

INFRASTRUCTURE RENEWAL – MAXIMISING PUBLIC BENEFIT THROUGH COLLABORATION AND ENGAGEMENT

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ABSTRACT

Given the design life of new network infrastructure (often greater than 50 years), significant infrastructure renewals provide opportunities to think strategically, rather than just replace like for like or take a business as usual approach within a single infrastructure department or business. Collaborating with other infrastructure providers and those impacted by network operation can stimulate thinking around how additional potential project benefits could be implemented and thus accrued across multiple parties.

This approach has been taken for the St Marys and Masefield Beach Water Quality Improvement Project, a large outfall network reconfiguration project lead by Auckland Council's Healthy Waters Department. Community and Mana Whenua stakeholders have worked (and continue to work) alongside Healthy Waters and other Council businesses to define, develop and deliver a project which not only meets the need for infrastructure renewal, but provides multiple other benefits to project partners and the local environment and community.

The project has developed out of a wider community desire to improve water quality in St Marys Bay. Already widely used for recreational activities, this is an area which has been identified for future development of community facilities both on land and in water; however there are a number of sources of pollution which are giving rise to water quality issues.

Whilst the project is fundamentally an asset renewal project, given the wide ranging project partners and key stakeholders involved during the early stages of the project, opportunities to provide wider benefits to the public have been identified beyond the original requirements of the scheme.

This paper describes the process undertaken and sets out some key learnings that have occurred throughout the initial project development. It demonstrates a replicable infrastructure planning process, which can successfully deliver on Local Government Act requirements for Councils to be accountable for ratepayers' money, whilst meeting the current and future needs of communities.

KEYWORDS

Infrastructure renewal, collaboration, engagement, multiple public benefits

PRESENTER PROFILE

Caroline Crosby is a planning engineer who believes that no infrastructure system is too detailed, complex or challenging to be explained clearly and accurately to the stakeholders impacted by it.

Jenny Vince is a resource consent planner who enjoys working on infrastructure projects that make a difference – not only in the way we live, but also for the betterment of the environment.

1 INTRODUCTION

One of the key roles of a Local Authority is to deliver three waters infrastructure in accordance with the requirements of the Local Government Act (LGA - 2002), the Resource Management Act (RMA - 1991) and the direction of the National Infrastructure Plan (NIP- 2015). The LGA requires local authorities to provide for their communities' current and future needs for good-quality local infrastructure. In doing so, consideration must be given to a range of factors to ensure the designed infrastructure solution is an appropriate use of rate payers money, is resilient to environmental pressures such as climate change and can meet reasonably foreseeable current and future community needs. Infrastructure renewal or installation (and occasionally operation) can involve significant disruption to environments and communities. There is a need to consider (and manage) any actual and potential environmental effects, which may arise during construction and operation of the asset in accordance with the RMA.

The NIP has identified that much of New Zealand's three waters infrastructure is over 100 years old and needs replacing, which over the next 15 years could cost anywhere from \$30 billion to \$50 billion. Given the need to address not only issues such as an aging infrastructure, intensification and under capacity, but also resilience, sea level rise and climate change, there is a need for a step-change in the approach to infrastructure planning, delivery, management and use so that:

"By 2045 New Zealand's infrastructure is resilient and coordinated and contributes to a strong economy and high living standards"

Local authorities are also mandated to enable democratic local decision-making and action by, and on behalf of, communities. There is increasing pressure from the community to provide better environmental, cultural and social outcomes, an overall desire to minimise environmental footprint and increasing expectation that meaningful engagement around decisions involving significant expenditure will be undertaken.

In addition, mana whenua expect that local authorities will engage with them in a meaningful manner in accordance with the RMA and also many local authorities specific policies

Against this backdrop of multiple requirements, viewpoints and expectations, local authorities need to deliver tangible infrastructure outcomes for their citizens that meet legal and statutory requirements, often in highly complex working environments and with ever-increasing budgetary pressures being applied. Educated and engaged communities understand the role they can play in supporting or objecting to infrastructure initiatives.

Undertaking an effective, thorough and robust infrastructure planning and engagement process makes sense ahead of Resource Consenting and Construction. The objectives, context and constraints associated with an infrastructure initiative can be clearly articulated to a very wide audience, who can then be involved in defining and refining the initiative and supporting it through implementation, reducing time and expense in the more costly delivery phases of a project.

But what does 'effective' look like?

2 BACKGROUND

As one of a number of water quality issues that are faced by Auckland, the impact of combined sewer overflows on the city's waterfront environment is a hot topic at the time of writing (as it has been for some decades). Increasingly, very public conversations are

being held around topics such as understanding the impacts of combined sewer overflows on public spaces, the cost and complexity of the infrastructure upgrades needed to reduce overflows and Auckland's need to 'play its part' as a major centre in resolving urban waterways pollution.

The St Marys Bay and Masefield Beach Improvement Project (the Project) was developed in the midst of this challenging environment as part of a wider programme of work addressing water quality issues in the Central Business District catchment of St Marys Bay. The Project is specifically targeted at water quality issues arising from combined sewer overflows. It is relatively straightforward in terms of waters network infrastructure – primarily consisting of a new storage pipeline and outfall to capture and divert flows from 5 Engineered Overflow Points, with a pump station that will enable low volume overflows to be returned to the sewer network when capacity allows (see Attachment 1 – Outline Project Scope).

The project is being led by the Healthy Waters Department of Auckland Council. One of the functions of Healthy Waters is to plan and deliver stormwater infrastructure for the Auckland Region, in collaboration with the private sector and other infrastructure providers in the region. In several Central City catchments, including St Marys Bay, Healthy Waters owns and operates a network of very old stormwater outfalls. In addition to being used as storm-only drains these outfalls are used by Council Controlled Organisation Watercare Services Limited to discharge overflows from Watercare's combined sewer network. In the St Marys Bay catchment, the area where the overflows discharge to is managed by Council Controlled Organisation Panuku Development Auckland. Of course, all of these organisations are rightly seen as 'Council' by the local community and iwi. These beaches also receive treated stormwater discharges from the adjacent State Highway 1, managed by the New Zealand Transport Agency.

At face value, the project benefits seem 'obvious' –

- It removes overflow discharges from two very high profile and high amenity and cultural value beach environments
- It reduces the number of overflows from around 200 per annum to around 20 and reduces the total volume discharged
- It provides basic treatment of overflows (screening)
- It provides for the renewal and upgrading of an old failed outfall structure
- It reduces the total amount of wastewater discharged to the Waitemata Harbour
- It enables development of Auckland Waterfront to proceed in accordance with the Waterfront Plan
- It allows for future improvements to the network to be made

However, like many infrastructure initiatives, due to the number of organisational and community interfaces and the wider network and overflow situation, the project scope and justification has been widely challenged. In addition, at an estimated cost of \$40 million dollars, the project may be very small in the context of resolving the wider combined sewer network issues (estimated at around \$2 billion) – but it is still a lot of ratepayers money.

Defining the Project, assessing it against multiple perspectives and gaining support has necessitated a very robust and thoughtful infrastructure planning, communication and engagement process between all those involved in infrastructure provision and those impacted by it.

3 GETTING STARTED

3.1 ACKNOWLEDGING THE PROBLEM – EVERYONE’S PROBLEM!

The local community has become increasingly concerned with water quality in the local beaches and the Waitemata Harbour as a whole. Over the years there has been pressure on the Council to make changes to improve water quality and resolve combined sewer overflow issues. As development of Auckland’s waterfront has occurred and recreational use of the Bay has increased, these problems have become much more visible (and odorous) to all with:

1. Documented instances of wastewater solids discharging into the Bay, resulting in complaints from the public (Photographs 1 and 2)



Photograph 1 and 2: Combined Sewer Overflow and debris resulting from its operation in St Marys Bay at low tide

2. The marine pipeline within Masefield Beach, which is over 100 years old has failed very visibly on the shoreline and needs replacing (Photograph 3).



Photograph 3: Failed marine outfall at Masefield Beach

3. Auckland’s waterfront plan proposes to use St Marys Bay as a learn-to-sail hub and develop it as a community facility. The Bay is used by local water based recreational groups such as Dragon boating and Waka Ama and there is strong desire to develop the area further as a public facility with walkways, restaurants and tourist facilities (photograph 4).



Photograph 4: Recreational use within St Marys Bay

3.2 ACCEPTING THE CHALLENGE

In response to these drivers, the St Marys Bay Water Improvement Programme was initiated in 2016. Infrastructure providers whose operations impact on the Bay were all involved, alongside Mana Whenua. These included Healthy Waters, Watercare Services, Panuku, Westhaven Marinas, Auckland Transport and NZTA. At the time the programme was initiated, there was no clear understanding between service providers of how the problems could be solved or even agreement as to exactly what was causing all of the water quality issues. There was just a need to be present in the same room and go through a process together to explore how water quality issues were being caused and how they could be resolved.

3.3 UNDERSTANDING EACH OTHER

The first programme task was to undertake a session for all participants to share their stories and experiences of St Marys Bay and how their operations used and impacted on the Bay. This was critical for a group of infrastructure providers with very little experience or understanding of each other's operations and constraints. For example, the operation of a large distributed waters network is very different in scope and constraints to a site-based operation such as a marina. In this way more realistic expectations of what is achievable in different timeframes could be discussed.

This step was also necessary so that the full scale and complexity of the water quality issues (and hence of potential solutions) could be acknowledged, rather than finger-pointing at any particular organization.

3.4 SETTING THE PROGRAMME OBJECTIVES- SETTING UP FOR SUCCESS

Fundamental to any programme or project's success is setting objectives. This provides a focus for keeping projects on track – particularly where there are multiple stakeholders involved who will have different drivers or desired /expected outcomes. Project objectives also enable other parties to understand how and why a project has developed and what it seeks to achieve.

The St Marys Bay Water Improvement Programme overall aim is to resolve water quality issues in St Marys Bay and facilitate optimum public use of the space. In this respect, an agreed set of objectives were developed by the programme team early on:

- To enable contact recreation to occur safely in St Marys Bay
- To reduce and remove contaminant loads to the Bay as far as is practicable
- To develop a programme of work that will progressively achieve this as quickly as practicable
- To invest in projects to progressively achieve this over time; aligning these projects with long-term plans as far as is practicable.

The objectives recognise not just the aspirations for the area, but the complexity and huge cost involved with addressing the issues. They therefore set out a realistic framework in terms of putting in place a progressive programme of works, setting a clear direction for all parties involved.

It is important to note that the objectives set for the programme aim very high when compared to the existing situation – and aiming as high as you can is important. However, then this needs to be tempered against ‘real-world’ constraints such as operational requirements, available funding and technical feasibility. It is the job of infrastructure planners to translate these aspirations into robust and achievable work programmes in a manner that stakeholders can accept or support.

4 DEVELOPING A WORK PROGRAMME

4.1 SETTING UP FOR SUCCESS - AGAIN

Having established the overarching aim for the programme, and the key objectives, it was then possible to develop a programme of work to meet those objectives. Given the complexity of the issues within St Marys Bay, an action plan was developed which identified projects as either immediate (able to be implemented immediately), short/medium term (able to be completed within 2-5 years, due to planning and construction timeframes) or longer term projects (projects that may take more than 10 years to implement, and which require a larger regional strategy). Each category had sub-objectives to provide direction of their purpose and how they fit with the overarching vision for the area (see Figure 1).

Broken down into achievable steps, a wide range of projects were then able to be identified and considered by the programme team, aligned with each category, and work undertaken to assist with determining the viability, funding and approach for each project.

Figure 1: The St Marys Bay Water Improvement Programme

To resolve water quality issues in St Marys Bay and facilitate optimum public use of the space.		
<ul style="list-style-type: none"> • To enable contact recreation to occur safely in St Marys Bay • To reduce and remove contaminant loads to the Bay as far as is practicable • To develop a programme of work that will progressively achieve this as quickly as practicable • To invest in projects to progressively achieve this over time; aligning these projects with long-term plans as far as is practicable. 		
Immediate Term Projects (Immediate)	Short / Medium Term Projects (2 – 5 Years)	Long term Projects (10 years +)
To reduce the risk of visual pollution of the Bay and to reduce and better manage the risk of human exposure to pathogens via contact recreation in the Bay Area.	To provide public health protection benefit by significantly reducing the number of harmful pathogens entering the water.	To make significant improvements to water quality in the wider Waitematā Harbour by making improvements to the combined sewer network across the region.

4.2 SUMMARY OF 2016 PROGRAMME OUTCOMES

4.2.1 THE SHORT TERM

A number of immediate projects were identified by the programme team and have already been implemented. This included a comprehensive review of all historical environmental monitoring data in the Bay and recommendations for future monitoring, installing tetra traps within the adjacent residential area, the introduction of SafeSwim monitoring in the Bay to better inform users of water quality, and the installation of an automatic sensor to enable Watercare to quickly resolve dry weather overflows from the network. Safeswim monitoring and tetrap installation are continuing.

4.2.2 THE MID TERM

The mid term presented the most challenging situation for the team as solutions will involve significant investment and require buy in from a very wide range of stakeholders in a relatively short timeframe. In order to assist the team with evaluation, further assessment criteria for mid-term potential options needed to be developed. This assisted the team to define options that met Council family asset and business objectives and improve alignment between mid and long term initiatives. It also reduced the time in assessing options that cannot achieve the specific outcomes desired in this category of project. These criteria included:

- Acknowledge that a long-term plan needs to be implemented for the wider combined sewer network. This plan will be complex and require significant funding. As far as practicable short and medium term improvement projects should be a logical “first step” towards achieving a long-term strategy and not preclude its effective implementation □
- Solutions must be technically feasible, constructible and operable

- Projects should minimise 'wasted' cost by not building or minimising the building of assets that will not be functional in the long term ☐
- Projects should maximise overall benefits to the community by catering for areas other than St Mary's Bay as far as practicable. ☐
- Where possible, projects should take advantage of current or near-future requirements for asset renewal and upgrades, minimising additional cost to that already programmed by Council and CCO
- Projects should aim to provide the maximum "Whole of Community Value" for "Minimum Total Community Cost" (i.e. minimum cost irrespective of owning utility – remembering all are benefitting and billing the same ratepayers).

A number of potential options were evaluated by the programme team. These included:

- Combined Sewer Overflow Storage facilities prior to discharge
- Stormwater storage facilities in catchment
- Screening and Disinfection of CSOs Piped Diversion/s of CSOs to other locations
- Bioremediation /Bioengineering
- Living Machines to treat discharges
- Network Separation
- Outfall reconfiguration (The St Marys Bay and Masefield Beach Improvement project)

The St Marys Bay and Masefield Beach Improvement project was the only project that could fully meet all assessment criteria, fulfil programme objectives and be achieved in the timeframe specified. It was taken forward as the preferred short – mid-term project. The project is lead by Healthy Waters (as the asset owners) in partnership with other programme team members.

4.2.3 THE LONG TERM

A key initiative for the programme was to prompt the development of a Council Family agreed combined sewer network strategy within the next Council Long Term Plan Cycle, with the St Mary's Bay catchment a subset of the wider regional evaluation. Significant improvements to the combined network will take time and come with a very large price tag. A preferred strategy needs to be developed on a regional basis between all affected Council Agencies so that the best overall outcome for Auckland is achieved as well as desired outcomes for St Mary's Bay. This initiative is underway.

4.3 ENGAGEMENT AND COLLABORATION IN THE EARLY PHASE

During 2016, engagement was limited with external parties, largely limited to keeping local politicians, users of the Bay and community members informed that the programme was being undertaken. Regular short updates were provided to politicians and senior Council management and the programme was publicized at marina open days. There was a lot of support for the concept of such a programme and its objectives. However, there was considerable skepticism that it would amount to anything tangible, owing to the length of time the overflow problem has been in existence and the lack of progress in resolving it ('we've seen a lot of these strategies before'). The programme team realized we needed to come back out to the wider audience when we had been through a robust assessment process and had firm proposals to discuss with stakeholders.

However, in terms of engagement and collaboration, the early phase contributed a lot to ongoing success.

- Allowed the overall programme objectives to be widely circulated and commented on
- Aligned infrastructure providers on understanding of water quality issues and potential solutions and promoted a collaborative way of working
- Involved senior managers across all organisations so that decisions could be made
- Involved mana whenua in a meaningful way through the early stages, as part of the core programme team setting objectives and identifying and commenting on potential solutions
- Allowed the team to signal to the local politicians and community that there was an intent to make tangible progress in addressing combined sewer overflows
- Allowed the team to signal to key decision-makers inside Council that investment would be required to meet the defined programme objectives

5 IMPLEMENTING THE PREFERRED MID-TERM PROJECT

Deciding on a preferred option is the most straightforward part of any infrastructure programme. During 2017, the project team moved through the concept and preliminary design phases and concurrently undertook the studies needed to support applications for Resource Consents and undertook a much wider and proactive communication and engagement programme.

The desired delivery programme (within 5 years) meant that as many aspects as possible needed to be resolved as quickly as possible to de-risk future delivery, for example:

- Land for the new infrastructure needed to be identified and secured
- All technical studies required for consent needed to be carried out, including ground investigations
- Mana whenua and the wider community needed to be involved in the final project definition
- Preliminary design needed to be carried out

Therefore 'engagement' for the project applied as much to all the internal stakeholders (such as Regulatory, Community Services), impacted landowners (such as the New Zealand Transport Agency) as it did to the local communities, politicians and council teams and committees.

Mana Whenua have been a key partner in the process. A formal Project Working Group, with terms of reference and members specified by the iwi involved has been set up and will continue through the project. The group meets monthly. This has not only been beneficial in helping to identify and understand concerns and issues of mana whenua early in the process, but has resulted in a largely supportive group in relation to the whole project.

In terms of the wider community, a series of project newsletters was developed and delivered within the catchment, describing the wider programme and the project. This was backed up by drop-in open days, meetings with Residents Associations, individuals and politicians. In addition, a project website was established, and information provided online and a project specific email address set up so that people can get directly in touch with the project team. Through this community engagement, the project team has been able to better understand key areas of concern early in the process, focus technical work to address these concerns, and enable either group or one-on-one meetings with parties and key technical specialists to better understand the issues.

In addition, due to the need for new above ground infrastructure and the impact this could have on a public space, the process has brought together a group of stakeholders (both infrastructure providers, mana whenua and the community) interested in coordinating the spatial development of the area in a more holistic way. The process has allowed some initial masterplanning of the area, to see how the new infrastructure can be developed to tie in with future development plans of the area in terms of improved community facilities

5.1 WHERE ARE WE NOW?

At the time of writing, the team is preparing to lodge for Resource Consents for the project at the end of March 2018. The community has expressed a strong desire for a fully publically notified process and this is the process that will be followed. It is anticipated that following consents, construction will begin in late 2018 or early 2019 and the project will delivered within the 5 year timeframe. Raising awareness of the project through the engagement process is anticipated to streamline the Local Government Act Approvals process (required for all property owners) which is starting in 2018.

5.2 BENEFITS OF THIS COLLABORATION AND ENGAGEMENT

It is always important to understand any proposal in the wider context. This was crucial for successful implementation of the St Marys Project, which is a local project in a very high profile area. The Project will deal with a very small number of the total combined sewer overflows in the Auckland region. The wider longstanding problem has been unresolved for decades and with multiple partial attempts at resolution, there was a high degree of scepticism and cynicism among stakeholders in the early phase that a planning initiative would lead to any practical improvements.

As soon as the team put forward a 'real' project proposal, a huge amount of interest was obvious from the local community. It was necessary to spend time talking with the community not only about the project and why it was preferred, but also about the wider project context and the long-term planning initiative that had been set up. While this was not specifically related to the project, it helped to contextualize the project for the community. It helped them to better understand the wider issues and its complexities and enabled those who were interested to join in with the longer-term initiative.

Taking the time to work with the community has resulted in a project which has had significant stakeholder involvement, gained community, mana whenua and politician's support and understanding. This has resulted in letters of support from a number of organisations and parties prior to lodgment of resource consents.

5.3 YOU DEPEND ON YOUR OBJECTIVES!

Whilst there are some clear benefits with active engagement and collaboration on a project, it is important to not lose sight of the overarching project objectives. This is important for keeping a project on track and the project momentum moving forward. When there is a number of parties involved, there is a risk that the project may get side tracked with other project partners or stakeholders aspirations. Therefore having well defined and agreed objectives is crucial, as is having a process in place that re-visits the project objectives.

6 DISCUSSION

Engagement is not a formal tick box process that 'infrastructure provider' undertakes with 'the community' in terms of having a number of meetings and recording some feedback or other 'metrics'. The success of real engagement is understanding of an

infrastructure project (and ideally acceptance and support for it) among all impacted stakeholders.

Engagement can be uncomfortable and challenging – even confrontational - as in order to result in successful project outcomes, organisations, groups and individuals need to develop an understanding of each other and to accept that other viewpoints do exist. Context is everything – and an engineer’s context of a problem and a solution is not necessarily the same as a resident of 30 years next to an overflow, an iwi leader, a politician, an environmentalist, a park manager or a marina manager. Any individual or organisation will have own constraints, drivers and needs.

A good programme or project manager needs to acknowledge that there can be multiple versions of the ‘right’ answer – including around ‘technically correct and well-defined’ engineering solutions! Being able to articulate multiple viewpoints in a way that can be understood by all is important, as is making sure that the loudest voices don’t drown out others.

- It is extremely important that the history and past challenges of a community are acknowledged. But it is also important to make sure all understand ‘we are where we are now’ – no one can change the past. In the case of the St Marys project – this took some time, but it was time well invested. Building trust with any group takes time, particularly when a problem has been in existence for some time and will take some further time to resolve. It is necessary to be realistic about what can be achieved and then to follow through with it.
- It is preferable to start the engagement process early – stakeholders will let you know if they don’t wish to be involved at a very early stage, as did the local community in this case, and they will appreciate that you asked.
- It is important that the people managing or front-facing the consultation process understand the infrastructure that is proposed, how it operates, the impact it will have, how it will be constructed and how it will be paid for. Educated communities become frustrated if their questions cannot be answered in a way they understand and this leads to ongoing cynicism and skepticism.
- The use of specialist models and tools can be extremely helpful. Some specific examples from St Mary Bay project include:
 - Being able to demonstrate how the project could fit into any plausible long-term network improvement programme through a robust and concise infrastructure planning analysis
 - Many residents have been concerned about the potential impact of a pipeline being constructed under their property. Providing access to the geotechnical and geological specialists in a specific forum and using 3D modelling to show residents the results of ground testing demonstrated the low risk to their properties.
 - Dispersion modelling in the marine environment was used to demonstrate that there is no impact on local beaches from the project. The specialist modeller was available to talk with the community, demonstrate the models running and explain the science behind it.

7 CONCLUSIONS

Key to the success of the initial programme lay in its foundations, and right at the outset, the expectations for these involved were articulated. This included a requirement for all parties to be actively involved, and for the key stakeholder groups to have the opportunity to participate in and contribute to the development of solutions. Arising from

the initial programme, the St Marys Bay project is on track to be deliver significant water quality benefits within the 5 year timeframe specified in original programme objectives. A large part of this is due to two main factors:

- Development of agreed programme and mid-term project objectives that can be referenced throughout the life cycle and are able to be understood by a wide range of stakeholders. It is worth noting again that a wide range of stakeholders had input to the development of objectives.
- Effective engagement with all stakeholders impacted by the project.

Attachment 1 – St Marys Bay and Masefield Beach Water Quality Improvement Project

