Community appreciation of a local saltmarsh and recreational area

Windermere Bay Saltmarsh Restoration Project Community Survey

Ellie Green, 2025

Australian Government

Derwent Estuary Program

The Derwent Estuary Program (DEP) is a regional partnership between local governments, the Tasmanian State Government, businesses, scientists, and community-based groups to share science for the benefit of our estuary. The DEP was established in 1999 and has been nationally recognised for excellence in coordinating initiatives to reduce water pollution, conserve habitats and species, monitor river health and promote greater use and enjoyment of the foreshore.

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This project is funded by the Australian Government's Urban Rivers and Catchments Program

EXECUTIVE SUMMARY

The Derwent Estuary Program in collaboration with the Glenorchy City Council, funded through the Australian Government's Urban Rivers and Catchments Program, is undertaking a saltmarsh restoration project in Windermere Bay, Claremont. The project aims to achieve both ecological and social goals; to increase the area of saltmarsh in the bay, while also increasing community engagement with and knowledge of saltmarsh communities. A community survey was conducted to investigate what visitors enjoy most, how they interact with the bay, knowledge level of saltmarsh environments and interest in saltmarsh biodiversity and ecosystem services. The results from this report will be used to inform community engagement and interpretation material installed onsite during and post restoration.

Recreating in a natural space was found to be the key reason why people visited Windermere Bay. Walking was the most popular activity, with participants spending the most amount of time on the paths/tracks/trails in the bay. Glenorchy City Council is currently upgrading and extending the track network in the bay, most importantly building a bridge over the restoration area, and Faulkners Rivulet. This will increase access to the saltmarsh area to walkers on both sides of the bay. The positive sentiment, emotive language and joy conveyed in participants short answer responses is indicative of strong attachment and emotional connection to Windermere Bay, with most participants responding that they attributed high feelings of sense of place to Windermere Bay.

There was found to be good baseline knowledge of and engagement with the saltmarsh area at Windermere Bay. Participants were interested in a broad range of biodiversity values and ecosystem services. Birds and plants were the most popular biodiversity groups of interest. Improving water quality was the most popular ecosystem service, which is not surprising given the proximity to popular Windermere Beach. Informative signs were the most popular form of delivery selected by participants to be presented with saltmarsh education material.

1 INTRODUCTION

Windermere Bay is a shallow protected bay, located in Claremont, within the mid-zone of the Derwent Estuary. Estuarine fringing saltmarsh community occupies approximately 9,000 m^2 of area within the bay (Figure 1-1) (Prahalad & Jones, 2013). The Derwent Estuary Program conducted a project to collect baseline data on all saltmarsh communities located within the Derwent Estuary and provided management recommendations for each site. Windermere Bay saltmarsh was identified as a priority restoration area in the report, due to the impacts on the saltmarsh from historic infilling (Visby & Prahalad, 2020). The site was also identified as a priority area for extension of existing pathways within Glenorchy. By upgrading the existing boardwalk over the saltmarsh and extending a bridge over Faulkners Rivulet, foreshore trails within Windermere Bay will be connected to other parts of the foreshore trail network (GCC, 2020). The Derwent Estuary Program and Glenorchy City Council agreed to collaborate on each of these projects in 2019 to achieve both ecological and community outcomes in Windermere Bay.

In 2023 funding for saltmarsh restoration in Windermere Bay was approved under the Urban Rivers and Catchment Program. The aim of this restoration project is to increase saltmarsh extent within the bay and to increase community education and engagement with saltmarsh communities at Windermere Bay. The community priorities of this project are important, as Windermere Bay is a popular recreational area, with pathways along the foreshore, off-lead dog area to the north of the bay, and popular swimming site, Windermere Beach, to the south. There is an active local environmental group, Claremont Coast Care, who host regular weeding and planting activities in the bay. The site also has historical significance, being the site for army training camps in the First World War. A cenotaph is located close to the carpark, with signage and plaques located along tracks donated and maintained by the Rotary Club of Claremont (Figure 1-1).

Sense of place is the emotional attachment, belonging and connection that people attribute to a place or environment (Tuan, 1977). Human, landscape and ecological interaction are fundamental to sense of place theory (Hausmann *et al.*, 2016; Seddon, 1972). Prominent landforms and environments, which humans directly engage with for recreation or resource extraction, like the Derwent Estuary and saltmarsh environments, would contribute strongly to the creation of sense of place (Mulvaney *et al.*, 2020; Pritchard, 2023). Therefore, we thought it interesting to investigate sense of place attachment to Windermere Bay felt by local users in this survey.

To collect baseline data on what the current level of engagement and knowledge of saltmarsh communities in Windermere Bay is, we undertook a community survey of site visitors. The aim of this community survey was to:

1. Collect information on what users' value most about Windermere Bay and why they visit;
2. Assess current knowledge level of saltmarshes and engagement with Windermere saltmarsh; and
3. Assess what saltmarsh biodiversity values and ecosystem services visitors would like to learn more about, and how they would like this educational information presented to them.

Results from this survey will help to inform community engagement and saltmarsh educational material presented onsite during and post restoration.

Figure 1-1 Key infrastructure, sites, saltmarsh community and restoration area within Windermere Bay, Claremont. Source: Tasmanian Orthophoto base map, the LIST, NRE, Tasmania.

2 METHODS

2.1 Survey design

The survey was designed with advice from academic ecologists with experience in designing and administering community surveys related to ecological community knowledge and engagement. Care was taken in wording the questions to ensure that

no leading questions appeared in the survey, and that language used was easily understandable to the general public. For example, it was decided to use '*wetland*' instead of '*saltmarsh*' as it is likely the former would be more familiar to people. The order of questions in the survey was also carefully considered to ensure that no information needed for future questions was inadvertently given away. For example, the question '*Do you know there is a wetland in Windermere Bay?*' occurred before any other questions containing the word *'wetland'*, so as not to influence people in their answer. The first question in the survey '*Please list all the elements you enjoy most, and why you visit Windermere Bay*' was the only short response question (255-word answer length restriction), with all other questions in the survey being either multiple choice, check box or single word response. The length of survey was kept to within five-minutes to complete, to ensure participants were willing to engage and complete the survey.

2.2 Survey delivery

Two methods of delivery were utilised, onsite interrupt in person delivery and online delivery hosted on the Glenorchy City Council's website '*Let's Talk Glenorchy*' page. Interrupt surveys were scheduled to ensure that we captured different demographics of people, i.e. before and after work walkers, lunch-time users, etc. Unfortunately, no interrupt surveys were able to be conducted on the weekend. Good weather days were selected to ensure people would be onsite to survey. When approaching people onsite, we aimed to explain the survey in an engaging manner and ensured that no information about the project that would influence answers was revealed.

As we were primarily interested in targeting regular users of Windermere Bay, we concentrated on how best to engage with this community of people. Links to the survey were promoted on the Derwent Estuary Program and Glenorchy City Council's Facebook pages. In early January 2025 posters were placed around the bay asking people to complete the survey with a QR code that linked them to the online survey. This proved to be very effective in engaging regular users of the site.

Table 2-1 Date, time and number of participants for survey at Windermere Bay, Claremont.

Survey Method	Date	Time	Participants
Interrupt	Tuesday 15/10/2024	12:00 - 13:00	5
Interrupt	Wednesday 22/10/2024	07.15 - 09:00	6
Interrupt	Wednesday 29/10/2024	16:20 – 18:00	3
Online	22/11/2024 – 17/01/2025	-	157

2.3 Analysis

2.3.1 Text analysis

Short-answer responses were manually read, and spelling mistakes corrected. Short-answer responses were analysed using text analysis. Text analysis was conducted in R (version 4.4.2) (R Core Team, 2016), using the Rstudio tidytext package (Silge & Robinson, 2024), and visualised using the Rstudio ggplot2 package (Lin Pedersen *et al.*, 2024). The most common 20 words contained within the responses were extracted, removing stop words, i.e. '*the*', '*is*', '*and*' etc. Certain words were combined as they were the same or similar, for example '*walk*', *'walks'*, and '*walking*' were combined, as were '*kids'*, '*grandkids*', '*grandies*', '*children'*; '*peace*', '*peaceful*', '*peacefulness*' etc. The naming words '*Windermere*' and '*Bay*' were also removed.

Sentiment analysis was then conducted, words were classified in a binary fashion as either 'positive' or 'negative', based on tidytext lexicon of 6,786 words. These classifications had to be manually checked as certain words were misclassified, such as the negative word '*suffer*', when examined in context '…*I suffer from numerous illnesses and this is my medicine. Always puts me in a happy place'*, had a positive sentiment.

Short-answer responses were then manually classified into seven categories based on why people visit Windermere Bay, and what they enjoy most about it. These categories were 'activity/recreation', 'nature/environment', 'facilities/infrastructure', 'spatial', 'emotional', 'historical/cultural', and 'community'. Responses could contain multiple classifications.

2.3.2 Chi-squared test of independence

Chi-squared test of independence was conducted to assess if there was independence between groups in their responses to survey questions. Ensuring that the assumption of mutual exclusion was met, as some questions allowed respondents to select multiple answers. Analysis was conducted in R (version 4.4.2) (R Core Team, 2016), using the Rstudio janitor package (Firke, 2024).

3 RESULTS

3.1 Participant demographics

The survey had a total of 171 participants, 14 via interrupt survey method, and 157 online respondents. The age group 35-54 were the highest proportion of participants,

making up over half of all survey respondents. There was fairly good representation from almost all age groups in the survey responses, with a minimum of 14% in the top five age brackets, with the exception of people aged under 24, who made up just 3.5% of respondents (Figure A-14). The majority of participants were female (72.5%), 26.9% were males, and one participant was non-binary (Figure A-15).

Over half of participants resided in Claremont (57.3%), with six participants stating that they were a direct neighbour to Windermere Bay. Almost all other respondents (38.7%) resided in adjacent suburbs contained within the Glenorchy City Council municipality, and seven participants resided in suburbs further afield (Figure A-16). The majority of participants were regular visitors to Windermere Bay, with almost all visiting either weekly (37.4%), daily (31.0%) or monthly (21.1%) (Figure A-1).

3.2 Participant use of Windermere Bay

Half of respondents (53.8%) visited Windermere Bay for walking, with 32.7% of respondents walking with dogs. Tracks in the bay were specifically mentioned by 12.3% of participants. Windermere Beach and the water were popular reasons for visiting the bay, with both mentioned by ~15% of participants. Birds and ducks were mentioned by 13.5% and 9.4% respectively. The peace and quiet were mentioned by 9.4% and 5.8% of respondents respectively. The war memorial and ANZAC plaques located at Windermere Bay were mentioned by 5.3% of respondents. Other popular word themes include taking children to Windermere Bay (kids, playground, play), enjoying the open space and scenery (view, nature, space, scenery), and emotionally positive descriptive words including (enjoy, nice, love) (Figure 3-1). This positive sentiment was reflected throughout almost all short-answer responses, with sentiment analysis finding that of the 121 words within the lexicon 96% were positive and 4% were negative. Two respondents mentioned feeling unsafe in the bay, the cause of this unsafe environment was anti-social teenagers. It should be noted that two participants mentioned that they visited the bay because it felt safe.

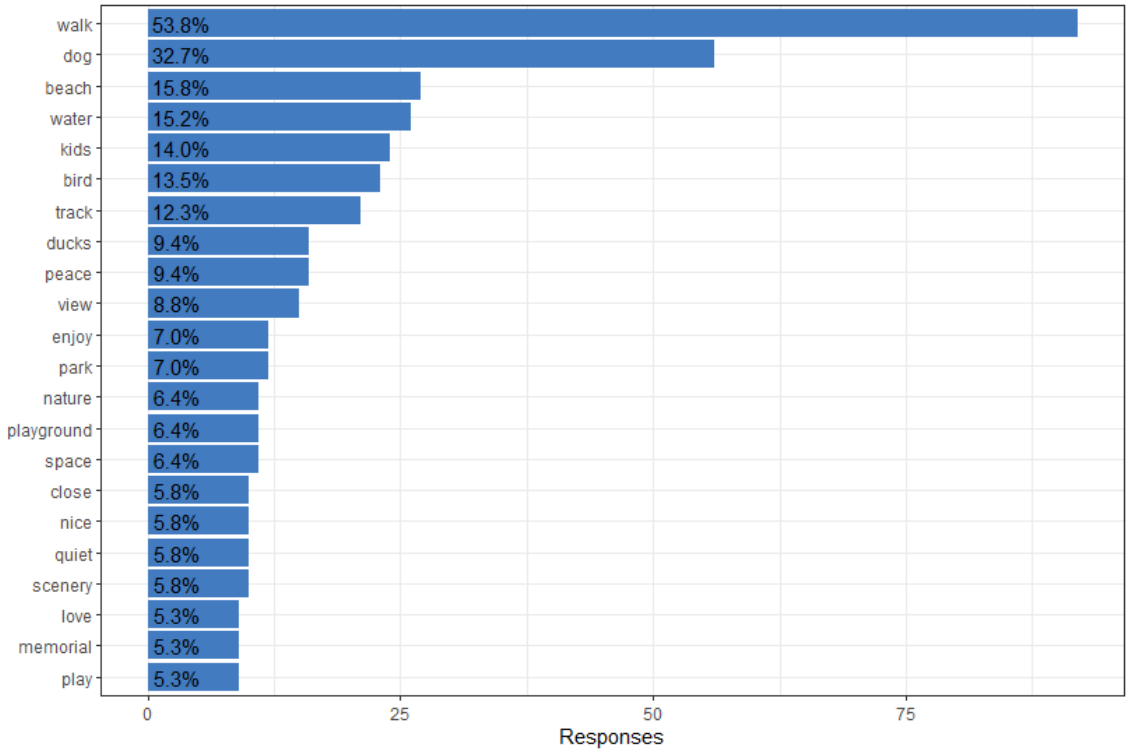

Figure 3-1 Top twenty words used by respondents in short-answer question stating why they visit and what they enjoy most about Windermere. Percentage of respondents who used each word displayed on the corresponding columns.

Categorisation of short-answer responses found that the majority of participants visited for/enjoyed activity/recreation (61.4%), with walking being the most popular activity. Other recreational activities were also mentioned by participants including fishing, kayaking, biking, swimming, picnics and photography. The nature/environment within the bay was also a popular reason for visiting (56.1%), as well as the facilities/infrastructure (36.3%), and the proximity to home or landscape (26.9%) of the bay (Figure 3-2).

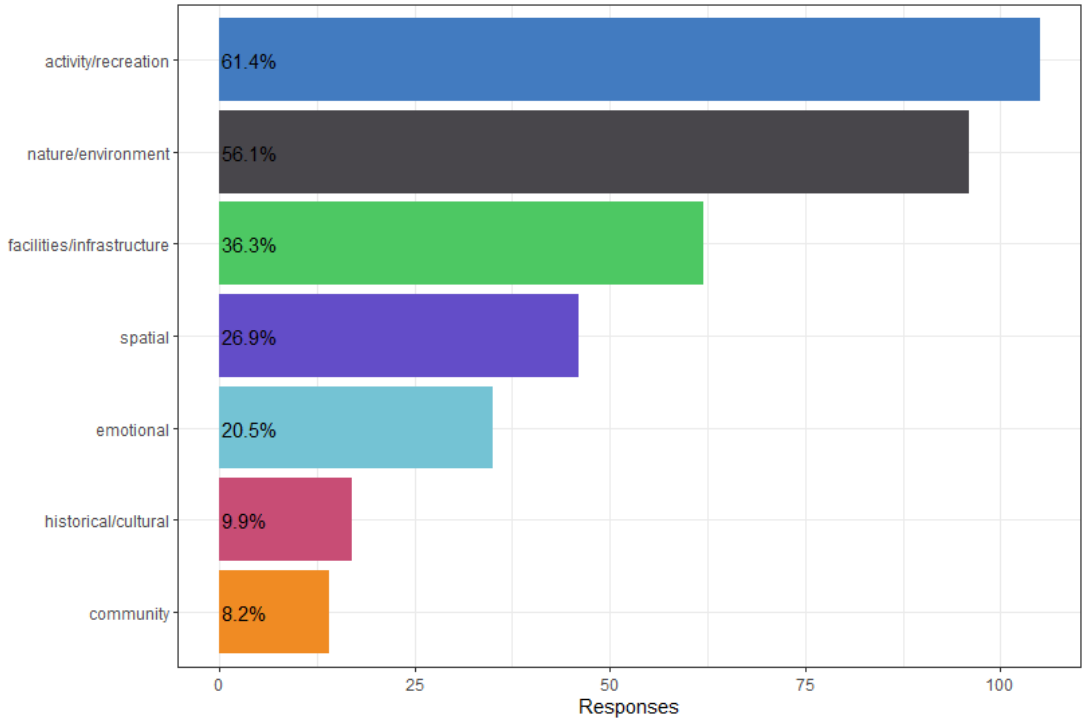

Figure 3-2 Categorised responses to short answer question. Percentage of respondents whose response included one of these categories displayed on the corresponding column.

The majority of survey respondents spent the majority of their time while at Windermere Bay on the paths/tracks/trails (75.4%), other areas of high usage included by the water (62.0%), grassy areas (55.6%), Windermere Beach (55.0%), and the wetland (35.1%) (Figure 3-3).

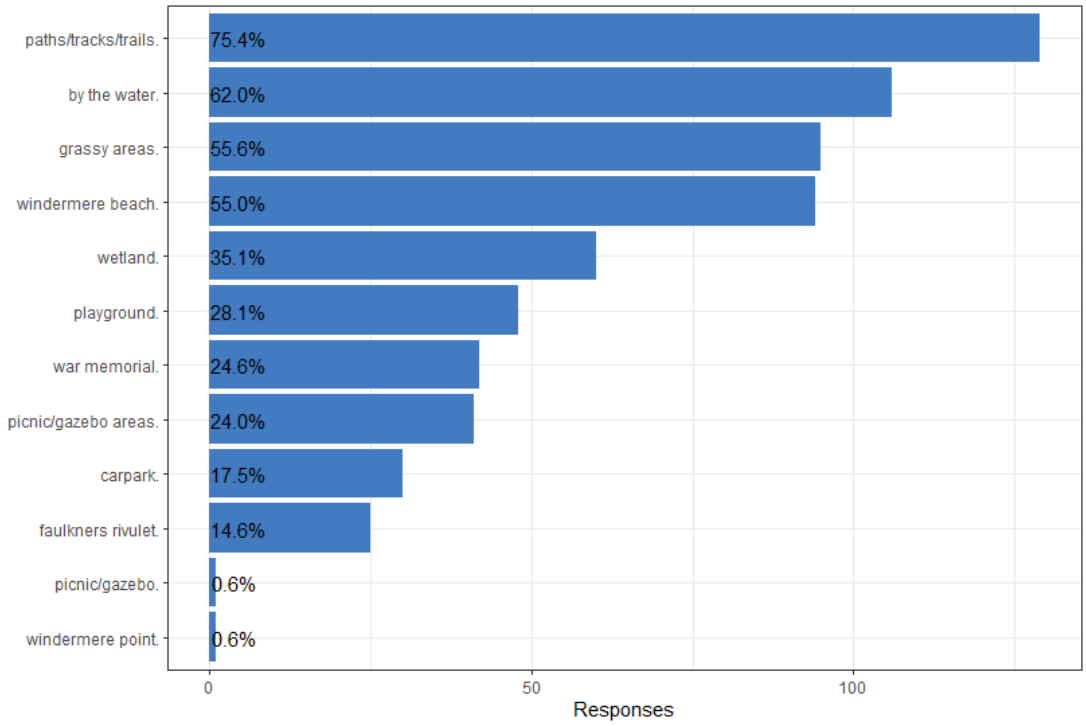

Figure 3-3 Results for where participants spend the majority of their time while visiting Windermere Bay. Percentage of respondents whose answer included a particular area displayed on the corresponding column.

3.3 Connection and engagement at Windermere Bay

A high proportion of respondents (35.1%) felt that Windermere Bay was essential to their belonging and sense of place within Claremont (Figure A-2), and that the natural features were either essential (52.6%) or of high (27.5%) importance to their visit to the bay (Figure A-3).

Many respondents (36.8%) had attended ANZAC day or commemorative events at Windermere Bay. With other respondents having attended community events (19.9%), coast care/environmental activities (12.3%), volunteer activities (8.2%), education programs (7.0%), and/or club events (5.3%). Almost half of respondents (48.5%) had not attended any event or volunteer activity at Windermere Bay previously (Figure A-5).

3.4 Saltmarsh engagement, knowledge and educational material

The majority of participants knew that there was a wetland located in Windermere Bay (87.1%) (Figure A-4), and 60.2% of respondents said that they visited/observed the wetland frequently or every time they visited Windermere Bay (Figure A-6).

Almost half of participants (44.4%) responded that they had medium knowledge level of wetlands, this response did not vary between age brackets. Although those with higher knowledge (high and very knowledgeable) were older (25+). Overall, 33.9% of respondents said they had low knowledge level of cultural significance of wetlands and timtumili minanya (Derwent Estuary). The 35-44 age bracket had majority medium cultural knowledge level, and 100% of under 18 respondents said they had no cultural knowledge (Table 3-1).

Respondents were most interested in learning more about birds (74.3%) and plants (64.9%) in wetlands environments. All under 18 respondents said they were interested in fish. 24.6% of respondents selected all wetland biodiversity values when posed which they would like to learn more about. Improving water quality was by far the most popular ecosystem service respondents selected to learn more about (78.9%), with coastal protection (64.3%) also being popular. 21.6% of respondents selected all wetland ecosystem services when posed which they would like to learn more about. The majority of participants said that they would like this information to be presented via informative signs (81.9%) (Table 3-1).

Most participants said that they are interested in learning more about the cultural significance of wetlands and timtumili minanya (Derwent Estuary) to Tasmanian Aboriginal people (67.8%). This response was more positive with the age groups 18-54

with responses being in the range +67%, compared to the age groups under 18 and over 55, whose positive response was in the range 50-57% (Table 3-1).

Almost half of respondents said they would feel '*very happy*' if the wetland area at Windermere Bay was increased (42.1%). The age groups under 18 and 18-24, had more positive responses ('*happy*' and '*very happy*'), the majority response of 25-34 age group was '*neutral*', and a range of feelings from the groups 35 – over 65, with majority responding '*very happy*'. Three respondents said they would feel '*bad*' if the wetland area at Windermere Bay was increased, and two respondents said they would feel '*very bad*' (Table 3-1).

Table 3-1 Table of percentage of respondents in each age group, and percentage total responses to questions 9 – 15 of the survey. Highest percentage responses in each category are highlighted in bold, if there was a draw between categories, both were highlighted.

	Age group (years)							
	Under 18	18-24	25-34	35-44	45-54	55-64	Over 65	Total
Wetland knowledge level								
No knowledge	**50**		8.3	19	8.7	7.7	3.7	10.5
Low		25	**41.7**	31	28.3	34.6	29.6	31.6
Medium	**50**	**75**	37.5	**33.3**	**52.2**	**46.2**	**48.1**	**44.4**
High			8.3	14.3	6.5		14.8	8.8
Very knowledgeable			4.2	2.4	4.3	11.5	3.7	4.7
Cultural knowledge								
No knowledge	**100**	25	29.2	28.6	26.1	**26.9**	18.5	26.9
Low		**50**	**33.3**	28.6	**34.8**	**26.9**	**48.1**	**33.9**
Medium		25	25	**40.5**	28.3	19.2	14.8	26.9
High			8.3		4.3	11.5	14.8	6.4
Very knowledgeable			4.2	2.4	6.5	15.4	3.7	5.8
Wetland biodiversity								
Flying insects		25	12.5	33.3	37	30.8	29.6	29.8
Fish	**100**	**50**	50	42.9	65.2	38.5	40.7	49.7
Plants	50	**50**	45.8	64.3	**67.4**	61.5	**85.2**	64.9
Mammals		25	**70.8**	40.5	54.3	50	40.7	49.1
Invertebrates		25	37.5	42.9	54.3	42.3	48.1	45
Birds	50	**50**	**70.8**	**78.6**	63	**92.3**	77.8	**74.3**
NA					2.2		3.7	1.2
Wetland ecosystem services								
Fish nursery habitat	50	25	50	54.8	50	34.6	29.6	45
Storing carbon	50	25	37.5	33.3	30.4	30.8	25.9	31.6
Flood mitigation		25	37.5	45.2	43.5	30.8	44.4	40.4
Water quality	**100**	**100**	**87.5**	**76.2**	**69.6**	**84.6**	**81.5**	**78.9**
Coastal protection	**100**	75	66.7	69	54.3	61.5	70.4	64.3
Urban biodiversity	50	25	50	59.5	52.2	50	48.1	52
NA					4.3			1.2
Wetland information presentation								
Informative signs	**100**	**100**	**79.2**	**81**	**80.4**	**88.5**	**77.8**	**81.9**
Audio clips		25	8.3	9.5	15.2	15.4	3.7	11.1
Prints/paintings	50	25	45.8	31	34.8	26.9	29.6	33.3
Sculptures	50	25	54.2	38.1	37	19.2	48.1	38.6
Apps			12.5	16.7	30.4	34.6	14.8	21.6
Online resources	50	25	29.2	26.2	50	50	40.7	39.2
Videos			29.2	4.8	19.6	19.2		13.5
NA					2.2			0.6

Cultural knowledge								
Yes	**50**	**75**	**87.5**	**73.8**	**67.4**	**57.7**	**51.9**	**67.8**
No	**50**	25	12.5	26.2	32.6	42.3	48.1	32.2
Feelings about wetland area being increased								
Very bad					2.2		3.7	1.2
Bad				2.4	4.3			1.8
Neutral			**50**	28.6	32.6	26.9	11.1	28.7
Happy	**100**	25	12.5	31	17.4	26.9	40.7	26.3
Very happy		**75**	37.5	**38.1**	**43.5**	**46.2**	**44.4**	**42.1**

3.5 Chi-squared test of independence

There was found to be a significant difference in participant responses to feelings of sense of place in Windermere Bay, depending on how much time they spent at the bay (p-value <0.001), and what suburb they resided in (p-value <0.001). Not surprisingly the less time people spent at Windermere Bay (Figure 3-4), and the further away they resided (Figure 3-5), the less they believed that Windermere Bay contributed to their sense of place in Claremont. Unsurprisingly, there was found to be a significant difference (p-value <0.001) in where people resided, and participation in events and volunteer activities in the bay.

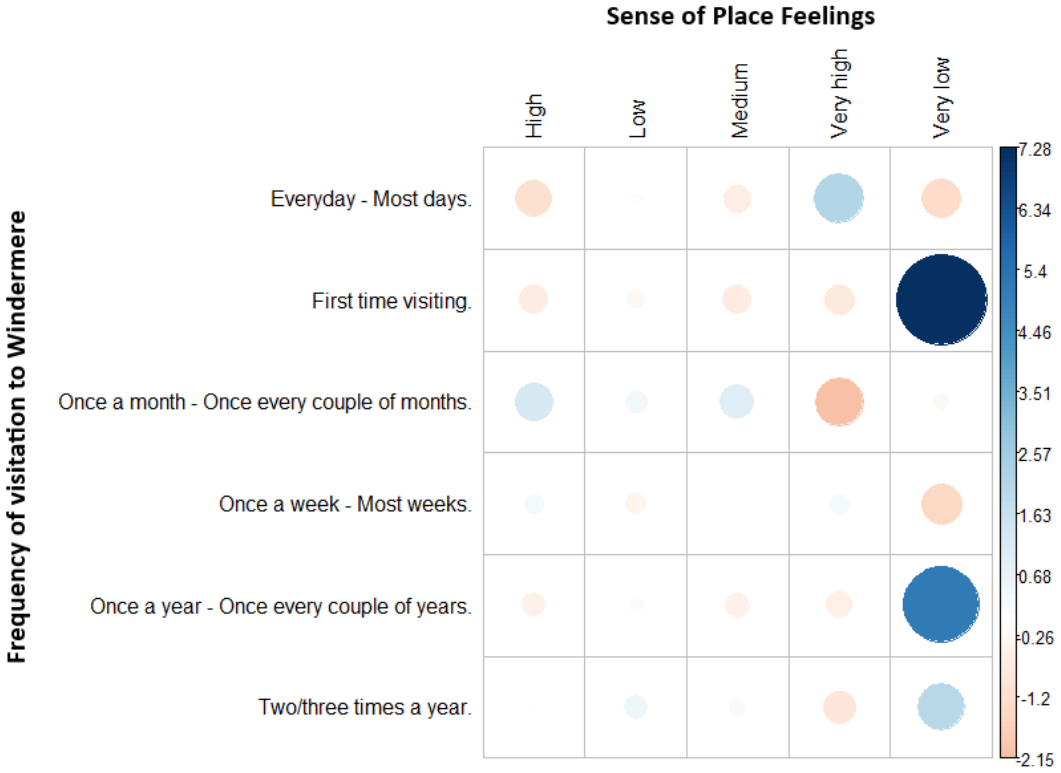

Figure 3-4 Heat map of Pearson's residuals in chi-squared test of independence for responses to time spent and feelings of sense of place for Windermere Bay.

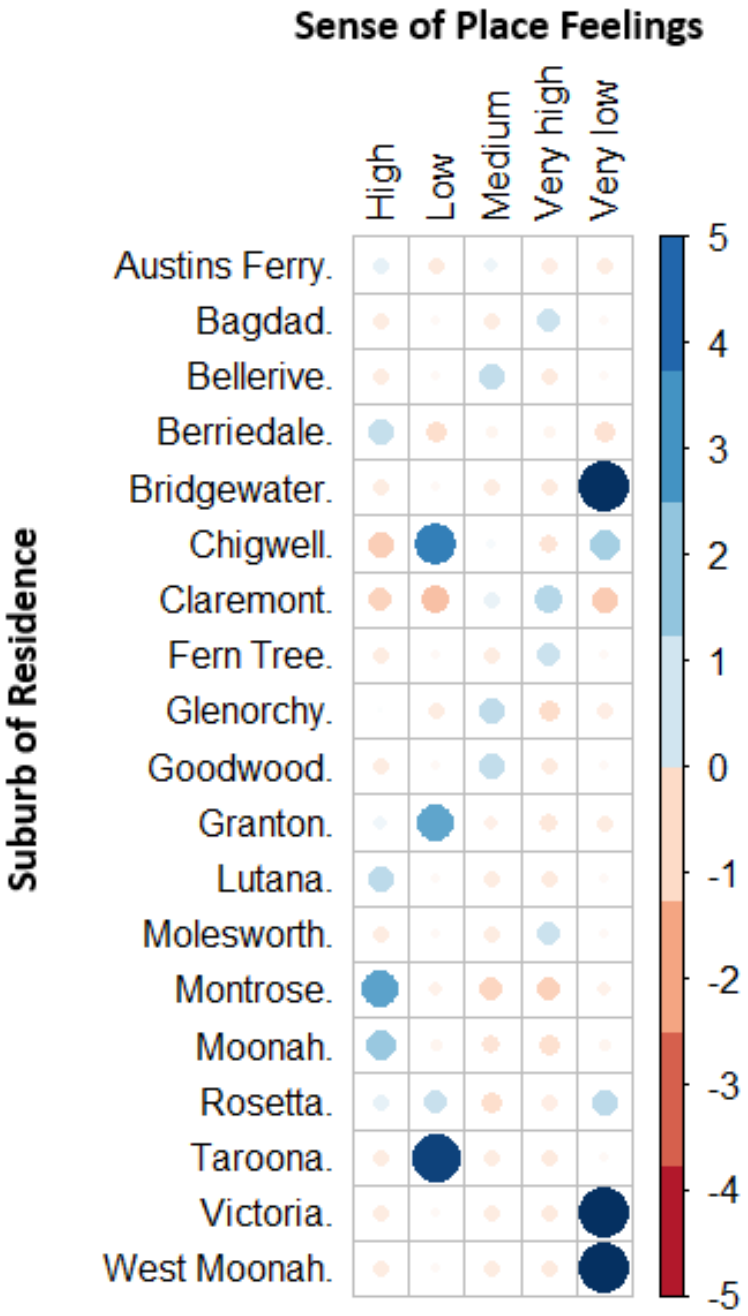

Figure 3-5 Heat map of Pearson's residuals in chi-squared test of independence for responses to suburb of residence and feelings of sense of place for Windermere Bay.

There was found to be no significant difference between how much time respondents spent at Windermere Bay, or which suburb they resided in and their value of the natural features within the bay.

There was found to be significant difference (p-value <0.001) in respondents' value of the natural features and their feelings of sense of place within Windermere Bay (Figure 3-6). There was found to be no significant difference between people who attended events and/or volunteer activities at Windermere Bay, and those that did not in their feelings of sense of place to Windermere Bay.

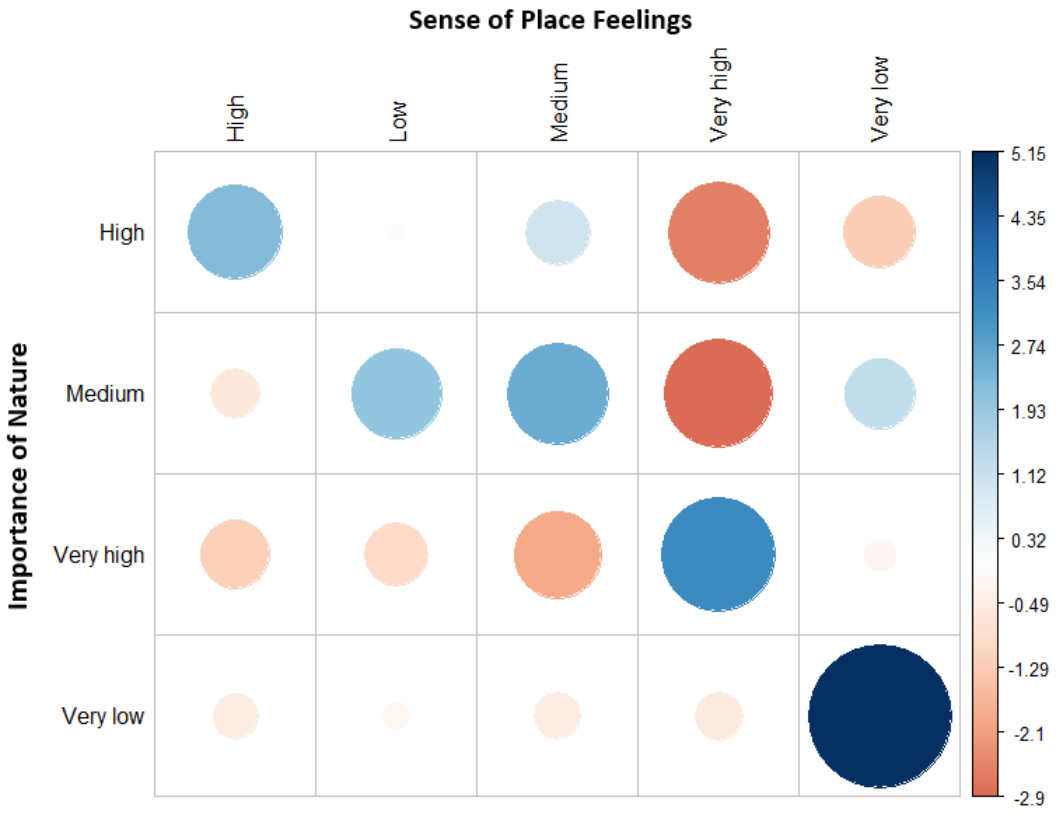

Figure 3-6 Heat map of Pearson's residuals in chi-squared test of independence for responses to importance of natural features to visit of Windermere Bay, and feelings of sense of place within Windermere Bay.

4 DISCUSSION

4.1 Activity, connection and engagement at Windermere Bay

Recreating in a natural setting was found to be the key reason for people to visit Windermere Bay. The appreciation for the natural environment was conveyed by participants in both obvious and subtle ways. This included enjoying the views of the water, fresh air, diversity of birdlife, or natural soundscape of Windermere Bay.

> *"The views, the living cultural sites, the sandy beach, the clear water, the wildlife in the water and flying around. We visit with the local Windermere Primary School regularly for science, outdoor play, belonging, and caring for place."*

> *"The view of the river/water is so good for my soul…"*

This enjoyment in and connection to nature has likely established a strong sense of place for participants to Windermere Bay. We found that participants who highly valued the natural features of the bay felt a deeper connection and belonging to the bay. Directly engaging with nature, as well as activities associated with being in nature (i.e.

fishing, walking, landscape views) have been found to be important in establishing a sense of place (Larson *et al.*, 2013; Russell *et al.*, 2013). Social connection and community are part of the broad 'landscape' encompassed within sense of place (Riley, 1992). However, we found there to be no difference in participants' feelings of sense of place and participating in events and/or volunteer activities in the bay. This highlights the deeper connection to Windermere Bay through the natural environment of the bay.

The extremely positive sentiment for the bay expressed by participants in their short-answer responses is indicative of healthy well-being. When delved into, given the recreational pursuit by majority of participants, enjoyment of the natural landscape of the bay, and sense of place respondents felt, this is not surprising. Regular physical activity and outdoor recreation are known to benefit health and well-being (Ibhafidon *et al.*, 2021; Saxena *et al.*, 2005; Warburton *et al.*, 2006). Broadly, connection to nature has been found to promote physical, mental and phycological well-being (Abraham *et al.*, 2010; Barton *et al.*, 2009; Martin *et al.*, 2020; Richardson *et al.*, 2021; Russell *et al.*, 2013). More specifically there are health benefits linked to biodiversity (Sandifer *et al.*, 2015), good water quality (Freeman *et al.*, 2019), natural soundscapes (Dumyahn & Pijanowski, 2011; Passchier-Vermeer & Passchier 2000), green-spaces in urban areas (Lafortezza *et al.*, 2009) and many more. Human health, biodiversity, and sense of place are intrinsically linked, and there is growing literature to view sense of place as an important ecosystem service (Gottwald *et al.*, 2022; Hausmann *et al.*, 2016; Horwitz *et al.*, 2001; van Dinter *et al.*, 2022; Wartmann *et al.*, 2018). I will share two participants' responses who discussed the health benefits they received from visiting the bay.

> *"The peace, ducks, swans, the water. It's a beautiful spot close to home and after suffering from a stroke it's the best place to walk to regain my balance."*

> *"I live along the foreshore and just love the surroundings and bird life. I suffer from numerous illnesses and this is my medicine. Always puts me in a happy place."*

Given that walking is the most popular recreational activity in the bay, it is not surprising that three-quarters of participants spent most of their time on the paths/track/trails. The popularity of paths/tracks/trails in Windermere Bay supports the findings of Glenorchy City Council's *Paths, tracks and trails report* (GCC, 2020). Linking foreshore tracks from Cadbury Factory to Prince of Wales Bay was a project identified in this report, with a bridge over Faulkners Rivulet being a key missing link in this track network. This bridge will also extend over the proposed saltmarsh restoration area which will provide great

visibility of the saltmarsh to walkers. Walking trails and viewing platforms are a great low impact way for users to engage with these communities, particularly as trampling is a key threat in these environments and are desired by potential wetland visitors (Wang *et al.*, 2022).

4.2 Saltmarsh engagement, knowledge and educational material

Almost all participants knew of the presence of the wetland in Windermere Bay, and the majority visited the wetland area regularly. This is in contrast to the study conducted by Wang *et al.* (2022), who investigated public awareness and interest in the Ramsar wetland Moulting Lagoon, on Tasmania's east coast. This study found that over half of participants were not aware of the existence of the wetland, and the majority had never visited. This difference is likely due to two reasons, firstly the visibility and accessibility of the wetland at Windermere Bay, and second the demographics for the survey. Most participants in Wang *et al.* (2022) were from interstate or overseas. Whereas most participants in our survey were regular visitors to the area and reside nearby. Over half of respondents said they had medium or above knowledge level of wetland environments.

Birds were the most popular biodiversity value that respondents wanted to learn more about, this is not surprising as over 20% of respondents said they visited/enjoyed the birdlife within the day in their short-answer responses. Windermere Bay was found to have the highest diversity of birds within saltmarsh environments found within the Derwent Estuary (Visby & Prahalad, 2020). This diversity in birdlife is clearly enjoyed by survey participants and noted as a high value to the local coast-care group during in-person discussions. Interest in biodiversity groups in the survey followed the general trend of more interest in visible groups such as birds, plants and fish, and less interest in more cryptic animals such as macro-invertebrates and insects (Brady, 2018; Eisenhauer *et al.*, 2019; Wang *et al.*, 2022).

The role of saltmarshes in improving water quality was the most popular ecosystem service participants wanted to learn more about. This is not surprising given the proximity to the popular Windermere Beach, as there is direct interaction with the water and benefit provided from the ecosystem service. Other popular ecosystem services of interest were coastal protection and increasing biodiversity in urban areas. Interestingly, participants had the least amount of interest in sequestration of atmospheric carbon by saltmarshes. This hierarchy of interest is clearly reflective of the location and scope of perceived benefits to participants (Macmillan & Duff, 1998). There is higher interest in services that could directly benefit participants and their interaction with the ecosystem,

as opposed to more global benefits such as climate change (Bateman *et al.*, 2006; Drake *et al.*, 2013).

Approximately one-quarter of participants selected all biodiversity values and ecosystem services when posed what they would like to learn more about. This shows an interest in gaining a comprehensive knowledge of saltmarsh communities. This may also be reflected in the popularity of signage and online resources as a tool for engaging with saltmarsh educational material, as more detailed information on saltmarshes could be accessed through these avenues, which may not be easily interpreted through art, or more discrete forms of interpretation (Hughes & Morrison-Saunders, 2002). Signs seem to be popular with local users, as several participants specifically mentioned their love of and engagement with the historic signage installed by the Claremont Rotary Club near the cenotaph. Care needs to be taken in selecting the location, design and content included on signage, as it needs to be legible, attractive, engaging, and informative while also not overloading readers with information or messaging (Cole *et al.*, 1997; Mutiara *et al.*, 2021).

The majority of participants responded '*happy*' to expansion of the Windermere Bay saltmarsh area, which reflects the general sentiment of enjoyment and connection to nature in the bay. 28.7% of participants responded that they had neutral feelings if the wetland area were to be increased highlighting the need to effectively communicate why we are restoring the wetland at Windermere Bay, and the associated benefits it will have (Cooke *et al.*, 2013). We will do this by installing signage onsite, including links to more extensive online resources, holding community events and planting days. Of the five respondents that said they would feel '*bad*' or '*very bad*' if the wetland area was increased, almost all said they never visited the wetland, showing a disconnect from this environment, which likely influenced their response.

5 CONCLUSION

There was found to be good baseline knowledge of and interaction with the saltmarsh at Windermere Bay. The urban setting of this wetland has highly influenced participants' interest in biodiversity and ecosystem services when posed which they would like to gain more knowledge on. Strong connections to the natural features of the bay were expressed by participants, who highly value the biodiversity, quiet/peaceful atmosphere, views and access to water, which seem to provide a respite from urban areas close by.

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APPENDIX –SURVEY QUESTION RESULTS

A.1 How often do you spend time at Windermere Bay?

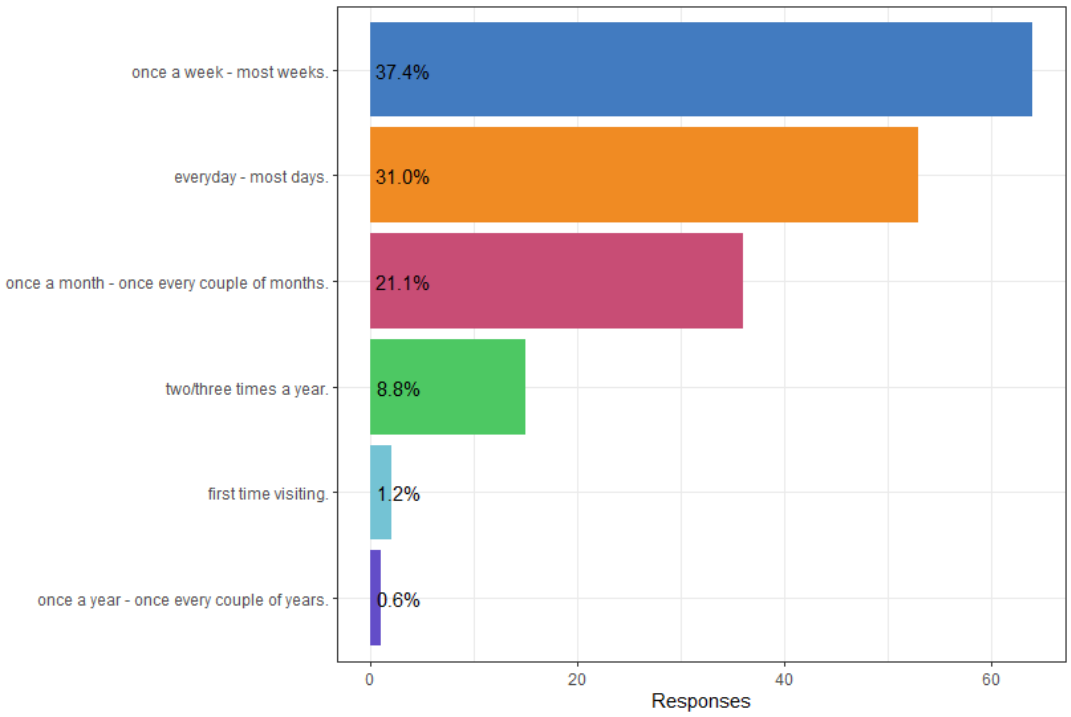

Figure A-1 Results for how often participants spend time at Windermere Bay. Percentages displayed within the corresponding column.

A.2 How much does Windermere Bay contribute to your sense of place in Claremont?

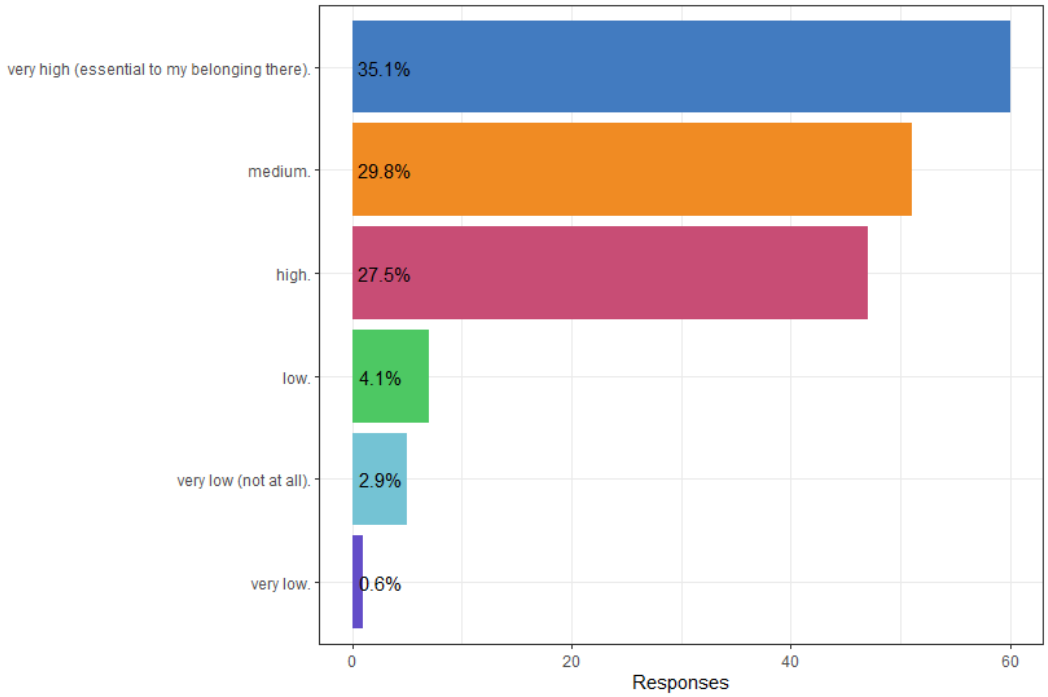

Figure A-2 Results for how participants attribute feelings of sense of place to Windermere Bay. Percentages displayed within the corresponding column.

A.3 How important are the natural features of Windermere Bay to your visit here?

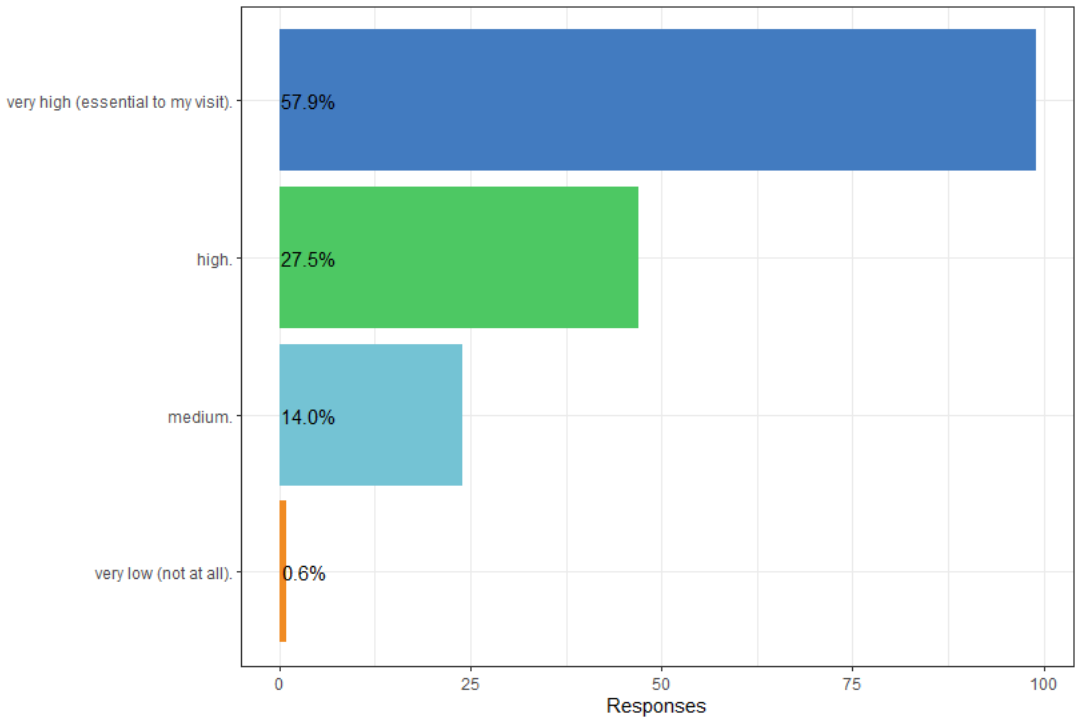

Figure A-3 Results for how participants value the natural features of Windermere Bay. Percentages displayed within the corresponding column.

A.4 Do you know that there is a wetland in Windermere Bay?

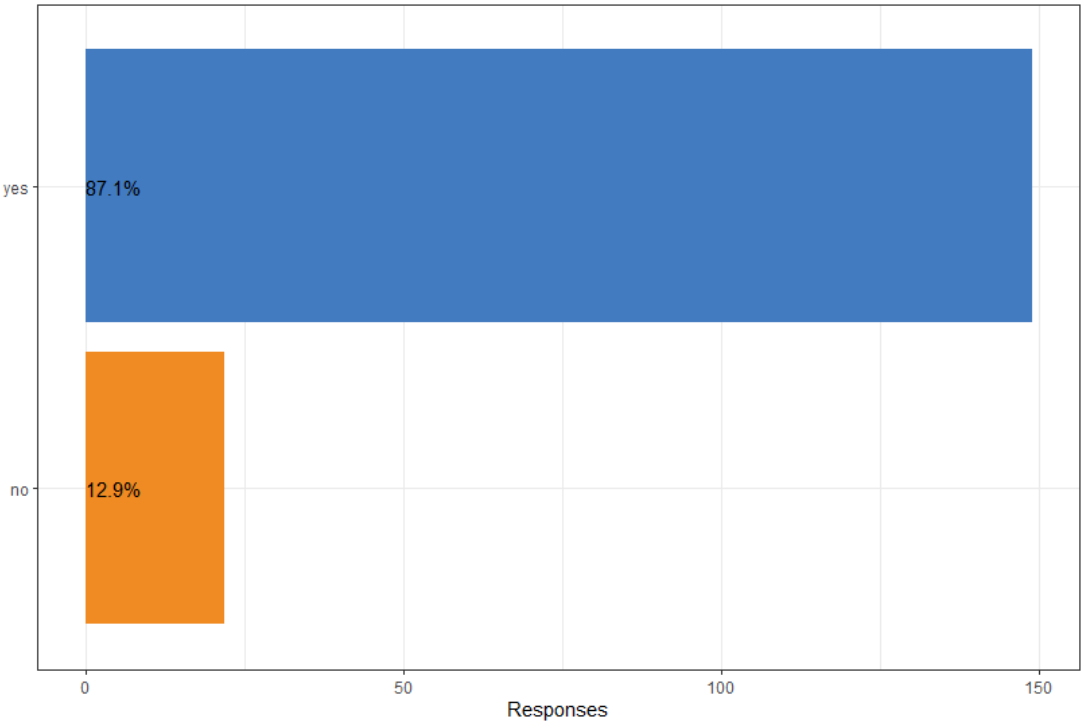

Figure A-4 Results for participant knowledge of the presence of a wetland in Windermere Bay. Percentages displayed within the corresponding column.

A.5 Have you ever participated in/attended events or volunteer activities at Windermere Bay? Please circle each one you have.

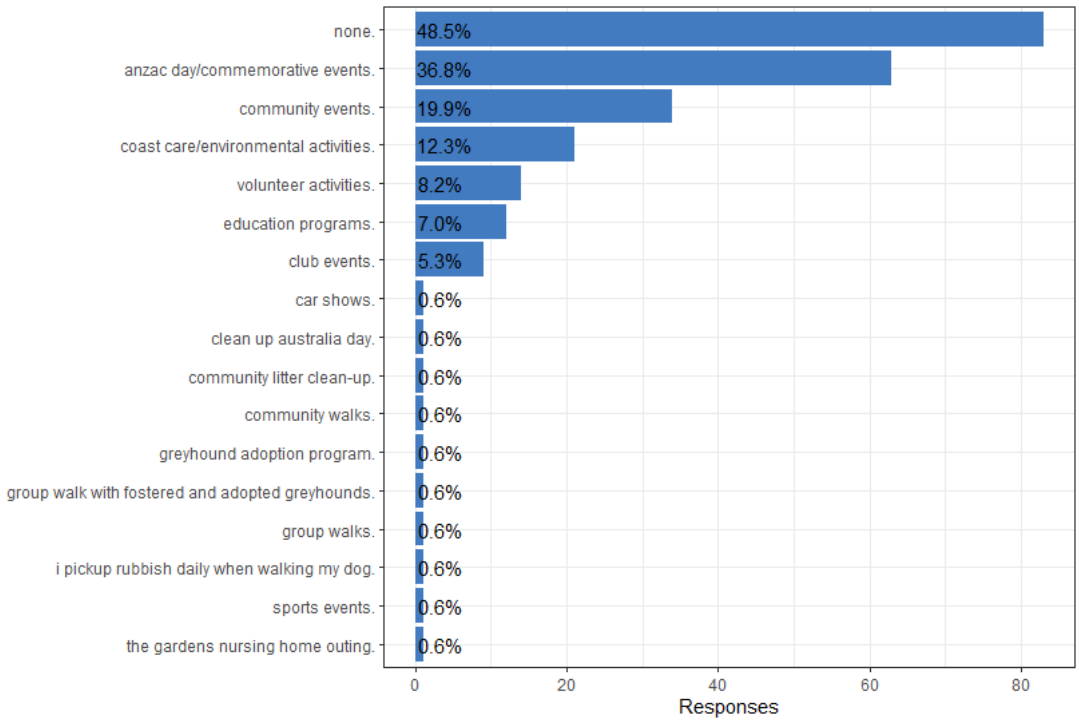

Figure A-5 Results for participation in events or volunteer activities at Windermere Bay. Percentages displayed within the corresponding column.

A.6 When you visit Windermere Bay, how often will you visit/observe the wetland area?

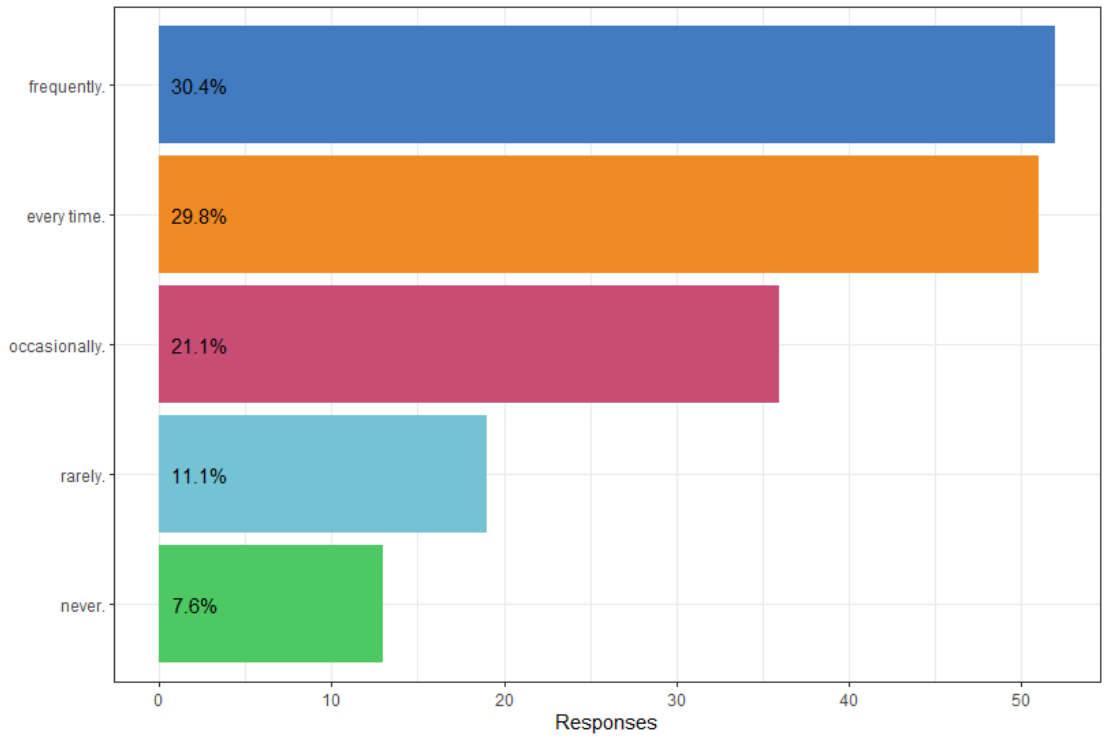

Figure A-6 Results for participant visitation of Windermere Bay wetland area. Percentages displayed within the corresponding column.

A.7 What would you say your knowledge level of wetlands is?

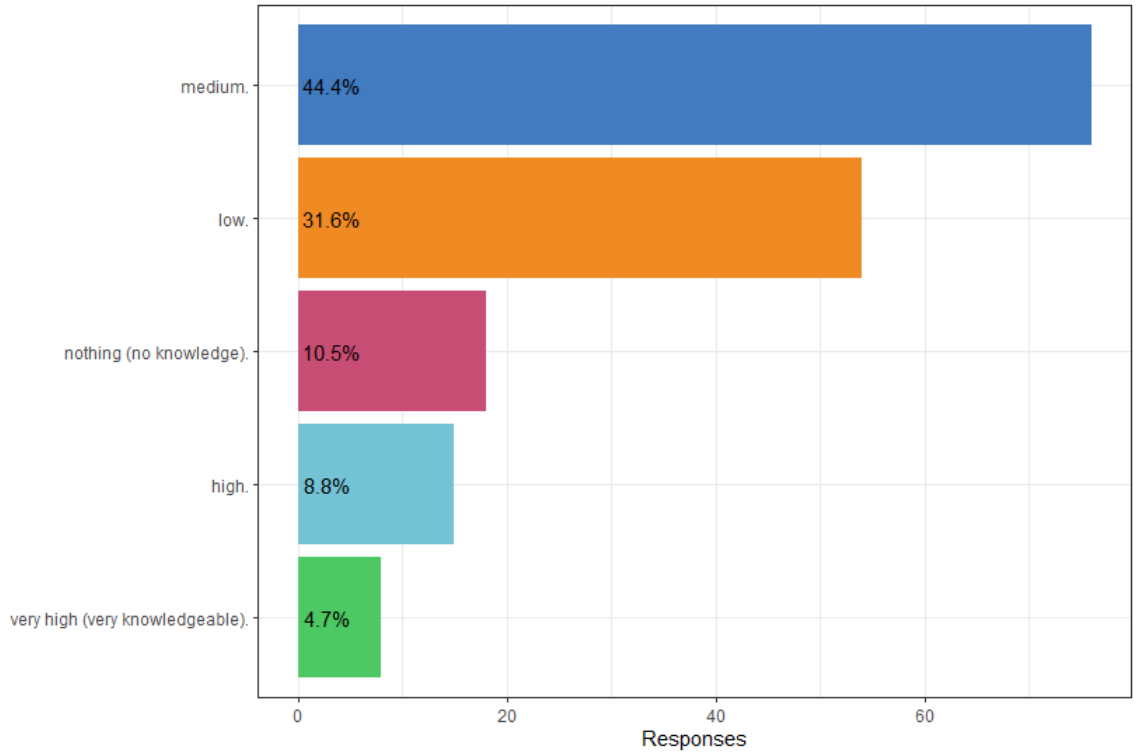

Figure A-7 Results for participant knowledge level of wetlands. Percentages displayed within the corresponding column.

A.8 What is your knowledge about the significance of wetlands and the Derwent Estuary to Tasmanian Aboriginal people?

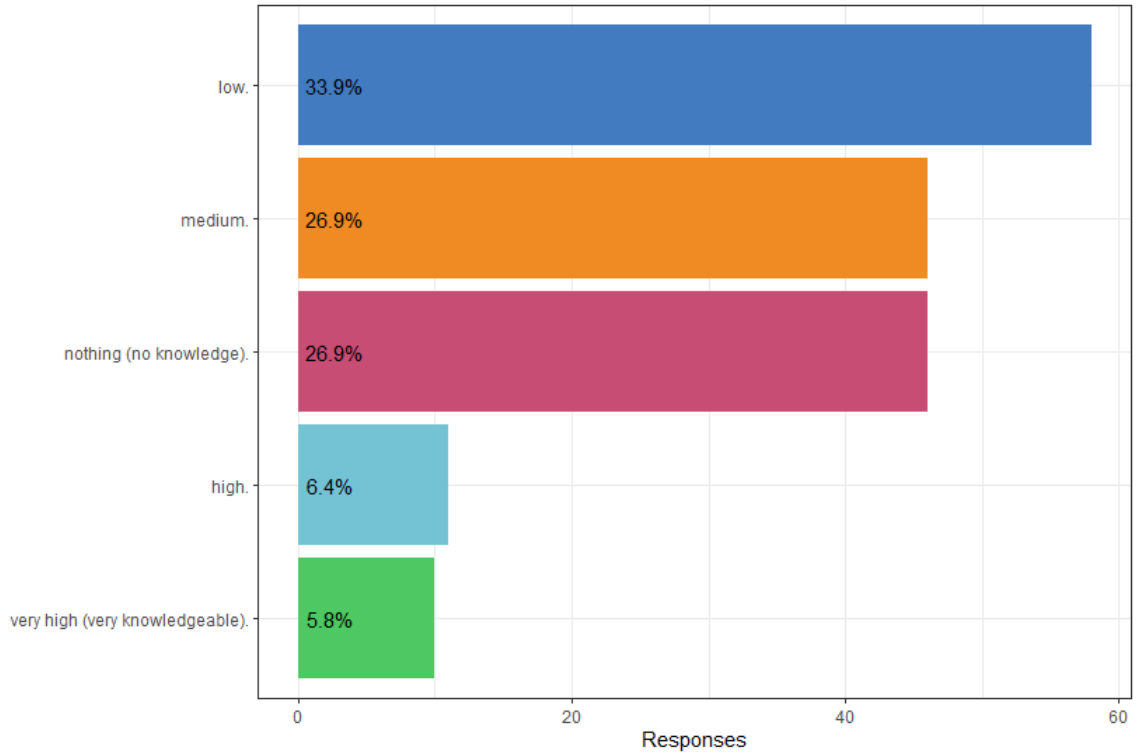

Figure A-8 Results for participants cultural knowledge. Percentages displayed within the corresponding column.

A.9 Which wetland biodiversity values would you like to learn more about?

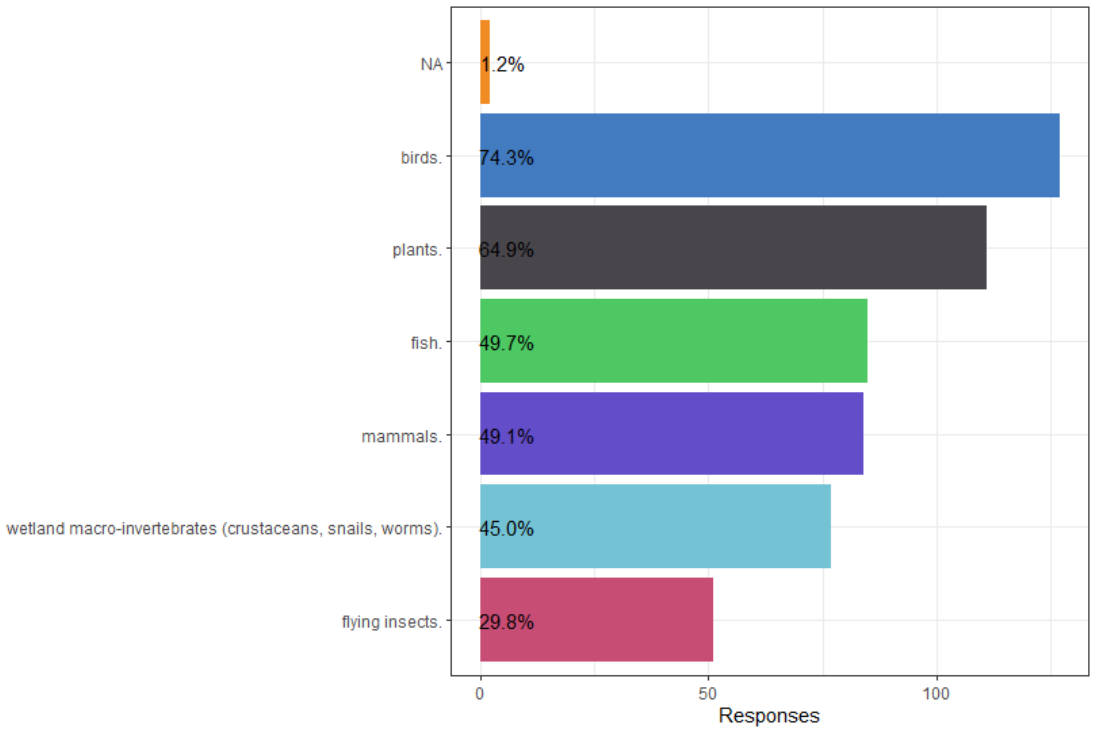

Figure A-9 Results for participant interest in wetland biodiversity values. Percentages displayed within the corresponding column.

A.10 Which wetland ecosystem service would you like to learn more about?

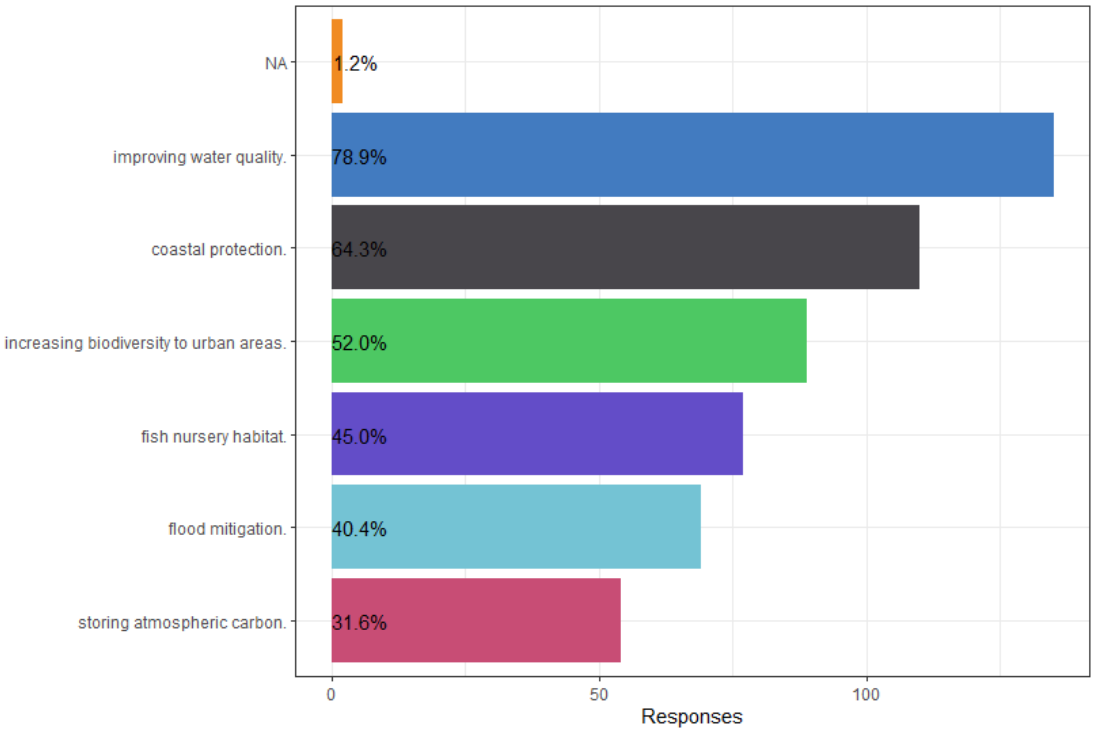

Figure A-10 Results for Results for participant interest in wetland ecosystem services. Percentages displayed within the corresponding column.

A.11 How would you like wetland information presented to you?

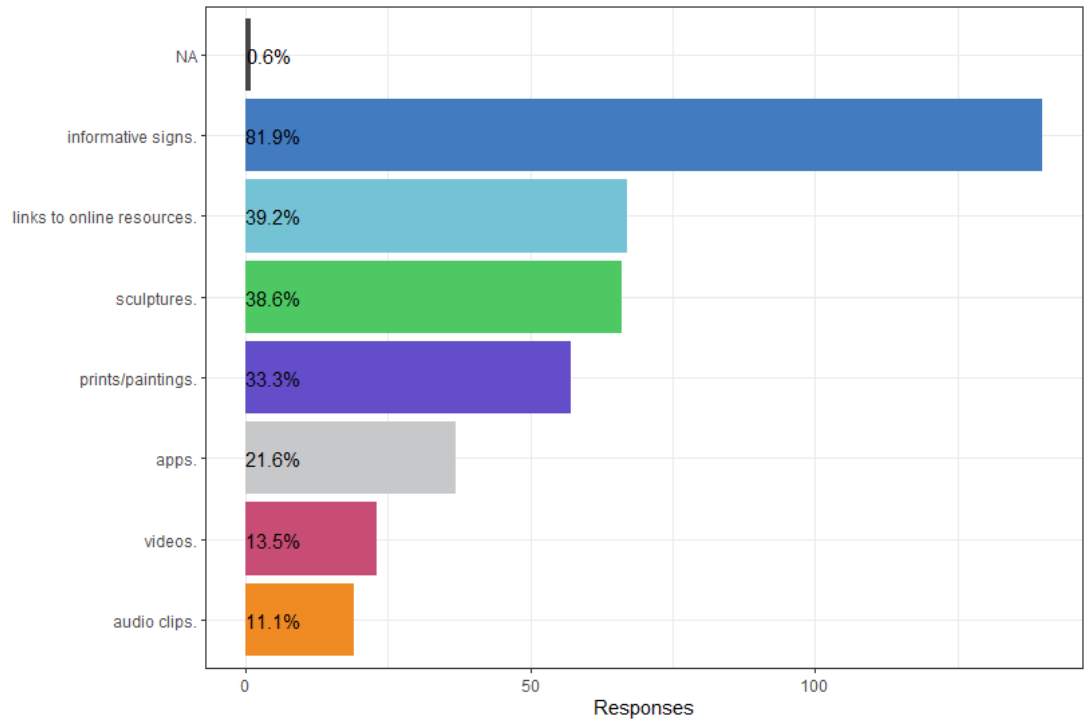

Figure A-11 Results for interest in educational material presentation format. Percentages displayed within the corresponding column.

A.12 Are you interested in learning more about the cultural significance of wetlands and the Derwent Estuary to Tasmanian Aboriginal people?

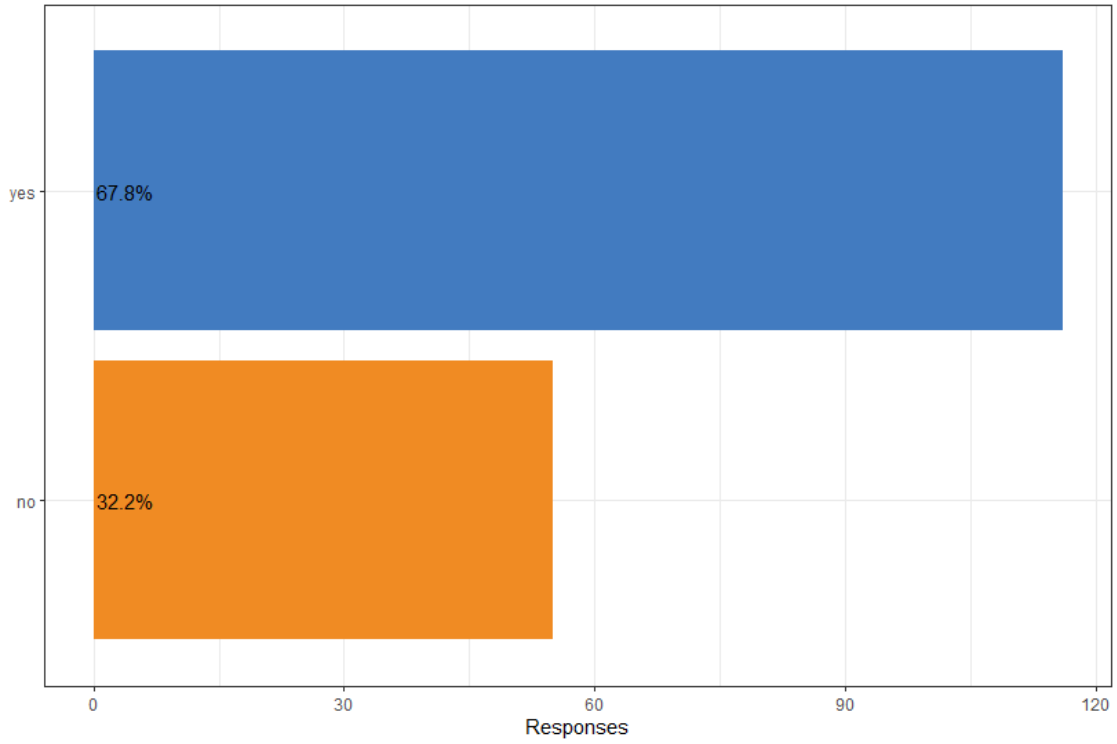

Figure A-12 Results for participant interest in cultural knowledge sharing. Percentages displayed within the corresponding column.

A.13 How would you feel if the area of wetland at Windermere Bay was increased?

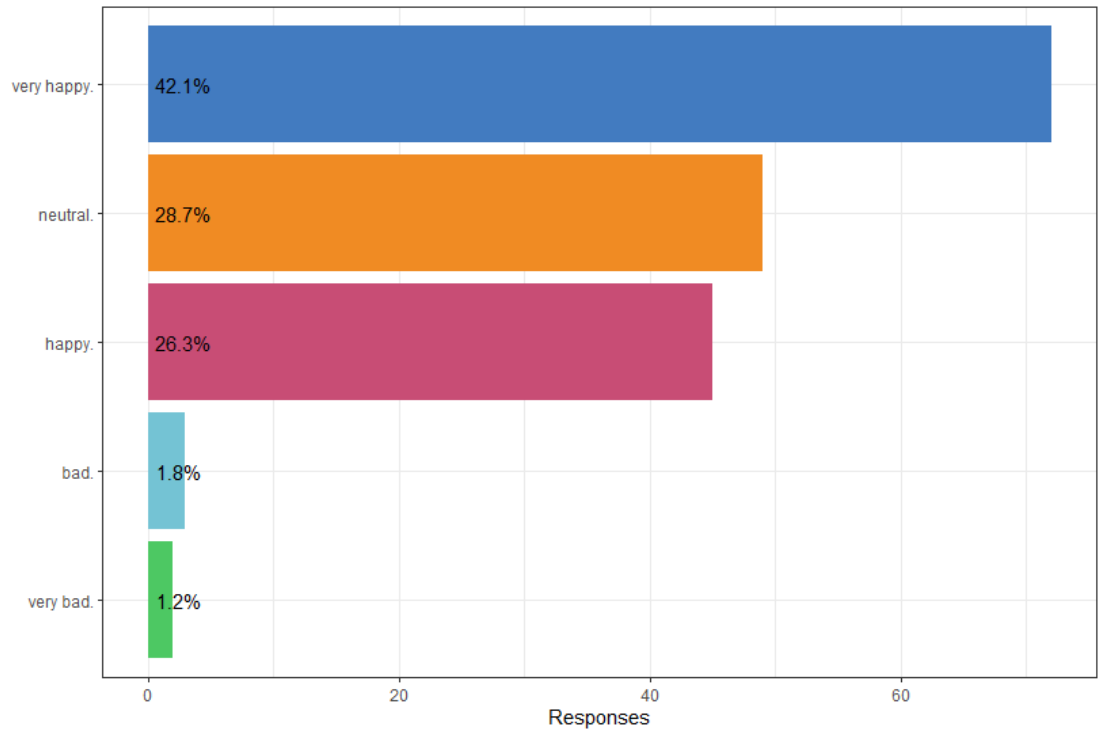

Figure A-13 Results for participant feelings of wetland area increase at Windermere Bay. Percentages displayed within the corresponding column.

A.14 What is your age range?

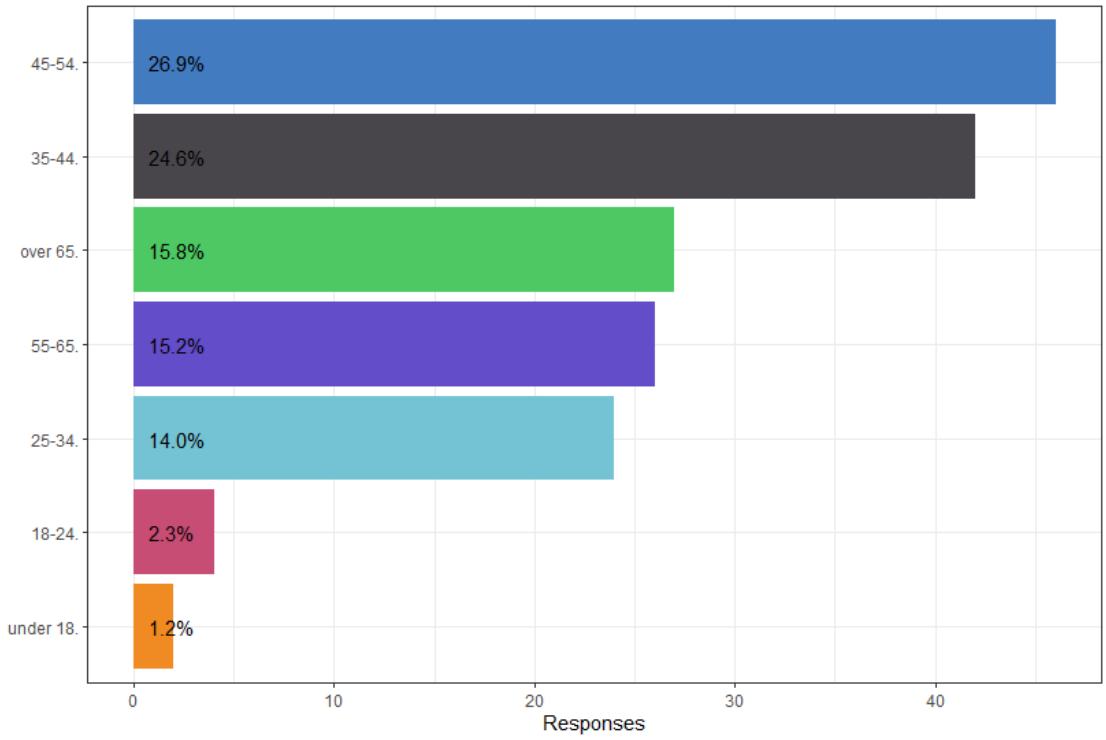

Figure A-14 Results for participant age range. Percentages displayed within the corresponding column.

A.15 What is your age range?

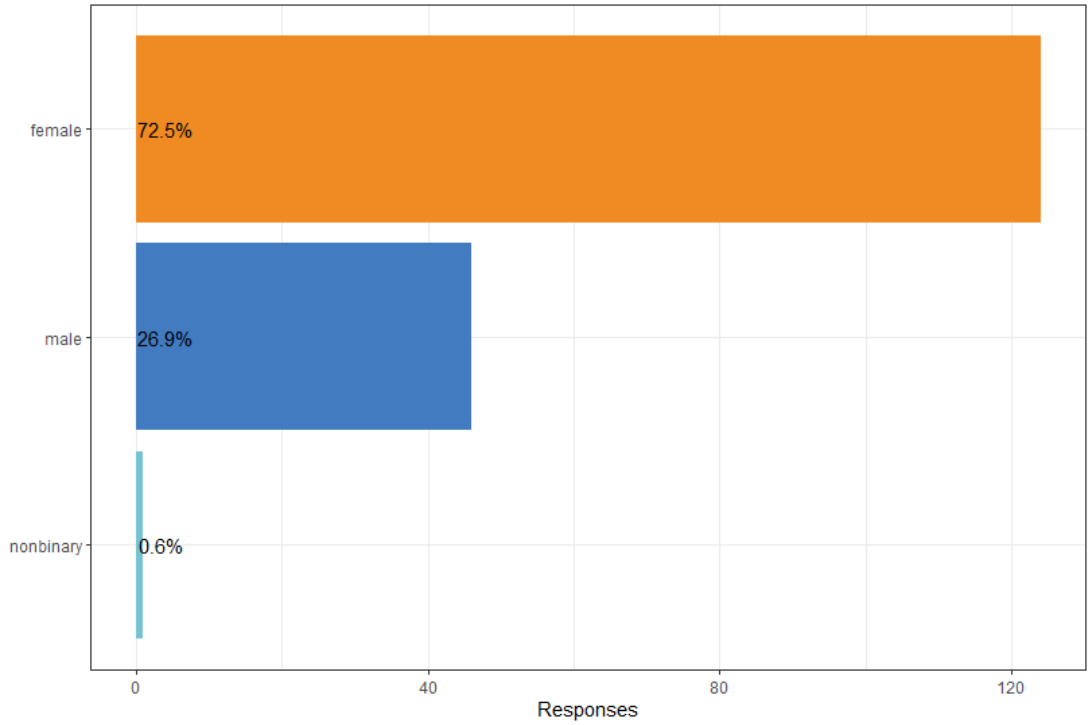

Figure A-15 Results for participant gender. Percentages displayed within the corresponding column.

A.16 What suburb do you reside in?

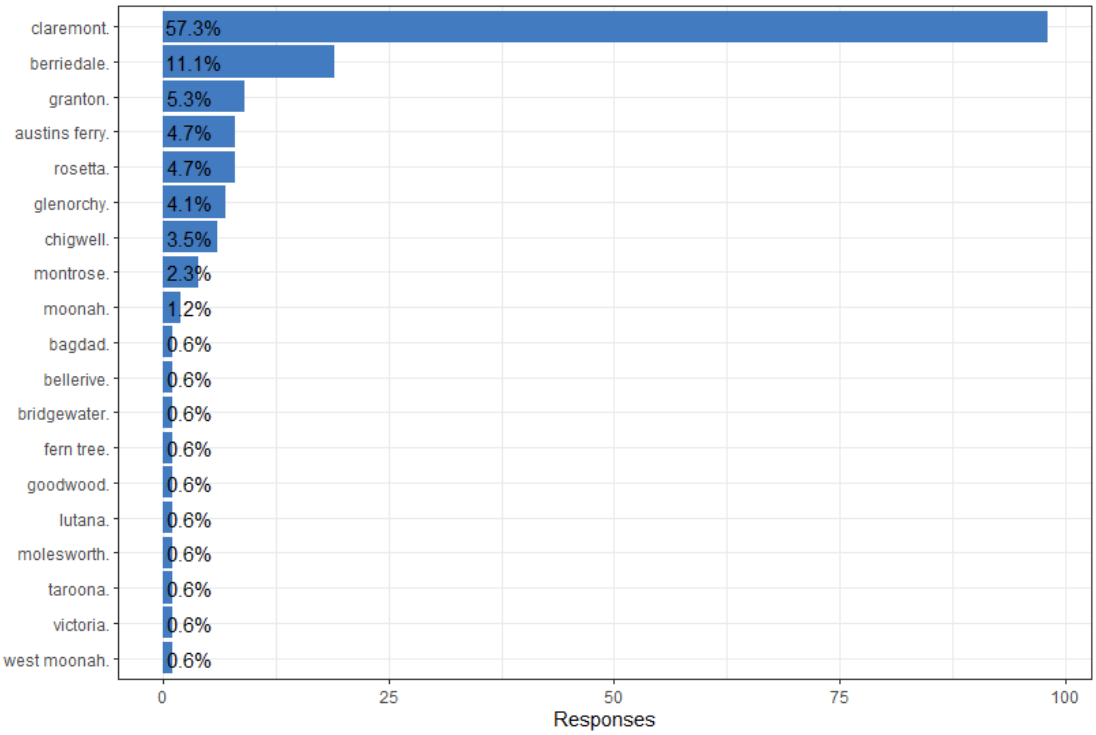

Figure A-16 Results for participant suburb of residence. Percentages displayed within the corresponding column. Percentages displayed within the corresponding column.