



Member of the Surbana Jurong Group

# Annual Review

2020



**We're redefining exceptional**

Through our specialist expertise, we're challenging boundaries to deliver advanced infrastructure solutions.

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Surbana Jurong Group

Ballarat Line Upgrade, Rockbank Station  
Victoria, Australia

Cover image: Norwest Train Station  
New South Wales, Australia

# Interview with the CEO

It's a truth universally acknowledged that 2020 was a year like no other in recent history. The ramifications of the global COVID-19 pandemic continue to re-shape the world in which we live.

Hari Poologasundram, CEO SMEC & CEO International Surbana Jurong, reflects on the challenges, triumphs and learnings of an unprecedented year, and looks ahead to the company's future.

## 2020 was a year of enormous challenges for so many businesses. What were some of SMEC's key challenges, and how did you overcome them?

The slowdown of the private sector in 2020 presented us with challenges, but our core work on publicly funded projects, with a focus on national development, received early support from many nations' governments. We were able to continue working, in a COVID-safe manner, on many essential infrastructure projects.

A central and ongoing challenge was the ability to continue serving our clients whilst also ensuring the health and wellbeing of our people. There is no one-size fits all approach, and we deal with each of our corporate offices or project sites in a unique manner to ensure we always have the appropriate information to inform decisions and protect our employees whilst delivering critical infrastructure.

## What learnings from 2020 are you taking into 2021 and beyond?

We will see some changes in the way we do business beyond the COVID-19 pandemic. There will be more flexibility, whilst not compromising on employee collaboration and interaction, operational efficiencies and the in-person mentoring that is important for career and skills development. Where appropriate, work undertaken on an individual basis can be completed remotely.

We are also preparing for new opportunities and expanding into areas such as data centres, logistics and distribution, city regeneration and building refurbishments, all of which have been highlighted by the impacts of the global pandemic.

## What strengths do you feel SMEC can build on in 2021?

SMEC has a 70+ year history of technical excellence and a strong reputation for delivering advanced engineering, design leadership and innovative solutions on nation-building projects all over the world.

Our success is built on our people – their innovation, tenacity, drive and technical expertise in delivering solutions for our clients.

Another strength is our decentralised business model – we operate through locally-based offices and teams with access to significant global expertise and experience. Our strategy has been to make it easy to reach out and connect our clients with the best resources available across the world.

We have the necessary geographical and market diversity to overcome any localised market downturns. We have developed a successful model of growth and remain focused on continually improving our corporate governance and systems to ensure we remain sustainable, connected and competitive for our clients and partners.

## What does the future hold for SMEC?

SMEC has an exciting future ahead of us as we partner with our parent and sister companies in the Surbana Jurong Group to help countries recover from the COVID-19 pandemic and continue to deliver essential infrastructure. In addition to our existing project portfolio, we are increasing our focus on providing specialist solutions to transport and energy infrastructure sectors, including hydropower and dams, renewable energy, roads and highways, rail and metro.

Sustainability is another key focus for our organisation. SMEC provides a broad range of environmental and sustainability solutions that are tailored to location, local market conditions and industry dynamics. Where possible we are taking a broader view of sustainability in our business and ensuring that principles cascade through all stages of the project lifecycle. This can range from specific services such as guiding clients' projects through sustainability ratings schemes, to collaborating more closely with key clients on adopting management plans to minimise or offset impacts from development projects.

The future outlook will continue to challenge us and we look forward to continuing to support our clients with advanced solutions and exceptional project delivery.

"We will continue to support our clients and governments as they transition towards recovery by focusing on key partnerships, technology and technical expertise."

– Hari Poologasundram, CEO SMEC & CEO International Surbana Jurong



The Karnaphuli River Tunnel  
Bangladesh

## Our approach

We take a values-driven approach to everything we do. Our core values of Integrity, People, Professionalism, Partnership and Purpose are part of our DNA, representing what we stand for, what we expect from employees, what we deliver to our clients, and how we aim to conduct our daily work. We are committed to leading by example and continuing to build a values-led global culture.

## About us

SMEC is a global engineering, management and development consultancy with a 70+ year history of delivering advanced infrastructure solutions for our clients and partners, with a focus on resolving complex challenges within roads, highways, rail, metro, airports, hydropower and renewable energy markets.

Through our network of global technical leaders collaborating with local partners, we connect you with the best teams and capabilities to deliver highly innovative and sustainable solutions.

Collaborating closely with our parent and sister companies, we have the flexibility to operate in global markets either individually or in partnership to add value for our clients.

As a member of the Surbana Jurong Group, SMEC is part of a family of specialists.

## What drives us

### Integrity

We act responsibly and conduct our business with the highest ethical standards, accountability and transparency.

### Partnership

We build trusted and enduring relationships with clients, partners and colleagues to achieve win-win outcomes.

### People

We value our global and diverse talent by creating a safe, inclusive and supportive environment where our people can thrive.

### Purpose

We are passionate and committed to making meaningful impacts on people, environment and communities.

### Professionalism

We act in the best interests of our clients and deliver innovative solutions with high standards of excellence.

# Our people

## Balancing purpose and action

Apart from its devastating economic effects, the COVID-19 pandemic has profoundly impacted the lives of many people, including members of our SMEC family, their relatives and friends. We are proud of and grateful for the resilience, fortitude and drive of our workforce who came together around a singular focus: protecting the safety and health of our people, maintaining operational resilience and exceeding our commitments to our clients and partners.

With SMEC operating around the world in over 35 countries, many of our people were no strangers to collaborating in remote, albeit globally connected teams. Still, as lockdowns and other restrictions came into play during 2020, SMEC offices, teams and employees mobilized quickly to support our communities and stakeholders by taking steps to protect health and wellbeing. We supported our clients to deal with any impacts on their projects and continued to deliver quality technical services. Internally we increased morale and productivity through creative team building initiatives.

At our core, SMEC's mission is simple: to build trusted partnerships to solve problems through design and engineering. It's this drive that has guided our teams during these unprecedented times and helped us to balance action with purpose as we look to redefine excellence.

## Continued focus on supporting gender equality

Supporting female participation and retention in engineering continues to be a priority not only for SMEC but also the industry at large.

In 2020, SMEC Australia was proudly recognised by the Workplace Gender Equality Agency as an Employer of Choice for Gender Equality. This citation is a leading recognition program designed to encourage, recognise and promote active commitment to achieving gender equality in Australian workplaces. Our employees and business prioritised key improvements in flexible work practices, industry leading parental leave policies and learning and development programs.

We also partnered with Cultivate, a research-based sponsorship program in Australia, aimed at assisting female employees to progress into leadership positions. The program connects members of SMEC's senior leadership team with emerging female leaders who benefit from mentoring, sponsorship and formalised support. We look forward to running this program again in 2021.



The Anganwadi Project in India, supported by the SMEC Foundation

# Our communities

It is safe to say that there has never been a more pressing need for community assistance and support for recovery from the impacts of the COVID-19 pandemic.

During 2020, we continued to make a positive difference to communities through the SMEC Foundation, our charity partners and employee volunteering through our regional Corporate Social Responsibility (CSR) committees. Here are just a few examples around the world:

## Africa

In addition to progressing existing projects, the SMEC Foundation is partnering with Action on Poverty (AOP) to support a food security initiative in Ethiopia, working with smallholder farmers to grow potatoes for household consumption and cash crops. The SMEC South Africa CSR committee is also supporting two projects that provide healthcare and educational opportunities to vulnerable communities in the country.

## Asia

Despite the challenges of COVID-19 delaying some works, two key projects to improve infrastructure and educational facilities in Vietnam and India were completed. Our teams in the Philippines joined hands with the Lipa Archdiocesan Social Action Commission, Inc. (LASAC), our NGO partner, to provide critical assistance to people who had been displaced by the eruption of Taal Volcano in Batangas. This included organising a donation drive and purchasing necessities for at least 3,600 families.

## Australia

We continued our key partnerships with Engineering Aid Australia, Habitat for Humanity, Hope2Day and the Indigenous Literacy Foundation. We were also proud to donate to the Cathy Freeman Foundation, which aims to help Indigenous children and their families recognise the power of education in achieving their goals and dreams.



# Awards and rankings

Building towards a more sustainable future requires a winning combination of experience, expertise and innovation, which has been recognised by multiple national and international industry awards.

## #26, Engineering News Record (ENR) 2020

- The Surbana Jurong Group is ranked at #26 in the Top 225 International Design Firms list, and #9 in the Top 10 Asia/Australia list for 2020.

## Client Choice Awards

### Australia

- Winner, Best Provider to Construction and Infrastructure
- Winner, Most Improved Net Promoter Score®
- Winner, Best Professional Services Firm with revenue greater than A\$200 million
- Winner, Best Built Environment Firm with revenue greater than A\$200 million

## Albion Park Rail Bypass – Detailed Design

### Australia

- Winner, Australian Engineering Excellence Award Sydney 2020

## Sydney Metro Northwest Stations project

### Australia

- Winner, Australian Engineering Excellence Award Sydney 2020

## InQuik Bridge System

### Australia

- Winner, Australian Engineering Excellence Award Canberra 2020

## Sydney Metro Northwest – Operations, Trains and Systems project

### Australia

- Highly Commended Award, Innovative Design, Consult Australia Awards

## Logan Enhancement Project

### Australia

- Gold Award, Collaboration for Project Excellence, Consult Australia Awards

## V&A Waterfront Swing Bridge

### South Africa

- Winner, Bridges category, and Overall Winner, Southern African Institute of Steel Construction (SAISC) Steel Awards 2020
- Joint Winner, Technical Excellence category, South African Institution of Civil Engineering (SAICE) National Awards

## Provision of Water and Sanitation Services to Informal Settlements and Schools in the eThekweni Municipality (Phase 3)

### South Africa

- Winner, Projects with a value greater than R1-billion category, Consulting Engineers South Africa (CESA) Aon Engineering Excellence Awards

## Strengthening partnerships for a more sustainable future

In 2020, notwithstanding the challenges of the global pandemic, we are proud to have partnered with our clients to deliver advanced engineering and design solutions on significant projects around the world, particularly in the transport and energy sectors. This selection highlights some of our completed projects, new wins and other technical milestones.

A focus on national development received early support from many nations' governments, allowing us to continue essential infrastructure projects in a COVID-safe manner. Our specialist teams leveraged digital and technological platforms, innovative ideas and new ways of working; and most of all, tenacity, drive and commitment, to deliver exceptional outcomes as trusted consultants and delivery partners.



The North Luzon Expressway (NLEX) in the Philippines is a significant 101 km toll road connecting Manila to the Central Luzon Region, via the Bulacan and Pampanga provinces. Operated by NLEX Corporation (formerly Manila Tollways Corporation), a subsidiary of the Metro Pacific Tollways Corporation (MPTC), the expressway has undergone numerous network upgrades since its construction in 2005.

SMEC has partnered with NLEX Corporation since 2010, working on various upgrades including the Value Engineering Study. In 2020, we completed the redesign of NLEX Segment 10, a four-lane, 5.65 km elevated expressway connecting the NLEX Harbor Link to the C-3 Road. This section is significant as the Segment 10 terminus at C3 Road interfaces with the proposed NLEX-SLEX Connector Road, the last stretch of the extension connecting the North and South Luzon Expressways, and the C3-R10 Section which connects the NLEX mainline to the port area.

The project involved re-designing the original viaduct configuration, reducing its width from 28m to 25.6m, and integrating two separate viaducts into one substructure support.

**Our Role**

Engineering specialists across various disciplines collaborated to deliver the project on time and within budget. The global team developed a suite of complete redesigns and geometric amendments to suit the required reduced carriageway width. This meant amending or redesigning all associated infrastructure including tapers, ramps, bridge arrangement and cross sections, pier and deck layouts, and drainage.

Our partnership with NLEX Corporation stretches back over a decade, and we are pleased to continue bringing our expertise and capacity to transport projects that make a positive difference to communities in the Philippines.

**Outcomes**

At the completion of the project, two separate viaducts were integrated into one substructure support, reducing the deck slab width and number of girders. This resulted in estimated savings of 20% for our client.

NLEX Segment 10 has helped to ease traffic in Metro Manila by providing access to the North Luzon Expressway without passing through the bottleneck on Epifanio Delos Santos Avenue (EDSA), which improves cargo movement and reduces motorists' travel time.

# Expressway redesign the latest achievement in long term partnership

Project: North Luzon Expressway (NLEX) Segment 10  
Country: Philippines

“SMEC Philippines has been a long-time partner of NLEX Corporation (formerly Manila North Tollways Corporation) as its designer and design consultant during construction in its major infrastructure projects such as NLEX Harbor Link Segment 10 and NLEX-SLEX Connector Road Project. Through the excellent service rendered by SMEC, our projects were designed efficiently and adjustments in design during construction were addressed in a timely manner. We look forward to more fruitful partnerships with SMEC in the future.”

– Nemesio G. Castillo - Vice President for Tollway Development and Engineering, NLEX Corporation.





## A light at the end of the tunnel

Project: Atal Tunnel

Country: India

The need for a road through the perilous Rohtang Pass, located at an altitude of over 13,000 ft in the Pir Panjal Range of the Himalayas, was discussed as early as 1860 by the Moravian Mission.

Nearly 160 years later, the Atal Tunnel (formerly called the Rohtang Tunnel) has become a reality. After nearly a decade under construction, and despite challenges including heavy snowfall, avalanches and severe geographic conditions, the 9 km tunnel is now the world's longest highway tunnel above an altitude of 10,000 ft.

### Our role

SMEC was engaged by India's Border Roads Organisation and the Ministry of Defence in 2006 to provide design, engineering and advisory services on the project. We then took on a subsequent role as the Independent Engineer, contributing our global expertise to helping our client make this huge undertaking a reality.

### Challenges on a once-in-a-lifetime project

The remoteness, accessibility and extreme altitude of the project presented enormous challenges to geological works, tunnelling and mechanical and electrical installations.

The Himalayas are a thrilling but daunting environment when it comes to geological setup and challenges to large civil works. One of the most challenging sections was the Seri Nallah Fault zone, located about 1.5 km into the mountain from the south tunnel portal. Tunnelling through this crushed material with a huge material outflow was extremely challenging and took almost five years of tenacity and technical skill to complete.

Another very complex piece of work was designing a tunnel ventilation system in accordance with international best practice, considering height above sea level and the different barometric pressures at different times of year. Our specialists provided innovative solutions for the design of robust mechanical and electrical (MEP) engineering systems, which are essential for fire and life safety on the project.

### Delivering a nation-first

Through a persistent, collaborative effort between SMEC, our client and the contractors, the Atal Tunnel was opened to the public in 2020. The tunnel facilitates two-way traffic and is designed to cater to up to 3,000 vehicles per day in any weather conditions at a maximum vehicular speed of 80 km per hour.

Previously, access over the Rohtang Pass was limited to only six to eight months out of each year, due to heavy snowfall, avalanches and landslides. What this tunnel offers – safe, year-round road travel through the Rohtang Pass – is a game changer for India.

## Milestone on Bangladesh's first underwater tunnel

Project: The Karnaphuli River Tunnel

Country: Bangladesh

The Karnaphuli River Tunnel in the port of Chittagong is a proposed 3.4 km-long, 11 m diameter twin tunnel under the river. Expected to be completed in 2022, the tunnel will be the first of its kind in Bangladesh and is being implemented by the Bangladesh Bridge Authority.

The project includes over five km of connecting roads and will be a game changer for the south east region of Bangladesh, presenting a solution to connectivity issues to the rest of the country. It is also part of China's One Belt One Road initiative and a key link in planned cross-country transport corridors.

In 2020, SMEC, together with our partners, met a key milestone after the Tunnel Boring Machine (TBM) successfully broke through at the Karnaphuli River east bank working shaft.

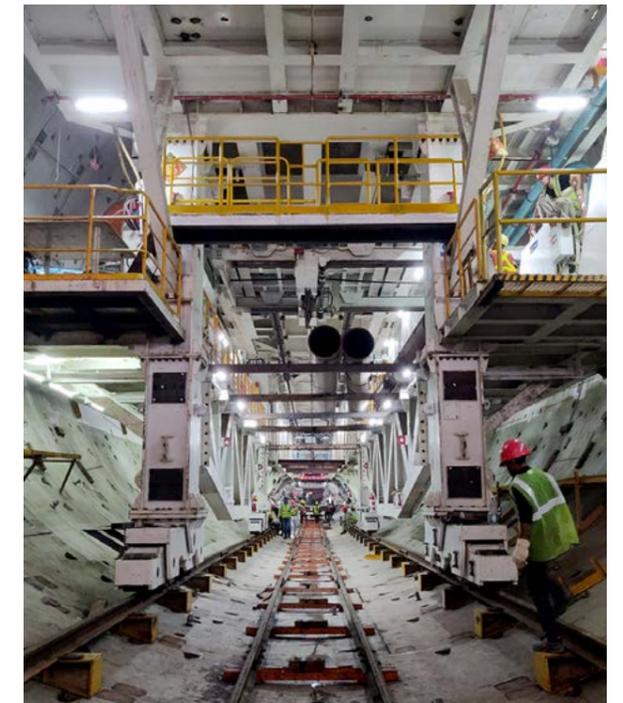
### Delivering national infrastructure in a pandemic

The progress of tunnelling was slow, as slurry shield tunneling brings with it many risks. The TBM movement and its shield were affected by several

factors, including the varying ground conditions, overburden depth, slurry pressure, primary grouting pressure, and over-excavation.

In TBM slurry shield tunnelling, operators rely totally on instrumentation and sensors to guide the TBM. SMEC, together with our partners' specialists, supported the project contractor with their vast experience and expert advice when driving the TBM.

"The slurry shield tunnelling method used on this project is very complex and challenging due to soft soil conditions encountered," said Gavin Strid, SMEC's Chief Technical Principal - Project Management. "Notwithstanding, the first tunnel has been completed despite the ongoing challenges of the COVID-19 pandemic. The breakthrough of the TBM is another huge milestone which we, together with our partners, client and contractors, are very proud of."



## A safer, greener motorway in Pakistan

Project: Sukkur - Multan Motorway

Country: Pakistan

The 392 km Sukkur to Multan Motorway is a critical element of the Peshawar to Karachi Motorway Route. A lifeline for Pakistan's economy, it is a high speed (120 km/h), controlled access, six-lane modern motorway that forms part of the China Pakistan Economic Corridor. The motorway was opened to traffic in November 2019 and made operational by March 2020.

SMEC and EGC, in a joint venture with five local engineering consultancy firms, were appointed by Pakistan's National Highway Authority to act as Assistant to the Employer's Representative. The scope and magnitude of the project demanded high standards of technical excellence across multiple disciplines. Our teams delivered project design review, supervision of civil works and monitoring of operations and maintenance activities.

Some of the unique elements of the project are the installation of a night lighting system, tree planting and extensive landscaping, beyond what has been achieved on previous motorway projects. A total of 415,000 trees were planted along both sides of the motorway, and the team designed and delivered the landscaping of 12 service areas, 10 rest areas and 12 interchanges.

Considering various factors including reduction in distance and traffic congestion relative to the previous network, and more energy efficient operations, this project has contributed significantly to reduction in carbon emissions. The ambitious landscaping has improved the natural environment in areas around the motorway, leading to improved pollution control.



**A new landmark pedestrian swing bridge for South Africa's oldest working harbour.**

Situated in South Africa's oldest working harbour, the V&A Waterfront is a mixed-use development, offering visitors a world-class experience when it comes to entertainment, shopping, dining and accommodation. The existing pedestrian swing bridge, carrying up to 2.4-million people per year, could no longer cope with the rising foot traffic. To keep pace with demand, a new, wider bridge was commissioned.

**The challenge**  
SMEC South Africa's Structures team was engaged by V&A Waterfront Holdings (Pty) Ltd as the lead design firm and structural engineers for the replacement of its old swing bridge.

The challenge set by the client was that the new bridge had to be equally quick and efficient, effective and reliable as the existing bridge. Its construction cost had to be within a tight budget; and the works had to limit disruption to the public, the harbour and the environment.

**Leveraging technical expertise to identify fit for purpose solutions**  
After working through various options, the design team determined that a swing bridge would be the best solution in terms of operational speed and energy.

Both steel and Fibre Reinforced Polymer were considered at the early stages of the project. However, as the design progressed the use of steel was obvious. A slew bearing option was preferred as it was considered to offer a more sustainable solution.

The slew bearing and hydraulic motors are in a plant room, created by the pile cap ring. By forming the pile cap in this way, it was possible to house the mechanics within the depth of the foundations. This reduced the required excavation depth and kept the foundations above sea level, which was advantageous from a durability perspective.

**Industry recognises outstanding project outcomes**  
The project, which was delivered within very tight commercial and time constraints, were split into two stages to ensure that construction works did not run into the V&A's peak periods. The piling works were first built under one contract and then buried in sand and the area re-paved until the superstructure contract was activated the following year.

In 2020, the project was named joint winner in the Technical Excellence category of the South African Institute of Civil Engineering (SAICE) National Awards. It also won both the Bridges category and was recognised as the Overall Winner (across all categories) at the Southern African Institute of Steel Construction (SAISC) Steel Awards, 2020.

*"The bridge's integrated form is simple and unique. It is no more nor less than it needs to be, which gives it an elegance that is hoped will be timeless. It serves as an important link and is considered a positive landmark for both the V&A Waterfront and Cape Town."*

– John Anderson, SMEC Functional General Manager, Structures

# Elegance meets form and function

Project: V&A Waterfront Swing Bridge  
Country: South Africa

**60km/h**  
The swing bridge is capable of operating in up to 60 km/h wind speeds.

**40m**  
The new 4m wide swing bridge has a span of 40m.

**90seconds**  
The bridge opens in 90 seconds and closes in 100 seconds.

**500mm**  
The spine beam is 500 mm wide and has a total depth of 800 mm.





## Solving complexities on Australia's deepest road tunnel

Project: NorthConnex  
Country: Australia

New motorway link for traffic returns neighbourhood streets to north-west Sydney communities.

NorthConnex is a 9 km tunnel reaching a maximum depth of 90 m, making it Australia's deepest road tunnel. Motorists are now able to travel from Newcastle to Melbourne without a single set of traffic lights, paving the way for more efficient state and national freight movements.

The tunnel delivers significant benefits to local communities around Pennant Hills Road, Sydney, taking 5,000 trucks a day off neighbourhood streets.

**Digital engineering tackles variable tunnel profiles**  
Engineers turned to digital engineering tools to develop, streamline and validate the definition of the complex variable tunnel geometry. A fully optimised spatial model enabled the design and construction teams to visualise the changing geological requirements as well as varying geometrical requirements, such as underground junctions, traffic merges and diverges, cross passages, jet fans and traffic signs.

The engineering design used the sequential excavation and support method; using roadheaders to excavate the tunnel, with a combination of rock bolts and sprayed concrete applied close to the tunnel face to

**5,000** trucks per day diverted from neighbourhood streets.  
**100%** of excavated soil reused.

support excavation. In this way, the efficient tunnel design solution is that each cross section is cut specifically to the geometrical requirements at any given location. This resulted in less excavation and spoil to move.

**Sustainability in design**  
NorthConnex was awarded a 'Leading' Infrastructure Sustainability (IS) Design rating by the Infrastructure Sustainability Council of Australia (ISCA). A 'Leading' IS rating is the highest possible achievement in the IS rating scheme and indicates the project is achieving best practice in sustainability. NorthConnex is the first road tunnel in Australia to achieve a 'Leading' rating.

The project was able to achieve this by implementing sustainable design practices and construction techniques, including reducing emissions through the use of LED lighting, modelling reduction in water use throughout construction and reducing the lifecycle impacts of materials through initiatives focused on locally sourced, reclaimed and recycled content for construction. More than 2.5 million cubic metres of soil was excavated and 100% was reused.

## Delivering major upgrades to one of Cape Town's busiest roads

Project: Trunk Road 9/1 (Route N1) Widening Project  
Country: South Africa

In May 2013, the Western Cape Government's Department of Transport and Public Works appointed SMEC South Africa to provide the full scope of professional services for the Trunk Road 9/1 (Route N1) Widening – a freeway improvement project aimed at reducing traffic congestion and improving traffic safety over 8 km of freeway between Jip de Jager Avenue and Durban Road in Cape Town.

SMEC South Africa has played a vital role in the project for seven years, beginning with planning and then developing to concept and viability, design development, documentation and procurement, contract administration and construction supervision. The project was closed out in 2020.

**Challenges on a major freeway widening project**  
The existing four-lane basic dual carriageway needed to be widened to a six-lane cross-section by removing the grassed median island and building two inner lanes separated by a concrete median barrier. With approximately 120,000 vehicles travelling along the route during the morning inbound and afternoon outbound peaks, accommodating the large volume of traffic on one of Cape Town's busiest roads was a significant challenge.

Additional road works included the upgrading of three interchanges and the construction of new auxiliary lanes between the interchanges on both inbound and outbound carriageways.

Structural work included the demolition and reconstruction of the Old Oak West Bridge over the freeway. Ancillary works included a new street light system, new traffic signals at all interchanges and the removal and replacement of all overhead sign gantries.

**A team of specialists collaborate for success**  
The planning and design of the project involved specialists across multiple disciplines.

Despite the complexities involved, SMEC South Africa successfully delivered this mammoth project on time and within budget, with our client commending the outcome.

"SMEC South Africa successfully delivered this project within the constraints of the high traffic environment, while keeping the road user and the greater public well informed. This is a true example of the citizen-centric value that the Western Cape Provincial Government strives for." – Melanie Hofmeyr, Chief Director, Road Design, Department of Transport and Public Works, Western Cape Government.

## Connecting key economic and residential hubs in Bangalore

Project: Bangalore Metro Rail Project (Phase 2A & 2B)  
Country: India

The Bangalore Metro Rail Corporation Limited is extending the city's Mass Rapid Transit (MRT) system through Phases 2A & 2B of the Bangalore Metro Rail Project. This will extend the metro line on the Outer Ring Road line and provide a new Airport Line. The new stretch forms an arterial link in the city, connecting to the airport and various key economic and residential hubs.

In 2020, SMEC was appointed to provide detailed design for the elevated viaduct and 18 metro stations along the Outer Ring Road, from Central Silk Board to Hennur Bellary Road (HBR) Layout.

**Our role**  
Our specialists are delivering complicated and varied design concepts, including concept to construction

drawings on architecture, structure, electrical elements, plumbing and drainage, fire detection, fire-fighting services and traffic diversion plans. Our role also includes review of other elements such as alignments, temporary works and as-built drawings.

Architectural concepts and designs, which are being delivered in BIM, maximise property development area and optimise space in the stations for commercial opportunities. The station buildings will reflect Bangalore's "Garden City" ethos while ensuring safety, sustainability, and high performance.

**Community impact**  
Bangalore is one of India's most congested cities. While metro rail systems are already in operation in some parts of the city, this project will significantly improve public transportation solutions and benefit more than 11 million residents.



## Snowy 2.0 – The next generation of hydropower in Australia

Project: Snowy 2.0 Pumped Storage Project

Country: Australia

Snowy 2.0 is the next generation of the iconic Snowy Mountains Hydroelectric Scheme, and construction of this major pumped-hydro project is well underway. Once complete, the Scheme will provide 2,000 megawatts of dispatchable, on-demand renewable energy and approximately 350,000 megawatt hours of large-scale storage.

### Leading international hydropower planning and design

From a technical and engineering perspective, this project is at the forefront of international hydropower technology and design, attracting input and interest from global specialists across a range of fields. Snowy 2.0 also presents geographical and environmental challenges due to its remoteness and alpine location within (and below) the Kosciuszko National Park.

Following the successful approval of the project, SMEC's technical specialists have been engaged as the Owner's Team for Snowy Hydro Ltd, providing technical advice from internationally recognised specialists and engineering support to help deliver this iconic and innovative renewable energy scheme.

### Geotechnical report model revolutionising construction risk sharing

The Snowy 2.0 project site is situated within a complex alpine geological and hydrogeological area. This presents significant geotechnical uncertainties for construction, making it difficult to accurately predict construction time and costs.

At Snowy Hydro's request, SMEC's tunneling and geotechnical specialists developed an innovative 'balanced' Geotechnical Baseline Report (GBR) which was incorporated into the construction contract. The GBR sets out geotechnical risk-allocation mechanisms with an aim for fair and balanced allocation of geotechnical risks between the owner of the project and the contractor. Successful implementation of this 'balanced' risk sharing structure could be a game-changer for the Australian infrastructure industry, lowering project costs by alleviating some of the complexities of project implementation and risks.

### Unrivalled scale and complexity

Snowy 2.0 can only be described as monumental when considering the project scope, complexity and ambition. The project includes 27 km of waterway tunnels connecting two existing reservoirs, Tantangara and Talbingo. This allows the scheme to utilise approximately 700 m of head difference by transferring water through the waterway tunnels and the six 340 MW reversible pump-turbines of the underground power station located approximately 750 m below ground.

"With construction well under way, we are enjoying seeing all our hard work and planning coming to life," says Andreas Neumaier, SMEC's Chief Technical Principal – Hydropower. "As one of the world's most iconic hydroelectric projects, the next few years of construction are going to be monumental. It is a privilege and pleasure to contribute and be a part of Snowy 2.0"



## Extending rural electrification in Papua New Guinea

Project: Pilikambi Hydropower Project

Country: Papua New Guinea

It is estimated that only 12% of the 7 million residents of Papua New Guinea (PNG) has access to electricity; in rural areas, the estimated proportion is less than 4%.

Enga Hydro Power Limited (EHPL) is a public-private partnership (PPP), including private investors and the Enga Provincial Government of PNG, to develop a hydropower project on the Lagaip River.

Following our successful completion of the pre-feasibility study in July 2019, SMEC was again engaged in January 2020 to deliver the feasibility study for the proposed Pilikambi Hydropower Project. The feasibility study was completed on schedule in October 2020, despite the challenges of the global pandemic, with results showing the project was financially robust and could move into implementation phase.

### Our Role

SMEC drew on its network of global expertise, bringing together a team of specialists across multiple disciplines, who were variously located in PNG, Australia, the UK, Switzerland, Nepal and Malaysia. Although all interactions were limited to virtual collaboration, team members worked effectively to address challenges and meet project deadlines.

Our role involved a range of activities including the review and update of the 2019 pre-feasibility study; feasibility level geotechnical investigations, hydrological

assessment and sediment analysis and water quality analysis. We also completed project optimisation studies, basic design of civil work structures, preliminary design studies for the power generating equipment and substation, initial design of power evacuation transmission lines, project cost estimation, energy generation estimation and financial evaluation.

### Outcomes

The Pilikambi Hydropower project harnesses the energy potential from a perennial river. The feasibility study demonstrated the financial and technical viability of the project which is now poised to move to implementation. Once operational, the scheme will extend rural electrification in the Enga Province by replacing diesel generation with sustainable, renewable energy.

SMEC was subsequently appointed again by our client in December 2020 for the Environmental and Social Impact Assessment study, as a variation to the feasibility study.

Our strong partnership with our client underpins the achievement of this important milestone and has led to SMEC collaborating on other hydropower projects in PNG.



## A brighter future for Ghana's electricity supply sector

Project: Ghana Power Compact project  
Country: Ghana

The U.S.-based Millennium Challenge Corporation (MCC) and the Government of Ghana (GoG), through the Millennium Development Authority (MiDA), are implementing an extensive power sector development program that aims to reduce poverty through sustainable economic growth in Ghana.

Ghana's electricity supply has been identified as a critical sector requiring major reinforcement and expansion. Challenges in transmission capacity constraints as well as constrained and inefficient distribution systems mean that much of the country experiences unreliable or insufficient access to electricity. Several projects are being implemented under the Power Compact program to modernise utility operations, upgrade infrastructure, limit technical and commercial losses and reduce outage.

### A reliable partner

In the role of Project Management Consultant, SMEC's Power and Energy teams have been supporting the Power Compact program for four years.

During 2020, a significant milestone was reached with the completion of the design phase.

With inputs from SMEC specialists around the globe, design for the following projects was completed and we have now commenced construction.

- design of Pokuase AIS BSP substation with total 330/33 kV transformation capacity of 580 MVA and 33/11 kV transformation capacity of 78 MVA
- design of Kasoa GIS BSP substation with total 161/33 kV transformation capacity of 435 MVA
- design of total circuit length of 33 kV overhead and underground cable of 50 km
- design of total circuit length of 11 kV overhead and underground cable of 35 km
- design of 161 kV circuit length of 0.75 km
- design of Kanda and Ghana Teaching Hospital primary substations with total 33/11 kV transformation capacity of 130 MVA
- a meter management system with a capacity to supervise 3 million smart meters.

## Waste management proposal to give thriving metropolis sustainable energy

Project: Technical Assistance to Semarang Waste to Energy Project

Country: Indonesia

The management of Municipal Solid Waste (MSW) is a significant issue at a national level in Indonesia, requiring treatment based on its specific composition and characteristics. And in Semarang City, the increasing amount of MSW generated could exceed its current landfill disposal capacity, posing a serious problem for safe and sustainable waste management.

One of the potential solutions to this issue is waste-to-energy (WtE) projects, which may go some way towards also meeting the Indonesian Government's ambitious energy targets. The Indonesia Australia Infrastructure Partnership (or Kemitraan Indonesia Australia untuk Infrastruktur – KIAT), which is funded by the Government of Australia, conducted an Outline Business Case (OBC) of a proposed WtE project in Semarang as part of a wider project feasibility assessment. The OBC needed to be integrated to include complex technical, financial, and regulatory information and analysis.

PwC was appointed as the lead consultant in 2019 to develop the OBC and SMEC was sub-contracted to PwC in 2020 as the technical advisor for this assignment; specifically, to review relevant masterplans and studies, support preliminary studies and initial public consultation, and undertake sampling and waste composition analysis and waste characterisation. SMEC brought together a group of multi-disciplinary specialists, as well as consulted with international energy and waste contamination specialists, to successfully communicate and coordinate with stakeholders and the local community.

On completion, this project aims to minimise landfill utilisation and provide better options for waste management and potential generation of renewable energy. This is SMEC's first WtE project in Indonesia, opening further opportunities in an emerging market.

## Meeting renewable energy targets in Victoria

Project: Winton Solar Farm  
Country: Australia

In support of the state government's Renewable Energy Targets, SMEC delivered Owner's Engineering services on the Winton Solar Farm in Victoria, Australia, which will provide enough energy to supply around 50,000 homes and offset around 150,000 tonnes of CO<sup>2</sup>.

Our scope of work as Owner's Engineer included technical support, planning and project management support, detailed design review, generator registration support and construction and commissioning support services. This is the third project SMEC has partnered with Fotowatio Renewable Venture (FRV) to deliver as Owner's Engineer, having contributed to delivering 253 MW of FRV's total 429 MW portfolio.

Winton Solar Farm is set to be one of the largest solar farms to be delivered with bi-facial PV modules in Australia and the largest semi-scheduled solar farm participating in the National Electricity Market to utilise string inverters. These technologies represent an innovative step towards maximising energy production per hectare, which in turn maximises plant availability and flexibility.



## Ancient practice inspires cost-effective sanitation solution

**Project:** Improved Sanitation Value Chain in Arba Minch

**Country:** Ethiopia

Due to rapid population growth, the southern Ethiopian town of Arba Minch was struggling to provide infrastructure and basic amenities in line with the pace of urbanisation, resulting in insufficient toilet and sanitation facilities.

The town had no piped sewage system and unhygienic sludge from septic tanks was discharged into the environment without being treated. The sludge disposal was upstream of the groundwater wells, the primary source of water supply to the town. This, along with practices such as open defecation, posed a significant health and hygiene risk.

The town could not afford to install a sewage drainage network with a conventional treatment plant, nor did they have the technical capacity to operate one. Arba Minch's communities needed a sustainable, low-cost solution that could be developed by small-scale construction firms and would be relatively inexpensive to maintain and operate.

### Our role

SMEC provided consulting engineering services to progress sanitation planning capabilities in Arba Minch and improve the existing sanitation service chain.

Our 'back to basics' approach involved modifying sewage treatment processes used by ancient Greek communities to provide a modern, sustainable solution. This method leverages natural degradation processes and relies on the sun's ultraviolet light to stabilise and treat the liquid waste before it is discharged to the local environment. Sludge solids are dried and recycled into organic fertiliser, which is then sold to local farmers for their banana and coffee plantations. This solution is low-cost, requires no electricity supply and is environmentally sustainable.

### Outcomes

Completed in 2020, the solution provides Arba Minch with sustainable amenities for the next 10-15 years. The project has improved sanitation service levels for the town's population, reduced environmental contamination and lowered hygiene risks related to water-borne diseases. Economic opportunities have also been created for people who recycle the dried sludge. Local authorities have praised the outcomes of the project which has been used as a showcase for other towns in Ethiopia.

## Guiding sustainable lakeshore development in Rwanda

**Project:** Management Guidelines for Lakeshores and Riverbanks in Rwanda

**Country:** Rwanda

The many lakes and rivers in Rwanda are not only key ecological areas but also offer opportunities for development projects involving tourism, ports, fisheries, agriculture, and energy. The Rwandan Government sought to balance the potential economic benefit of such projects with protection of these ecologically delicate zones by developing a set of rigorous management guidelines.

### Our role

The Rwanda Environmental Management Authority (REMA) had specified a 50 m buffer zone around all lakes in the country. SMEC was then engaged by REMA to conduct a study that would inform the development of guidance for sustainable lakeshore management.

Our teams analysed lakeshore land use, including detailed mapping and GIS analyses; collected field

data, consulted with community groups, identified zones of ecological sensitivity and erosion risk, and assessed potential environmental impacts and associated mitigation measures. Based on the research and data, we established clear guidelines and regulatory recommendations for the sustainable management of the lakeshore buffer zones for Lakes Burera, Kivu, Mugesera, Muhazi and Rweru.

The study also uncovered ways the buffer zone framework could support the sustainable use and modification of the lakeshores while still ensuring these zones are protected.

### Outcomes

This unique project will ultimately impact a large proportion of communities in Rwanda, as the intention is for the guidelines and recommendations developed from this study to be applied to all 23 lakes in Rwanda. Our recommendations will help preserve and enhance the affected zones' ecological and economic integrity.

## Strategic masterplan protects wetlands in Kigali

**Project:** Development of Wetland Master Plan, Kigali

**Country:** Rwanda

Kigali City, the capital of Rwanda, has 37 wetlands comprising a total area of over 7,700 ha. Over the years, the wetlands have undergone significant change, mainly due to being drained by agricultural activities that have replaced wetland plants with crop plants. Other impacts have arisen from infrastructure developments, such as buildings and roads, within wetland boundaries and the extraction of clay for brickmaking. However, proper and strategic ecological rehabilitation solutions can help to reverse these impacts.

### Our Role

In 2020, SMEC's Environment and Water Resources teams in the East Africa Region, together with our partners, provided a wetland master plan to guide the development of urban wetlands in Kigali. This project complemented the overarching Kigali City Master Plan, which was also developed by our parent company Surbana Jurong, with support from SMEC.

The wetland master plan identifies and responds to multiple issues and provides solutions that support Kigali City to better manage and utilise its wetland system sustainably.

### Outcomes

This unique project will lead to a range of benefits for local communities as wetlands have the capacity to provide water supply, flood mitigation, climate moderation and wastewater treatment. They are also important habitats for biodiversity, agriculture and fisheries.

## Digital platform accelerates vital irrigation project

**Project:** Irrigation and Drainage Improvement Project

**Country:** Kazakhstan

SMEC is providing construction supervision and project management services on a key infrastructure project aiming to modernize and improve irrigation and drainage service delivery to approximately 10,000 farms located in the Almaty, Kyzylorda, South Kazakhstan and Zhambyl Provinces. Our role also includes strengthening the capacity of farmers and farm managers in efficient water management and sustainable agriculture production facilities.

The project will enhance over 3,200 km of irrigation canals that provide water to 105,104 ha of farmland and act as a primary lifeline for the region. It will reduce water losses in the canal systems, increase water use efficiency in agriculture and reduce demands on scarce surface water resources, contribute to the further development of the agricultural sector, and benefit both the national economy and the rural population.

In addition to delivering on the original contract scope, SMEC has also provided an innovative value-add to our client in the form of a digital Project Monitoring and Management Information System (PMIS). This is the first time such a system has been utilised in Kazakhstan's water and irrigation sector.

SMEC's PMIS provides multiple tools on a unified platform, including Key Performance Indicators, project bill of quantities, monitoring dashboard for project milestones, site image library, and a news and events website. It is web-based and can be accessed online in real-time from any location with a stable internet connection. Both our client and SMEC's project teams are reaping the rewards from this system, which provides efficient project monitoring and management and allows for confident and cost-effective asset management decisions.



# Where community and conservation meet

Project: The Point  
Country: Australia

“We brought in specialists from across SMEC’s business, in environment, survey, geotechnical and engineering design, to create the solutions that deliver Moremac’s vision of a sustainable and genuinely environmentally-focused development.”

– Greg Healey, Team Leader, SMEC Urban Engineering

Delivering an ecologically sensitive and sustainable community near a RAMSAR-listed wetland that will preserve and protect the environment for future generations.

Environmental sustainability is at the core of The Point, a popular, premier coastal community being developed by Moremac Property Group near the beautiful RAMSAR-listed wetlands of Swan Bay in Point Lonsdale, Victoria.

“SMEC are a valuable part of our team for this most complicated project. We value their input”.

– Bryce Moore, Director of Moremac Property Group.

### Bringing a sustainable vision to life

Since 2013, SMEC has provided planning, survey, environment, infrastructure and urban engineering services for the project, which consists of approximately 600 homes and a 170-unit retirement village surrounded by waterways, wetlands and parklands.

The Point’s centrepiece is a winding, five-kilometre, tidally flushed loop of waterway, around which the residential, commercial, open space and conservation areas are being built. Our specialist teams have been integral in the delivery of this key aspect of the community and are providing solutions to an array of challenges.

The landscape was heavily modified by past land uses, including grazing in the 1800s, shell grit mining from the 1940s to the 1980s and previous attempts at urban development, which have had a significant impact on the environmental integrity of the site.

Moremac Property Group is focused on delivering the development sustainably, with positive environmental impact and significant gains in the future repair, protection and preservation of the ecosystem around The Point.

The development is being implemented in accordance with a comprehensive approval issued by the Commonwealth Minister for the Environment. This approval requires ongoing environmental management and the implementation of the development in accordance with strict controls.

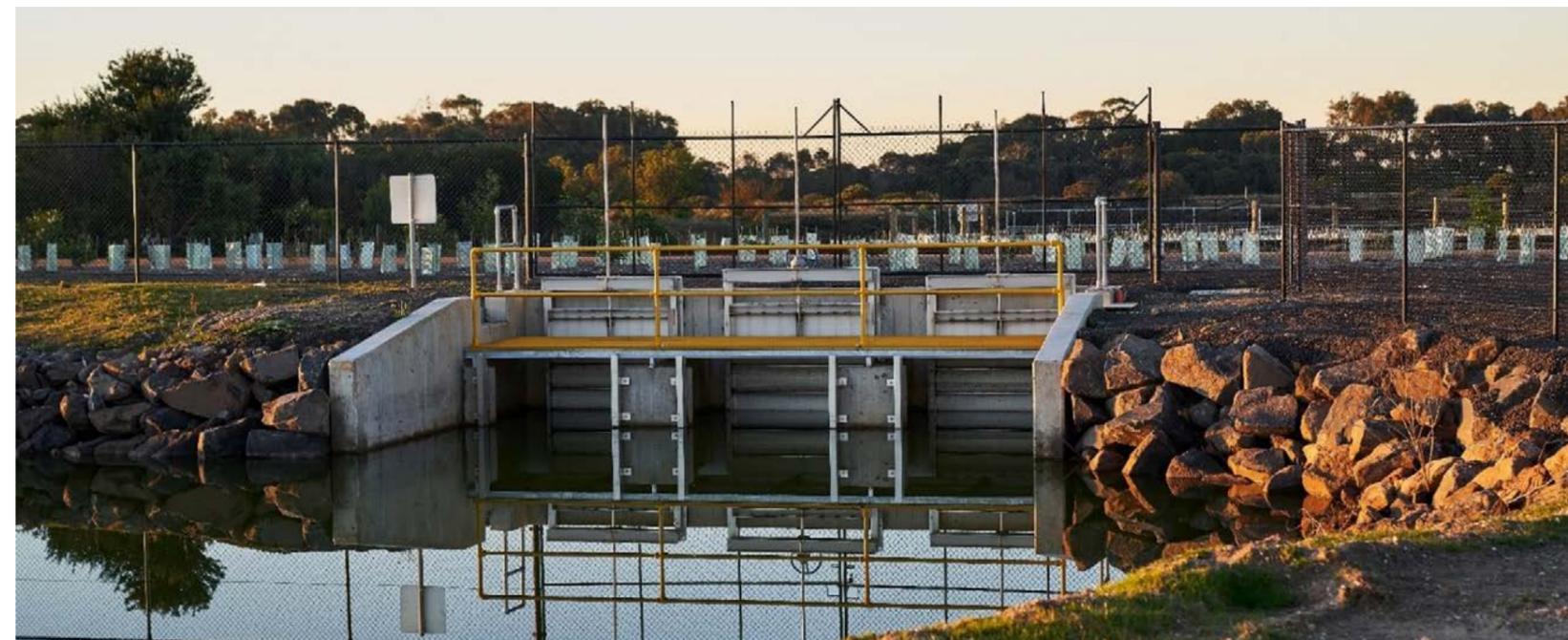
### Environmental excellence recognised by industry

The team’s careful work was recognised when The Point became one of the first communities to achieve the Urban Development Institute of Australia’s (UDIA) nationally recognised EnviroDevelopment certification across all six elements; ecosystems, waste, energy, materials, water and community.

The project also won both the Environmental Excellence Award and Judges’ Award Regional Victoria at the 2020 Urban Development Institute of Australia (UDIA) Victorian awards.

Greg Healey, SMEC’s Team Leader of Urban Engineering in Geelong, has worked on The Point for the past couple of years. “Because of the complexity of the development and the diverse challenges we faced in the delicate environment, we relied heavily on team collaboration and shared knowledge,” he said.

“We’re really proud of what we’ve accomplished together.”





## Unlocking an iconic site in Sydney

Project: Channel 9 Willoughby Redevelopment  
Country: Australia

In 2020, SMEC joined with Australian property group Mirvac to redevelop the iconic Channel Nine studios in Willoughby, Sydney, in a project that unlocks the site to the public for the first time in over 60 years.

Located approximately six km north of Sydney's central business district, the site covers 3.2 ha of land. Mirvac acquired the site to bring to life a new community that will feature 10 architecturally designed apartment buildings, approximately 6,000 m<sup>2</sup> of publicly accessible open space and complementary retail outlets, with new and upgraded connections.

SMEC is providing civil engineering design and flood management services for the redevelopment.

"Our team has provided value to this challenging site through the delivery of a bulk earthworks strategy and stormwater management plan that will improve construction outcomes," said Scott Carne, SMEC's Manager Urban Renewal.

"Through constant communication, strong teamwork and collaboration, we were able to complete the works despite the COVID-19 pandemic and subsequent lockdowns. By using 3D modelling and delivering the

design in BIM, we were able to present and discuss designs with Mirvac and relevant stakeholders remotely, but in real time, which streamlined the review and approvals process."

### Strategies to improve construction outcomes

The existing topography of the site posed a significant engineering challenge. The steep slope, with an overall fall of 30 m, required careful civil design considerations. These included early project phase 3D bulk earthworks design, building floor level design, positioning and interfacing of the buildings to the surrounding topography.

"Throughout SMEC's involvement in the project, our team's focus was to provide solutions that could improve development outcomes, such as more developable and public open space," said Cameron Miles, State Sector Manager (NSW/ACT), Urban Communities.

"One of the ways we achieved this was by collaborating with SMEC's geotechnical engineering team to design an earth retaining wall that could lead to more space for public parklands in the development."

SMEC is looking forward to continuing our partnership with the Willoughby project team in 2021, as final approvals are received, and construction commences.

## Designing tomorrow's sustainable cities

Project: Lanseria Smart City  
Country: South Africa

The Greater Lanseria Master Plan (GLMP) is the first stage in the development of the new Smart City in Lanseria (Gauteng Province), as announced by South African President Cyril Ramaphosa in his 2020 State of the Nation Address. Following the announcement, a joint initiative led by the Gauteng Office of the Premier was formed to undertake extensive studies and engagements for the planning of Lanseria Smart City.

The Gauteng City Region population is estimated to increase from 12.5 million to 30 million over the next 30 years and is set to become a mega-city the likes of São Paulo, Mexico City and Jakarta.

### Interdisciplinary approach

SMEC South Africa's Urban Development team was appointed by GAPP Architects / Urban Designers as the Project Managers and infrastructure and transportation planners for the GLMP.

The interdisciplinary team produced an integrated infrastructure and transportation master plan to ensure that the future Smart City would be adequately serviced, all whilst considering sustainable and innovative solutions and technologies in each of the

following areas: water, sanitation, electricity, solid waste, roads, stormwater and information and communications technology.

"The Greater Lanseria Master Plan was an excellent opportunity for SMEC to influence the future of new smart city development in South Africa," said Deon du Plessis, SMEC Function Manager, Urban Development. "Sustainable development guided all aspects of the master plan and resulted in a plan that encourages the adoption of new technologies, enabling waste-to-energy; recycling of water; generating electricity from biogas produced by wastewater treatment works; reducing solid waste and wastewater; and reducing the need to supplement water from outside the region's catchment."

### Shifting the paradigms of a Smart City

The GLMP project will not reflect an extravagant tech-heavy city, but instead, a true post-apartheid city in which innovative technologies are used to provide smarter, more sustainable solutions and services that will change the apartheid spatial architecture and provide social and economic opportunity for all South Africans.

The project is a key opportunity to move urban sustainability beyond existing paradigms of planning, engineering and urbanisation to increasingly appropriate levels of sustainability, innovation and inclusivity.





# Restoring dignity through accessible water and sanitation

Project: Programme Management and Cost Consulting Services for Water and Sanitation Services in eThekweni Municipality (Phase 3)

Country: South Africa

**400**  
new and 825 refurbished ablution facilities.

**51.76km**  
of new sewer pipelines.

**38.68km**  
of water pipelines.

**3**  
onsite treatment plants.

SMEC South Africa delivers over 1,200 ablution facilities, bulk and secondary infrastructure to local municipality.

eThekweni Municipality, the largest city in KwaZulu-Natal (KZN) Province, is home to over 3.5-million people and approximately 200,000 informal households, some of which fall within the poorest communities in South Africa. Many of the informal settlements within eThekweni have little or no access to piped potable water and ablution facilities, and as a result, experience adverse health conditions.

### Our role

To address basic human needs for its informal residents, eThekweni Water and Sanitation Department has been implementing a program to provide ablution facilities and address water and sanitation services to informal communities within the municipality. SMEC South Africa's Management Services team was appointed by the eThekweni Water and Sanitation Department to provide Phase 3 program management, governance and control over a four-year period, beginning in 2016.

### The outcomes

Completed in 2020, the program has delivered over 400 new, and a further 825 refurbished, ablution facilities. Nearly 52 km of sewer pipes and over 38 km of water pipes have been laid, and significant bulk sanitation infrastructure projects have been implemented.

SMEC South Africa also implemented three onsite treatment plants ranging from 5 ML to 10 ML, as well as constructed a 90 L/S bulk pump station.

Our teams efficiently managed ever-evolving factors and challenges on the project through the continual development of robust project processes, techniques and tools.

With specialist management and guidance, the project team has successfully achieved Contract Participation Goals, supported social development and increased economic wealth for local communities. The programme has also been successful in implementing similar services in numerous schools, hostels and housing projects scattered within the metropolitan.

## Awards

### 2017 Winner

- KwaZulu-Natal SAICE (South African Institute of Civil Engineering) Regional Awards in the Community-Based Project category

### 2020 Winner

- CESA (Consulting Engineers South Africa) Aon Engineering Excellence Awards – Projects with a value greater than R1-billion category





## Driving sustainable road network management in Timor-Leste

Project: Promoting Sustainable Road Network Infrastructure

Country: Timor-Leste

The 7,505 km national road network in Timor-Leste is in a transition period from heavy investment in road development to a period of longer-term sustainable road maintenance. The aim of this vital project was to develop a strategic plan for a multi-agency donor initiative that will redefine the approach to operating and maintaining the country's road network.

### Collaborative approach drives industry best practice

A team of international and local specialists consulted on the project, bringing expertise from transport policy, legislation, road asset management, road maintenance, road design, procurement and contracting. Capacity building and development were also common themes across all disciplines.

The SMEC team prepared a road subsector assessment, a full 20-year road investment and maintenance strategy, a 10-year road maintenance program, and a road asset management plan for development of a RAMS database system.

As Timor-Leste is a small country with many active development partners, it was essential to ensure all stakeholders were on board with and committed to the strategy and programs. The team consulted with various development partners, including the World Bank, Japan International Cooperation Agency, and the Department of Foreign Affairs (Australia), and held two nationwide workshops with ministers and donor agencies. As a result of this collaborative approach, the outcomes were seen as representative of the entire sector.

The final output – a professionally published suite of reports in both English and Tetun, the local language – will be used as a library of reference to guide sustainable management and maintenance of the national road network. The Asian Development Bank (ADB) can also use the reports as an example of industry best-practice for similar application on road management sustainability initiatives in other developing countries.

### Supporting economic and environmental sustainability

Since Timor-Leste's founding in 2000, the war and poverty-stricken nation has relied heavily on offshore oil and gas exports, however, as the economy recovers, other exports and emerging markets are on the rise. These industries need improved access to technology, water, air, and seaports to progress beyond subsistence levels. Roads provide this vital link. An improved road network is a crucial enabling factor for Timor-Leste to move away from being a carbon-reliant economy.

The delivery of this vital project has further solidified SMEC's track record in the region, adding to its strong reputation for delivering asset management advisory services, particularly for road networks in developing countries.

### Adapting to the impacts of COVID-19

Technical works were substantially completed in 2019, but some final activities targeted for early 2020 were delayed, due in large part to the temporary closing of the country's borders to visitors and air freight. Appropriate restructuring and modifications were put in place to overcome this, recognizing and respecting the COVID-19 mitigation controls put in place by the Timor-Leste government, as closely supported by the ADB.

When in-country measures allowed for freer movement, final training was consequently delivered in distance learning mode over a series of carefully tailored training modules. In early 2021, the project was brought to a successful close, having achieved all original deliverable objectives. These remained fully aligned with ADB's development goals, particularly those for the transport sector of Timor-Leste.

## Robust investigation drives informed asset management

Project: Port Maintenance Optimisation and Improvement

Country: Australia

Flinders Ports is the maritime gateway to central Australia for importers and exporters. As South Australia's leading privately-owned port operator, with multiple ports across the state, it requires continual process improvement to ensure methodical asset management.

Flinders Ports engaged SMEC to evaluate multiple elements of its operations, including all container loading quay cranes located at the Port Adelaide Container Terminal and Flinders Logistics Terminal.

### Meticulous investigation informs recommendations

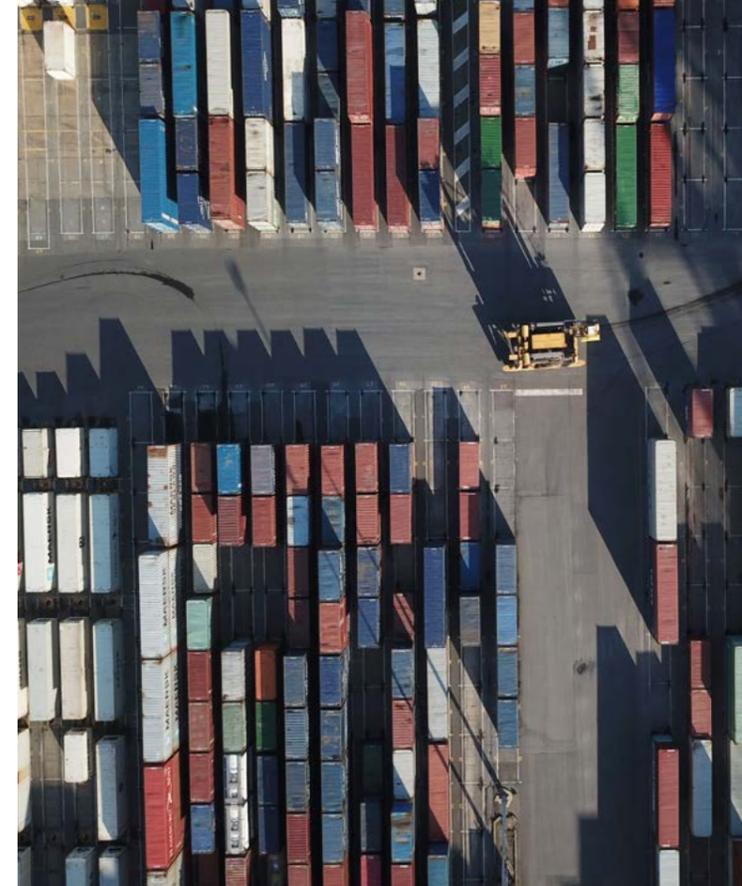
SMEC's team conducted detailed research on and investigations of the Port's floating plant assets, mobile assets, storage and handling facilities and associated infrastructure. The aim was to provide an evidence-based set of detailed work instructions and processes that could be used as a base line for all ongoing maintenance and inspection activities across a range of different asset classes.

This included a complete review of all relevant literature ranging from current maintenance processes, original equipment manufacturer (OEM) documentation, and appropriate Australian and International Standard legislation.

### Outcomes

In collaboration with our client and based on the research findings, our team developed recommended maintenance approaches for all asset classes, along with detailed work instructions including risk assessments, schedules and bills of materials. These were delivered to our client for inclusion in their computerised maintenance management system (CMMS) for ongoing asset management and maintenance by the maintenance teams and service partners.

The outcomes of this project support better alignment with legal and industry compliance requirements; safe, predictable and efficient operations through calculated maintenance activities; improved risk management and cost reduction.



## Enabling seamless change through robust transition support

Project: Support Services for implementation of centralised maintenance planning

Country: Chile

SMEC's client, a world-leader in the resources industry, was in the process of transitioning its maintenance engineering functions to an off-site, centralised office in Santiago, Chile. Our client required specialist support to ensure a seamless conversion of crucial operational functions.

SMEC was appointed to provide planning support services, including asset management, work management and scheduling review, for the concentrator, cathodes, crushing and conveyor areas for two primary copper mining operations in Northern Chile. The three-year project aims to improve efficiencies, productivity and quality of life for on-site staff.

As a result of the COVID-19 pandemic, we have adapted our services model to support a hybrid model of remote and on-site work. This approach, while new to the industry, has been successful and resulted in improved collaboration.

# The Board

The Board of Directors is responsible for formulating SMEC's strategic direction and ensuring robust corporate governance.

The Board is committed to maintaining an appropriate system of governance and risk management applicable to all SMEC's locations, business units and functional groups; maintaining the integrity of SMEC's assets, people and reporting, and complying with legal obligations in all jurisdictions in which SMEC operates. The Board has two permanent committees – the Audit and Risk Committee and the Remuneration and Nominations Committee. Each has written terms of reference and is subject to annual review by the Board.



**Max Findlay**  
Chairman



**Wong Heang Fine**  
Group CEO,  
Surbana Jurong Group



**Hari Poologasundram**  
CEO SMEC & CEO International  
Surbana Jurong



**Adil Al-Raeesi**  
Financial Controller,  
SMEC Group



**Say Boon Lim**  
Non-Executive Director and  
Chair of the Audit and Risk  
Committee

# The Executive Committee



**Hari Poologasundram**  
CEO SMEC & CEO  
International Surbana Jurong



**Andy Atkin**  
Group Chief Financial Officer,  
Surbana Jurong Group



**Angus Macpherson**  
Director of Operations



**George Lasek**  
Chief Operating Officer,  
Americas



**James Phillis**  
Chief Executive Officer,  
Australia & New Zealand



**Dr Uma Maheswaran**  
Chief Operating Officer,  
South & Central Asia



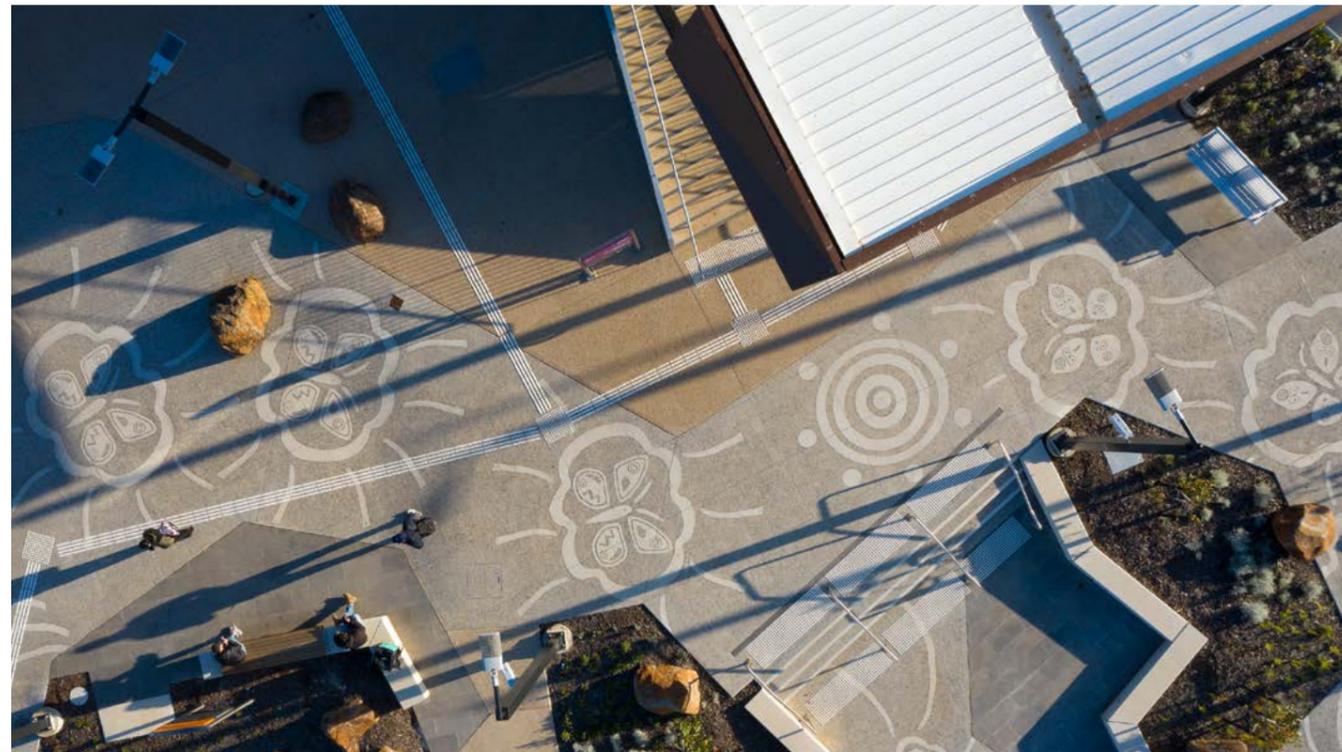
**Tom Marshall**  
Chief Operating Officer,  
Africa



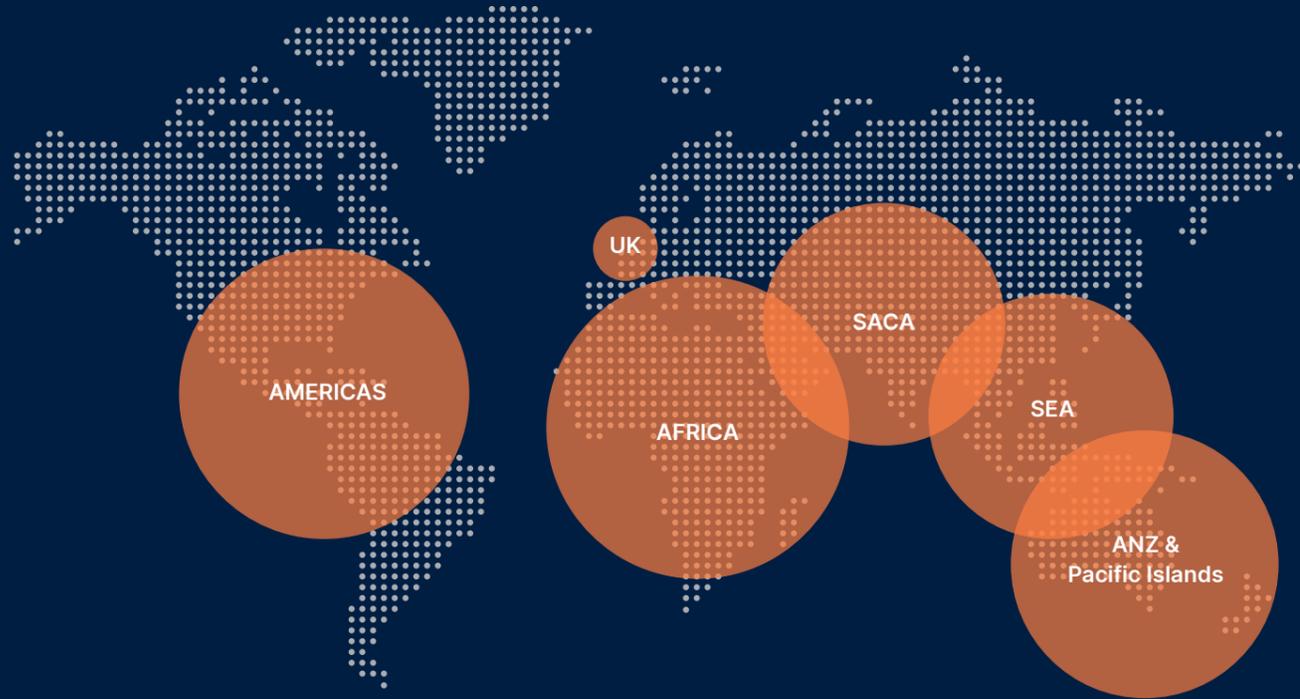
**Adil Al-Raeesi**  
Financial Controller,  
SMEC Group



**George Simic**  
Director, Growth, Mergers and  
Acquisitions, Australia & New Zealand



# Our global footprint



**Australia, New Zealand (ANZ) & Pacific Islands**

- Australia
- Fiji
- New Zealand
- Papua New Guinea
- Solomon Islands

**Africa**

- Ethiopia
- Kenya
- Namibia
- South Africa
- Tanzania

**Americas**

- Canada
- Chile
- US

**South Asia & Central Asia (SACA)**

- Afghanistan
- Bangladesh
- Georgia
- India
- Kazakhstan
- Nepal
- Pakistan
- Sri Lanka
- Tajikistan
- UAE

**Southeast Asia (SEA)**

- Brunei
- Indonesia
- Malaysia
- Myanmar
- Philippines
- Singapore
- Vietnam

**UK**

- England

# A family of specialists

As a member of the Surbana Jurong Group, SMEC is part of a family of specialists. Collaborating closely with our parent and sister companies, we have the flexibility to operate in global markets either individually or in partnership to add value.

Since its formation, Singapore headquartered Surbana Jurong Group has invested in deepening its expertise in architecture, design, engineering, facilities management and security services, building a global group of specialist consulting and advisory firms.

With size and scale becoming increasingly important for companies to effectively compete in larger urbanisation and infrastructure projects, SMEC can draw on capabilities from a group of highly

specialised consultancies to provide a full service offering to clients around the world based on years of global experience.

We continue to create synergies across the Surbana Jurong Group of companies and foster innovation to drive value for our clients. This allows us to compete in larger and more complex projects, and provide our clients with specialist expertise.

**120+**

Offices

**40+**

Countries

**16,500+**

Employees



