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Welcome to the first issue of Arotahi, your quarterly glimpse into our people, trends and projects throughout New Zealand and across the globe.

Arotahi is the Māori word for focus, or lens, which speaks to what WSP Opus can provide. We help clients to see the future more clearly and design for it today. Being part of a 48,000-strong network of WSP experts allows us to bring together both our local expertise and global knowledge for our clients.

In this issue you will see how drawing on our network has delivered the 2018 WSP Global Cities Index – A Tale of Our Cities. The index explores how cities are identifying and responding to the challenges they will face in the coming two decades, and beyond. We see how Auckland has performed and where we can learn from around the world.

We introduce our new Technical Directors – a role that ensures we continue to deliver technical excellence on projects and keep pushing the boundaries with what we can achieve for our clients.

There has been a lot of discussion around gender equality in the industry. Making sure we have a diverse and inclusive culture is something we all need to focus on and is a passion of mine. We were pleased to announce our diversity and inclusion action plan earlier this year and recently closed any gender pay gaps we had in our business. While there is still more for us to do, we are proud of the progress.

Lastly, I hope many of you have seen our Glocal Pioneers campaign that has been in market. Our 148 years of creating what matters for future generations in NZ now combined with our WSP network, means that we are placed better than ever to bring expertise and innovation to our clients.

Arotahi is an invitation to explore what’s possible with WSP Opus – so open and enjoy.

Ian Blair
Managing Director, WSP Opus
LESSONS FROM ANTARCTICA

By Amanda Kirk
Environmental Engineer, WSP Opus
Earlier this year I spent three weeks exploring one of the world’s last true wildernesses as one of 78 women on the largest all-female expedition to Antarctica. The continent was the backdrop for Homeward Bound, a groundbreaking leadership programme for women in science, technology, engineering, mathematics and medicine (STEMM). The initiative comprises a 12-month leadership course delivered remotely online, followed by a 3-week expedition to Antarctica.

We were welcomed to Antarctica by an unusually calm crossing of the notorious Drake Passage. Our excitement at the first sighting of small icebergs, known scientifically as “bergy bits”, was just the beginning. At the time, we couldn’t comprehend the immense scale of the icebergs we would see over the coming weeks, some of which were several kilometres long and hundreds of metres high, completely dwarfing our ship MV Ushuaia. The icy continent is known as a place of extremes, but it also serves as a stark reminder that climate change impacts all corners of our globe. The remote polar regions remain largely untouched by humans, but are still experiencing some of the most rapid responses to climate change seen anywhere on the planet. The beauty and fragility of Antarctica is surreal and near impossible to capture, despite the several thousand photos I returned with!

In Antarctica, we typically spent half of each day on board the ship engaged in lessons covering the four key components of the programme: leadership, science, strategy and visibility. Programme content was delivered by experts in their fields through lectures, workshops, collaborative projects and extensive open discussion. In the Southern Ocean, surrounded by icebergs, we learnt about developing and implementing organisational strategy, leadership diagnostics, science communication tools, and Antarctic science among other things.

The other half of the day was spent on land exploring Antarctica, visiting research stations and experiencing the wildlife. We visited six research stations along the Antarctic peninsula: Cámara and Carlini (Argentina), Great Wall (China), Palmer (US), and Port Lockroy and Rothera (UK). At each research station, we had the opportunity to mingle with staff and learn about the operational requirements of the base as well as the scientific research being undertaken there. At 67˚ south and the southernmost point of the journey, our visit to Rothera Station was particularly special as we were one of only two non-governmental ships permitted to visit each year.

The impact of Homeward Bound extends far beyond the year-long course and Antarctic expedition. I continue to connect with other Homeward Bound participants around the globe and many collaborative, multi-disciplinary projects have been born. As the programme continues to grow, the opportunities for learning and networking will increase and become even more valuable. Visiting Antarctica instils a sense of ambassadorship and a responsibility to actively contribute to a more sustainable future. Homeward Bound takes that a step further, and recognises that elevating the individual and collective voices of women in STEMM will enable us to achieve this in a more effective and equitable way.

More about Homeward Bound

Homeward Bound aims to create a global network of 1,000 women over a period of 10 years, all equipped with the skills needed to influence policy and decision-making for a more sustainable future for our planet.

Women are underrepresented in STEMM careers around the world, and even more severely underrepresented in leadership positions. Homeward Bound aims to change this paradigm, by raising awareness of the inequity at the leadership table and developing the skill sets of women in STEMM to enable them to have a greater impact in their fields of work.
RUBBERISED CYCLEWAYS – THE ULTIMATE IN RECYCLING

Cycleways are big news right now, with many new urban and off-road projects either installed or underway across the country. These cycleways could become even more attractive for users thanks to an innovative pavement material delivered by WSP Opus Research.

Our pavement materials and behavioural sciences teams are in the final phase of a three-year project to trial an exciting alternative pavement material made from rubberised asphalt made from recycled tyres. The asphalt is mixed with bitumen that has devulcanised tyre-rubber added to it, resulting in numerous benefits including increased resistance to fatigue and oxidation – factors that traditionally undermine asphalt pavement durability over time.

Each year New Zealand creates five million waste tyres, so finding a way to recycle tyres is a highly sustainable approach and takes care of an abundant waste material that would otherwise languish in landfills.

When the rubber hits the road

Since the rubberised asphalt surface was laid down, our behavioural scientists have been collecting data by way of intercept surveys to capture feedback from the local community. The response so far has been extremely positive.

We’ve also been using an instrumented bike as a quantitative tool to demonstrate that not only is ride quality for the rubberised pavement comparable to that for standard asphalts, it is also far superior to the ride quality experienced on chip seal and gravel alternatives. Our researchers are currently quantifying the levels of chemical compounds that are emitted as gases under manufacturing conditions with assistance from AsureQuality. We’re hoping to confirm that there will be no unintended negative side-effects from using rubber waste in this useful way.

About:

This project was funded by the Ministry for the Environment via the Waste Minimisation Fund and the NZ Transport Agency, with contracting assistance from Fulton Hogan and PCL. The cycleway for the project in Upper Hutt was provided by the Upper Hutt City Council.

See more exciting innovations in our InTouch magazine: wsp-opus.co.nz/research
Community led climate change resilience in Vanuatu

Many of us know Vanuatu through the cosmopolitan town Port Vila, which is where most hotels, businesses and tourist activities are found. But 130km north is North Efate, with a population of 8,000 people spread across 36 villages, from Mangaliliu to Pang Pang and nearshore islands. These communities are extremely vulnerable to the impacts of climate change, relying on family-run agricultural plots and near shore fishing. They already see the impacts of climate change and expect the health and productivity of their reefs, oceans, forests and agricultural areas to further decline. At the same time, damage to their homes, schools, roads, and tourism services from increased sea-level rise and storm surge is getting worse.

Enter Vanuatu RESSCUE, with its focus on community resilience to climate change by protecting and enhancing the key ecosystems that communities rely on for food and income. The lessons from this pilot will inform and drive future efforts across Vanuatu and the Pacific. Our initial assessments found that coral reefs were highly degraded and fish stocks low, agriculture was impacted by drought and invasive pests, and communities faced frequent water shortages and reduced water quality.

Four years on, positive change is happening. RESSCUE has partnered with communities to support their development and resilience of food and income sources, such as ecotourism, agroforestry and local reef and fisheries management. Crucial to the success of these actions is community empowerment and leadership, with RESSCUE in support. This has seen the strengthening of the community led Tasi Vanua and Nguna Pele environmental networks, which work closely with RESSCUE to lead programmes within their communities across North Efate.

Conservation and resilience efforts need a sustainable source of finance. So in partnership with RESSCUE the communities of North Efate decided to establish the North Efate Conservation Management Trust. The Trust brings together Tasi Vanua and Nguna Pele with local tourism associations and a local NGO, Live and Learn Vanuatu, to collaborate and fund conservation activities of common interest. These efforts are supported by a voluntarily tourism levy collected by tourism association members. The arrangement is mutually beneficial; environmental improvements benefit community food and livelihood resources while...
improving the quality of visitor experience, growing the tourism market and opportunities for local business.

Another key innovation is the Community Marine Monitoring Toolkit. The Toolkit is championed by local leaders and resource monitors who survey their marine environment and analyse their findings to anticipate declining marine health and identify appropriate adaptive management strategies in response. Part of this response is the existing tradition of tabu or protected marine areas, and their improved monitoring, local management and enforcement.

Onshore, the Shefa Provincial Council and Vaturisu Council of Chiefs are attempting to establish the Efate Land Management Area (ELMA) to protect indigenous forest and the freshwater rivers it supplies to communities.

RESCCUE led a rapid biodiversity survey - a Bioblitz - to establish a biodiversity baseline in part of the ELMA. The forest was found to be healthy with high biodiversity but remains vulnerable to cyclones, invasive species and the human activities that are increasingly encroaching. Protection of the ELMA is necessary to secure freshwater supply and healthy communities, and presents an opportunity to expand North Efate’s tourist offering from the reefs and into the forests. This will further contribute to their tourism livelihoods, the income of the Conservation Trust and conservation activities.

Similarly, RESCCUE assisted Tasi Vanua, Nguna Pele and the Government of Vanuatu to develop tools and programmes to raise community awareness of the 2018 single-use plastic ban law. This is a significant step in the international effort to stem the detrimental effects that plastic waste is having on the health of the marine environment and the communities that depend upon it. This work partners broader community waste management and recycling efforts to improve village health and protect their tourism economy and livelihoods.
Working with award-winning creative AR/VR studio M Theory, we have combined cutting-edge technology and industry expertise to put the power of city design in the hands of everyday people with Sustain-a-city, an interactive, problem-solving virtual reality game.

Sustain-a-city allows players to build a smart world of the future and help it grow and thrive to an optimum healthy size. Players must choose from a selection of infrastructure components which are then put into their miniature, simulated world - to a certain formula.

All four smart infrastructure components have to be used wisely and in unison, otherwise the overall health of the virtual world plummets. Just like a real city all the elements – power, water, residential and commercial buildings, and transport - need to work in balance in order to thrive.

Visit wsp-opus.co.nz/sustainacity for more information
While the game is about entertaining it is also about educating, by building a micro-world of the future all while using components from real-life WSP Opus projects. These include the Margaret Mahy Family Playground Park, The Justice and Emergency Precinct Christchurch and the Daldy Street and Halsey Street Redevelopment.

With our focus on creating what matters for future generations there is no better way of bringing this vision to life than by enabling people to create their own future world.

Sustain-a-city is a fun and interactive output for a technology WSP Opus already uses on projects. We create virtual 3D models of projects that allow clients and stakeholders to experience the layout of the building, the land and surrounding areas in a virtual environment. That means design elements can be modified or changed in real-time before they become a major consideration or cost during construction.
The opportunity to work on a massive, transformational project that redefines the way a city connects, travels and moves doesn’t come along often. For Wataru Okada, Technical Principal - Geotechnical and Tunnels, WSP Opus, working on Auckland’s Waterview tunnel was a dream come true.

As the largest infrastructure project in New Zealand there were numerous milestones, but what really stands out for Wataru, who was onsite during the construction phase, was the teamwork.

“There was input from so many specialists and experts in their field; civil, architectural, geotechnical, structural, M&E. When we designed each element our work was checked by multi-disciplinary team leaders and during that process we’d discuss and coordinate with other experts. The end product is a combination of the input from different disciplines, and when you see that come to fruition it’s quite satisfying and rewarding,” he says. “Every time we completed a package of design there was a real sense of achievement.”

Excavation required the use of a Tunnel Boring Machine (TBM) and the sheer scale of the work required a big machine. Enter Alice, the 10th largest TBM in the world and the biggest ever used in the Southern Hemisphere at the time of the project.

Wataru says the experience of seeing Alice in action was indescribable. “It was a massive moment to see this humongous piece of machinery start work. When Alice began drilling a huge cheer went up from everyone on site. The same happened when we finished drilling – it was a milestone achievement.”

Alice’s journey would have been abruptly interrupted if it hadn’t been for some smart thinking from the Alliance team.

Wataru says the team identified a lost core barrel – a steel tube – that would have caught in and mangled Alice, causing significant delays and potentially halting the project. Removal of the steel barrel was a mini-project in itself but allowed Alice to continue without issue.

“When we finally got the steel out it was cut into sections. I know that a piece was mounted on a stand and now sits in a senior project member’s home as a reminder.”

Waterview tunnel opened in July 2017, and Wataru was one of more than 60,000 people who walked through on the open days. A year later he’s still immensely proud of what was achieved.

“I get such positive feedback from people about how it’s improved their travel. When I take a taxi the driver always tells me how much Waterview benefits them. It’s so good to see people happy with what we produced.”
Global Cities Index – are we ready?

As we enter an age when humanity’s impacts become dominant in shaping our world, cities provide the biggest opportunity to enhance people’s lives – and the biggest challenge. Cities are the canvas on which much of our collective futures will be drawn.

How cities are planned, designed, serviced, governed and financed is material to our happiness and prosperity.

2018 WSP Global Cities Index - A Tale of Our Cities is a different index as it provides insights about how cities are preparing for a future shaped by fundamental changes in climate and societal technology forces.

Auckland was ranked 13th in the Index of 24 global cities, bolstered by a major planning overhaul for growth and renewed public investment in metro rail infrastructure. This has set our largest city well on the path to a stronger global position.

To read the full report visit wsp-opus.co.nz/futurecities but if you're short on time, here's the top five things we learnt from the WSP Global Cities Index.

1. Vision and leadership counts

The foundations of today’s most competitive cities were laid in decades past by visionaries able to see beyond their immediate horizons.

What this suggests is that visionary planning can prepare a city for success, even in the face of extreme uncertainty and change.

Cities such as Copenhagen - ranked #2 - are reaping the rewards of plans that were put in place after the second world war. The palm of a hand represented central Copenhagen and the five fingers were the areas of growth, including an emphasis on green space across the metropolis consisting of recreational facilities, forests, grassland and agricultural land.

Auckland has shown real strength in its future planning, providing a yardstick by which it can measure its progress. With vision and leadership, Auckland has the opportunity to become a global leading city. The time to act is now.

2. Australasian cities perform well, but...

Auckland and its Australian cousins Melbourne (#14), Sydney (#15), and Brisbane (#21), sit mid-table and share many characteristics. They too face the material challenges of housing affordability, quality and supply but on a much larger scale. Where Auckland is grappling with managing a population growth from 1.5 million to 3 million by 2050, Australian cities face population growth from 4.5 million to 10 million. Like Auckland, Australian cities have had historic investment in urban sprawl and underinvestment in transport including future mobility. It is an area where Australia and New Zealand (ANZ) has historically been reluctant to move decisively with planning, investment and regulation. Strategic planning for freight and logistics are an opportunity for global competitiveness.

ANZ cities are extraordinary, but to remain competitive and future-focused it’s important not to be complacent.
3. Transport – the mindset challenge

Cities that are highly liveable emphasise walkability and tend to have extensive, affordable and high quality public transport that connects people to jobs, schools and amenities in an efficient and reliable way.

Auckland’s rapid growth and historic underinvestment in public transport has created a culture of car dependency, resulting in significant traffic congestion. This has made it more difficult for people to reach employment, education, healthcare, shopping, recreation and other activities.

That said, Auckland has recently been bolstered by a major planning overhaul for growth and renewed public investment in metro rail infrastructure, setting it well on the path to a stronger global position. However future success in this area will require commuters to forgo their love affair with private vehicles and turn to public transport. The Auckland Transport Alignment Project (ATAP) is a game-changer for Auckland commuters and the first step in easing congestion and allowing Auckland to move freely.

Auckland needs a multi nodal transport system that provides genuine choice for people, enables access to opportunities, achieves safety, health and environmental outcomes, and underpins economic development.

4. Housing - managing our girth

Providing affordable housing is a challenge faced by many of global cities regardless of whether they’re well established or emerging. For example, housing is a priority in Manchester and the city has a 15-year strategy to build 227,000 new homes in the city, 20% of them “affordable”.

In 2013 Singapore set an objective to build 700,000 affordable homes by 2030, to meet projected population growth. Commendably, 200,000 of those homes have already been delivered. Globally, around 3 million are moving to cities each week. This mass human migration is putting pressure on housing stock, with demand outstripping supply. So, we’re going to need clever solutions and different thinking to address this.

In Auckland we have an opportunity to embrace a more compact city. Over the last seven years the focus has been on greenfield developments on the fringes, but this trend is changing in favour of brownfield developments. Auckland Council has noted that 85% of new housing has been in brownfield development, particularly in terraced housing and apartments. Crucial to success in this area will be to focus less on creating iconic buildings and more on creating extraordinary places that connect citizens to their communities.

5. Climate change – we’re on the right track

Auckland has been proactive and highly transparent about planning for climate change, commissioning climate change projects and impacts research to support resilient and sustainable decision-making. Some of the key threats facing the region include a 30cm sea level rise by 2050, increased temperature and increased extremes in rainfall intensity, erosion and slip instability.

As a member of the C40 Cities Climate Leadership Group, Auckland is committed to a 40% emissions reductions by 2040 (from 1990 levels) and Auckland’s Low Carbon Strategic Action Plan lays out the pathway to achieve this.

The vast majority of Auckland’s greenhouse gas emissions are from stationary energy generation and transport. The Auckland Transport Alignment Project is tackling transport emissions by improving cycling and encouraging the proliferation of electric vehicles. This includes a commitment to using only electric buses by 2025 and a zero-emission city centre by 2030.

Auckland is a regional leader in climate change planning and is embracing innovative approaches. However, considerable transformation of mobility systems and built form is required to meet the expected challenges in the next 30 years.

David Kidd
General Manager Client Solutions

“WSP Opus brings clarity and vision to complex challenges. We see the future more clearly through key trends in climate change, society, technology and resources, working with our clients to advise on solutions that are ready for today and for the future.”
This has created a need for new infrastructure to protect the unique environment visitors have travelled to enjoy, providing for an improved visitor experience and to educate visitors about the area’s special environment. The Curio Bay Tumu Toka Infrastructure Collaboration project focussed on addressing visitor-related environmental issues at Curio Bay in Southland. Three parties (South Catlins Charitable Trust, Southland District Council and the Department of Conservation) came together to agree on a shared vision for the area. Each party identified an infrastructure project they wished to progress with the end goal of providing a great tourist experience and reducing the environmental impact of high visitor numbers.

WSP Opus drafted and progressed resource consent applications for each of the three projects. The consenting process posed a unique challenge, as each project needed to progress separately, but was directly connected, and reliant on the other two. Respecting and being cognisant of the important ecological, recreational, archaeological, cultural, landscape values of the area, as well as the high local and regional profile of the project was key in obtaining the resource consents. Additionally, the collaborative nature of the project meant that the requirements and individual project goals of each collaborator were also a challenge.

The outcome of the collaborative project has been the successful obtaining of resource consents and the construction and opening of three significant visitor related infrastructure projects in Curio Bay Tumu Toka. The resource consent applications for each development provided the process through which the collaborators addressed potential effects of each development and developed specific approaches for mitigation. This allowed a unique and collaborative approach to project construction and adoption of specific mitigation in relation to wildlife in this sensitive location.

The physical environment of Curio Bay has been positively altered through the construction of each of the three infrastructure projects. The development of new infrastructure has enabled the collaborators to address the adverse effects of high visitor numbers on the natural environment while improving and enhancing the physical environment. Overall, this project provides an example of collaboration between three
organisations with a shared vision seeking specific environmental outcomes in a highly sensitive environment. It has achieved the aim of each organisation and improved overall amenity and visitor experiences, as well as providing advanced protection and conservation of the natural and physical resources of Curio Bay.

The positive community outcomes of this project were recognised by NZPI with an award for Best Practice Integrated Planning and Investigations for the collaborating parties.

Read more about this project at wsp-opus.co.nz/projects/curio-bay-tumu-toka
Rolling out the big guns

Across a diverse array of disciplines including transport, property and buildings, power, water, environment and asset management, WSP Opus’ team of Technical Directors have vast collective experience, gained on some of the largest transformational projects in recent times – both here and abroad.

Think London’s Docklands, the Adelaide Oval, Auckland Council’s landfill management, London’s City Hall, Heathrow Airport’s masterplan, Air NZ’s environmental performance and much, much more.

This depth of experience and multi-discipline approach ensures WSP Opus Technical Directors offer an unparalleled level of expertise not seen elsewhere in the New Zealand market.

MEET THE TEAM

CAROLE SMITH
Technical Director, Environment & Planning

“Sometimes when we work for our clients in the environmental area the benefits of our efforts aren’t always immediately obvious – it is quite different from building a bridge or a new road. Yet when I reflect back on my career I can see that I’ve made a difference for the environment and for our communities. This is what gets me out of bed in the morning.”

With over 20 years’ experience in environmental consulting in New Zealand and the United Kingdom, Carole has a well-earned reputation for being strongly committed and versatile, with a multi-disciplinary background involving project management, technical and management roles.

She is passionate about understanding how technology can be used to deliver better results for clients, and believes that being at the forefront of new technologies and approaches is one of WSP Opus’ major strengths.

Like many of our experts, Carole didn’t initially start university with a career as an environmental scientist in mind.

In Carole’s opinion, adapting to climate change, particularly the impacts of coastal erosion, is one of the biggest issues facing local authorities – both locally and globally.

PHIL HARRISON
Technical Director, Transport

“I want to leave a legacy of empowered, talented transport engineers and planners that are future focussed and professional with the skills, experience and attitude to make WSP Opus the #1 New Zealand transport consultancy.”

As he explains, the road to becoming a Transportation Engineer was one he stumbled on by accident.

“I was studying geology at Auckland University, and had a holiday job at the Ministry of Transport. I was coding Traffic Accident Reports, and when I saw all these crashes and the resulting death and trauma I thought ‘wouldn’t it be a great job to try to prevent this?’ I never went back to the geology degree!”

His defining moments are numerous, ranging from crash reduction studies with the MoT in the 80s, working on the regeneration of London Docklands in the 90s, delivering transformational projects in the 2000’s such as Canary Wharf, London Bus and Tram projects and transport planning for the London 2012 Olympics.

Phil says transport faces a number of significant challenges, one of the most immediate is keeping up with the impact of disruption on existing and planned infrastructure with new technologies such as electric transport alternatives, mobility as a service and rapid social changes driving this.
DANIEL JURGENS
Technical Director, Digital Engineering

"Everything is converging right now and we are being flooded with data, but not intelligence. As Technical Director of Digital Engineering I am across all our disciplines and tasked with connecting the dots to extract collective intelligence. It’s very exciting and the potential is limitless."

Daniel is passionate about sustainability and is genuinely excited about harnessing the power of Building Information Modeling (BIM) and smart build initiatives to realise project efficiencies and increase sustainability of the build environment across the entire project life-cycle, from inception, design, construction, asset management, re-use to demolition.

His defining career moments include working on the Adelaide Oval redevelopment project where he was exposed to a proper BIM project for the first time, with all disciplines collaborating in a model-based environment. It was the sheer scale of this project with a 140-metre wide steel diagrid roof shell that really got him interested in engineering.

BRUCE CURTAIN
Technical Director, Buildings

"I relish the technical stimulation of design. Each project is different, with new challenges and opportunities. Teasing out the project brief, analysing and understanding the site constraints and generating a design response is a truly inspiring career. Every day is different and the energy of working with a like-minded team to solve a design makes my job truly enjoyable."

Career defining moments include collaborating with the artist Billy Apple on a high-rise office competition and the opportunity to work on London’s City Hall Building. "Geometrically and technically this landmark building was at the leading edge of design and construction. Now it’s an iconic feature on the London skyline. From its high sustainability credentials, complex structural and façade systems and truly civic brief for London’s local authority assembly building, this project was challenging and inspiring to be a part of such a high performing team."

WAYNE HATCHER
Technical Director, Asset Management

"Throughout my career I have gained significant experience working for a broad range of clients in various sectors, countries, political systems and cultures. These experiences and technical knowledge make me well placed to deal with complex and high risk asset management projects."

Wayne is passionate about sustaining, managing and maintaining our built environment in harmony with society needs and the environment.

Career defining moments include developing a compelling case for increasing investment in motorway maintenance and renewal in the UK in a time of financial austerity, and winning the Hertfordshire County Council Whole Client Service Professional services contract in the UK; a 12-year contract employing over 150 people full time.

He sees technology as the biggest industry disruptor, particularly advancements in data capture that enable better decision making. There will be an increasing need for collaboration around road and water projects in order to overcome the skills shortage, and to gain greater efficiency and productivity across the industry.

JASON BRETHERTON
Technical Director, Buildings

"We are living in an ever-changing world which is heavily influenced by climate change, immigration and urbanisation, social and democratic change, rapid technology advancements and limited resources."

Jason’s curious mind and interest in how things work led him to a career in engineering and he’s been blessed with opportunities to work on a diverse range of projects across a broad range of sectors ranging from pumping systems in power stations, to electrical infrastructure and control systems in road and rail tunnels. As his practice has grown so has the scale and complexity of the projects and this has seen him involved in building and infrastructure projects associated with schools, hospitals, prisons and commercial buildings.

Of all, the most career defining experience was living through the devastating earthquakes that have occurred in Christchurch and Canterbury since 2010. "Out of this came the opportunity to apply my skills and work with others and be part of the post-earthquake rebuild and create a modern, resilient and inspiring city that others will enjoy for generations to come."
We need to stop unnecessary deaths

According to our research, 4,250 premature deaths in London each year can be directly attributed to breathing bad air. One in four residents has seriously considered moving out of the city because of noise and poor air quality. We worked out that if electricity could power all of its transport needs and replace gas for heating and cooling, we could reduce the nitrogen oxide emissions that harm our lungs by 37%, and carbon dioxide emissions by two-thirds. So we challenged London, and all other leading cities, to commit to becoming all-electric by 2035.

People want fossil-free cities

In our survey, we found that Londoners were generally in favour of the city becoming fossil-free within the next 20 years. They supported an electric car-hire scheme, and reducing energy bills was considered a priority. It is becoming standard for new developments to be all-electric and designs have been changed to electric at the request of the planning authority. A lot of people ask where we are going to get all the electricity from. Renewables, energy efficiency and smart energy management with energy storage are already addressing these challenges.
The car revolution will happen quicker than expected

Small numbers of all-electric cars are sold today, but they will become more affordable. Governments are now setting their own targets for full car electrification. Last year, the UK government announced that all cars sold will be electrified by 2040, and France intends to have ended sales of petrol and diesel for cars by 2040 too. Volvo has stated that it will only sell hybrid and electric cars from 2019 – in one year’s time. Buildings will need electric car charging points, increasing energy demand. So we need to think about what additional equipment will be required, how energy will be stored and how smart energy systems can be introduced.

A gas boiler might already be a bad investment

Heat pumps have a much lower carbon intensity than gas, as well as air-quality benefits. From auditing and modelling buildings across Europe, Asia, Canada and the US, we demonstrated that using heat pumps rather than gas boilers and traditional air conditioning chillers can cut the cost of commercial building ventilation by a quarter as well as reducing nitrogen dioxide emissions. Electric buildings are reporting lower carbon every year as electricity production itself becomes more efficient. If you install a gas boiler or a CHP engine that will last, say, 20 years, that’s going to look like a bad decision in ten or 15 years’ time (and arguably even now).

We will have a completely different attitude to cooling

People living in cities are increasingly complaining that their homes overheat in summer. Electricity is the only realistic solution for future cooling systems. But in an all-electric city, we will also be able to open our windows. Streets will be quieter, cleaner and cooler as less heat is generated from building services and vehicles. We will be able to have more open spaces and pavement cafes, and we could put housing in places that are currently undesirable because they are too noisy and polluted.
Glocal Pioneers
Thinking global, knowing local
Early in 2018 WSP and Opus joined forces as the New Zealand operation of WSP providing a rare opportunity to tell our compelling story.

Our history dates back to colonial New Zealand, when the Public Works Department was opening up the country’s notoriously difficult terrain through the combination of national road and rail networks. Innovation, future readiness, collaboration and local knowledge has always been at the forefront of what we do.

Together as WSP Opus we bring something unique to the market. Combining 48,000 global experts with 148 years of unrivalled local knowledge. We call this combination of thinking global and knowing local – glocal.

As Glocal Pioneers we pride ourselves on bringing our clients a richness of local and global expertise, pushing the boundaries and being future ready. Our people are located across the country in the communities that we serve ensuring we are truly invested in the outcomes for New Zealand both for society and environment.

We are now at a defining moment where we can collaborate with leading expertise from around the world on transformational projects that will redefine New Zealand for generations to come.

We are the advisors, engineers, scientists, architects and innovators that with our clients pioneer the infrastructure and environments that matter to Kiwis.

Read more at wsp-opus.co.nz/glocal