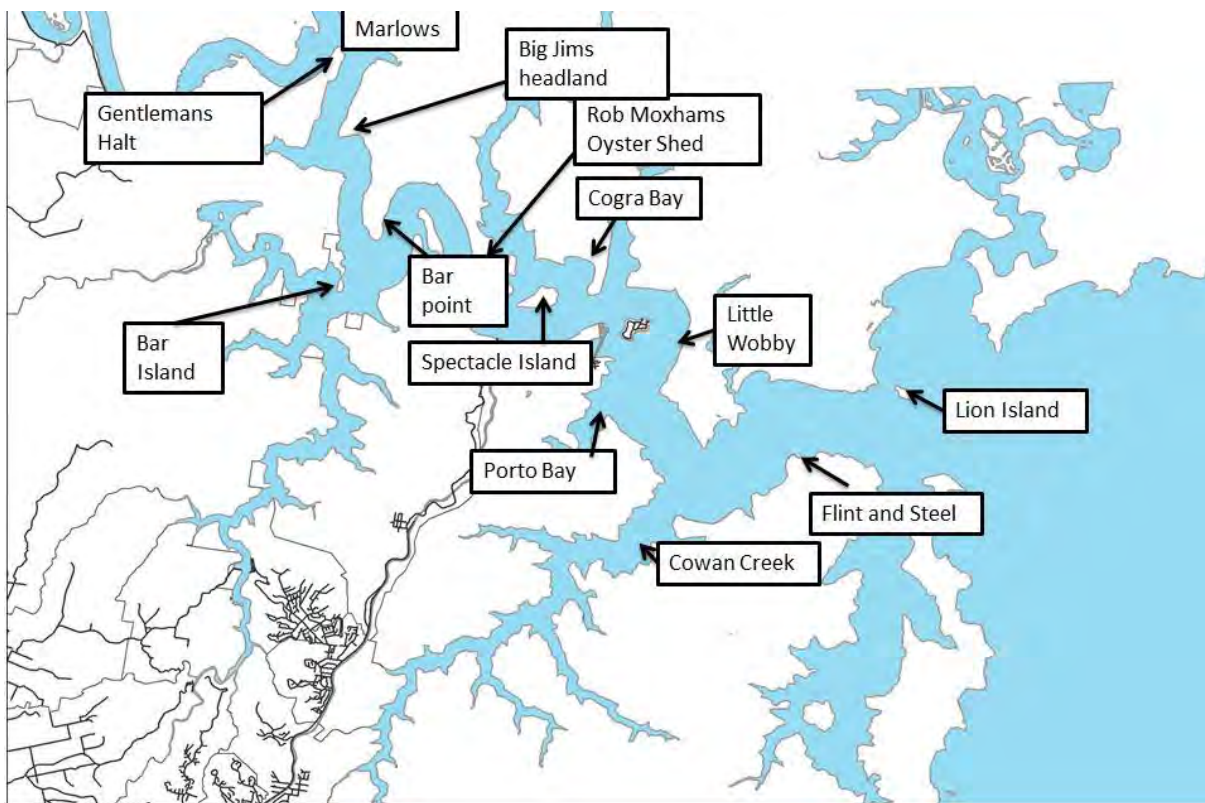
In Brisbane Waters this activity was high in 2014 and therefore a higher weight figure, with priorities shifting to the litter in Fagan's Bay and Narara Creek area in 2015 and 2016 showing a deduction in weight of debris removed.

In the Hawkesbury, aquaculture gear and tyres were the big contributors to the large weight. Illegal dumping of items such as tyres, furniture, shopping trolleys and small craft contributed to the Tuggerah Lakes total.



Plastic and foam items are very mobile and will move around the estuaries and lakes easily unless trapped. They leak toxins, polluting the waterways. Glass, rubber, metal and wood items clog up habitats and also because of the weight involved have a high impact on resources for removal and disposal.

HAWKSURY SUMMARY



Seventeen field trips were organised targeting the different areas of the Hawkesbury, as shown in the map above. Delays in co-ordinating school bookings limited outings during Term 1. The visit by the young indigenous group from Dubbo, was probably the highlight of the year. The students were very keen, being their first time to the Coast, and supervisors stating that this outing on the river, was indeed something special. The group visited the NSW Governor the following day, boasting of their time cleaning up the “city mess”.

Statistics for the year from the Hawkesbury indicated that the major source of our litter came from “upstream”. A March survey of the foreshores from “Big Jims” headland to “Marlow’s Caravan Park” found large amount of rubbish and small litter consistent to the 2014 flood litter that Clean4Shore found further downstream at the time. Truck tyres and boating parts were also present among the mangroves in this area. The heavy duty clean-up took place during April, involving corporate group Dimension Data who contributed financially and “The Glen”, with over four tonne collected. The Bar Point area still has derelict vessels and concrete covered polystyrene pontoons beached among the mangroves. More of these pontoons have also been found downstream.

The dominance of the “East Coast Lows” during May, June and July restricted and limited the program, several school outings were cancelled, with “protected’ foreshores of Porto Bay, Peat Island and Milsons Passage cleaned instead. Corporate Landcare engaged ING Direct, to remove an old oyster stack in the Porto Bay area.

Cowan Creek, Little Wobby and the Brooklyn beaches, were found very clean with only small items removed. Sandbrook Channel still collects local and storm road litter. Further information about this area has been included in the heading under, “site of concern’.

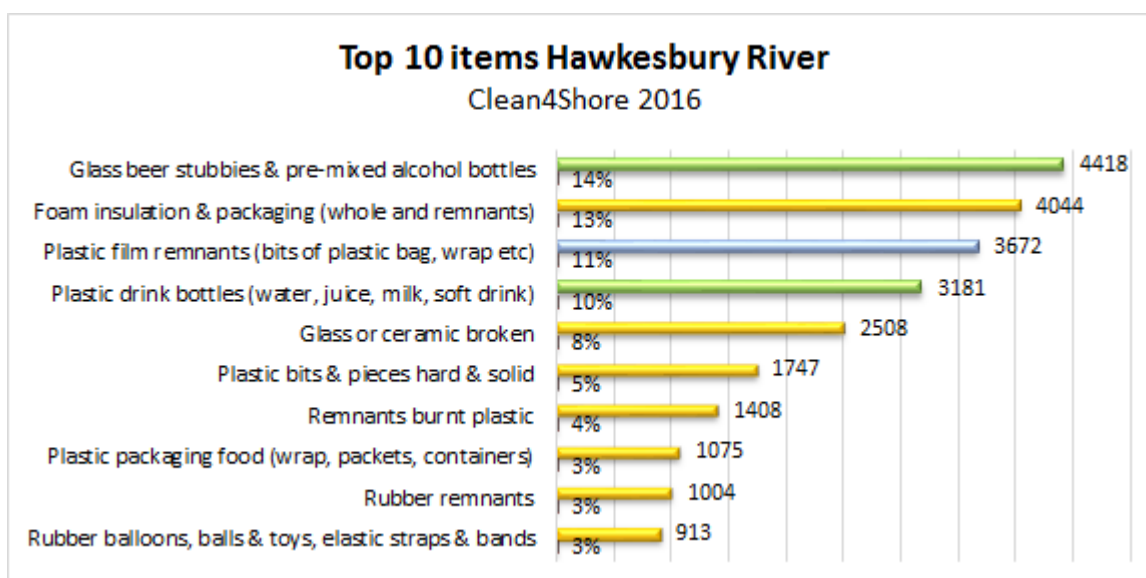
Cogra Bay finally received the attention of our adult volunteer base, with Dimension Data, Green Army and The Glen tackling the “horded’ rubbish collected over many years. Twenty tonne of bulk items were removed including five tonne of recycled metal. Central Coast Council Compliance officers visited the site, attaching twenty-two “removal stickers’ to the derelict vessels, abandoned in the mangroves and beached on the foreshore. Statistics here highlighted excessive numbers of beer bottles which was attributed to one particular site in Cogra Bay which was reported as a compliance issue.

Twelve old concrete covered polystyrene pontoons are also drifting or tied in Cogra Bay. The vessels and pontoons still remain, with Dimension Data, Green Army and locals contributing financially to this clean-up.

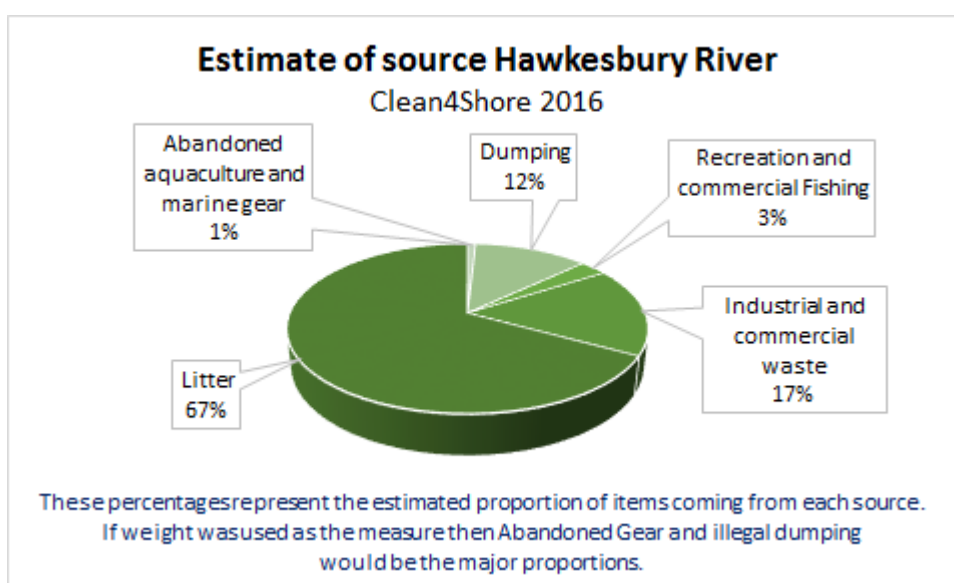
Large skip bins eased the disposal issues, together with providing safer manual handling during the off load. Rob Moxham’s crane and large storage bins within the barge were also factors in the ‘safer” off loads. Five tonne of metal was recycled from the November Cogra Bay clean-up.

Hawkesbury – Collections – Field Trips

Clean Up #	Date	Participating Group	Clean – up Site	Disposal	Funding	Weight	Volunteer #	Total Hours
1	13/03/16	Buninyong School Dubbo	Eleanor Gunyah	Gosford Council Bins	GSLLS Hornsby Council	140	17	76.5
2	01/04/16	BWSC Suppot	Milsons Passage	Gosford Council Bins	GSLLS Hornsby Council	70	10	25
3	13/04/16	The Glen	Big Jims Headland	GSLLS Grant Skip Bins	GSLLS Hornsby Council	1400	12	54
4	19/04/16	Dimension Data	Bar Island Fishermans	GSLLS Grant Skip Bins	GSLLS Hornsby Council	680	21	71.4
5	20/04/16	Dimension Data	Pumpkin Big Jims	GSLLS Grant Skip Bins	GSLLS Hornsby Council	860	17	76.5
6	21/04/16	Dimension Data	Marlows Upper Hawkesbury	Gosford Council Skip Bins	Dimension Data Corporate Donation	1500	20	80
7	04/05/16	Rowland Hassall	Peat Island to Bar Point	In Kind Council Bin	GSLLS Hornsby Council	120	7	24.5
8	10/05/16	ING Direct	Porto Bay	Rob Moxham & C4S Delivery	C4S Corporate Landcare	2880	14	42
9	13/07/16	The Glen	Olga Bay Peat Island Bar Point	Clean4shore Delivery	GSLLS Hornsby Council	380	12	42
10	05/09/16	Asquith High	Eleanor Cowan	Clean4shore Delivery	GSLLS Hornsby Council	460	18	80
11	07/09/16	Rolland Hassall	Milsons Passage Spectacle	Clean4shore Delivery	GSLLS Hornsby Council	240	6	18
12	27/10/16	Green Army	Cogra Bay	Moxham Delivery	Gosford Council Green Army Grant	1420	8	48
13	02/11/16	Dimension Data	Cogra Bay	Gosford Council 2 x Skip Bins	Dimension Data Corporate & Local Donation	5000	15	52
14	03/11/16	Dimension Data	Cogra Bay	Gosford Council Skip Bin	GSLLS Hornsby Council	5000	20	70
15	04/11/16	BWSC Bushcraft	Cowan Creek	C4S Delivery	GSLLS Hornsby Council	240	10	50
16	07/11/16	The Glen	Sandbrook Chanel	GSLLS Grant Skip Bins	GSLLS Hornsby Council	1500	10	45
17	25/11/16	BWSC "Support" Unit	Little Wobby	GSLLS Grant Skip Bins	GSLLS Hornsby Council Work Experience	280	6	26
Note: Additional 5 tonne of metal delivered to recyclers from Cogra Bay						5000		
Total						27170	223	880.9



Container Deposit Legislation (CDL) and plastic bag bans when they come into effect will have an impact on CDL items (green bars) and plastic film remnants (blue bar). These items make up 35% of the overall items collected in the Hawkesbury.



Some of these sources are located away from the river. A whole of landscape approach is therefore necessary to address them. This includes improvements in waste and litter management, stormwater management and the development of source reduction and **public education programs**. Please note that foam insulation and packaging items are included under the Industrial and Commercial Waste category but the project has also identified a worrying source of leakage of polystyrene foam from abandoned Pontoon in the Hawkesbury Estuary (see below).

Area's to Target - Hawkesbury

1. Concrete/Polystyrene Pontoons

Following the floods of 2014, Clean4shore have monitored 25 large concrete pontoons in the mangroves and foreshores of the Hawkesbury River. These pontoons are polystyrene “blocks” covered with concrete or fibreglass. The origin of these pontoons is unclear, with rumours suggesting they “broke loose” whilst being towed, or utilised to “stabilising” river banks, further upstream, and were washed downstream, during the 2014 floods. Stakeholders have reported that several pontoons, have laid in the mangroves for years. The major environmental concern is the “leaking” of polystyrene pieces in the waterway, which is occurring on many of the “decaying” pontoons. Clean4shore removed one pontoon from the rocks near Milson’s Island, towing it back to Rob Moxhams, and raising it from the water with a crane, then to the Woy Woy tip. This was a small pontoon yet it still weighed 480 kilo’s.

These pontoons are generally, “loosely” tied to mangroves, or “wedged” on tidal banks. They often drift during king tides or wind pushing them off the shore, potentially drifting to the middle of the waterway and becoming a navigational hazard.

Stakeholder ownership of these pontoons is very unclear, limiting removal and disposal options with financial assistance this can be managed by Clean4Shore



Large Pontoon in Olga Bay, near the M1 bridge



Polystyrene leaking from this pontoon in Cogra Bay

2. Hawkesbury River Cogra Bay

Initial surveys of Cogra Bay were completed in February 2014, with the vast majority of this foreshore littered with horded items, and swamped derelict boats, mostly washed into the Bay by floodwaters and high tides. Reports in March 2014 indicate boating parts, household items and three old “hulls” being hauled away. These reports also recommended funding options from stakeholders, to cover the additional disposal, required for this large task. In October 2016, this funding became available, including voluntary labour from corporate group Dimension Data, Green Army and “The Glen” to complete the heavy task of removing the collected and “horded” items that were stored on floating craft, in the waterline and on the foreshore. Local residents also participated, contributing financially towards barge hire. Twenty tonne of rubbish was removed, leaving the derelict vessels, in the mangroves. On the 9th November Central Coast Council compliance officers visited the site, noting that these properties are on absolute waterfront and there is no public land in this location. Hence the reluctance of Council to spend public money in this location. Council officers did place twenty-two ‘removal stickers’ on these craft. Only two of these vessels have been claimed the balance of the vessels still remain.



3. Bar Point

Five old boats lay among the mangroves in Bar Point potentially washed from downstream, or disused by previous owners. Funding from the 2016 grant did not allow for disposal, locals are very keen to have these gone. 2017 grant funding, together with community engagement, could see these vessels removed.



4. Car & Truck Tyres

The removal and disposal of tyres from the waterways has always caused “headaches” for Clean4shore and disposal stakeholders (Councils). Disposal fees have greatly been reduced, thanks to the EPA concessions at Woy Woy Landfill, however the disposal of tyres is a constant battle as the program collects more than what they can dispose. EPA regulations states that only four tyres can be delivered to the landfill at any given time, very difficult when 36 tyres are pulled from Narara Creek mangroves during one field trip. Clean4shore was advised by Council that if these tyres were cut into pieces, they could be buried, as this follows EPA guidelines at the Landfill. This was too difficult a task when attempted. The Marlow’s clean-up on the Hawkesbury revealed 96 tyres, many of them from larger trucks. A solution was achieved by engaging Tyrecycle., a company that recycles end-of-life tyres. Tyrecycle were happy to assist with the 145 tyre disposal as long as the tyres were relatively cleaned with no oysters, barnacles or sand/mud. The work experience program saw “Ryan” clean the tyres ready for Rob Moxham to deliver to Tyrecycle. A sound solution to be repeated in 2017



Flint & Steel Beach, more tyres



Mitchells barge towed this one out

5. Sandbrook Inlet/Long Island (Hawkesbury River)

This small inlet was formed following the construction of the railway line “rock wall” to link Sydney with Newcastle and the Northern Coast area of Australia. This wall effectively “cut off” the natural flow of the river, creating tidal ‘mud banks’ towards the end of the Inlet. Local maritime industries, thrived in this environment, greatly expanding the traffic, utilizing this waterway.

Tidal influence comes to a “dead end” at the railway line wall, with floating litter items especially floating plastic balls, bottles and polystyrene, being deposited at the end of the Inlet (750 pieces of polystyrene 80 balls, 70 plastic bottles collected on the 7th November). These items together with locally identified rubbish and boating items, suggests that local and marine litter within this inlet is an issue needing addressing.



The “corner” at the end of Sandbrook Inlet 750 pieces of polystyrene removed.

Sandbrook Inlet/Long Island Continued

Access to the foreshore is limited to higher tides, due to the “muddy banks” with Clean4shore completing two field trips into Sandbrook Inlet, during 2016. Four field trips during 2015 removed similar litter totals, with surveys in late 2016 citing additional litter on the banks.

This site will be a priority in 2017 with greater ‘local’ involvement required.

Education: School & Community

Clean4shore completed three school presentations, in conjunction with Hornsby Councils Natural Resource Officers. These presentations covered local Council issues including litter collecting devices used by Council and information on run-off litter and catchment control methods. Clean4shore focussed on the promotion and participation of the schools involved in the program, including achievements and knowledge gained by the students. Cherrybrook, Asquith and Cheltenham High Schools were visited this year. Asquith Boys High School completed outings in 2016, with Cheltenham and Cherrybrook committing to the 2017 program. Clean4shore was also the guest speaker at Kariong/Gosford Probus Club. Again the programs history, aims and objectives and operation procedures were explained. Probus members were alarmed at the extent of the litter in their local Fagan’s Bay and Narara Creek area. An invitation to speak at the NSW Litter Conference was accepted, with the programs operations well received by the audience. Plastic bottles and polystyrene packaging was the focus of the forum. These programs were funded from the Greater Sydney Local Land Services Grant

Work Experience

Brisbane Waters Secondary College, a founding partner with Clean4shore, accepted the program as a “work experience” opportunity for Year ten students.

The focus for this program included skill development in environmental management, maritime and boating management, aquaculture management, problem solving, team and confidence building working more closely with industries associated with the program.

This work experience was also utilised by “The Glen”, as a transition to work program. A good program worth repeating funded from the GSLLS Grant.



Asquith Boys High on the job with Clean4Shore



Education in the classroom, engaging forums.



Ryan, cleaning tyres for recycling at Moxham’s



Bailey and Brad, towing a floating pontoon.

Special Day: Buninyong School Visit

"Take a handful of visionary adults, a group of country kids and a large dose of community spirit and mix well. What you get is a community driven and funded young leadership project like last March's visit from a group of indigenous students from Dubbo, to the coastal community of Macmasters Beach, and watch them thrive."

*Jen Cowley's quote in the local Dubbo Weekender
19/03/2016.*

"Yes, Clean4shore was a big part of this program, taking the students and carers out on the Hawkesbury River for a typical school clean-up. Enthusiasm, big smiles, lots of fun and an appreciation of the environment that is, in most parts, unspoilt from urban development. The student camped at the surf club, enjoyed meals from the community, met the Governor in Sydney, and of course learnt surfing skills from the locals."

Clean4shore is very proud, to be a partner in this venture.

Special Thanks

The success of this program relies on the motivation, mentoring skills and service provided by our barge owners and operators.

Their liaison with the students, teachers, corporates or community groups has always been of a high standard, together with providing safe boating and manual handling procedures.

The task is difficult, very tiresome and often that smile, or joke, is the motivation needed to continue the task. Our Hawkesbury River contractors are: Rob Moxham and staff Members Lee and Mitchell.



Buninyong students from Dubbo, on the job with Clean4Shore



Life's a beach with these Buninyong students from Dubbo @ MacMasters Beach



Mitchell, on the job in Cogra Bay.

*Photo below;
Rob Moxham, his skill, knowledge and equipment make difficult tasks much easier.*



Hawkesbury Cool Shots



Photo left;
I'm stuck, what's next!"

Photo right;
Dubbo kids,
'gotta love em'.



Positive Stakeholder Action



Hornsby Council installed these 'litter traps' in the Asquith catchment, together with 432 smaller traps, all regularly serviced, greatly reducing the road/storm litter entering into the Hawkesbury.



The Groups Hawkesbury River



Photo Left;
Brisbane Waters
Secondary
College(Bushcraft)

Photo right;
Brisbane Waters
Secondary College
(work experience)





Asquith Boys High School Parramatta



Rolland Hassall School



The Glen



ING Direct



Dimension Data, (Marlows)



Dimension Data, (Cogra Bay)

UNRESOLVED ISSUES:

This partially sunken houseboat still remains in Piles Creek, near the Mooney Bridge and is a waterway obstruction requiring attention.



Hawkesbury full barge loads, what 22 tonne looks like



Photo Left;
Marlows



Photo right;
Cogra Bay



Photo Left;
Big Jim's
Headland Bay



Photo right;
Cogra Bay

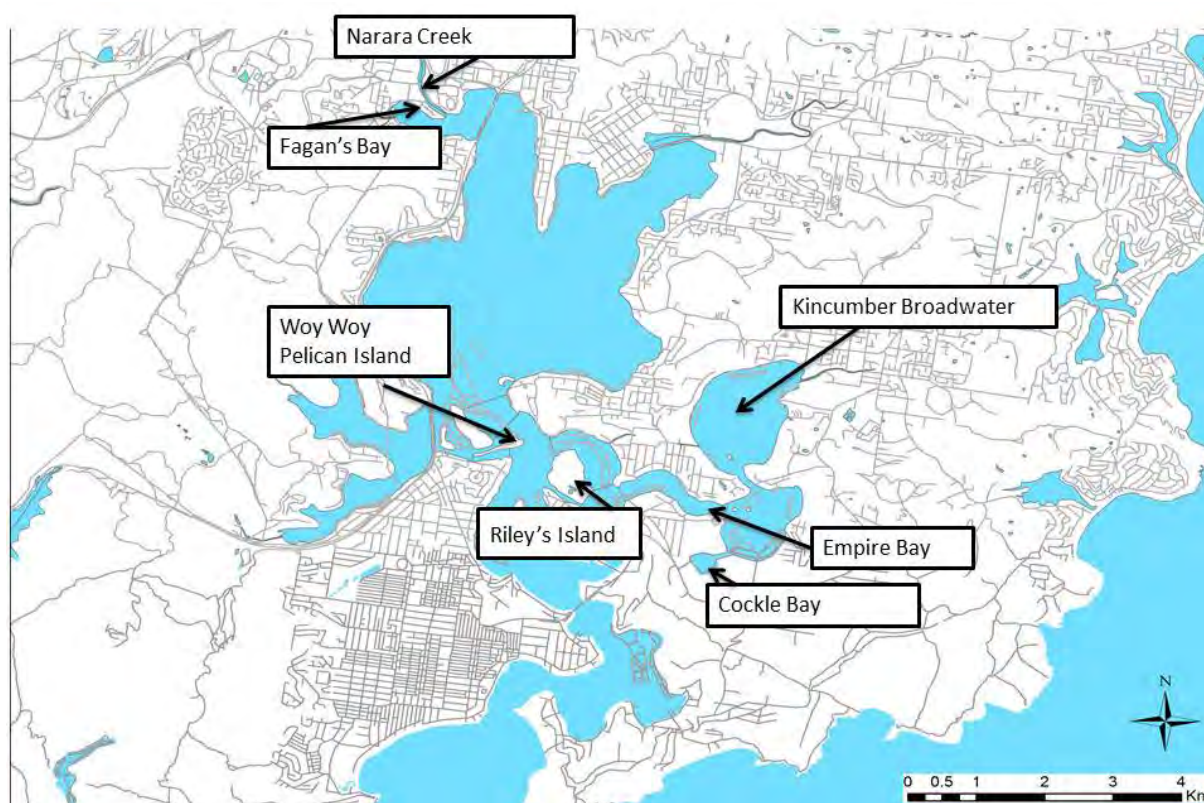


Photo Left;
Sandbrook
Inlet



Photo right;
Porto Bay

BRISBANE WATERS SUMMARY



Survey's and reports from 2015 highlighted the abundance of litter in Fagan's Bay and Narara Creek, and with ten field trips completed during that year; there would be an assumption that the majority of the litter in this waterway would be cleared.

Survey's completed during January of 2016, revealed vast amounts of small litter within Fagan's Bay. A youth group from Macmasters Beach Surf Club attended to this during January, however the source of this litter, needed to be found.

The Greater Sydney Local Land Services grant allowed for fifteen funded field trips in Brisbane Waters. Gosford Councils "Green Army" program funded four outings with surveys and Clean4shore funded the Macmasters Beach outing.

Further surveys were completed in Narara Creek, and with much of these foreshores covered in thick mangroves, very little litter could be observed from the water. However, behind these mangroves, and their boundaries, with the bordering industrial complex, plastic items, mostly bottles and polystyrene were stacked on tidal marks, of such volume, never seen before by Clean4shore. One "Facebook" post, on this litter, received 32,000 responses, many from overseas. Gosford CBD truly had "third world" litter issues!

Field trip report dated 24/08/16 stated "Green Army" group removed 196 large bags, containing 9,860 plastic bottles and 6,256 pieces of polystyrene. These are staggering figures, from a litter source that was "unseen" from the waterline. This waterway requires constant monitoring.

East Coast low storms during May and June, again effected the program, dispersing floating litter from “one side” of Brisbane Waters to “the other side”, also causing damage to fragile oyster infrastructure. Local oyster growers provided barge assistance during the clean-up, transporting volunteers and litter back to loading areas for disposal. The EPA concessions for all litter and rubbish collected and disposed at Woy Woy Landfill, was again a major financial saving to Clean4shore, allowing grants to focus on the volunteers, and sub-contractors involved in the program. The difficult task of “man handling” much of this oyster product was accomplished by “The Glen and Green Army Groups. Local reports also targeted, “squatter camps” in the mangroves near Empire Bay, another difficult task for Green Army group “Manpower”, who ‘dodged’ the thousands of “Golden Orb” spiders, thriving in the mangroves at that time of year.

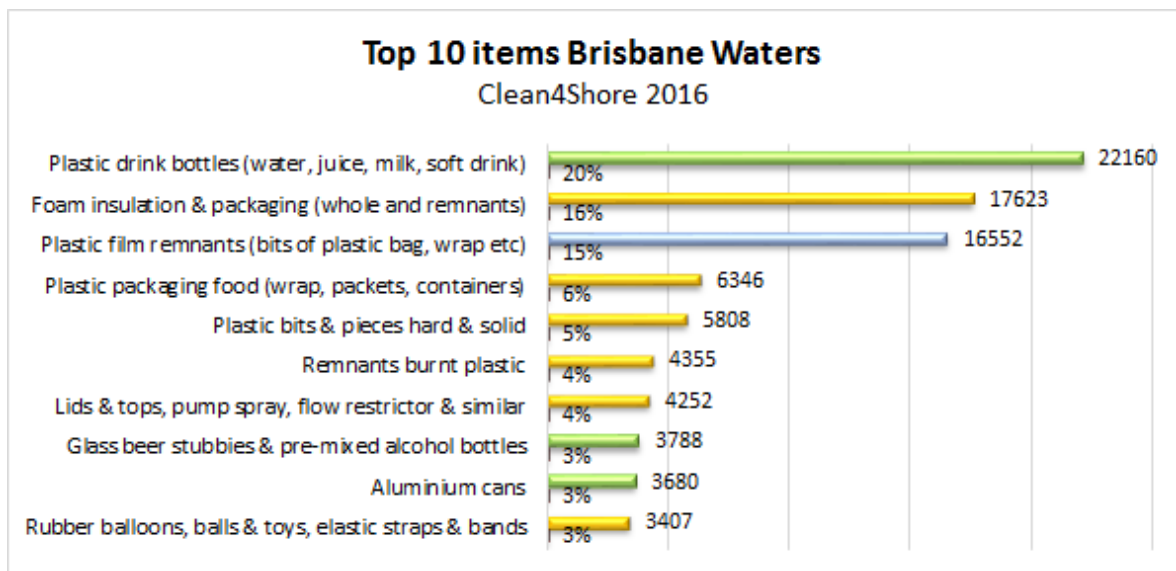
Kincumber High school developed a “Youth Support” program, utilising Clean4shore’s as a team/confidence activity for their students. Their coping skills were quickly tested as they ‘dropped” into the mud, bordering Kincumber Broadwater. This school, addressing a local litter issue, a fine achievement by a local school, successfully completed two trips a fine achievement.

Litter “hot spots” still remain in Brisbane Waters, the lack of sediment and storm water litter control, still allows large amounts of litter to flow, uninterrupted into this waterway.

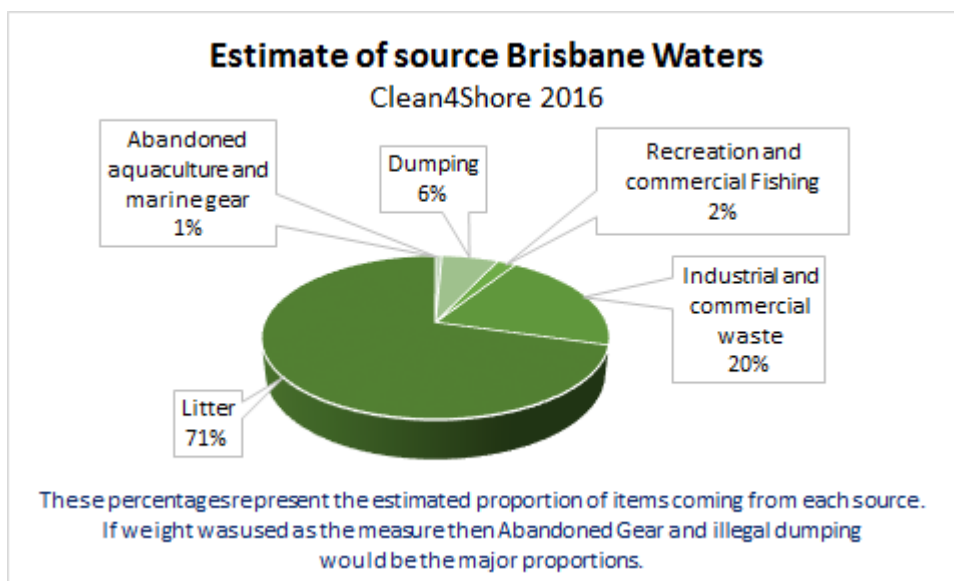
Brisbane Waters – Collections – Field Trips

Clean Up #	Date	Participating Group	Clean – up Site	Disposal	Funding	Weight	Volunteer #	Total Hours
1	12/01/16	Macs SLSC	Fagan’s Bay	Council Delivery	Clean 4shore	520	16	67
2	09/02/16	Green Army	Empire Bay	Council Delivery	C4S Corporate Landcare	1400	8	40
3	11/02/16	BWSC The Croft	Woy Woy Bay	C4S Delivery	Greater Sydney Local land Services	200	6	12
4	26/02/16	BWSC Bushcraft	Riley’s Island	C4S Delivery	Greater Sydney Local land Services	800	15	52.5
5	02/03/16	North Gosford learning	Spider Island Narara	C4S Delivery	Greater Sydney Local land Services	560	11	33
6	04/03/16	BWSC Support	Pelican Island	Nat Parks Delivery	Greater Sydney Local land Services	580	9	31.5
7	06/03/16	Community Clean up Aust Day	Erina Bay	C4S Delivery	Greater Sydney Local land Services	400	7	21
8	07/03/16	Green Army	Fagans Bay	C4S Delivery	Gosford Council Green Army	880	20	90
9	09/03/16	The Glen	Empire Bay	Gosford Council Pick up	Greater Sydney Local land Services	1480	9	31.5

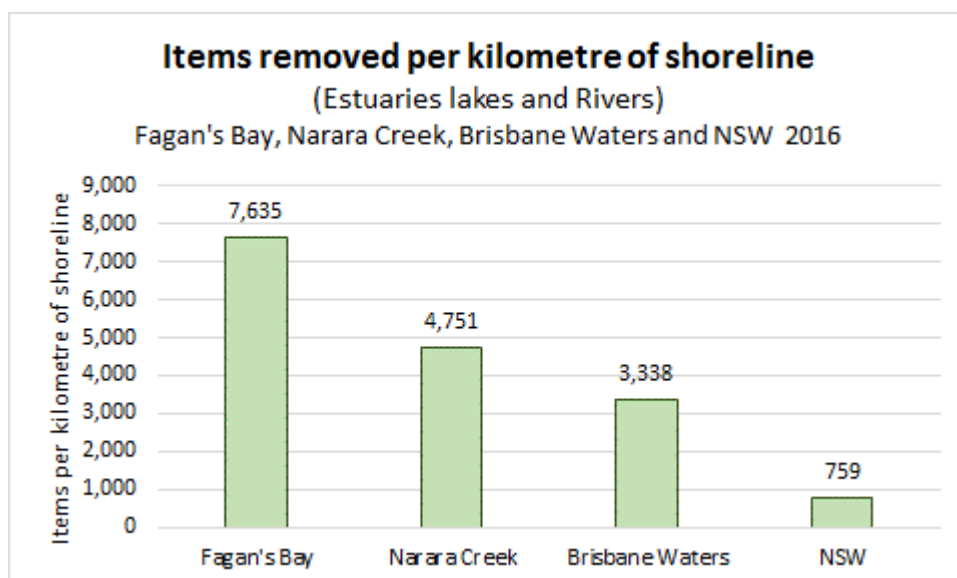
10	05/04/16	Green Army	Empire Bay	Council Delivery	Gosford Council Green Army Manpower	880	15	52
11	11/05/16	North Gosford School	Narara Creek	C4S Delivery	Greater Sydney Local land Services	520	13	45.5
12	06/07/16	Mac SLSC Kincumber High	Pelican Island Paddy's	C4S Delivery	Greater Sydney Local land Services	340	6	26
13	09/08/16	BWSC Support	Narara Creek	C4S Delivery	Greater Sydney Local land Services	140	2	8
14	24/08/16	ET Aust Green Army	Narara Creek	Gosford Council Pick-up	Greater Sydney Local land Services	1580	17	60
15	26/08/16	BWSC Bushcraft	Riley's Pelican Henderson	Gosford Council Pick-up	Greater Sydney Local land Services	960	13	54
12*	06/09/16	Kincumber High School	Kinny Broad Water	C4S Delivery	Greater Sydney Local land Services	385	16	72
13	04/10/16	Macs SLSC	Bensville South Kincumber	C4S Delivery	Greater Sydney Local land Services	460	7	14
14	05/10 2016	Green Army	Fagan's Bay	C4S Delivery	Gosford Council Green Army	420	9	42
18	13/10/16	Youth Connections	Narara Creek	C4S Delivery 185.78	Greater Sydney Local land Services	240	7	31
19	12/12/16	Kincumber High	Kincumber Broadwater	C4S Delivery In Kind	Greater Sydney Local land Services	580	12	56
Total						13325	218	839



Container Deposit legislation (CDL) and plastic bag bans when they come into effect will have an impact on CDL items (green bars) and plastic film remnants (blue bar). These items make up 41% of the items and these measures should have an impact on the loss of these items into the Brisbane Waters system.



Some of these sources are located away from the river. A whole of landscape approach is therefore necessary to address them. This includes improvements in waste and litter management, stormwater management and the development of source reduction and public education programs. The project has identified (and directly observed) the large proportion of litter inputs coming from stormwater drains in the Narara Creek Fagan's Bay system making these a priority for action if this environment is to survive the impacts from the massive inputs.



The above graph clearly demonstrates the massive amount of litter and waste collected in 2016 from the Narara Creek – Fagan’s Bay system compared to the wider Brisbane Waters Estuary and to lakes and estuaries in NSW as a whole (see Issues of Concern below).

Tables below show the most common items in Fagan’s Bay and Narara Creek.

Fagan's Bay	Total	Percentage
Foam insulation & packaging (whole and remnants)	24130	21%
Plastic drink bottles (water, juice, milk, soft drink)	14949	13%
Plastic film remnants (bits of plastic bag, wrap etc.)	11465	10%
Plastic packaging food (wrap, packets, containers)	9200	8%
Plastic bits & pieces hard & solid	6658	6%

Narara Creek	Total	Percentage
Plastic drink bottles (water, juice, milk, soft drink)	16275	25%
Foam insulation & packaging (whole and remnants)	10971	17%
Plastic film remnants (bits of plastic bag, wrap etc.)	8983	14%
Plastic bits & pieces hard & solid	2810	4%
Aluminium cans	2729	4%

Issues of Concern: Brisbane Waters

1. Narara Creek

Clean4shore completed surveys in Narara Creek in January 2015, with alarming reports of litter in the Creek and the adjoining Fagan's Bay. Fourteen field trips produced 112,643 items, from this small waterway during 2015.

Surveys were again completed in 2016, with staggering results, as the Creek appeared visually clean from the watercraft, however massive amounts of plastic bottles and polystyrene, were located from behind the mangroves, or in high tidal banks. Community interest was overwhelming as local media covered the story, and international interest through Facebook (32,000 likes) provided comments on litter issues, within one kilometre of the Gosford CBD.

Clean4shore completed eight field trips in the Narara Creek and Fagan's Bay waterways during 2016, with the major source of the litter (road, industrial and residential run off into open stormwater drains), continuing to deposit litter into this system.



Bailey and Ryan thick in Narara Creek litter deposits



Amie and Jade with Fagan's Bay rubbish

2. Cockle Bay

Gosford Council utilised a Green Army group (manpower) to remove the suspended trays, and oyster mesh. Many more trays were removed from the shallow water. Further attempts for clarification on the stacked trays in Cockle Bay, has not been received from Fisheries. Clean4shore did report to Fisheries of vandalism within the compound.



3. Pelican island

Clean4shore has spent six years "picking up" oyster trays, it's a constant battle. This derelict lease inside Pelican Island, has 'cone' baskets which are roughly tied with thin rope or cable ties, the weather finally breaks the ties, and the baskets flow into the water, again for Clean4shore to pick up. It is a vicious cycle that only be addressed through DPI Fisheries.



4. Kincumber Creek

This largely populated suburb has stormwater drains, that run residential and road litter directly into Brisbane Waters, via Kincumber Broadwater. From 2013 Clean4shore has removed in excess of ten tonne of litter, plus more oyster infrastructure product. In 2016 Kincumber High School completed two major clean-ups of the Creek and Bay. The school will again commit to the 2017 program.



Plenty of plastic bottles in the thick sea grasses



Kincumber students waiting for a "pick up"



Special Thanks

The success of this program relies on the motivation, mentoring skills and service provided by our barge owners and operators. Their liaison with the students, teachers, corporates or community groups has always been of a high standard, together with providing safe boating and manual handling procedures. The task is difficult, very tiresome and often that smile or joke, is the motivation needed to continue the task. Our Brisbane Waters Contractor is Simon Funnel.



Full Loads Brisbane Waters



Photo Left;
Ryan and Bailey
upper Narara Creek



Photo right;
Green Army Woy
Woy Channel



Photo Left;
MacMasters Beach
SLSC – Fagan's Bay



Photo right;
Green Army
Narara Creek



Photo Left;
Green Army,
Narara Creek



Photo right;
"Bushcraft" load,
Pelican Island

The Groups



Green Army Narara Creek



Brisbane Waters Secondary College (work experience)



MacMasters Beach Surf Club



Kincumber High School 'Kinny Creek'



Green Army Narara Creek



BWSC "Bushcraft" Riley's Island

TUGGERAH LAKES SUMMARY



Clean4shore received advice in late January 2016, that a successful grant application from the Environmental Protection Authority, was received for work on the clean-up of Tuggerah lakes and tributaries was to commence immediately.

Planning and promotion to schools and community groups occurred quickly with Hopetown Special School, Northlakes High School, The Glen and Green Army being engaged for this task. The 'feeder' Creeks into Tuggerah Lakes being Ourimbah Creek, Wallarah Creek and Wyong River were first surveyed and cleaned, with healthy loads coming from each waterway. Loads were "ugly" with shopping trollies, tyres, car and boating parts and illegally dumped material removed from these Creeks. Access from the water for the volunteers was relatively easy as Simon's barge and the Clean4shore tinny retrieved the litter for trailer delivery to Wyong Landfill.

The Entrance Channel and surrounding Islands, Terilbah and Pelican, contained bulk litter, due to the extremely high volume of marine traffic and recreational angling that takes place in this confined space.

The foreshores of Long Jetty were cleaned "on foot" utilising the Clean4shore's vehicle and trailer. Camping gear, bikes, tyres and mattresses were dragged out of the muddy shallow water.

The Eastern foreshore from North Entrance to Canton Beach is only accessible by water and with shallow conditions up to one hundred metres from the shoreline, tidal conditions and 'group suitability' was needed. This was indeed a very difficult task, as bulk rubbish and a long haul to Simon's barge confronting the volunteers.

The East coast low storms also restricted access into this “open water” foreshore, which had possibly “never” been cleaned. Boating parts, car tyres, water toys, furniture and masses of plastic and polystyrene, filled Simon’s barge on each occasion. Large ‘ugly’ loads were transported, by trailer to Wyong Landfill.

The vast Western foreshores, were again cleaned ‘on foot’ as the Clean4shore vehicle and trailer “backed up’ the small groups of volunteers, from the Work Experience programs of Brisbane Waters Secondary College, Department of Juvenile Justice and The Glen.

Thirty field trips were completed, together with five survey trips, reports and statistics were well received by Wyong Council. Additional school interest from Berkeley Vale and The Entrance High school was received, however weather conditions forced late cancellations from both schools.

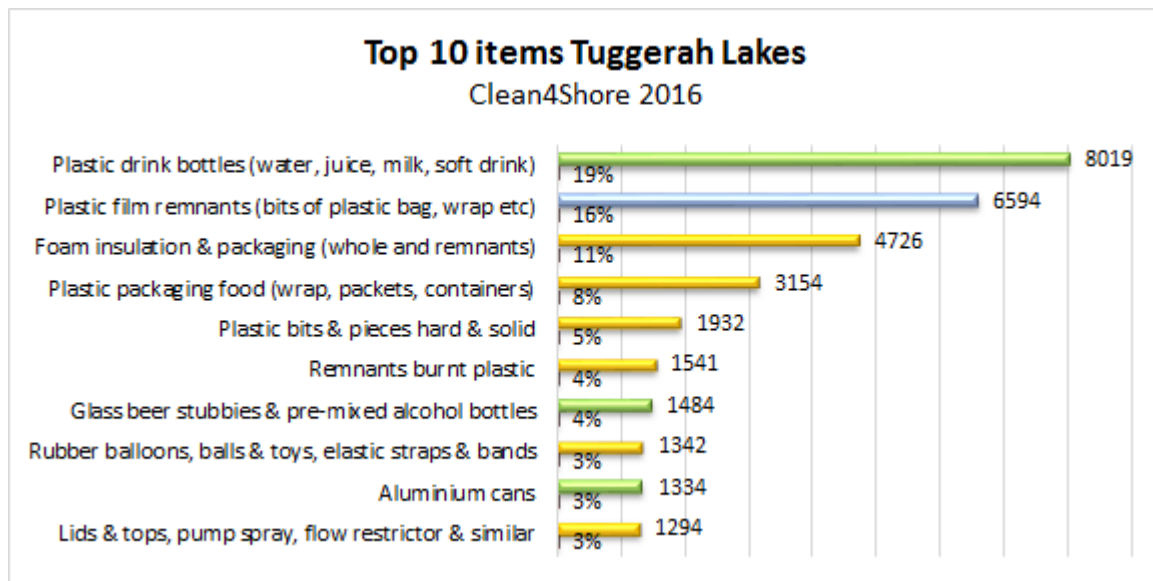
Wyong Council has installed litter sediment traps, however the vast ‘open ness’ of the lakes system is conducive to illegal dumping. National Parks were active site identification, and we greatly appreciated the efforts by all volunteers to remove litter and rubbish from their foreshores.

The EPA Grant was completed in November 2016, and with no further funding options available the Tuggerah Lakes clean- up program will not be repeated in 2017.

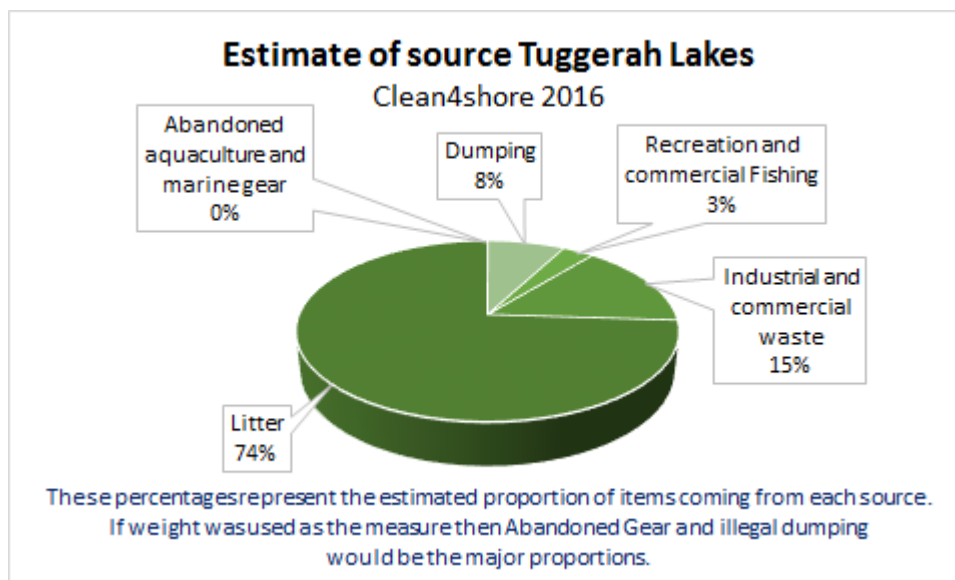
Tuggerah Lakes – Collections – Field Trips

2016 Tuggerah Lakes EPA/Wyong Council Grant						
Field Trip	Date	Group	Site Location	Weight	Vol #	Total Vol Hours
1	02/02/16	Clean4shore	Ourimbah Creek	60	1	5
2	03/02/16	Clean4shore	Up Ourimbah Creek	220	1	4
3	03/02/16	Clean4shore	Ourimbah Creek Railway Bridge	180	1	2
4	15/02/16	Hopetown School	Wyong River	580	6	21
5	17/02/16	The Glen	Chittaway Point North	660	8	24
6	22/02/16	Hopetown School	Wyong River	360	6	26
7	24/02/16	Hopetown School	Terilbah Island Nth Entrance	560	6	6
8	29/02/16	BWSC The Croft	Wyong River Upper	220	1	5.5
9	03/03/16	Green Army	Terilbah island Nth Entrance	560	12	55

10	04/04/16	BSWC Support	Wallarah Creek	580	4	20
11	11/04/16	Clean4shore	Toukley Picnic Point	280	1	4
12	26/04/16	Dept Juvenile Justice	Rocky Point	220	1	4.5
13	02/05/16	Hopetown School	Chittaway Point South	280	5	18
14	03/05/16	Dept Juvenile Justice	Chittaway Point South/North	240	1	4.5
15	09/05/16	Woy Woy High	Chittaway Point South/North	80	2	15
16	16/05/16	Northlakes High	Wallarah Creek	540	9	32
17	17/05/16	Woy Woy High	Long Jetty	420	5	12
18	02/06/16	Green Army	Wyrabalong	880	10	40
19	16/06/2016	Green Army	Wyrabalong	960	6	16
20	22/06/2016	The Glen Transition	Ourimbah Creek	160	1	4.5
21	27/06/16	The Glen Transition	Canton Beach	160	1	4.5
22	28/06/16	The Glen Transition	Wyong River	140	1	4.5
23	29/06/16	The Glen Transition	Magenta Berkeley Vale	760	1	4.5
24	30/06/16	The Glen Transition	Long Jetty	280	1	4.5
25	11/07/16	Glen Transition	Entrance Foreshore	380	1	4.5
26	08/08/16	Hopetown Special School	Pelican & Terilbah Islands	280	4	20
27	29/08/16	ET Australia Green Army	Magenta Wyrabalong	460	6	33
28	30/08/16	The Glen	Picnic Point Terilbah/Pelican	340	8	40
29	08/09/16	BWSC Support	Berkeley Vale	340	3	10
30	10/10/16	Clean4shore	Killarney Vale Tumbi Creek	540	1	4.5
			TOTALS	11720	114	449



Container Deposit legislation (CDL) and plastic bag bans when they come into effect will have an impact on CDL items (green bars) and plastic film remnants (blue bar). These items make up 42% of the items and these measures should have an impact on the loss of these items into the Tuggerah lakes system.



2016 was the first full year of field trips to the Tuggerah lakes system and these trips have shown long-term accumulation of rubbish from litter and dumping sources with the project identifying illegal dumping as a significant concern (see comments in the Tuggerah lakes summary).

The Groups



Green Army at Magenta Shores



North Lakes High School Wallarah Creek



Luke "work experience", Wyong River



Green Army Group - "Magenta"



Hopetown School Wyong River



Brisbane Waters Secondary College



Clean4Shore "tinny", Ourimbah Creek



Huge loads on the Clean4Shore trailer from Magenta



The things you find in the waterways!



Green Army , another big load out of Magenta



With the barge 60 metres away, this sea grass makes disposal from the foreshore a tough task.



Thousands of plastic bottles found in the native grass, another difficult task!

Collation of Collected Items

Clean4Shore 2016 full list of items removed	Hawkesbury River Estuary	Brisbane Waters	Tuggerah lakes	Total
Cigarette butts & filters	0	0	33	33
Cigarette lighters	269	1,739	483	2,491
Pens, markers & other plastic stationary	133	569	306	1,008
Straws, confection sticks, cups, plates & cutlery	327	1,347	626	2,300
Toothbrushes, brushes & combs, hair ties etc	10	72	26	108
Toys, party poppers, ribbons, clips & similar	672	1,999	1,165	3,836
Childcare items	0	1	5	6
Plastic furniture outdoor & camping	18	16	65	99
Plastic gardening items, implements & fittings	0	0	8	8
Plastic housewares, tablewares, house fittings	0	0	6	6
Recreation & outdoor equipment	9	6	22	37
Bleach & cleaner bottles	187	1,053	265	1,505
Lids & tops, pump spray, flow restrictor & similar	444	4,252	1,294	5,990
Personal care & pharmaceutical packaging	10	12	25	47
Plastic bags supermarket, garbage, dog poo, ice	240	223	414	877
Plastic containers non food (oil, sealant, chemical)	279	995	320	1,594
Plastic drink bottles (water, juice, milk, soft drink)	3,181	22,160	8,019	33,360
Plastic packaging food (wrap, packets, containers)	1,075	6,346	3,154	10,575
Plastic wrap non food (bubble wrap etc)	58	244	103	405
Strapping band scraps	29	107	41	177
Strapping band whole (record as single item)	2	16	11	29
Packaging accessories (seals, reels, spools, handles)	1	10	14	25
Plastic bottles, drums, jerrycans & buckets over 4 litres	74	43	80	197
Plastic sheeting (tarpaulin, woven bags, pallet wrap)	18	9	13	40
Synthetic cardboard (corflute) signs & packaging	3	3	2	8
Bait & tackle bags & packaging	346	841	592	1,779
Bait containers & lids, bait savers	213	959	527	1,699
Commercial fishing remnants (float, pot, crate bits)	72	1	18	91
Cylume glow sticks	2	6	2	10
Fishing line in metres (Recreation)	27	54	51	132
Recreation fishing items (lures, floats, rods, reels)	119	111	74	304
Rope & net scraps less than 1 metre	73	120	87	280
Rope (estimated length in metres)	85	67	41	193
Oyster Products/Commercial	209	758	0	967
Baskets, crates & trays	17	6	0	23
Commercial fishing traps, pots & intact parts	0	0	21	21
Fishing line in metres commercial (monofilament)	18	0	0	18
Fishing net over 1 metre in metres	4	0	0	4
Plastic buoys and floats	18	0	0	18
Plastic bits & pieces hard & solid	1,747	5,808	1,932	9,487
Plastic film remnants (bits of plastic bag, wrap etc)	3,672	16,552	6,594	26,818
Remnants burnt plastic	1,408	4,355	1,541	7,304
Carpet & lino household, boat deck & padding	12	6	0	18
Municipal activities (tree guard, barrier fence etc)	0	2	4	6
Occupational health & safety items	0	0	1	1
Plastic electrical cable, connectors & fittings	2	0	0	2
Plastic oddments	0	0	1	1
Plastic pipe PVC, irrigation & reticulation	135	22	3	160
Plastic vehicle parts	1	0	2	3
Foam buoys	58	273	27	358

Foam cups, food packs & trays	399	1,568	1,236	3,203
Foam insulation & packaging (whole and remnants)	4,044	17,623	4,726	26,393
Foam sponge sheeting (mattress & similar)	15	15	22	52
Oil globules & tar-balls	4	0	0	4
Sanitary (tissues, nappies, condoms, cotton buds)	9	11	21	41
Shoes leather & fabric	117	138	95	350
Appliances, electronics & batteries	3	2	4	9
Boat parts, wreckage & remnants	64	14	10	88
Building & trades materials, fixings & fittings	14	1	0	15
Personal effects (wallets, money, keys, jewellery)	0	0	2	2
Fluorescent light tubes and bulbs	1	3	3	7
Glass beer stubbies & pre-mixed alcohol bottles	4,418	3,788	1,484	9,690
Glass jars & sauce bottles	196	145	59	400
Glass or ceramic broken	2,508	1,111	518	4,137
Glass wine, spirit and similar bottles	414	801	507	1,722
Construction material (brick, cement, pipe)	7	1	0	8
Glassware & ceramic items	4	0	4	8
Binding, thread, string & cord (natural fibre)	54	86	53	193
Cloth, clothing, hats & towels	198	191	102	491
Canvas, sailcloth & hessian materials	1	0	0	1
Aerosol cans	51	169	130	350
Aluminium cans	423	3,680	1,334	5,437
Foil wrappers, packets, bladders & alfoil	8	23	26	57
Metal bottle caps, lids & pull tabs	0	16	47	63
Metal Fishing Items (Sinkers, lures, hooks, traps, pots)	64	13	8	85
Tins under 4 litres (food, drink tins and similar)	202	124	98	424
Gas & volatile liquid capsules & cans	8	2	0	10
Gas bottles	0	3	0	3
Metal bicycle, shopping trolley and similar	3	7	23	33
Metal drums, cans & buckets over 4 litres	5	1	5	11
Metal building & trades materials, fixings & fittings	3	1	2	6
Metal marine engine & boat parts & fittings	4	1	3	8
Metal motor vehicle parts & batteries	13	3	4	20
Metal outdoor equipment, implements, furniture	26	3	6	35
Metal scrap & remnants	115	0	7	122
Metal signs and sheeting	128	1	6	135
Metal tools	0	0	1	1
Metal unspecified	12	0	0	12
Small machinery & electric motors	2	0	0	2
White goods	21	3	3	27
Wire, metal stakes & pipes	13	8	11	32
Newspaper, magazines & brochures	56	62	148	266
Paper & cardboard packaging	197	111	163	471
Tetra packs & drink cartons	30	44	37	111
Rubber balloons, balls & toys, elastic straps & bands	913	3,407	1,342	5,662
Rubber footwear & thongs	304	1,000	431	1,735
Rubber remnants	1,004	2,749	1,001	4,754
Rubber buffers, tyres, seals & similar	121	118	111	350
Brooms, brushes & paint brushes	7	13	6	26
Processed timber, pallets & other wood	819	324	102	1,245
Wooden confection sticks, pencils, matches etc	0	0	2	2
Wooden furniture	2	9	6	17
Large item	7	3	6	16
Totals	32,308	108,559	41,933	182,800

MOVING FORWARD 2017

Clean4shore's major issue, shared by most organisations, is the reliance on "short term" grant funding, resulting in the inability to plan and expand the program.

The Federal Governments election commitment from 2016, to fund the program, within the Robertson Electorate, for three years, is a major boost for Clean4shore.

This funding is now in the final stages of approval, with Local MP Lucy Wicks, and the grant provider assuring Clean4shore that the funding will commence in July 2017, through the Central Coast Council. This assurance of funding will also allow schools, youth and community organisation to plan ahead, and book into the program.

This grant covers the Hawkesbury River foreshores, upstream from Spencer, an area previously unsurveyed by Clean4shore, and a good challenge for the assisting volunteers. The Coastal Lagoons and foreshores in the Robertson Electorate will also be monitored with litter removed, which is typically an enjoyable task.

Donations received in early 2017 from MacMasters Beach and Bar Point Progress Associations, JD Family Auto and local residents will allow limited work to proceed, until July, with Clean4shore constantly appreciating any financial or in kind support.

An issue of concern is the funding for the Southern foreshores of the Hawkesbury, which is outside the grant guidelines, and may require funding from those stakeholders involved.

The consistent abundance of litter monitored, collected and documented, does not appear to be declining. Stormwater and road litter still enters our waterways unchecked. Clean4shore applauds the efforts of Hornsby Council, by installing and maintaining, 400 litter stormwater traps within their Shire. Waterways such as Narara Creek would benefit from this type of action, rather than "hiding" 10,000 plastic bottles and polystyrene behind the mangroves and in the low tidal foreshores.

The planned NSW Government's Container Deposit Legislation, having an immediate effect on the volume of litter being discarded and documented in the statistics being forwarded to Tangaroa Blue in December 2017. Clean4shore efforts in producing this data, is encouragement to other Council's and organisation's in approaching local litter reduction.

Stakeholder action through roadside signage and media advertising, on general littering is now starting to appear. The environmental effects of plastics in the waterways, is now well documented and is a conversation topic by the general public. This awareness is also part of the education process within the schools, delivered by teachers, and organisations such as Clean4shore, Take 3 and others.

Clean4shore's ongoing work, relies on positive working relationships with important stakeholders, especially Council's, National Parks, Maritime, EPA, Local Land Services, Tangaroa Blue, volunteer organisations and contractors. All of whom have their own agenda's, guidelines and funding limitations. Their contribution to the program is equally important as the hard work and effort of the program itself.

**Let's see what the future brings
Graham Johnston
Clean4shore**