



Member of the Surbana Jurong Group

2022

Annual Review



We're redefining exceptional

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

We're

redefining

exceptional



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New Khanki Barrage, Pakistan

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2022 was a notable year for SMEC, characterised by the performance of our people around the world. In Australia and New Zealand, I was proud to see our commitment to client service recognised at the Beaton Client Choice Awards. Across all our global business units, SMEC continues to raise the bar and set new benchmarks for client service.

The year saw another step up in fee growth and profitability. Australia and New Zealand had an outstanding year and was successful in winning significant projects such as the Sydney Metro, Stations, Systems, Trains, Operations and Maintenance (SSTOM) package. We are also delivering the design for the largest road project in Australia, North East Link. In the Middle East, we are progressing design on two NEOM projects, Trojena and Sindalah. In India, construction of Noida Airport is well underway, with ambitions to become one of the most sustainable aviation facilities in the world. In South Africa, we are continuing to deliver complex road infrastructure projects, as the premier international infrastructure consultant in the country.

It has been encouraging to see an increasing number of staff returning to the office and connecting in person again. With the resumption of international travel, it was great to have the opportunity to visit some of our global offices and meet various clients, colleagues, and industry partners.

A five-year strategy

In 2022, SMEC launched a five-year strategy which will guide the next phase of our growth. Our strategy is aligned with the Surbana Jurong Group strategy and delivers a clear road map to grow sustainably and achieve our long-term organisational goals.

It was a pleasure to have the opportunity to present SMEC's five-year strategy to colleagues in different parts of the world. The enthusiasm and positive feedback received from our people indicated an overwhelming sense of support for the strategy and a readiness to embark on the action plans.

I feel an incredible sense of purpose when talking with our people about the future. With enhanced focus on key enablers such as client relationship management and employer of choice, SMEC is well positioned to lead our industry into a new era of sustainability and digital transformation.

Redefining our purpose

Leveraging over 70 years of history, our people are driving world-class technical excellence in Renewables, Water, Transport and Urban Communities. It is a privilege to work with our leadership team to forge a more connected community, both within SMEC and across our house of brands.

Our purpose sits at the heart of our culture and values, transcending multiple sectors and geographic markets. We strive to create a flexible, diverse, and inclusive environment that enables our people to reach their fullest potential. Every day we make a difference to people's lives; creating and connecting communities for present and future generations to thrive.

Looking ahead

As economies navigate supply chain issues, inflation, and rising interest rates, SMEC is well prepared for the challenges that lie ahead. Despite some signs of softening markets, SMEC is buoyed by a strong pipeline of work and diversification of revenue across the government and private sector. As markets recalibrate post pandemic, SMEC will need to rely on astute management and operational flexibility to achieve anticipated growth.

The ability to form partnerships continues to be an important necessity in project delivery. It is testament to our reputation that SMEC has established a trusted network of partners, with whom we are collaborating to deliver some of the most ambitious mega engineering projects.

In 2023 we will continue to strengthen our global design capability in our core markets and increase the level of collaboration across various regions, in the pursuit and delivery of megaprojects. Greater emphasis will also be placed on proactively identifying people who are keen to work on these megaprojects.

As illustrated by the projects featured in our annual review 2022, SMEC continues to expand our credentials in digital design and sustainability. Guided by the United Nations Sustainable Development Goals we are embracing digitalisation to drive positive sustainable change across our portfolio. SMEC has applied smart technology to enhance the sustainable management of transport infrastructure as well as optimise water supply and renewable energy resources.

I extend my thanks to every one of our people for their ongoing resilience to challenges we face today and making these achievements possible. I hope you enjoy reading.

Hari Poologasundram,
CEO, SMEC and SJ International



Our purpose and values

“Creating and connecting communities for present and future generations to thrive.”

Our values

Our values define our culture and underpin everything we do.

Integrity

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

Partnership

We build trusted and enduring relationships with clients, colleagues, and partners to achieve shared success.

People

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

Professionalism

We act in the best interest of our clients and the communities in which we work, delivering innovative solutions to the highest of standards.



About us

SMEC is committed to having a meaningful impact on our people, the environment, and the clients and communities we serve.

As a member of the Surbana Jurong Group, SMEC is part of a family of specialists committed to the creation of thriving sustainable cities and communities. We align specialist expertise to deliver effective, practical, and sustainable outcomes.

Leveraging our 70-year history of delivering nation-building infrastructure, SMEC provides technical expertise and advanced engineering services to resolve complex challenges in some of the most remote corners of the world.

Collaborating with Surbana Jurong member companies enables us to add further value for our clients. Through our network of global specialists collaborating with local partners, we connect clients with the right blend of skills and experience to deliver innovative and sustainable solutions.



An employer of choice

SMEC employs over 5,400 people in over 35 countries, supported by a globally integrated People and Culture team, which diligently supports our key business objective to be an employer of choice.

Being an employer of choice means that we are creating an environment that people want to be in and that people want to thrive in. We give people the opportunity to develop their careers and capabilities, explore new horizons and be creative in our organisation.

SMEC is a global organisation with opportunities for our people to experience working in different countries around the world. This offers the chance to work on new and exciting projects that are unique to that location.

Engagement and development

Our people are at the core of who we are and what we accomplish. At SMCE we have adopted a localised approach to engaging with our people. Regional leaders are consistently and regularly communicating through a structured program that utilises a range of communication methods, information sharing platforms and channels.

We are committed to creating a rewarding, inclusive workplace for our people by encouraging personal and professional development, recognising performance, fostering equal opportunities, and ensuring employee health, safety, and wellbeing.

Diversity

Enabling diversity remains a key focus. All our regional business units have activated women in leadership programs, with the aim of nurturing and increasing female representation across our global leadership team.

In ANZ, SMCE has continued to support the Cultivate program, which provides targeted development opportunities for high-performing female employees. Also, in ANZ, SMCE is an accredited member of the Workplace Gender Equality Agency and continues to support the Consult Australia Champions of Change Coalition.

In South Africa, SMCE is active in a national Supplier Development Programme empowering business owners of African descent to build their operations into sustainable, commercially viable enterprises.

Commitment to client service

As a multidisciplinary consultancy operating in the global build environment, our commitment to client service is paramount to our success. Serving a dynamic and diverse client base, we strive to provide responsive, proactive, and innovative solutions to meet their goals.

We prioritise open communication, collaboration, and transparency throughout the entire project lifecycle to ensure that our clients are informed and involved every step of the way. We also advocate for sustainable outcomes, delivering solutions that benefit our clients, the community and the environment.

Our people are dedicated to understanding their clients' needs and proactively responding to project requirements. We understand the value of local relationships to ensure that we develop optimal outcomes. Our specialist teams are enabled by data and technology, guided by global and local experts with extensive experience.

SMEC's global Client Relationship Management program helps us to better understand how we collaborate with clients, stakeholders, and delivery partners. Our global technical network gives us access to an extensive knowledge pool. Dedicated client managers are coming together to plan and strategise how to support the market sectors in each of their regions, collaborating with technical streams to knit together our service offering.

“When it comes to building client relationships and client service, we want to add value in every interaction. It is great to be able to bring colleagues into a client conversation, with specialised expertise in an area the client is interested in. Two is always better than one and being able to offer expert advice and different perspectives adds genuine value that our clients enjoy.”

Jonathan Powell,
Clients & Strategy Implementation



Industry recognition and awards

We are always honoured to receive industry recognition for our work and are proud to share some of the awards we have earned in 2022. These accolades showcase our technical achievements and exceptional commitment to our clients. The achievements are also a reflection of the hard work and expertise of our talented team.

Afrika Mashariki Transport Awards

Winner, Best Road Transport Infrastructure of the Year

2022 SAICE National Awards

Commendation | Investigative Studies

Indian Achievers' Forum

Woman of Excellence Award

Consult Australia OneConsult Awards for Excellence

Finalist | Client Service Award – Water Service NSW

Consult Australia OneConsult Awards for Excellence

Finalist | Superior Sustainability – Varsity Lakes to Burley Interchange

Consult Australia OneConsult Awards for Excellence

Finalist | Design Innovation – Crows Nest Station

Consult Australia OneConsult Awards for Excellence

Finalist | Champions of Change – Karen Quinlan

Consult Australia OneConsult Awards for Excellence

Finalist | Future Leader – Rob Lee

Consult Australia OneConsult Awards for Excellence

Finalist | Collaboration for Project Excellence - Enhanced Condition Assessment Program

Indian Building Congress

Best Infrastructure Project

Afcons Infrastructure Limited (Afcons)

CII Industrial Innovation Award

World HRD Congress

Global Best Employer Brand

Beaton Client Choice Awards

Winner | Best Built and Natural Environment Consulting Firm (>\$200m Revenue)

Beaton Client Choice Awards

Winner | Best Professional Services Firm (>\$200m Revenue)

Sustainability Consulting Awards 2022

Winner | Creating Resilient & Sustainable Communities Award

The Project Management Institute (PMI) – Ghana

Project Management Consultant of the Year

Association of Land Development Engineers (ALDE)

Winner | Billy Foley Award | Stephen Watters

Great Place to Work® Institute

Great Place to Work Accreditation, SMEC India



Great Place to Work® Institute

Great Place to Work Accreditation, SMEC Bangladesh

Great Place to Work® Institute

First Place | Golden Arrow Civil Consulting Engineers and Structural Consulting Engineers Categories

UDIA Queensland Awards

Finalist | Excellence in the Consultants' Excellence, Northshore Brisbane Project

Planning Institute of Australia (PIA) ACT Awards

Winner | Strategic Planning Project Category | Infrastructure Study for Woden Urban Intensification

Australasian Railway Association (ARA)

Winner | Supplier Excellence Award | Cowra Lines



School Infrastructure Project, Tanzania

SMEC Foundation

Celebrating 21 years of giving back to communities

230+ projects completed **\$1.58** \$AUD million donated **30+** Operated in over 30 countries

Since 2001, the SMEC Foundation has been connecting people and resources around the globe to uplift communities by contributing small-scale grants to assist in carrying out projects in developing countries where SMEC has a presence. Its humble beginnings were originated and led by employees, who worked on large infrastructure projects next to underprivileged communities. They saw a need and had the skills to help connect and uplift these communities.

For over 21 years, the Foundation has continued with its philosophy of 'a little money spent wisely has gone a long way' and we are proud to have raised over \$AUD 1.58 million and completed over 230 projects in over 30 countries around the world.

It is through our genuine relationships within our community and additional financial support from a growing portfolio of philanthropic partners, we have been able to increase our global impact and make a difference where it matters most.

Our aim is to deliver projects in the areas of health, education, environment, emergency relief and community development and in 2022, the Foundation supported eight projects with improvements to school infrastructure,

building new water, sanitation, and hygiene facilities, and providing educational outdoor learning centres. We were also able to provide emergency assistance relief to our SMEC community in times of natural disaster and crisis situations.

By working alongside one another and giving together that the SMEC Foundation, in partnership with our loyal community, can continue to fund these types of projects, as well as support our employees.

We want to thank our charity partners, our alumni partners, and our employees for their ongoing support as we celebrate 21 years of the SMEC Foundation connecting and uplifting communities.

Corporate Social Responsibility

In 2022 SMEC's initiatives provided more opportunities for future generations to thrive

5 Divisional CSR Committees **28** CSR projects and emergency assistance relief efforts **23** partner organisations **36** schools supported

39,400+ students and teachers were given critical infrastructure **22** different types of educational rooms built **16** pieces of equipment donated **370+** trees planted

At SMEC we are committed to making conscious decisions that are beneficial to not just the business itself, but also to the environment, society, and the economy. It is our responsibility to act with integrity and consider our actions on the world around us.

SMEC's Corporate Social Responsibility (CSR) framework aligns us with our overall strategic goals and objectives, and contributes to sustainable development by delivering economic, social, sustainable, and environmental benefits for all our stakeholders. The framework reflects our values and encourages us to conduct our daily work with three focus areas being People, Community, Sustainability, and Environment. By following this framework it has helped us demonstrate responsible practices, ensuring our initiatives are meaningful and have a positive impact in the regions in which we operate.



Lora Miana Water Project, Pakistan



Kingsford Smith Drive, Australia

Our projects

Creating and connecting communities for present and future generations to thrive

SMEC is committed to leaving behind a legacy that enhances the world around us. We do this by enacting our values, celebrating our diversity, and empowering our people. Through our collaborative delivery model, we are advocating for solutions that protect our communities, delivering innovative solutions to the highest of standards.

Operating in over 35 countries, SMEC continues to maintain an expansive global portfolio across Australia and New Zealand, Southeast Asia and the Pacific, South and Central Asia, Africa and the Americas. Our multi-disciplinary capability, combined with our ability to partner with Surbana Jurong and its member companies is enabling us to offer comprehensive solutions for infrastructure megaprojects all over the world.

The following pages highlight some of SMEC's key achievements and milestones across our key sectors such as Renewables, Transport, Urban Communities and Water. We are proud to showcase a mix of international development, government, and privately funded projects knitted together by our global network of engineers, scientists, planners, environmental experts, and advisors.

Renewable energy



Goonumbla Solar Farm, Australia



Karen Atkinson
Chief Operating Officer,
South East Asia

The renewables sector is expected to experience significant growth in the coming years, driven by increasing demand for clean energy and favourable government policies. Declining costs of renewable technologies is making renewable energy more and more viable. Also, the transition to renewables is becoming more pronounced as societies face concerns over climate change and energy security.

We are committed to helping our clients innovate towards a more sustainable world, powered by clean and affordable energy. SMEC has established an extensive renewable energy portfolio spanning solar, wind and hydropower. SMEC and the Surbana Jurong Group have also built sophisticated capability in the design and integration of hydrogen and green ammonia production, storage, and distribution infrastructure.

The renewables sector remains a complex industry to navigate. Working with global experts, we are guiding a transition towards renewable energy production, battery storage, grid integration and distribution to help power our homes, vehicles, and industries.

SMEC is applying our market knowledge to develop customised pathways for clients, considering technological implications, commercial assessments, and local regulatory knowledge. As an active member of the International Hydropower Association, we are committed to responsible energy transition, safeguarding communities through rigorous stakeholder engagement and ecological assessment.

Tehri Pump Storage Project, India

An additional 1,000MW set to be added to India's highest dam

1,000MW

additional power generation

1 million

enough power for 1 million homes

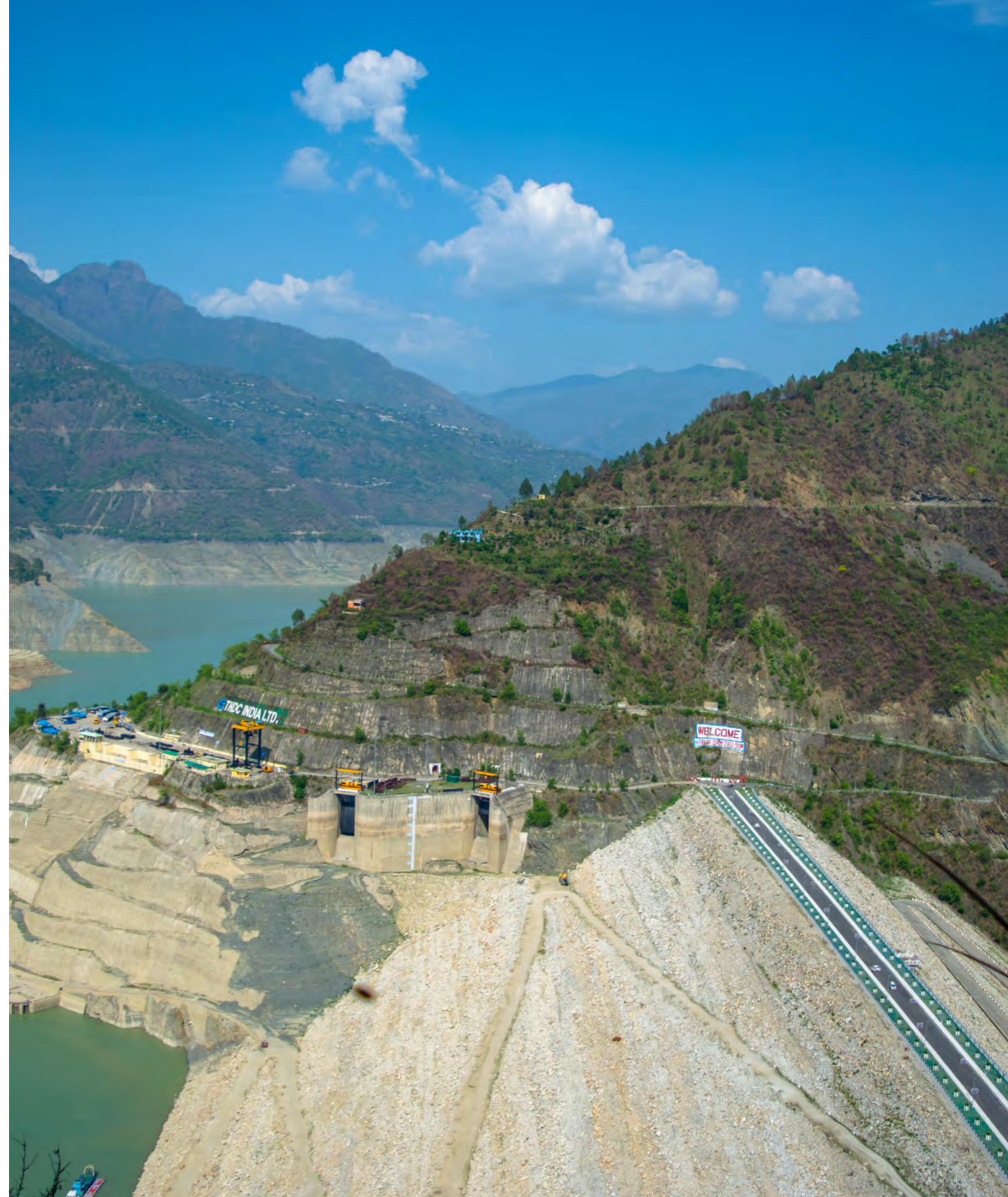
Tehri pumped storage project (PSP), will provide peaking power to the northern grid of India, improving grid stability by balancing the supply and demand of electricity during periods of peak demand.

Tehri PSP is located on the Bhagirathi River, a tributary of the Ganges River, in Uttarakhand, India. It is one of the tallest dams in the world, with a height of 260.5 meters. Tehri PSP will add an additional 1,000 megawatts of power to the facility, bringing the total capacity to 2,400 megawatts.

SMEC has been working on the project since 2013. One of the main challenges for the project was the need to manage the big cavern excavations through unstable geological conditions. This required the use of advanced geotechnical and rock mechanics analysis through sophisticated software, to ensure that the excavations are carried out accurately and safely. Extensive 3-D analysis of the underground caverns has ensured the safety of workers during construction, with rock support and rock bolting modelled in the analysis to replicate ground conditions.

Meticulous attention was also afforded to the construction of the turbine foundations and powerhouse to mitigate seismic activity. The foundations had to be designed to limit the vibration amplitudes of the shaft, the rotor and the bearings as well as having sufficient loading capacity for the turbine, generator and its auxiliary equipment.

During the design, SMEC undertook redesign of two large outlet structures, converting them into four smaller structures to control velocity and provide more equitable distribution of flow. Other major project components designed by SMEC include the underground machine hall, upstream surge shafts, butterfly valve chamber, upper Penstock assembly chamber, downstream surge shafts, a pair of tail race tunnels and outlet structures.



Prieska Power Reserve, South Africa

Ambitious project in the Northern Cape province, committed to making green hydrogen a reality

180_{MW}
anticipated solar generation

138_{MW}
anticipated onshore wind generation

13,700 tons
green hydrogen production per year



Prieska Power Reserve will be a catalytic project that will begin producing green hydrogen and ammonia in 2026 by combining high-yielding renewable solar and wind energy.

Prieska Power Reserve aims to establish a mega-scale renewable energy hub that will generate electrical energy from renewable sources and store energy as chemical energy (green hydrogen and ammonia) on a long-term basis. The first phase of the project involves producing more than 77 000 tons of green ammonia per year, with a green hydrogen content of approximately 13 700 tons per year from 2026 through 180MW of solar (fixed-tilt and single-axis tracking), 138MW of wind and 106MWh of battery storage.

SMEC has been delivering project management services for Prieska Power Reserve (Pty) Ltd since November 2021. In addition to program development, scheduling, risk mitigation and scope development, the SMEC team has overseen cost, quality and communication management; procurement and project controls.

In 2022, Prieska Power Reserve successfully obtained environmental approvals for the chemical plant area and Townlands solar and onboarded two new technical partners. The team also concluded a number of technical studies and completed construction of the wind mast. The project incorporates three 60MW solar sites and 21 wind turbines with a production capacity of 6.6MW each.

Prieska Power Reserve (Pty) Ltd is a collaboration between founders Mahlako a Phala, the Industrial Development Corporation (IDC) and Central Energy Corporation (CENEC). In 2022, in recognition of its national significance, Prieska Power Reserve was classified by the South African government as a national strategic infrastructure project.

Borumba Dam Pumped Hydro Project, Australia

Delivering one of Queensland's largest pumped hydro projects

2_{GW}
energy storage

24 hours
energy storage capacity

The Borumba Pumped Hydro Energy Scheme is an integrated energy and water security brownfield development, encompassing the existing Borumba Dam as a lower reservoir.

Located near Imbil, southwest of the Gympie Region, Borumba Dam has been identified by Queensland Hydro as one of the best potential sites for long duration pumped hydro due to its proximity to a high-voltage electricity transmission network, existing dam infrastructure and location within the Southern Queensland Renewable Energy Zone.

Once delivered, the Borumba Pumped Hydro will support Australia's target to achieve net zero emissions by 2050, through powering Queenslanders with 2GW of energy storage and 24 hours of energy storage capacity.

SMEC is engaged by Queensland Hydro as project advisor, managing and supporting the delivery of front-end engineering design and detailed analysis for the proposed Borumba Pumped Hydro Energy Scheme. The engagement brings SMEC's experience working across industry leading pumped hydroelectric projects in Australia and globally to successfully support Queensland's transition to a renewable energy system that will power communities long into the future.

with engineering, environmental, geological, hydrological and commercial studies being completed to assess the feasibility of the scheme. In addition, SMEC is preparing the crucial front-end engineering design and detailed analysis of the environmental impacts, social impacts and mitigation as Owner's Engineer to support further state and federal government investment.

"We are proud to work collaboratively alongside Queensland Hydro on the Borumba Pumped Hydro Energy Scheme. SMEC brings a team of specialists with experience in delivering large-scale pumped hydroelectric projects to support further government investment in a project that will transform Queensland's renewable energy network, create long-lasting employment opportunities and power communities with access to clean and secure energy," stated Anna West, SMEC ANZ Technical Principal – Water Infrastructure.

Funded in partnership with the Queensland Government, the Borumba Pumped Hydro Project will empower our communities and power our regions long into the future.

Following SMEC's delivery of the concept study in 2021, the Detailed Analytical Report is currently underway



Sunkoshi Marin Diversion Multipurpose Project, Nepal

Tunnel Boring Machine (TBM) launched to initiate Sunkoshi River diversion

30_{MW}
of anticipated energy to be generated

122,000_{ha}
irrigated land

13.1_{km}
of headrace tunnel to be constructed

The project aims to harness the power of the Sunkoshi River, which is one of the largest rivers in Nepal.

The Sunkoshi Marin Diversion Multipurpose Project is a proposed hydroelectric power project in Nepal. The project aims to harness the power of the Sunkoshi River, one of the largest rivers in Nepal, to generate electricity and provide irrigation for agriculture in the region.

SMEC's team in Nepal was honoured to be appointed by the Government of Nepal, Department of Water Resources and Irrigation to deliver Contract Management and related consultancy works. SMEC is leading a joint venture with EMAY, Jade Consult and CMS Nepal.

A 13 kilometre headrace tunnel will divert water from the Sunkoshi to the Marin River and used to irrigate approximately 122,000 hectares of farmland. This will help to boost agricultural productivity and support rural development in the region.

In addition to the headrace tunnel, the project involves the construction of a diversion dam, an intake structure, a powerhouse, and transmission lines. The headrace tunnel will link to a new powerhouse initially capable of generating 30MW with capacity to grow.



Baime Hydropower Facility, Papua New Guinea

Improving livelihoods for local communities with renewable, reliable power

500,000
households powered

11.6_{MW}
total installed capacity

5_{km}
distance between upper and lower reservoirs

Currently less than 15% of the population in Papua New Guinea (PNG) has access to electricity, with a heavy reliance on diesel generated power. The Baime Hydropower facility will increase power supply and reliability in the Morobe, Madang and Highlands provinces of PNG. Connecting into the Ramu Network, the project will improve livelihoods for local communities whilst contributing to job creation, infrastructure development and economic growth.



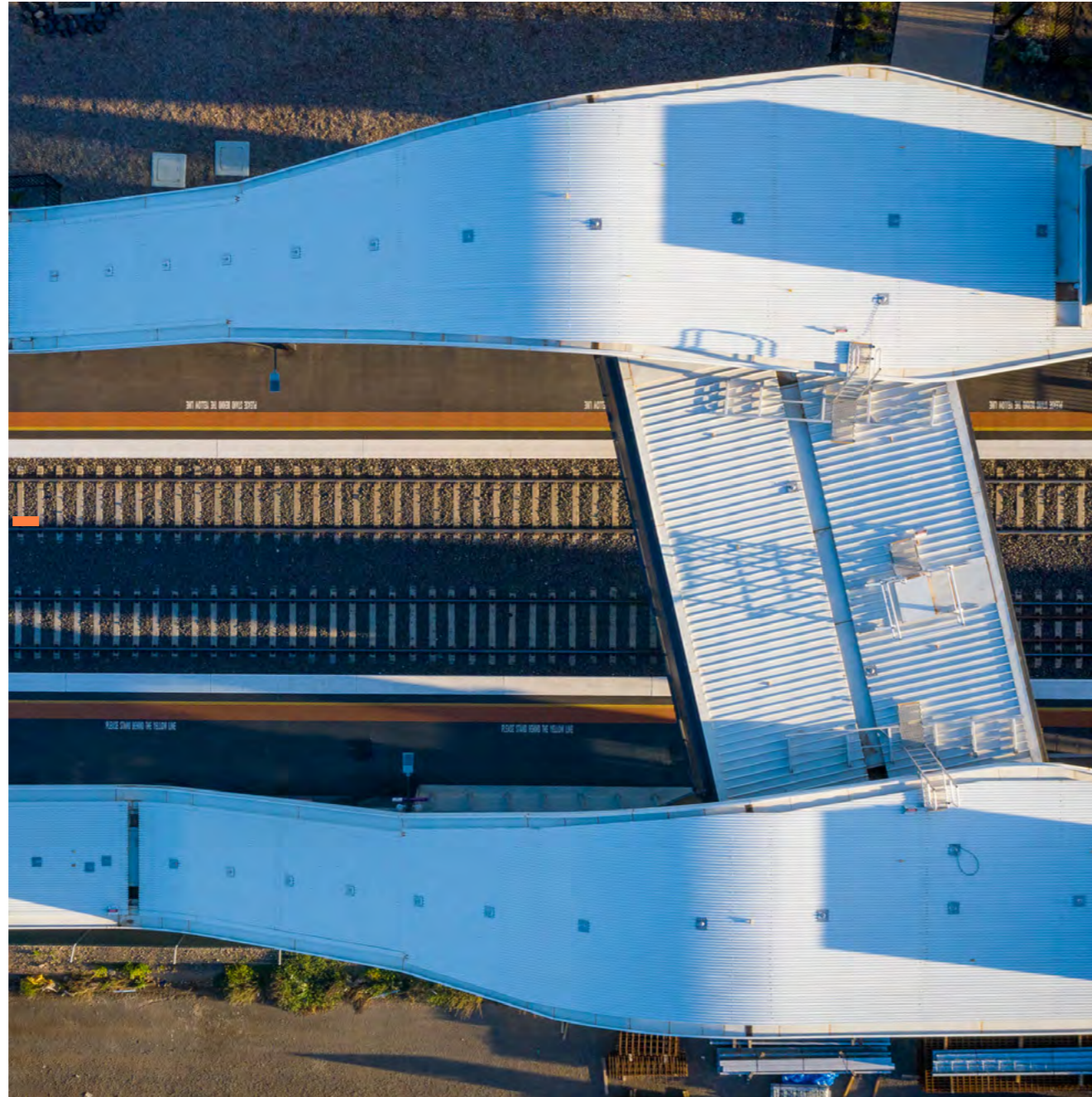
The PNG Government aims to connect at least 70% of the population to electricity by 2030. As part of PNG Power Limited's Fifteen Year Power Development Plan (2016- 2031), the Baime Hydropower facility is also significant from an environmental viewpoint as it replaces diesel-generated power.

SMEC has been continually engaged on the project since 2014, initially appointed to lead pre-feasibility studies and concept design. Since then, SMEC has delivered detailed feasibility studies, the environmental and social impact assessment, detailed design, tendering and contractor selection.

During construction, SMEC was appointed by the project financing agency, the Bank of South Pacific (BSP) as the Independent Technical Expert (ITE). The ITE services included periodic site visits, review of design changes during construction, construction quality review, health and safety reviews, and regular reporting to the lender BSP.

The facility comprises a concrete weir connected to a 33m high surge tank by five kilometre long low-pressure headrace GRP pipeline. From the surge tank a three kilometre long steel penstock connects with the surface power station. The power station houses two Pelton turbines with 5.8MW installed capacity each.

Transport Rail



Ballarat Line Upgrade, Australia



Anthony Dunn
Chief Technical Principal - Rail, Australia

Across our rail portfolio, SMEC is applying technically advanced planning and engineering across the full breadth of the project lifecycle. Alongside infrastructure design and supported by other market sectors, we work with clients and authorities to optimise public transport initiatives. SMEC offers engineering and advisory services to the transportation supply chain by connecting communities and industry locally and internationally through various transportation modes.

One trend in the rail sector is the focus on technology and innovation. Transport nodes are becoming increasingly integrated as land, sea and air collaborate to offer a seamless travel experience. In understanding the bigger picture, SMEC is developing solutions to increase service capacity, guard safety, and enhance customer experience and streamline operations with a sustainable vision to ensure that the end of service requirements are also integrated into the planning and delivery solutions.

The Sydney-Metro, Stations, Systems, Trains, Operations and Maintenance (SSTOM) package will help deliver one of the most advanced metros in the world. SMEC is proud to have the opportunity to impact the industry and contribute to a transformational urban project. Collaborating with other companies of the Subana Jurong Group, including Robert Bird Group, enables growth internationally but also brings innovation, technology and systems learnings from overseas.

In emerging markets, rapid urbanisation is driving demand for public transportation systems. In ASEAN and South Asia, initiatives to reduce carbon emissions and congestion are leading to increased investment in rail infrastructure. And in South Africa, SMEC recently contributed to a much-anticipated National Rail Policy White Paper. The policy introduces ambitious structural reforms to transform rail to underpin South African land transportation by 2050. SMEC is leading a technical coordination across our international offices to develop learnings and implement consistency and improvement across all our offering to our clients.

Padma Multipurpose Bridge, Bangladesh

Turning a dream into reality – Padma Bridge is an icon of resilience and the future of Bangladesh

10,000 tons
bridge bearing capacity

5 hours
reduced journey times

128m
depth of piles into the water

The Padma Multi-Purpose Bridge connects the south-west of Bangladesh, to northern and eastern regions, reducing the distance to the capital Dhaka by up to 150 kilometres. The new bridge enables travel times to be reduced by up to five hours.

SMEC and sister company ACE Consultants partnered with Korea Expressway Corporation as the Construction Supervision Consultant (CSC) for the Padma Multipurpose Bridge project. Appointed in 2014 SMEC-ACE played a key role in the Design and Construction Supervision work.

The bridge is approximately 6.15km long and 21.1m wide, connected with 13.6km of approach roads. The bridge consists of two decks with a four-lane highway on the top and a single-track dual gauge rail line below. Bridge amenities include toll plazas, service areas and offices. Ancillary services are also included to transfer gas, power, and telecommunications across the Padma River.

The main bridge is a two-level steel truss superstructure acting compositely with a reinforced concrete deck slab. The double deck composite steel truss structure uses 41 piers with the main spans up to 150m long. The world's

largest floating crane was brought in to carry the gigantic spans, each weighing 3,140 tons.

SMEC's services included bridge design verification, foundation works, river training, geotechnical engineering, quality control, environment, social, materials, hydrology, bathymetry, electrical engineering, dredging design, project management, surveying, and contract administration.

The Padma River has the second largest water volume in the world. This posed a huge obstacle to Bangladesh's economic development and connectivity of Dhaka to regional communities south of the capital. The new bridge brings multiple impacts, increasing transport efficiency whilst augmenting economic development in rural areas, and enriching social development by connecting planned growth centres.



Sydney Metro West, Western Tunnelling Package, Australia

Innovative design delivering world-class metro services to Western Sydney

24km
metro line between Paramatta and Sydney CBD

9km
of twin metro railway tunnels

The Sydney Metro West is a 24km metro line between Paramatta and the Sydney CBD, doubling rail capacity and improving connectivity for commuters. The Western Tunnelling Package (WTP), will help deliver the key metro infrastructure necessary to support the future growth and economic development of Greater Sydney and contribute to the sustainable transport network, which provides mobility as a service for all.

The project encompasses nine kilometres of metro rail tunnels running between Sydney Olympic Park and Westmead, including two spur tunnels from the main running tunnels.

As part of the design and construct contract, SMEC commenced the detailed design portion of the package in early 2022. SMEC and joint venture (JV) partner GHD have provided the client, Gamuda Australia and Laing O'Rourke Consortium (GLC), with substantial value through numerous design innovations.

Improving community outcomes

A tunnelling system built underground, the WTP provides an overall benefit to the Parramatta City area, constructed with minimal impact to local communities and surface infrastructure. This streamlined metro network is supported by the Clyde Stabling and Maintenance Facility (SMF), which will serve as a base for Sydney Metro West to control the state-of-the-art driverless system. To create better connectivity, the team diverted an existing road alignment (via an overpass bridge) over the

railway line entering the Clyde SMF area, minimising any traffic disruptions.

Alternative Tunnelling Alignment

The spur tunnel construction was positioned under an existing 100-hundred-year-old sewer main at Clyde. By tunnelling underneath the pipeline, the Clyde Dive Structure will save approximately six months of construction time, as this solution does not require the current sewer system to be diverted to a new location.

Rigorous 3D structural analysis was completed to model the alignment of the existing sewer main and the spur tunnel. This technique identified the exact zone where the two components are likely to interact with each other. Following strict authority design guidelines, the design team has demonstrated that the spur tunnel can be constructed while ensuring impacts to the existing sewer will be kept within acceptable design limits.

Construction is expected to be completed in 2025.



Sydney Metro – Western Sydney Airport – SSTOM, Australia

Preliminary stage begins on SMEC's largest rail package

23km
metro rail line

12
driverless trains

14,000+
construction jobs

In late 2022 Parklife Metro, comprising Plenary, Webuild, RATP Development and Siemens were awarded the contract for the Sydney Metro - Western Sydney Airport – Stations, Systems, Trains, Operations and Maintenance (SSTOM) package.

The SSTOM contract has the largest scope of any Sydney Metro contract awarded to date and is the largest public-private partnership awarded in New South Wales.

As part of the Design and Construct contract for the project, a SMEC ARUP Design Joint Venture was selected to deliver the design.

The SSTOM works will complete the Sydney Metro – Western Sydney Airport project.

The project will enhance connectivity to the Western Parkland City, with a new 23km metro rail line running from St Marys to the new airport and the Western Sydney Aerotropolis. Parklife Metro will deliver 12 new driverless trains, six new stations, tracks and signalling, and will manage the operation and maintenance of all mechanical and electrical systems for 15 years.

The appointment of SMEC comes after previous successes with Sydney Metro on Metro Northwest Operations, Trains & Systems (OTS), Metro Northwest Surface Works Viaducts & Civils (SVC) and Crows Nest Station.

SMEC's scope will comprise of end-to-end project delivery including project design and management, digital engineering and complex structural building design. Construction commences in 2023 and is expected to continue for three years.

"We're incredibly proud to be undertaking another section of the iconic Sydney Metro project, helping prepare Sydney's transport network for the future by developing stations which become hubs of our community precincts," said Trevor Sullivan, Director of Infrastructure at SMEC.

New stations at St Marys, Orchard Hills, Luddenham, Airport Business Park, Airport Terminal and Western Sydney Aerotropolis will incorporate signalling and train control, overhead conductor wiring, tunnel drainage, ventilation and various other line-wide and tunnel systems, that will support a fast safe and reliable metro for industry and community stakeholders.

The project from the Australian and NSW governments is expected to create more than 14,000 construction jobs, including apprenticeships.

Cowra Lines Upgrade Concept Design, Australia

Our freight future: Investigating one of Australia's first cross-country rail lines

135
year-old rail line

179km
railway line

New South Wales first cross-country line 'Blayney to Murrumburrah Railway' was built in three sections, opening on 13 February 1888 the line was progressively suspended from operations from 2007 to 2009.

SMEC were engaged by Transport for NSW via John Holland Rail in 2021 to undertake condition assessments and a construction cost estimate of the 135-year-old line and from these findings develop a concept design of track, civil, structural and signalling disciplines to support reinstating operations on the Blayney to Demondrille section, collectively referred to as the Cowra Lines.

Given Cowra Lines has been out of operation for an extended duration, there was limited information available to assist in informing the concept design development. SMEC thereby needed to develop a system to obtain a completely new data set to support the reopening of this vital infrastructure.

SMEC established an all-inclusive data collection initiative that presents comprehensive information for current and future stages of the design including UAV aerial imagery, fixed wing flight Lidar survey and a bespoke in-house Asset Data Collection System.

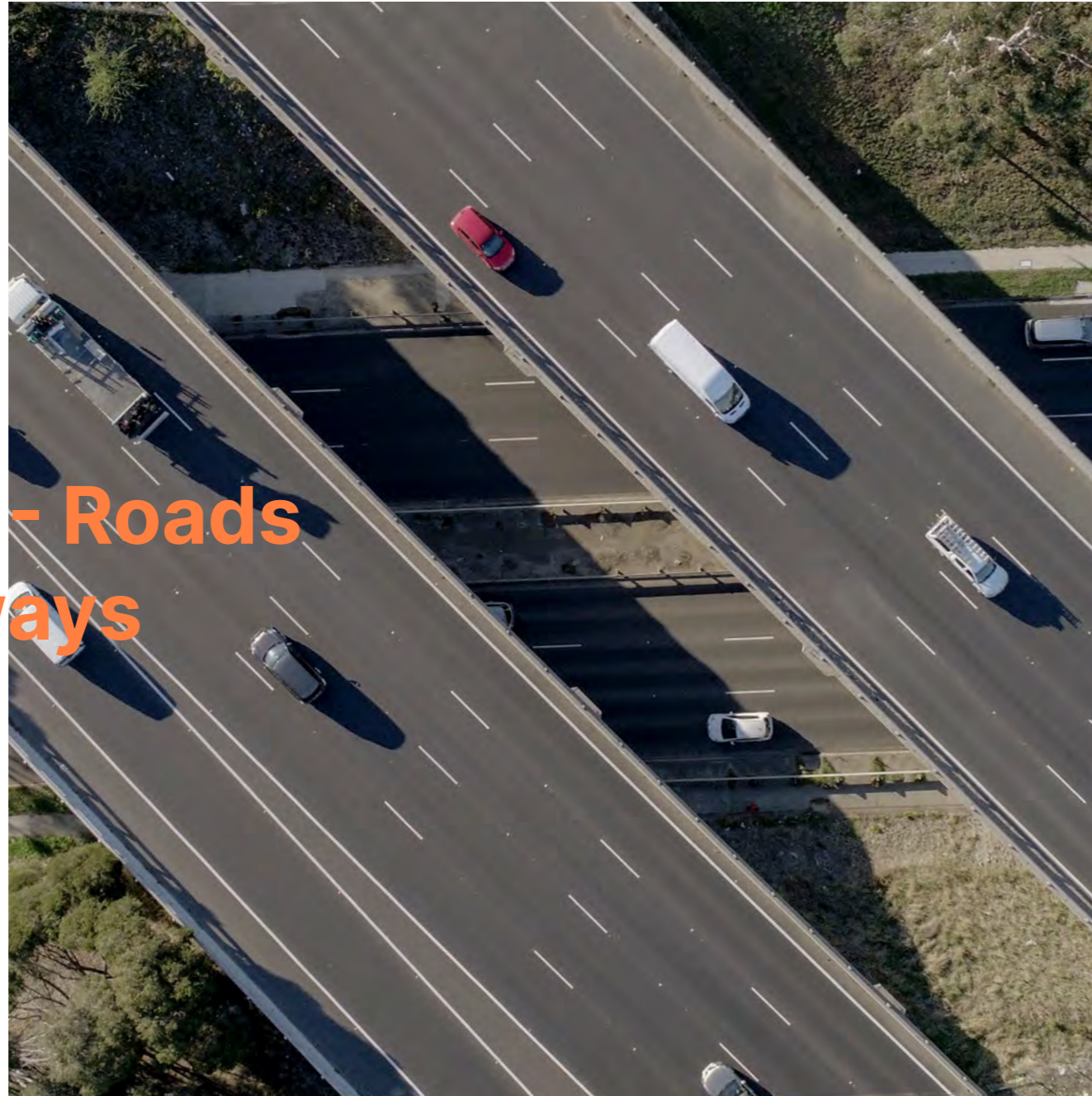
SMEC's innovative approach to Cowra Lines sets a new standard in data capture and engineering concept design for Australian projects. One of the unique challenges for infrastructure projects in Australia is our vast and variable landscape. The survey capture program that SMEC implemented uses modern technology in its best form to efficiently, safely and cost effectively provide a solution that delivers an exceptional outcome, improving the experience for clients and partners.

The data collected and the concept design delivered will be crucial in informing discussions on the feasibility of reopening the Cowra Lines.

SMEC ANZ Project Manager Ben Morris stated "We are proud of the innovative data collection and image capturing solutions we implemented that provided significant benefits across the programming, economic, environmental, safety and security aspects of the project, but also for the stakeholders involved and the future of the rail line and the communities it serves."



Transport - Roads and highways



Monash Freeway, Australia



Jaco Engelbrecht
General Manager Transport -
Roads and Highways, South Africa

Over the years, the world of highway design has evolved dramatically and our global portfolio continues to reflect world class outcomes in sustainability, urban design, traffic management and futureproofing of road infrastructure megaprojects. We draw on our extensive expertise in bridge structures, road alignment and pavement design, tunnelling and geotechnical engineering to provide advanced design and advisory solutions to complex challenges.

Our drawing boards currently include some of the largest roads and highways projects in Australia and New Zealand, ASEAN and Africa. Each of the projects featured in our annual review bring world class solutions to the fore. With a total cost of around AUD 16.5 billion, the North East Link is one of the largest infrastructure projects in Australia's history.

The adoption of smart transportation technologies is driving demand for engineers with expertise in areas such as intelligent transportation systems, connected and autonomous vehicles, and data analytics. There is also a focus on sustainability, with road engineers designing and constructing roads that are eco-friendly, durable, and able to withstand extreme weather events.

North East Link, Australia

Changing the way people move, delivering Australia's largest road project

15,000

trucks removed from local roads every day

6km

three-lane twin tunnels

SMEC is delivering the detailed design for the delivery phase of Australia's largest road project, North East Link, led by Spark Consortium. In 2022 SMEC and Spark Consortium achieved an important milestone, issuing the first 'Issued For Construction' Package within nine months of commencing the project.

The new North East Link freeway will connect an upgraded Eastern Freeway to the M80 Ring Road in Melbourne's north-east, significantly reducing travel times, increasing freight reliability, and removing over 15,000 trucks from local roads every day.

SMEC, together with their tender design joint venture partners Mott Macdonald, delivered the winning design for the Spark Consortium during the pandemic. The innovative design has now been unveiled by the Victorian Government and includes a longer tunnel to Watsonia, a new tree-lined boulevard for Greensborough Road and new, revived, and reconnected parklands which covers more area than 50 Melbourne Cricket Grounds.

SMEC CEO Australia and New Zealand, James Phillis commented, "The North East Link project will change the face of Melbourne and have a huge impact on the future growth of the city. Our team of highly skilled, global specialists are excited to be a part of the

positive impacts that this project will create."

The project includes Victoria's longest road tunnels, three-lane twin tunnels which run for six kilometres under Melbourne. North East Link is a once-in-a-generation project which will facilitate better connections for businesses, increase efficiencies for freight transport and make neighbourhoods in the north-eastern suburbs of Melbourne safer and more enjoyable places to live. The new tunnels will help protect homes and sensitive environmental areas including the Yarra River, Banyule Flats and Warringal Parklands.

The Spark consortium comprises WeBuild, GS Engineering and Construction, CPB Contractors, China Construction Oceania, Ventia, Capella Capital, John Laing Investments, DIF and Pacific Partnerships.



Zanzibar Urban Roads, Tanzania

SMEC designs Zanzibar's first double carriage flyovers

100km

of roads being upgraded

150

roads designed as part of the scope

2

grade-separated interchanges

This Zanzibar Development Vision 2050 (ZDV50) is a long-term national development plan formulated to guide Zanzibar's overall development agenda through to 2050.

As part of this plan, the Ministry of Infrastructure, Communication and Transport of Zanzibar has planned vital architectural and landscaping improvements, including design and construction of the first double carriage flyovers on the island. This project has great potential to contribute towards fast-expanding business and tourism activities in Zanzibar City.

SMEC is collaborating with the Contractor, China Civil Engineering Construction Corporation (CCECC), to undertake the design and build of over 100 km of priority roads in Zanzibar's main urban centre, known as the Rehabilitation and Improvement of Urban Roads Project.

CCECC developed the concept designs and has appointed SMEC as their design engineer.

The Rehabilitation and Improvement of Urban Roads project adds to the extensive road portfolio that SMEC has developed in Tanzania over the last two decades and affirms our credentials as a reliable development partner for our clients in the region. The new roads networks will have rainwater tunnels, street lights, and inclusive paths to accommodate pedestrians, bicycles, and people with disabilities. The project is expected to be completed by 2025.



Nairobi Expressway, Kenya

Construction monitoring and quality control on a major fast-track expressway

27.1km

class A dual-carriageway

600 million

estimated USD\$ construction cost

20,000 jobs

created during construction

The six-lane elevated highway runs from the Jomo Kenyatta International Airport (JKIA) to the Westlands area of Nairobi. Journey times have been reduced from two hours to twenty minutes.

Spanning 27.1 km the class A dual-carriageway was developed under a Design-Build-Finance-Operate-Transfer (DBFOT) PPP Model. The Nairobi Expressway is a strategic priority project by the Government of Kenya, and is the first PPP-DBFOT Concession in Kenya.

SMEC was appointed as the Contractors Engineer to manage and supervise construction of one of the largest highway projects in East Africa, within record time. Spanning a highly complex urban environment with heavy vehicular and pedestrian traffic the project demanded diligent planning with regards to traffic management and safety.

The project consists of a total of 11 interchanges, five mainline bridges and 20 ramp bridges. The primary mainline bridge has a length of 8.6 km, with Precast box girders and composite beams. The project also includes five pedestrian overpasses, five box culverts, 95 pipe culverts, mainline toll stations, one management centre and one maintenance base.

SMEC mobilised a multi-disciplined team of experts, familiar with local and regional standards, and with the requisite knowledge and capacity to manage quality on the project. This project was successfully completed within 18 months, six months ahead of schedule, with a limited number of instances of major quality and safety issues.

Marine Drive Expressway, Bangladesh

Connecting Bangladesh's economic corridors

190_{km}
of new coastal highway

45%
anticipated reduction in travel time from Cox's Bazar to Chattogram

10
interchanges

Spanning 190 kilometres, Marine Drive Expressway will integrate new development corridors and connect some areas of the country to the road network for the first time.

The project corridor spans several major development projects and will interface with Bangladesh's largest economic zone, a deep seaport, and military facilities. Agreement of the corridor's alignment required a high level of coordination and engagement with a complex web of stakeholders. Topographic and geotechnical conditions were particularly challenging because vast sections of the road will pass through tidal planes and wetlands, frequently subjected to cyclones and heavy rain.

SMEC initiated a drone based photogrammetric survey to scan remote sections of the alignment safely and efficiently. This provided the team with detailed topographical data that could be used to build a digital alignment model. SMEC used the drone survey data to implement an intricate Geographic Information System (GIS) using ArcGIS. The GIS map stitched together drone and satellite images to plot and visualise all social and environmental impact areas, as well as overlaying all interface projects.

This proved to be a highly useful tool for stakeholder engagement and project management because it provided a clear understanding of the interface and integration requirements. To test traffic flow, SMEC has developed a simulated traffic model.

The expressway's preliminary design features two dedicated freight traffic lanes; four fast lanes; ten interchanges, five rest areas with integrated landscape design and numerous drainage structures. It also features six major and 21 minor bridges, culverts, coastal protection, and other hydraulic fixtures. 'Paving the way for the future of Bangladesh' the project team has proposed a modern design that matches international standards and global best practice.



Wingfield Project, South Africa

Connecting national economies and unlocking the regional potential of Cape Town

6,350_m
of bridge structures designed

4,000_{ha}
stormwater management improvements

8_{km}
allowing for dedicated BRT lanes and associated stations

47_{km}
new and upgraded freeway

165_{km}
high voltage overhead lines relocated underground

20_{km}
Non-motorised transport lanes

The Wingfield Interchange is a key strategic freeway junction, with major infrastructure upgrades set to significantly improve traffic flow along the notoriously congested road network of Cape Town. The project will be a catalyst for job creation, skills improvement and economic growth.

Wingfield Interchange is located at the junction of two major national routes, the N1 (Trunk Road 9), running from Cape Town, through Johannesburg to the national border with Zimbabwe, and the N7 (Trunk Road 11), running between Cape Town and the national border with Namibia.

existing traffic was diverted over the N7 freeway onto the newly constructed westbound carriageway bridge. The old single carriageway bridge over the N7 freeway was demolished over a single weekend night with minimal impact to traffic.

In 2022, the project reached an advanced stage of implementation readiness, initiating the first in a series of staged transport infrastructure project packages that will be phased out over an envisaged 10-year period. SMEC has worked on the project since 2014, undertaking extensive pre-feasibility and planning stages. Meticulous staging will enable the critical road network to remain open throughout construction and flow seamlessly into interfacing interchanges as they are constructed.

The demolished bridge makes way for the construction of a new eastbound carriageway bridge which is set to be completed in February 2024. The Sable Road Interchange and the relocation of major electrical overhead lines to underground cables is the next project package to be rolled out, with the start of construction expected in 2024. The overall Concept and Viability Report for the larger package is well advanced, with submission expected early 2024. Thereon, the design development stages for the balance of the project packages will be progressed in accordance with the strategic implementation plan developed by SMEC.

The first implementation package, Refinery Interchange Upgrade, recently reached an important milestone where



Urban communities



Harpley Estate, Australia



Kate Drews
Director - Urban & Energy,
Australia and New Zealand

Our built environments are dynamic places embodied by continuous evolution and change. By 2050, around 2.5 billion more people will be living in cities, with governments and developers facing pressing challenges to keep pace with the demand on critical infrastructure services.

The focus of urban development has shifted towards sustainability and resilience, with a greater emphasis on reducing greenhouse gas emissions, improving energy efficiency, and integrating green infrastructure. The COVID-19 pandemic has also had a significant impact on the industry, with changes in consumer behavior and the need for more flexible and adaptable public spaces.

SMEC's Urban Communities team takes an evidence based approach to planning, urban design, landscape architecture, engineering, survey and advisory to maximise value. We are passionate about helping our clients to manage risk and optimise the value of their assets, and to help them execute on their strategy.

Whether it be a mixed-use development, residential, industrial, or business park, we are ready to assist with visioning and strategy, considering market trends and commercial viability. Beyond the concept phase, SMEC can deploy a range of technical specialists to support detailed design, development management, construction supervision and asset management.

We are passionate about design and its relationship to the natural and built environment. Clients may come to us with an empty piece of land, or sometimes we will have clients with a completed master plan, but they need advice on how to execute it - how to translate the strategy into something that is buildable, profitable, and sustainable.

Boystown Housing Development, Cape Town, South Africa

Vital housing project delivers new homes for families from informal settlements

1,392 residential plots **14km** of roads **15km** of water lines

Spanning 26 hectares, the Boystown housing development in South Africa's Western Cape, provides families formerly housed in informal settlements with safe, affordable housing in a community setting.



The project team at SMEC worked with delivery partner Martin & East to form the turnkey operation, Vula Joint Venture (JV), to successfully deliver this important community development. SMEC's scope included all site infrastructure and the development of turnkey housing components to successfully deliver a high-performance, low-cost solution.

SMEC was appointed in 2010 and was responsible for the design of all civil, structural, some electrical, and geotechnical services, as well as construction monitoring. Construction was phased across three stages, with the handover of the final stage completed in September 2022.

The completion of Boystown provides a benchmark for quality, low-cost housing solutions in South Africa. SMEC is proud to contribute to vital social inclusion for residents, with new roads and services providing critical infrastructure for the local community.

Minister Tertuis Simmers, Western Cape Provincial Minister of Infrastructure said, "This handover marks the end of what has been a challenging yet fulfilling journey as we have successfully assisted qualifying beneficiaries. I would like to extend my gratitude to all stakeholders, particularly the contractors and communities for ensuring that the handovers could occur".

Al Noor Orchard, West Marina masterplan, Pakistan

A unique garden city concept knitted by sustainability and community living

485ha land parcel for detailed layout plan **31 organisations** of linear parks connecting Gardens from precinct to district level **3.6km** of bicycle tracks

West Marina is modern, master planned community with social, economic, and ecological sustainability at its core.

Al Noor Orchard West Marina is a Land Development Authority approved residential Block of Al Noor Orchard Lahore. It is developed by Al-Jalil Developers and located off the main Jaranwala Road approximately 15 kilometres west of Lahore. The West Marina is a new extension of the Al Noor Orchard Housing Society. The housing society provides a range of facilities and services, such as security, electricity, water supply, sewerage, and waste management systems.

As part of the master planning of the project SMEC supported Surbana Jurong with road connectivity, infrastructure planning and water management. Water amenity is embedded into the identity of the site. Provision of quality well connected green areas will enhance the overall environment. On site water and flood management is intertwined with the open space strategy to treat water and maximise opportunities for rainwater harvesting.

The project includes a drainage system that uses gravity to move water away from the buildings and roads. This is important to prevent flooding during heavy rain or



other weather events. Landscaped water terraces will be constructed with raised embankments to help manage the threat of flooding from the nearby canal.

The master plan of West Marina is a one of a kind in Pakistan in terms of providing affordable housing in an iconic business gateway. Introducing modern urban planning concepts, SMEC and Surbana Jurong have created a framework for a distinct and vibrant community, unique to Lahore.



Greater Springfield IDEA City Market Validation Study, Australia

An entrepreneurial hub for innovation, design, and the arts

800 executives
contacted from 400 organisations

31 organisations
invited to participate in further research
(23 companies and 8 government entities)

4 lighthouse concepts
developed with leading industry players

Greater Springfield is one of Australia's largest master planned cities, already home to over 52,000 which is set to grow to approximately 100,000 by the end of the decade.

SMEC worked with Springfield City Group (SCG) to develop a clear and concise roadmap, with viable strategies for the future development of IDEA City, a core segment of the Knowledge Precinct. The Greater Springfield Knowledge Precinct is a key component of the city centre and is adjacent to the central commercial hub, known as Parkside. The Knowledge Precinct is 119 hectares in land area and comprises three key areas: Health City, Education City and IDEA City.

Whilst there is development within Health and Education Cities, IDEA City remains a greenfield site of approximately 42 ha. Springfield City Group required assistance with a development strategy to position the site and to attract investors and prospective occupants to the Knowledge Precinct and more specifically IDEA City.

Springfield City Group engaged SMEC to lead the delivery of a two-phased study, namely an industry positioning study and a market validation / delivery strategy study. SMEC was appointed alongside parent company Surbana Jurong who mobilised their CityGlobal and Energy and Industrial teams as subject matter experts.

The project enabled pathways for SCG to continue conversations and build synergies between existing anchor organisations and encourage them to drive "Lighthouse Projects" building on Greater Springfield's identity as a destination for innovation. IDEA City Market Validation study is an example of successful collaboration with colleagues at Surbana Jurong providing upstream value to clients right across the project and asset management life cycle.

Thoothukudi Furniture Park, India

Extensive industry engagement and supply chain analysis lays the foundations for a furniture industry ecosystem

1st
International Furniture Park in India

465^{ha}
land area identified for urban renewal

300,000
projected employment opportunities

The masterplan for Thoothukudi International Furniture Park covers 465 hectares of evidence-based infrastructure planning. This thriving furniture park will be enabled by diligent phasing, interconnected transport infrastructure and development guidelines benchmarked against international best practice.

The Thoothukudi site was identified by the client (State Industries Promotion Corporation of Tamil Nadu Ltd.) due to its proximity to the port and an abundance of land, local labour, and raw materials. The park will incorporate furniture manufacturing, panel board manufacture, sawmill clusters, ancillary services, export infrastructure, skill development institute and residential villages.

Shared utilities and services networks will enable tenants to reap the benefits of an infrastructure ecosystem.

A key attraction of the park will be the availability of communal design and manufacture hubs and state of the art innovation spaces, capable of catalysing industrial transformation in the digital age.

SMEC and Surbana Jurong undertook extensive outreach to initiate discussions with key players in the industry to understand their requirements, processes, and infrastructure dependencies. Pro-active consultation was conducted in tandem with in-depth benchmarking studies. As part of the masterplan process SMEC developed several innovative strategies to embed sustainability into the site infrastructure.

Through in-depth research into the manufacture process, the masterplan optimises the spatial juxtaposition of each industrial function to maximise value across the supply chain (from timber logs to packaging the finished product).





Northshore Brisbane, Australia

Transforming Northshore Brisbane into a vibrant, mixed-use precinct

304_{ha}
precinct

14,167
new residential dwellings



Northshore Brisbane is continuing its transformation from an ageing industrial wharf into a vibrant mixed-use high-density community, characterised by a dynamic and activated streetscape.

SMEC was engaged by Economic Development Queensland (EDQ) in December 2019 to oversee the provision of critical new infrastructure.

From the outset SMEC adopted a precinct-wide approach, that considered all stages of the project, yielding significant benefits for the developer, government, and community. The team planned to pre-emptively mitigate future development issues.

SMEC delivered innovative engineering services for the design of the road and civil infrastructure network including designing a solution to recycle concrete from major Brisbane building sites to be used as the base for road upgrades.

Collaboration between the design team (engineering, traffic, landscape architecture), the client (EDQ), the building contractor and key stakeholders (Brisbane City Council, Energex, and QLD Urban Utilities) was key to the project's success.

The completion of the \$18 million package of new roads, cycle tracks, footpaths and other infrastructure is a crucial step in the transformation of Northshore from a former industrial port into a vibrant mixed-use urban precinct.

Over the next 20 years, the 304-hectare precinct will be home to 14,167 new residential dwellings and play a key role in the Brisbane 2032 Olympic and Paralympic Games as the site for the Brisbane Athletes Village.

Water



Sharad Bhushan
Director – Water & Environment, India

Water is a vital component of sustainable development, forming the foundation of a thriving society and penetrating all aspects of community life. As governments work to address challenges related to aging infrastructure and water scarcity, the demand for water and wastewater treatment services is increasing globally. SMEC offers integrated water and environmental services, with a team of global experts applying their knowledge to some of the world's largest climate resilient & sustainable water & waste water management and irrigation for natural and built assets.

Working across the full spectrum of drinking water supply, wastewater collection, treatment and its redistribution, SMEC is delivering climate resilient sustainable outcomes that balance the competing demands of the community, the environment and economic viability. The company's expertise in water & wastewater infrastructure and its asset management is further strengthened by longstanding relationships with international development agencies, governments, and educational institutions.

Looking ahead there are clear opportunities across the Central Asia & Asia Pacific regions and more generally across the advisory space. Our water advisory services cover business case preparation, source sustainability & climate adaptable/resilient analysis, demand levelling & modelling, techno-commercial detailed design proposals, and statutory approvals.

Our ambitions are built around investment in our people and our capabilities, and our ability to serve key clients with exceptional value propositions in selected markets and geographies. Through collaboration with the Surbana Jurong Group, SMEC aims to provide unique offerings to clients in the water sector.

Watershed Services Improvement Project, Malawi

Restoring livelihoods and landscapes through improved watershed capacity

The Watershed Services Improvement Project in Malawi is a development project that aims to improve the management of watershed services in the country.

The project is funded by the World Bank and the Global Environment Facility and is being implemented by the Government of Malawi through the Ministry of Forestry and Natural Resources. The Ministry of Forestry and Natural Resources has carefully identified 13 potential dam sites which will be the subject of further feasibility studies to be led by SMEC in consultation with government departments, district councils, local communities, and other stakeholders.

SMEC has been appointed to lead feasibility studies and the subsequent design and supervision of the program. The aim is to develop a network of small and medium sized multipurpose dams across the Shire River Basin.

The project is also supporting the development of policies and institutions that promote sustainable watershed management. To achieve this goal SMEC is helping to build the capacity of local communities, government institutions, and civil society organisations to manage natural resources more effectively.

The Watershed Services Improvement Project is expected to have significant positive impacts on the livelihoods of rural communities in Malawi, particularly by improving their access to water for agricultural production and domestic use, and by promoting sustainable land use practices that can help to reduce soil erosion and increase soil fertility.



City of Tshwane Water Saving Measures, South Africa

Pilot water conservation and demand management project saves local municipality USD \$500K per year

814,839_{kl}
water savings per annum

500,000
\$USD saved per annum

Water security is one of the key challenges facing South Africa and the reduction of water losses forms an integral part of ensuring sustainable water supply.

Non-revenue water refers to water losses in the water distribution system prior to it reaching billable consumers. South African municipalities rely on water billing as a source of revenue, but revenue loss is exacerbated by non-revenue water issues such as leaking infrastructure, metering inaccuracies and illegal connections. It was estimated that the City of Tshwane's non-revenue water loss may have been as high as 40%.

SMEC's Management Services team was appointed by the City of Tshwane to pilot water conservation and demand management initiatives in Cullinan, Rayton, Refilwe and surrounding areas in Pretoria. SMEC performed technical audits of existing bulk infrastructure, conducted field investigations, logged water levels, flow and pressure at strategic locations, and oversaw the appointment and supervision of three contractors who implemented the identified initiatives.

One of the key initiatives included the installation of auditable check meters and reservoir level probes, coupled with loggers that facilitate the remote monitoring

of key metrics such as level, flow and consumption – this will enable improved water balance data, detection of reservoir overflows, excessive minimum night flows and leaks; thereby providing the platform for ongoing water conservation and demand management.

Another initiative that yielded promising water savings was the installation of water management devices at piloted schools. Installed water management devices can be programmed in accordance with the user requirements, such as completely cut-off water supply at a predetermined time.

As a result of this intervention, the City of Tshwane has already been able to save the equivalent of 320 Olympic-sized swimming pools per year, which can be translated into annual monetary savings of over USD \$500,000. Further to this, it has been calculated that around 300g of CO² emissions are saved for every 1kl water leakage reduced which equates to a total of 24 tons of CO² emissions saved per annum.

Mount Bold Dam Safety Upgrade, Australia

Delivering resilient and secure water infrastructure for our communities

46 billion litres
total storage capacity

40%
metropolitan Adelaide's water supply

Constructed between 1932 and 1938, South Australia's Mount Bold Dam was designed and built as a water supply dam with the purpose of maximising storage levels. The dam is a critical and cost-effective water supply asset while also providing some flood mitigation benefits to downstream communities through controlled releases of water.

SMEC's Concept Design will bring Mount Bold Dam in line with current Australian guidelines through:

- strengthening the central arch section of the dam wall by buttressing with mass concrete,
- strengthening the existing gravity dam abutment sections with post tensioned anchors through to bedrock,
- investigation the possibility of removing the existing spillway gates and need for manual operation,
- providing a free-flow staged spillway to safely pass the full range of floods, including flood attenuation for frequent floods, and
- incorporating an embankment saddle dam to prevent flow over a low-lying section on the reservoir rim.

community's most important infrastructure assets. A lot has changed since the dam was first constructed in 1938 and upgraded in the 1960s, which means there is a need to reassess and upgrade Mount Bold Dam to meet current ANCOLD guidelines and industry standards."

The upgrade will strengthen the dam to safely pass flood and seismic events, while also providing limited flood protection to the downstream community.

SMEC's dam specialists are helping to upgrade a resilient storage dam for South Australia, delivering a more secure and safe asset for the future.

Currently, SA Water with the support of SMEC is re-evaluating other possible remedial alternatives, resulting from the Concept Design. Detailed Design is planned to commence in 2024/25, with construction starting in 2026 and taking approximately four years to complete.

Francisco Lopez, the SMEC project Design Manager stated, "We are proud to have chosen as the project's concept designer for the upgrade of the dam. This is a crucial role helping to safeguard one of the Adelaide



Chennai Perur 400 MLD Desalination Plant, India

Construction underway on one of the largest desalination plants in the world

400_{MLD}
desalination plant

2 × 200_{MLD}
pump facilities

1,300_{km}
of water distribution network



The 400 million litres per day (MLD) capacity Seawater Reverse Osmosis Desalination Plant at Perur will be the fourth desalination facility in the city, helping to ease the city's water deficit.

Chennai Perur Desalination Plant is being built to secure Chennai's water supply for the next 50 years. The treated water will be distributed across southern residential suburbs and industrial areas with up to two million people benefitting per day. The 400 MLD plant at Perur will significantly improve the water supply situation in Chennai, which has been facing severe water scarcity issues in recent years.

Following a delay in the tender process, the team commenced negotiation with a preferred contractor in

2022 with preliminary works being initiated. The team has commenced dredging work to lay intake and outfall pipelines into the sea.

Seawater will need to be brought into the plant through a 1.8 km HDPE pipe network measuring 2,500 mm in diameter and sunk at a depth of ten metres. Once treated the water will be transmitted through a distribution system measuring approximately 59 km to a new pump house and pump facility at Porur, which will be connected to a further 18 water distribution stations.

Trimmu Barrage Rehabilitation, Pakistan

Rehabilitation of century old infrastructure to benefit 395,000 farming families

7 million cubic feet of concrete installed **14 million** cubic feet of earthworks **2,438 tons** of steel sheet piles **11Kv** high tension line constructed

Trimmu Barrage is a major irrigation structure located on the River Chenab in the Punjab province of Pakistan. The main function of the Trimmu Barrage is to regulate the flow of water and to divert water for irrigation purposes.

In 2015, the Government of Punjab partnered with SMEC and National Engineering Services Pakistan (NESPAK) to supervise the construction of the Trimmu Barrage Improvement Project. The main challenge was to upgrade the century-old barrage to modern standards without destabilizing the existing foundations in a river where the water discharge could vary drastically.

The project required the construction of 13 additional bays without disrupting water flow for irrigation. The scope of services included conducting surveys, reviewing designs, supervising construction, maintaining quality, ensuring compliance, and certifying completed works.

To maintain the river flow without disruption, the existing barrage was rehabilitated in two stages. Hydraulic simulations were conducted to understand the risks of

sediment accumulation, and operators were trained to use SCADA systems to control the gates for managing incoming suspended sediment. The project resulted in the installation of over seven million cubic feet of concrete, with a chiller plant installed to maintain the appropriate working temperature of the cement mix.

The impact of the project is significant, providing reliable irrigation water to one million hectares and directly benefiting 395,000 farming families. As a result, there will be sustainable agricultural production in the command area reducing the risk of floods while protecting an estimated 150,000 people. The successful upgrade of the century-old infrastructure has enabled the government to focus on improving the current infrastructure rather than replacing it entirely, which is crucial for generating higher incomes and attaining Punjab's targeted growth rate.



Climate Adaptive Water Resources Management, Uzbekistan

Improving the resilience of water resources management systems in the Aral Sea Basin

The Climate Adaptive Water Resources Management project is a development initiative that aims to improve the resilience of water resources management systems in the Aral Sea Basin. The Uzbekistan Ministry of Water Resources has appointed SMEC as Project Implementation Consultant for the project.

The Aral Sea Basin covers an area of around 200,000 square kilometres, spanning across Uzbekistan, Kazakhstan, Turkmenistan, and parts of Tajikistan and Kyrgyzstan. The region has faced numerous environmental challenges in recent decades, including water scarcity, land degradation, and desertification, which have had significant negative impacts on local communities and ecosystems.

As Project Implementation Consultant SMEC will work alongside project implementing agencies to develop and align sector policies, institutional capacity building programs and rehabilitation of irrigation systems. This includes improving water governance, strengthening the legal and

regulatory frameworks for water resources management, and promoting the participation of local communities in decision-making processes. SMEC will also develop initiatives to improve on-farm water management practices through the introduction of new technology, and improved water harvesting techniques. The team will also supervise construction elements and rehabilitation works.

With 40% of the Uzbekistan community working in agriculture, improved water resources management is critical for sustained economic growth. This project is expected to be undertaken over a seven-year period and the team is working towards a target completion date in 2028.

Demographics of the Aral Sea Basin, Climate Adaptive Water Resources Management project

9% of Aral Sea Basin water resources found in Uzbekistan

50% of water that can be saved by drip irrigation compared to traditional flood irrigation methods

51% of irrigated land in Uzbekistan currently affected by salinity

Vakhsh River Basin, Irrigation and Drainage Modernization, Tajikistan

Climate and disaster resilient water infrastructure set to reshape lives of rural communities

The Climate and Disaster Resilient Irrigation and Drainage Modernisation in the Vakhsh River Basin project is a development initiative aimed at modernizing irrigation and drainage systems in the Vakhsh River Basin in Tajikistan while also building resilience to climate change and natural disasters.

Key challenges faced by the community include rising water tables and salinity, aging infrastructure which is vulnerable to earthquakes, and inflexible and unreliable irrigation, which locks farmers into rigid (mostly cotton-wheat) cropping with low yields. Farmers and government agencies also lack the capacity to modernise agricultural and irrigation practices. The project vision is framed across three key outputs:

- Modernisation of climate and disaster resilient irrigation and drainage infrastructure
- Strengthening of climate adaptive management and gender-responsive operation of irrigation and drainage systems
- Strengthening of policy for suitable water management

SMEC has been appointed to undertake engineering planning, institutional development, agricultural development, and project management services.

SMEC has deployed an international and local team of experts to implement nature-based solutions for soil stabilisation and effective irrigation management practices. Using advance GIS and digital technologies, SMEC will help to build management capacity whilst designing training opportunities for agriculture workers in the region.



Demographics of the Vakhsh River Basin

570,000ha
geographic area

2,000,000
population

80%
of people employed in agriculture

German Green Infrastructure Initiative, Indonesia

Unprecedented infrastructure investment program set to underpin Indonesian socio-economic development

By 2035, Indonesia's population is expected to inflate to over 300 million, a 29% increase from 2022. To ease pressure on municipal infrastructure services, Indonesia, via Coordinating Ministry of Maritime Affairs and Investment (CMMAI), and Germany, through the Federal Ministry of Economic Cooperation (BMZ), jointly implemented the Green Infrastructure Initiative (GII). The German KfW Development Bank provides financial cooperation via subsidised and promotional loans of up to EUR 2.5 billion to implement the identified projects in Indonesia.

The principal aim of the Indonesian-German Green Infrastructure Initiative is to identify, select, prepare and implement and develop environmentally focussed, climate-resilient infrastructure projects, which also take gender aspects into account. All selection criteria will incorporate the 'Leave No One Behind' principle. At the micro-level, the aim is to advance the technical skills to develop and apply general, sector-specific and gender-oriented criteria for the selection and preparation of green infrastructure projects.

SMEC and JV partners CDM Smith are collaborating on behalf of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) as part of the German contribution to the Green Infrastructure Initiative with key government agencies at national and sub-national level (provinces, districts, cities) to identify suitable infrastructure investment opportunities.

In 2022 the team progressed several Urban Infrastructure pre-feasibility studies across the provinces of West Java, Central Java, East Java and Bali. The studies will investigate viable infrastructure investment programs across three distinct sub sectors; water and wastewater management; solid waste management and urban public transport.

SMEC Denka Indonesia has mobilised approximately 80 national experts to undertake data gap analysis, sector assessment, stakeholder engagement, timeline projections and associated work plans to inform the business case for each project. SMEC's scope includes social, environmental,



and economic analysis as well as detailed investigation into local institutional conditions and technical surveys to analyse site conditions.

As part of the project SMEC is coordinating with key stakeholders including the Government of Indonesia such as Ministry for Maritime Affairs and Investment, Ministry of Public Work and Housing, Ministry of National Development Planning, Ministry of Transportation, KfW and local government representatives.

International development



Tonle Sap Poverty Reduction program, Cambodia



Brad Bowman
International Development Director,
Australia

Supporting the social and economic development of low- and middle-income countries continues to require integrated solutions that not only address social and economic disadvantage but support sustainable development for all. By utilising the expertise of staff across SMEC's regions we provide our clients with informed local knowledge supported by SMEC's global technical excellence.

Globally SMEC is supporting International Financial Institutions (IFIs) and partner governments to deliver projects to improve community access to essential social services and enable greater access to markets for local producers.

SMEC's international development practice is focussed on implementing inclusive infrastructure projects in SMEC's core sectors of Water, Transport, Renewable Energy and Urban Development. We support governments to develop quality infrastructure and implement asset management

systems enhancing the ability of governments to provide essential services to their citizens. Building capacity and strengthening institutions charged with delivering infrastructure is also at the core of many of our projects, ensuring sustainable outcomes.

Increasingly addressing the impact of climate change is seen by IFIs and governments as a priority in the planning and constructing of infrastructure. SMEC's expertise across the climate adaptation and resilience stream is being utilised to support action to limit the impacts of climate change.

SMEC provides its International Development clients with an integrated approach to infrastructure development from concept through to construction ensuring that stakeholders are engaged and that gender equity, the needs of people with disability and the impact on environment are full considered.

Ghana Power Compact II, Ghana

SMEC celebrates completion of Ghana Power Compact

400,000

smart metres installed

498.2 million

\$USD infunding from the Millennium Challenge Corporation

2

bulk supply points

The Ghana Power Compact II is a major infrastructure project funded by the United States government and aimed at improving the power sector in Ghana.

SMEC was first appointed by the Millennium Development Authority (MiDA) in 2017 to provide engineering design of power transmission and distribution, project management and quality control during the construction. SMEC also participated in power system planning, design and operation, as well as asset management, procurement, and environmental and social impact assessment.

The Power Compact was completed over a five-year program involving multiple stakeholders in the Power and Energy Sector. New energy standards and reduced energy consumption have created momentum towards inclusive and sustainable economic growth that will continue long after the compact ends. Completed infrastructure projects include:

- Kasoa and Pokuase bulk supply points and associated interconnecting lines
- Low voltage feeder bifurcation and network improvement for five districts within Accra

- High voltage distribution system and security lighting for 10 markets within Accra and Tamale
- Installation of meter management systems (MMS)
- Implementation of utility geographic information systems (GIS)
- AC test building and with installed refrigerator test laboratory,
- Primary substation and interconnecting circuit at the University of Ghana and Kanda.

SMEC's technical assistance helped to ensure that the Ghana Power Compact II was implemented in a technically sound and efficient manner, while also meeting the highest standards of quality and safety. Overall, SMEC's role in the Ghana Power Compact II demonstrates the company's commitment to supporting sustainable development and improving access to critical infrastructure, such as power, in developing countries around the world.



Tonle Sap Poverty Reduction Program, Cambodia

Cultivating resilient farming practices in one of the most disadvantaged regions in the world

9,000 tons

of certified rice seed produced

2,500+

on farm demonstrations to train farmers in resilient agriculture techniques

500GWh

value of commodities sold through market improvement groups during 2022

The Tonle Sap Poverty Reduction and Smallholder Development Project (TSSD) has supported over 650,000 households, enabling vulnerable farming communities in seven provinces to enhance agriculture techniques and access new technology, markets, and rural finance.

SMEC was appointed as the Project Implementation Consultant (PIC) in 2010 and again in 2018 to oversee the additional financing phase. The contracted scope of works from the additional financing concluded in December 2022. As PIC SMEC deployed a highly specialised team comprising experts in value chain analysis, agribusiness policy and economics, social development, and environmental safeguards. The project implementation work supported two key initiatives:

- Commune Development through block grants. This focussed on improving rural productive infrastructure and livelihoods whilst enhancing capacity in disaster risk management.
- Create an enabling environment for increased agricultural productivity, diversification, and climate resilience.

SMEC worked alongside the project implementing agencies to lead the development and implementation of work plans, program monitoring and evaluation systems. Other key outputs included development of new agribusiness policy and guidelines for capacity building, appointment and management of specialist service providers and implementation of the Gender Action Plan.

A key feature of the program has been the creation of community Livelihood Improvement Groups which enable grants of \$USD 240 per household. Through these funds, successive short duration loan cycles over a period of several years have been provided to the members for investment in livelihood improvement activities.

To support increased agricultural productivity, over 2,500 on-farm demonstrations have been carried out to train farmers on a range of crops, livestock, and aquaculture enterprises.

Furthermore, TSSD has supported rural infrastructure upgrades to over 850km of laterite roads and rehabilitation of canals and water structures to irrigate over 11,000 hectares in dry season.

TSSD has been co-financed by the Asian Development Bank (ADB), the International Fund for Agricultural Development (IFAD), the Government of Finland (GoF) and the Royal Government of Cambodia (RGC). The project has been implemented through two executing agencies, the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the National Commission for Democratic Development Secretariat (NCDDS).



Noida International Airport, India

SMEC partners with Tata Projects to deliver India's greenest airport

12 million
passengers per year in phase one

2024
phase one completion

1,334ha
phase one footprint

The Noida International Airport delivery model will combine global expertise from parent company Surbana Jurong and sister company Robert Bird Group.

In 2022, SMEC commenced working with Tata Projects Ltd to deliver detailed design consultancy services as part of the Engineering, Procurement, and Construction (EPC) Contract at Noida International Airport.

The Noida International Airport is a greenfield airport, which means it is being built on undeveloped land. This provides the opportunity to design and construct the airport from scratch, incorporating the latest technologies and features to make it more efficient and sustainable.

The airport is being designed with a focus on sustainability, with features such as energy-efficient systems, water conservation measures, and waste management facilities. The airport is expected to be certified as a Greenfield Airport under the Indian Green

Building Council's Green Rating for Integrated Habitat Assessment (GRIHA) rating system.

The Noida International Airport is expected to be built in phases, with the first phase scheduled for completion by 2024. The first phase will include one runway and a terminal building capable of handling around 12 million passengers per year. The airport is eventually planned to have six runways and three terminals, with a capacity to handle up to 130 million passengers per year.

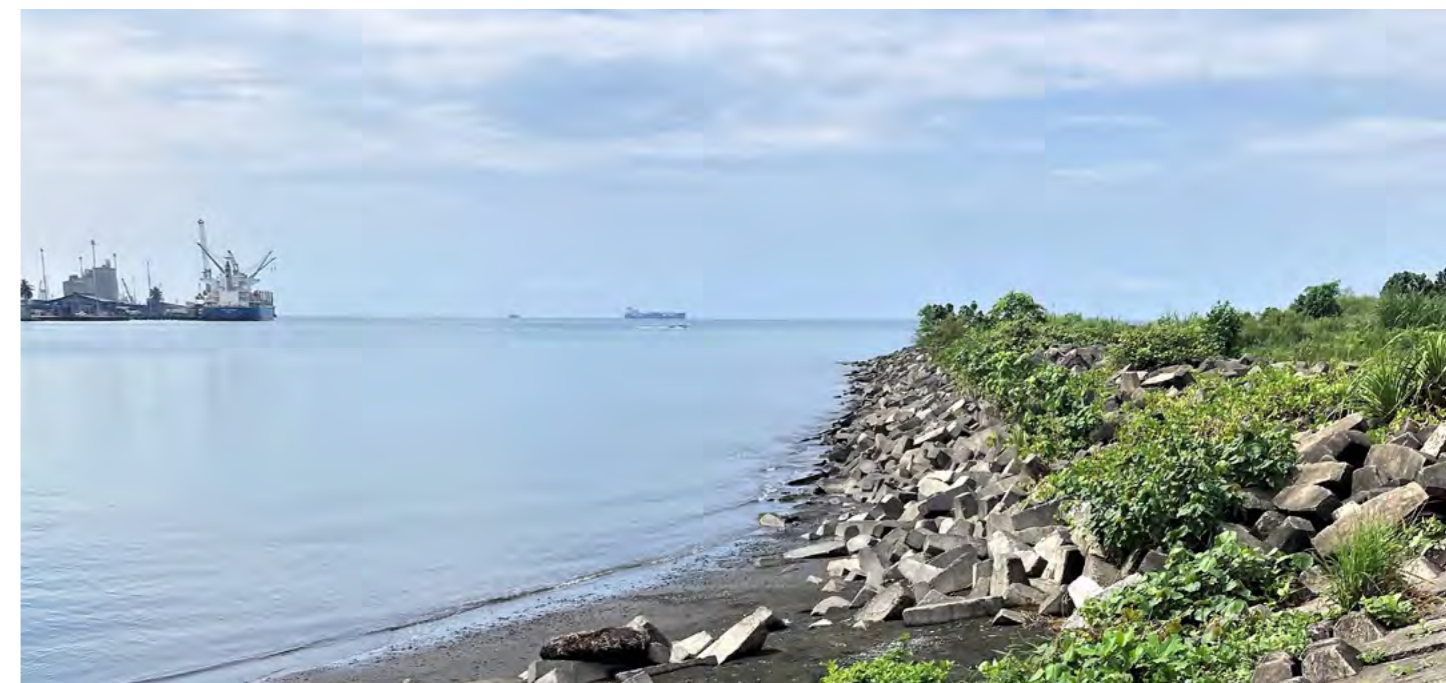
Located in the Indian state of Uttar Pradesh, approximately 20 kilometers southeast of New Delhi, Noida International Airport will be developed and operated by Yamuna International Airport Private Limited (YIAPL). When complete, the new airport is expected to be the largest in India and the fourth largest in the world.



Port Lae Tidal Basin, Phase 2 Infrastructure Development, Papua New Guinea

SMEC leading the next phase of Papua New Guinea Port Expansion

Lae Tidal Basin Phase 2 Infrastructure Development Works are part of a 30-year masterplan developed by PNG Ports Corporation Limited (PNGPCL) to increase port capacity and catalyse industrial and commercial development in the region.



The \$200 million upgrade will open the port up to larger vessels up to 9,000 TEU and establish infrastructure for potential automation in the future. SMEC's nominated team offers broad global experience and a deep understanding of container terminal design, port infrastructure and operational requirements associated with the green field port development.

In 2022 SMEC and P&M Consultants commenced design and investigation works to facilitate extensive upgrades that will expand the port's capacity and capabilities. Planned work includes the construction of a new container terminal, the extension of the existing wharf,

the construction of new storage areas and cargo handling facilities, and the upgrade of the port's infrastructure.

Wave-climate assessments, assessment of coastal actions, hydrology assessments, hydrographic surveying, and seismic and geotechnical investigations will be undertaken to inform the design works.

Funded by the Australian Infrastructure Financing Facility for the Pacific (AIFFP), the project will be managed by PNGPCL with support from assigned officials from the Transport Sector Support Program (TSSP) and AIFFP.

The Board

The Board is responsible for formulating SMEC's strategic direction and maintaining corporate governance. Acting on behalf of shareholders, the Board is accountable for SMEC's financial and operational performance.

The Board is independent of management and has a good balance of skills and experience to ensure transparency and sustained long-term growth.

Board Committees

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.

Audit and Risk Committee

The Audit and Risk Committee assists the Board with financial reporting, managing SMEC's material risks and ensuring that financial information is accurate and timely. The Audit and Risk Committee must have at least three members, and have an independent Chair (who is not the Chair of the Board).

Remuneration and Nominations Committee

The Remuneration and Nominations Committee works to ensure that SMEC secures, motivates, and retains highly skilled and diverse senior executives and employees. The Remuneration and Nominations Committee must have at least two members, at least one of which is an independent non-executive director.

Note: Designated Board and Executive Committee members are current as at 01 April 2023.



Max Findlay
Chairman and
Non-Executive Director



Say Hong Teo
Group Chief Officer,
Surbana Jurong Group
Integration, M&A
Appointed 01/10/2022



Hari Poologasundram
CEO SMEC & CEO
International Surbana Jurong



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



Wong Heang Fine
Group CEO,
Surbana Jurong Group
Departed 01/10/2022

The Executive Committee

SMEC's Executive Committee has primary authority for the management and monitoring of SMEC's operations, and the implementation of the Company Strategy subject to policies and procedures approved by the Board of Directors.

The Executive Committee is comprised of senior individuals with extensive experience in strategic and operational planning.



Hari Poologasundram
CEO SMEC & CEO
International Surbana Jurong



Andy Atkin
Group Chief Financial Officer,
Surbana Jurong Group
Departed 23/02/2023



Angus Macpherson
Director of Operations
Departed 23/02/2023



George Simic
Director - Strategy, Growth, M&A
Africa, Americas, ANZ, SAME



Karen Atkinson
Deputy Chief Operating
Officer, ASEAN



James Phillis
Chief Executive Officer,
Australia & New Zealand



Dr Uma Maheswaran
Chief Operating Officer,
South & Central Asia



John Anderson
Chief Operating Officer, Africa

SMEC acknowledges and thanks exiting members for their significant contributions during their service.



Goonumbia Solar Farm, Australia

Our global footprint



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

35+

Countries

16,500+

Employees



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
- USA

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



