

Smart Infrastructure

ITS & Smart Mobility

Infrastructure & Energy
2024 Capabilities

Real impact, made together



For 75 years, SJ Group has built a reputation as a trusted partner on major Transport, Water, Environment and Energy projects around the world.

Through our 10 brands we are committed to positively impact the people, the environment and the clients and communities we serve. Our specialist teams draw on deep expertise and systems thinking to simplify the complex and deliver integrated engineering solutions across a range of diverse environments.

By combining the latest digital technology with critical thinking, we provide practical, reliable solutions that consider both sustainability and scalability across Intelligent Transport System and Smart Infrastructure and the wider built environment.



Real impact, made together

Real impact, made together expresses our shared commitment to create meaningful, tangible, and enduring change, through collaborative efforts with clients, partners, and communities, shaping a brighter future for all.

Our DNA Pillars



Unlocking Excellence

We assemble specialist teams and create innovative approaches to deliver excellent outcomes.



Solutions at Scale

We are pioneering a smart and sustainable world with regenerative approaches for buildings, cities and economies.



Limitless Imagination

We are powered by our intelligence and ingenuity – continuously challenging what's possible.



Future Legacy

We are committed to creating a collective legacy that is greater than our individual pasts.

A diverse collective of problem solvers for the built environment

The SJ Group is a global network of 16,000 specialists in 38+ countries. United by our purpose, Real impact, made together, we are committed to creating measurable and meaningful change for the built environment.



Committed to exceptional partnerships and client service

The greatest outcomes are achieved when parties collaborate openly, honestly and professionally. We forge meaningful relationships with our clients, partners and communities and together unlock a greater potential working as a united team.

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.

Financial Services



Consumer & Real Estate



Transportation & Industrials



Telecoms, Media & Technology



Energy & Resources



Life Sciences & Agriculture



Seamless delivery across business lines

Working together, the SJ Group is leading smart and sustainable solutions, at every scale, to build and create a regenerative future.

Buildings + Cities

Urban Development + Residential

- Residential
- Urban Development

Transport

- Rail Stations
- Terminals
- (Airports, Ground Transport, Marine, Inter-modal)

Mixed-Use + Commercial

- Office
- Retail
- Hospitality
- Transit Oriented / Mixed-Use Development

Healthcare + Institutional

- Healthcare + Life Sciences
- Education + Civic + Culture
- Defence + Government

Industrial

- Data Centre + Technology
- Manufacturing + Logistics



Infrastructure + Energy

Transport (Infrastructure)

- Geotechnics & Tunnels
- Roads & Highways
- Rail & Metro
- Aviation & Aerospace
- Ports & Maritime

Water & Environment

- Environment
- Waste & Resource Recovery
- Water Infrastructure
- Coastal Engineering & Management
- Water Resources & Irrigation
- Dams & Hydropower

Energy

- Renewables
- Power & Gas
- Energy Transition
- Fuels



Integrated Solutions

Security

- Physical Security
- Digital Security
- Operational Cyber
- Security Beyond Traditional Training

Digital Technology Services

- Campus, Estate and City-Wide Asset Monitoring
- Comprehensive Digital Solutions

Facilities Management (FM)

Asset Management (AM)

- Integrated FM
- AM Consulting
- Integrated Command Centres
- Smart FM

Mission Critical Facilities (MCF)

- Blast Proof Design
- Testing and Certifications
- Specialist MCF Related Solutions

Defence

- Design, Engineering & Security Consultancy
- Live Firing & Simulation
- Remote Systems & Sensors
- Fitness & Wellness
- Freight & Logistics

We're fuelling capabilities for complex problem solving

Our member companies are the best in their respective fields of expertise. Each brings a unique legacy and injects new thinking and talent into the Group.



Total security solutions from design and development to management solutions and safety management.



Global environmental design advisors, embedding sustainability into the world's most ambitious projects.



A multi-sector design practice, specialising in large scale buildings and environments.



Luxury hospitality designers, delivering world class concepts that transform the guest experience.



Civil & structural engineers synonymous with innovation and creative solutions for the built environment.



Security consulting, with deep expertise in structural engineering, fire and blast protection.



Civil and construction engineering specialists working on complex projects at scale.



A full-service architecture & master planning practice creating major transport, aviation, health, and mixed-use precincts.



Major infrastructure engineers working on critical transport, energy, and water projects globally.



Specialist consulting in architecture, engineering, and smart city solutions.

Delivering sustainable solutions that help safeguard the planet

SJ Group has an ambitious mission to catalyse the transition to a regenerative future. We are doing this by championing regenerative legacy and impact across six key areas and 12 points of action. This commitment will enable us to contribute meaningfully to the UN Sustainable Development Goals.

We partner with clients and communities utilising design thinking to deliver adaptable and scalable solutions, provide inclusive employment opportunities, and endeavour to bring social license to everything we do.

For us, this means delivering sustainable solutions that help safeguard the planet.

Impact Areas	Actions	UN SDG Primary Alignment Areas	UN SDG Secondary Alignment Areas
Nature	Climate Action Ecological Resilience	13 Climate Action, 14 Life Below Water, 15 Life on Land	7 Affordable and Clean Energy, 12 Responsible Consumption and Production, 8 Decent Work and Economic Growth, 11 Sustainable Cities and Communities
Life	Healthy Bodies Healthy Minds	2 Zero Hunger, 3 Good Health and Well-being, 6 Clean Water and Sanitation	4 Quality Education, 5 Gender Equality, 11 Sustainable Cities and Communities, 16 Peace, Justice and Strong Institutions
Society	Empowerment Equality	1 No Poverty, 5 Gender Equality, 10 Reduced Inequalities	3 Good Health and Well-being, 8 Decent Work and Economic Growth, 9 Industry, Innovation and Infrastructure
Knowledge	Knowledge Advancement Knowledge Philanthropy	4 Quality Education, 16 Peace, Justice and Strong Institutions	5 Gender Equality
Economy	Sustainable Value Shared Prosperity	8 Decent Work and Economic Growth, 12 Responsible Consumption and Production, 17 Partnerships for Sustainable Development	5 Gender Equality, 6 Clean Water and Sanitation, 9 Industry, Innovation and Infrastructure, 10 Reduced Inequalities, 16 Peace, Justice and Strong Institutions
Built Environment	Future Resilience Regenerative Innovation	7 Affordable and Clean Energy, 9 Industry, Innovation and Infrastructure, 11 Sustainable Cities and Communities, 13 Climate Action	6 Clean Water and Sanitation, 15 Life on Land

Known for the reliable delivery of tailor-made solutions across global, complex projects

Through technical excellence and exceptional problem solving, we simplify the complex, providing advanced transport infrastructure solutions for our clients, partners and communities.

We are specialists in providing design leadership, consulting and advisory expertise across the roads and highways, rail and metro, aviation and aerospace, and ports and maritime sectors.

Our design leaders and specialist teams draw on global expertise and local experience to deliver tailor made solutions across the lifecycle of each project, regardless of size, complexity, or location.

75

Years of successful project delivery

3000+

Transport specialists

4000+

Transport projects



Montrose Interchange
South Africa

Unlocking potential to deliver greater benefits on a global scale

Our integrated services have been applied to some of the largest and most complex transport projects around the world and include roads and highways, rail and metro, ports and maritime, geotechnics and tunnels, aviation and aerospace. Our expertise in transport, infrastructure, and management is enhanced by long-standing associations with international development agencies, governments, and educational institutions.



Roads and Highways

Using our skills in transportation planning, design program management and asset support services, we help our clients to develop, expand, reconstruct and rehabilitate roads, bridges and highways around the world.



Rail and Metro

We provide a whole-of-life approach to the design, construction, operation and maintenance of railway infrastructure, helping to transform mass transportation worldwide.



Ports and Maritime

Our expertise comprises the planning and development of new and upgraded port and maritime facilities, wharves, terminals, dredging and reclamation works, coastal protection works, and associated infrastructure for transportation of goods and people.



Geotechnics and Tunnels

Our geotechnical and tunnelling teams bring a comprehensive suite of engineering skills and services to projects of all sizes. We provide a wide range of solutions to our clients and are ably supported by other discipline groups within the SJ Group.



Aviation and Aerospace

Our global team of aviation specialists provide multi-disciplinary consultancy services for both airside and landside aviation infrastructure.

Connected teams, seamless solutions

In some of the world's most remote locations, we have implemented national programs to upgrade transport infrastructure, facilitating improved connectivity, economic growth, and environmental sustainability. We continue to assist our clients in developing resilient transport networks that combat the effects of climate change while empowering communities.



Roads & Highways



Rail & Metro



Ports & Maritime



Geotechnics & Tunnelling



Aviation & Aerospace



Delivering at every stage of the project lifecycle

At SMEC, we provide a whole-of-life approach from planning and design through to construction and the maintenance of geotechnics and tunnelling infrastructure and the wider built environment.

1.

Project Management

Project Management for our clients to plan, execute and successfully complete projects.

2.

Planning & Advisory

Supporting our clients' strategic decisions, providing expert advice for feasibility and planning of projects.

3.

Investigation & Testing

Supporting our Clients with consulting services to support investigation and testing.

4.

Engineering & Design

Supporting our Clients with Engineering, Design and Documentation.

5.

Construction & IV

Supporting our Clients with Contract Administration, Construction Services & Independent Verification.

6.

Operation & Maintenance

Supporting our Clients with consulting services to support operation and maintenance.

Conceptual Design

The conceptual design phase is a foundation for subsequent design and development activities in ITS projects, providing a clear direction and understanding of the system's requirements, functionalities, and expected outcomes.

Our expertise includes:

- System Architecture
- Functional requirements
- Data requirements
- Communication Infrastructure
- Human-Machine Interface (HMI)
- System Integration
- System Performance & Scalability
- Operation Concepts
- Safety & Security
- Cost Estimation



Substantial and Final Detailed Design

The substantial detailed design phase aims to provide a comprehensive blueprint for implementing the ITS system, ensuring that all technical aspects and requirements are considered and documented before proceeding to the development and deployment stages.

The final detailed design phase sets the stage for the actual implementation and deployment of the ITS system, providing a solid foundation and detailed instructions for the development teams. It ensures that all design aspects have been thoroughly documented and considered before moving forward with the implementation process.

Our expertise includes:

- System Components Specification
- Detailed Hardware & Software Specifications
- Database Schema & Data Model
- User Interface Design & prototyping
- System Integration Plan
- Detailed Algorithms & Logic
- System Performance Analysis
- Security & Privacy Measures
- Documentation
- Design Review & Approval



Melton Highway, Victoria, Australia

Operations

Running and operation activities focus on ensuring the efficient and reliable functioning of the ITS system, maximising its benefits, and delivering effective transportation services to users. These activities require ongoing monitoring, maintenance, support, and proactive management to address emerging issues and maintain system performance over time.

Our expertise includes:

- System Monitoring & Control
- Incident Detection & Response
- Maintenance & repair
- Data management & Analysis
- Traffic Management & Control
- System Upgrade & Enhancement
- User Support & Training
- Data Privacy & Security Management
- Performance Evaluation & reporting
- Stakeholder Engagement & Communication

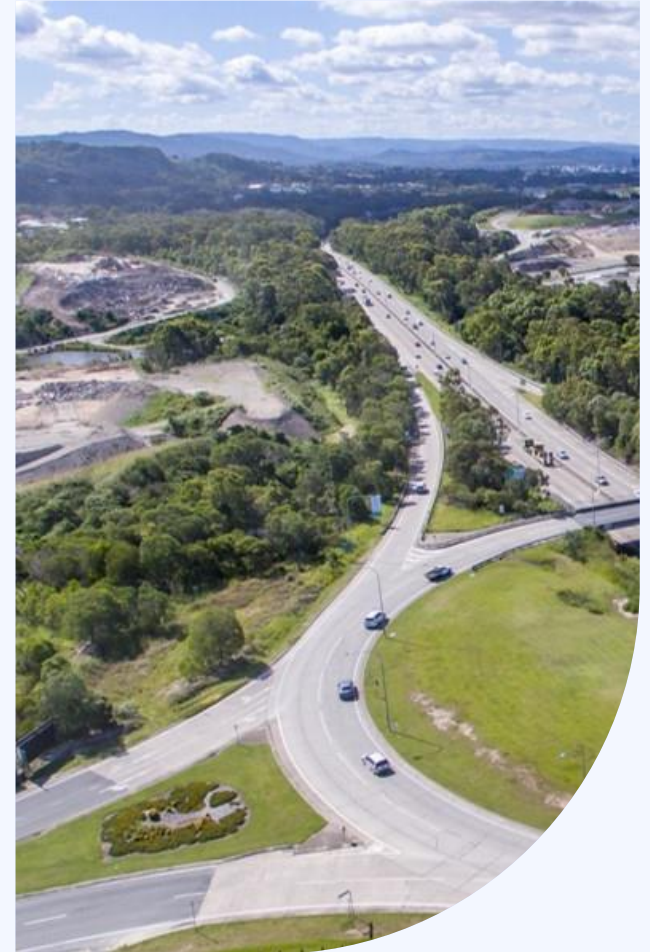


Support & Maintenance

Support and maintenance activities are crucial for ensuring the ongoing functionality and reliability of the ITS system, addressing issues promptly, and providing necessary assistance to system users. These activities help optimise system performance, extend the system's lifespan, and deliver effective transportation services to users.

Our expertise includes:

- Help Desk & User Support
- Incident Management
- Maintenance Planning & Scheduling
- Preventing Maintenance
- Software Updates & Patches
- Configuration Management
- Performance Monitoring & Optimisation
- System Backup & recovery
- Vendor Management
- Documentation & Knowledge Management



Our Services

Our Capabilities

Delivering world-class transport solutions

The impact of our work extends far beyond the engineering and physical structures. We're driven by a shared desire to create a lasting positive legacy that transcends the work that we do. Together, we strive to leave behind a legacy we can all be proud of, one that reflects our collective efforts and commitment to making a meaningful difference in the world.

Our Capabilities

At SMEC, we provide a whole-of-life approach to the design, construction, operation and maintenance of ITS and smart infrastructure, helping to transform transportation and infrastructure worldwide.

Our technical specialists have undertaken a range of ITS and smart infrastructure projects from the design of new motorways to the rehabilitation and maintenance of existing tunnel systems. We continually explore and implement practical application of advancing technologies to provide innovative, cost effective and appropriate solutions to ITS and smart infrastructure projects worldwide.

Our team provide advice, planning, design, supervision and project management services for complex infrastructure works through the entire lifecycle of the design, from feasibility to construction.

Our Services

- Planning, investigation, survey and design
- Equipment selection and analysis
- Systems master planning
- Network design
- Condition assessments
- Rehabilitation and maintenance
- Construction management
- Project management
- Asset management



ITS & Smart Infrastructure Services

- Smart Infrastructure
- ITS & Smart Mobility
- Transport Planning
- Smart Motorway Management
- System Design and Integration
- Intelligent Ramp Metering
- Traffic Monitoring & Incident Management
- Tunnel Management & Critical Infrastructure
- Tunnel Ventilation & Air Control
- Intelligent Lighting and Signage
- Connected & Automated Vehicles (CAV)
- Electrical Vehicles
- Power and Automation
- Data Communication Systems, Microwave and Fibre
- Operational Management and Control Systems (OMCS)
- Dynamic Traffic Management & Incident management
- Data Analytics and Performance Monitoring
- Traffic Information and Communication Systems
- Electronic Toll Collection Systems
- Traffic Signaling Systems
- Automatic Incident Detection Systems
- Warning and Enforcement Systems
- Emergency Vehicle Notification Systems
- Critical Corridor Communication Network (CCCN)



Logan Enhancement
Logan, Australia

Smart Mobility

In the ITS projects, Smart Mobility refers to the use of advanced technologies and innovative approaches to improve the efficiency, safety, sustainability, and accessibility of transportation systems. It encompasses a range of solutions, including the integration of digital platforms, data analytics, connected and autonomous vehicles, and smart infrastructure, all aimed at optimising the movement of people and goods.

Overall, smart mobility aims to create a more intelligent, responsive, and sustainable transportation system that addresses the challenges of urbanisation, population growth, and environmental concerns.

The key components include:

- **Connected and Automated Vehicles:** Utilising communication technologies and automation to enhance safety and reduce congestion.
- **Sustainable Transportation:** Promoting the use of electric vehicles, public transit, and other environmentally friendly transportation options.
- **Integrated Mobility Services:** Offering seamless access to various transportation modes through Mobility as a Service (MaaS) platforms.
- **Real-time Data and Analytics:** Leveraging big data to make informed decisions and improve traffic management.

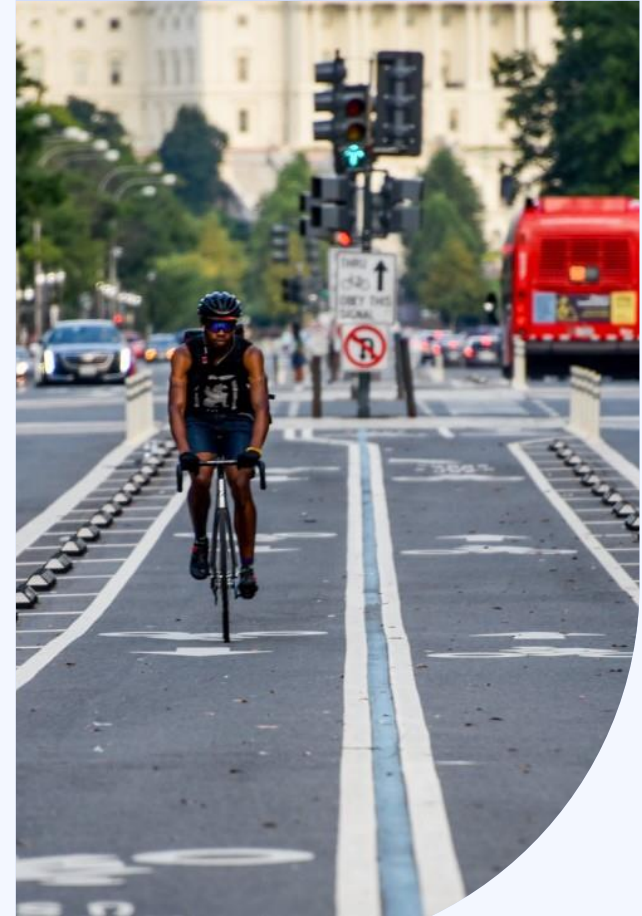


Transport Planning

Transport planning is the process of designing and managing transportation systems aims to efficiently move people and goods within and between urban and rural areas. It involves the analysis, evaluation, and implementation of policies, strategies, and infrastructure projects to supports economic growth, improves quality of life, minimises environmental impacts, and address current and future transportation needs.

Our expertise includes:

- **Infrastructure Development:** Planning and designing roads, highways, public transit systems, bike lanes, pedestrian pathways, and other transportation infrastructure.
- **Land Use and Zoning:** Coordinating transportation planning with land use policies to promote sustainable development and reduce travel demand.
- **Traffic Management:** Developing strategies to manage traffic flow, reduce congestion, and enhance road safety.
- **Environmental Considerations:** Assessing and mitigating the environmental impacts of transportation projects, including air quality, noise pollution, and carbon emissions.
- **Public Engagement:** Involving communities and stakeholders in the planning process to ensure that transportation solutions meet the needs of the population.
- **Economic Analysis:** Evaluating the costs and benefits of transportation projects, including their impact on economic development and social equity.
- **Policy Development:** Formulating transportation policies and regulations that guide the planning and operation of transportation systems.



CC BY -NC

Strategic Planning

Strategic planning in ITS projects aims to align technology implementation with transportation goals, address user needs, and maximise the benefits of intelligent transport systems for the community and stakeholders involved.

Our expertise includes:

- Vision & Goals
- Stakeholder Analysis
- Need Assessment
- Technology Assessment
- Implementation Strategy
- Performance Metrics and Evaluation
- Regulatory & Policy Considerations
- Public Outreach and Communication
- Risk Assessment and Management

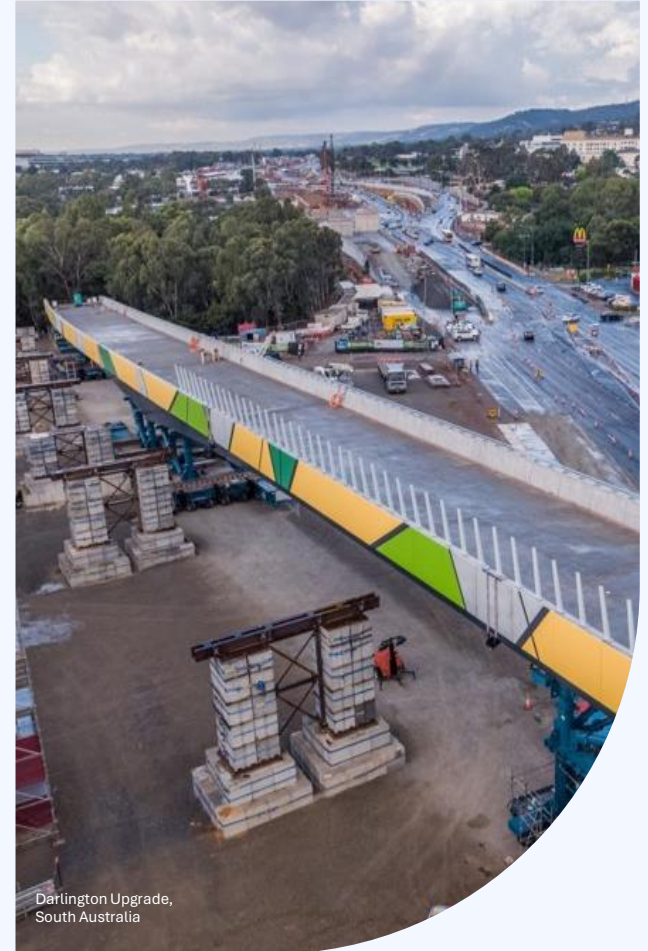


Construction and Procurement

The construction phase services focus on turning the detailed design into a functional and operational ITS system. It involves close collaboration with contractors, vendors, and stakeholders to ensure successful implementation and deployment of the system.

Our services and expertise cover:

- Procurement and Vendor
- Installation & Deployment
- System Configuration & Setup
- Integration & Interoperability Testing
- System Testing & Commissioning
- User Acceptance Test (UAT)
- Training & Knowledge Transfer
- Documentation & Handover
- Project Management & Quality Control
- Change Management



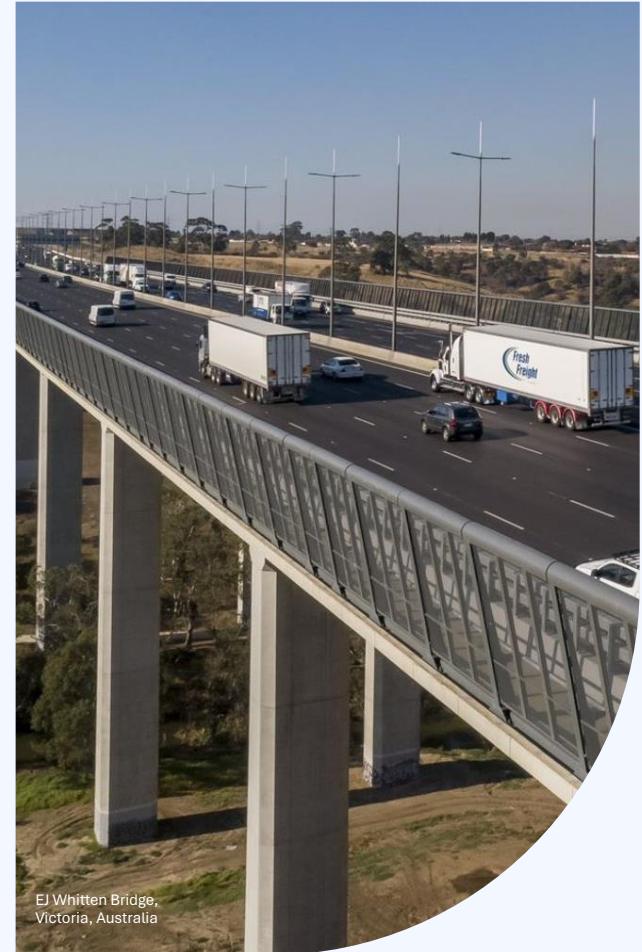
Darlington Upgrade,
South Australia

Risk Management

By implementing robust risk management practices, ITS projects can proactively identify and address potential risks, thereby minimising disruptions, enhancing project success rates, and ensuring the delivery of effective and reliable intelligent transport systems.

Our expertise includes:

- Risk Identification
- Risk Assessment & Prioritisation
- Risk Mitigation Strategies
- Risk Monitoring & Control
- Risk Response Planning
- Stakeholder engagement
- Risk Communication
- Contingency Planning
- Documentation & Lessons Learned
- Continues Improvement



EJ Whitten Bridge,
Victoria, Australia

Testing and Commissioning

Testing and commissioning activities help ensure that the ITS system functions as intended, meets performance requirements, and provides reliable and efficient transportation services. These activities aim to identify and resolve any issues or deficiencies before the system goes live, thereby minimising risks and maximising the system's operational effectiveness.

Our expertise includes:

- Test planning
- System Integration testing
- Functional Testing
- Performance Testing
- Usability testing
- Security Testing
- Data Validation & Accuracy Testing
- User Acceptance Testing (UAT)
- Documentation & Reporting
- System Commissioning



Running and Operation

Running and operation activities focus on ensuring the efficient and reliable functioning of the ITS system, maximising its benefits, and delivering effective transportation services to users. These activities require ongoing monitoring, maintenance, support, and proactive management to address emerging issues and maintain system performance over time.

Our expertise includes:

- System Monitoring & Control
- Incident Detection & Response
- Maintenance & repair
- Data management & Analysis
- Traffic Management & Control
- System Upgrade & Enhancement
- User Support & Training
- Data Privacy & Security Management
- Performance Evaluation & reporting
- Stakeholder Engagement & Communication



Auditing & Verification

Auditing, inspection, and verification activities in ITS projects aim to assess the system's compliance, quality, performance, and safety aspects. These activities provide valuable insights, identify areas for improvement, and ensure that the ITS system operates within established guidelines, standards, and regulations.

Our expertise includes:

- Compliance Audit
- Quality Assurance
- System Performance Audit & Verification
- Security Audit
- Data Audit
- System Configuration Audit
- System Inspection
- Documentation Review & Verification
- Process Audit
- Compliance Inspection & Verification



Renewal & Rehabilitation

Repair, rehabilitation, and renewal activities are critical for ensuring the ITS system's longevity, reliability, and performance. These activities help address deterioration, obsolescence, or changing requirements, ensuring that the ITS infrastructure and components continue to support efficient and effective transportation operations.

Our expertise includes:

- Asset Inventory & Condition Assessment
- Asset Life Cycle Planning
- Component Replacement & Upgrades
- System Expansion & Capacity Enhancement
- Infrastructure Repair & rehabilitation
- Software Maintenance & Upgrade
- Data management & Quality Control
- System Performance Evaluation
- Sustainability & Energy Efficiency Enhancement
- Documentation & Record Keeping



Our Team

Our strength lies in the wealth of knowledge within our extensive team of ITS and Smart Infrastructure specialists.

SMEC's large team of ITS and Smart Infrastructure professionals has the capability and experience to bring practical and innovative technical solutions to challenging projects. The ITS and Smart Infrastructure team comprises of highly qualified and experienced engineers focused on delivering tailored solutions that meet individual project and client requirements.

Our collective experience span across Australia and around the world. SMEC's ITS and Smart Infrastructure team is led by core members with expectational experience and technical ability.

We connect you with the best teams and capabilities to deliver highly innovative and sustainable solutions.

Our design leaders and specialist teams draw on deep expertise and experience delivering projects across a range of diverse environments, from some of the world's most remote locations to some of the densest urban surroundings.



Andrew MacKune

Regional Operations
Director



Ajith Wanniarachchi

Client Account Manager



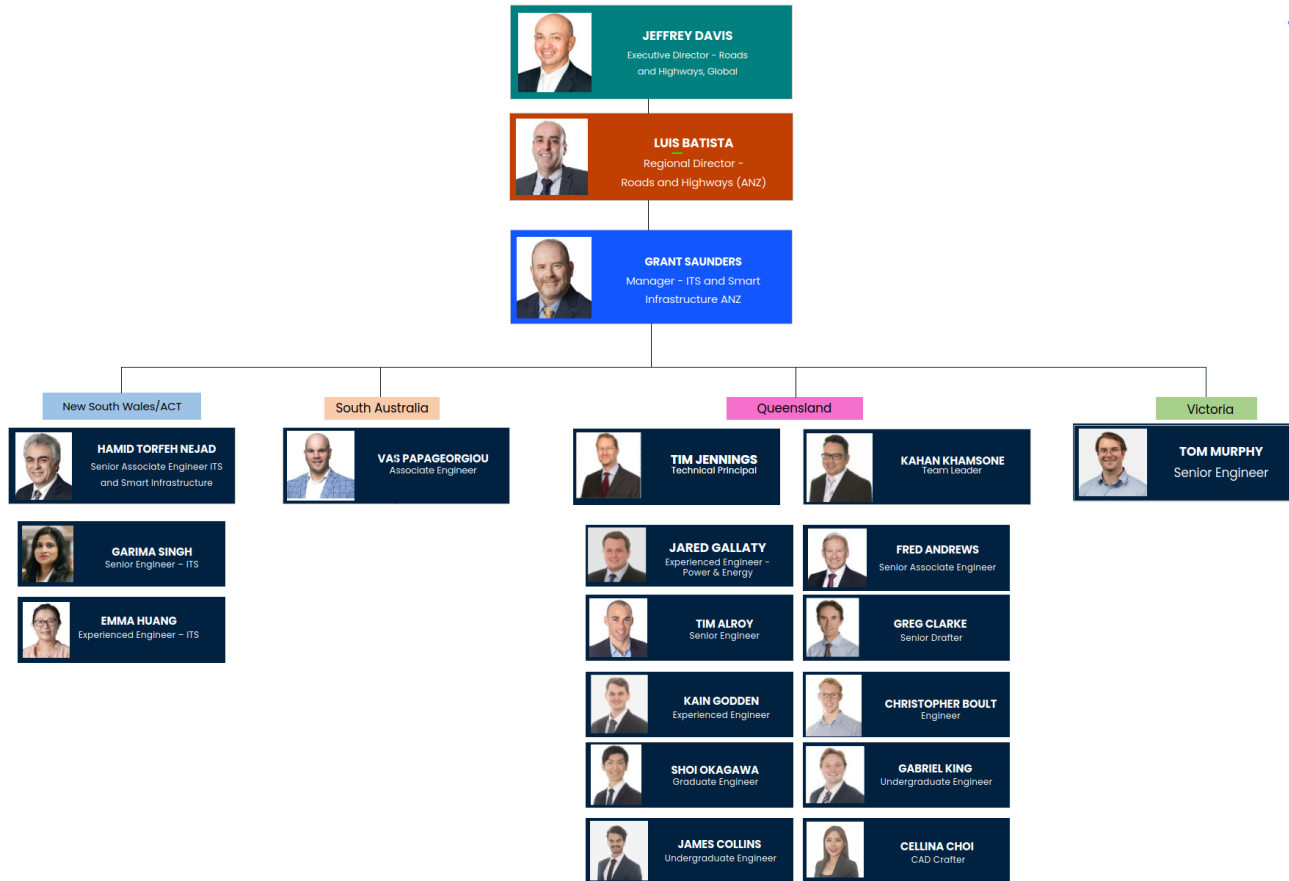
Grant Saunders

National Manager, Intelligent
Transport Systems – Smart
Infrastructure, ANZ



Hamid Torfeh Nejad

Senior Associate Engineer –
ITS and Smart Infrastructure





Grant Saunders

National Manager, Intelligent
Transport Systems – Smart
Infrastructure, ANZ
[Sydney, Australia](#)

Grant brings a depth of over 37 years of international complex delivery experience.

Grant's experience covers a vast array of planning, design and hands-on physical ITS and ICT/Electrical Systems procurement, delivery and commissioning. His proven track record is ground-up, working in all areas for both the Government and Commercial Delivery and Consulting sectors.

His experience includes numerous roles in Project Directorship, Technical Directorship, Delivery Management and overall contract, and project and program management of complex ITS/ICT, tunnels SCADA and systems. Covering the wide array of communications, electrical and technical security systems, networks fibre WAN / LAN and also tidal flow systems.

Qualifications/Affiliations

- Associates Degree in Project and Program Management, 2011
- Associates Degree in Telecommunications and Network Engineering, 2007
- Cert III in Technical Security Design and Installation, 2015

Key Projects

- Zero Emission Buses North Lakes
- M12 Smart Motorway Detailed Design



Tim Jennings

Technical Principal Engineer –
ITS, Traffic Signals, and
Electrical
[Brisbane, Australia](#)

Tim is a Registered Professional Engineer of Queensland with over 30 years of experience in the field of systems engineering, predominantly on ITS, traffic signals, electrical and control systems engineering projects.

He has been involved in a wide range of multi-disciplinary projects for clients such as TMR, RMS, VicRoads, DPTI, WA Main Roads, NTG, and multiple authorities in the UK, China, Malaysia, and Sri Lanka. Tim has extensive experience in state government highway projects and commercial developments.

His primary skills are in strategy, feasibility and concept, detailed design, specification, contract documentation, contract management, testing and operations/maintenance.

He has specialised expertise in the delivery of traffic control systems design, operation and maintenance; systems integration; motorway communications systems; bus priority and emergency vehicle priority systems and different types of vehicles and pedestrians. His experience covers most types of traffic signal systems, including SCATS, SCOOT, STREAMS, MOVA, PUFFINS and TOUCAN.

Qualifications/Affiliations

- Bachelor of Engineering (Hons) Electrical/Electronic Engineering, University of Greenwich, UK
- Business and Technology Education Council Higher National Diploma Electrical/ Electronic Engineering, Portsmouth University, UK
- Registered Professional Engineer of Queensland (RPEQ) RPEQ No. 7193 (since 2002)
- RailCorp Engineering Authority Approval for Electrical & Electronic Design

Key Projects

- Brisbane Metro, QLD
- BAC Auto Mall, QLD
- Albion Park Rail Bypass, NSW



Hamid Torfeh Nejad

Senior Associate Engineer – ITS
and Smart Infrastructure
[Sydney, Australia](#)

PhD, FIEAust, CPEng, RPEQ, VPEQ, NER, and ITEE College Committee Member (Sydney Branch).

Dr. Hamid is a highly accomplished professional with a PhD in Electronics Engineering and the distinguished title of Fellow of Engineers Australia. With over 32 years of extensive experience, he has specialised in the conceptual and detailed design, development, implementation, and project management of complex Intelligent Transportation Systems (ITS) and telecommunication projects. His expertise encompasses a deep understanding of control and telecommunication systems, SCADA, quality assurance, risk management, regulatory approvals, and adherence to relevant standards and policies. Dr. Hamid is a recognised leader in the deployment of smart-managed motorway technology and the connected and automated vehicle industry. He has successfully led design teams and served in technical roles for a diverse range of clients, consistently delivering high-quality results in the field of ITS and Smart Infrastructure technologies.

Qualifications/Affiliations

- Doctor of Philosophy, PhD, Electronics Engineering, Shahid Beheshti University
- Master of Science – MS, Telecommunications Engineering, Isfahan University of Technology
- Bachelor degree, Telecommunications Engineering, K.N.Toosi University of Technology

Key Projects

- Warringah Freeway Upgrade (ITS Electrical and Communication design)
- Rockhampton Ring Road (ITS Electrical and Communication design review and update)
- Western Sydney Airport (ITS Electrical and Communication design review and update)
- Mount Ousley Wollongong (ITS Electrical and Communication design review and update)
- Borumba PHES (Communication Network Transaction Strategy)
- Aldoga, Culcairn, Kowhai, Maryvale, Stubbo Solar Farms (Communication, Security, and CCTV design)



Fred Andrews

Senior Associate Engineer – ITS
Gold Coast, Australia

Fred has over 40 years of experience designing, documenting, and constructing electrical and communications systems for the transportation, mining, buildings, and defence sectors.

Fred has designed and delivered local, state and federal transportation projects. He has extensive experience in road services design and good road standards and specifications knowledge. He has worked closely with the local transport project teams to produce finished products that meet both local and general needs of the road authority requirements.

His ITS experience covers system architecture and integration; wireless and fibre optic communications systems; managed motorways including ramp metering, variable message signs, ANPR camera systems, CCTV Cameras, Web cameras, VSL/LCS, traffic signals, vehicle detection and classification systems. His work has included preliminary conceptual designs for ITS and lighting, site inspections to determine condition and compliance with existing equipment standards, design reports, detailed design documentation, supplementary specifications and cost estimates.

Qualifications/Affiliations

- Associate Diploma Engineering
- Diploma of Project Management
- Diploma of Security risk Management
- Certificate Traffic Engineering and Operations (University of Maryland)
- Certificate in Fundamentals of ITS and Traffic Management (University of Maryland)

Key Projects

- M1 Pacific Motorway Upgrade: Burleigh Interchange
- M1 Pacific Motorway Upgrade: Varsity Lakes to Burleigh
- Darlington Motorway



Kahan Khamson

Senior Associate Engineer –
Team Leader ITS and Electrical
QLD/NT
[Gold Coast, Australia](#)

Kahan has developed a wide range of skills with extensive knowledge in relation to road infrastructure projects over 23 years with SMEC and previously with the Department of Transport and Main Roads and RoadTek Consulting (QLD).

He has broad civil design experience focusing on intersection design, traffic signals, road lighting and Intelligent Transport Systems designs.

Kahan has been involved with notable large projects, including North-East Link (NEL) in Melbourne, Rockhampton Ring Road (Detailed Design) and M1 Pacific Motorway Widening, Varsity Lakes to Tugun: Packages 1 & 2.

Kahan brings a comprehensive understanding of project constraints in relation to scope, time and cost. He is thorough and ensures tasks are achieved to a high quality and to the relevant standards to meet client expectations.

Qualifications/Affiliations

- BEngTech (Civil)
- Accredited Road Safety Auditor

Key Projects

- North-East Link (NEL)
- Rockhampton Ring Road (Detailed Design)
- M1 Pacific Motorway Widening
- Varsity Lakes to Tugun: Packages 1 & 2



Vasili Papageorgiou
Associate Engineer – ITS and
Electrical
Adelaide, Australia

Vasili has 16 years of experience in varying fields as an electrical engineering consultant working on various projects.

His experience began with projects in the building services sector, working closely with project teams comprising of architects, structural engineers, civil engineers, councils and institutional facilities. This continued into infrastructure projects for councils, the defence industry, power authorities such as SA Power Networks and Essential Energy, and Communications Authorities, including NBNCo and Telstra. A substantial portion of his career has been involved in significant rail and transport projects for local authorities such as the Department of Infrastructure and Transport and VicRoads - in the capacity of design, independent design verification and independent construction review.

Vasili possesses an extensive understanding of project experience in diverse roles; using this experience helps him to be a versatile part of any team and contribute positively towards delivering upon client expectations. His team leadership experience extends across engineering teams' establishment, management and sustaining.

Qualifications/Affiliations

- Bachelor of Engineering, Electrical and Electronic Engineering, University of Adelaide



Garima Singh

Senior Engineer-ITS and Smart Infrastructure /Sydney
[Sydney, Australia](#)

Garima has over 14 years of experience in various transportation projects, ranging from conceptual to detailed design stages. Her experience includes technical advisory, subject matter expert (SME) and Independent Roadway Electrical Auditor (IREA), value engineering, as-built documentation, and on-site project experience. She has worked on projects in Australia, United Kingdom, United States (remote), Doha (Qatar), and India.

During her career, Garima has led the ITS (Intelligent Transportation Systems) project team (Engineers and CAD technicians) and was responsible for review and coordinate ITS deliverables. Her skills include ITS design (surface and tunnel), Toll Management Systems (TMS), Data Centre design, associated communication systems, civil infrastructure and electrical design, traffic modelling, microsimulation, data analytics, resource planning, budget management, development of BIM-compliant 3D modelling, roadside utilities, and proficiency in software tools such as AutoCAD Civil 3D, 12D, MicroStation, Revizto5, Navisworks Manage, QGIS, and Bluebeam.

Qualifications/Affiliations

- Master in Transport Planning
- Bachelor of Architecture

Key Projects

- North East Link Packages, VIC, Australia
- Western Sydney Airport, NSW, Australia
- Paramatta Light Rail Stage 2, NSW, Australia
- Smart Motorway Projects M3, M4, M6, M25 and M62, United Kingdom
- Van Wyck Expressway, NY, United States
- ITS Designs for Major Highways, DH, Qatar



Greg Clarke

Senior Drafter – ITS and
Electrical
Gold Coast, Australia

Greg has over 33 years of experience across various sectors, including civil and municipal infrastructure, government projects, mine sites and water utilities in electrical design drafting. Greg has worked on many projects with SMEC over the past 7 years, including Western Sydney Airport (NSW), Mooloolah River Interchange (QLD), M1 Upgrade from Varsity to Burleigh (QLD), Capricorn Hwy Lawrie St Upgrade, Rockhampton Ring Road Project, Fullarton Road Intersections (SA), Vanderlin / Lee Point Intersection (NT), Shuwaikh and Hawally Pump Stations (Kuwait), WestConnex M4 West Widening (NSW).

Qualifications/Affiliations

- Associate Diploma of Electrical Engineering

Key Projects

- Western Sydney Airport (NSW)
- Mooloolah River Interchange (QLD)
- M1 Upgrade from Varsity to Burleigh (QLD)
- Capricorn Hwy Lawrie St Upgrade
- Rockhampton Ring Road Project
- Fullarton Road Intersections (SA)
- Vanderlin / Lee Point Intersection (NT)
- Shuwaikh and Hawally Pump Stations (Kuwait)
- WestConnex M4 West Widening (NSW).



Kain Godden

Experienced Engineer – ITS and Electrical
Gold Coast, Australia

Kain Godden has over 6 years' experience in ITS and Electrical road projects with specialist knowledge of Road Lighting, Traffic Signals and Intelligent Transport Systems on major roadways including freeways, arterial roads, and local roads.

Throughout his career, Kain has worked across multi-disciplinary projects such as M1 Pacific Motorway Upgrade - Varsity Lakes to Burleigh Interchange Upgrade, and North East Link (NEL) in Melbourne. Such exposure to such large infrastructure projects, has allowed Kain to develop many skills including, but not limited to, electrical cable calculations, placement of electrical equipment and clash detection identification and rectification.

Relevant computer knowledge obtained through work and study includes AutoCAD, Microstation, Software Development, ProjectWise, Microsoft Office Suite, AGI32, 12D, JVSG (CCTV Coverage Software), Navisworks and Perfect Lite.

Qualifications/Affiliations

- Bachelor of Engineering Majoring in Mechatronics (Honours)

Key Projects

- M1 Pacific Motorway Upgrade - Varsity Lakes
- Burleigh Interchange Upgrade
- Northeast Link (NEL) in Melbourne



Emma Huang

Experienced Engineer – ITS and
Smart Infrastructure
Sydney, Australia

Emma is an Electrical Engineer with over 7 years of experience in the field of ITS and Traffic Signals. She has experience ranging from concept design to detailed design and WEX documentation in various sectors including tunnels, highways, and local roads. Furthermore, she has expanded the interests from ITS and Traffic Signal design to Road Lightings which can be beneficial in terms of looking at electrical elements design from an overall point of view. Emma has also worked on building communication system design. Additionally, she excels in 3D modelling up to LOD350 using Grasshopper scripting and Revit. Through Grasshopper script, she combines 12D output, Microsoft Excel spreadsheet and AutoCAD output to create 3D model and provide like to like transformation from 2D to 3D. She is proficient with digital design software such as AutoCAD, Revit, 12D, as well as viewing software like Navisworks and Revizto.

She is passionate, quick thinker, accurate and attentive to detail. She is enthusiastic and committed to continuous learning. Emma works well in multidiscipline team environments, effectively facilitating efficient project delivery.

Qualifications/Affiliations

- Certificate 4, Civil Drafting and Civil Engineering CAD/CADD
- Certificate 4. Revit, AutoCad, Inventor

Engineers



Christopher Boulton

Engineer - Lighting, Power and Energy
[Gold Coast, Australia](#)

Christopher Boulton has over 3 years in the electrical infrastructure industry with specialist knowledge of traffic signals, intelligent transport systems, public space outdoor lighting, electrical and communications design, electrical arc flash safety and drafting. Throughout his career, he has worked on multi-disciplinary projects across the nation for a variety of clients, such as North-East Link (Melbourne), Western Sydney Airport (Sydney) and Lawrie Street Upgrade (Rockhampton). Christopher is recognised for his problem-solving and proven capability to deliver quality designs.



Gabriel King

Graduate Engineer – ITS and
Electrical
[Gold Coast, Australia](#)

Gabriel King has 1 year of experience in design and drafting for electrical solutions for Roads and Highways with specialist knowledge of TMR standards, AS/NZS standards relating to electrical works and CAD programming. Although only been in the industry for 1 year, Gabriel has assisted in many projects for both local and state government projects, including Mooloolah River Interchange, Pimpama West Services Road Upgrade, Ingham Road 4 Lane Upgrade in Townsville, Vanderlin Drive Intersection Upgrade in the Northern Territory and Gateway Motorway Upgrade, Brisbane.

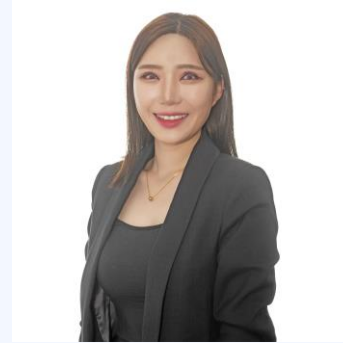
Engineers



Shoi Okagawa

Graduate Engineer – ITS
[Gold Coast, Australia](#)

Shoi has recently graduated from University with a Bachelor of Engineering and is currently working as a Graduate Engineer in intelligent transport systems at SMEC. Shoi has been working on a Melbourne Project, the Northeast Link Program undertaking ITS conduits and pits design. He has proficiency in MicroStation and developing his skills in the 12d Model. He has excellent initiative and great independency.



Cellina Choi

CAD Drafter – ITS and Traffic Signals
[Gold Coast, Australia](#)

Cellina completed a dual Diploma in Technical Engineering and Civil Construction Design. She graduated with a demonstrated understanding and proficiency in managing technical drafting software applications such as 2D & 3D AutoCAD / Revit / Inventor / Spacegass.

Cellina has worked at SMEC for 2 years, starting as a Civil Drafter and progressing into the ITS and Electrical Team. She has gained valuable skills working closely with ITS and Electrical engineers and designers and is proficient in producing CAD drawings for large and complex projects.

Project Experience



ITS and Smart Infrastructure

(Roads and Highways)

OHVD Improvement Program – Ventia Australia

Company: SMEC

Location: Sydney, Australia

Client: Ventia/Transport for New South Wales, New South Wales Government



4

Post Mounted
Cabinet

4

AWS and CCTV

Services

- ITS Detailed Design, procurement, Installation, and commissioning support

Project Overview

Ventia, on behalf of Transport for NSW has requested SMEC to assist with the Sydney Harbour Tunnel (SHT) Over Height Vehicle Detector (OHVDS) improvement program. This program consists of design and install new OHVD systems at various locations on the M1 / Gore Hill Freeway prior to reaching Sydney Harbour Tunnel.

The ITS design in this project includes the following elements:

- VMS and gantry design
- CCTV and pole design
- OHVD and pole design
- Communication design
- Structure design and analysis
- Civil foundation design, including conduits
- ASP3 design
- Documentation

Also, SMEC, on behalf of Ventia, has been commissioned to undertake a Road Safety Audit (Concept Design), as part of the OHV Improvement Program project, with a primary focus on the southbound carriageway.

Real impact, made together

Mount Ousley Interchange

Company: SMEC

Location: Wollongong, New South Wales

Client: Transport for New South Wales (TfNSW)



50,000+

Motorists traffic

\$390M

Project value

Project Overview

Mount Ousley Interchange project will replace the existing intersection of the Princes Motorway and Mount Ousley Road. The new interchange is a crucial development for the Illawarra and the South Coast region, enhancing connectivity, safety, and efficiency for travellers and the freight industry now and into the future.

Collaborating with Fulton Hogan on the winning tender design, SMEC ITS team was engaged by TfNSW to work on the ITS detailed design for Communication and Electrical systems.

Services

- ITS Detailed Design for Communication and Electrical systems (With Fulton Hogan)

Real impact, made together

Rockhampton Ring Road

Company: SMEC

Location: Queensland, Australia

Client: John Holland Group



Image courtesy Department of Transport and Main Roads

Artist's Impress

3

ITS design packages

15

ITS site design

Services

- ITS Design Support- IFC
- Detailed Design
- Contract documentation

Project Overview

Rockhampton Ring Road will improve road safety and strengthen the region's economy by improving freight efficiency and connectivity between key employment, leisure, tourism and residential growth areas in Rockhampton and the surrounding areas and improving access to Rockhampton via the Bruce Highway.

SMEC and Jacobs have engaged to deliver the detailed design and contract documentation.

SMEC's scope of work includes ITS design support – IFC.

The ITS design and requirements were developed following design coordination with DTMR to support the Fitzroy River Flooding Traffic Operations Plan.

This design has been developed to document the ITS packages for 1IT10 (South Package), 2IT10 (North Package), and 3IT10 (RCR Package) for the Rockhampton Ring Road Project.

Real impact, made together

Cairns Bruce Highway Upgrade - Detailed Design

Company: SMEC

Location: Brisbane and Cairns, Australia

Client: Department of Transport and Main Roads, Queensland Government



3.5km

Constrained urban corridor

6

traffic signal intersections

Services

- ITS detailed design

Project Overview

SMEC was responsible for defining and producing the ITS detailed design. This includes a new fibre optic communications network designed to be expandable for future roll-out of ITS and busway infrastructure, vehicle detectors, CCTV and web cameras and upgrade of the 6 traffic signal intersections.

The Cairns Bruce Highway Upgrade Project – Sheehy Road to Chinaman Creek – involves the upgrade of 3.5km of constrained urban corridor. This upgrade includes two interchanges; provision of service roads; QR parallel corridor with future duplication provision requirements; the elimination of existing rail crossings; intersection upgrades; five bridges, including a pedestrian bridge; as well as complex traffic staging and management.

Real impact, made together

Cardwell Range Crossing, Bruce Highway – Detailed Design

Company: SMEC

Location: Brisbane and Cairns, Australia

Client: Department of Transport and Main Roads, Queensland Government



25m

Telecommunication tower

3.6GHz

Licensed multi-point wireless communications network

Services

- ITS detailed design

Project Overview

SMEC was responsible for defining and producing the ITS detailed design which includes 25m telecommunications tower with a 3.6GHz licenced multi-point wireless communications network to link into the Townville TMC to overcome black-spots on the range and provide alternative communications links for existing and future ITS on both sides of the range.

In addition, the design includes an innovative ANPR point-to-point incident detection solution, CCTV surveillance cameras, weather monitoring equipment, fibre optic communications and utilising existing VMS on both sides of the range. This system is being integrated into STREAMS to provide more effective incidents detection, verification and response.

The upgrade is to realign the 4 km of the Bruce Highway over the Cardwell Range to meet current standards of highway design. Major constraints for the project include working inside a road corridor surrounded by national park and World Heritage Wet Tropics with a grade separated rail crossing at the northern end of the project.

Real impact, made together

Ipswich Motorway Upgrade (Rocklea to Darra)

Company: SMEC

Location: Western Brisbane, Qld

Client: Department of Transport and Main Roads (TMR - Metro),
Queensland Government



25km

of bicycle and
pedestrian paths

3

new service roads

Services

- Options analysis
- Business Case

Project Overview

SMEC was commissioned by TMR (Metro) to undertake the options analysis, business case and preliminary design of the Ipswich Motorway, which is part of the National Highway system in Queensland.

A fully managed motorway concept solution including truck bypasses to give priority to freight transport was part of the design solution. The design also included CCTV systems, fibre optic communications systems and traffic management control systems

The Ipswich Motorway plays a vitally important role in the transport of freight between Melbourne and Sydney and Brisbane and serves Brisbane southern industrial hub including major freight terminals at Rocklea, Archerfield and Acacia Ridge. In 2003 KBR completed a concept planning report for Main Roads covering the Motorway between Rocklea and Dinmore. Major upgrading work is well underway on sections of the motorway between Darra and Dinmore. The Rocklea to Darra section is the remaining section of the motorway which has not yet been improved.

Real impact, made together

Ipswich Motorway Upgrade (Dinmore to Goodna)

Company: SMEC

Location: Western Brisbane, Qld

Client: Department of Transport and Main Roads (TMR -Metro) ,
Queensland Government



32

bridges

8km

6/8 lane motorway

Services

- Planning
- Detailed Design

Project Overview

Upgrade of the section of the Ipswich Motorway between Dinmore and Goodna.

The major scope items of the project included:

- Approx. 8km of 6/8 lane motorway with provision for future dynamic lane management
- Motorway to motorway grade separated interchanges with the Warrego and Cunningham Highways with provision for future connection of the Alternative Northern Corridor
- Grade separated interchange at Redbank with provision for the future connection to the Smith St extension to the south and Monash St extension to the north
- Grade separated interchange at Goodna
- 32 bridges including 5 pedestrian bridges
- New service roads and upgrading of local roads
- Drainage including transverse, longitudinal and water quality infrastructure
- Provision for pedestrian and cyclists along the Ipswich Motorway corridor
- Provision of ITS systems including VSL/LUS gantries, CCTV, ramp metering and incident detection to provide a fully managed motorway solution

Real impact, made together

Gateway Upgrade South (GUS)

Company: SMEC

Location: Australia

Client: Department of Transport and Main Road, Queensland Government



4.5km

long

4 new

Retaining wall

Project Overview

The project included the duplication of the Gateway Bridge and the upgrade of 20km of the Gateway Motorway from Mt Gravatt-Capalaba Road to Nudgee Road.

In addition, SMEC was involved with the design of Gateway Upgrade South which is an extension of the Gateway Upgrade Project. The project extends from Mt Gravatt-Capalaba Road and Miles Platting Road making the project approximately 4.5 km's long.

The design involves realigning the motorway so that safety is improved. The realignment and widening can only take place within the existing road corridor with no widening to the Bulimba Creek side.

Services

- Preliminary Design
- Detailed Design

The design includes several structures, which are widening two bridges under live traffic, and constructing 4 new retaining walls. There is a new transverse and longitudinal drainage as well as a fauna underpass. New ITS gantries have been designed to hold variable speed limit signs as part of a fully managed motorway solution. New street lighting is being installed for the entire length. The existing Mt Gravatt-Capalaba Road intersection was remodeled and widened to improve its performance and requiring several large PUP relocations.

Real impact, made together

Pacific Motorway Upgrade – Package 2 (Gateway Motorway to Logan Motorway)

Company: SMEC

Location: Logan, Australia

Client: Department of Transport and Main Roads (TMR), Queensland
Government



3

Carriageways
upgrade

4

ITS services

Services

- ITS consultation
- Relocation of existing ITS infrastructure (VMS and CCTV cameras)
- Early installation of existing ITS infrastructure
- Provision for VSLC/VSLG gantries in the interim upgrade

Project Overview

The project involves the fast-track provision of additional capacity southbound on the M1 between the Gateway Motorway and the Logan Motorway.

This is to be achieved by additional lanes between Gateway Motorway to Rochedale Road, Fitzgerald Avenue to Shortland Street and Shortland Street to Old Chatswood Road. The project includes provision for managed motorways, bikeway facilities, ultimate upgrade options and Southeast Busway Extension.

SMEC is responsible for all technical inputs including alignment, drainage, geotechnical, pavements, ITS, consultation, environment, urban design and costing.

Relocation of existing ITS infrastructure (VMS and CCTV cameras) to suit the interim upgrade and ultimate upgrade of the Motorway.

Early installation of ITS infrastructure to assist with the management of the temporary traffic arrangements during construction

Provision for VSLC / VSLG gantries in the interim upgrade (i.e., footings positioned to suit ultimate upgrade). It is anticipated that full managed motorways will be incorporated after the interim upgrade. Provision for ramp metering on all entry ramps. Inclusion of help telephones in the median and outside shoulders

Real impact, made together

Smith Street Motorway and Olsen Avenue

Company: SMEC

Location: Gold Coast, Australia

Client: Department of Transport and Main Roads (TMR), Queensland Government



4

Full length accessible LUMS gantries

6

ITS Services

Project Overview

SMEC was commissioned by Department of Transport and Main Roads (TMR), Queensland Government to develop and assess options to upgrade the Smith Street Motorway/Olsen Avenue Interchange and provide an additional eastbound lane on the Smith Street Motorway.

The purpose of this project was to support the development of the new Gold Coast University Hospital and proposed knowledge precinct at Parkwood, as well as cater for the future growth of the adjacent Griffith University and allow for the future Gold Coast Rapid Transit Project.

Services

- ITS detailed design

SMEC's role included: responsible for defining and producing the ITS detailed design which includes Managed Motorway infrastructure comprising 4 full length assessable LUMS gantries, vehicle detectors, fibre optic communications, CCTV and web cameras and upgrade of the traffic signals for the redesigned Olsen Avenue intersections.

Image courtesy of Transport and Main Roads

Real impact, made together

Calliope Arterial Interchange – Bruce Highway

Company: SMEC

Location: Gladstone, Australia

Client: Department of Transport and Main Roads (TMR), Queensland Government



4

CCTV camera sites

2

Loop detector sites

Services

- ITS detailed design

Project Overview

SMEC was responsible for defining and producing the ITS detailed design comprising two intersections, four CCTV camera sites and two loop detector sites for the new grade separated intersection of the Bruce Highway with Dawson Highway.

Preliminary design of the upgrade to a staged grade separated interchange at the intersection of the Bruce and Dawson Highways at Calliope. There is a staged development of a diamond type interchange progressing to loop ramps in the ultimate configuration. The design includes the alignment, longitudinal and cross drainage, barriers, public utility plant, signs and lines and liaising with TMR Bridge branch for design of the bridge.

The project includes planning of the accesses and liaising with the residents to achieve the safest outcomes. The design also includes extensive traffic analysis to ensure design meets expected traffic outcomes for the duration of the interchange, especially for the ultimate stage of loop ramps.

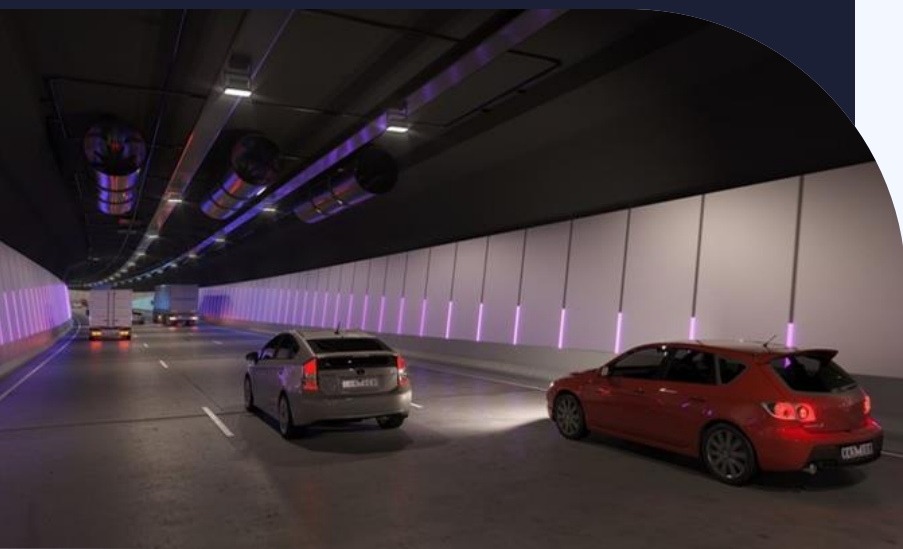
Real impact, made together

North East Link

Company: SMEC

Location: Victoria, Australia

Client: Spark Consortium



6.5Km

Road and Tunnel

1.9Km

Total Tunnel Length

Services

- Foundation network design - Primary package

Project Overview

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 are engaged to deliver the detailed design of Australia's largest road project.

The scope of works includes:

- Design and construction of the M80 Ring Road upgrade from Plenty Road to Greensborough Bypass and of NEL from Greensborough Highway to near Richards Avenue, including the Greensborough Bypass interchange and infrastructure interfacing with the Hurstbridge Rail
- Design, supply, installation, testing, and local commissioning of the ITS Elements for the M80 Ring Road and the associated infrastructure
- Building Melbourne's first dedicated busway along the Eastern Freeway
- Upgrading bridges and adding more signalised crossings for walkers and bike riders

Real impact, made together

North East Link Stage 2 Tender Design

Company: SMEC

Joint Venture: Aurecon

Location: Victoria, Australia

Client: Spark Consortium



5.2 Km

Road and
Intersection Design

2028

Year of completion

Project Overview

The North East Link East Freeway Upgrades from Tram to Springvale (T2S), is one of the packages of the NEL Program. This multi-discipline project includes four grade-separated interchanges with ramp connections to Eastern Package as well as ITS, traffic signals, roadside devices, and Freeway Motorway Systems required for managed Motorways.

The brief ITS scope of works includes:

- Design and construction of the Eastern Freeway upgrade from near Tram Road to Springvale Road, including additional lanes in both directions.

Services

- Design, supply, installation, testing, and local commissioning of the ITS Elements for the Eastern Freeway Upgrades
- Communications Data Network (CDN) - Fibre Optic Backbone and associated infrastructure
- Electrical Network and associated infrastructure
- Design, supply, installation, testing, and local commissioning of the ITS Elements for the Eastern Freeway Upgrades: Tram to Springvale and the associated infrastructure including The Infra-Red Traffic Logger (TIRTL), Wireless Vehicle Detectors (WVDs), Overhead Lane Use Management Signs (LUMS), Variable Speed Limit Signs (VSLs), Variable Message Signs (VMS), Side, Freeway Ramp Signal (FRS) Sites, CCTV, Ramp Control Signs.

Real impact, made together

M7-M12 Interchange

Company: SMEC

Location: Sydney, Australia

Client: John Holland Group



2 billion

Project cost

4

Years project
timeline

Project Overview

Supporting the continued growth of Western Sydney, addressing existing congestion and reducing travel times on a critical freight route.

SMEC in association with our design partner Jacobs and contractor John Holland have been appointed the design and construction contract.

The project will widen sections of Western Sydney's M7 and construct a new interchange, connecting the future Western Sydney Airport precinct to the future M12 motorway.

Supporting the project, SMEC undertakes the ITS design support and verification.

Services

- ITS Design Support and Verification
- Design and construction

Real impact, made together

Bruce Highway Smart Motorway Construction Administration

Company: SMEC

Location: Queensland, Australia

Client: Department of Transport and Main Roads



60km

length

5

Major ramps

Project Overview

SMEC is responsible for reviewing and acceptance of ITS smart motorway component of this 60km project, ensuring traceability of implemented design to original design requirements, ensuring that implemented design satisfy all technical requirement of original design and referenced standards.

ITS outcomes are to deliver safer, smoother, and more reliable travel times for motorists by managing traffic in real-time to reduce stop-start travel, improve safety, and offer more reliable travel times. Full Managed Motorways including ramp meter including pavement widening works for 5 major ramps.

Services

- Reviewing and acceptance of ITS smart motorway component

Real impact, made together

Colombo-Katunayake Expressway Project

Company: SMEC

Location: Sri Lanka

Client: Road Development Authority



25km

Toll road

4

interchanges

Services

- Design and construction of all control systems including ITS, Tolling and Communications Systems
- Implementation of the first ETC system

Project Overview

SMEC is responsible for the design and construction of all control systems including ITS, Tolling and Communications Systems, including control centres and customer care centre, for the 25km toll road that connects the International Airport with the capital.

This includes the implementation of the first ETC system which will likely become the national system for Sri Lanka. Role requires advising and reporting to top level of government on key issues and strategy, developing operating and maintenance procedures, support contracts, specifications, managing the contractor, reviewing contractors solution, advising on traffic management systems, back-office tolling operations, interfacing to banks, traffic control centre buildings, security systems (CCTV and Access control), reviewing road and toll plaza design and developing strategy for future migration to free-flow tolling. The ETC System uses the open standard ISO18000-6C GEN2 RFID E-tags.

The latest PTN network solution supplied by ZTE has been installed to provide a resilient, highly reliable and fully expandable telecommunications solution that can be supported by the local telecom companies. All civil and structural works have also been designed to allow easy switching to free-flow.

Real impact, made together

CAREC Trance 1, Taraz to Kordai Section in Zambly Oblast

Company: SMEC

Location: Kazakhstan

Client: Ministry of Transport and Communications



100km

Highway section

4

tranches

Project Overview

The Central Asia Regional Economic Cooperation (CAREC) Transport Corridor 1 Program entails the rehabilitation, improvement or construction of several road sections along the Western Europe-Western China transit corridor and is financed through a Multi-tranche Financial Facility (MFF).

SMEC is responsible for reviewing major transcontinental telecommunications fibre optic and HV power cable relocations and adjudicating over contractor claims for variation. The cables lie on a 100km section of highway which SMEC is the Contract Supervisor.

Services

- Reviewing major transcontinental telecommunications fibre optic and HV power cable relocations and adjudicating

Real impact, made together

Rail, Metro & Tunnel

Sydney Metro Western Sydney Airport – Station Boxes & Tunnelling

Company: SMEC

Location: Sydney, New South Wales

Client: CPB-Ghella JV; Sydney Metro, Transport for New South Wales



9.8km

twin tunnels &
excavations

6

ITS services

Project Overview

SMEC, and our sister company Robert Bird Group, are engaged by CPB-Ghella Joint Venture to undertake detailed design services for the Station Boxes and Tunnelling packages.

The packages include:

- Airport Terminal Station Excavation;
- Claremont Services Facility Shaft Excavation; and
- Bringelly Services Facility Shaft Excavation.

We provided the client with the ITS detailed design including Communication, Wi-Fi, CCTV, OSP, Lighting, Power Land side services, cabinets, carpark design and technology system & electrical.

Services

- ITS Detailed Design including Communication, Wi-Fi, CCTV, OSP, Lighting, Power Land side Services, cabinets, carpark design, and technology systems & electrical

Real impact, made together

Stations System Train Operations and Maintenance (SSTOM) PPP - Western Sydney Metro

Company: SMEC

Location: Sydney, New South Wales

Client: Parklife Metro



23 km

Metro rail line

6

New stations

Project Overview

The SSTOM is a city-shaping project, the 23-kilometre new railway will connect the Western Sydney Aerotropolis in the south with St Marys in the north – where customers can connect to the existing Sydney Trains suburbs T1 Western Line and provide major economic stimulus for Western Sydney. As part of the Design and Construct contract for the project, a SMEC ARUP Design Joint Venture was selected to deliver the Communications and Control design.

The scope of the Stations, Systems, Trains, Operations and Maintenance (SSTOM) are:

- Data Communications Network Design (DCN)
- Network Management System (NMS)
- Passenger Information Display System
- Public Address System
- Electronic Access Control System (EACS)
- Closed Circuit Television (CCTV) System
- Trackside Intrusion Detection
- Help Points

Services

- Communication network design

Real impact, made together

Atal Tunnel

Company: SMEC

Location: India

Client: Border Road Organisation



9km

tunnel

3000m

Above sea level

Project Overview

Atal Tunnel is a highway tunnel built under the Rohtang Pass in the eastern Pir Panjal range of the Himalayas on the National Highway 3 in Himachal Pradesh, India.

SMEC is responsible for the preparation of tender design, specifications and drawings for the procurement of the TMCS and PMCS for a new 9km tunnel through the Himalayas (Contract value: INR\$5bn). This road tunnel is required to comply to the latest standards and best practices in design with the challenging uniqueness of being 3000m above sea level and therefore subject to heavy snow drifts in winter and the impact this has on equipment and cabling.

Services

- Preparation of tender design, specifications and drawings for the procurement of the TMCS and PMCS

Real impact, made together

Power, Communication and Automation

380MWac Aldoga Solar Farm

Company: SMEC

Location: Aldoga, Central Queensland, Australia

Client: ACCIONA Energía



380MW

Solar farm

30 years

Operating period

Project Overview

The Aldoga Solar Farm of 380MW, is located approx. 20 km north-west of Gladstone on the central Queensland coast. The solar development will contribute significantly to the Queensland government's target of achieving 50% renewable energy by 2030 and 70% by 2032. Once commissioned, this 380 MWac solar farm will be connected to the Powerlink 275kV network at the Larcom Creek substation. ACCIONA Energía has signed an agreement to lease the land from EDQ for the purposes of constructing and operating the Aldoga Solar Farm for a period of 30 years.

ITS and Smart Infrastructure team has been involved to provide the communication network, security systems, and CCTV design.

Services

- Communication Network, Security Systems and CCTV design

Real impact, made together

Solar Grazing on 520MWac Stubbo Solar Farm

Company: SMEC

Location: Stubbo, New South Wales, Australia

Client: ACEN



33kV

Overhead, underground
electrical reticulation

185,000

Australian homes per
year

Services

- Communication
Network, Security
Systems and
CCTV design

Project Overview

Located to the east of Dubbo, Stubbo Solar Farm is a project that will generate renewable energy enough to power 185,000 average Australian homes per year and contribute to New South Wales's target of 50% renewable energy by 2030.

The Stubbo solar farm has been designed to allow space for sheep to graze in and around the photovoltaic panels, while also providing shade and protection to grazing animals from the sun. Hence, local geotechnical conditions were monitored and any measures to minimize soil erosion and maximize plant growth establishment potential were identified. As the solar farm is situated on a highly complex site that has variable terrain, we had to realize challenging cable routing solutions for transmission infrastructure up to 33kV overhead and underground electrical reticulation.

ITS and Smart Infrastructure team has been involved to provide the communication network, security systems, and CCTV design.

Real impact, made together

Culcairn Solar Farm

Company: SMEC

Location: Culcairn, New South Wales, Australia

Client: Neoen



330kV

Solar farm

160,000

homes

Project Overview

SMEC Australia Pty Ltd has been requested by BYCA to provide a proposal for detailed electrical design services of the Culcairn Solar Farm. The Culcairn SF generating installation will connect to a new 330kV switching station designated as TransGrid 330kV Switchyard, built and operated by TransGrid.

The civil and structural design, step-up substation, HV overhead line, and MV delivery station are outside this scope of works.

ITS and Smart Infrastructure team has been involved to provide the communication network design.

Services

- Communication Network design

Real impact, made together

Horsham Solar Farm

Company: SMEC

Location: Horsham, Victoria, Australia

Client: ESCO Pacific Pty Ltd



118.8MWac Project Overview

Solar farm

Horsham Solar Farm is a 118.8MWac project 5km east of Horsham central business district in Victoria.

5km

East of Horsham

Engaged by ESCO Pacific, SMEC ITS team's scope of work includes communication and security systems.

ITS and Smart Infrastructure team has been involved to provide the communication network design.

Services

- Communication Network design

Real impact, made together

Jindera Solar Farm

Company: SMEC

Location: New South Wales, Australia



150MW

Solar PV power project

92,000t

Offset carbon dioxide emissions

65,000

households

Project Overview

Jindera Solar PV Park is a 150MW solar PV power project. It is planned in New South Wales, Australia. The project is expected to generate 275,000MWh electricity and supply enough clean energy to power 65,000 households. The project is expected to offset 92,000t of carbon dioxide emissions (CO₂) a year.

ITS and Smart Infrastructure team has been involved to provide the communication network design.

Services

- Communication Network design

Real impact, made together

Maryvale Solar Farm

Company: SMEC

Location: New South Wales, Australia

Client: PCL Construction



243MW

Hybrid power plant

82,000

Households

Project Overview

Maryvale is a 243 MW Solar/Hybrid Power Plant with DC Coupled Battery Energy Storage System located 37km South-East of Dubbo in Maryvale, NSW comprising an area of around 400ha. The projected energy generation for this project is equivalent to an average of 82,000 households per annum, whilst also preventing 615,000 Tonnes of CO2 being prevented from entering the atmosphere.

Services

- Communication Network and CCTV design

Real impact, made together

Borumba Pumped Hydro

Company: SMEC

Location: Australia

Client: Queensland Hydro (previously Powerlink)



24 hours

Of energy storage capacity

2

gigawatts of energy storage

Services

- Communication network transaction strategy advisory and communication network design services

Project Overview

Delivering one of Queensland's largest pumped hydro project, powering our communities long into the future.

SMEC is currently engaged by Queensland Hydro (previously Powerlink) as the advisor managing and supporting the delivery of front-end engineering design and detailed analysis of environmental and social impacts for the proposed Borumba Pumped Hydro Energy Scheme Business Case to support further government investment.

Once delivered Borumba Pumped Hydro will power up to two million Queensland communities with two gigawatts of energy storage and 24 hours of energy storage capacity.

Following the concept studies successful completion in 2021, the Business Case is underway with engineering, environmental, geological, hydrological and commercial studies being completed to assess the feasibility.

ITS and Smart Infrastructure team has been involved to provide the Communication network transaction strategy advisory and communication network design services.

Real impact, made together

Smart Infrastructure (Ports and Maritime)

Port of Newcastle

Company: SMEC

Location: Newcastle, Australia

Client: Newcastle Port Corporation



5800

New Jobs

660

KTPA

Services

- ITS infrastructure, CCTV and security, and Communication network design

Project overview

Port of Newcastle (PON) is undertaking a project to develop the Clean Energy Precinct. The CEP Project would also facilitate the future development of clean energy facilities, infrastructure, and associated works. The Clean Energy Precinct will be developed using a phased approach.

SMEC assembled a team with the capability and experience to assist PON to progress this important project to provide local context but also the experience of working with Clients within the strategy guidelines set by the funding agencies. SMEC's team has been carefully selected to ensure both the technical and coordination is adequately delivered whilst maintaining the essential objectives for Port of Newcastle.

ITS and Smart Infrastructure team in SMEC will undertake the conceptual design for the following elements:

- ITS infrastructure design including the cable pathway, pits and conduits, cabinets, fibre optic and Wi-Fi communication network, and traffic lighting.
- CCTV and security system design
- Internal communication network design.

Real impact, made together

DP World Port Botany

Company: SMEC

Location: Sydney, Australia

Client: DP World



3 million

TEU per year

600m

Port shuttle train sets

Project Overview

Port Botany is one of Australia's largest deep-water container seaports. Located in Botany Bay in Sydney, Australia. The port is dominated by trade in containerized manufactured products and, to a lesser extent, bulk liquid imports including petroleum and natural gas. It is one of Australia's largest container ports and is administered by NSW Ports.

DP World Logistics intends to consolidate the current four individually operated logistics facilities into one super-park with direct access and integration with the contiguous DPW Sydney container terminal.

SMEC and FH have applied for tender design in this project as a JV.

ITS and Smart Infrastructure team has been involved to provide the communication network, and SCADA system tender design.

Services

- Communication network and SCADA systems tender design

Real impact, made together

Skeikh Jaber Al-Ahmed Al-Sabah Causeway

Company: SMEC

Location: Kuwait

Client: Ministry of Public Works



36km

length

6

Lane highway

Project Overview

The Sheikh Jaber Al-Ahmad Al-Sabah Causeway is a causeway in Kuwait under China's Belt and Road Initiative. This causeway is part of the first phase of the Silk City project. Responsible for the tender design of control and communications systems and ITS for 36km of 6 lane highway, 22km of which is causeway which will link Kuwait City to Subiyah.

The project involves two new traffic management centres, in excess of 600 video incident detection cameras VMS every 2km, overweight vehicle detection and enforcement systems, SCADA plant monitoring systems, telecommunication systems, structural monitoring systems, security systems, weather monitoring systems and so on which will all be fully integrated with each other to provide effective traffic and plant management.

Services

- Tender design of control and communications systems and ITS
- Two new traffic management centres

Real impact, made together

Smart Mobility

(Electric Vehicle- Smart Transport Systems)

Real Time Passenger Information and Signal Priority System

Company: SMEC

Location: Auckland, New Zealand

Client: North Shore City Council



Services

- Specifications and contract documentation and providing independent technical advice for procuring a real time passenger information and signal priority system

Project Overview

SMEC is responsible for specifications and contract documentation and providing independent technical advice for procuring a real time passenger information and signal priority system that would be fully compatible with the Auckland systems.

Real impact, made together

Brookvale Depot Bus Vehicle Charging System

Company: SMEC

Location: Brookvale NSW

Client: Keolis Downer



37

Design drawings

8

Specification reports

Project Overview

Keolis Downer is undertaking the detailed design of the Brookvale Depot Electrification, electrical bus vehicles charging systems.

The scope of work for SMEC's ITS and Smart Infrastructure team has been reviewing the Downer Detailed designs against the Zenobe Concept Design, Basis of Design document and the relevant standards; and then reviewing the As Built at the end.

Services

- Electrical bus vehicle and charging systems advisory.

Real impact, made together

Darlington Upgrade

Company: SMEC

Location: Adelaide, Australia

Client: Department of Planning, Transport and Infrastructure (DPTI), South Australian Government



3.3km

Free-flow motorway

9

overbridges

Services

- Fully managed motorway with metered onramps and full coverage by AID cameras

Project Overview

The Darlington Upgrade forms part of the Adelaide North South Corridor Upgrade, which is the centerpiece of South Australia's transport infrastructure strategy.

Darlington upgrade comprised of the construction of approximately 3.3 km of free-flow motorway (with a maximum of five lanes in each direction), nine overbridges, at grade side surface roads and local computer equipment room building. The Darlington Upgrade Project is one of the most complex road project ever undertaken in South Australia, with the upgrade taking place along South Australia's busiest road within a heavily developed environment.

Together with its Design Joint Venture Partners, SMEC was responsible for design coordination, traffic modelling, geotechnical investigations, traffic engineering, bridge and road design, drainage and Intelligent Transportation System (ITS) design.

The ITS component comprised of a fully managed motorway with metered onramps and full coverage by AID cameras. Due to the main motorway being lowered, incident response plans were developed to redirect traffic away from the incident area through the use of electronic signage and LUMS on the motorway and adjacent roads. In addition to the motorway a computer equipment room was provided to house network equipment, spare parts and monitoring room.

Objectives of the project are to:

- Reduce congestion, improve safety, boost freight transportation and reduce travel time.

Real impact, made together

Accreditations



Awards and rankings

Over the past 40 years, SMEC has received numerous industry awards for technical excellence, professional service, community service and the achievements of SMEC's talented employees.



Australia and New Zealand award wins

2022 Winner

- beaten Client Choice Awards, Best Professional Services Firm (>\$200m Revenue)
- beaten Client Choice Awards, Best Built and Natural Environment Consulting Firm (Revenue > \$200m)
- Australasian Rail Industry Awards, Supplier Excellence for Cowra Lines
- PIA ACT, Strategic Planning Project for Infrastructure Study for Woden Urban Intensification

2021 Winner

- 12D Innovation Awards, Customisation
- AITPM Young Professional Award, SA Branch, Gayath Chalabi
- Australian Water Awards, NT Branch, Young Water Professional, Jocelyn Ellero
- Concrete Institute Awards (QLD Branch) Awards for Excellence, Repairs, Restoration & Retrofitting for West Chevron Island Bridge
- Queensland Major Contractors Association Project of the Year under \$100 million for Binna Burra Remedial Works

2020 Winner

- Best Built Environment Firm >\$200m revenue, Client Choice Awards
- Best Professional Services Firm >\$200m revenue, Client Choice Awards
- Most Improved Net Promoter Score[®], Client Choice Awards
- Best Provider to Construction & Infrastructure, Client Choice Awards

Quality Management

At SMEC, we provide not simply a Quality Assurance system but a completely Integrated Management System. Our organisation is third party accredited to AS/NZS ISO standards in Quality, Safety and Environment.

Through the plans for Safety, Quality, Recruitment and Retention and the associated policies and procedures, it is proved that we are committed to a system for the identification of non-conformances and the implementation of corrective and preventative action to ensure continual improvement.

We are committed to a system which will eliminate workplace injury and meet all legislative and legal requirements to which it subscribes.

The Management System of SMEC is based on our policies and includes standards, documents and procedures that are required to deliver services to customers and to monitor performance of those services. Included in the provision of service is the involvement of SMEC in the wellbeing of the environment and those persons who deliver our projects.

Procedures contain actions necessary to correct errors and to prevent their recurrence.



Health and Safety Management

At SMEC, we understand that fostering a robust and responsive health and safety culture is a critical part of our obligation to our employees, our clients and the communities in which we operate.

We underpin our strong culture of health and safety with a detailed, targeted and responsive safety governance framework and management system.

We achieve this by having a Health and Safety Management System (HSMS) fully integrated with our project and service delivery processes.

Our HSMS framework is there to support us in delivery. Supporting our HSMS is SMEC's Safety in Design programme. This programme is designed to offer us practical lessons to use in the efficient and effective management of health and safety risks specific to our day-to-day operations - be it on a project site or in the office.

Our staff can call on the support of a highly professional Health and Safety team who have the knowledge and experience needed to meet the challenges of project health and safety management. In addition, to give 'on the ground support' we appoint experienced health and safety professionals to our project teams, people who combine a deep understanding of the management of health and safety and the needs of our clients.

With our knowledge and experience in project and service delivery, SMEC offers an unparalleled level of expertise in the successful management of health and safety risk.



Environmental Management

Our Environmental Management System is integrated into our Quality Management System and is delivered through a global framework for Surbana Jurong Group delivery methodologies.

Our delivery methodology standardises the way we engage our clients and deliver projects, from inception to completion.

These methodology practices enable us to deliver consistently, cost effectively and in a timely manner. This approach aims to enhance client relationships and instill confidence that Surbana Jurong Group has a standard approach based on quality and rigour. Our system is online, continually reviewed and updated to reflect best practice and is readily available to all our staff.

Our commitment to the EMS is evidenced with signed polices by top management and agreed objectives, measures and targets. Regular management reviews direct the planning and strategic goals to align with the overall business plan.

Our methodologies focus on meeting our clients' requirements while still encompassing the requirements of the relevant ISO Standards. BMS is our web-based delivery platform for performance support information. It provides simple, easy-to-follow "how-to" instructions for staff in their execution of all the business processes and procedures that underpin SJ Group's daily operations. It is available to all staff, 24 hours a day.

Through review, feedback, suggested improvements, reporting and communication programmes we strive to continually improve our client services and add value.





Real impact,
made together.

For 75 years, SJ has built a reputation as a trusted partner on major Transport, Water and Energy projects around the world.

SJ is committed to positively impact the people, the environment and the clients and communities we serve. Through our network of global specialists, our specialist teams draw on deep expertise and systems thinking to simplify the complex and deliver integrated engineering solutions across a range of diverse environments.



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