IN STEP

Corporate sustainability

Towards a safer world

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FROM OUR CHIEF EXECUTIVE

This year is already moving at a rapid pace and has provided an equal balance of challenge and opportunity.

In the wake of the global financial crisis, it is clear what the world is experiencing is not just the ebb and flow of the economic cycle, but a fundamental shift in what ‘normal’ is. To succeed in this environment, we must think and act differently, with agility and momentum, and we are strongly focused on doing this.

This publication showcases just that, and features a range of projects using innovative design, leading-edge multidisciplinary skills and clever thinking to help our clients solve their infrastructure needs.

I hope you enjoy this edition of Momentum.

Regards,

David Prentice

FROM OUR MANAGING DIRECTOR

At Opus, we believe relationships are our lifeblood. We believe they’re built on a foundation of understanding, trust and credibility. And we believe nothing cements a professional relationship more than shared success.

This edition of Momentum not only profiles a number of great stories featuring our projects and our people, but also very strong client relationships.

Our reputation for service excellence is important to us. We pride ourselves on working closely with our clients to understand their needs and aspirations, to deliver innovative and creative solutions for what are often complex design challenges.

In this edition you will read about how we are integrating sustainable practices into our workplace and projects, how urban design is evolving to accommodate changing populations and environments, and how our leading-edge work in asset management is making a difference for our clients.

Regards,

Peter Mathewson

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The 2008 global financial crisis stamped its mark. The shattering of public trust in private companies sparked an enduring global movement towards transparency, social awareness and sustainability.

The first steps introduced concepts like carbon footprints and multiple bottom lines. But the next steps are about innovating the fundamental strategies of how a company creates value, in equal measure with shareholder value.

And the critical mass needed to get there is increasingly coming from the client.

“We are currently facing the biggest sustainability challenges we have ever had to face as a civilisation,” explains Opus Sustainability Leader, Kat McDonald.

“Our ever-expanding population, climate change, resource depletion and the declining quality of our ecosystems are changing the face of our planet and therefore the way we need to do business.”

The goals for corporate sustainability have moved on from simply aiming to reduce the company footprint.

“Organisations are starting to recognise the opportunities associated with taking a strategic approach to sustainability. Commercial success and competitive advantage can be gained when we link long-term value creation to sustainability,” she says.

This shift in thinking is promoting a business case for sustainability that creates benefits for the bottom line and starts to align the drivers of business success with the needs of society.

Beyond treating sustainability as a box they need to tick, companies are increasingly spreading its principles through their businesses.

At the beginning of the year Opus’ Sustainability Leader role was increased in scope.

“It was recognised that we needed more investment to achieve what we wanted; we needed more scope, more resource, more time,” she says.

Her role is now squarely focused on integrating sustainability into core strategy and creating a sense of purpose at Opus that clarifies what we believe in and why we exist.

“I believe that Opus has a role in transitioning our world from a future that is uncertain and unsustainable, to one that is sustainable and regenerative by design. It’s about ensuring our strategy is relevant in the wider context of global sustainability challenges and developing the right skills and knowledge to support transformative change.”

Seven key pillars make up the Opus sustainability strategy – integrated sustainability, valuing people and culture, zero waste, resource efficiency, collaboration and engagement, transformative change, and sustainability leadership.

Current internal projects include a ‘Big Ideas’
competition driving employee innovation and engagement, along with plans to collaborate with human resources to embed sustainability into induction, training and individual performance. An environmental management system certified to ISO:14001 standard is also in development, as is the implementation of sustainability frameworks that enhance decision making at project level.

Externally, Opus is working on sustainable client projects spanning building, transport, water, environmental, and energy sectors across all corners of the world.

Sustainability innovations range from wood being used in new ways in earthquake-prone areas of New Zealand, to a Canadian wastewater treatment plant where heat pump technology extracts heat from human effluent and uses it to heat a nearby school and pool, plus the treatment plant itself.

Recently, Opus has been working on one of New Zealand’s largest urban renewal projects – Wynyard Quarter. Opus’ involvement focused on delivering innovative water sensitive design. The collaborative design process led to a high quality public space with improved environment outcomes, connectedness, sense of place, community, urban environment and economic vitality. Strong sustainability principles underpinned the project and were central to the success.

“It highlights how the Opus team can bring added value by creating innovative, affordable, environmentally sensitive and sustainable solutions as part of a multidisciplinary project team.”

Customer-led sustainability is beginning to pick up in terms of requests in both initial and future build phases. Clients are increasingly recognising the shifting opinions of the public, lower life cycle costs and increased long-term value.

“There are clear moves towards designing more flexible solutions; this includes designs that are easy to adapt, and retrofit sustainable solutions once it’s more affordable,” McDonald says. “It’s about flexibility of purpose, multipurpose design and being fit for the future.”

Business no longer has to choose between making a profit and being sustainable, McDonald says. Expanded aspirations that add value to society and the environment are increasingly being seen as viable commercial opportunities.

“We’ve set our long-term goals and we’re working backwards, taking it in small steps. Ultimately we want to take a leadership approach that lays the foundations for future success.”
WE’VE ALL SEEN THE HEADLINES... “29 KILLED IN MINE EXPLOSION” ... “MISSING TODDLER DROWNS IN DRAIN”. THESE ARE NOT ISOLATED INCIDENTS. DISASTER STRIKES. FAMILIES GRIEVE. LESSONS MUST BE LEARNT.

Following the Royal Commission on the Pike River Coal Mine tragedy, New Zealand will before year-end see a fundamental overhaul of its health and safety legislation. Both workplace and public safety will be addressed.

Tragically, Pike River is not an isolated incident. New Zealand has on average over 1,000 accidental deaths every year. To give this context, that’s an average of three accidental deaths every day of the year.

“Workplace safety is an increasingly high-profile issue. And public safety around infrastructure is coming under much greater scrutiny requiring a new approach to asset management,” explains Warren Bird, Principal Environmental Engineer.

The Health and Safety Reform Bill’s first reading on March 10, 2014 saw it described by Minister of Labour Simon Bridges as “the biggest health and safety reforms in 20 years.”

The Bill passed with wide support from the House to Select Committee. By the end of the year it will pass into law, and come into full force.

A key change is the extension of duties to everyone in the workplace, but with particular emphasis on a new acronym borrowed from the Australians: ‘PCBU’ - person conducting a business or undertaking. The new law creates a due diligence duty for those in governance roles to proactively manage workplace health and safety by ensuring their PCBU complies, this includes Boards of Directors.

Penalties will increase, with potentially fines up to $3 million and maximum prison sentences more than doubling. And crucially, obligations for companies that subcontract out work are not excluded; meaning obligations can’t be contracted away.

The legislation is a key component in meeting the Government’s target of reducing the workplace injury and death toll by 25 per cent by 2020. That’s five years. Five years to slash New Zealand’s injury statistics by a quarter.

While sweeping changes come to the fore in workplace safety, strides are also being taken in public safety, with local councils responsible for infrastructure that’s both numerous and diverse, it can be costly to identify and mitigate hazards to public safety.

Prompted by a high-profile drowning tragedy, Opus worked with the Auckland Council Stormwater Unit to develop a potentially life-saving risk assessment tool.

“The tool assesses potential hazards associated with stormwater assets (pipes, open channels, manholes and ponds) and then ranks the risks associated with these,” says Warren. “More than 200,000 diverse assets were assessed for hazards such as drowning or falls, and ranked according to their public safety risk. Following the initial screening, we inspected sites where the infrastructure had high hazard risk scores. The risk assessment tool enables safety interventions like safety grills or fences to be targeted at the highest-risk assets.”

The tool is readily adaptable to other types of infrastructure including rural water schemes, irrigation races, public walkways, pedestrian bridges and boardwalks. Such tools will play an increasingly important role in legislative compliance and, more importantly, public safety.

Events of recent years have spurred a positive sea change in the way the New Zealand public views workplace safety and injury. Now bold projects are in hand to bring down the numbers of accidental deaths both in the workplace and in the public arena.
C A P I T A L  C O M M U T I N G

WELLINGTON IS A SMALL CITY WITH BIG INFLUENCE. ITS STATE HIGHWAY NETWORK SPANS 246 KILOMETRES AND IS VULNERABLE TO FLOODING, SLIPS, ROCK FALLS AND EARTHQUAKES. WHEN THE NZ TRANSPORT AGENCY WAS LOOKING FOR A NEW WAY TO GET THE BEST OUT OF ITS INFRASTRUCTURE, CAPITAL JOURNEYS PROVIDED THE SOLUTION.

Wellington is the world’s southernmost capital city. The roads are used every day by ministers, public servants, freight and private citizens alike.

The network is New Zealand’s second largest area of motorway and expressway, outside of Auckland, spanning a total of 645 lane kilometres which also range from high volume strategic state highways to low volume rural highways.

But the similarities with Auckland diverge when it comes to the city’s vulnerability and diversity and the region’s susceptibility to earthquakes, flooding and extreme weather events.

As part of a major strategic push across government departments and agencies, the NZ Transport Agency was looking for a more collaborative
approach to asset management and network maintenance. They wanted to move beyond just the ‘client, consultant, contractor’ relationship. This led Opus to form a joint venture with Fulton Hogan, collectively known as ‘Capital Journeys’.

The 50-strong Capital Journeys team brings a new primary supplier arrangement to the network for maintenance and operation activities. It covers everything from the planning and delivery of routine and tunnel maintenance, incident response, pavement and road marking, sweeping, rubbish and graffiti removal, street lighting, vegetation and mowing.

The $21 million per year, five-year contract started on 1 October, 2014.

The key difference in the approach is that it is much more of a relationship-driven, collaborative effort. Client, contractor and consultant are co-located to create an open and collaborative team environment driven by the delivery of successful results.

The contract deliverables focus on key results areas such as customer experience, sustainability, safety and road network performance. The more holistic and integrated approach will not only ensure strong working relationships, but ultimately better outcomes for the client, and the end user.

“It all adds up to a safer and more reliable network, one that’s better planned so that limited funds are used more effectively,” Capital Journeys Contract Manager David Dunlop says. “We’re ensuring that road and freight users are well informed and can make good travel decisions.”

And beyond the day-to-day details of traffic jams and graffiti removal, it’s about a longer-term approach to asset management.

“It’s about collecting and understanding the data and background information and making informed decisions about where and when money is best spent; not just today on the current contract but thinking about tomorrow and future generations,” he says.

**CLIENT** NZ Transport Agency  
**PROJECT NAME** Capital Journeys  
**LOCATION** Wellington  
5-year contract worth NZ$21 million per year  
New Zealand’s second largest area of motorway  
246 kilometres of road network, 3 critical tunnels
Clean water on the way at Mara Lake

RESIDENTS OF THE DISTRICT OF SICAMOUS HAVE BEEN ON BOTTLED OR BOILED WATER FOR OVER TWO YEARS AFTER SEVERE FLOODING COMPROMISED MARA LAKE. WE TALK TO OPUS DAYTONKNIGHT SENIOR PROJECT MANAGER TIMOTHY PHELAN ABOUT THE UNIQUE TREATMENT PLANT THAT WILL END THE DISTRICT’S WATER WOES.

In June 2012 a severe storm and landslides in the watershed flooded areas around Mara Lake, a 20 km² lake providing drinking water for the Sicamous community. The floods had a significant effect on Mara Lake water quality.

After this event, the Interior Health Authority (IHA) stipulated that the District’s water infrastructure be upgraded to meet safe drinking water standards. Working with the IHA, the District of Sicamous partnered with the governments of Canada and British Columbia on a project to build a new filtration facility that would ensure the safety and security of the community’s drinking water.

Opus is delivering the entire project with 43 specialists from Canada and New Zealand. Together, the team has expertise in surveying, water treatment system design, mechanical engineering, architecture and REVIT 3D building modelling.

The project will deliver membrane filtration to the existing facilities to remove *Giardia* and *Cryptosporidium*, and lower water turbidity below the 0.1 NTU required by health regulations.

Senior Project Manager Timothy Phelan has been involved in the project since Opus came on board, and says there is nothing ‘cookie cutter’ about the design thanks to the international team that was able to be pulled together.

“It’s a unique project because we had Opus Stewart Weir doing the survey, Opus DaytonKnight doing the water treatment plant design, and Opus Architecture in New Zealand providing architecture for the new building that will house the plant.”

The $6.5 million capital project will see the addition of a new building to house a membrane filtration plant, which will integrate with the existing infrastructure. The building will be next to the Mara Lake high lift pump house, on an arrowhead-shaped site.

As with any filtration process, managing the backwash was a major component of the project. The team minimised the backwash water volumes and worked with the District to provide a system that is compatible with the existing infrastructure limitations and receiving environment.

“We have effectively added a second filtration step to the backwash water. It was more expensive, but as a long-term solution it’s bought the District another five to ten years on their sanitation system,” says Timothy.

A long-term view, teamed with a multidisciplinary, cross-regional approach,
are hallmarks of this project. While the New Zealand architects worked with the Canada team online, a mechanical design expert from Opus New Zealand came out on secondment and facilitated the transfer of 3D design skills from New Zealand to Canada. The transfer of course went both ways, with new knowledge of the water treatment technology being used on these kinds of advanced projects going back to New Zealand.

From the outside, the building won’t look like your average treatment plant, due to the fresh perspective brought by the New Zealand architects.

“With REVIT we could start building the plant with objects. It’s like LEGO®. Working with the client in REVIT we could look at the model, twist it, spin it around, zoom in, and quickly identify where we could make improvements. It was so much faster and more meaningful than navigating 2D drawings.”
“In the valley here, a lot of the local water infrastructure has a typical look, but this site didn’t fit that category. The architects had a narrow wedge of land to work with and they have designed right up to the edges. We’ve ended up with a trapezoidal shape with lots of interesting angles.”

The design process proved interesting too, with the facility constructed in a 3D environment using REVIT. Timothy sees its use in the municipal market becoming more common.

“With REVIT we could start building the plant with objects. It’s like LEGO®. Working with the client in REVIT we could look at the model, twist it, spin it around, zoom in, and quickly identify where we could make improvements. It was so much faster and more meaningful than navigating 2D drawings.”

REVIT also made life easier for working with the vendors supplying equipment – whose drawings are also in 3D. This approach from the onset also produced graphics that were shared with and well received by the local community.

Timothy says REVIT was a learning experience: “But as far as how projects like this are going to be put together in the future, I think we’re going to see more of it. More clients are asking for it.”

Resilience was integral to the design and the plant will have back-up power so it can function rain or shine. The existing chlorination building will be converted to house a second emergency diesel engine generator, which operates two pumps plus lighting and controls.

Now in construction, Timothy’s team is overseeing the build and doing site inspections. All going well, the new plant will be commissioned in fall 2015 and a three-year water advisory notice will be lifted.

Looking further ahead, Timothy says the region will be in a much better position to deal with any changes in the watershed - or to climate change events. “It’s about better stewardship of the water, and lengthening the lifespan of the sanitary infrastructure.”
WITH BABY BOOMERS RETIRING IN DROVES, THERE IS AN URGENT NEED FOR HOUSING OLDER GENERATION AUSTRALIANS THAT MEETS THE WAY MANY ARE WANTING TO LIVE. WE TALKED TO PRADEEP PEJAVAR, OPUS’ DIVISIONAL MANAGER MECHANICAL & ELECTRICAL AUSTRALIA, ABOUT BUILDING SERVICES INNOVATION WHEN DEMOGRAPHY AND ARCHITECTURE INTERSECT.

Between June 1993 and June 2013, the proportion of the population aged 65 years and over increased from 11.6% to 14.4%. This is projected to rapidly increase over the next decade. People aged over 85 tend to be the main users of aged care services, and their numbers are expected to increase at least four-fold by 2047.

Providing high quality, cost effective aged care will be a huge challenge for the sector, but from an architectural and engineering perspective it also opens up exciting opportunities to design efficient, customer-focused and functional buildings.

Opus has a strong track record of providing consultancy for aged care and retirement living projects, and is currently working on four projects in Australia. “Our experience with this sector has given us an
in-depth understanding of the particular considerations and sensitivities specific to these developments,” says Pradeep Pejavar, who oversees Opus’ mechanical, electrical and hydraulics engineering consultancy services in Australia. Aged care facilities currently make up a significant proportion of his work.

Opus recently provided mechanical services for a 106-bed development in Perth for Braemar Presbyterian Care, and is providing civil, structural and building services for a new 120-bed residential aged care facility at Lake Macquarie in New South Wales.

### CHANGING MARKET, CHANGING LANDSCAPE

Pradeep says development has picked up after a quiet few years after the global financial crisis. Increased government funding has also given the sector a boost.

“We are doing some new builds but about 70% of the work is refurbishment, extensions and rebuilding. Clients are looking to increase capacity without extending the building’s footprint, remodelling outdated facilities to reflect the way seniors are wanting to live.”

### RESPONSIVE AND SUSTAINABLE DESIGN

The aged care facilities of a decade ago are worlds away from what is being designed today. Aesthetically and environmentally, today’s buildings reflect an entirely different mentality when it comes to looking after senior citizens.

“There used to be a hospital feel - single rooms off a corridor - but aged care has gone high-rise and opened up, with interactive spaces, centrally located nurses’ stations and Wi-Fi. We are seeing developments of two to six storeys with communal living spaces, located in close proximity to public facilities. It’s about lifestyle as well as assisted care,” Pradeep says.

His team is also seeing a lot of demand for energy reduction in the aged care sector. A recent Opus commission for the Churches of Christ was an Ecological Sustainable Development strategy, to help the client meet its environmental goals as well as reduce its operating costs up to 10% based on some of the energy reduction initiatives.

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**Braemar Presbyterian Care**

**CLIENT:** Braemar Presbyterian Care, Perth  
**PROJECT:** 106-bed aged care facility  
**VALUE:** $20m  
**SERVICES:** Opus is providing mechanical services for this residential aged care facility. The development comprises a car park and administration facilities on the ground floor with two identical levels of accommodation and a third level with 600m² of commercial office space.

Mechanically employing the latest technology and working closely with suppliers, Opus is providing efficient, cost effective systems. Architecturally the building has a very large floor area with three storeys creating large common spaces, such as dining and lounge areas, to promote social interaction.
Infographic – notes for designer

Useful stats:
- 11.6% - percentage of Australians aged over 65 in 2003
- 14.4% - percentage of Australians aged over 65 in 2013
- 400% - projected increase in the number of Australians aged over 85 by 2047

With aged care projects, it’s about understanding what the end users need, as well as the business requirements for the service provider. Architectural concerns can include how far nurses have to walk every day, so it goes beyond just having an efficient building - there are business, operational efficiencies and customer experience considerations too.

Pradeep says location selection is increasingly important, with developers investing in centrally located aged care properties for clients who want to be closer to shops, eateries and community facilities.

BABY BOOMER HOT SPOTS

New South Wales is a hot spot with Queensland close behind. “Newcastle is seeing a lot of aged care development. We are currently working on a 56-bed development for Benhome Hostel for Maitland Benevolent Society Ltd, with the potential for future developments in the region.”

Pradeep says the value Opus can bring to aged care projects all over Australia is in having everything under one roof – architecture, building services, civil and structural engineering – or at least only a phone call or online conference away. We have multidisciplinary teams working together in offices around the country, and geographic location is no barrier to accessing the shared knowledge of the Opus consulting team.

With demand for aged care development not likely to slow any time soon, the sector’s future is bright. “Creating liveable spaces for our senior citizens is rewarding work. People want to be somewhere that feels like a community, as well as a home.”
THE EARTHQUAKES IN CHRISTCHURCH HAVE CAUSED MANY PEOPLE TO QUESTION WHY MODERN BUILDINGS WERE SO SEVERELY DAMAGED. DESPITE MANY NEW BUILDINGS WITHSTANDING LARGER EARTHQUAKES THAN EVER ANTICIPATED WITHOUT COLLAPSING, THEY WERE BEYOND ECONOMIC REPAIR.
Owners, architects and tenants are now looking towards the use of more resilient, damage-resistant technologies as an option for rebuilding or strengthening their buildings.

Trimble Navigation’s Christchurch office is one such example. Destroyed by fire in 2011, it was rebuilt using the latest timber engineering available.

Trimble New Zealand employs 230 people in Christchurch and 260 nationally, with its Kiwi operations forming a significant R&D hub for its world-leading productivity solutions.

“They wanted a building that reflected the way they do business. State-of-the-art design is what their company is all about,” says Jamie Lester, Senior Structural Engineer.

The building stands out, both in its scale and use of the innovative ‘Pres-Lam’ structural approach, a resilient timber technology developed by the University of Canterbury.

Pres-Lam combines existing materials – engineered timber and structural steel – in new ways. The technology reduces damage in seismic events through the dissipation of energy and controlled rocking of the structure. The components are easily replaced following significant seismic events, providing economical repair alternatives.

Trimble is the first time Pres-Lam frames and walls have been used together in a commercial building and, at 6,000m², it’s the largest Pres-Lam building ever constructed.

“We were able to deliver a low-damage, resilient building that provides the owners and tenants with peace of mind,” Lester says. “This project demonstrates that it is possible to deliver a commercial office economically, with a higher-than-normal level of seismic resilience.”

“Corrine Haines, Trimble Manager”

“The design steps beyond traditional thinking of how to design a building that just protects the occupants, to one that also allows for early re-occupation – essential for us as a tenant, as we develop and design hardware and software solutions for our US parent company, Trimble Navigation Limited.”

The structural design is a key aesthetic component of the building. The joints and connections are exposed as part of the interior fit out, allowing occupants to see the building’s underlying structural form.

The building was awarded a commendation at the UK IStructE Structural Engineering Award for its innovation. Judges commented that the project “pushes the boundaries of earthquake resistant timber design.” They were impressed by the quality of innovative and unobtrusive detailing, combined with an approach that allows easy replacement of components, which result in a rapid post-earthquake return to functionality.

Lester says the reality is that the development of earthquake-resilient structural technology is usually spurred along by a major disaster.

Current New Zealand building codes are based on the principle that a minor earthquake should cause no building damage, a moderate earthquake may cause repairable damage, and a large earthquake may
cause irreparable damage but the building should not collapse. Many of the newer buildings in Christchurch were in the latter category. Having withstood larger earthquake forces than many people expected without collapse, many buildings were not economic to repair.

A damage resistant design approach aims to reduce damage during an earthquake. Depending on the type of technology used, the building may remain fully operational following an earthquake, but as a minimum, the building should be available for occupation shortly after a major event.

The Christchurch earthquakes have created an increased awareness of resilient structural design, Lester says. “People are more aware of how buildings could be damaged in an earthquake and are now more receptive to the use of innovative designs that reduce damage.”

Pres-Lam technology has already been used successfully by Opus at the award winning Carterton Events Centre outside of Wellington. Another Opus designed building for the Rash Family Trust using the same technology has also been completed in Christchurch’s heavily damaged Colombo Street.

The world is also watching. Canada is showing interest, Lester says, as areas on the country’s west coast are similarly vulnerable to earthquakes.

“Increased public awareness of safety and the benefits of timber as a structural material following the Christchurch earthquakes provided a platform for the use of this new technology at such a substantial scale.”

“It’s been remarkable to see some of the more innovative techniques. These better performing systems are one positive to come out of this earthquake.”

“Opus engineers have provided a resilient structure that is designed to offer superior structural performance in the event of both earthquakes and fires,” says Corrine Haines, Trimble Manager. “The design steps beyond traditional thinking of how to design a building that just protects the occupants, to one that also allows for early re-occupation – essential for us as a tenant, as we develop and design hardware and software solutions for our US parent company, Trimble Navigation Limited.”

“We have a building that is light, bright, quiet, offers good collaborative spaces, energy efficiency and with state of the art mechanical services, all of which are consistent with our company values of innovation, productivity, sustainability and responsible corporate citizenship.”
Built in the 1900s, Wales’ 923-mile railway network is peppered with bridges, viaducts, embankments and tunnels. Since 2012 Opus has been working with Network Rail on its strategic plan to make the country’s railway fit to keep pace with the unprecedented growth in passenger numbers over the last 10 years.

But not only does Network Rail have to maintain an extensive network of ageing major infrastructure, it has been tasked by the ORR (Office of Rail Regulation) with shaving 15% of cost from its five-year budget through working more efficiently.

The Wales Route Asset Management team has a five-year budget set for the funding period (CP5) – approximately £30m per year – and Guy Dunscombe is clear on the Opus mandate: “Our job is to help Network Rail save about £22m over CP5.”

UK RAIL NETWORK DEVOLUTION

Finding these efficiencies on the back of the 2011 changes to the way the railway is managed in the UK is no mean feat. Devolution of operational responsibility meant that the network was split into 10 areas, seeing the creation of a Wales specific route. It now has a new dedicated asset management team that works out of Cardiff and Shrewsbury where previously asset management direction came centrally from Swindon.

In November 2012 Opus was commissioned to provide technical and financial support to model the CP5 funding and compile the Structures Strategic Business Plan.

ESSENTIAL LOCAL KNOWLEDGE

Fortunately, it wasn’t a case of starting from scratch – far from it. Opus has a longstanding relationship with Network Rail, extensive rail experience globally, and staff with both local and strategic knowledge of the network.

“Our link with the Network Rail Central team has been highly beneficial for the client. Due to our asset management expertise, Opus have staff placed in Network Rail’s HQ where all the high level policies are set for the UK network.”

“We already had an understanding of the organisation, its assets and processes when we sat down with Network Rail’s Wales route to look at nine areas for change in CP5. This project really does highlight that asset management is as much about people as it is about infrastructure,” Guy says.

STRATEGIC BUSINESS PLAN 2014-2019

The business plan covers 2014 to 2019 and maps out a programme of projects and strategies to maintain and improve ageing infrastructure, and reduce the cost of running the rail network.

“We have nine people seconded within the Wales Route, five of whom are with the Network Rail team day to day. Some of our team are in other parts of the UK so we can tap into the specialist expertise required.”

The team has been working on efficiency measures in the areas of minor maintenance and in-house design capability, and ensuring the Wales Route complies with ORR efficiency benchmarks.

“Previously Network Rail would use the same organisations for minor and major maintenance and the administration cost of the smaller jobs was often more than the cost of the physical works themselves. Minor maintenance was also falling by the wayside across Wales, resulting in significant long-term issues with their assets. We brought the maintenance in-house and trained existing staff to lead teams of maintenance contractors.”

Other initiatives included improving communication with local stakeholders such as councils, highway agencies, Natural Resources Wales and National Parks, as well as organising a conference to get 50 key stakeholders together to talk about the country’s rail aspirations for the next five years.

LOOKING AHEAD

Guy explains the focus now is on developing asset management plans for the complex, historic structures such as moving bridges, and identifying hidden vertical shafts dug over 100 years ago - which in some cases are yet to be located.

“They pose a real risk to the operational railway and we are helping to identify and mitigate these risks.”

Measurement is a constant theme: “Ultimately we’ll be able to look at how the project has fared against the 15% target at the end of CP5, but we also have a lot of internal measures and KPIs we use to monitor our progress and quantify savings.”

Collectively, these initiatives are lining up to produce the steep but achievable efficiencies needed to stand the Welsh rail network in good stead for the future.
A number of local health centres in Denbighshire are being relocated onto the Rhyl Hospital site in North Wales as part of a change in the local healthcare strategy. This community development will feature the extensive refurbishment and alteration of the Grade II listed Royal Alexandra and Edith Vizard buildings, along with a new three-storey extension to produce a modern, state-of-the-art healthcare facility.

Opus is undertaking all the civil and structural engineering on the project, as part of Interserve Construction’s design team through the Designed for Life 3 framework.

The elderly pair of buildings are over 100 years old and, while in good condition for their age, are showing normal signs of wear and tear. As with buildings of the time, the spaces are relatively small and the...
buildings aren’t being used at full capacity because not all rooms are suited to modern community healthcare service provision.

Opus is tasked with identifying any defects with the buildings to enable the health board and contractor to set aside enough budget for repairs – before plans are made for the more exciting improvements.

The team will be working with the local authorities’ conservation officer to agree the extent of permitted building alterations, and what materials are to be used.

“We’ve completed a building condition survey so the client is aware of all the risks and likely repair costs upfront. The aim is to avoid expenditure on things that can be fixed as part of routine maintenance,” Graham says.

Building condition information was gathered with point cloud survey, from about 900 scan locations.

Whilst point cloud survey has been around for several decades, Graham says it isn’t widely used but is well suited to projects that need a high level of survey detail and have the budget to fund it.

“You’re more likely to see point cloud in heritage work, surveying structures like medieval water towers, turrets and historic buildings. Heritage buildings are so hard to survey accurately - point clouds give you better information to use for the design.”

Point cloud is significantly more accurate than 2D CAD plans, which have more room for human error. And when you’re working with heritage buildings with irregular walls and floors, accuracy is all important.

Because Opus has this capability in-house, it was a value-add for the client.

“It didn’t cost a lot more than a standard survey but has given the client something much more useable,” Graham says.

“You can fly around the hospital and get an almost perfect photo of every room. When we finish the project, the client will have a full 3D model they can use when the
The entire building was stickered. The scan picks up the points, joins them back together and you get an accurate 3D point cloud of the entire building to pour into REVIT and create a 3D model.”

The Opus team at Wrexham, along with some assistance from the structures team at Doncaster, will be assessing the floor structures, widening every door and working out how to create as much floor space as possible within the building’s heritage requirements.

Once the investigation stage is complete and the architects have finalised the designs, the challenge will be doing the work without disrupting the day-to-day operations of the hospital.

Graham says that this is another stage in the project where detailed early planning pays off, because once the work has started it won’t be able to stop.

“Having intelligent building information from the start gives the client the assurance that what is designed will fit.”

The detailed design is due to start mid/late-2015 and run through to 2016.
What a year: in 12 months Andrew has been in Canada with the Opus Stewart Weir integration; appointed a Fellow of Engineers Australia; overseen service excellence across the continent; and moved his family from Western Australia to Melbourne to take up the new position of State Manager Victoria.

What does a day look like in your new job?

Several months in, it’s about building relationships and understanding the local market – I’m meeting prospective partners, contractors and clients as well as overseeing our work here.

What does Opus offer in Victoria?

We are known for our rail work through Opus Rail, and we also have the capability to provide a one-stop-shop for asset design and asset management. There are around 50 people working from the Melbourne office.

What is your team working on?

We recently finished a building services project on the World Trade Centre in central Melbourne, and have completed a new primary health centre in Gisborne for Macedon Ranges Health.

What trends are you seeing in Melbourne?

Melbourne’s population is expected to almost double over the next four decades. That’s a lot of infrastructure. There are some multi-billion dollar mega projects coming out in the next 12 to 18 months. The optimism and opportunity in Melbourne is extensive.

What will these mega projects mean for the market?

The model is changing. Clients are looking for technical experts to join their teams and the bigger players are consolidating. No one consultant can manage a whole project on this scale. It’s very much a combined effort with a number of consultants teaming up on mega projects. This opens up opportunities to be part of creating some very exciting infrastructure, as well as to continue to provide a one-stop-shop for other projects.

How does the Service Excellence team benefit Opus clients?

The Service Excellence role has enabled me to take a step back to look critically at our technical processes. It involves looking at the outputs as well as inwardly at how we can improve the way we work. I am fortunate to be working with three service excellence leaders in Australia, as well as the wider global team.

What was your most memorable project?

Working on Opus’ plantation industry projects in Western Australia was rewarding and I’ve enjoyed the Macedon project – we’ve done a great job with the design and I’m looking forward to seeing it completed.

“Service excellence is about improving what and how we deliver to our clients.”

Meet Andrew Barker

Andrew Barker,
State Manager, Victoria

April 2015
The challenge with pipeline projects is that there are so many different stakeholders with different needs and priorities. We work very closely with our clients to deliver on their objectives and business imperatives.”
The Enbridge Pipeline System transports oil from Canada to the United States. Enbridge is developing the Woodlands Pipeline Extension Project to bring additional crude oil transportation capacity into the Edmonton area by 2015. The Woodlands pipeline will run from Enbridge Athabasca’s Cheecham Terminal to the Edmonton Terminal, extending the Enbridge Pipeline by 386km.

One piece of a large puzzle, the Woodlands extension is one of several pipeline projects Opus Stewart Weir’s Sherwood Park team is engaged on in Canada. Combined, they account for around 4,000km of pipeline - the most Earl has been involved with.

Comprising 386km of 36” diameter pipe, the project is currently in construction. Engineering surveys, access plans, geotech bore locations and re-routes have been done, and the project is on track for completion in 2015.

The Woodlands pipeline is in Alberta and traverses varied terrain, from forested areas in the north to farmland in the south. “We’re now working more in British Columbia and getting into the mountains,” Earl says, which is familiar territory for him – he started his pipelines career working in the mountains 44 years ago.

Reflecting, Earl says that while the fundamental structures of pipelines haven’t changed considerably, the change is in the pace and scale of pipeline projects, and the regulatory and safety environment they exist within.

“The challenge with pipeline projects is that there are so many different stakeholders with different needs and priorities. We work very closely with our clients to deliver on their objectives and business imperatives.”

IMAGERY FOR CONSULTATION & COMMUNICATION

A lot of Opus Stewart Weir’s survey work has been used to help the client communicate the project to stakeholders, such as landowners, councils, environmental agencies, engineers and construction contractors.

Thirty specialists from Opus Stewart Weir have worked on the project through its various stages. The team has created drawings for individual property owners in the pipeline path, is liaising with 1,500 construction workers onsite and collecting pipe data. With so many stakeholder variables and the fixed requirement of pipe in the ground on time, Earl says having existing relationships has proven invaluable.

“There is a core group of people working on this from Opus and Enbridge who have worked together before. Things can get hectic and having that established relationship makes a difference.”

FOR ALMOST 65 YEARS, ENBRIDGE HAS BEEN A MAJOR ENERGY PROVIDER FOR NORTH AMERICA. FOR CLOSE TO 20 OF THESE, OPUS STEWART WEIR HAS WORKED ON THEIR MAJOR PIPELINE PROJECTS. MOMENTUM TALKS TO OPUS STEWART WEIR’S MANAGER PIPELINES, EARL BUKER, ABOUT THE LATEST PIECE OF ENBRIDGE’S PIPELINE SYSTEM.
The dream of owning your own home on a quarter acre section has been ingrained in the Kiwi psyche and dates back to the early days of colonial immigration. If you had a land title, you were entitled to put a house on it – with this came the phenomenon known as urban sprawl.

Nowadays, arguably the two biggest issues facing Auckland are housing and transport. It has become a problem of such scale that the Auckland Unitary Plan refers to a housing crisis and calls for a housing action plan to be developed and implemented urgently. It’s also one of the top issues on the political agenda.

What’s more, Auckland currently ranks as one of the least affordable markets in the world behind Hong Kong, Vancouver, Sydney, San Jose, San Francisco, Melbourne, and London. Recent, extensive media coverage has highlighted the affordability problem in Auckland, and as the city continues to grow, the need for higher density living can’t be ignored.

But how do we balance good design with a burgeoning city? Are the two mutually exclusive? During the mid-2000s, there was a shift in thinking and a greater focus on what we call ‘urban design’ – with the aim being to make cities and towns more liveable, as well as improving the environment and reducing urban sprawl.

This is an area that the Opus team has been heavily involved in, right throughout the country, and for many years. We assert that not only can the city of Auckland have both good design and growth – it must.

CHALLENGES AND OPPORTUNITIES FOR URBAN DESIGN

The quarter acre section and the opportunity to develop ‘outwards’ is becoming a distant dream. The reality is housing now has to be a high-density style of urban living for many Auckland residents.

The conversion of single house, three and four bedroom properties are giving way to multi-dwelling two and three bedroom properties, providing a workable solution to affordable living opportunities. As big cities such as Auckland expand, people will need to live in smaller dwellings. We will be seeing a lot more mixed housing developments, including apartments being built all over Auckland City; this is something that is already happening.

The construction of apartments is promoted by many as the way to fix Auckland’s housing shortfall because they
provide a large quantity of cost-effective residences on a single site. They do, of course, need to be of the appropriate quality to ensure the creation of vibrant and sustainable neighbourhoods. This is where quality urban design comes to the fore, bringing with it a number of opportunities and challenges that need to be considered – safety, access to amenities and traffic flow to name but a few.

**THE IMPLICATIONS OF URBAN SPRAWL**

How we best manage and design for urban sprawl is a complex issue; having a permissive planning system in place makes it easier for developers to build high-density developments. However this needs to be adhered to so that it meets stringent standards.

Auckland City’s Urban Design Advisory Panel was set up in May 2003 to help improve the standard of development projects in Auckland City. Its main purpose was to provide independent advice to developers and to the Auckland City Council on the quality of proposed development projects in the central city. Whilst the role of the panel is purely an advisory one, it’s important to raise awareness of the importance of urban design amongst developers and design consultants.

An example of this could be to remove car parking at street level and replace it with designs that generate pedestrian-based activities, with more emphasis on utilising ‘green spaces’ or active frontages. Making building edges ‘active’ to the street adds interest, life and vitality to these spaces and provides a more welcoming and aesthetically pleasing feel.

The new Christchurch Justice and Emergency Precinct is an example of the implementation of good urban design, mixing a landmark civic facility with public amenity and activity in an inner city context.

It’s important too to take on learnings from overseas to see what has worked, as we can learn, follow in their footsteps and develop our own solutions whilst secure in the knowledge we are working from a solid foundation. This has recently been proven in Christchurch, where there has been a growing acceptance of international best practice coupled with Kiwi innovation and local know-how.

**THE ROLE OF ARCHITECTURE FOCUSING ON COST/QUALITY, WHILST ENSURING DESIGN INTEGRITY AND SUSTAINABILITY**

Urban design is not just confined to architecture or planning; it’s about all design consultancies involved in the design of cities. Our role is to ensure that we work closely and collaboratively with all stakeholders.

Building by its very nature is a coordinating discipline and having a clear vision and being able to articulate it are vitally important. If you understand that vision and can contribute proactively to achieving it, then you are onto a winning formula.

At Opus we have pulled our architecture, urban design and transportation teams much closer together to meet the changing needs of Auckland.

We must resist a cavalier approach to planning because the best buildings are the ones that can be adapted to different uses over time.

Good planning is imperative, because what we create now in terms of urban design, transportation and architecture, will have a marked effect on our cities in five to ten years’ time. We are creating a legacy that future generations will have to live with.

Our largest city deserves buildings that incorporate innovative design solutions, sustainable features, and are considerate of what the future might look like, as opposed to simply meeting immediate requirements. If we continue this thinking and move forward in a pragmatic and commercially sensitive way, the future for Auckland’s housing development could be extremely promising.