

# **SAFESWIM, WAI ORA AND THE NPSFM**

*Nick Brown, Auckland Council*  
*Andrew Schollum, Puhoi Stour Limited*

---

## **ABSTRACT**

Funding and willingness to pay are two of the biggest barriers to building core infrastructure. The 2017 election had healthy waters and clean rivers as a core policy platform for all political parties.

As part of the NPSFM millions of dollars is being spent to understand what the current state of our streams and rivers is throughout New Zealand, both urban and rural. The information which is being collected is being fed into decision making tools to determine the interventions required, both policy and infrastructure, to achieve outcomes agreed with the community. In urban communities the investment required in infrastructure will take decades to fund and build. In Auckland the investment required is more than \$2 Billion required to address issues in our worst performing area covering part of the Western Isthmus of Auckland.

Many of our communities don't know how poor the state of urban waterways are or what effect the discharge from those waterways is having on their health when they swim at their local beaches. They are not aware of the high frequency of contamination events and don't understand the risks associated with swimming in the receiving environment despite Auckland having a number of beaches where the risk of becoming ill after swimming is high.

We now hold enough data to reliably inform the community about the risks of swimming at their local beaches. Over an 8 month period in 2017 Auckland Council moved from a retrospective sampling programme to a predictive interactive web based platform to make available the risk of swimming at 84 beaches in the Auckland Region. We are providing information on the risk of swimming now and the upcoming risk to people days in advance. People in Auckland can now make risk based decisions for themselves and their families about interacting with the water at their local beach.

The NPSFM is a long term solution to improving the health of our waterways and receiving environments. Until the NPSFM is fully implemented along with the supporting infrastructure we will continue to have the same risks and issues we have now. We have a duty of care to our communities to provide them with the information they need to manage the risks of illness to themselves and their families until the water quality of our watercourses improves. The experience Auckland Council has had in upgrading and transitioning to the Safeswim system will provide useful insights to councils implementing the NPSFM.

This paper will detail the Safeswim system we moved from and to, the improvement in our ability to predict risk, and how we are engaging with a city the size of Auckland to help people manage the risk to themselves and their families of contracting illness through swimming at their local beach.

## **KEYWORDS**

**Wai Ora, NPSFM, Safeswim, Beaches, receiving environments**

## **PRESENTER PROFILE**

Nick Brown is the Flood Planning Manager for Auckland Council. Nick works in the Healthy Waters Department within council. He has more than 20 years experience working in engineering consultancies and for local government in Australia and New Zealand. Nick's main focus is infrastructure planning to deliver great outcomes for the community he serves. He has been known to dabble in plan change processes in his quest to improve the status quo – but only as a last resort.

Andrew Schollum is the lead strategist and co-founder of Puhoi Stour. Andrew has a diverse professional background, including importing and distributing specialist foods, medicines and cosmetics, advising board members of some of New Zealand's largest companies on environmental strategy, and helping government Ministers take legislative reforms through the House of Parliament under Urgency. Andrew's experience has given him a balanced, pragmatic and action-oriented perspective that is sought after by clients.

## **1 INTRODUCTION**

### **1.1 The old Safeswim programme wasn't working**

In the nine months from February to November 2017, we overhauled The Auckland Council 'Safeswim' programme so it accurately reflected the risk of interacting with the water at our beaches in the Auckland Region.

Consequently, in the minds of the public, the summer before last Auckland's beaches were safe to swim at. This past summer the risk of becoming ill from swimming was often too high for people to choose to swim. Aucklanders who enjoy our beaches are unhappy with the change.

The subsequent disruption to planned events, whether they be; beach swims, kiwi kids triathlons, family picnics, scout events, yachting etc was high with several events cancelled and many thousands of peoples plans impacted.

The media over the 17/18 summer period contained numerous investigative articles, opinion pieces, editorials, pieces to camera, interviews, and letters from individuals all questioning how have things gotten this bad. With headlines like – "Swimming off limits at 50 Auckland beaches"

Individual reports over many decades have highlighted water quality problems in Auckland, whether they were about the frequency of wastewater overflows or the water quality in the receiving environment. Risks identified by the reports were managed regionally by closing some beaches and having a blanket statement at all others not to swim for 48 hours after heavy rain.

Until the summer just gone our tool for communicating with the public about water quality at our beaches was based on outdated national guidelines and wasn't easy to access - the message often just didn't get through.

### **1.2 Suspected under-reporting of exceedances and an internal review**

Auckland's beaches are central to the region's image both nationally and internationally. Despite the importance Aucklanders place on clean, safe, healthy water, almost without fail every summer newspapers run articles about how Auckland's beaches suffer wastewater overflows.

In 2015 staff in Auckland Council's regulatory and compliance teams had strong suspicions that the council's Safeswim programme wasn't effectively identifying wastewater contamination at recreational swimming spots. The programme was consistently returning extremely high rates of 'safe' samples from beaches that council engineers noted as 'weak points' on the network, and where there were anecdotal reports of wet wipes and other items being found frequently and in large numbers in the vicinity of wastewater engineered overflow points.

These suspicions prompted council staff to conduct an internal review. By mid-2016, that review had managed to achieve a general consensus amongst participants that change was required. The options for redesigning the programme looked complicated and risky to some parties, and the lack of direct evidence of health impacts<sup>1</sup> from water contamination discouraged some members from implementing the changes. The programme looked destined to roll-over for another year unchanged.

### **1.3 A watershed in water quality monitoring and reporting**

The water quality crisis at Havelock North proved to be a watershed in Auckland. If water quality thresholds were breached, even if there was no direct evidence of illness, Auckland Council staff felt they had a duty of care to inform the public of the potential for harm.

Immediately following the news of the crisis at Havelock North, Auckland Council staff commissioned an independent review of the Safeswim programme to make sure Auckland Council was doing everything it reasonably could to ensure the safety of Auckland's beaches.

### **1.4 An independent review**

The independent review found that the Safeswim programme was generally complying with national guidelines, but that those guidelines were out of date and the programme had failed to keep pace with advances in science, technology and practice since they were set in 2003. The review in particular identified issues with the methods used to generate and report data - issues that perpetuated a false sense of security about water quality at Auckland's beaches, contributing to public health risk.

The independent review evaluated the programme against international best practice and suggested a set of short, medium and long term steps required to move the programme towards best practice. A detailed explanation of the findings of the review and the technical/operational aspects of the revised Safeswim programme can be found in an accompanying paper (see Neale et al 2018).

Immediately after receiving the outcomes of the review, Auckland Council staff in the Healthy Waters department asked the reviewers to sketch a practical programme for making a rapid upgrade to the programme, in time for the following summer swimming season.

---

<sup>1</sup> People swimming at Auckland's beaches assume the water quality is good and are unlikely to associate sickness with swimming. This is exacerbated by the fact that waterborne illnesses can take ten days or more to incubate, and can present as respiratory and other infections rather than stomach upsets. According to the Auckland Regional Public Health Service, perhaps as little as 1/200 or 1/250 of those who do fall ill present to doctors, are tested and notified to public health agencies. This means there is a paucity of information on the number of people who are falling ill from contact with contaminated water, but it does not mean that contaminated water is not a source of significant illness in the community.

This paper will focus on describing how the changes to the Safeswim programme were made and highlighting the impact and implications of the programme - sharing the lessons we learnt. The paper also touches on the implications of our journey for the NPSFM process and managing risks to the communities we serve.

## **2 HOW WERE THE CHANGES TO SAFESWIM MADE?**

### **2.1 A commitment to transparency**

One of the first steps in the upgrade was to test and validate the predictions of a pilot predictive model for water quality that was operating in the Waitemata Harbour from Pt Chevalier to St Heliers. This area covers many of the city's most used swimming spots and some of the beaches in Auckland most vulnerable to water contamination.

A programme of high density sampling - samples taken from three locations at each beach, three times a day following rain events of differing intensities - was used to create an accurate picture of water quality. These results were compared against the findings of the old Safeswim programme and the model's water quality predictions. The old system correctly identified only 4%<sup>2</sup> of observed exceedances at these locations while the (untrained) model predicted 72%.

These findings made it immediately apparent that there would likely be a significant change to the classification of water quality status at these beaches once the revised Safeswim programme went 'live'. This could create the impression that there had been a dramatic degradation of water quality at many beaches. In fact, water quality wouldn't have changed, rather the accuracy of our sampling and reporting of water quality would simply have increased.

The project team discussed this with project steering group, which confirmed the Council Families<sup>3</sup> commitment to generating the most accurate information on water quality and making it easily accessible to the public as quickly as possible.

The project steering group also agreed there needed to be a programme of proactive communication prior to launching the revised programme to explain the context (water quality issues were a legacy problem and the guidelines council had been following for monitoring and reporting on water quality were out of date) and ensure the public understood the rationale for the revision, how the new system worked and what it meant for them.

The project steering group recognised that monitoring and communicating the state of water quality was only the first step and that real emphasis needed to be placed on ensuring that the Council Family was 'joined-up' and doing everything it could to find and fix the source of poor water quality. Works that were underway across the Council Family would need to be integrated both practically, and in terms of the way they were packaged and communicated to communities at regional and local scales.

---

<sup>2</sup> Largely because the old Safeswim programme collected samples by helicopter, which could only fly in calm, sunny weather, and was unable to take samples from close to the shore (the guidelines specify knee-depth) when people were swimming at the beach.

<sup>3</sup> Council Family includes Auckland Council and the Council Controlled Organisations.

## **2.2 A commitment to partnership**

From the outset it was clear that parties outside of council had to be involved in the design and delivery of Safeswim if the project was to be a success.

Water quality is important, but it is a subset of safety and other agencies have roles in ensuring the safety of Auckland's beaches. Similarly, Auckland Council can take samples that establish the environmental state, but translating these findings into statements regarding public health or making judgements that relate to project health needed to be made by the relevant public health agencies.

At the very beginning of the project, team members approached Surf Life Saving Northern Region, the Auckland Regional Public Health Service, Watercare and the region's mana whenua to explain Safeswim's objectives, outline its general direction and invite participation.

Members of these organisations were integrated into the programme in roles that matched their self-determined interests and resourcing, and as the programme began to take shape and where significant decisions on programme direction were required these partners were invited to step in to governance and steering roles.

## **2.3 A clear 'light on the hill' and champion**

Along with this commitment to transparency came political commitment to the ambitious task of revising the programme in time for the next swimming season. The project team's target was to have the Safeswim programme revised and fully functional by 1 November 2017, in time for the next summer swimming season.

Having a clear outcome to focus on and a champion to drive the programme - in this case the General Manager of the Healthy Waters department - were essential to the success of the programme. It can be difficult to work across a large organisation like Auckland Council as each department has its own, entirely legitimate, objectives and processes. In this case the complexity was multiplied by having to work across different agencies. A clear outcome-focused objective, even if it is some distance away, helped the project team keep people directly and indirectly involved with the project oriented towards the outcome. At certain times in the project it was a great help to be able to ask how a particular action or position was going to help the project improve water quality and safety at Auckland's beaches.

## **2.4 Agile project planning and management**

In a large organisation like Auckland Council the process of planning and designing large-scale cross-cutting programmes like Safeswim can take years - and years more can elapse before they are implemented.

In this case the project team gained approval to begin work on 14 February 2017 and had a deadline of 1 November 2017 for implementing a fully-revised programme. An innovative approach to project management was called for.

The council formed a virtual team incorporating members from across all the departments and organisations affected by and with an interest in the programme. Programme leadership was allocated to staff seconded to the Safeswim programme (rather than reporting to a 'home team') who were given a mandate to operate across

silos and the performance target of delivering a fully-functioning platform on time and within budget. Project governance was provided by senior members of each contributing department and agency. As the programme took shape and began to approach launch, the membership of the programme steering group was expanded to include representatives of external partners and the region's mana whenua.

The virtual team met fortnightly to agree tasks that needed to be achieved by the following fortnight, report on progress and find solutions to any barriers that had prevented achievement of tasks in the previous 'sprint'. These meetings helped ensure horizontal integration across the project's workstreams. At each fortnightly meeting workstream leaders presented the current status of their work package and the team collectively offered suggestions on how to improve the work package, and integrate it with other aspects of the project to achieve overall coherence and integration. This avoided the risk of project components failing to integrate effectively at the back-end of the project and created opportunities for project team members to provide insights outside their area of expertise - 'outsiders' and 'non-experts' can often see problems more clearly than those embroiled in the detail of an area they know extremely well.

Innovative cross-cutting projects like Safeswim must keep everyone in the participating agencies moving in the same direction. The project team placed a great deal of emphasis on internal relationship management and informing staff from across council departments about the overarching objectives of Safeswim, the innovations at its core, and the likely implications of Safeswim for the council and council work programmes. This included:

- Regular briefings of middle managers in directly affected departments, and supporting members of the virtual team to explain Safeswim to their colleagues in their 'home' teams.
- Regular briefings to council committees and local boards were used as a touchstone to bring together agency representatives, who were invited to co-present at these meetings alongside the project team, and to ensure that senior managers across the organisation had a strong appreciation for Safeswim, its objectives and its implications.
- Inviting shared service providers within the council (i.e. science, communications and IT teams) to contribute expertise and resource directly, or to help oversee the design and delivery of project components if there were unable to commit resource themselves.

## **2.5 Commitment to continual improvement**

The project team was determined from the outset to ensure there was a meaningful framework against which to judge the performance and impact of the upgraded Safeswim programme, and an evidence base that could be used to inform course-correction and the design of subsequent cycles of project development.

Prior to making any externally obvious changes to the old Safeswim programme, staff from the council's evaluation team conducted a random survey of over 1000 Aucklanders to establish a baseline of public awareness of Safeswim. This survey established that there was a very low level of public awareness of Safeswim and no culture of checking for water quality or other hazards before choosing which beach to visit and whether or not to swim.

The project team engaged iteratively with external user groups and internal council experts as the upgrade progresses to seek feedback on the design of the web-based user interface and functionality of the digital architecture underpinning the programme.

The results of beach intercept surveys and repeated random surveys, direct user feedback through the council website, and interviews with project team members from across the participating agencies are being used by the project team to inform the iterative redesign of the Safeswim programme and to develop a schedule of improvements ahead of the 2019 summer swimming season.

## **2.6 Avoiding over-commitment**

The great is the enemy of the good. As a project gains momentum it is very easy for it to generate ideas, or for people to see how their ideas could be complementary.

To avoid the trap of trying to do too much (and consequently failing to do anything), the project team borrowed the software development concept of MVP - minimum viable product - and stuck to delivering the minimum possible to deliver a fully-functional product within the timeframe and budget available.

If new requirements or good ideas surfaced through the process, they were added to a backlog and evaluated against a set of project priorities. If they were judged to be a priority they were added to the programme and another task was dropped off to make way.

Sticking to this discipline is easier said than done. The project steering group's commitment to continual improvement helped - if someone's idea or action dropped down or didn't make it on to the priority list, it could be picked up in subsequent cycles of the programme.

## **2.7 Independent science and modelling**

Auckland Council recognised that water quality and safety are of extreme importance to the public. To ensure public confidence and to avoid any sense that the regulator (Auckland Council) might be too close to the network operator (Watercare). For this reason, the sampling programme was designed and model assumptions set by independent scientists. In addition, an independent panel of internationally recognised experts in the relevant fields of science was established to provide oversight and help inform decision-making on model parameters in response to sampling data and sensor performance.

# **3 WHAT DID WE DELIVER, WHAT DID WE LEARN?**

## **3.1 Safeswim is up and running, and performing well**

Safeswim now provides a fully-integrated web and signage platform of advice for beach users, allowing them to 'check before they swim' and make informed decisions about when and where to swim.

Auckland beach users now have access to real-time data on the performance of the wastewater and stormwater networks, and are able to see forecasts of water quality underpinned by predictive models. These forecasts are automatically overridden if sensors detect unpredicted overflows that are likely to cause a public health risk, and additional beach-specific warnings are uploaded if Surf Life Saving Northern Region or the Auckland Regional Public Health Service identify other safety hazards (i.e. dangerous wind and wave conditions, rip currents and the presence of hazardous marine life).

The project team has taken more than 5000 samples since beginning the upgrade of Safeswim in February 2017 (about 1800 were taken per annum prior to the upgrade) to build the models and validate their predictions. We don't yet have a full season of

validation sampling results but the data we do have indicates an acceptable level of predictive accuracy across the Safeswim programme's models. Taking into account monitored overflows, the Safeswim alerts (incorporating model predictions and overflow monitoring) for exemplar sites indicate that models are accurately identifying between 67% and 86% of exceedances, meeting performance standards published by the USGS (50%) and comparing well with the previous monitoring programme (4%).

### **3.2 There is always room for improving models**

We have noticed that there can be rapid changes to modelled predictions as new weather forecasts become available and models rerun with the new input data. The models in the Safeswim programme break the day into four six-hour 'session times', with models updating at 6am, midday, 6pm and midnight.<sup>4</sup> Model updates can cause significant changes in predictions at key times in the day - most notably at 6pm, when many people are considering a swim after work or as ocean swim events are scheduled to begin.

The Safeswim forecasts are 'hooked up' to Auckland Council's network of rain gauges and revise in response to observed rainfall. This allows them to capture the effects of short intense rainfall events that may not have been forecast. This is important as it allows the system to capture the effects of rain events in 'tropical' summers, where rain emerges unpredictably, passes quickly and is often followed by sunny, humid conditions - perfect for swimming. This level of responsiveness can prompt water quality alerts to arise rapidly creating a perception that models are over-sensitive or inaccurate.

On the other hand, the six-hourly 'sessions' the system uses can cause issues if heavy rain is forecast for the last few hours of the session and this pushes the average for the entire session over the threshold for an alert. This can cause the water quality icon to turn 'red' some hours before the rain hits. If the rain doesn't materialise, then this can create a perception that the model is over-sensitive or inaccurate.

Both of these circumstances make it difficult for the organisers of ocean swim events, who cannot run events when water quality predictions are 'red'. Although council only requires event organisers to advise their participants when poor water quality is predicted (not to cancel their event), event organisers generally rely on Surf Lifesavers to patrol their events and Surf Life Saving Northern Region has a policy of not putting their Surf lifesavers in the water when poor water quality is predicted.

The project team has been working closely with event organisers over the summer period - providing 'hotline' access to the science/modelling teams in the days leading up to an event and designing sampling programmes to provide additional information for high-use beaches. This has helped some event organisers, but not others and more work needs to be done to help them engineer their business models to work with a system that provides more accurate and dynamic advice about water quality.

---

<sup>4</sup> These models are complex and require hours to run using the most powerful computers currently available to the Council.



### 3.3 The public-facing platform is performing well

The Safeswim website (<https://www.safeswim.org.nz/>) has attracted over 130,000 unique users since its launch, and gained nearly 300,000 hits. The interface is performing well and we're receiving feedback that it is easy to access, easy to use and informative (Figure 1). Usage rates continue to grow.

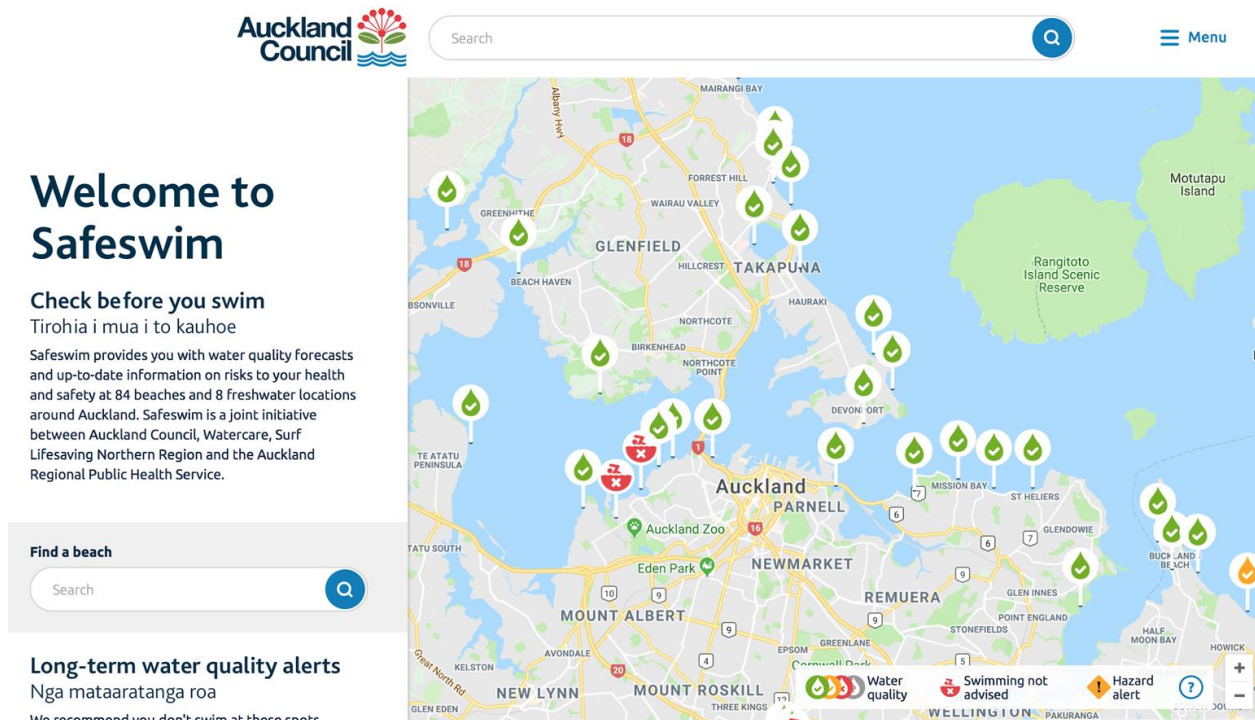


Figure 1: Safeswim interface (<https://www.safeswim.org.nz/>)

We have, however, received feedback that some users find the water droplet icon unclear and perceive it to be a general indication of beach safety. Some users have also been confused by the distinction between 'red no swimming' icons where long-term warnings are in place and the red water droplets that denote transient or short term warnings.

The manual on-beach signs<sup>5</sup> operated by surf lifesavers at Auckland's patrolled beaches are subject to user error and public tampering. Some clubs are reluctant to manage them given their beaches infrequently experience water quality issues.

The beach approach signs<sup>6</sup> are easily overlooked and don't clearly indicate there is a potential health risk. Several Local Boards and some Parks staff have been resistant to their installation on the grounds that they create clutter which causes the public to 'switch off'. On the other hand, we have had feedback from many members of the public demanding more information about water quality issues and safety hazards. Public

<sup>5</sup> 'Sandwich-board signs with movable arrows that indicate current water quality status

<sup>6</sup> Signs installed at the key approaches to each beach in the programme notifying the public about the programme and advising them to 'check before you swim'

signage at beaches is a topic that demands specialist input, but that is also heavily political - different communities have different views.

As part of the programme we trailed the installation and operation of digital signs at three locations, Mission Bay, Takapuna (Photograph 1) and St Mary's Bay. The reaction has been generally positive and indicates there is real potential to use this type of signage to address the concerns of both those who want less signage and those who want more information. Some people still miss the digital sign as they approach the beach, however, indicating that there is a patchy culture of checking beach signs for information - there is a well-established expectation in some countries of comprehensive risk signage at beaches, but not, it would seem, in New Zealand.



*Photograph 1: Takapuna Digital Sign*

Despite their promise, digital signs have proven to be more difficult to install and operate at beach locations than anticipated. Connectivity issues have created challenges for the project team, especially where yachts are moored nearby - their masts appear to disrupt cell signals.

### **3.4 Proactive versus reactive communications**

The proposal for upgrading the Safeswim programme anticipated a comprehensive, proactive, education-focused media campaign prior to launching the new platform. This was supported by the project steering group, but ultimately it was decided that a measured approach to communication would be adopted prior to launch and the emphasis would shift to promoting the programme in a general sense, with the aim of Water New Zealand's 2018 Stormwater Conference

alerting people to the Safeswim website and encouraging the public to 'check before you swim'. This appeared to work well to drive people to the website, but website analytics suggest that people are not visiting the FAQ section of the site to inform themselves about the programme, and the nature of public queries indicated there is:

- lingering confusion about how Safeswim works
- misunderstanding and mistrust of the Safeswim system and the models that underpin it
- confusion between stormwater and wastewater contamination
- persistent public demand for decisions to be based solely on monitoring
- a persistent misconception that council is closing beaches

Neither council-owned communication channels (i.e. printed and electronic magazines) or reactive responses to media articles appear to have effectively addressed common and persistent misconceptions.

The Safeswim system is complex and the project lead team found itself on the back-foot following the launch, being asked to provide brief 'high-level' answers to misguided questions in very tight timeframes. Project team members found that taking the time to explain the programme to journalists, members of the public and politicians almost invariably turned them from skeptical antagonists into advocates.

Taking a reactive approach to educating the public person by person, room by room has some benefits - it can build advocates at the grass roots level - but it is slow and incredibly resource intensive, diverting project resources away from important technical tasks.

### **3.5 Key barriers and factors for overcoming them**

To drive this level of change and achieve this level of impact so rapidly the Safeswim project team had to overcome:

- A natural and logical desire to integrate Safeswim within existing workstreams and use in-house resources to develop and implement the upgrade. This would have required the project team to work within very tight resource constraints - constraints that would have challenged the project team's ability to meet the delivery deadline and react in an agile and timely way to issues and opportunities that cropped up as the project proceeded.
- A natural and understandable tendency to view Safeswim's transparency as a risk, given it would be revealing that water quality at Auckland's beaches was worse than previously thought.
- The inevitable gaps between departments in a large bureaucracy and across organisations with responsibilities for water quality and beach safety - each having their own organisational culture in relation to risk-management and decision-making.

Critical success factors to overcoming these barriers were:

- The establishment of a virtual team, led by people responsible to the objectives of the project rather than the objectives of their home team. This allowed the project team to keep returning to the overarching objective of improving the region's water quality and avoid being 'trapped' by the status quo.
- The willingness of the project steering group and partner organisations to view this project as a prototype. This allowed the project team to build bespoke systems and trial solutions as the project moved through its phases. Now the revised platform is up and running, council units are working with project team members to integrate the project's operational requirements with their long-term work programmes. This transition is made easier by the presence of project team members who have rotated back to their 'home' teams, bringing with them an intimate knowledge of the project's objective and mechanics.
- The emphasis placed on engaging early with politicians and mana whenua representatives, and on building relationships with leaders of partner agencies. Giving these parties time to understand the programme fostered well-informed political debate and governance, and allowed the council to build the public/private partnerships necessary to ensure Safeswim is resilient to contextual change.

### **3.6 Insights**

The philosophy that drives external communications is extremely important when making transformation change. Innovative programmes like Safeswim will introduce new concepts, new information and new ways of doing things. There needs to be a strong focus on educating the public proactively before launching projects of this kind and during the first months of their operation to help people understand how to engage with and use the information that is being provided - promoting a programme is not enough.

Innovation within existing bureaucratic structures can be very difficult. Have a clear framework for managing the relationship between innovation and BAU tasks. Staff working on delivering core services and established programmes are likely to struggle to understand what the new project or product means for them and their work programmes. For some staff innovation can be stimulating, for others it can be destabilising, distracting and even threatening. This can create antagonism and resistance.

This will require councils to strike a balance between empowering project teams to deliver an outcome and working through in-house shared services who have their own schedule of actions and priorities. Shared service providers (i.e. comms and marketing) are naturally motivated to take responsibility for delivering aspects of projects that look like those that would normally sit within the scope of their BAU. The standard approach is to build a project team that includes members from the operational team driving the innovation, as well as specialist shared service teams. If staff contributing to the project are doing so from the perspective of their home team, they may be working to different objectives than that of the project - introducing mixed incentives and priorities into the project team and making it harder to keep everyone moving in the same direction. This

massively escalates the level of effort required to maintain programme integration and strategic and operational coherence.

Committing to transparency and the use of real-time information is more challenging than it might seem. There are some technical challenges to overcome but they are resolvable with money and time. The real challenges are behavioral - those who seek to introduce transparency and real-time information into their organisations are inevitably embarking on a culture change programme.

## **4 SAFESWIM AND THE NPSFM**

### **4.1 The NPSFM**

Safeswim is a useful lens to use to view the future of the NPSFM. The NPSFM seeks to understand Water Quality, agree with the community what standard of water quality they want and are willing to pay for. District and Regional plans are to go through a plan change process to give effect to the agreed outcomes and direction. Capital works programmes are to include the public capital works interventions required to achieve the agreed outcomes. Funding will be sought through the Long Term Plan process or follow a more political route to central government.

### **4.2 The LTP process and capital works programme**

Capital works programmes are well understood as is their funding through the LTP process. We have a Long Term plan for infrastructure investment which is updated every 3 years and is required to have a ten year outlook, our plan has a 30 year outlook.

Projects in years 1-5 typically get built, projects prioritised beyond year 10 tend with each plan revision to stay out beyond year 10, so whilst a project may be scheduled for year 15 it may be built anywhere from year 15 to year 50 or never because of projects which may leap frog it due to having a higher priority as agreed in the cyclical LTP process.

The LTP process is a good process but it does carry risks which should be managed.

### **4.3 Unmanaged risks**

Generally an infrastructure project comes into being because of an issue – in the case of Safeswim the infrastructure project would have a water quality outcome. The reason for creating the project is due to an identified risk – typically the projects in years 1-20 are to deal with existing risks not solely predicted future risk.

The time between an issue being identified and a solution being scoped is anywhere from 1-10 years. The time to implement the solution is anywhere from 1-50 years assuming it meets cost benefit criteria.

The risk of an issue is typically poorly dealt with in the period between identification and construction – typically more than 10 years and up to 60 years after an issue is identified.

#### **4.4 Management of the Safeswim risks**

There are a number of ways to manage risk in the period between identification and reduction of the risk due to implementation of the long term solution. Some achieve better outcomes for the community we serve than others

1. Do nothing
2. Beach Closures
3. Static signage
4. Dynamic signs
5. Pushed updates (emails texts)
6. On demand updates – interactive website
  - a. Risk information
7. Rules about when and where swimming can occur

We need to draw the line somewhere – we have stopped at personal responsibility – we have moved from a combination of 1 - 3 above to 6 above. We now actively show the current risks and allow people to make their own choices from there.

#### **4.5 Impact on people**

Aucklander's who enjoy our beaches are unhappy with the change Safeswim represents for the decisions they make for themselves and their family.

The disruption Safeswim has caused people to make to planned events, whether they be; beach swims, kiwi kids triathlons, family picnics, scout events, yachting etc was high with many events cancelled and many thousands of peoples plans impacted.

The media over the 17/18 summer period contained numerous investigative articles, opinion pieces, editorials, pieces to camera, interviews, and letters from individuals all questioning how have things gotten this bad. With headlines like;

- "West Auckland beaches top blacklist list of filthy swimming spots"
- "Revealed: Auckland's dirtiest beaches"
- "Auckland's water shock: Bacteria levels 'dangerously high'"
- "Swimming off limits at 50 Auckland beaches"

Safeswim has had a large impact on people and decisions they make for themselves, their families and the events they run. The decisions people have made as a consequence of the safeswim information being made readily available have been widespread and caused major disruption to peoples habits and businesses.

As detailed in section 3, Surf Life Saving do not patrol if the water quality on Safeswim is poor. If the life savers aren't patrolling many organisations have safety plans which state their event cannot go ahead.

The right behaviours are being driven by the programme. The change in behaviours represents a large departure from people's habits. People are very unhappy about the impact on their lives.

We are seeing appropriate choices being made given the level of risk which represents a large change in the behavior of our community. Whilst the risk is being managed more appropriately the impact on people's lives is large and many people are very unhappy with the current state of the beaches and their ability to interact with the environment in which they live in a safe manner.

Understanding the risk to themselves and their family has been very emotional for our community, people are used to going to the beach, they were then told their behavior risked illness to them and their families. Our Community is not happy that last year the beaches were ok for swimming in and this year they carry a high risk of becoming ill. Whilst nothing has changed regarding actual risk between last year and this year the emotions displayed by people show their expectations haven't been met.

The general hierarchy of thinking and understanding the issues follows the journey below;

1. Why is the risk higher this year than last?
2. Doesn't seem possible.
3. It isn't possible
4. The model is wrong
5. Why are we only being told about the problems now
6. Council needs to fix the problem now
7. The infrastructure is to blame
8. It'll take many decades to fix the issues

#### **4.6 Duty of Care**

As the implementation of the NPSFM progresses Council's will understand more about the risks their communities face regarding water quality. There will be a large time lag between identifying the issues and resolving the issues. It would be a failure in our duty of care not to manage the risk to the community prior to the risks being resolved. Resolving the issues and reducing the risk will take many decades. For swimmability the simplest way to reduce the risk in the short term is to reduce the exposure.

## **5 CONCLUSIONS**

We have moved from an inherently biased system which was difficult to access and quantified risk retrospectively following exposure, to a system which is able to predict risk accurately and is easy to access.

The behavior of our community has changed to better manage risk for themselves and their families based on the new information.

Councils have a duty of care to our communities to manage the risks we know about and to inform our community of these risks.

Safeswim is a key tool helping Auckland Council meet our duty of care to our community. Safeswim is the tool which allows people to make decisions for themselves and their families around interaction with the water at our beaches. The real time and forecast risk of interacting with water at the beaches is made available to everyone and updated multiple times a day from the best available data.

Councils are in the business of identifying risks and reducing these risks to the communities they serve. Risk reduction is generally in the form of capital works projects to reduce the likelihood of the event occurring. The LTP process provides a mechanism for funding of the projects. Identified risks are typically poorly managed between when the risk is identified and when the solution is implemented (5-50 years). The public can be exposed to the risks for up to half a century before the risk is resolved. Currently Councils are not doing enough to manage the risks between identification and resolution.

As the implementation of the NPSFM progresses Council's will understand more about the risks their communities face regarding water quality. There will be a large time lag between identifying the issues and resolving the issues. It would be a failure in our duty of care not to manage the risk to the community prior to the risks being resolved. For swimmability the simplest way to reduce the risk in the short term is to reduce the exposure.

The problems we're dealing with today are complex. Solutions to them lie between silos. They require joined-up analysis and collaboration. When agencies hold their responsibilities too tightly they compartmentalise issues and define problems within the bounds of their own organisational objectives. This can lead agencies to externalise the cause of problems and follow programmes of work that make sense from the perspective of their organisation, and may even appear intuitively sensible, but may not help achieve the desired outcome.

Transparency is a solvent for complex problems - it shows us what we know and don't know. It allows us to audit performance and learn from past experiences properly.

If we don't have the full information we're at risk of repeating the mistakes of the past or simply missing something and making poor decisions.

Safeswim brings an outcome-focus to the management of Auckland's water. It holds up swimmability as the benchmark against which council's activities are to be measured. It takes the best information available and makes it easily accessible and relevant so that people are motivated to seek it out and use it. In doing so, it provides a very visible measure of the current state of the environment and invites the public to audit council's performance in lifting that state to meet expected standards.

The Safeswim platform has changed the operating context for water management in Auckland. The public and political dialogue is now much more informed. Although more

Water New Zealand's 2018 Stormwater Conference



can and needs to be done to lift public understanding, in a very short time frame the transparency that Safeswim has brought has replaced ignorance with awareness, and leap-frogged debate over whether there is an issue - moving the conversation to 'what can we do about it'.

## **ACKNOWLEDGEMENTS**

We would like to thank the Safeswim project partners: The Auckland Regional Public Health Service, Surf Life Saving Northern Region and Auckland Council (Healthy Waters, Watercare, Regulatory and Compliance, RIMU).

We would also like to thank the delivery partners: DHI, Mott MacDonald, Translate Digital, Fulton Hogan, Fingermark, ESR, Aqualab and Morphem Environmental.