Hūnua Falls
Water Safety Report
October 2023

Ngāi Tai ki Tāmaki

Drowning Prevention Auckland
education • research • advocacy

Auckland Council
Te Kaunihera o Tāmaki Makaurau

Preface and Acknowledgements

This report is an evaluation of the 2022-2023 Hūnua Water Safety Project developed by the Auckland Council, YMCA North, and Drowning Prevention Auckland (DPA). It reports on the fourth year of the initiative. Many individuals and organisations have been involved with keeping those visiting the beautiful Hūnua Falls safe.

We would like to thank Lynette Penrose and the iwi of Ngāi Tai ki Tāmaki and Auckland Council as landowners for allowing us to undertake the initiative. Acknowledgement also to the Franklin Local Board for funding.

The project was coordinated by personnel from the three organisations above. Key contributors DPA were Ants Lowe, Josh Carmine, and Dr Teresa Stanley. Key people involved from Auckland Council were Stuart Leighton, Bronwen Lehmann, and Trent Taylor. Dave Lockwood from YMCA North led and coordinated the Water Safety Advisor Team of Caitlin Reelick, Emily Tusa, and Kimberly Cruickshank.

Report Prepared by:

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Suggested Reference:

Stanley, T. (2022). *Hūnua Falls Water Safety Report, October, 2023*. Report prepared for Auckland Council and the Hūnua Falls Water Safety Project Team.

Executive Summary

The previous summer, 2021 – 2022 was the first of a three-year funding contract with Franklin Local Board. Education and research were provided by Water Safety Advisers managed by Y North. Research observed actual behaviours of visitors to Hūnua Falls and interviewed visitors regarding signage. Recommendations were provided to improve the signage.

The project team agreed to continue with education and research, adding interviews of those displaying at-risk behaviours following the observations. Methodologies were developed and the training of the Advisers was undertaken.

The 2022 – 2023 summer period experienced unseasonable and unsettled weather. The Hūnua Falls area was battered during the flooding in late January. Temperatures and conditions were not favourable for swimming. Less than one-tenth (n = 74, 6%) of all visitors were observed entering the water. Only one in four observations (n = 20, 25%) recorded anyone entering the water. Of those that did enter the water, three-quarters (*n* = 56, 76%) were in the shallow pool area and only 18 visitors (24%) were observed entering the deeper pool area. There were minimal (*n* = 8, 11%) observations of visitors jumping from the edge and no jumping observed from height.

It is not known whether the minimal risky in-water behaviours observed is due to previous educational campaigns and improved behaviours, the poor weather, or a mixture of both. DPA recommends additional research data to ensure that safer behaviours displayed are ongoing. Additionally, interviews with those displaying any at-risk behaviours should be undertaken to provide content and targets for ongoing education.

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1. Background

The 2020-2021 Hūnua Falls Water Safety Project observational study of visitors' behaviours when visiting Hūnua Falls was repeated in the 2022 – 2023 summer. The observational study reports on the actual behaviours of visitors to Hūnua Falls, as opposed to their perceptions, and intended behaviours.

Observational studies can be conducted overtly, where the observers noting the behaviours are visible, or covertly, under hidden observation. Behaviours are more likely to be compromised in an overt observational study. It was therefore recommended that the research at Hūnua be completed covertly. Behaviours can be observed by video camera, where the data gathered would be an analysis of the videos observing behaviours of visitors to the Hūnua Falls, or by manual head counts and reporting of behaviours.

To eliminate any under-reporting of high-risk behaviour due to Water Safety Advisers being on-site, it was recommended that camera surveillance, being most covert, monitor behaviours. Cameras from either 24-hour cameras, or cameras on-site installed by the Advisers, would monitor behaviours and the footage then be analysed.

Due to numerous restrictions, including Wi-Fi availability, budget, and logistics of installing cameras, it was agreed to repeat the observational study using the Water Safety Advisors to collect data.

In addition, it was agreed to complete an interview study of those visitors observed displaying risky behaviours. The interview asked about attitudes, knowledge, and perceived risk and water competence.

2. Methodology

2.1 Observation Study

Research Question: What are the characteristic behaviours of visitors to Hūnua Falls?

Study Design

The basic design is a cross-sectional observational study of behaviours of visitors to Hūnua Falls.

Water Safety Advisers observed and recorded behaviours of visitors within Hūnua Falls pool area. Four recordings per day, for seven weeks were collected from 19 December 2022 to 2 February 2023, anticipating a total of 192 recordings (4 x 48 days). For two hours each day, from 1.00 – 3.00pm, one Adviser collected data observing visitor behaviours around the Falls. The Advisor remained as covert as possible during these two hours to allow them to observe the behaviours of visitors to Hūnua Falls, and record behaviours.

Visitor head counts to the Falls area, visitor behaviours, and some demographics (gender and age) were recorded, every 30 minutes.

The two-hour period was chosen as it is a cross-over time during the day when two Advisers are present and will allow one Adviser to observe and collate behaviours of visitors while the other remains in the carpark/entrance. The previous year indicated this to be the busy time of the day.

Data Collection Times: 1.15pm, 1.45pm, 2.15pm, and 2.45pm.

Research Instrument

Visitor head counts in the area, in-water head counts, visitor at-risk behaviours such as jumping from edge, jumping from height, and wearing inappropriate swimming attire, as well as some demographics (gender (male) and age (0-14 years, 15-24 years and over 25 years)) were recorded every 30 minutes. Inappropriate swimwear was defined as normal streetwear, that is, oversized clothing, long pants and included those wearing t-shirts rather than rash shirts. Researchers used the following Alchemer link to collate data at each time (see Appendix 1).

https://app.alchemer.com/explorer/report-view/id/7152515/view/24118

Limitations: The high-risk behaviours of visitors may be underreported due to the Water Safety Advisers being on-site. To minimise this, the Advisor remained as covert as possible during their recording of data.

Observational research is non-experimental because nothing is manipulated or controlled, and as such we cannot arrive at causal conclusions using this approach.

2.2 Interview Study

Research Question: What are the drowning risk perceptions of participants who demonstrate at-risk behaviours at the Hūnua Falls?

Study Design

The study was implemented to provide the project team with further information to support the observation study. The design of the study is interviews. It involves one researcher requesting one adult observed displaying at-risk behaviours to be part of an interview about their attitudes and perceptions.

Researchers recorded responses of visitors. Prospective interviewees were chosen for demonstrating at-risk behaviours. These at-risk behaviours included jumping from height, pushing others in, egging on others to participate in at-risk behaviours, evidence of alcohol/drugs, or lack of appropriate supervision.

One researcher (the researcher not collating observation data) was to record data from interviews with visitors to the Hūnua Falls site about their water safety knowledge, perceptions and attitudes, perceived competency, and risk awareness.

To randomise the sample, the researcher selected the most recent adult visitor to enter the site area. Their actual behaviours were recorded before requesting the interview.

Researchers used the following Alchemer link to collate data at each time (see Appendix 2).

https://survey.alchemer.com/s3/7124229/Hunua-At-risk-Behaviour-Interview-YE23

Research Instrument

The interview consisted of a mixture of 19 close and open-ended questions. The first three related to demographic detail of age, gender, and ethnicity. Respondents were able to opt for more than one ethnicity. The following five questions asked participants about how often they have visited the site, their reason for visiting, and who they visited with. The next two questions asked about their perceived swimming and floating competency. To ascertain their water safety attitudes, a series of six statements using a forced *agree* or *disagree* response was included. Another series of five statements was used to determine perceived risk (*extreme risk, high risk, slight risk, no risk*). Two further questions were asked to determine where they had learnt to swim and their waterfall safety knowledge. Four final questions were asked around local signage, local risks in the waterfall,

experience of rescue or drowning incidents, and suggestions to make the site safer for aquatic recreation. Content validity was determined via expert opinion and peer appraisal.

Data was entered into SPSS Version 27 for analysis. Descriptive results for all responses have been reported. Age groups were dichotomised to more closely match the three age brackets of the observation study (0-15 years, 16-24 years, and 25 and over years). Originally those under 16 years were not included in the interview study. It was realised very early in the data collection that this group comprised a large proportion of the at-risk displaying behaviours, so another age bracket was included. Risk perception responses were also dichotomised (*extreme and high risk, slight or no risk*) for analysis.

Requirements:

- iPad and electronic method of collecting data developed using coded behaviours and photographs
- Hūnua Water Safety Advisers – two hours per day for observational study
- Training information developed, included, and shared in the Water Safety Adviser training
- YMCA management of Hūnua Water Safety Advisers
- DPA commitment and time to oversee the study, develop the methodology analyse the data, and complete the research report.

Ethical Protocols

An ethical committee review is not required. Ethically, this method is considered to be acceptable if the participants remain anonymous and the behaviour occurs in a public setting where people would not normally have an expectation of privacy. The data collection in this study will be completed using the following protocols:

1. Anonymity – behaviours reported will not be identifiable to any one individual.
2. Confidentiality – In the course of recording behaviours, Water Safety Advisers will not disclose behaviours of individual people.
3. Respect for People – All people will be treated with respect
4. Māori and ethical considerations – Ngāi Tai ki Tāmaki are tangata whenua and the top of the Falls and half of the bottom of the pool have been gifted back to them. Auckland Council

remains as the land manager. Ngāi Tai ki Tāmaki have been consulted and are supportive of the research.

5. Justice – all people will be included in the observations. There will be no discrimination on the grounds of ethnicity, age, gender, disability or other.

6. Beneficence and non-maleficence – The risks of a study should be reasonable in the light of the expected benefits. The benefit of having robust data of actual behaviours at Hūnua will assist immensely in the development of future drowning prevention educational initiatives. There are however some risks which need to be addressed:

    - Concern of visitors noting that their behaviour is being monitored. Water Safety Advisors should be coached in their response to this.

    - Concern from Water Safety Advisors monitoring risky behaviour that could compromise safety of individuals being monitored.

    - Water Safety Advisers present during a drowning incident.

7. Integrity – The Water Safety Advisers will collect honest and actual data and the information will be analysed in a careful and rigorous manner.

8. Diversity – The Water Safety Advisers will understand, respect and make due allowance for diversity among participants and their communities.

9. Conflict of Interest – Perceived, potential, or actual conflicts of interest will be noted. Any conflict of interest will be minimised.

3. Results

3.1 Observations

A total of 78 observations were completed during the seven weeks from 19 December 2022 to 2 February 2023. This was less than one-half of the 168 observations completed during the previous summer.

As expected, the observations were evenly spread throughout the four observation time periods, 1.15pm, 1.45pm. 2.15pm, and 2.45pm.

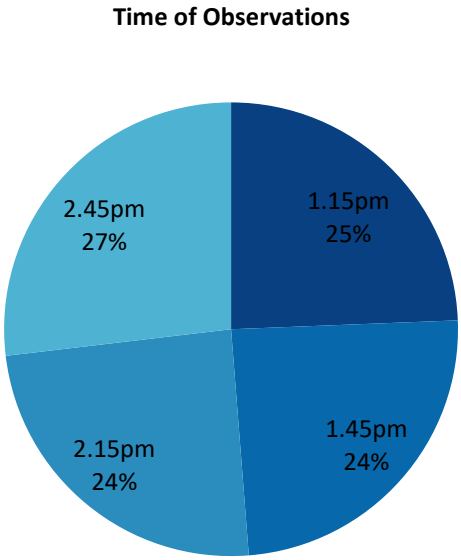


Figure 1 Time of Observations

Weather Conditions

The weather conditions were unsettled for much of the data gathering period, with particularly unfavourable conditions toward the end of January. One-third (*n* = 27, 35%) of the observations were conducted in sunny conditions. For two-thirds of the observations it was either cloudy (*n* = 30, 39%), rainy (*n* = 14, 18%), or stormy (*n* = 6, 8%).

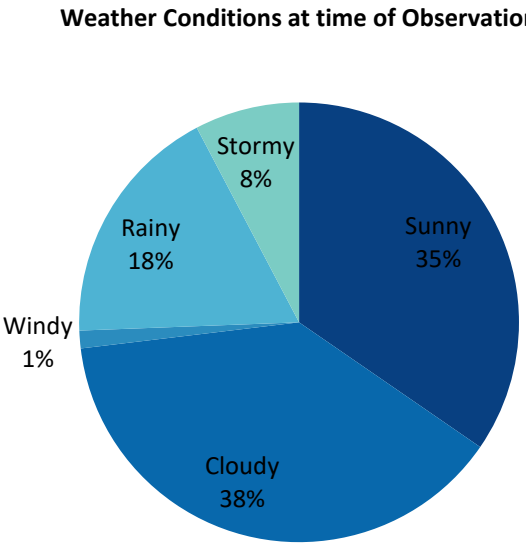


Figure 2 Weather Conditions at time of Observation

Most often (*n* = 65, 83%) the land temperature was in the relatively cool 17 – 20 degree Celsius range.

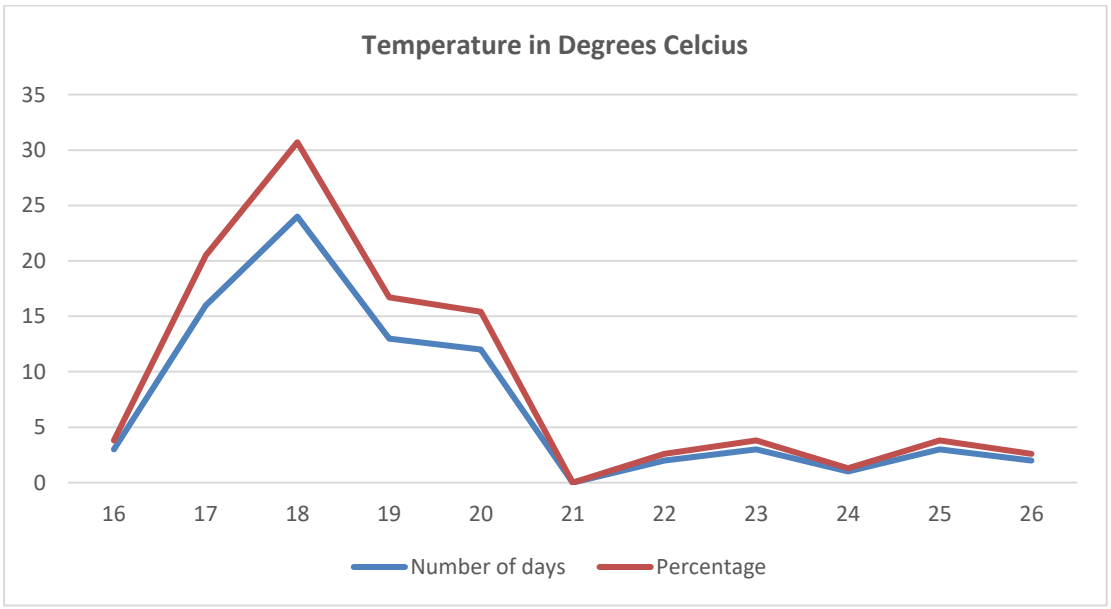
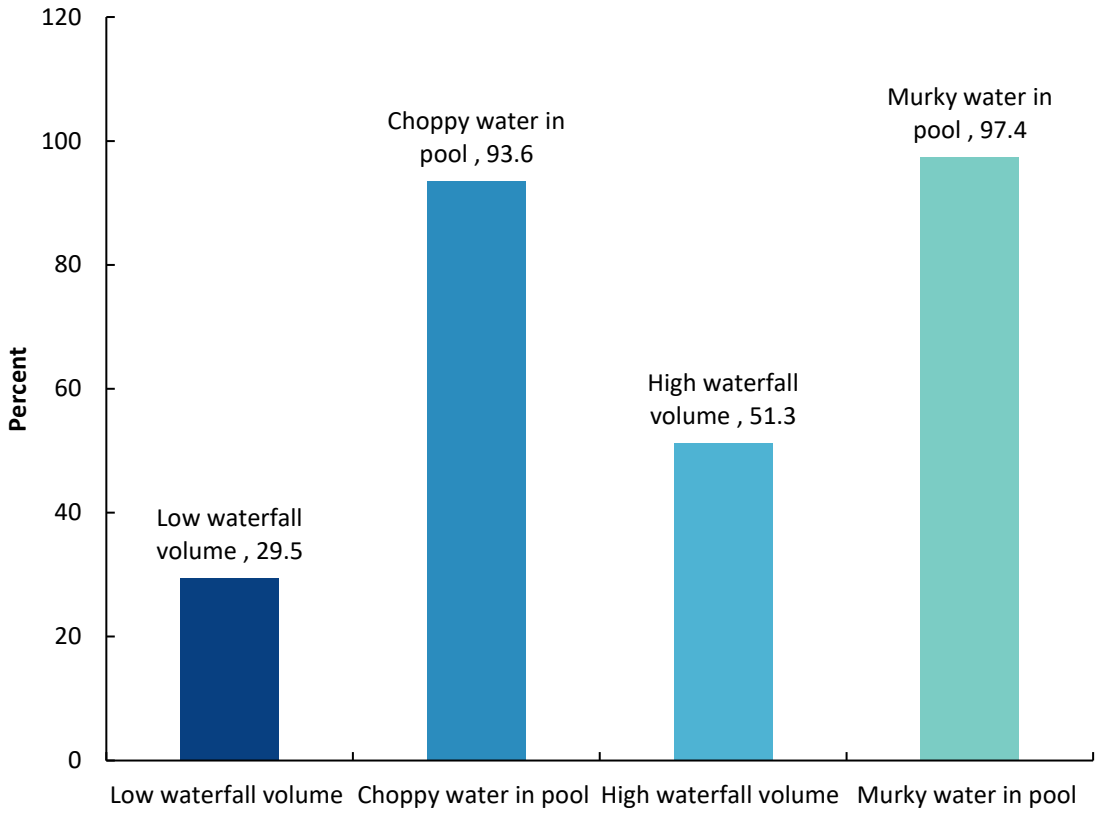


Figure 3 Temperature

Water Conditions

For almost all observations the water was noted to be murky (*n* = 76, 97%) and choppy (*n* = 73, 94%). One-half (*n* = 40, 51%) of the observations were conducted during higher-than-normal waterfall volume.



Visitors and Behaviours

The 78 observations counted 1,247 visitors in the Hūnua Falls area. This was about one-quarter of the total visitors (*n* = 4,545) observed in the previous year, despite only having about one-half of the observations.

Less than one-tenth (n = 74, 6%) of all visitors were observed entering the water. Only one in four observations (n = 20, 25%) recorded anyone entering the water. Of those in the water, just over one-half (n = 44, 59%) were male and just under one-half (n = 30, 41%) were female.

Of those that did enter the water, three-quarters (*n* = 56, 76%) were in the shallow pool area and only 18 visitors (24%) were observed entering the deeper pool area. There were minimal (*n* = 8, 11%) observations of visitors jumping from the edge and no jumping observed from height.

	Approx head count in area	Total in water	No. in shallow pool - Wading	No. in deep pool - Swimming/Floating	No. jumping from edge	No. jumping from height over 2m	No. floating using buoyancy
Total	1,247	74	56	18	0	0	2
Male		44	29	13	8	0	2
Female		30	26	4	0	0	0
Age 0-14 years		25	25	3	0	0	1
Age 15-24 years		29	20	10	0	0	1
Age 24+ years		19	16	3	0	0	0

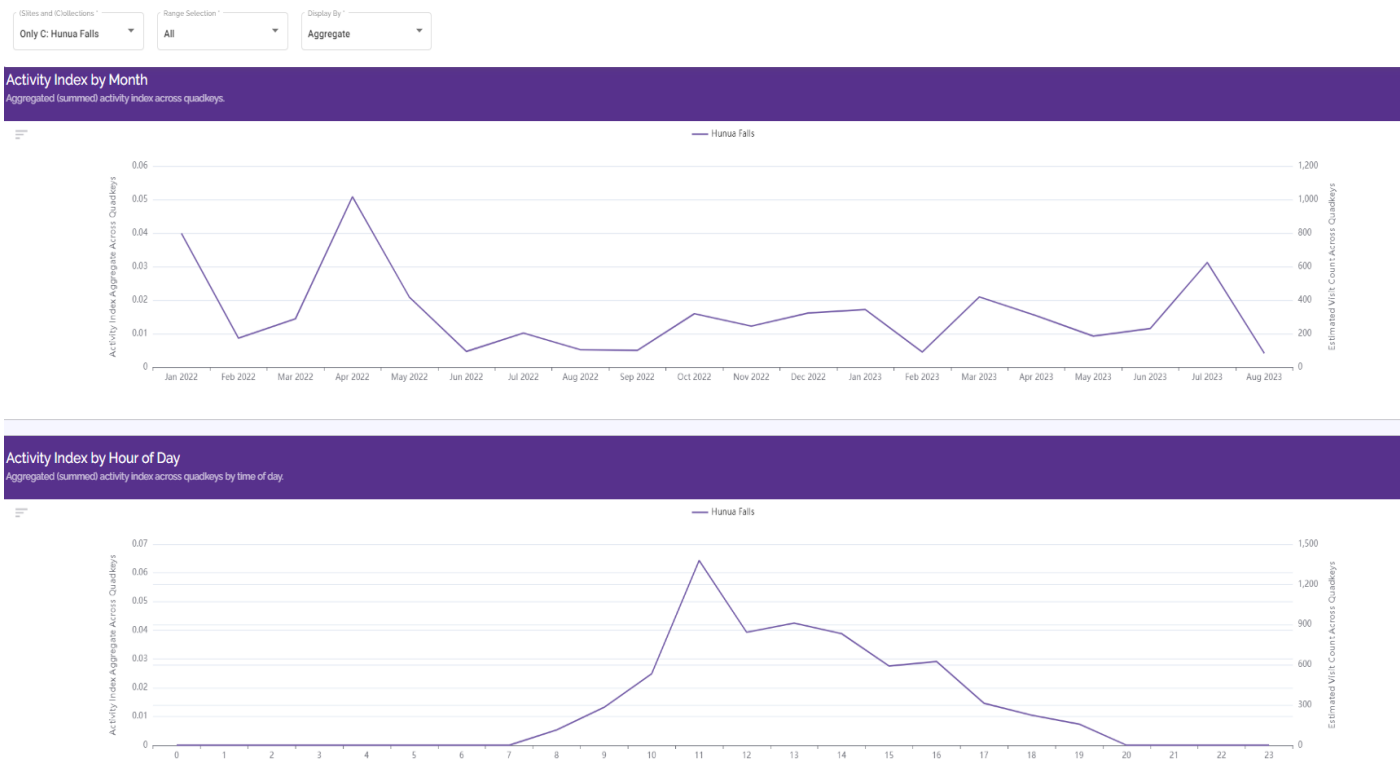
Other Behaviours Observed

Adequate adult supervision of young children was recorded on three-quarters (*n* = 56, 71%) of the observations. Risky behaviours other than swimming or jumping in deep water were observed on over one-third (*n* = 29, 37%) of the observations. These included swimming in inappropriate swimwear (*n* = 16, 21%), youth supervision of young children (*n* = 6, 8%), lack of any supervision of young children (*n* = 3, 4%), male youth encouraging risky behaviours (*n* = 2, 3%), people being threatened by others to perform risky behaviours (*n* = 1, 1%), and risky behaviours associated with consumption of alcohol or other drugs (*n* = 1, 1%)

ActiveXChange Hūnua Quadkey

DPA has obtained visitation data from ActiveXChange that can be used to help verify the visitation rates. It uses GPS from cellphones to measure visits to specific areas.

This data shows monthly visits being December 2022 – 322, January 2023 – 343, and February 2023 – 89, much lower than corresponding times in the previous year. The bottom graph shows the peak of the popular time for visiting the Falls. It is recommended future education focusses around this time period of 11.00am to 2.00pm.



3.2 Interviews

Unfortunately, there were no follow-up interviews conducted with visitors displaying risky behaviours.

The Advisors noted on one occasion where an adult individual and three boys swam to waterfall without checking on the safety of the area. Most comments from the Advisers were that there were very few visitors, and those that were there were either picnicking or taking photos.

4. Conclusion

Fewer visitors were recorded entering the water during the 2022 – 2023 summer. Less than one-half of observations were recorded when compared with the previous summer, resulting in about one-quarter of visitors observed in the Falls area. Even allowing for the reduced visitor numbers recorded, less than one-tenth of all visitors were observed entering the water, very few were in deep water and there were no observations of jumping from the edge or height.

During the 2021 – 2022 summer project period, one-fifth (20%, n = 907) of visitors in the pools area entered the water. Of these, over one-half (60%, n = 544) were wading in the shallow pool with over one-third (36%, n = 330) were observed in the deep pool swimming or floating. In addition, less than one-tenth (8%, n = 76) were seen jumping from the edge and a small number seen jumping from a height of over 2m (3%, n = 31).

The 2022 – 2023 summer period experienced unseasonable and unsettled weather. The Hūnua Falls area was battered during the flooding in late January. Although temperatures cannot be compared with previous years as they were not collected during the previous initiatives, the temperature and conditions were not favourable for swimming. Additional cellphone data corroborates the lower numbers of visitors to the area. Less than one-tenth (n = 74, 6%) of all visitors were observed entering the water. Only one in four observations (n = 20, 25%) recorded anyone entering the water. Of those that did enter the water, three-quarters (*n* = 56, 76%) were in the shallow pool area and only 18 visitors (24%) were observed entering the deeper pool area. There were minimal (*n* = 8, 11%) observations of visitors jumping from the edge and no jumping observed from height.

It is not known whether the minimal risky in-water behaviours observed is due to previous educational campaigns and improved behaviours, the poor weather, or a mixture of both. DPA recommends additional research data to ensure that safer behaviours displayed are ongoing. Additionally, interviews with those displaying any at-risk behaviours should be undertaken to provide content and targets for ongoing education.

Appendix 1 Observation Survey Tool

Hūnua Observation Study Dec 22 - Feb 23

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1) Date:*

_____

2) Time:*

( ) 1.15pm

( ) 1.45pm

( ) 2.15pm

( ) 2.45pm

3) Weather Conditions:*

( ) Sunny

( ) Cloudy

( ) Windy

( ) Rainy

( ) Stormy

4) Temperature:*

_____

5) Water Conditions - Tick all that apply*

[ ] Low waterfall volume

[ ] Calm and clear water in pool

[ ] Choppy water in pool

[ ] High waterfall volume

[ ] Murky water in pool

6) Fill in the boxes with your most exact numbers. *

	Approx head count in area	Total in water	No. in shallow pool - Wading	No. in deep pool - Swimming/Floating	No. jumping from edge	No. jumping from height over 2m	No. floating using buoyancy
Total	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _
Male	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _	_____ _____ _____ _____ _____ _____ _

Age 0-14 years							
Age 15-24 years							
Age 24+ years							

7) What other behaviours did you observe at this time? *

[ ] Male youth encouraging risky behaviours

[ ] People being threatened by others to perform risky behaviours

[ ] Risky behaviours associated with consumption of alcohol or other drugs

[ ] People trying to stop risky behaviours

[ ] Adult supervision of young children

[ ] Youth supervision of young children

[ ] Lack of adequate supervision of young children

[ ] Swimming in in appropriate clothing

[ ] None

[ ] Other - Write In: _____

8) Any other comments?

_____

9) Upload a photo of the pool area:*

_____1

Thank You!

Appendix 2 - Hūnua At-risk Behaviour Interview YE23

1) Researcher Only
*What behaviours was the participant seen doing prior to the interview?**
( ) Pushing others
( ) Jumping from height
( ) Wearing inappropriate clothing
( ) Not supervising young children adequately
( ) Presence of alcohol or other drugs
( ) Pressuring others into risky behaviours
( ) Other - Write In (Required):
_____*
( ) No-one is exhibiting at-risk behaviours

2) What are the positive or safe behaviours displayed by the participant?
_____

3) Date
_____

*4) Are you?**
( ) Male
( ) Female
( ) Other - Write In: _____

*5) What age bracket do you fall into?**
( ) 16 - 19 years
( ) 20 - 24 years
( ) 25 - 34 years
( ) 35 - 44 years
( ) 45 - 54 years
( ) 55 - 64 years
( ) 65+ years

*6) What ethnicity/ies do you identify with?**

[ ] NZ European / Pakeha

[ ] Maori

[ ] Pacific Peoples - Please specify: _____*

[ ] Asian - Please specify: _____*

[ ] Other - Please specify: _____*

*7) How often have you visited this location?**

( ) This is my first time

( ) Between 2 - 4 times

( ) Between 6 - 10 times

( ) Between 11 - 20 times

( ) More than 20 times

*8) What is the main reason for visiting this location today?**

( ) Manu / jumping

( ) Swimming

( ) Picnic with friends / whanau

( ) Walking tracks

( ) View the Falls

( ) Other - Write In (Required): _____*

*9) Who did you come with today?**

( ) Mates / friends

( ) Family / whanau

( ) Partner

( ) Myself

( ) Other - Write In: _____

*10) In summer months, how often do you this site?**

( ) Daily

( ) A few times perweek

( ) Once a week

( ) Less often

*11) Can you swim?**

( ) Yes

( ) No

*12) How well can you swim?**

( ) Poor

( ) Fair

( ) Good

( ) Very good

*13) How far can you swim non-stop in 5 minutes? (25m = 1 length of a pool) **

( ) Less than 25m

( ) 26 - 50m

( ) 51 - 100m

( ) 101 - 200m

( ) More than 200m

*14) Can you float?**

( ) Yes

( ) No

*15) How well can you float?**

( ) Poor

( ) Fair

( ) Good

( ) Very good

16) How long can you float for?

( ) Less than 30 seconds

( ) 31 seconds - 1 minute

( ) 1 minute - 3 minutes

( ) 3 minutes - 5 minutes

( ) More than 5 minutes

*17) Tick the box that best reflects your opinion on the following statements:**

	Agree	**Disagree**
My swimming competence will keep me safe when swimming in the Falls.	( )	( )
Others are at greater risk than me when swimming/jumping in the Falls.	( )	( )
My swimming competence means I don't need to wear a lifejacket in the Falls waterhole area.	( )	( )
I often feel at risk when swimming/jumping in the Falls.	( )	( )
My swimming competence means I am capable of rescuing others in the Falls waterhole area.	( )	( )
The risk of drowning is always in the back of my mind when swimming/jumping	( )	( )

in the Falls waterhole area.		

*18) Rate the risk to your life in the following situations:**

	Extreme risk	**High risk**	**Slight risk**	**No risk**
Standing in the shallow area of the waterhole area	( )	( )	( )	( )
Swimming near or under the waterfall at Hūnua	( )	( )	( )	( )
Jumping into the deep water of the waterhole area from height (over 2m)	( )	( )	( )	( )
Falling into the Falls waterhole area fully clothed	( )	( )	( )	( )
Swimming in the deep water of the Falls waterhole area	( )	( )	( )	( )

*19) Why are you in the water here today? Tick all that apply.**

( ) It's hot and the water looks inviting

( ) It's more fun than the public pools

( ) I can't afford the public pools

( ) I don't know about the whakapapa of the Hūnua Falls or any reason not to enter the water

( ) I don't like swimming at the beach

( ) Other - Write In (Required):

_____*

*20) Where did you learn your water safety knowledge or tikanga around Hūnua Falls? Give an example of your knowledge/tikanga in the comments box**

( ) I don't have any

( ) From Kaumātua (elders)

( ) From family / whanau (siblings/parents)

( ) From my peers

( ) At school

( ) Other - Write In (Required):

_____*

Comments:

*21) Where did you learn to swim?**

( ) Commercial swim lessons

( ) At school

( ) From family / whanau

( ) My peers

( ) Myself

( ) Other - Write In: _____

( ) I've never learnt to swim

22) Do you have suggestions that would make this site safer for aquatic recreation?

_____