NO MORE THE POOR COUSIN

A Christchurch stormwater story

The collaborative Land Drainage Recovery Programme may have taken place in a post-earthquake world but it highlights why stormwater should not be treated as the poor cousin -**Jules Scott-Hansen** of Opus International Consultants explains.

The latest position paper from Local Government New Zealand (LGNZ) on improving the water, wastewater and stormwater (3 Waters) sector in New Zealand recognises that knowledge about stormwater networks is in many cases incomplete and requires more attention. The paper also highlights the unique challenges that face the stormwater sector, including stricter standards for water quality and increased risks associated with climate change.

It is often the case that stormwater, the 'poor cousin' of the water sector, is not prioritised when balancing the many challenges that confront water service providers' budget restrictions for managing extensive asset portfolios. However, these assets have a large potential to cause extensive damage to the communities they serve and need to be adequately managed to mitigate this risk.

Christchurch City Council (the Council)who manage the majority of Christchurch's SWD network, have a proactive

approach to management of their SWD assets involving a good knowledge base of their assets and a maintenance regime undertaken by their service contractor. Following the Canterbury Earthquakes, and subsequent flooding events caused by damage combined with widespread land subsidence, it was recognised that the condition and performance of the network was not fully understood. As a result of this, the Council initiated the Land Drainage Recovery Programme (LDRP) to assess damage and subsequently identify areas in need of repair to restore the flood carrying capacity of the network.

In this article, experiences are shared from Opus' involvement in condition assessment projects carried out under the LDRP. The article gives examples of how a collaborative approach between consultant and client resulted in innovative approaches and valuable project outputs. The article also highlights why a nationally consistent approach for managing SWD assets should be introduced – in order to increase efficiency and consistency, and ultimately save money.

Stormwater Drainage – Why bother?

SWD networks are vital assets in our communities but their existence is often overlooked; piped underground or running in open channels through back sections – out of sight, out of mind. However, when the flows they carry no longer follow their intended path and make their way into our homes and across our roads, these forgotten assets make an appearance in our lives we cannot ignore.

Natural disasters have a tendency to exacerbate existing problems and this became particularly evident following the Canterbury Earthquakes; earthquake damage to Christchurch's SWD network, combined with other problems such as widespread land subsidence and lateral spreading, resulted in flooding in areas where this had previously not been an issue.

Natural disasters set aside, other parts of New Zealand also experience problems with more frequent and severe flooding events; declining asset performance and the expectation of more severe and frequent storm events with climate change means our SWD networks will require some attention in order to minimise potential damage and harm to our communities.

Christchurch in focus

Opus, as the consultant for a major part of the LDRP data collection, focused on a strong collaborative approach to the project methodology. As the overall programme was split into several distinct work packages, and some projects would be undertaken by other consultants, the need for

a common specification was recognised in order to ensure consistency in the data collection. A specification document for condition assessment of open channels was developed by Opus in conjunction with the Council to establish common procedures for the field assessments. The specification was developed through an iterative process driven by pilot studies and experiences from the field assessments. Refinement of the collected data was a major focus in order to ensure a balance was struck between efficiency and comprehensiveness – it was important to collect extensive but also targeted data that was relevant to the overall purpose of the recovery programme.

Another major focus for Opus was efficiency of data collection and management given the inevitably large amount of data that would be collected. Opus developed custom-made interfaces on tablets that combined several functionalities into one device and allowed field assessors to easily collect all the required data (standardised text and number entries, photographs and GPS coordinates etc.) on one platform. The tablets also increased the efficiency and quality of data management by enabling direct uploading to different storage solutions, thus eliminating the need for manual entry that carries with it an additional risk of introducing errors to the data.

Visual records are important to properly understand the condition of assets, and photographs provide this information to a certain degree. However for long, linear assets such as stormwater channels, they only provide snapshot views of the full picture. In response to this, a geo-referenced video survey method was developed by Opus and undertaken for sections of high-vulnerability channels such as concrete and timber lined drains. The idea behind the videos, which are analogous to CCTV for pipes, is that they can capture valuable information that can be easily shared and viewed, thus providing benefit to several people within an organisation. The videos can also be used as a historical benchmark for asset condition that enables assessment of deterioration over time or following significant events such as earthquakes or floods.

The ongoing collaboration between Opus and the Council on the LDRP projects ensured a successful project process and high quality outputs. The track record throughout the initial projects encouraged the selection of Opus as the consultant to deliver the important final phase of the LDRP data collection and collation of over 600 km of waterways information into one consistent master database. Once complete, the database will provide a comprehensive picture of the attributes and condition of the SWD network and facilitate better decision-making to develop a strategic maintenance and renewals programme.

The call for a consistent approach

Asset management is a sector that is growing in importance as the amount of assets in our societies steadily increases. Asset management involves a constant process of maintenance and renewals – it is not a one-off exercise but rather an on-going system that has to be sufficiently prioritised and resourced in order to produce benefits.

Currently there are no nationally consistent best-practice guidelines for management of SWD assets in New Zealand; an increased focus on asset management in this sector calls for best-practice guidelines to be developed and applied across the whole country.

This call for a consistent approach is echoed by the current development of metadata standards for the 3 Waters and buildings sectors. The anticipation is that the metadata standards will help to achieve the vision of the Thirty Year New Zealand Infrastructure Plan 2015 of having infrastructure that is resilient, coordinated and contributes to a strong economy as well as high living standards for New Zealanders by 2045.

Case studies from across the globe have shown that there are several direct benefits to developing nationally consistent best-practice guidelines, including:

- Cost savings through increased efficiency and better decision-making
- Better implementation of capital and operational investment programmes
- Benchmarking of infrastructure networks
- Easier integration of new technologies and improved adaptation
- Better life-cycle management of assets

It is clear that a more efficient and nationally consistent SWD asset management approach can produce significant benefits; water service providers can save time and money and improve their strategic decision-making, and our communities are kept safer through proactive risk mitigation. And with increased needs as a result of stricter water quality standards and more volatile climate conditions, as well as keeping up with on-going maintenance of aging infrastructure, there really is no better time to start than now. **WNZ**