

Wyong Shire Council

Estuary Management Plan

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Objectives, Background, and Methodology



Objectives, Background, and Methodology

Objectives

Micromex Research, together with Wyong Shire Council, developed the questionnaire to:

- Measure current levels of knowledge as well as attitudes, behaviours and perceptions of residents towards Tuggerah Lakes and the surrounding catchments
- Assess longitudinal data changes in research outcomes compared to the 2013 and 2009 surveys
- Guide the continued development of an awareness and educational campaign for residents of Wyong Shire Council

Data collection period

Telephone interviewing (CATI) was conducted during the period 12th-23rd November 2015.

Sample

N=605 interviews were conducted.

515 of the 605 respondents were selected by means of a computer based random selection process using the electronic White Pages. In addition to this, 90 respondents were 'number harvested' via face-to-face intercept at a number of areas around the Wyong LGA, i.e. Wyong Train Station, Tuggerah Train Station, and Lake Haven Shopping Centre

A sample size of 605 provides a maximum sampling error of plus or minus 4.0% at 95% confidence. This means that if the survey was replicated with a new universe of N=605 residents, that 19 times out of 20 we would expect to see the same results, i.e. +/- 4.0%.



Objectives, Background, and Methodology

Sample (Continued)

A quota of 106 interviews were obtained from five Wyong LGA suburbs that fall within the Lake Macquarie catchment area: Chain Valley Bay, Crangan Bay, Gwandalan, Mannering Park, and Summerland Point.

Interviewing

Interviewing was conducted in accordance with the AMSRS Code of Professional Behaviour.

Data analysis

The data within this report was analysed using Q Professional.

Percentages

All percentages are calculated to the nearest whole number and therefore the total may not exactly equal 100%.

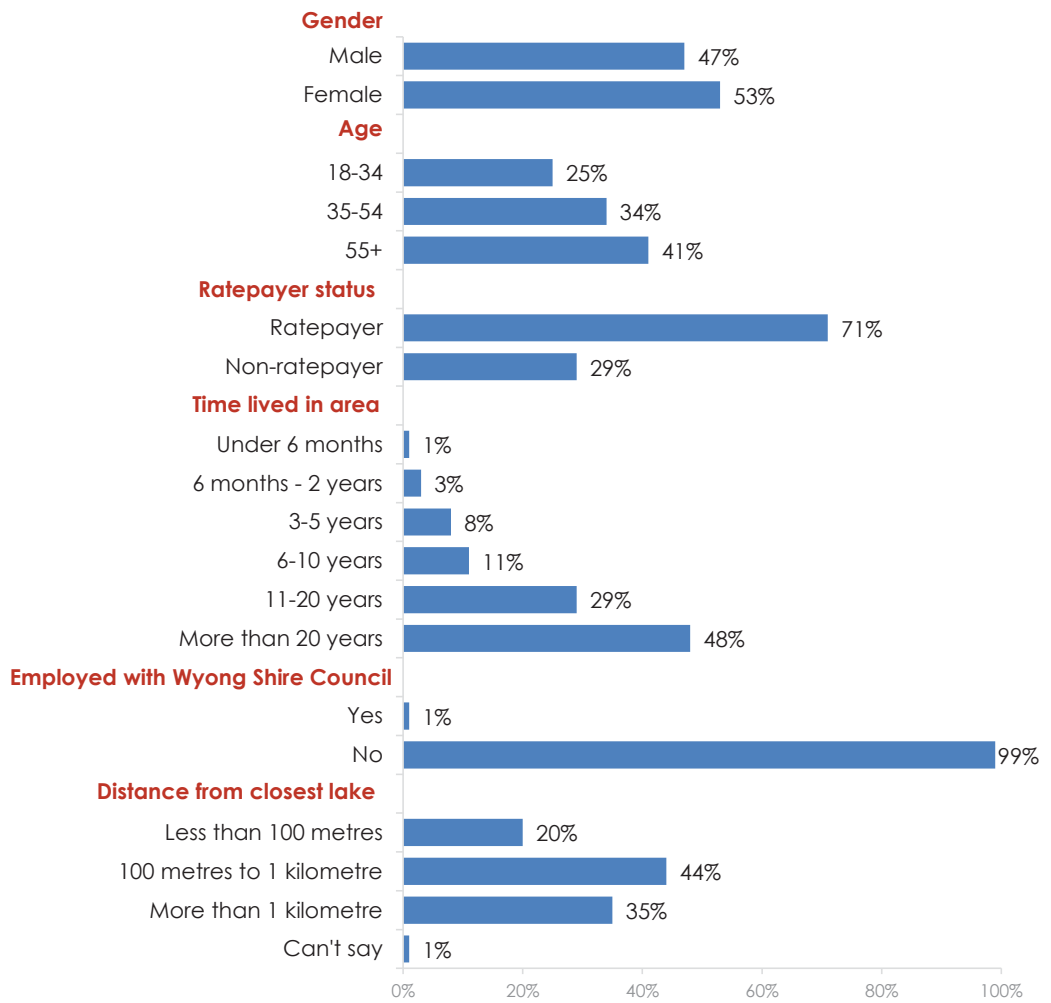


Sample Profile



The sample was weighted by age and gender to reflect the 2011 ABS community profile of Wyong Shire Council

Sample Profile



Base: N = 605

Key Findings



Key Findings

Overview

Two key themes emerged from the Wyong Shire Council 2015 Lakes Survey:

- **Awareness** levels have remained relatively flat or have declined since 2013 – for instance:
 - Unaided recall of Tuggerah and Budgewoi Lakes has dropped significantly – and recall of Lake Munmorah is also down marginally. In contrast, unaided recall of Lake Macquarie is up, even after we exclude those suburbs in the Lake Macquarie catchment where we conducted booster interviews
 - Claimed awareness of particular lake facts (such as the role of sea grasses and salt marshes) is down significant on 2013
 - Awareness of the 'Love Our Living Lakes' campaign has remained unchanged since 2013 – given this research was conducted during/directly after the Wyong Lakes Festival and the 'Love Our Living Lakes' campaign was a program partner of the festival, we perhaps could have expected an increase in awareness
 - Possibly reflecting the awareness scores, claimed knowledge about the health and long-term sustainability of the lakes was also down marginally (although not significantly)

Discussions with Council have revealed that between June 2013 and July 2015, Council communications about the lakes were less than they had been prior to the 2013 Wave – this supports the above research findings.



Key Findings

Overview (Continued)

- However, encouragingly, **attitudes and a sense of community responsibility** for the lakes have increased:
 - There has been a noticeable increase in residents expressing some degree of concern about the issues affecting the lakes. Furthermore, the survey results suggest that concern is LGA-wide, not just restricted to those living next door to a lake
 - There has been a significant increase since 2013 in residents' thinking that the quality of the lakes has improved over the past 8-10 years:
 - That said, opinions are still polarised on this issue, with a number of residents feeling the lakes have gotten worse
 - On an unaided question about who residents believe is responsible for the quality of the lakes, there has been a significant increase in mentions of 'Residents and individuals living in the Shire'
 - In a similar vein, when asked a more direct question about the effect residents have on the lakes, our respondents provided a significantly higher effect rating



Key Findings

Overview (Continued)

- So how do we reconcile lower awareness scores with more favourable attitude/responsibility scores?
 - Awareness is arguably more fleeting/dynamic than are values/beliefs/attitudes which may build over time (i.e.: are cumulative).
 - Resident interest in/concern for their local lakes may be fuelled in part by external communications about environmental sustainability etc. For instance, given awareness of Lake Macquarie has increased whilst awareness of the three Wyong lakes has decreased, it is possible that there has been more visibility around Lake Macquarie issues in recent times
 - Residents reported that 'personal experience' was by far the most common way they became aware of facts about the lake – what they see and experience for themselves. 80% of residents had walked along a lake foreshore in the past 12 months – up significantly from 73% in 2013 – it is possible that cumulative exposure to the lake system has impacted attitudes and beliefs



Key Findings

Importance and Satisfaction

A key component of the 2015 survey was the Importance/Satisfaction module:

- **Importance** scores for four of the 13 attributes increased significantly in 2015 – this is in line with the more favourable attitude/responsibility scores discussed above; that is, residents are placing more importance on certain environmental and sustainability issues:
 - Three of the four significant increases were for those attributes with the lowest relative Importance scores, which is particularly pleasing
- **Satisfaction** scores increased on **all** 13 attributes – in six cases the increases were significant:
 - However, there is still room for improvement, as the Satisfaction scores are generally weak
- Based on direct comparison of 'Importance' and 'Satisfaction' ratings, the key issues/concerns that the Community is readily able to articulate are:
 - Reducing litter around waterways
 - Ensuring nutrients don't leach into waterways
 - Ensuring creeks are clean and healthy
 - Maintaining litter traps
 - Ensuring sediment from building sites, etc. does not leach into waterways



Key Findings

Importance and Satisfaction (Continued)

- Based on the Shapley Regression Analysis – which is better able to identify the underlying drivers of overall quality perceptions that respondents can't necessarily articulate – the key issues shaping resident perceptions are:
 - Vegetation: 'Maintaining healthy low growing lake foreshore vegetation', 'Maintaining the health of underwater grass or plants in the lake', and 'Maintaining and increasing natural vegetation around the lakes' foreshores'
 - Ensuring that creeks in the area are clean and healthy

In essence, the above 'visual' factors have most impact on whether residents believe the lakes have improved or not. They may talk about pollution, leaching, etc. – but it is the state of the vegetation and the cleanliness of the creeks that appear to shape residents' perceptions of the lakes (of course, this may reflect that current management of rubbish is sufficient to make it less of an issue – addressing rubbish/pollution may be a necessary but not sufficient condition).

Other Opportunities

- In terms of communications **channels**:
 - Newspapers appear to be the dominant medium for Council to use
 - However, given the high level of usage of the lakes/foreshore (particularly walking) and stated reliance on personal observations to learn about the lakes, perhaps Council should consider greater usage of in-situ communications (signs, etc.) to engage with residents



Key Findings

Other Opportunities (Continued)

- In terms of communications **content**:
 - Only 38% of all residents specifically mentioned that rainwater run-off flows into the local lakes. Other frequent mentions were stormwater drains and local creeks/rivers – but what is not known is whether residents who mentioned these other channels directly associate them with the lakes
 - The challenge facing Council in balancing the needs/perceptions of residents is perhaps best illustrated by the fact that 'bad smells' and 'water quality' were both mentioned as reasons why residents felt the lakes had **improved** and had **gotten worse** in recent years
 - As noted on the previous slide, the state of the vegetation is a key driver of overall perceptions of the lakes. Interestingly, a quarter of those who felt the lakes had gotten worse over the years reasoned it was because of the 'amount of weeds/seaweeds in and around the lakes'. Further education about the important role of the weeds may be required
 - In terms of environmentally damaging behaviours, washing cars on streets/driveways appears to be the main issue



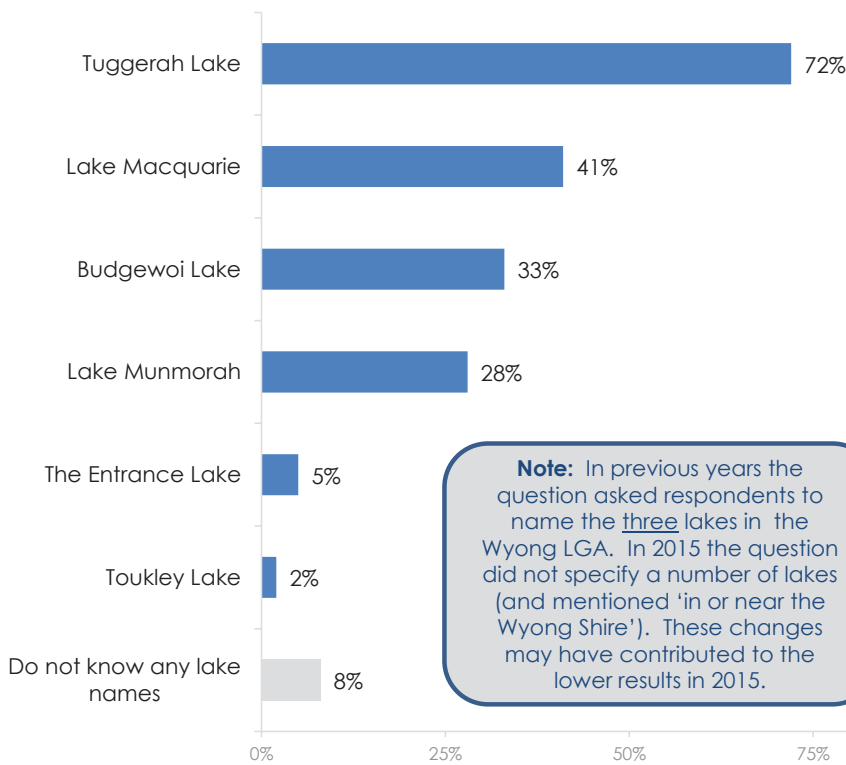
Findings in Detail:

1. Awareness & Communication



Recall of Lakes in or Near Wyong Shire

Q1. Are you able to name any of the large lakes that are in or near the Wyong Shire?



	2015 (N=605)	2013 (N=600)	2009 (N=600)
Tuggerah Lake	72% ▼ (73%)	83%	72%
Lake Macquarie	41% ▲ (31%)	21%	18%
Budgewoi Lake	33% ▼ (32%)	43%	48%
Lake Munmorah	28% (26%)	36%	39%
The Entrance Lake	5%	5%	2%
Toukley Lake	2%	-	-
Do not know any lake names	8%	9%	18%

Note: In previous years the question asked respondents to name the three lakes in the Wyong LGA. In 2015 the question did not specify a number of lakes (and mentioned 'in or near the Wyong Shire'). These changes may have contributed to the lower results in 2015.

▲ ▼ = significantly higher/lower (by year)

Note: Only responses >1% were reported. See the Appendix for a list of 'other' responses

Figures shown in red in the above table exclude the booster sample of those living in the Lake Macquarie Catchment. The higher recall of Lake Macquarie is partly due to the Lake Macquarie booster sample (93% recall amongst the booster sample) – however, as shown above, even those living in the 'Other suburbs' had a recall of 31%, up from 21% in 2013. In contrast, recall of the other main lakes has declined, even amongst the 'Other suburbs' sample.

Positioning Statement

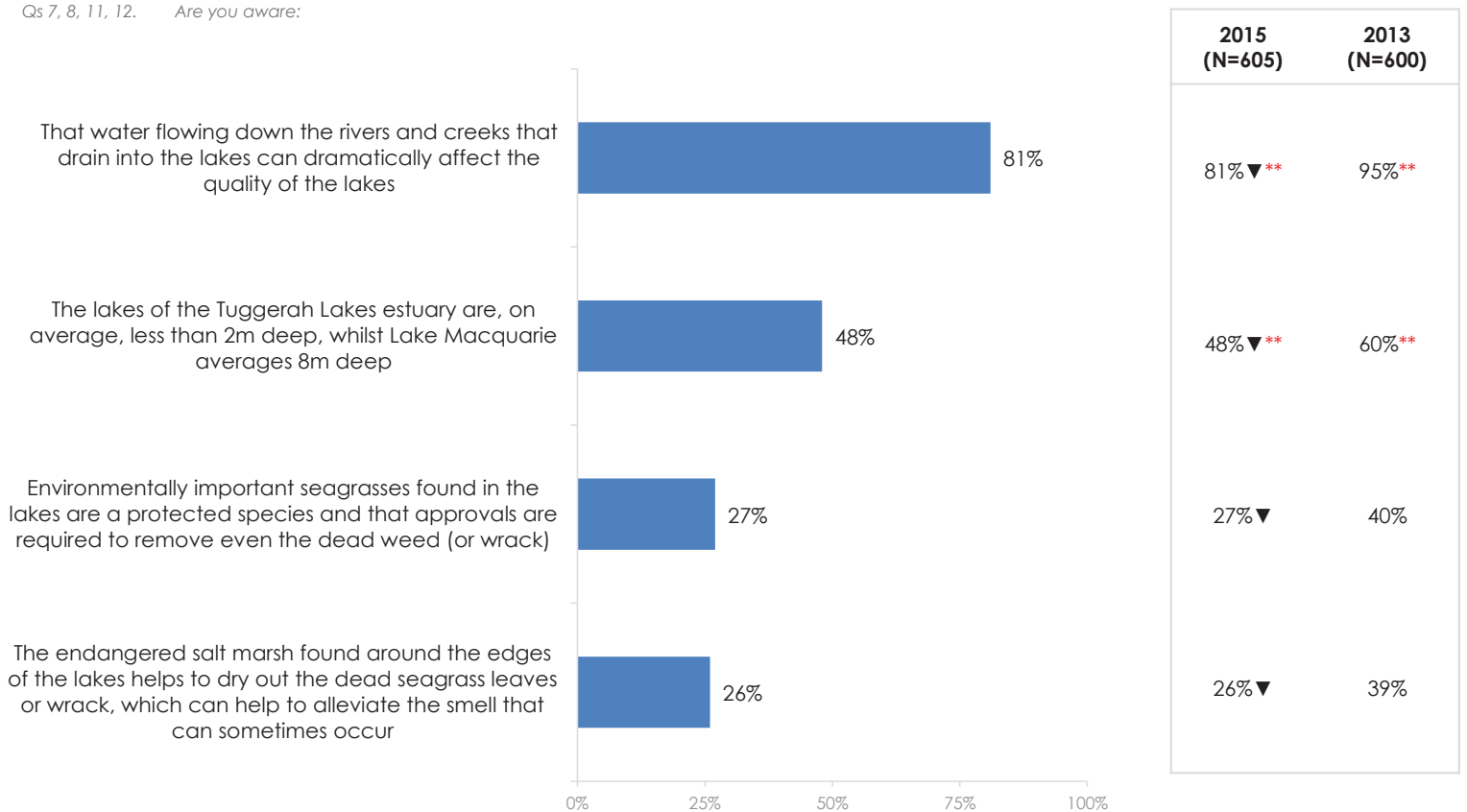
This statement was read to residents prior to being asked the subsequent questions

Just to give you some background, Wyong Shire includes three main coastal lakes or lagoons. They are Tuggerah Lake, Budgewoi Lake and Lake Munmorah. Also, some Wyong Shire suburbs are in the Lake Macquarie Catchment area. The following questions relate to these four Lakes in general – although we understand you may base your answers on those lakes closest to you.



Awareness of Facts Regarding the Lakes

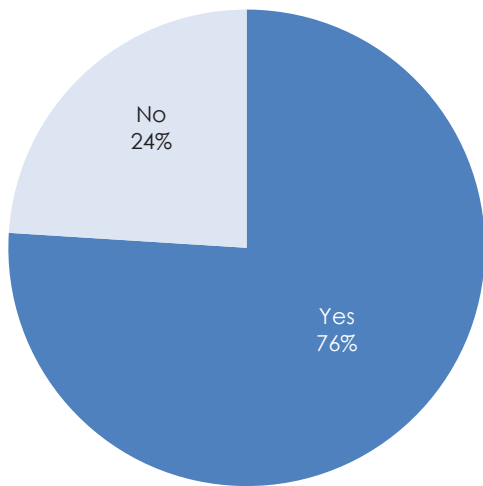
Qs 7, 8, 11, 12. Are you aware:



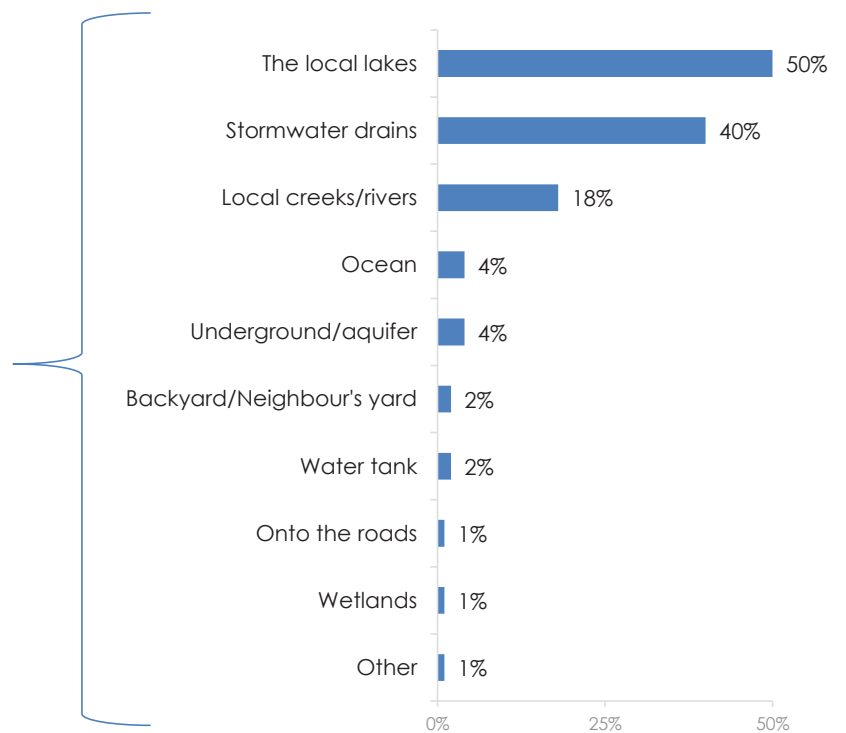
Awareness of all four facts regarding the lakes has significantly declined from 2013 (**The wording of the lake-depth question changed this year to include reference to the 8 metre depth of Lake Macquarie – and the water flow question changed marginally). The Lake Macquarie catchment residents provided generally higher awareness scores, so their inclusion has certainly not contributed to the decline.

Awareness of Facts Regarding the Lakes

Q9a. After rainwater falls on your property, do you know where the run-off flows to?



Q9b. If yes, where does it flow to?



Base: N = 605

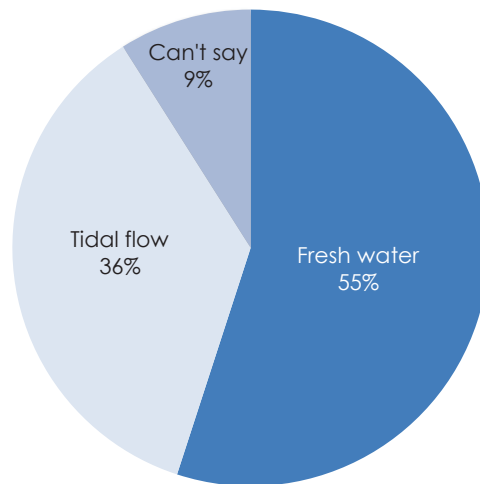
Base: N = 461

Note: See the Appendix for a list of 'other' responses

On the previous slide we saw there had been a significant decline in those claiming to be aware that the water flowing down rivers and creeks can dramatically affect lakes. Perhaps related to that finding, we can see from the above chart that 24% are unsure where rainwater flows to – and only 50% of those who are aware (or 38% of total residents) directly mentioned the lakes as a destination.

Awareness of Facts Regarding the Lakes

Q10. What do you think has a greater effect on water quality in Tuggerah Lakes, fresh water flows from creeks and stormwater drains or tidal flow through the channel mouth at The Entrance?

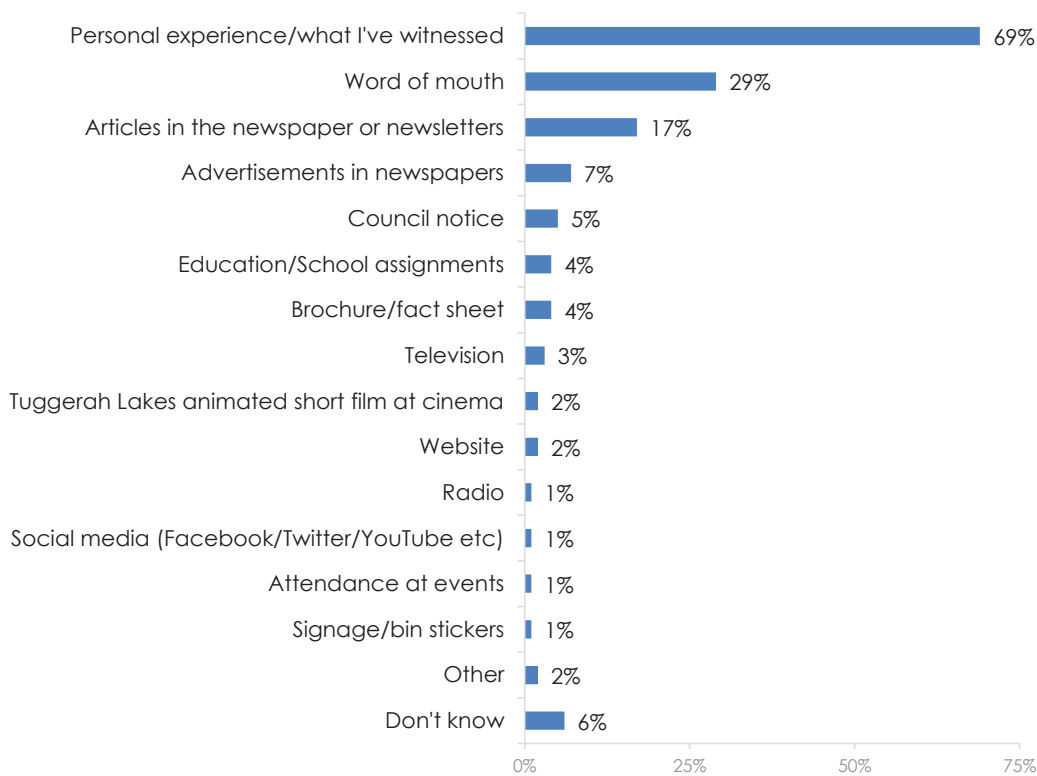


Base: N = 605

A majority of residents (55%) thought that 'fresh water flows from creeks and stormwater drains' has a greater effect on water quality in Tuggerah Lakes – although a substantial minority (36%) believed 'tidal flow' has a greater effect.

Method of Awareness

Q13. If you answered yes to questions 7-12 (or anything but 'can't say' on Q10), how did you become aware of these facts?



	2015 (N=594)	2013 (N=594)
Personal experience/what I've witnessed	69%	69%
Word of mouth	29%	26%
Articles in the newspaper or newsletters	17% ▼	32%
Advertisements in newspapers	7%	N/A
Council notice	5%	N/A
Education/School assignments	4%	N/A
Brochure/fact sheet	4%	N/A
Television	3%	N/A
Tuggerah Lakes animated short film at cinema	2%	N/A
Website	2%	N/A
Radio	1%	N/A
Social media (Facebook/Twitter/YouTube etc)	1%	N/A
Attendance at events	1%	2%
Signage/bin stickers	1%	2%
Other	2%	11%
Don't know	6%	N/A

Note: See the Appendix for a list of 'other' responses

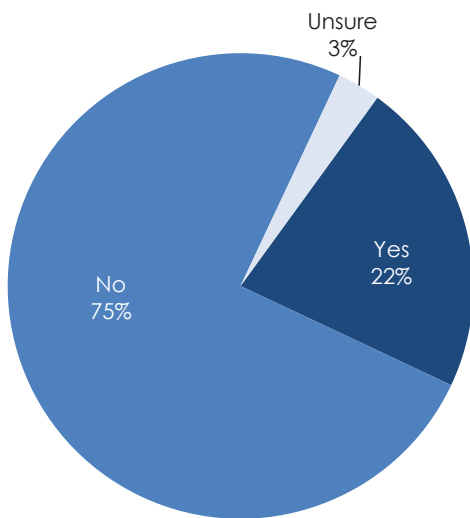


The primary means of awareness of facts regarding the lakes was 'personal experience' (69%), followed by 'word of mouth' (29%). This suggests that in-situ education is likely a key channel for Council to consider.

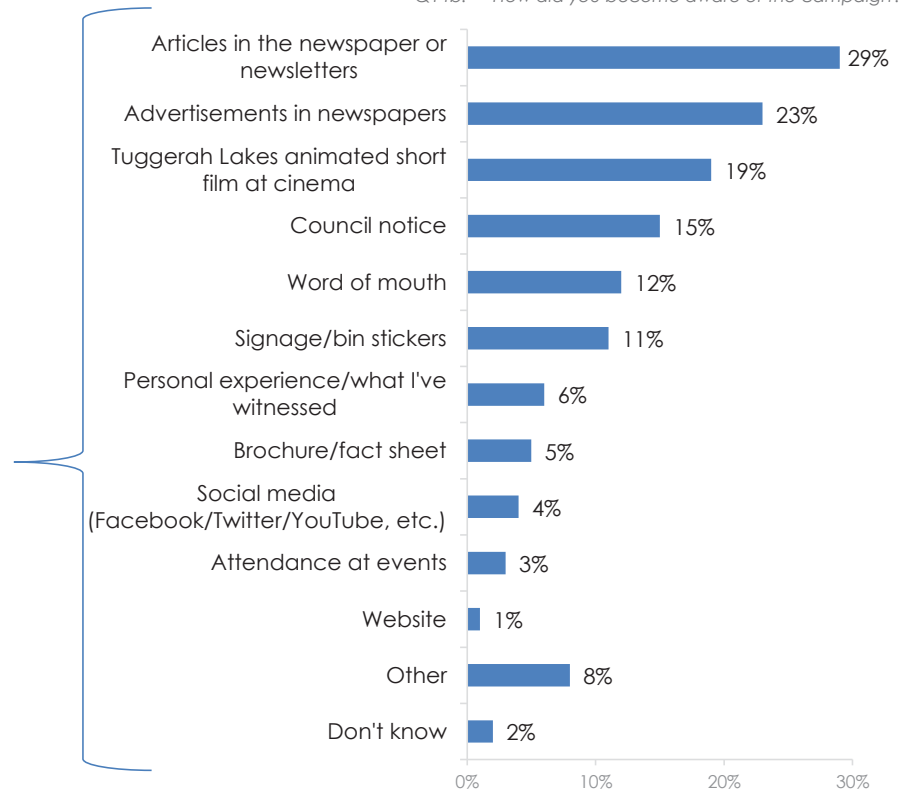
Awareness of the 'Love Our Living Lakes' Campaign

Q14a. Are you aware of the 'Love Our Living Lakes' campaign?

	2015	2013
Yes	22%	22%
No	75%	77%
Unsure	3%	1%



Q14b. How did you become aware of the campaign?



Base: N=605

Base: N=131

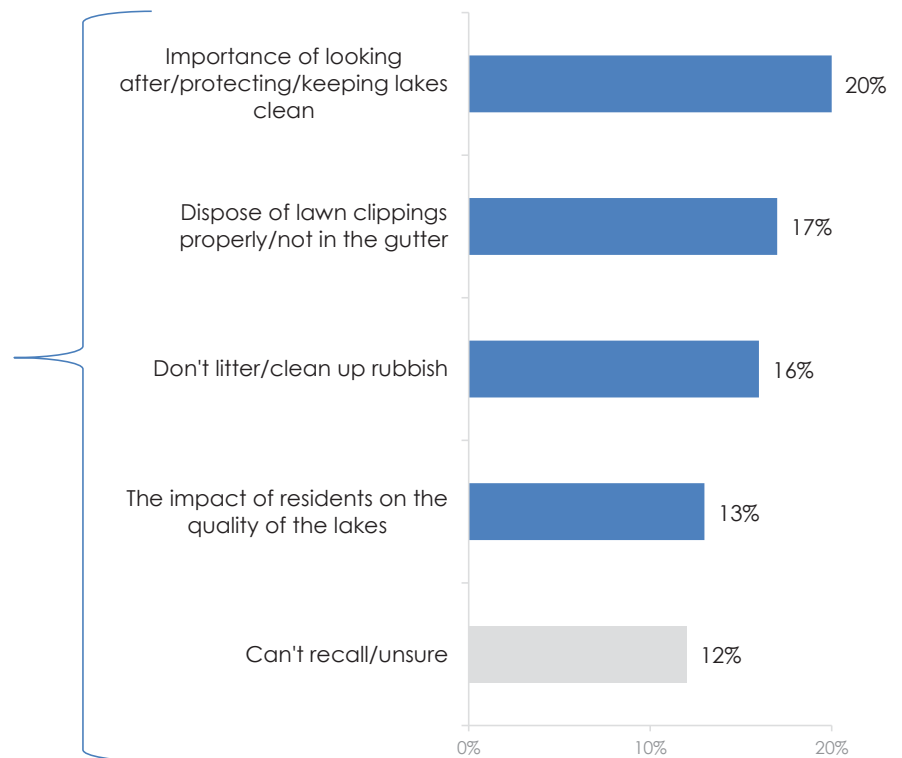
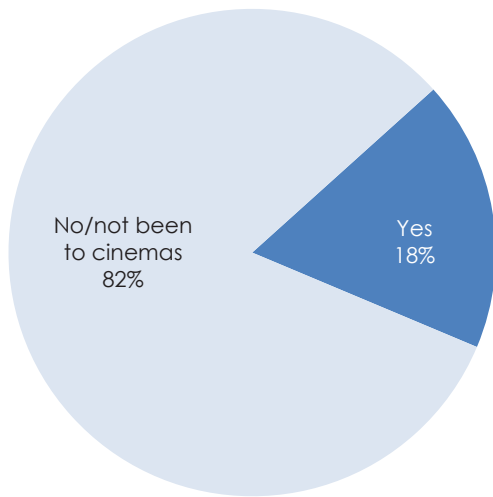
Note: See the Appendix for a list of 'other' responses

22% of residents had heard of the 'Love Our Living Lakes' campaign (identical to 2013), primarily becoming aware via 'articles in the newspaper or newsletters' (29% of those aware) or 'advertisements in newspapers' (23%). It should be noted that this research was conducted shortly after the nine-day 'Wyong Lakes Festival', which could have been expected to boost awareness levels?

Tuggerah Lakes Estuary Short Animated Film

Q15a. Over the last 12 months, the Lake Haven Metro and Westfield Tuggerah Event Cinemas have screened a short animated film on the Tuggerah Lakes estuary. Do you recall seeing this short animated film at all at the cinemas?

Q15b. What do you think were the main messages in the short animated film?



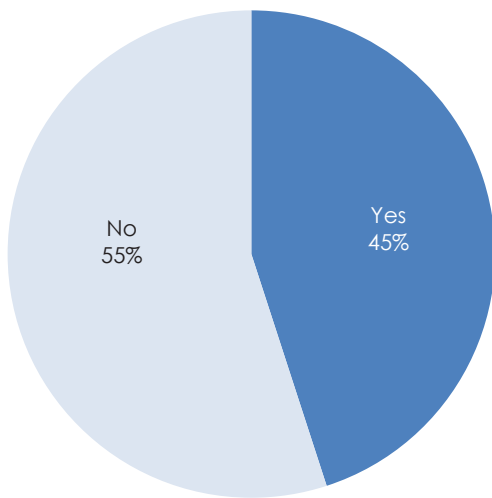
Base: N = 605

Base: N = 106
 Note: Only responses >10% were reported. See the Appendix for a full list of responses.

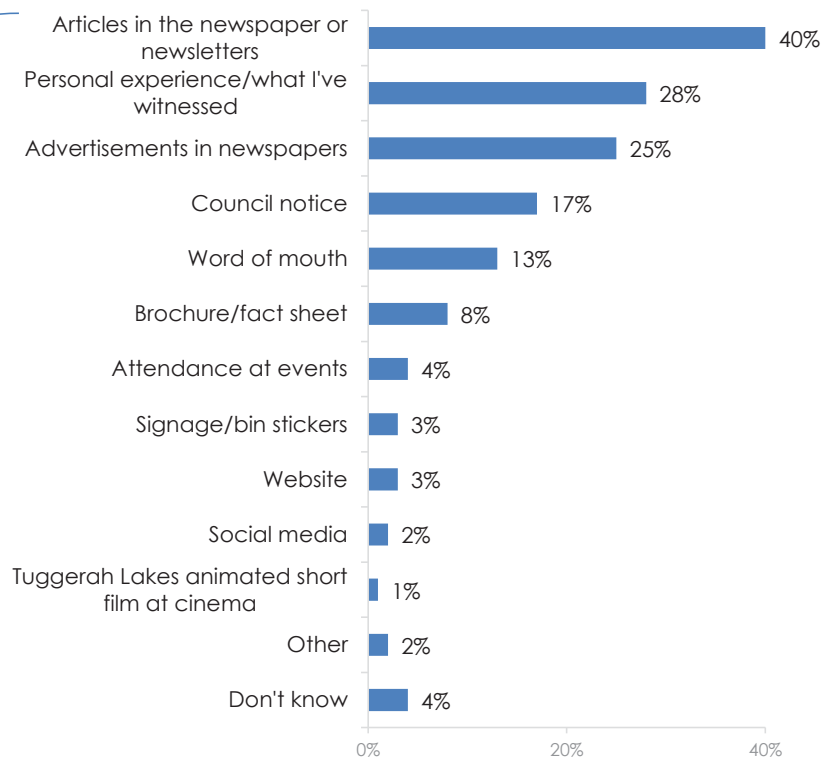
18% of residents recalled seeing the short animated film at cinemas, of whom 20% believed that the 'importance of looking after/protecting/keeping the lakes clean' was the main message of the film. In terms of specific action-messages, references to correct disposal of lawn clippings (17%) and not littering (16%) dominated.

Awareness of Wyong Shire Project Partnerships

Q16a. Did you know that Wyong Shire Council and its partners have implemented an extensive program of projects such as stormwater treatment and stream bank rehabilitation over the last 8 years to improve the water quality in Tuggerah Lakes estuary?



Q16b. How did you become aware of these projects?



Base: N = 605

Base: N = 272

Note: See the Appendix for a list of 'other' responses

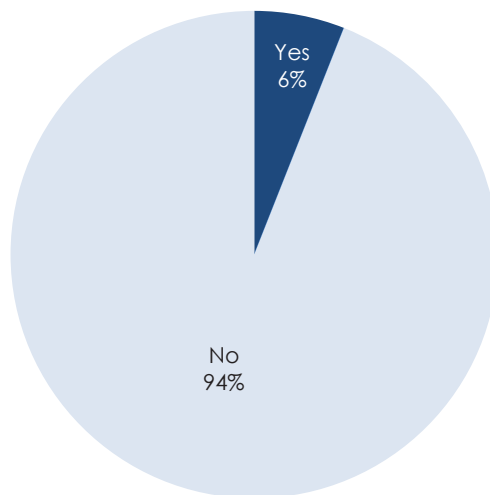


45% of residents were aware of Wyong Shire Council's water quality program partnerships, of whom 40% became aware through 'articles in the newspaper or newsletters'.

Participation in Lakes Educational Activities or Workshops

Q17a. Have you participated in any educational activities or workshops that have been conducted to raise awareness of the lakes?

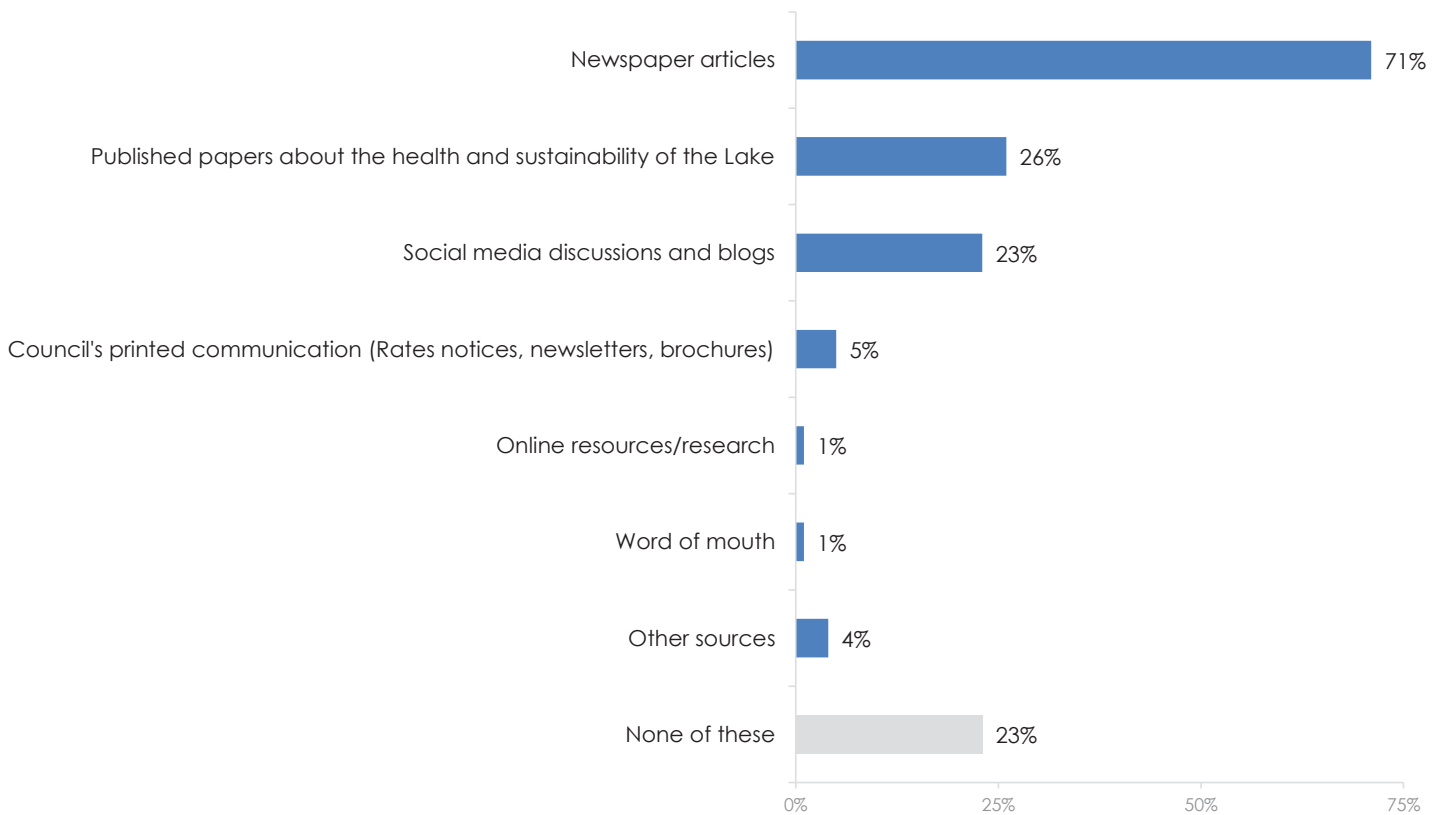
	2015	2013
Base	N=605	N=600
Yes	6%	4%
No – I tried but it was full	0%	0%
No	94%	96%



6% of residents participated in educational activities or workshops that had been conducted to raise awareness of the lakes – up marginally from 4% in 2013.

Sources of Reading about Tuggerah Lakes Estuary

Q17b. Have you ever read any of the following sources specifically about the Tuggerah Lakes Estuary?



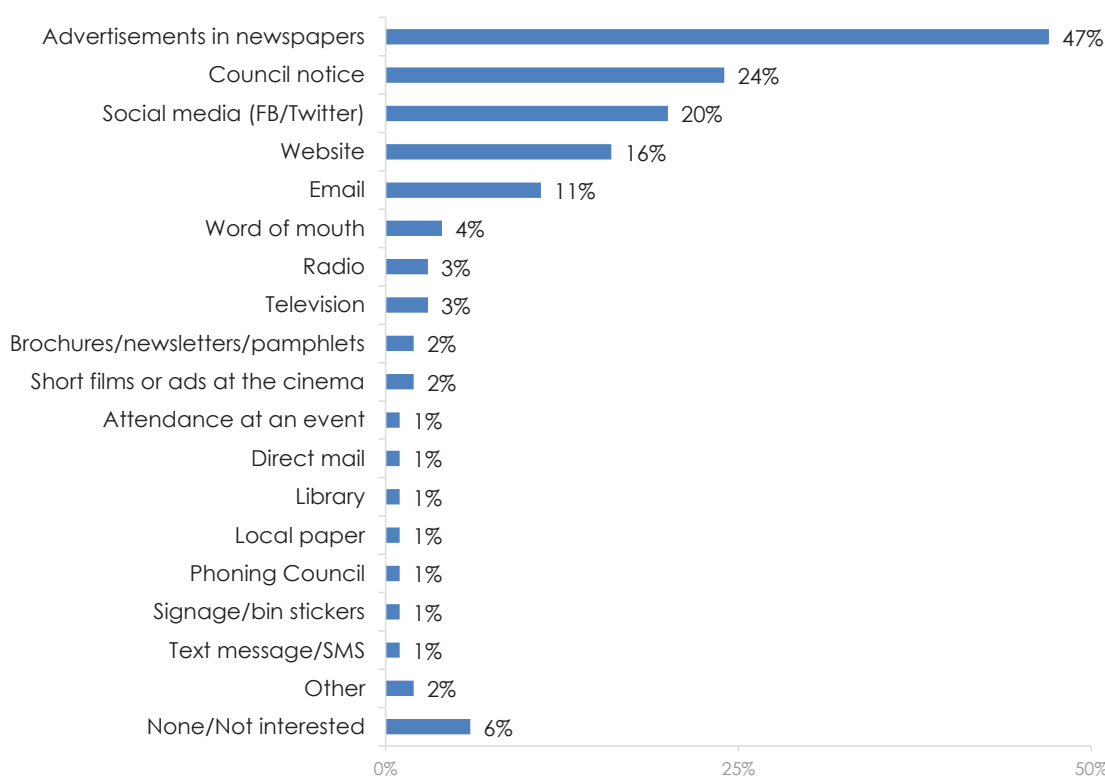
Base: N = 605

Note: See the Appendix for a list of 'other' responses

Almost a quarter of all residents (23%) claimed to have never read any of the listed media regarding the Tuggerah Lakes Estuary (more likely to be 18-34 year olds and those who rent) – this could be an opportunity for Council. Reading of published papers was higher amongst those aged 35+ years.

Preferred Method of Finding Out Information About Environmental Activities

Q20. How do you like to find out information about environmental activities at Council?



	2015 (N=605)	2013 (N=600)
Advertisements in newspapers	47%▼	61%
Council notice	24%▼	33%
Social media (FB/Twitter)	20%▲	5%
Website	16%▼	24%
Email	11%▲	4%
Word of mouth	4%	2%
Radio	3%	2%
Television	3%	3%
Brochures/newsletters/pamphlets	2%	1%
Short films or ads at the cinema	2%	N/A
Attendance at an event	1%▼	4%
Direct mail	1%	2%
Library	1%	2%
Local paper	1%	N/A
Phoning Council	1%	N/A
Signage/bin stickers	1%	N/A
Text message/SMS	1%	N/A
Other	2%	4%
None/Not interested	6%	N/A

Note: See the Appendix for a list of 'other' responses

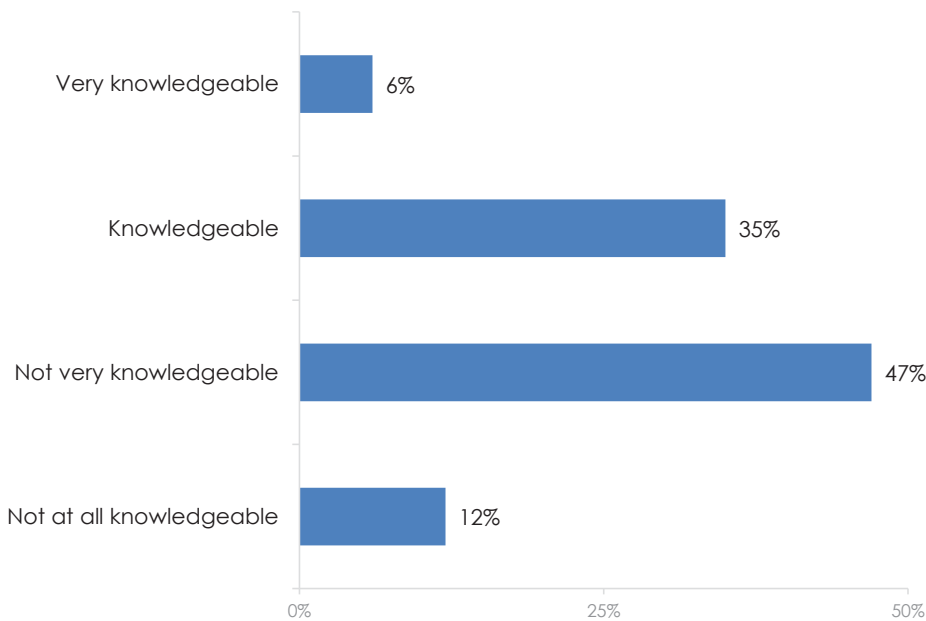


47% of residents like to find out information about environmental activities at Council via 'advertisements in newspapers', followed by 'Council notice' (24%). Interestingly, the two channels that increased significantly from 2013 were 'targeted' e-communications – social media and email

Knowledge of the Health & Sustainability of Lakes

Q2. Thinking of the lakes closest to you, how knowledgeable do you believe you are in terms of their health and long-term sustainability?

	2015	2013	2009	Male	Female	18-34	35-54	55+	Ratepayer	Non-ratepayer
Mean rating	2.34	2.41	2.29	2.46▲	2.24	2.07▼	2.29	2.55▲	2.46▲	2.06
Base	605	600	600	286	319	150	209	246	427	178



Time lived in area
Residents who have lived in the area for more than 20 years indicated they were significantly more knowledgeable than those who had lived in the area for less than 5 years

Distance from lakes
Those who lived less than 100 metres from a lake considered themselves to be significantly more knowledgeable than those who live more than 1 kilometre away

▲ ▼ = significantly higher/lower (by group)
Scale: 1=not at all knowledgeable/4=very knowledgeable

41% of residents indicated they were 'knowledgeable' to 'very knowledgeable' regarding the health and long-term sustainability of the lakes (down from 46% in 2013). The mean score has dropped marginally from 2.41 out of 4 in 2013 to 2.34 in 2015. Given the question wording in 2015 was changed to focus on 'the lakes closest to you', we could have expected an increase rather than decrease in knowledge in 2015.

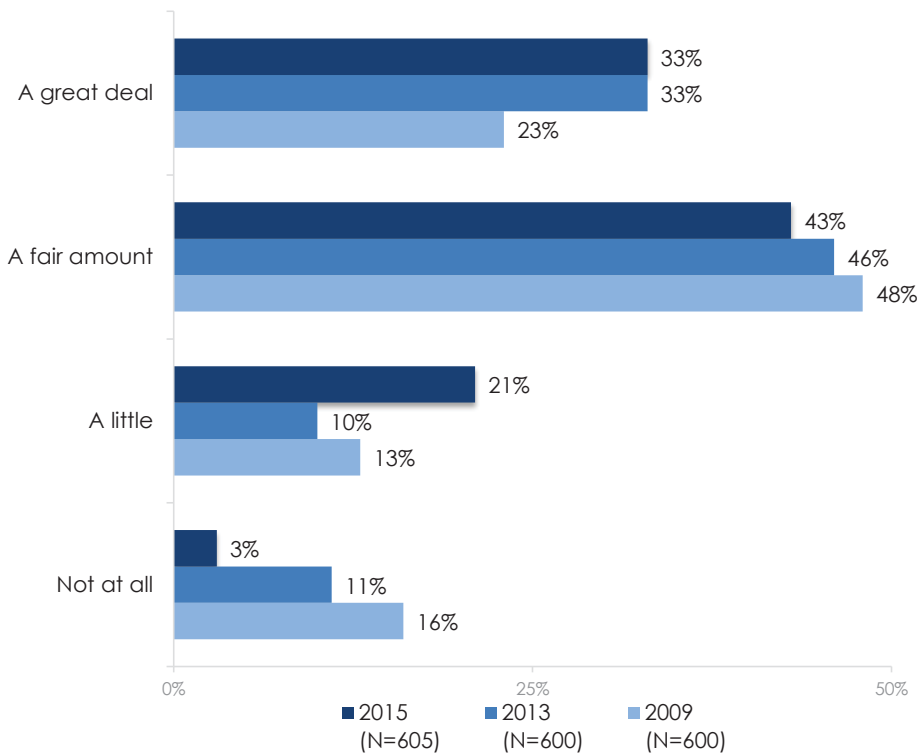
Findings in Detail:

2. Overall Attitudes



Concern for Environmental & Sustainability Issues Affecting the Lakes

Q3a. Are you concerned about environmental and sustainability issues affecting the lakes?



Year
Residents were significantly more likely to be 'a little' concerned, and significantly less likely to be 'not at all' concerned than in 2013

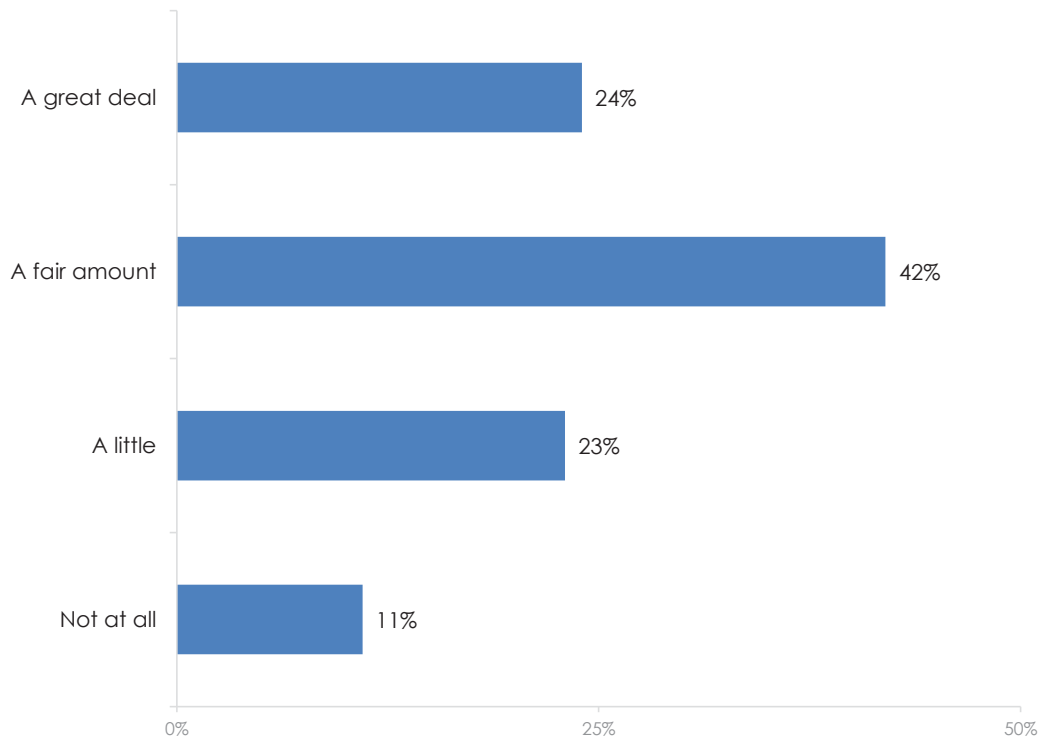
Age
Residents aged 55+ (40%) were significantly more likely to be concerned 'a great deal' than were those aged 18-34 (15%)

Ratepayer status
Non-ratepayers were significantly more likely to be concerned 'a little' (32% v 17%)

Encouragingly, the 'not at all concerned' result has dropped significantly from previous years. The challenge now for Council is to engage with those who are 'a little concerned' and engage more deeply with them. Interestingly, there were no significant differences by proximity of living near a lake – this suggests Council's communication and education campaign has reached across the LGA.

Concern for Visual Issues and Impacts on Aquatic Recreation Activities Affecting the Lakes

Q3b. Are you concerned about visual issues and impacts on aquatic recreation activities affecting the lakes?



Base: N=605

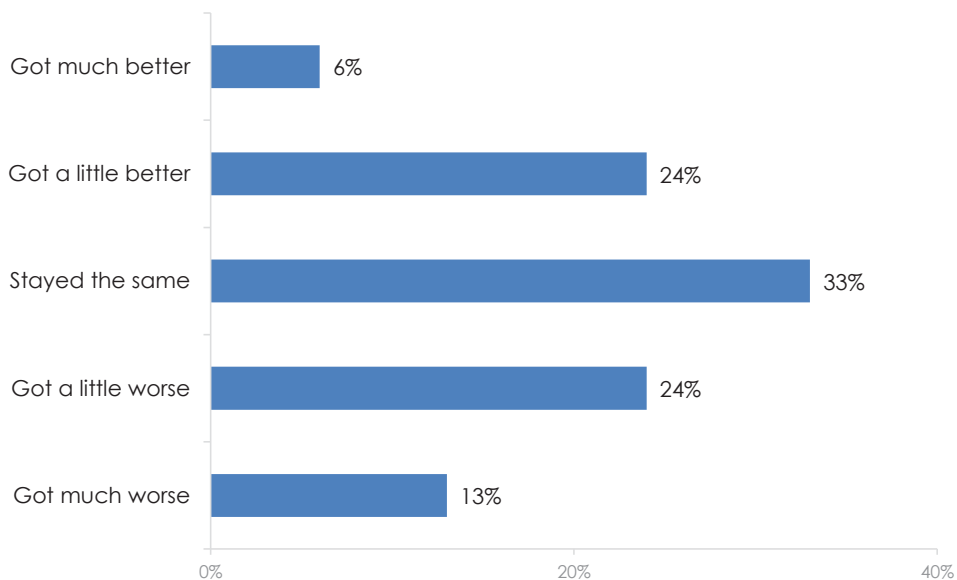
89% of residents were at least 'a little' concerned about the visual issues and impacts on aquatic recreation activities affecting the lakes – this is a little lower than for the 'environmental and sustainability' issues reported on the previous slide.

Results were similar across the demographics – once again, proximity to a lake is not a factor.

Change in the Quality of the Lakes

Q4a. Looking back over the last 8-10 years, do you think that the quality of the lakes has:

	2015	2013*	2009	Male	Female	18-34	35-54	55+	Ratepayer	Non-ratepayer
Mean rating	2.86▲	2.58	2.70	2.86	2.86	2.65	2.78	3.06▲	2.95▲	2.65
Base	605	600	600	286	319	150	209	246	427	178



*Note: In the 2013 report, the mean was inaccurately reported as 2.67

▲ ▼ = significantly higher/lower (by group)
Scale: 1 = got much worse/5 = got much better

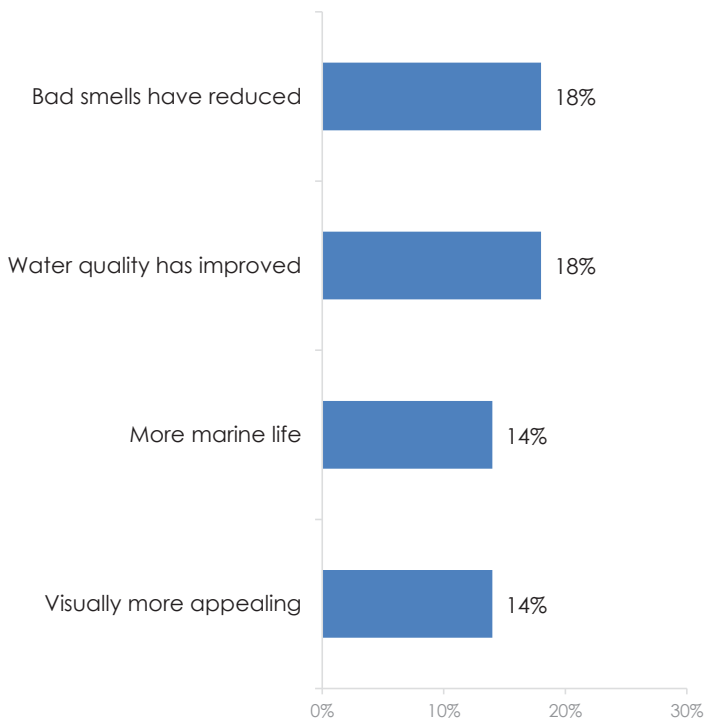
Residents' opinion of the quality of the lakes has significantly improved since 2013, which is an encouraging result! However, results remain polarised, with 30% indicating improvement and 37% indicating degraded quality. Frequent users of the lakes (for on or off water activities) were more likely to say there had been improvements – although there were no significant differences by proximity of living near a lake.

Change in the Quality of the Lakes

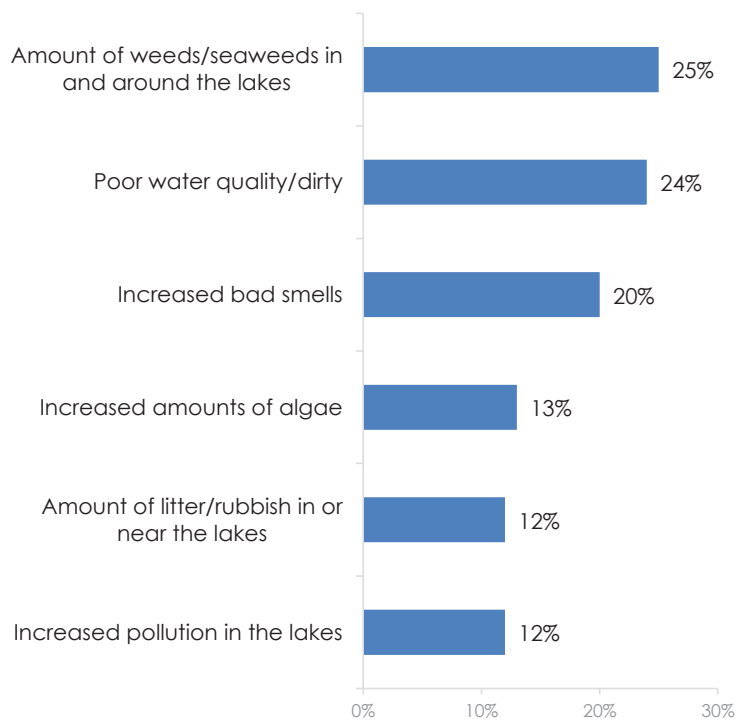
Q4a. Looking back over the last 8-10 years, do you think that the quality of the lakes has:

Q4b. (If rated 'better' or 'worse') Why do you say that?

Reasons for rating 'better' (Overall 30%)



Reasons for rating 'worse' (Overall 37%)



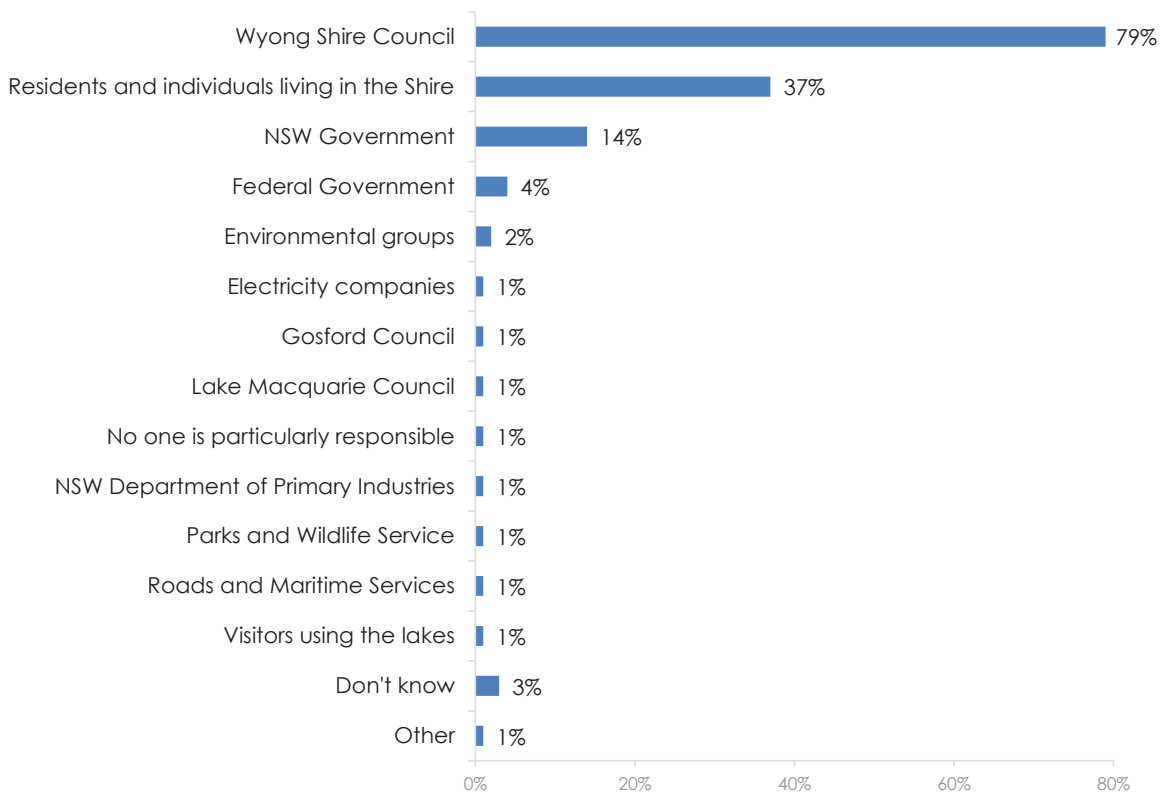
Base: N=605

Note: Only responses >10% were reported. See the Appendix for a full list of responses

'Bad smells' and 'water quality' both feature as reasons why residents feel the lakes have improved and why they have become worse. This potentially highlights a perceptual challenge for Council. In contrast, 'the amount of weeds in and around the lakes' was a main reason given by those who felt the lakes had gotten worse – but did not feature as a main reason why they had improved.

Responsibility for Improving the Quality of Tuggerah Lakes

Q4c. Who do you believe is responsible for improving the quality of Tuggerah Lakes?



	2015 (N=605)	2013 (N=600)
Wyong Shire Council	79%	75%
Residents and individuals living in the Shire	37%▲	25%
NSW Government	14%▼	22%
Federal Government	4%▼	8%
Environmental groups	2%	N/A
Electricity companies	1%	N/A
Gosford Council	1%	N/A
Lake Macquarie Council	1%	N/A
No one is particularly responsible	1%	N/A
NSW Department of Primary Industries	1%	N/A
Parks and Wildlife Service	1%	N/A
Roads and Maritime Services	1%	N/A
Visitors using the lakes	1%	N/A
Don't know	3%	5%
Other	1%	10%

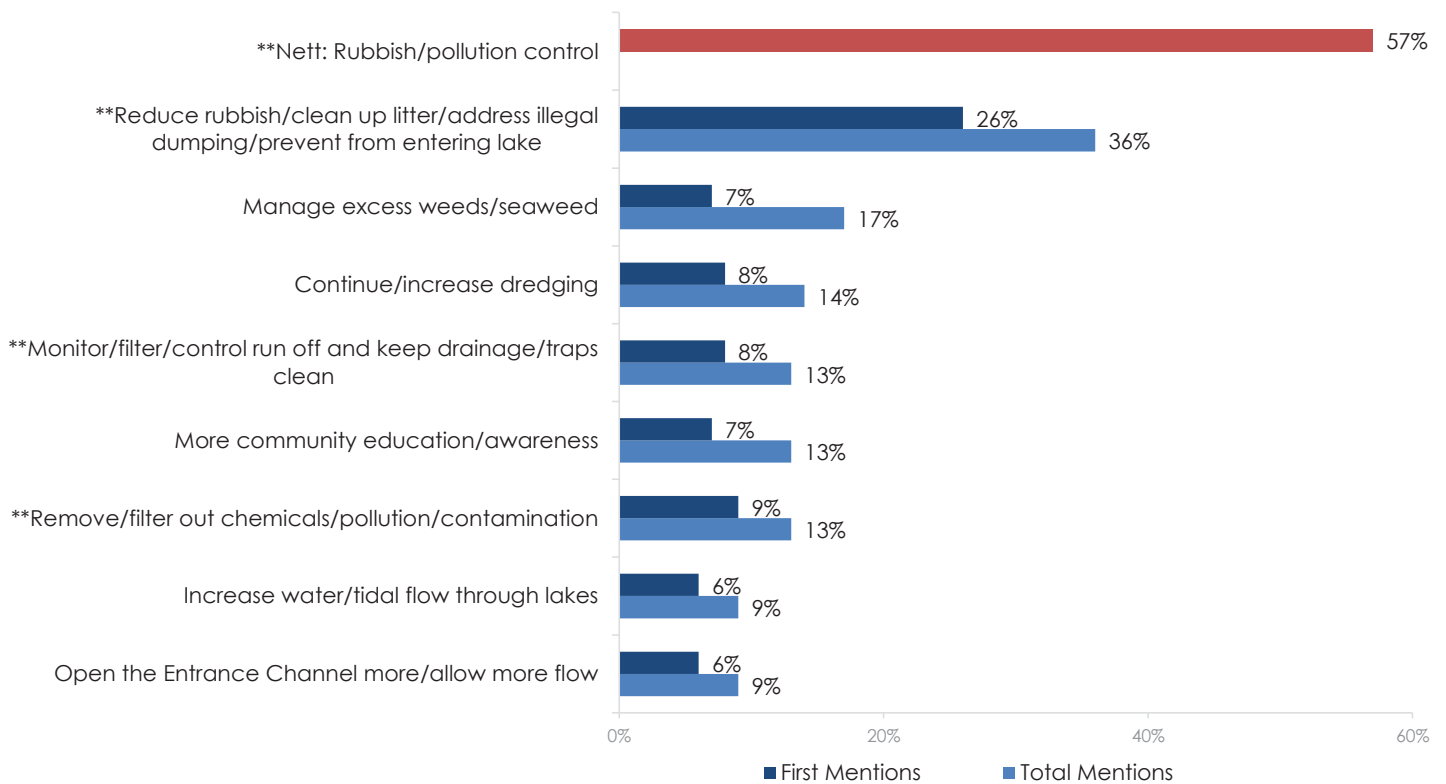
▲ ▼ = significantly higher/lower (by year)

Note: See the Appendix for a list of 'other' responses

Whilst 79% of residents believe Wyong Shire Council is responsible for improving the quality of Tuggerah Lakes, the significant increase in references to 'residents and individuals living in the Shire' (up from 25% in 2013 to 37% in 2015) is particularly pleasing. In contrast, those who felt that 'NSW Government' and 'Federal Government' were responsible significantly declined from 2013

Key Actions to Assist In Maintaining Healthy Lakes

Q4d. In order of importance, what are the 3 key things you believe need to be done to assist in maintaining healthy lakes?



Base: N=605

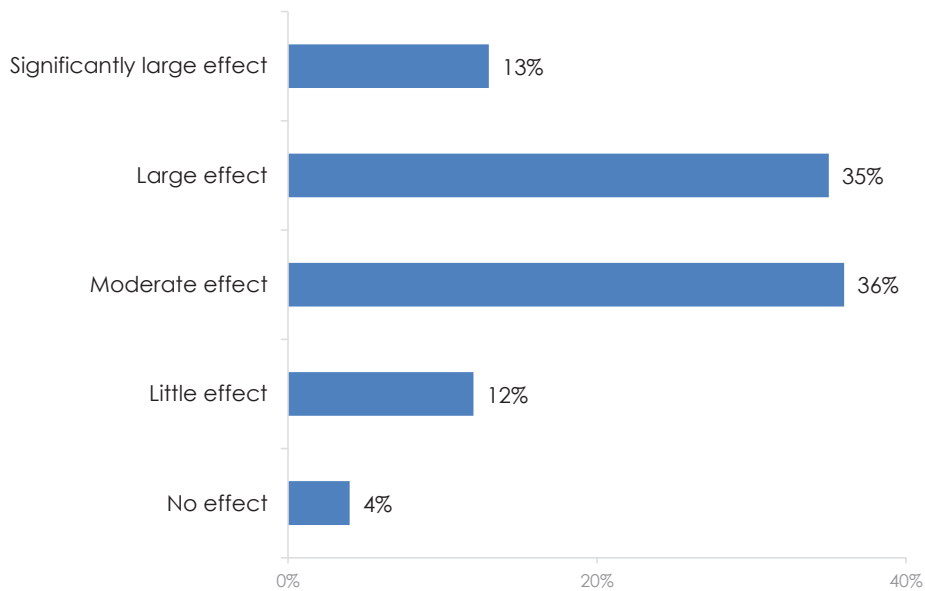
Note: Only responses >10% were reported. See the Appendix for a complete list.

Rubbish/pollution control were the main aspects mentioned by residents: 36% felt that preventing rubbish/litter from entering the lake was a key aspect, whilst 13% referred to filtering/controlling run-off and 13% mentioned filtering out chemicals/pollution. The net sub-total of residents mentioning any of these three issues was 57%. Control of weeds (17%) and continued dredging (14%) were also mentioned, along with 'tidal flow' / 'open the Entrance Channel' mentions (net sub-total of 18%).

Effect Residents Have on the Lakes

Q4e. What effect do you think residents living and working in Wyong Shire have on the lakes?

	2015	2013	Male	Female	18-34	35-54	55+	Ratepayer	Non-ratepayer
Mean rating	3.43▲	3.24	3.36	3.49	3.46	3.54	3.32	3.45	3.38
Base	605	600	286	319	150	209	246	427	178



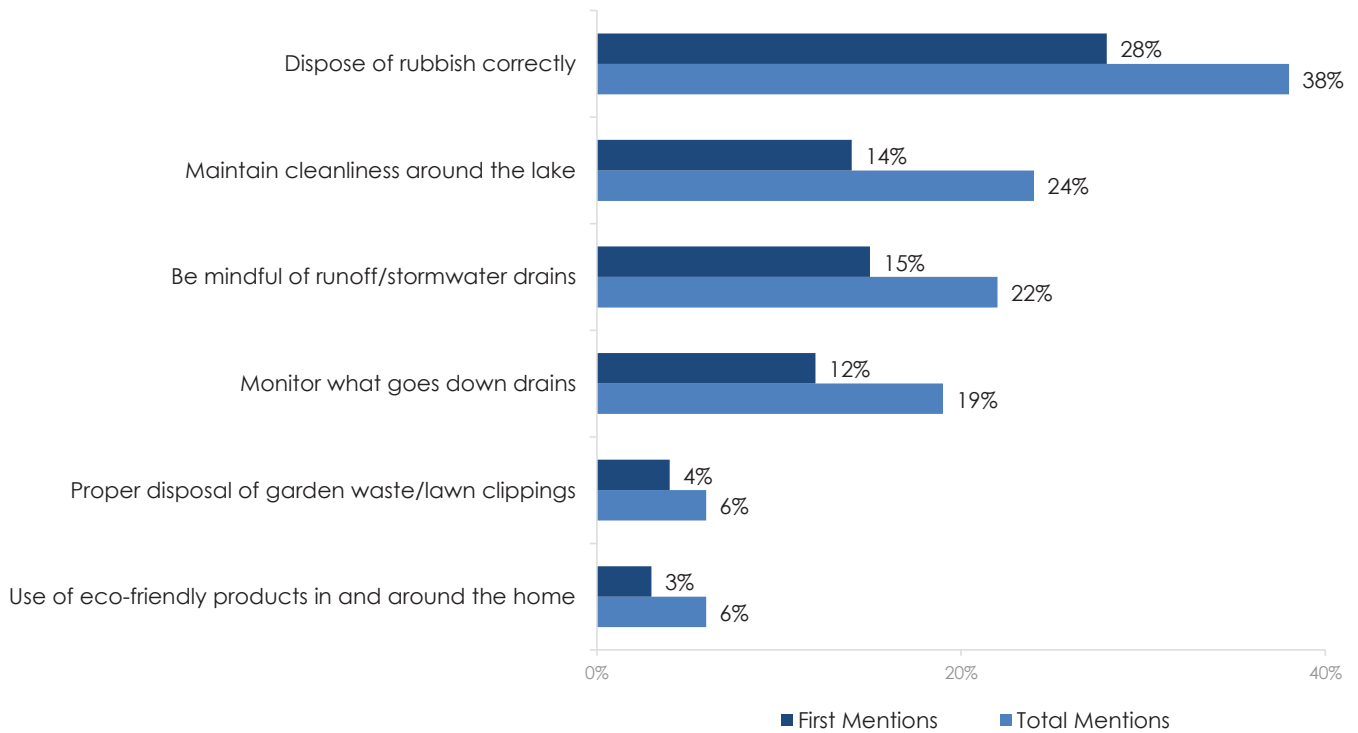
▲▼ = significantly higher/lower (by year)
Scale: 1 = no effect/5 = significantly large effect



There has been a significant positive shift in resident perceptions about the impact people have on the lakes, with the mean 'effect' score increasing from 3.24 out of 5 in 2013 to 3.43 in 2015.

Key Ways Households Can Assist in the Maintenance of Healthy Lakes

Q5. In order of importance, what are the 3 key things you believe that you and your household can do to assist in maintaining healthy lakes?



Base: N=605

Note: Only 'total mention' responses >5% were reported. See the Appendix for a complete list.



38% of residents felt that the correct disposal of rubbish was a key way for their household to assist in the maintenance of healthy lakes – this item also dominated 'first mention' responses

Findings in Detail:

3. Importance and Satisfaction



Importance and Satisfaction Ratings

Residents were asked to rate 13 environmental and sustainability issues on a five point Importance scale – and where Importance was rated 4 or 5 out of 5, they were also asked to rate their Satisfaction on a five-point scale.

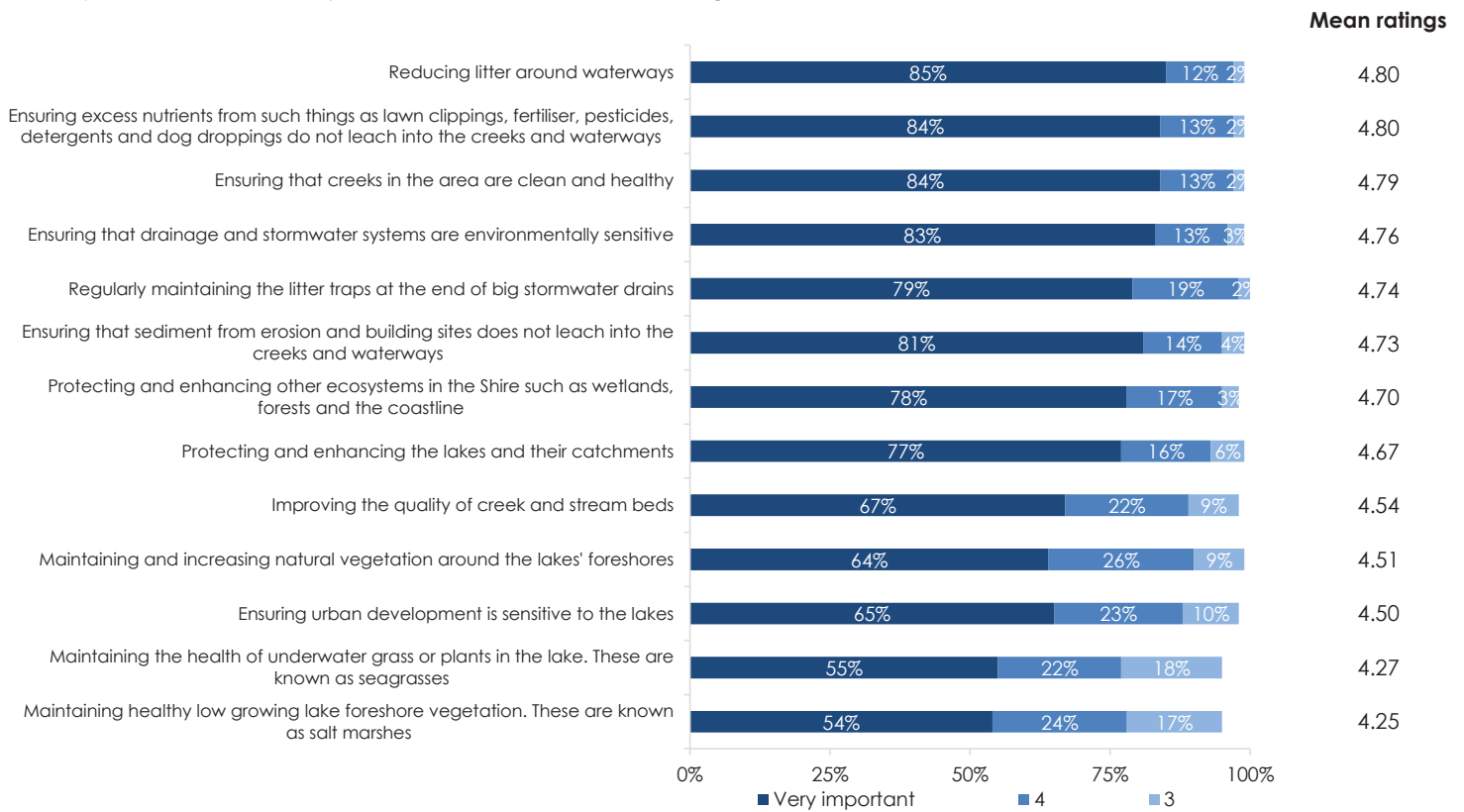
The following slides report the key findings of these questions.



Importance of Environmental & Sustainability Issues

Q6.

I would like you to give me your opinion on the importance of 13 specific environmental and sustainability issues in the Wyong Shire Council area that have an impact on the lakes, as well as your satisfaction with the current actions being undertaken for these issues.



Base: N=605

Scale: 1 = not at all important/5 = very important

Importance was high across all environmental and sustainability issues, with 54%-85% of residents rating each issue 'very important', and the lowest mean score being just 4.25 out of 5. Interestingly, the three 'vegetation' statements had some of the lowest importance ratings – although they were still relatively high.

Importance of Environmental & Sustainability Issues

Year-on-Year Difference

Q6. I would like you to give me your opinion on the importance of 13 specific environmental and sustainability issues in the Wyong Shire Council area that have an impact on the lakes, as well as your satisfaction with the current actions being undertaken for these issues.

	2015	2013	2009	Importance mean ratings
Ensuring excess nutrients from such things as lawn clippings, fertiliser, pesticides, detergents and dog droppings do not leach into the creeks and waterways	4.80	4.73	4.71	
Reducing litter around waterways	4.80	4.73	4.72	
Ensuring that creeks in the area are clean and healthy	4.79	4.76	4.76	
Ensuring that drainage and stormwater systems are environmentally sensitive	4.76▲	4.66	4.68	
Regularly maintaining the litter traps at the end of big stormwater drains	4.74	4.74	4.69	
Ensuring that sediment from erosion and building sites does not leach into the creeks and waterways	4.73	4.69	4.69	
Protecting and enhancing other ecosystems in the Shire such as wetlands, forests and the coastline	4.70	4.65	4.63	
Protecting and enhancing the lakes and their catchments	4.67	4.66	4.66	
Improving the quality of creek and stream beds	4.54	4.52	4.56	
Maintaining and increasing natural vegetation around the lakes' foreshores	4.51	4.44	4.47	
Ensuring urban development is sensitive to the lakes	4.50▲	4.37	4.46	
Maintaining the health of underwater grass or plants in the lake. These are known as seagrasses	4.27▲	4.07	4.09	
Maintaining healthy low growing lake foreshore vegetation. These are known as salt marshes	4.25▲	4.07	4.24	

The hierarchal sorting of the table is relative to the criteria's current importance mean ratings

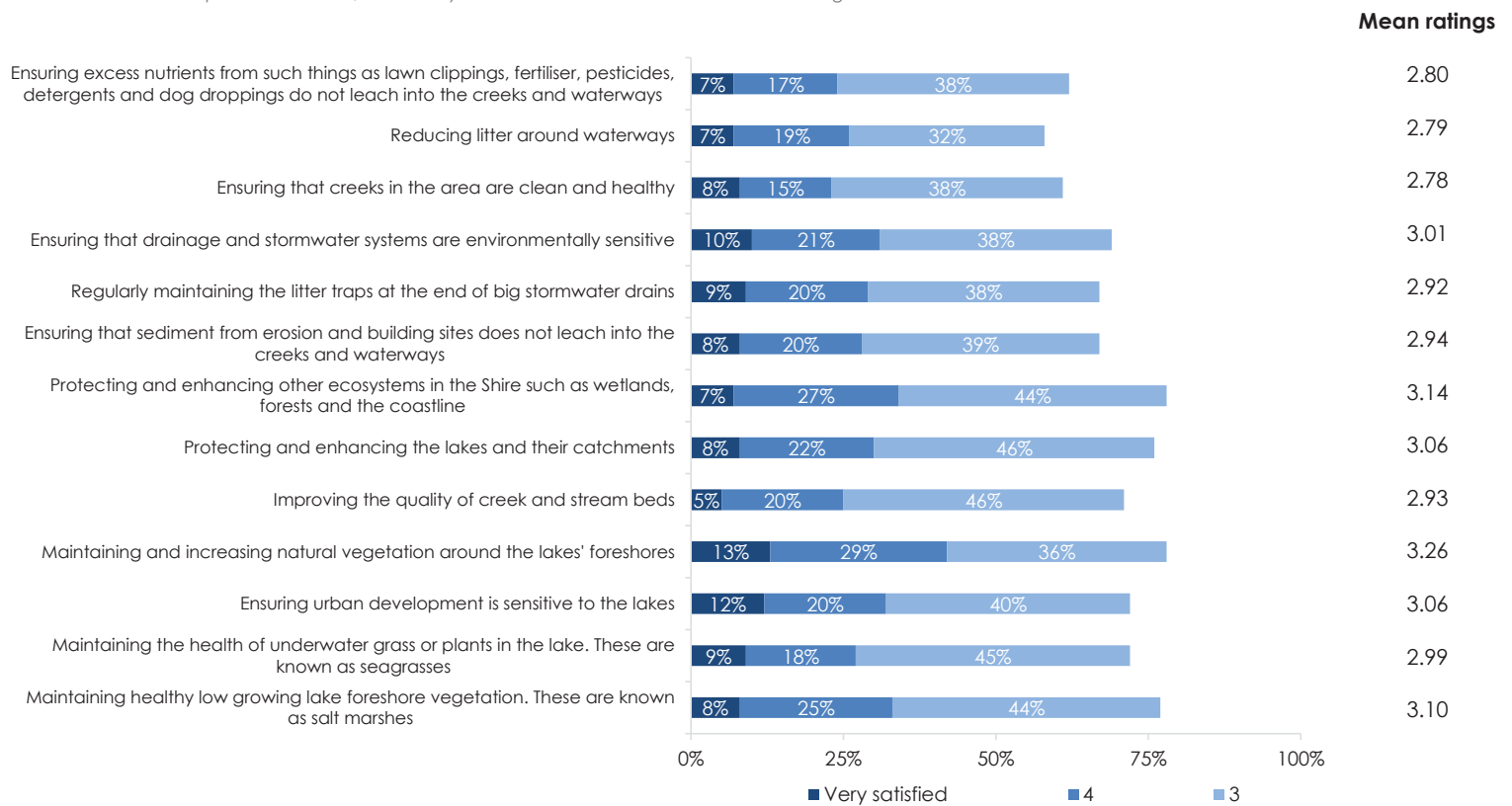
▲ ▼ = significantly higher/lower (by year)
Scale: 1 = not at all important, 5 = very important



Importance ratings for four of the 13 environmental and sustainability issues significantly increased from 2013 – including for the three lowest scoring statements, which is encouraging.

Satisfaction with Environmental & Sustainability Issues

Q6. I would like you to give me your opinion on the importance of 13 specific environmental and sustainability issues in the Wyong Shire Council area that have an impact on the lakes, as well as your satisfaction with the current actions being undertaken for these issues.



The hierarchal sorting of the table is relative to the criteria's current importance mean ratings

Scale: 1 = not at all satisfied/5 = very satisfied

Satisfaction scores are noticeably lower than their corresponding Importance scores – note that relatively few residents committed to the top two codes. Furthermore, as the attributes above are ranked according to their Importance rating, there is a sense in the data that those attributes with the higher Importance scores have lower Satisfaction scores.

Satisfaction with Environmental & Sustainability Issues

Year-on-Year Difference

Q6. I would like you to give me your opinion on the importance of 13 specific environmental and sustainability issues in the Wyong Shire Council area that have an impact on the lakes, as well as your satisfaction with the current actions being undertaken for these issues.

	2015	2013	2009	Satisfaction mean ratings
Ensuring excess nutrients from such things as lawn clippings, fertiliser, pesticides, detergents and dog droppings do not leach into the creeks and waterways	2.80	2.71	2.59	
Reducing litter around waterways	2.79	2.68	2.68	
Ensuring that creeks in the area are clean and healthy	2.78▲	2.61	2.58	
Ensuring that drainage and stormwater systems are environmentally sensitive	3.01▲	2.76	2.77	
Regularly maintaining the litter traps at the end of big stormwater drains	2.92▲	2.65	2.60	
Ensuring that sediment from erosion and building sites does not leach into the creeks and waterways	2.94	2.87	2.76	
Protecting and enhancing other ecosystems in the Shire such as wetlands, forests and the coastline	3.14	3.03	2.91	
Protecting and enhancing the lakes and their catchments	3.06	2.95	2.82	
Improving the quality of creek and stream beds	2.93	2.81	2.70	
Maintaining and increasing natural vegetation around the lakes' foreshores	3.26▲	3.06	2.99	
Ensuring urban development is sensitive to the lakes	3.06▲	2.85	2.73	
Maintaining the health of underwater grass or plants in the lake. These are known as seagrasses	2.99▲	2.63	2.63	
Maintaining healthy low growing lake foreshore vegetation. These are known as salt marshes	3.10	2.96	2.89	

The hierarchal sorting of the table is relative to the criteria's current importance mean ratings

Scale: 1 = not at all satisfied/ 5 = very satisfied

Encouragingly, mean Satisfaction ratings for all 13 environmental and sustainability issues have increased in 2015 – and in six cases the increases are significant.

Importance and Satisfaction Ratings Performance Gap Analysis

PGA establishes the gap between Importance and Satisfaction. This is calculated by subtracting the mean Satisfaction score from the mean Importance score. These scores are aggregated at a total community level.

When analysing the performance gaps, it is important to recognise that, for the most part, a gap of up to 1.0 is acceptable when the initial Importance rating is 4.0+, as it indicates that residents consider the attribute to be of 'high' to 'very high' Importance and that the Satisfaction they have with that same measure is 'moderate' to 'moderately high'.



Summary of Performance Gap Analysis (PGA)

Q6. I would like you to give me your opinion on the importance of 13 specific environmental and sustainability issues in the Wyong Shire Council area that have an impact on the lakes, as well as your satisfaction with the current actions being undertaken for these issues.

Ranking	Environmental & Sustainability Issue	2015 Importance Mean	2015 Satisfaction Mean	2015 Performance Gap	2015 v 2013 PGA Difference
1	Ensuring excess nutrients from such things as lawn clippings, fertiliser, pesticides, detergents and dog droppings do not leach into the creeks and waterways	4.80	2.80	2.00	0.02
2	Ensuring that creeks in the area are clean and healthy	4.79	2.78	2.01	0.04
3	Reducing litter around waterways	4.80	2.79	2.01	0.14
4	Ensuring that sediment from erosion and building sites does not leach into the creeks and waterways	4.73	2.94	1.75	0.15
5	Ensuring that drainage and stormwater systems are environmentally sensitive	4.76	3.01	1.82	0.27▲
6	Regularly maintaining the litter traps at the end of big stormwater drains	4.74	2.92	1.79	0.03
7	Improving the quality of creek and stream beds	4.54	2.93	1.56	0.06
8	Protecting and enhancing other ecosystems in the Shire such as wetlands, forests and the coastline	4.70	3.14	1.61	0.10
9	Protecting and enhancing the lakes and their catchments	4.67	3.06	1.61	0.10
10	Maintaining the health of underwater grass or plants in the lake. These are known as seagrasses	4.27	2.99	1.25	0.13
11	Maintaining and increasing natural vegetation around the lakes' foreshores	4.51	3.26	1.44	0.08
12	Ensuring urban development is sensitive to the lakes	4.50	3.06	1.28	0.16
13	Maintaining healthy low growing lake foreshore vegetation. These are known as salt marshes	4.25	3.10	1.15	-0.04

The hierarchal sorting of the table is relative to the criteria's 2015 performance gap

▲▼ = positive/negative shift greater than 0.2 from 2013

As alluded to on an earlier slide, the largest Performance Gaps are generally on those issues with the highest Importance scores, such as managing nutrients and litter/general cleanliness. In contrast, the smallest Gaps were recorded for the vegetation issues.

Importance and Satisfaction Ratings

Quadrant Analysis

The Quadrant Analysis on the following slide combines residents' stated importance and satisfaction on 13 environmental and sustainability issues – it is a more visual representation of the Performance Gap Analysis.

This analysis is completed by plotting the variables on x and y axes, defined by stated importance and rated satisfaction. We aggregate the mean scores for stated importance and rated satisfaction to identify where the attribute should be plotted. For these criteria, the average stated importance score was 4.62 and the average rated satisfaction score was 2.98. Therefore, any attribute that received a mean stated importance score of ≥ 4.62 would be plotted in the higher importance section and, conversely, any that scored < 4.62 would be plotted into the lower importance section. The same exercise is undertaken with the satisfaction ratings above, equal to or below 2.98. Each attribute is then plotted in terms of satisfaction and importance, resulting in its placement in one of four quadrants.

The 'Improve' quadrant at top left is most important for Wyong Shire Council to focus on, as it represents those attributes with higher relative importance and lower relative satisfaction.

The attributes that fall under this quadrant include:

- Ensuring that sediment from erosion and building sites does not leach into the creeks and waterways
- Regularly maintaining the litter traps at the end of big stormwater drains
- Ensuring excess nutrients from such things as lawn clippings, fertiliser, pesticides, detergents and dog droppings do not leach into the creeks and waterways
- Reducing litter around waterways
- Ensuring that creeks in the area are clean and healthy

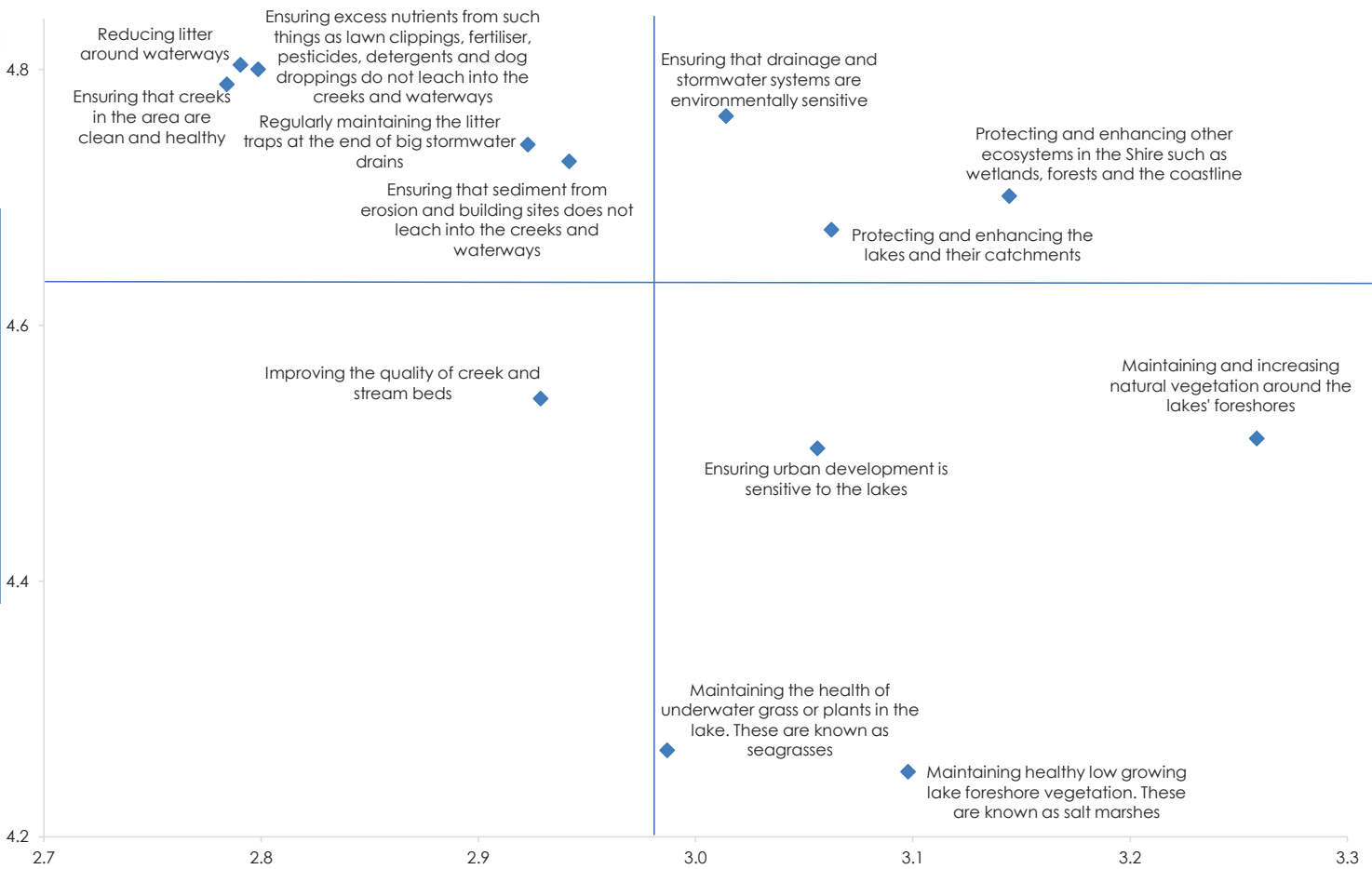




Quadrant Analysis – Importance v Satisfaction

Improve
Higher importance, lower satisfaction

Maintain
Higher importance, higher satisfaction



Niche
Lower importance, lower satisfaction

Satisfaction

Secondary
Lower importance, higher satisfaction

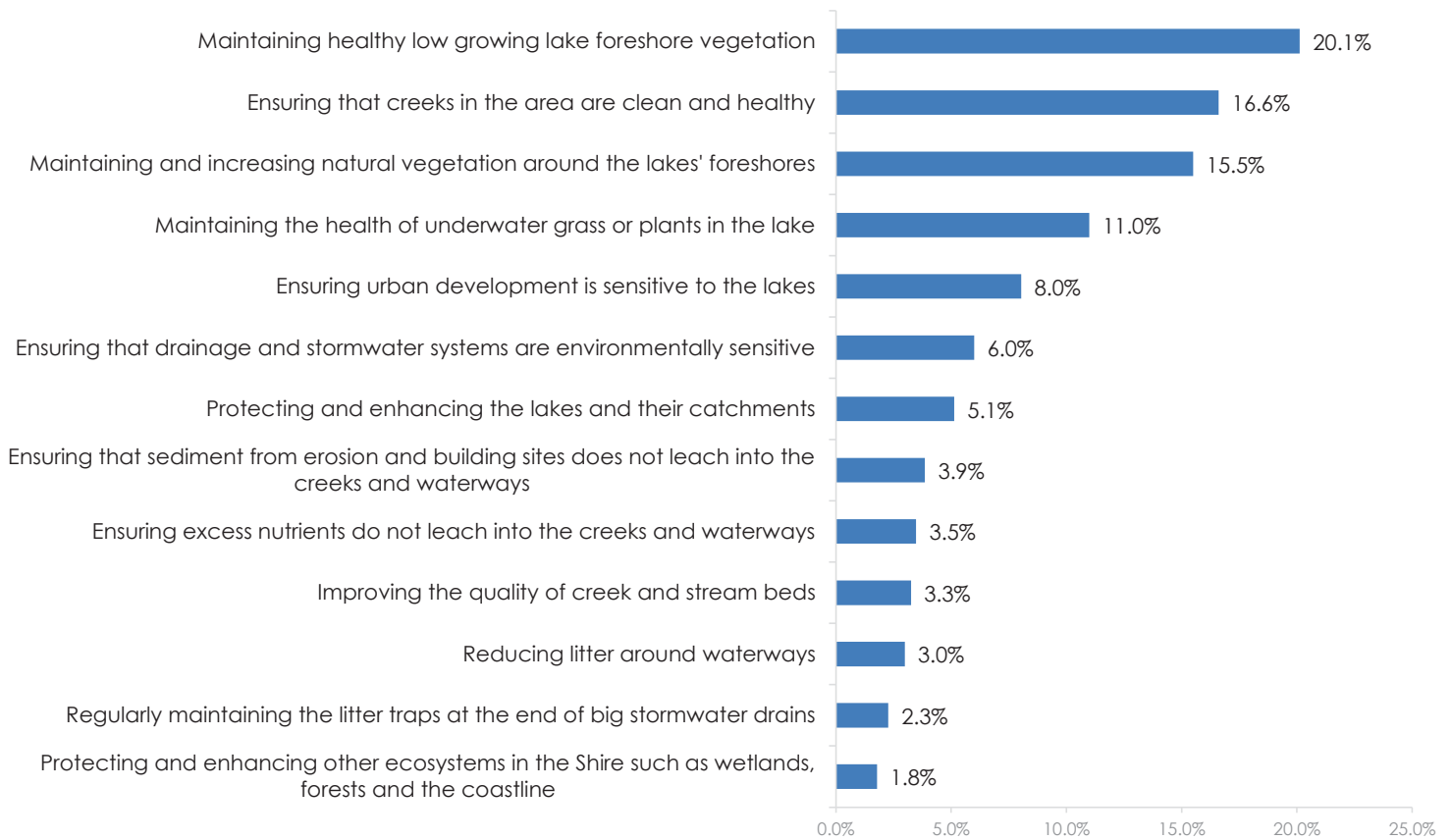
Satisfaction Ratings

Regression Analysis

Regression is a statistical process for estimating the relationships between variables – particularly when the focus is on the relationship between a dependent variable (in our case, residents' perceptions of how the quality of the lakes has changed in the last 8-10 years) and one or more independent variables or 'predictors' (in our case, the detailed satisfaction ratings of the 13 specific environmental and sustainability issues in the Wyong Shire Council area). The Shapley Value regression technique allows us to gauge the relative contribution of each measure toward residents' perceptions of the quality of the lakes, and to express it as a percentage of the total.

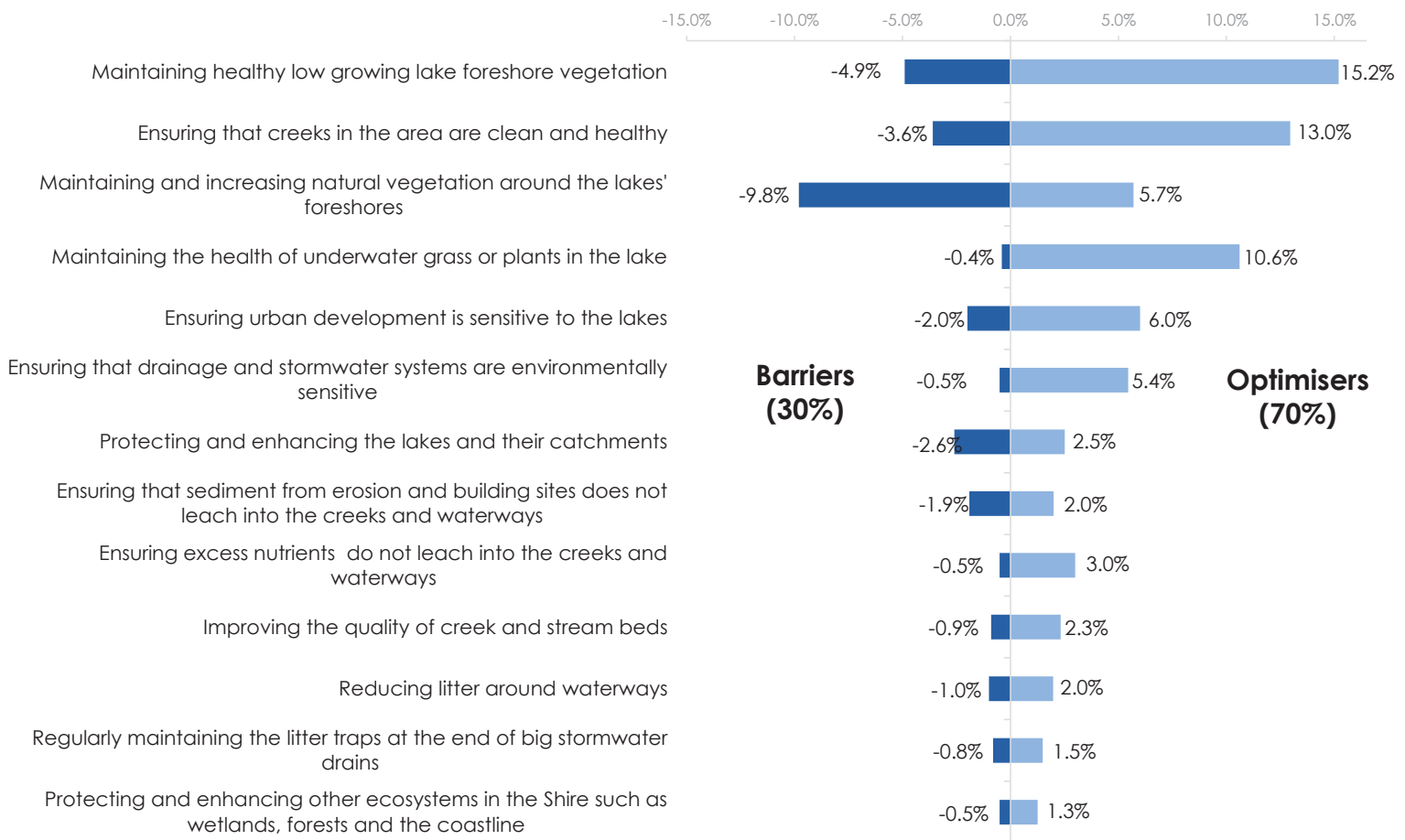


Contribution to Perception of the Change in the Quality of the Lakes over the Last 8-10 Years



In contrast to the standard Importance and Satisfaction results, the Regression Analysis highlights just how important *all three* vegetation attributes are in terms of driving overall perceptions of lake quality (combined they contribute 47% towards overall perceptions). The cleanliness/health of the creeks was also a key driver of perceptions (17%).

Key Contributors – Barriers/Optimisers



The above chart splits the previous slide's results into 'Barriers' and 'Optimisers'. For instance, 'Maintaining healthy low growing lake foreshore vegetation' is more an optimiser (if residents are satisfied with this they are more likely to think the lake has improved) than a barrier (if residents are dissatisfied with this they are more likely to think the lake has not improved).

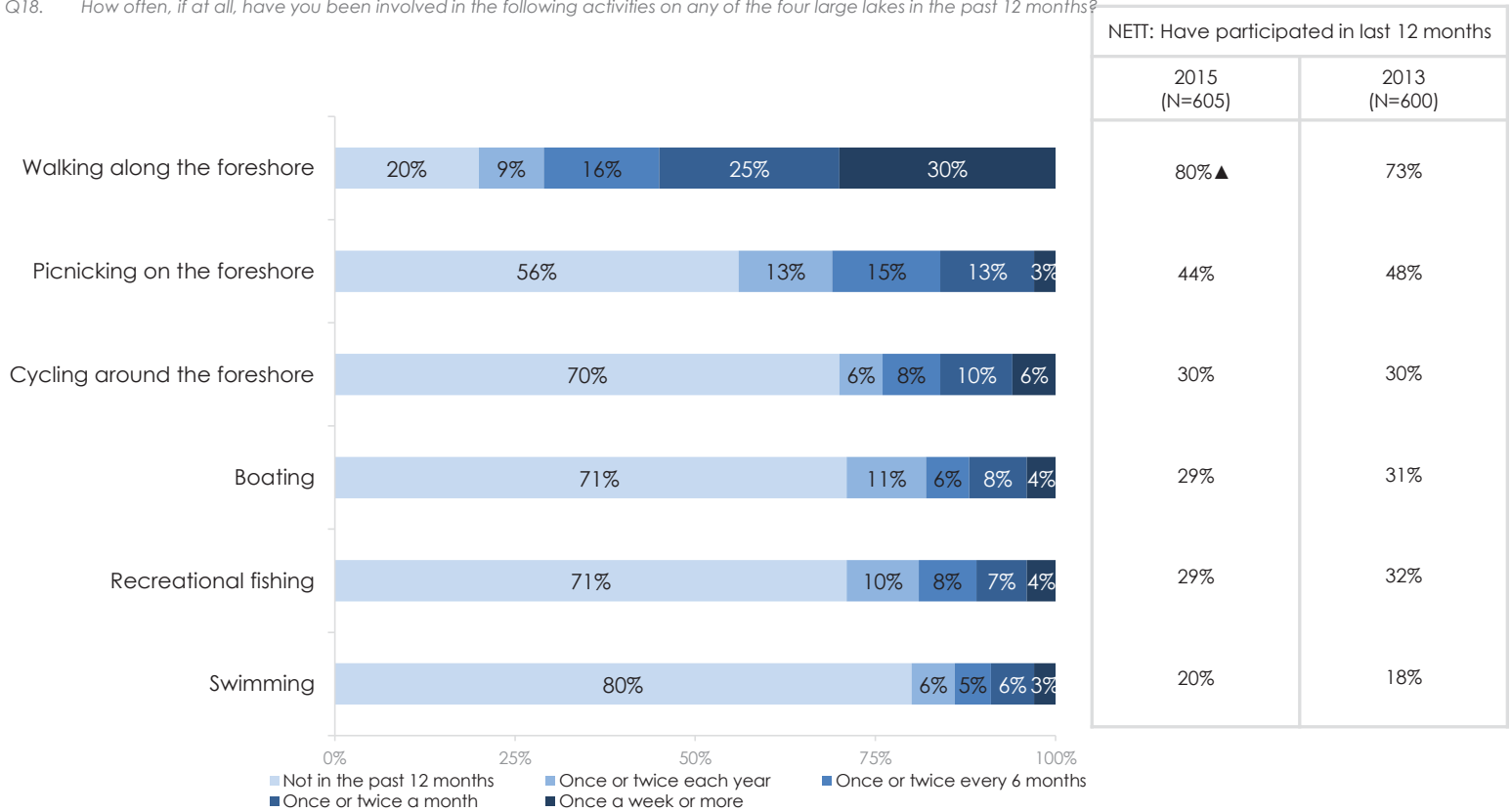
Findings in Detail:

4. Profiling



Participation in Activities on the Lakes

Q18. How often, if at all, have you been involved in the following activities on any of the four large lakes in the past 12 months?



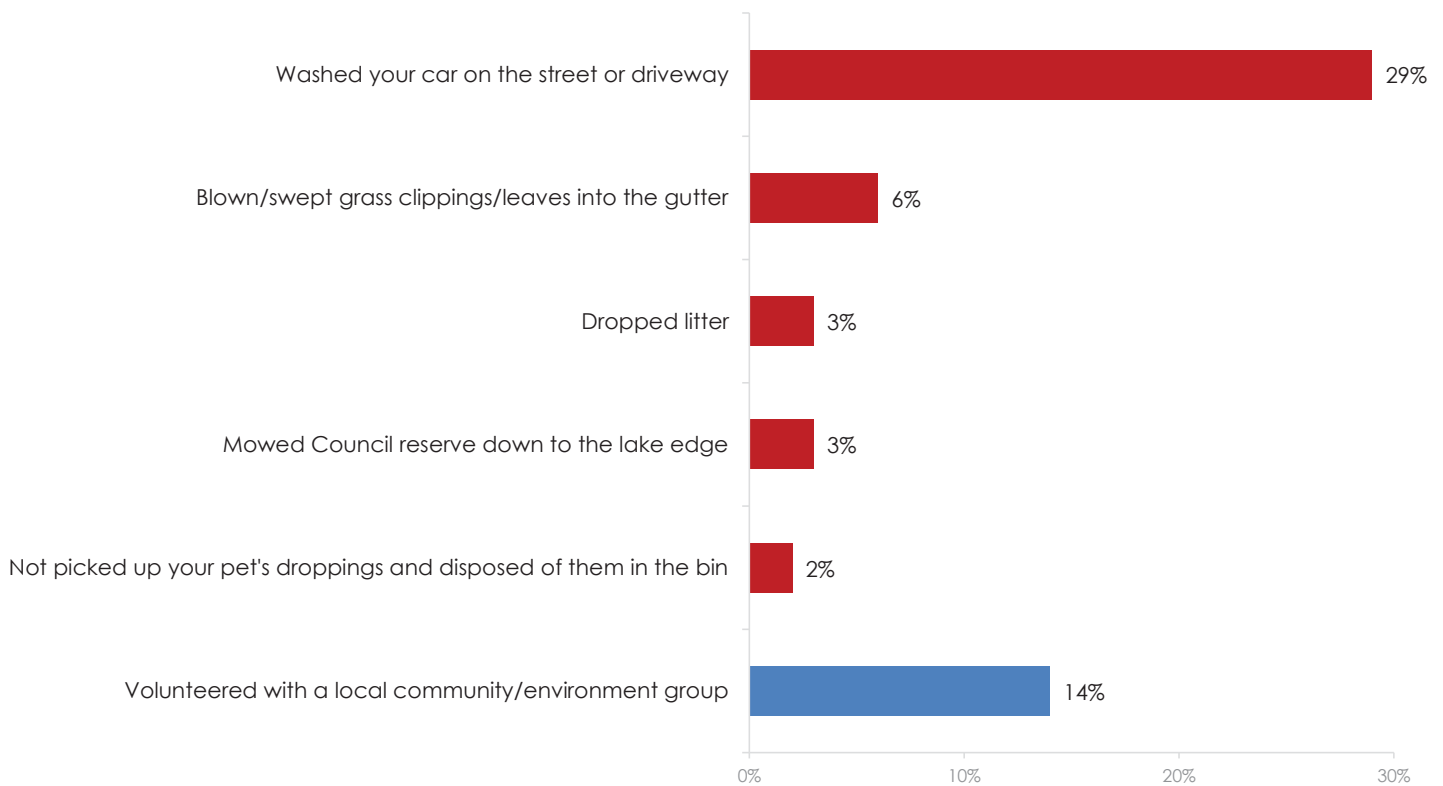
Base: N = 605

'Walking along the foreshore' was the most popular activity, with 80% participating in the last 12 months. This is a significant increase from 2013.

Other results were very similar to 2013.

Environmental Profiling

Q19. In the past 12 months, have you done any of the following things?



Base: N = 605

The main environmentally challenging behaviour was 'washing a car on the street/driveway', mentioned by 29% of residents (no significant differences by sub-samples, although younger residents were somewhat more likely to do this). Although not shown above, only 6% of residents indicated they undertook two or more of the five environmentally challenging (red) behaviours, which is encouraging.

Appendix 1: Additional Responses



Suburb

Q25a. Can you confirm which suburb you live in?

	%		%
Gorokan	8%	Canton Beach	1%
Bateau Bay	7%	Chittaway Bay	1%
Berkeley Vale	6%	Glenning Valley	1%
Summerland Point	5%	Jilliby	1%
Blue Haven	4%	Norah Head	1%
Chain Valley Bay	4%	Noraville	1%
Gwandalan	4%	North Entrance	1%
Kanwal	4%	Shelly Beach	1%
Killarney Vale	4%	The Entrance	1%
Lake Haven	4%	Tuggerawong	1%
Lake Munmorah	4%	Wadalba	1%
Long Jetty	3%	Blue Bay	<1%
Toukley	3%	Chittaway Point	<1%
Tumbi Umbi	3%	Dooralong	<1%
Budgewoi	2%	Fountaindale	<1%
Buff Point	2%	Halekulani	<1%
Charmhaven	2%	Halloran	<1%
Hamlyn Terrace	2%	Palmdale	<1%
Manning Park	2%	Ravensdale	<1%
Mardi	2%	Rocky Point	<1%
Ourimbah	2%	Tacoma	<1%
San Remo	2%	Toowoona Bay	<1%
Watanobbi	2%	Tuggerah	<1%
Woongarah	2%	Warnervale	<1%
Wyong	2%	Wyong Creek	<1%
Wyongah	2%	Yarramalong	<1%



Recall of Lakes in Wyong Shire - 'Other' Responses

Q1. Are you able to name any of the large lakes that are in or near the Wyong Shire?

	Count
Brisbane Water	1%
Wamberal Lagoon	1%
Wyong River	1%
Long Jetty Lake	1%
Wyong Lake	1%
Lake Morisset	1%
Gorokan Lake	<1%
Lakes Entrance	<1%
Mardi Dam	<1%
Wyong Creek	<1%
Lake Haven	<1%
Ourimbah Creek	<1%
Mannering Park Lake	<1%
Wollahra Lake	<1%
Chittaway Creek	<1%
Edgewater	<1%
Lake Edge	<1%
The Entrance Lake	<1%
Terrigal Lagoon	<1%
Jenny Dixon	<1%
Colongra Lake	<1%
Swansea Lake	<1%

Base: N= 605



Key Actions to Assist In Maintaining Healthy Lakes

Q4d. In order of importance, what are the 3 key things you believe need to be done to assist in maintaining healthy lakes?

	%		
Increase water/tidal flow through lakes	9%	Monitor erosion along the foreshore	1%
Open the Entrance Channel more/allow more flow	9%	Prevent grass clippings/fertiliser/leaves from getting into the lakes	1%
Monitor/improve water quality	8%	Prevent sewerage from entering the lakes	1%
Limit commercial/excessive residential fishing	6%	Put in kerb and guttering	1%
Don't know/unsure	4%	Reduce the smell	1%
More bins in the area/more frequent collection/reduce rubbish output/recycle	4%	Residents to use less chemicals	1%
Reduce run off from industrial/power station/agriculture/building sites	4%	Seek professional/scientific advice on the conservation of the lake	1%
Build a breakwall at The Entrance	3%	Encourage fishermen to clean up their hooks and lines	<1%
Monitor boat/jet ski speeds on the lakes	3%	Encourage residents to wash cars on grass	<1%
Community clean up days	2%	Improve general maintenance of the lakes	<1%
Create another channel at Budgewoi	2%	Improving boat ramps	<1%
Improving and maintaining the foreshores	2%	Lakes should be environmentally protected areas	<1%
Increased laws and enforcement of laws around the lakes	2%	Maintain dune stability	<1%
Maintain healthy vegetation around the lake	2%	Make the lakes more child friendly	<1%
Manage/protect marine life	2%	Monitor/improve salt marshes	<1%
Monitor recreational activities/limit those that may damage the lakes	2%	More involvement from Council	<1%
Remove sand/silt	2%	Preserve the natural cycles of the lake	<1%
Strict penalties for litter/pollution	2%	Reduce dredging	<1%
Better infrastructure around the lakes	1%	Reduce sharks and razor fish	<1%
Better planning for lake improvement strategies	1%	Reestablish swamps around lakes	<1%
Control development around the lakes	1%	Removal of algae	<1%
Don't feed the fish	1%	Replace kerbing with grass	<1%
Increase funding for projects to improve the lakes	1%	Residents should take ownership and responsibility for lakes	<1%
Increase wildlife around the lakes	1%	Other	1%
Increased signage around lakes regarding rules	1%		

Base: N= 605



Key Ways Households Can Assist in the Maintenance of Healthy Lakes

Q5. In order of importance, what are the 3 key things you believe that you and your household can do to assist in maintaining healthy lakes?

	%
Avoid polluting	5%
Recycle/compost	5%
Reduce amount of packaging/household rubbish	5%
Unsure/Don't know	5%
Attend clean up events/community projects	4%
Avoid using chemicals on garden/lawn	4%
Awareness of the environment/caring for the lake	4%
Reduce water/electricity usage	4%
Advise Council of environmental issues	3%
Careful disposal of oils, poisons and chemicals	3%
Adhere to fishing restrictions	2%
Cleaning up after domestic pets	2%
Consider the local wildlife	2%
Minimise damage/erosion of the foreshore	2%
Servicing boats/cars regularly	1%
Lobby for funding/donate	<1%
Maintain sewer and septic tanks	<1%
Making recreational use of lakes/foreshore	<1%
Plant trees	<1%
Support Council/Council guidelines	<1%
Other	<1%

Base: N= 605



Q4 & Q9 - 'Other' Responses

Q4c. Who do you believe is responsible for improving the quality of Tuggerah Lakes?

	Count
Doug Eaton	1
Tourism authorities	1
Work for the dole	1

Q9a. After rainwater falls on your property, do you know where the run-off flows to?
Q9b. If yes, where does it flow to?

	Count
Ponds	2
Private property dam	1
Water treatment works	1



Method of Awareness - 'Other' Responses

Q13. If you answered yes to questions 7-12 (or anything but 'Can't Say' on Q10), how did you become aware of these facts?

	Count
Boat licence course	2
Book about Tuggerah Lakes	1
Central Coast Canoe Club	1
Coast Guard	1
Coastal Patrol Group for Lake Macquarie	1
Community Labour Party group	1
Council meetings regarding the lakes	1
Council's Annual Report	1
Fishing maps	1
John Stinson books regarding the local area	1
Love Our Living Lakes	1
Marine Society	1



Q14b & Q16b - 'Other' Responses

Q14b. How did you become aware of the campaign?

	Count
Radio	2
Television ads	2
Landcare group	1
TAFE course	1

Q16b. How did you become aware of these projects?

	Count
Council meetings	2
Television	2
Council reports	1
Council emails	1



Q15b – Main Messages of the Animated Film – ‘Other’

Q15a. Over the last 12 months, the Lake Haven Metro and Westfield Tuggerah Event Cinemas have screened a short animated film on the Tuggerah Lakes estuary. Do you recall seeing this short animated film at all at the cinemas?

Q15b. What do you think were the main messages in the short animated film?

	%
Tips for improving water quality/preventing pollution	9%
Avoid mowing around the lake edge	9%
Everyone can make an impact on the health of the lakes	8%
Preventing animal waste from going into waterways	8%
Ensure that chemicals are not going down the drains	6%
Development around lakes is impacting the lake health	5%
Educating about the health of the lakes	5%
Being mindful of household run-off	4%
Community is responsible for the lakes	3%
Do not remove weeds/plants around water	3%
Education on importance of salt marshes	3%
Wash cars on the lawn instead of driveway	3%
Don't pollute the lake	2%
Check on the health of aquatic life	1%
Don't reduce marshlands	1%
Algae impacts marine and bird life	1%
Council is working to improve quality of the lakes	1%
Lakes are a valuable resource for future generations	1%
Importance of preserving seagrass	1%
Plant trees to stop erosion	1%
Dispose of fish hooks correctly	1%
Importance of looking after the lakes	1%



Sources of Reading about Tuggerah Lakes Estuary

'Other' Responses

Q17b. Have you ever read any of the following sources specifically about the Tuggerah Lakes Estuary?

	Count
Television	3
Community meetings	2
Community newsletter	2
Council's e-newsletter	2
From education/school assignment	2
Tuggerah Lakes book	2
Australian Labor Party member	1
Coastal Environment Network newsletter	1
Educational material from teaching	1
Landcare brochure	1
Leaflets at TAFE	1
Leaflets from local member	1
Local precinct meeting	1
Love Our Living Lakes assignment booklet	1
Radio	1
Surveying plans	1



Preferred Method of Finding Out Information About Environmental Activities - 'Other' Responses

Q20. How do you like to find out information about environmental activities at Council?

	Count
Landcare	2
Australian Labor Party member	1
Coastal Environmental Network	1
Community meetings	1
Community noticeboard	1
Council meeting	1
Council phone call	1
Magazines	1
Ratepayers Association	1
Seminar	1



Appendix 2: The Questionnaire



**Wyong Shire Council
Community Survey – Estuary Management
November 2015**

Good morning/afternoon/evening, my name is _____ and I'm calling on behalf of Wyong Shire Council from a company called Micromex. We are conducting a survey with residents on the local environment – the survey will take about 10 minutes.

For demographic purposes, is there someone in the house aged 18-34 who would be able to assist us?

If no: We encourage everyone 18 years and over to participate, would you be willing to assist with this please?

If no: Thank you anyway for your time.

If yes: Can I please confirm that you do live in the Wyong Shire Council area, and you are aged 18 years or over?

If no: Unfortunately you are not eligible for the research. Thank you for your time.

If Yes: All answers given will remain totally anonymous, and will be combined for analysis and reporting.

Q1. Are you able to name any of the large lakes that are in or near the Wyong Shire?

- Lake 1
- Lake 2
- Lake 3
- Lake 4
- Lake 5
- Lake 6
- Lake 7
- Do not know any lake names

Just to give you some background, Wyong Shire includes three main coastal lakes or lagoons. They are Tuggerah Lake, Budgewoi Lake and Lake Munmorah. Also, some Wyong Shire suburbs are in the Lake Macquarie Catchment area. The following questions relate to these four Lakes in general – although we understand you may base your answers on those lakes closest to you.

Q2. Thinking of the lakes closest to you, how knowledgeable do you believe you are in terms of their health and long-term sustainability? Prompt (SR)

- Very knowledgeable
- Knowledgeable
- Not very knowledgeable
- Not at all knowledgeable

Q3a. Are you concerned about environmental and sustainability issues affecting the lakes? Prompt

- A great deal
- A fair amount
- A little
- Not at all

Q3b. Are you concerned about visual issues and impacts on aquatic recreation activities affecting the lakes? Prompt

- A great deal
- A fair amount
- A little
- Not at all

Q4a. Looking back over the last 8-10 years, do you think that the quality of the lakes has: Prompt

- Got much better
- Got a little better
- Stayed the same (Go to Q4c)
- Got a little worse
- Got much worse

Q4b. (If rated 'better' or 'worse') Why do you say that?

.....

Q4c. Who do you believe is responsible for improving the quality of Tuggerah Lakes? Do not prompt (MR)

- Residents and individuals living in the Shire
- Wyong Shire Council
- NSW Government
- Federal Government
- Other (please specify)
- Don't know

Q4d. In order of importance, what are the 3 key things you believe need to be done to assist in maintaining healthy lakes? Do not prompt

- 1
- 2
- 3

Q4e. What effect do you think residents living and working in Wyong Shire have on the lakes? Prompt

- No effect
- Little effect
- Moderate effect
- Large effect
- Significantly large effect

Q5. In order of importance, what are the 3 key things you believe that you and your household can do to assist in maintaining healthy lakes?

- 1
- 2
- 3

Q6. I would like you to give me your opinion on the importance of 13 specific environmental and sustainability issues in the Wyong Shire Council area that have an impact on the lakes, as well as your satisfaction with the current actions being undertaken for these issues. Please rate on a scale of 1-5 where 1 is not at all important and 5 is very important and 1 is very dissatisfied and 5 is very satisfied.

Prompt
 (Note: Satisfaction is only asked where importance is rated 4 or 5)

	Importance					Satisfaction					DK
	Low 1	2	3	High 4	5	Low 1	2	3	High 4	5	
Maintaining the health of underwater grass or plants in the lake. These are known as seagrasses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring urban development is sensitive to the lakes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring that drainage and stormwater systems are environmentally sensitive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintaining and increasing natural vegetation around the lakes' foreshores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maintaining healthy low growing lake foreshore vegetation. These are known as salt marshes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring that creeks in the area are clean and healthy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring excess nutrients from such things as lawn clippings, fertiliser, pesticides, detergents and dog droppings do not leach into the creeks and waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensuring that sediment from erosion and building sites does not leach into the creeks and waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reducing litter around waterways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regularly maintaining the litter traps at the end of big stormwater drains	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improving the quality of creek and stream beds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protecting and enhancing the lakes and their catchments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protecting and enhancing other ecosystems in the Shire such as wetlands, forests and the coastline	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q7. Before today, were you aware that the environmentally important seagrasses found in the lakes are a protected species and that approvals are required to remove even the dead weed (or wrack)?

- Yes
- No

Q8. Did you know that the endangered salt marsh found around the edges of the lakes helps to dry out the dead seagrass leaves or wrack, which can help to alleviate the smell that can sometimes occur?

- Yes
- No

Q9a. After rainwater falls on your property, do you know where the run-off flows to?

- Yes
- No (Go to Q10)

Q9b. If yes, where does it flow to? Do not prompt (MR)

- The local Lakes
- Local Creeks/rivers
- Ocean
- Stormwater drain
- Underground/aquifer
- Other

Q10. What do you think has a greater effect on water quality in Tuggerah Lakes, fresh water flows from creeks and stormwater drains or tidal flow through the channel mouth at The Entrance?

- Fresh water
- Tidal flow
- Can't say

Q11. Were you aware that water flowing down the rivers and creeks that drain into the lakes can dramatically affect the quality of the lakes?

- Yes
- No

Q12. Were you aware that the lakes of the Tuggerah Lakes estuary are, on average, less than 2m deep, whilst Lake Macquarie averages 8m deep?

- Yes
- No

Q13. If you answered yes to questions 7-12 (or not CS on Q10), how did you become aware of these facts? *Prompt only if necessary, MR*

- Articles in the newspaper or newsletters
- Advertisements in newspapers
- Signage/bin stickers
- Attendance at events
- Word of mouth
- Personal experience/what I've witnessed
- Website
- Social media (Facebook/Twitter/YouTube etc)
- Tuggerah Lakes animated short film at cinema
- Brochure/fact sheet
- Council notice
- Other (please specify)
- Don't know

Communications Module

Q14a. Are you aware of the 'Love Our Living Lakes' campaign?

- Yes
- No (Go to Q15a)
- Unsure (Go to Q15a)

Q14b. How did you become aware of the campaign? *Prompt only if necessary (MR)*

- Articles in the newspaper or newsletters
- Advertisements in newspapers
- Signage/bin stickers
- Attendance at events
- Word of mouth
- Personal experience/what I've witnessed
- Website
- Social media (Facebook/Twitter/YouTube etc)
- Tuggerah Lakes animated short film at cinema
- Brochure/fact sheet
- Council notice
- Other (please specify)
- Don't know

Q15a. Over the last 12 months, the Lake Haven Metro and Westfield Tuggerah Event Cinemas have screened a short animated film on the Tuggerah Lakes estuary. Do you recall seeing this short animated film at all at the cinemas?

- Yes
- No/not been to cinemas (Go to Q16a)

Q15b. What do you think were the main messages in the short animated film?

.....

Q16a. Did you know that Wyong Shire Council and its partners have implemented an extensive program of projects such as storm water treatment and stream bank rehabilitation over the last 8 years to improve the water quality in Tuggerah Lakes estuary?

- Yes
- No (If no go to Q17a)

Q16b. How did you become aware of these projects? *Prompt only if necessary (MR)*

- Articles in the newspaper or newsletters
- Advertisements in newspapers
- Signage/bin stickers
- Attendance at events
- Word of mouth
- Personal experience/what I've witnessed
- Website
- Social media (Facebook/Twitter/YouTube etc)
- Tuggerah Lakes animated short film at cinema
- Brochure/fact sheet
- Council notice
- Other (please specify)
- Don't know

Q17a. Have you participated in any educational activities or workshops that have been conducted to raise awareness of the lakes?

- Yes
- No - I tried but it was full
- No

For your information, activities for the next 12 months will be advertised on the Love Our Living Lakes website www.loveourlivinglakes.com.au (only mention if "No - I tried but it was full" selected above)

Q17b. Have you ever read any of the following sources specifically about the Tuggerah Lakes Estuary? Please answer yes or no as I read each one.

- Published papers about the health and sustainability of the Lake
- Newspaper articles
- Social media discussions and blogs
- Other sources (please describe).....
- None of these

Demographics

Finally, some questions about you...

Q18. How often, if at all, have you been involved in the following activities on any of the four large lakes in the past 12 months? *Prompt (SR)*

- 1 Once a week or more
- 2 Once or twice a month
- 3 Once or twice every 6 months
- 4 Once or twice each year
- 5 Not in past 12 months

	1	2	3	4	5
Recreational fishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Boating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swimming	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cycling around the foreshore	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking along the foreshore	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Picnicking on the foreshore	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q19. In the past 12 months, have you done any of the following things? Please answer yes or no as I read each one – if a statement doesn't apply to you, please just let me know: *Prompt*

	Yes	No	N/A
Dropped litter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Blown/swept grass clippings/leaves into the gutter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not picked up your pet's droppings and disposed of them in the bin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mowed Council reserve down to the lake edge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Washed your car on the street or driveway	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Volunteered with a local community/environment group	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q20. How do you like to find out information about environmental activities at Council? *Do not prompt*

- Advertisements in newspapers
- Short films or ads at the cinema
- Attendance at an event
- Social media (FB/Twitter)
- Website
- Email
- Council notice
- Signage/bin stickers
- Other (please specify)

Q21. Which of the following best describes the house where you are currently living?

- I/We own/are currently buying this property
- I/We currently rent this property

Q22. Do you work for Wyong Shire Council?

- Yes
- No

Q23. Please stop me when I read out your age bracket: *Prompt*

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75+

Q24. How long have you lived in Wyong Shire?

- Under 6 months
- 6 months – 2 years
- 3 – 5 years
- 6 – 10 years
- 11 – 20 years
- More than 20 years

Q25a. Can you confirm which suburb you live in?

- | | |
|---|--|
| <input type="radio"/> Alison | <input type="radio"/> Lake Haven |
| <input type="radio"/> Bateau Bay | <input type="radio"/> Lake Munmorah |
| <input type="radio"/> Bebeah | <input type="radio"/> Lakeside |
| <input type="radio"/> Berkeley Vale | <input type="radio"/> Lemon Tree |
| <input type="radio"/> Blue Bay | <input type="radio"/> Lisarow |
| <input type="radio"/> Blue Haven | <input type="radio"/> Little Jilliby |
| <input type="radio"/> Blue Lagoon | <input type="radio"/> Long Jetty |
| <input type="radio"/> Brush Creek | <input type="radio"/> Magenta |
| <input type="radio"/> Budgewoi | <input type="radio"/> Mannering Park |
| <input type="radio"/> Budgewoi Peninsula | <input type="radio"/> Mardi |
| <input type="radio"/> Buff Point | <input type="radio"/> Moonee |
| <input type="radio"/> Buttendery | <input type="radio"/> Norah Head |
| <input type="radio"/> Canton Beach | <input type="radio"/> Noraville |
| <input type="radio"/> Catherine Hill Bay | <input type="radio"/> North Entrance |
| <input type="radio"/> Cedar Brush Creek | <input type="radio"/> North Wyong |
| <input type="radio"/> Chain Valley | <input type="radio"/> Ourimbah |
| <input type="radio"/> Chain Valley Bay | <input type="radio"/> Palm Grove |
| <input type="radio"/> Charmhaven | <input type="radio"/> Palmdale |
| <input type="radio"/> Chittaway | <input type="radio"/> Point Wolstoncroft |
| <input type="radio"/> Chittaway Bay | <input type="radio"/> Ravensdale |
| <input type="radio"/> Chittaway Point | <input type="radio"/> Rocky Point |
| <input type="radio"/> Chittaway Point South | <input type="radio"/> San Remo |
| <input type="radio"/> Colongra | <input type="radio"/> Shelly Beach |
| <input type="radio"/> Crangan Bay | <input type="radio"/> Somersby |
| <input type="radio"/> Dooralong | <input type="radio"/> Summerland Point |
| <input type="radio"/> Doyalson | <input type="radio"/> Tacoma |
| <input type="radio"/> Doyalson North | <input type="radio"/> Tacoma South |
| <input type="radio"/> Durren Durren | <input type="radio"/> The Entrance |
| <input type="radio"/> Elizabeth Bay | <input type="radio"/> Toowoong Bay |
| <input type="radio"/> Fountaindale | <input type="radio"/> Toukley |
| <input type="radio"/> Frazer Park | <input type="radio"/> Tuggerah |
| <input type="radio"/> Freemans | <input type="radio"/> Tuggerah Lake |
| <input type="radio"/> Glenning Valley | <input type="radio"/> Tuggerawang |
| <input type="radio"/> Goobarabah Point | <input type="radio"/> Tumby Umbi |
| <input type="radio"/> Gorokan | <input type="radio"/> Vales Point |
| <input type="radio"/> Gwandalan | <input type="radio"/> Wadalba |
| <input type="radio"/> Halekulani | <input type="radio"/> Wallarah |
| <input type="radio"/> Hamlyn Terrace | <input type="radio"/> Wallarah Point |
| <input type="radio"/> Hargraves | <input type="radio"/> Watanobbi |
| <input type="radio"/> Holgate | <input type="radio"/> Woongarah |
| <input type="radio"/> Jilliby | <input type="radio"/> Wybung |
| <input type="radio"/> Kangy Angy | <input type="radio"/> Wyee |
| <input type="radio"/> Kanwal | <input type="radio"/> Wyong |
| <input type="radio"/> Karraganbah | <input type="radio"/> Wyong Creek |
| <input type="radio"/> Kiar | <input type="radio"/> Wyongah |
| <input type="radio"/> Killarney Vale | <input type="radio"/> Yarramalong |
| <input type="radio"/> Kulnura | <input type="radio"/> Other specify..... |

Q25b. Thinking of where you live, how far away from the closest lake are you? Prompt (SR)

- Less than 100 metres
- 100 metres to 1 kilometre
- More than 1 kilometre
- (Do NOT Read) Can't say

Q26. Gender by voice:

- Male
- Female

QE1. Would you like to become a member of Council's Resident ePanel?

- Yes
- No (If no go to end)

QE2. What are your contact details?

Name

Telephone

Email

Thank you for your time and assistance. This market research is carried out in compliance with the Privacy Act, and the information you provided will be used only for research purposes. Just to remind you, I am calling from Micromex Research (1800 639 599) on behalf of Wyong Shire Council.

If respondent has any questions about this survey please contact:

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