

DUNEDIN 3 WATERS - GETTING TOGETHER: THE RIGHT MIX OF EXPERTS, EXPERIENCE AND ENTHUSIASM.

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ABSTRACT

Within the last 5 years, the Dunedin City Council (DCC) has made significant changes to the approach in strategic planning and delivery of water, wastewater and stormwater services in the City. A major component of this change was the initiation of a two-phase project for Dunedin's three waters – referred to as the Three Waters Strategy Project (the Project). The Project sought to determine and quantify current and potential future issues in Dunedin's water, wastewater and stormwater networks, with knowledge capture being an integral component.

The effective delivery of the Project was dependent on multiple-stakeholders - a team of consultants was engaged by DCC and a Project Control Group (PCG) was established. Not all Project team members were based in Dunedin, so the approach to communication was critical and required sound leadership to effectively co-ordinate across different cities and with multiple stakeholders.

The right mix of experience, expertise and enthusiasm within the core Project team was integral to the success of the project. This paper presents the path taken to enable the effective planning, development, governance and delivery of the Project (which was completed in 2011) and reflects on some of the lessons learned that have arisen as a result of this experience.

KEYWORDS

Three Waters, stakeholders, success, planning, leadership, governance, communication, reviews, collaboration.

1 INTRODUCTION

The passage of time and changing environmental priorities have left a legacy of ageing, and in some cases, inadequate infrastructure in Dunedin city. This is not entirely surprising given that Dunedin is the oldest city in New Zealand. However, coupled with a lack of asset knowledge, it has posed some significant risks to the effective management of water, wastewater and stormwater, including the potential inability to deliver the levels of service expected in the 21st century. These risks were acknowledged as not only being engineering/technical, but also related to a lack of strength in strategic planning.

Up until recently, planning for 'three-waters' capital investment in Dunedin has been very much a short-term and predominantly single issue or 'one-water' focus (such as meeting drinking water quality standards), with any planning detail largely contained within one years' timeframe - the integrated nature of the three water networks has not historically been considered to the extent required for the sustainable management of Dunedin's three waters assets. This situation has been exacerbated by the short-term planning horizons that are inherent within municipal organisations, such as the Community Plan (LTP) and subsequent Annual Plans. Whilst these documents form a necessary part of detailed budgeting for Council activities, they do not provide for planning beyond 10 years. In essence, there has been a planning and financial disconnect affecting the long-term management that is necessary for the long life-cycle of assets and resources managed by Dunedin City Council's Water and Waste Services (WWS). This situation has, until very recently, also been set within a cultural backdrop that has largely been technocratic, siloed and hierarchical; with a heavy reliance on contracted professional services.

The time had arrived for a new strategic direction for WWS, which was realised through the initiation of the Dunedin Three Waters Strategy Project ('the Project') and the development of the Three Waters Strategic Direction Statement. Through a range of Master Plan and Integrated Catchment Management Plan documents, the Project has outlined a programme to address system deficiencies. The Project has helped DCC to identify and prioritise operational improvements; capital works; business improvements and further studies using sound engineering principles and an integrated and transparent decision making process.

The Project Team, which comprised of DCC, Opus International Consultants, URS New Zealand and CH2M Beca, successfully delivered this challenging and innovative project. In the process, silos have been tested and dismantled, with an environment of collaboration established. Collaboration, both within the project team and across WWS, was not only fundamental to the success of the Project, but also fundamental if DCC was to effectively deliver the improved operational performance via a prioritised, staged capital investment programme.

2 PROJECT PLAN AND GOVERNANCE STRUCTURE

The Project was to be formulated and implemented at the same time as other initiatives that were being initiated by DCC. It was therefore important that boundaries of this project were sufficiently defined and articulated within DCC and within the project team.

The principal objective of the Project was to increase the knowledge of the capacity of the water and wastewater networks across the whole city and to develop catchment management plans for the stormwater drainage catchments which discharge to Otago Harbour. For the water and wastewater systems, an initial top down view of the performance of the networks was envisaged, which would then inform and justify more detailed investigations. The top down view formed Phase 1 of the project, with Phase 2 being the more detailed investigations. Phase 3 involved the implementation of any capital works or operational improvements recommended by the Project (the programme of which would be co-ordinated and managed by DCC WWS staff).

2.1 PLANNING THE PROJECT

Planning of the Project commenced in early 2007 and led to the development of a Project Plan, which sought to define the Project and its key components as accurately as was possible. The Plan covered the following elements:

Objectives - The Plan needed to clearly articulate the objectives of the project which were determined as follows:

- Determine required level(s) of service for each of the three waters' networks having due regard to affordability, flexibility, legal obligations and population change in space and time.
- Determine capital and operational costs associated with improvements to the three waters networks and priorities and phasing for investment.
- Develop a greater understanding of the networks operations through targeted asset and flow data collection and the development of decision support tools including network models.
- Provide sufficient data in a format suitable to inform Stormwater Catchment Management Plans.
- The results from the Three Waters Strategy in terms of required expenditure will be reflected in council policy and planning documents such as the Annual Plan and the LTP.

Procurement Options - DCC did not have resources to undertake the Project and therefore needed to procure consultant resources to undertake the work. A series of procurement options were identified using the following criteria

- **Resource Availability** - It was important that one consultant or team had sufficient appropriate available resources to undertake the Project as it was DCC's wish was to integrate the work and manage all work as one project.
- **Geography** – Acknowledgement that the necessary expertise probably would not be available in the local area (this was an initial concern to DCC).
- **Contestability** - There was a balance to be struck between a negotiated appointment, the fostering of a collaborative spirit, and the importance of being able to demonstrate value for money to Councilors, DCC Management, WWS staff and rate payers.
- **Project Management** - DCC wished to minimise the amount of management time devoted to the Project.
- **Collaboration** - There was a need for the consultant team to be encouraged to collaborate on the Project to maximise the opportunity for knowledge sharing and transfer to DCC.

Outline Methodology - An outline methodology for each of the three waters was developed and it was at this point where the three phase approach was described.

- Phase 1: Development of capital and operational investment needs at a Macro level and then determine the needs for more detailed investigations to be carried out in Phase 2 and then determine high priority capital and operational works for major infrastructure items to be carried out in Phase 3.
- Phase 2: Implementation of detailed investigation to determine capital and operational needs at a catchment or zonal level.
- Phase 3: Implementation of capital and operational works to realise the required level of service improvement.

The remainder of the methodology for the Project, at around eight A4 pages, was deliberately non- prescriptive to inspire innovation and collaboration and concentrated on describing *outcomes* rather than *process*.

Programme of works and budget - A programme of works was defined for the Project with Phase 1 for water and wastewater to be complete within 9 months and 15 months of commencement respectively. The Stormwater Catchment Management Plans were to be completed by November 2011 to feed into a renewal of the resource consent applications for the harbour-side catchments. These discharge consent applications had to be made by May 2012 as a requirement of the existing short-term (5yr) discharge consent conditions.

2.2 GOVERNANCE AND MANAGEMENT

The project planning phase identified the need for the project to have strong governance. In response to this, a Project Control Group (PCG) was established and first met on the 9th January 2008. This group comprised key people from DCC, the consultant team, peer reviewers and industry representation from another utility in New Zealand. A key reason for including representation from another utility (who had recently undertaken a similar exercise) was to allow the lessons learnt from that exercise to be applied to the Project.

DCC was represented at a high level on the PCG, thereby indicating commitment to the project. The PCG permitted the linkages between other Council-led initiatives and was held 'in person'. The fact that these meetings were held in person fostered relationships and built a collaborative environment and atmosphere where all views were respected.

3 THE CONSULTANT TEAM AND HOW THEY WERE SELECTED

The consultant team selected to undertake the project were a consortia of Opus International Consultants (Opus) and URS New Zealand Ltd (URS), with Opus acting as lead consultant. The selection process was in two parts:

Tenders were called from open market in response to a Request for Tenders (RFT) document issued by DCC. Six tenders were received and two tenderers were selected for shortlisting. Both consortia were asked to provide a presentation and the successful team was selected on the basis of their tender and the presentation session.

4 GETTING PEOPLE ON-SIDE

A key enabler of the Project was of course gaining approval from the DCC Executive Management Team, Councillors and most importantly, staff members. In 2006, well before the commencement of the Project, the journey towards integrated strategic management and sustainable infrastructure commenced for DCC WWS. The Project was but one aspect of an ambitious 'Three Waters' vision for Dunedin, however it was the most significant of these in terms of resourcing.

It was important for all stakeholders to 'buy into' the vision but, most importantly, to have belief and provide support over the life of the Project. The estimated project costs were significant, in the order of \$4M, and therefore the project team needed to clearly communicate and demonstrate that the benefits would outweigh the costs, and provide assurance to the political arm of Council that this would be a prudent investment.

One of the key messages for gaining this 'buy in' was the fact that the strategy project dealt with much more than just the issue of ageing infrastructure; it would ensure that planning across the three waters took a holistic approach and that there was a demonstrated linkage to the four well beings, otherwise known as Quadruple Bottom Line (QBL) measures - Social, Economic, Environmental and Cultural considerations,

The approach taken to engage and encourage support and commitment from the 'decision makers' was intentionally 'non-political'. The acceptance and approval of the Project was essentially gained through a series of discussions and reports, as per a typical Council process, to DCC's Executive Management Team. This approach aligned with the intent of the wider purpose within which the Project sat which, in its basic form, was to capture more knowledge of the three waters networks and systems. This subsequently evolved into a comprehensive programme of work with other distinct elements that supplemented the path of the three waters vision, including business improvement, international benchmarking and governance reform. Providing this 'bigger picture' context played a key role in assisting decision-makers to understand Project needs and benefits, and contributed to getting them on-side.

Once it was clear to DCC management that this was not just a 'data collection' exercise, but a serious attempt at business improvement and enhancing overall service delivery, the most important people to next get on-board, were the staff of DCC WWS (but not exclusive to). To ensure the success of the project, staff also needed to buy into this wider vision as well as its implementation and understand the change it would bring. At the outset of the Project the majority of activities were heavily consultant led. However, over the life of the Project, Council's in-house skills improved and WWS staff took on a much more active role in directing the Project, providing boundary conditions for the modelling work (e.g. growth and climate change scenarios), and in reviewing outputs from the consultants work. It was communicated to the consultants from the start that they would have a coaching role with regards to Council staff. This relationship was clear from the outset, and has been extremely effective at maintaining 'buy-in' and integral to the overall success of the Project.

5 OPERATOR INPUT : WORKSHOPS AND WALKOVERS

One of the challenges faced during the Project was that many field staff were relied upon to collate information, respond to information requests and answer questions; however many were also located off-site at the network

maintenance/operations centre or other plants scattered around Dunedin. Bridging this gap was essential, and was recognised by the Project team as a key task.

While there was general support and acknowledgement amongst WWS staff that this 'knowledge capture' project was necessary, ensuring the active engagement of staff off-site required extra focus particularly as the intent and indeed success of the Project equally relied on the capture of their knowledge and experience.

One of the key approaches of the consultant and field team was specific face to face engagement with the network operators. The benefits of building and then maintaining these relationships became obvious as the project progressed, with willingness to assist being evident amongst the operating staff, even with their busy work schedules. It was particularly important to ensure that communication and contact was as regular as it would have been if all the consultants and their staff were based in Dunedin. Having the right people and personalities on the project team certainly helped with this and it is an aspect of the project that many should be mindful of if venturing into something similar

Supporting this approach were the regular Consultant/Project Team visits to Dunedin for 'on the ground' interrogations and data collection with the operators playing host. A fundamental aspect was being able to ask the right questions (knowing what these were) and establishing a working relationship/environment that allowed for historic information and experiences to be imparted to consultants, who were effectively 'strangers' in all reality. However, by the end of the Project it is fair to say that good progress had been made to bridge this gap.

Regular workshops were held with water, wastewater and stormwater system operators to check and verify issues as well as review and develop options to address the problems identified. One of the other key aspects of this was the role of Hydraulic Modeller. Although located in the Civic Centre, the person in this role not only coordinated catchment walkovers and combined consultant-operator workshops, but also had significant influence in terms of building relationships, collating information, communicating project benefits and, overall, getting the operators on-board.

6 PEER REVIEWS

Having established a transparent and collaborative environment, another important aspect of the Project was to ensure the actual project outputs were of consistent high quality. To do this, the project team identified a number of approaches which could be applied to the peer review process for projects of this type. These are described below within the context of the DCC Three Waters Project:

Client Review

Where an individual in the client organisation is sufficiently experienced and expert in understanding the modeling process, the 'client review' approach can work quite well. The benefit of this approach is that the knowledge of the developed model is transferred quite easily to the client organisation and the model can be used by this organisation immediately when complete. With respect to the Three Waters Project, particularly at the commencement, there were no such skills within DCC.

Internal Peer Review

This approach to review is normally a requirement of the Quality System (usually ISO 9001 certified) that the consultants operates under and would normally be carried out to ensure that good systems and processes are being used. This peer reviewer would be appointed by the consultant or would have sufficient expertise available within the consultant team to provide this role. In this case the nature of the Project team lent itself to this approach, with skilled personnel from either Opus or URS performing that role.

External Peer Review

An external peer reviewer would normally be appointed by the client. The appointment of an external peer reviewer can be useful if the client organisation does not have suitably qualified staff. Under these circumstances, the external peer reviewer would normally be responsible for ensuring that the output met

the requirements of the scope of work carried out. From time to time external peer reviewers are appointed to do detailed checks of models, but really this is a duplication of the quality system review process which would normally be carried out by the lead consultant.

In the case of the Dunedin Three Waters Project, a combination of the above reviews proved to be very useful, particularly, as the Project evolved and changed. The review process was controlled by the PCG and all reviewers effectively reported to PCG. The PCG provided the direction and context for the reviews. Specifically, the following reviews were performed:

The Internal Consultant peer review was used to check adherence with systems and processes as part of the consultant team.

An External Peer Reviewer was appointed and performed reviews of the outputs of the Project.

At the same time the client representative (albeit inexperienced at that time) worked on the review process alongside the Reviewer to gain experience; and the PCG permitted and encouraged knowledge sharing, not only from the appointed consultant team but also from the Reviewer.

Above all the continual involvement of the external peer reviewer added value to the Three Waters Project as this role was involved in assisting with project direction and ensuring that project context was well understood. The peer reviewer therefore understood what was important and what was not. Such was the collaborative nature of the team, when issues arose all parties (including the reviewers, consultant team, client representative) were encouraged to ‘work the problem’ together and use the ‘grey matter’ to find a solution, rather than obtaining two divergent views on how to solve the problem.

7 ALONG DISTANCE RELATIONSHIP (THAT WORKED!)

With the lead consultants predominantly based in Christchurch, effective communication was essential. Consultant and Project Team interaction with staff in the Civic Centre (where most DCC staff are based) was made easier with frequent use of email and phone calls as most WWS staff roles were located within the Civic Centre office space. This meant that most staff could be easily contacted and maintained relative familiarity with Project status. Supporting this was regular, verbal updates from the WWS Manager.

There were however a number of key WWS staff located off-site. Perhaps one of the most useful forms of over-coming these spatial (or perceived) distances, ensuring ongoing staff engagement and indeed capturing the project from beginning to end, was the establishment of a web-based portal for the storage and retrieval of information. Access to this was made available to key project stakeholders, the wider project teams and all DCC WWS staff, as well as other key DCC departmental representatives that had an interest or information inputs into the project (such as the DCC Planning department). This web-based framework also ensured that all components of the project were captured at all stages: this included field surveys, meeting notes, technical data and analysis, draft and final reports, meeting agendas, minutes and any other supporting information. It was also used for group discussions and coordination of PCG meetings etc. The structure of the web-based framework and organisation/filing of information was afforded quality control through one key role in DCC WWS, namely the Hydraulic Modeller.

8 DELIVERY - THE DIFFICULT DECISIONS

The delivery of a project of this length, with so many interfaces, brings with it some tension; and at times, hard decisions have to be made. This was particularly true at certain points of the Three Waters Project where there was pressure on the programme for delivery. This situation was also exacerbated by changes in staff input and hence continuity of knowledge. When these problems arose, the whole team “worked” the problem and individuals roles changed to meet the challenge.

Early on in the Project, issues arose due to a communication barrier and a lack of understanding by the remote team members in terms of the Project and its aims; with some of the team located in Auckland whilst the core team was Christchurch based and key project stakeholders in Dunedin. This was initially addressed by co-locating the consultant team in the same City, in this case Christchurch. In addition to this, the technical team members attended the PCG meetings from time to time which, in the latter stages of the project, were alternated between Dunedin and Christchurch. This greatly increased the accessibility of the wider team members to the PCG and as a result continued to build the collaborative spirit.

When there were issues or concerns over delivery, timing or quality, these were brought to the attention of the PCG and resolved at the PCG. From time to time, teleconferences with team members, peer reviewers and the client representative were required to ensure the requirements were understood and necessary direction provided to the team members. In all cases, a 'no blame' approach was adopted by all parties which lead to the best result for the client.

9 CONCLUSIONS & LESSONS LEARNED

The Three Waters Strategy Project was completed in 2011 and has delivered a range of initiatives that will ensure that future infrastructure investment will be optimised, sustainable and affordable for current and future generations in the City of Dunedin. Over the Project's life, DCC WWS has been through a transformational change which focused on providing overall strategic vision and direction, as well as building the organisational capability to deliver the vision and outputs from the Project.

Some of the key lessons learned from this project were:

- Continuity in leadership positions is key. With a long project like this some staff changes are going to happen. This can be dealt with as long as the people in senior leadership positions on the team remain the same.
- Ensuring that junior team members were exposed to (and understood) the wider context of the project. This happened within the Three Waters Strategy Project and reduced the amount of wheel spinning. Importantly, it helped prepare a new generation of staff, consultants and engineers for future projects.
- Early and continual involvement of reviewers and having a robust framework to guide the review process is critical.
- Establishing a collaborative approach with a common goal reaps great benefits and generates spin off 'value-added' elements. It also generates enduring friendships.

The importance of effective project management and quality control for projects of this type cannot be understated. With a variety of teams involved across all DCC three water networks and a geographic distance with the core consultant team, the establishment of a Project Control Group was necessary; as was the development of a collaborative team environment. The right mix of experience, expertise and enthusiasm within the project team was integral and signifies one of the key aspects to the success of this project.

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