CONCURRENT SESSIONS
SESSION TWO: FRIDAY 23 JUNE – 1045 to 1215

Water Supply, Stormwater, Wastewater

104: Time: 1045

Dudley Creek – keeping both oars in the water

Presenters & authors: *James Thorne, Opus International Consultants, Dane Macky, Beca*

The Dudley Creek project is providing flood risk reduction for one of Christchurch's most vulnerable communities in the aftermath of the March 2014 floods in the Flockton Street area. A joint venture between Beca and Opus combined forces with Christchurch City Council and Downer to form a project team to provide the solution: channel widening and a new bypass pipeline to increase flood protection for 585 properties. Improved hydraulic performance was the chief concern, with the project's challenges encompassing:

- sensitive public and stakeholder engagement
- incorporating Council's six waterway values: ecology, landscape, recreation, heritage, culture and drainage
- significant design constraints including lateral spread risks
- private access concerns
- a condensed delivery programme.

The session will present the benefits of project team collaboration, reflecting on key lessons learnt:

1) Integration across multiple disciplines
    - Collaborative design across four organisations and nine disciplines requiring excellent communication and innovative approaches

2) Blurring the lines across Principal, Engineer, and Contractor organizations
    - Overcoming traditional contracts barriers including responsibility for risk, decisions and delays
    - Streamlining the design and procurement process to deliver the tight programme

3) Working together and managing relationships with the public already overwhelmed by flooding and continuing earthquake related repairs and disruptions

105: Time: 1115

Out with the old, in with the new – retrofitting new technology membranes at the Oamaru Treatment Plant

Presenters & authors: *Michael Goldingham, Waitaki District Council, Melanie Stevenson, Fluent Solutions*

The Oamaru Water Treatment Plant was commissioned in 2007 with the latest technology membranes –submerged Memcor PVDF membranes sized to treat up to 19MLD, expandable to 24 MLD. After 8.5 years of good reliable service the membranes were

failing to meet demand and the maximum capacity was down to 14MLD. With an increasing demand on the treatment plant, the old membranes needed to be replaced, and done so quickly.
The fastest solution was to go directly to the manufacturer of the original membranes and replace like for like. This offered a simple solution that would provide the Council with a membrane that was known to operators and had operational history.
However, the Waitaki District Council had just became aware of a potential new membrane that was on the market – it is the ZeeWeed membrane from GE and is specifically designed to be retrofitted to the Memcor (now Evoqua) membrane systems. The Council decided to get proposals from both membrane manufacturers. The result is the membranes were retroffited with the new ZeeWeed membranes, offering the Council, an increase in capacity (up to 29MLD), cost savings due to competition in the market, and a longer membrane life expectancy.
Key points/learnings: Risk management, competition in membrane replacement, cost benefits of retrofitting new membrane technology.

106: **Time: 1145**

Optioneering overland! Getting to the crux of the problem

Presenters & authors: *Jack Brennan, Beca, Deborah Lind, QLDC*
Co-author: *Simon Leary*

The justification for investment in local infrastructure can often be unclear or short-term; susceptible to changes in the political climate or public opinion. This often leads to a wide array of options investigations over time that cater to the latest flavor of the month. This sometimes can make it difficult to prioritise and progress capital spending for critical infrastructure upgrades.

In following the core values of Better Business Case (BBC) and having a structured framework in place for assessing options, QLDC was able to focus on the key wastewater upgrades needed in Central Queenstown. The key findings through this process were:

- Defining the problem and outlining the investment objectives at the start of the process was crucial. This was aided by aligning the objectives with clearly documented organizational drivers.
- A collaborative approach, with regular review points, added value and provided direction. A “fresh set of eyes” to the problem offered an impartial viewpoint while input from Operators and Asset Managers resulted in a defendable and clearly documented decision-making process.
- A risk based approach that allocated a financial value to each risk provided a quantifiable basis for assessing benefits.

This collaborative and integrated process between QLDC, CH2M Beca, Councilors and previous consultant reports, resulted in a transparent investment decision.

Transport / Public Transport – sponsored by Opus International Consultants

204: Time: 1045

SPOTLIGHT PRESENTATION

Road Efficiency Group – why are we blurring the lines and integrating our efforts?

Presenter & author: *Jamie McPherson, Tasman District Council*

The Road Efficiency Group (REG) was set up to enable the implementation of the Road Maintenance Taskforce recommendations. The REG programme is foremost a sector led programme of change that enables the Transport sector to improve New Zealand's road maintenance performance, including to better understand and, where possible, iron out high variability in performance and costs nationally.

A cornerstone initiative of REG is the implementation of a common level of service and performance framework which is fundamental to addressing the issue of unexplainable performance and cost variability.

Embedding the One Network Road Classification (ONRC) system is well underway across New Zealand and is a cornerstone of understanding the variability and improving our road maintenance planning for the 2018/21 National Land Transport Programme (NLTP) along with making better investment decisions.

Over the past two years one of the key focuses for REG has been empowering Road Controlling Authorities to embed the ONRC and the business case approach into their way of thinking and transport activity management planning for the 2018/21 NLTP.

This presentation will focus on how ONRC is changing the landscape for the road maintenance planning and will consider;

1. What have we learnt so far?
2. What are we doing now?
3. Tools we have developed.
4. Where are we heading?

In addition, this presentation will provide information regarding the overall work programme REG is undertaking to support improvements across the transport sector.

205: Time: 1115

Details to follow

206a: Time: 1145

Footpath conditions – how is my network performing?

Presenter & author: *Kris Garner, Fulton Hogan*

Following the adoption of the Non-Financial Performance Measure Rules in 2013, local authorities are required to report on new performance measures. One of the new measures is; "Are the footpaths that form part of the local road network being maintained adequately?". During the consultation process there were a number of submissions that indicated footpath performance wasn't currently being measured and there would be significant cost to implement this.

Central Otago District Council approached their maintenance supplier, Fulton Hogan, to work with them on an innovative and cost effective method to implement this measure. By utilising existing tools, and some kiwi ingenuity, a trial was commenced in the town of Alexandra.

This paper will explore how Central Otago District Council and Fulton Hogan developed methodology to record, measure and report on the condition of footpaths for the trial in Alexandra. We will present the results of this trial, areas where identified improvements could be made and how to proceed for the rest of the Central Otago network.

206b: **Time: 1155**

Clever little visual roadmap for South Waikato District Council transport asset management programme

Presenters & authors: *Priyani de Silva-Currie, Calibre Consulting & Gordon Naidoo, South Waikato District Council*

Managing a transportation network in the South Waikato region has its fair share of challenges, a rural aspect with a changing demographic of residents, industry and use. Forestry to farming conversions, significant heavy vehicle movements, limited public transport options and planned urban developments all draw upon an already constrained network. For this Council a key advancement was moving to a programmed business case approach and prioritisation of capital and development projects whilst achieving ONRC and RLTS and local outcomes and strategies.

Gordon and Priyani will demonstrate a visual method of prioritization created to link all national regional and local drivers to point of entry reporting which has simplified the initial process of decision making for this Council and streamlined asset management planning priorities for the next annual plan and long term plan.

The process also demonstrates to NZ Transport Agency that ONRC transitional strategies and outcomes are being worked towards in a planned manner, whilst keeping it real to this small community.

Asset Management – sponsored by Infor Global Solutions

304: Time: 1045

Levels of service levers – what really happens when you pull one lever – how do the other levers fare?

Presenters & authors: *Priyani de Silva-Currie, Calibre Consulting, Tony Anderson, Calibre Consulting*

Key words: Levels of service, levers, funding, options, benefits, disbenefits, impacts, asset management, lifecycle, diverse solutions, community collaboration, prioritisation

What would really happen in a maintenance contract; community facilities, road network maintenance or water utilities, if you increased or decreased the level of service? How sure are we that we know the effect of our decisions and what the true impacts are of changing LoS? We have a number of 'levers' to use; duration, frequency, cost, performance, quality. What are the short and long term consequences of adjusting one lever and could decisions be managed differently? Is there a point of critical mass where change is detrimental and disbenefits occur, how do we recognise this before damage is done? Are we able to articulate to our customers, other stakeholders and decision makers what the true impact is?

Priyani and Tony will discuss real life examples of where Councils and other organisations grapple with these decisions, the effect on the community and the users. They will look at the 'levers' holistically and provide examples of tools used in asset management which assess effects and impacts and the interconnectedness of the 'levers' in action.

305: Time: 1115

Should we close Marton?

Presenter & author: *Ross Waugh, Waugh Infrastructure Management*

Warning: The title of this paper is provocative, and could be seen as symptomatic of the type of technocratic miss-understanding and arrogance that has led in part to the 2016 UK Brexit and US election results. This paper is designed to provoke a necessary discussion, but without arrogance.

Situated in the middle of Rangitikei District and with a 2013 census population of 4,548 Marton can be seen as a typical New Zealand provincial service town. The type of town that has been under social and economic pressure since the 1980's economic changes, and might be included in the classification of 'zombie town' in some recent economic analysis in New Zealand.

The paper uses infrastructure asset management analysis to examine possible future scenarios for Marton, as a case study for provincial New Zealand towns, and based on this scenario analysis provides a fact based examination of whether or not Marton should be closed.

Rangitikei District Council has been proactive with the future challenges it faces and has already taken a range of measures to integrate efforts. Council has also consulted widely with its community regarding the sustainability of future service levels. These consultation and integration efforts are reviewed in the paper.

The paper also looks at what might be achieved in the future by even more integration of central government services, council services, and other community owned assets and services.
As part of this looking forward the application of the idea of a national minimum total community service level is developed.
The paper wraps up its analysis with a look at wider concepts of community liveability, how this has been applied in a more integrated manner in small communities in Norway, and what the application of such concepts might look like in the New Zealand context, again using Marton as a case study.
Key Words: Provincial NZ Towns, Future Service Levels, Marton, Zombie Town, Service Delivery Integration, Whole of Government Integration, National Minimum Total Community Service Level

306a: **Time: 1145**

When two worlds collide – a case study of the local government Act being pulled into a new orbit by ISO55000

Presenter & author: *Myles Lind, Queenstown Lakes District Council*
Co-author: *Polly Lambert*

The year 2014 was a big year for asset management practitioners in New Zealand. It signalled in the arrival of the international asset management standard ISO55000 and in addition, the Better Local Government reforms started coming into effect. In particular, these reforms brought about the introduction of Section 101B to the Local Government Act, requiring the development of a long-term infrastructure strategy. Whilst Asset Managers in New Zealand were quick to respond to the new requirements of the LGA, there was a lack of cohesion and structure in the approach. Then in December 2015, Treasury released its updated National Infrastructure Plan, amongst other things, the NIP called for maturing asset management practices. Asset management maturity requires a consistent and evolving application of approach. Aligning to ISO55000 provides a framework to underpin the continuing evolving application of AM maturity.

For the past two years, QLDC has been systematically integrating the structure of ISO55000 with the requirements of the LGA's long term infrastructure strategy. This paper explores the new frontier of asset management in New Zealand from a practitioner's, hard earned perspective.

306b: **Time: 1155**

A case study into the quantitative benefits of asset management

Presenter & author: *Myles Lind, Queenstown Lakes District Council, Alison Tomlinson*
Co-authors: *Polly Lambert, Dr Susan Todd, Dr Stephen Batstone*

Asset Management (noun): (1) the process of dealing with, or controlling senior managers with smoke and mirrors. (2) A bottomless pit in which staff time and company funds continuously disappear, with limited, if any trace.
Once the Pandora's Box of asset management is opened, benefits such as improved data confidence, optimised decision making and more robust investment plans will miraculously appear. Or will they?
Is this a fair assessment of asset management? Are all the benefits really only qualitative? Are there any harder benefits from asset management? And how might we quantitatively measure those benefits?

In this paper the authors study the experiences of Queenstown Lakes District Council in its ongoing pursuit of asset management maturity. In addition, this paper investigates what are the hard-metrics of asset management, why they are important and the benefits of cross-industry collaboration.

Working Collaboratively

404: **Time: 1045**

Collaboration in action – The northland transportation alliance

Presenter and author: *Neil Cook, Rationale Ltd*
Co-author: *Peter Thomson*

The Northland Transportation Alliance brings together NZTA, Northland Regional Council, Kaipara District Council, Far North District Council and Whangarei District Council in a collaborative initiative to deliver better transportation outcomes for the Northland Region. Efficiency gains of $20 - $35 Million are predicted over the next decade; as well as greatly improved asset management, resilience and the ability to build capability and capacity.

The Northland Transportation Alliance is unique in its scope and is an excellent case study in progressing an initiative of this nature in an accelerated timeframe. It is an example of what can be achieved through visionary political leadership, committed executive management, and dedicated practitioners coming together to chart a new course.

This presentation explores the development of the Business Case; the fast-paced implementation that saw the Alliance established within 2 months of the participants' formal approvals; and the first year of operation.

Whilst it is early days, the Northland Transportation Alliance is compelled to share the lessons learned on the journey so far to help other regions that will be entering into similar discussions in coming months and years. This will be of particular interest in light of proposed changes to the Local Government Act.

405: **Time: 1115**

When health matters as much as safety

Presenter and author: *Roger Oakley, MWH Global*
Co-author: *Peter Thomson*

Think about it, in our work in Public Works we are much more prepared to take chances with our health than we are with our safety. It is increasingly demanding, complex and stressful. Sleepness nights, not enough time to properly think, never properly relaxing, or looking after ourselves – these things affect many people at different times. Our families and friends can also suffer as a result. The challenges of work can be motivating and invigorating, within limits. Asking too much of people has risks to family, business, other staff and safety.

What if we were required to treat our physical and mental health more seriously? It may only be a matter of time before we are, and our industry isn't really ready. This presentation looks at where the problems and risks are, their causes, how they might be addressed and the benefits that might arise.

This is an industry-wide issue, and integrated efforts are needed to make meaningful progress. Key conclusions are:

- Health is not treated as seriously as Safety, introducing significant risks
- Practical measures can be taken,
- Ultimately, a more stable, efficient and attractive workplace can be achieved

406: **Time: 1145**

Kaiaua landfill remediation: an example of council(s), consultant and contractor co-operation to remove a historic blight on the landscape

Presenter and author: *Ken Read, Opus International Consultants*
Co-authors: *Andre Tibshraeny, Debbie Dewar*

The Kaiaua coastline on the Gulf of Thames is an area of scenic and natural beauty. However a 200m stretch of the coastline was for 20yrs used as a landfill for disposal of domestic and demolition waste, including asbestos. Buried in natural hollows and localised excavations, and compressed to less than 1m thick the wastes lay hidden and largely forgotten until coastal erosion and retreat of the shoreline started to expose and wash out the refuse. Hauraki District Council inherited this legacy and decided to do something about it.

To achieve a cost effective and practical level of remediation required a pragmatic approach by Regional and District Councils through the consenting process, by the Consultant in planning, verification and oversight, and by the Contractor working within a tight time, tidal and environmental constraints. The work also attracted considerable public and press attention.

Close liaison and co-operation between all parties was essential during the site works including shared supervision of the work and joint assessment of materials that could be retained.

In this paper we describe the constraints affecting the project and approaches used to overcome these to achieve a successful and acceptable level of site remediation.

Innovation/Resilience/Sustainability – sponsored by Anderson Lloyd

504: Time: 1045

SPOTLIGHT PRESENTATION

How to best consent infrastructure projects

Presenter & author: *Michael Garbett, Anderson Lloyd*

Michael Garbett is a lawyer who has practised for 19 years in relation to the consenting requirements for a wide range of projects under the Resource Management Act 1991 (RMA). This includes acting for councils on protection of drinking water, sewage disposals and roads as well as acting in relation to a gondola, dredging, hydro and wind power schemes.

Michael will discuss some of the key principles that infrastructure managers should keep in mind when scoping, developing and preparing a proposal for application. He will cover the various ways in which consent can be sought under the RMA including district plan rules, designations applications for resource consent and related issues such as the Local Government Act 1974, Local Government Act 2002 and Public Works Act 1981. A key focus will be on consenting strategy and tips to improve the likely success of a good outcome through a consenting process.

He has been identified as a recommended lawyer in the 2016 Doyles industry guide in the "Leading Environment & Resource Management Lawyers" category.

505: Time: 1115

The future of urban water: scenarios for urban water utilities in 2040

Author and presenter: *Daniel Lambert, Arup Pty Ltd*

The Future of Urban Water: Scenarios for Water Utilities in 2040 depicts four plausible scenarios for the future of urban water utilities in 2040. Using Sydney as a reference city, the report explores how a wide range of social, technological, economic, environmental and political trends could shape our urban water future. By understanding drivers and planning for the future, water utilities can create more engaging customer experiences, enhance the liveability of urban areas and get more out of their current and future assets. The scenarios can be used to explore the viability of different strategies, inspire innovation and assist in long-term planning for more sustainable and resilient urban water systems. We believe our population will be best served if water authorities migrate towards a hybrid model which incorporates greater decentralisation and autonomous management of water supply, greater participation of additional service providers and smarter management of the water grid.

Three Key Points

- Water scarcity is a vital challenge that must be faced in the coming years, but it is not the only challenge confronting global water supply. Pollution, rapid population growth and urbanisation are major factors posing fundamental challenges to the global water cycle, with a particular pressure on the urban water supply.

- Challenges for water utilities in Australia include: meeting future demand for water in a changing climate, managing diverse sources of supply, ensuring the health of waterways and ecological systems, maintaining the affordability of water services and reducing the carbon footprint of urban water supply and use. Australia utilises over 50% of its water consumption for agricultural purposes and the remainder for household, industrial and commercial consumption. However, in urban areas, the main driver for demand remains the population, and thus population growth (Australian Academy of Technological Sciences and Engineering [ATSE] 2012).
- The explored drivers of change and future scenarios studies reflect the necessity for water utilities to be prepared to operate and succeed in a world that will likely be utterly different than the world we are experiencing today. Cities across the globe will increasingly have to focus on local water sourcing, reuse and recycling in order to sustain their population.

506a: **Time: 1145**

How safe is "safe" – the journey of PNCC as a "small" owner of two large dams

Presenter & author: Dora Luo, Palmerston North City Council

Palmerston North City Council (PNCC) owns two large dams namely Turitea Upper Dam and Turitea Lower Dam which impound water sufficient to meet approximately 60 to 70% of the city's potable water demand. This paper will cover the journey PNCC commenced in 2011 to prepare for the impending NZ Dam Safety Scheme, including reflection on what had been done in the past, the dam safety issues and the path to resolution including adoption of the improvement initiatives in our LTP.

To date PNCC has completed the Potential Impact Classification study, developed a Dam Safety Policy, Dam Safety Assurance Programme and Emergency Action Plan (EAP). The EAP was exercised in conjunction with Civil Defence and Emergency Management. The structural performance reviews of both dams using modern seismic and flood load analysis are well underway.

Key learning points:

- Potential inundation mapping has resulted in challenging discussions within Council regarding whether and how we should communicate with the affected property owners and how it is going to affect the Council's duty of care under the Law
- The shelving of the proposed Dam Safety Legislation in 2015 has presented PNCC with the challenge of determining how to manage the dams in the interim.
- PNCC's dam safety management approach focussing on risk has resulted in Council support for implementing key actions within the current LTP
- Closely working with consultants who has the dam safety expertise is cost effective

506b: **Time: 1155**

Pipe abandonement beneath operational runway at Brisbane Airport

Presenter & author: James O'Grady, Mainmark Uretek

Mainmark has completed permanent abandonment works of a 280 metre 1650 internal diameter concrete enveloper culvert beneath an operational runway. The company was contracted by Brisbane Airport Corporation for the project, via a main works contractor. The repair project was completed in two stages and appropriately adhered to the site's safety standards.

First, the pipe was sealed using Mainmark's structural resin injection technology, Uretek®. This was to protect the pipe against further water ingress.
The second stage of the project required Mainmark to completely fill the pipe with a cementitious grout. Given the critical nature of runway operations, the specifications for a strong, yet lightweight, fill material were rigorous. It required a lightweight and flowable solution with no shrinkage and no bleed. The cementitious fill material required high sulphate resistance to resist saline and acidic ground water.
Mainmark developed a bespoke grout mix using their proprietary product, Terefil™, an air-entrained lightweight cementitious mass void fill material, to meet the project specifications. The filling operation was monitored in real time by sixteen separate sacrificial cameras installed within the crown of the pipe, which ensured the pipe was completely filled.
The project was successfully completed on time and within budget.