

Introduction to KSEL



Kimberley Systems Engineering Limited



Table of Contents

1	Executive Summary	2
1.1	Introduction	2
1.2	How KSEL can support its Clients	2
2	Strategic Position of KSEL	3
2.1	Service Portfolio	3
2.2	Transport Project Portfolio	4
3	Our People	5
4	Commercial Offer	7
4.1	Terms & Conditions	7
4.2	Finance	7
	Appendix A: Example Projects	8



1 Executive Summary

1.1 Introduction

Kimberley Systems Engineering Limited (KSEL) was formed in 2013. The objective of the company is to provide client neutral Engineering Safety Management and System Engineering services across multiple market sectors and technical applications.

KSEL is an ISO 9001 accredited company committed to delivering an outstanding level of service to its clients by ensuring that all works undertaken are delivered to a high quality, delivered on time and budget and to the satisfaction of the client and that all engaged resources are of a high calibre in the engineering field. Most of our staff have substantial knowledge in the rail, nuclear, aviation, defence, and petrochemical sectors, each holding a minimum of 20 years of engineering experience. This extensive knowledge enables us to engage projects swiftly and effectively from day one, delivering viable and cost-effective solutions to an array of challenging engineering problems.

“One of the most challenging railway projects ever, London Underground Subsurface Lines Upgrade. Jon is the most reliable and trustworthy professional I came across in my career. In addition to his second-to-none technical expertise, Jon has very good people and project management skills. Every single time deliverables he was responsible for were on time and of exceptional quality. In addition to the extremely heavy workload of his own, Jon was always prepared to help and support others.” — Prof. Ivan Lucic, Professional Head of Systems Safety.

1.2 How KSEL can support its Clients

KSEL brings several significant capabilities that facilitate an integrated interdisciplinary approach to the specification, design, creation, and operation of a system (or programme of works), including:

- A proven capability in Light, Heavy and Metro Rail - KSEL draws on experiences gained delivering programmes such as High Speed 2 (HS2), Four Line Modernisation Programme (4LM), Digital Railway (DR), Victoria Line Upgrade (VLU), Invensys Rail Distance to Go Radio System (DTG-R), WESTRACE, Great Western Electrification Programme, Cooling the Tube Programme, European Rail Train Management System (ERTMS) Betuweroute, GATC (Alstom Generic ERTMS Platform), West Coast Route Modernisation (WCRM), Train Protection & Warning System (TPWS), Transport for Greater Manchester (TfGM) Metrolink Phase 3 and many others.
- The delivery of services to satisfy three key objectives - technical, operational, and programme integration for Signalling and Control Systems Design & Application.
- Experience of compliance with Client Processes, British, European, and other International Standards including Common Safety Method (CSM), CENELEC and Military Standard (MIL-STD).
- Governance through lifecycle-based staging to control the design processes and provide incremental baselines from coordinated design efforts. A granular, structured approach to managing large complex projects is adopted, which allows for applicable and controllable migrations that can be monitored against an agreed baseline.
- Experienced railway programme management staff - KSEL will staff each commission with experienced railway discipline engineers who have consistently demonstrated the skills, creativity, and abilities required to promote timely and economical attainment of deliverables.

‘KSEL can provide a winning solution for its clients with a strong basis on which to deliver success.’



2 Strategic Position of KSEL

2.1 Service Portfolio

We have the flexibility to deliver the following services acting as owner’s engineer, advisor, consortium member, partner, independent assessor, or an arm of the client team whilst protecting clients’ interests and realising their goal.

Service	Service Description
Programme Management	<ul style="list-style-type: none"> • Acceptance and Approvals Management • Integrated Planning and Programme Controls • Quantified forward-looking risk assessment across the entire supply chain • Stakeholder Management • Engineering Safety Management • Reliability, Availability and Maintainability Management • Quality Management • Systems Assurance Management • Systems Engineering Management – Delivery Strategy • System migration planning • Value Engineering and Management
Safety, Reliability, Availability & Maintainability	<ul style="list-style-type: none"> • “As Low As Reasonably Practicable” (ALARP) and Cost Benefit Analysis (CBA) • Common Safety Method on Risk Assessment and Evaluation (CSM-RA), • Consequence and Loss analysis • Failure Reporting, Analysis, and Corrective Action System (FRACAS) & Data Reporting, Analysis and Corrective Action System (DRACAS) • Functional Safety Risk Assessment • Hazard Identification and Analysis • Human Factors and Ergonomics • Operational Scenarios • Operations Safety Hazard Analysis (OSHA) • Option Analysis • Quantitative Risk Assessment (QRA (ETA/FTA)) • Reliability, Availability and Maintainability (RAM) Analysis • Risk Management • Safety and RAM Requirements Derivation and Apportionment • Safety Case preparation and management • Software Assurance



Service	Service Description
Systems Engineering, Assurance & Integration	<ul style="list-style-type: none"> • Configuration Management • Demonstrations, Tests & Trials • Design review and acceptance management • ElectroMagnetic Compatibility (EMC) • Expert witness and accident investigation • Interface Management • Lifecycle Management • Performance & Process Modelling • Quality Management • Requirements Management • System Modelling • System Assurance Qualification Tests • Systems Integration • Use of Building Information Modelling (BIM) • Verification & Validation
Independent Professional Reviews	<ul style="list-style-type: none"> • Auditing • Independent Professional Reviews (IPRs) • Independent Safety Assessment (ISA)
Training	<ul style="list-style-type: none"> • Bespoke System Safety & Engineering courses to meet the requirements of the client. • Goal Structuring Notation (GSN) • Yellow Book • Knowledge sharing of tools developed for specific commissions.

2.2 Transport Project Portfolio

KSEL and its key staff have a proud history of providing railway related services around the globe. From London to Hong Kong, we have delivered engineering solutions to a wide variety of clients including many in the UK and Europe.

Appendix A details a selection of projects delivered both by KSEL and by our people under previous employment.



3 Our People

KSEL provide clients with a wide range of advice, skills and resources in strategic consulting, programme management, planning, design, engineering, construction management, and operations.

As an employee-owned company, we take great pride in creating a mutually supportive, rewarding workplace that encourages our professionals to achieve their full potential.

“Our people make our business”

Accountability is key to our service. We will appoint a KSEL Designated Account Manager, supported by the designated Project Delivery team. A summary of each of the core member’s skills and competences is provided below and copies of CVs are available upon request.

Name	Biography
Jonathan Harding MSc, BSc, FSaRS, CEng, CPhys	Jon is a Chartered Engineer and a Fellow of the Safety and Reliability Society with over 30 years’ experience in Systems Engineering, Safety, Reliability and Risk Management. He has worked on High Speed 2, London Underground, Network Rail, European and Hong Kong safety approval processes. He is Yellow Book, Six Sigma and Lean trained and has experience in the application of the CSM-RA, as well as IEC 61508 and British Standards BS EN 50126, 50128 and 50129.
Mukesh Sharma BEng, MIET	Safety and Reliability Engineer with over 30 years’ experience in the development of safety-critical railway signalling and train control systems, particularly the safety engineering and management of safety assurance and risk assessment. He has considerable working experience with BS EN 50126, 50128 and 50129, IEC 61508, and the application of the CSM-RA on the Crossrail project, in addition to being Yellow Book trained. Considerable previous safety and reliability experience in Nuclear, Power Distribution, and Baggage & Bulk Handling Systems.
Alan Lee BEng, CEng, MIET	Alan brings the benefit of over 30 years of RAMS, systems engineering and systems assurance “cradle to cradle” experience across multiple market sectors. He has full working knowledge of audit standards (ISO 19011), quality management systems (ISO 9001); CENELEC, ROGS Regulations, CSM-RA, GRIP and is familiar with a wide range of standards and techniques. Alan has performed the role of Project Director, Project Manager, Management Consultant, and Independent Assessor and has sat on many Project Review Boards, including Edinburgh Tram.
Jon Reed BEng, CEng	Jon is an experienced and versatile Chartered Safety Engineer with over 20 years’ experience in Safety, Loss Prevention and Risk Management, and Reliability techniques. Has undertaken Safety Engineering in Nuclear, Oil & Gas, Rail, Aerospace and Defence industries and is skilled in the production & verification of safety cases and supporting documentation, and a variety of risk identification, analysis & assessment methodologies, including the application of the CSM-RA on HS2 and the Yellow Book in London Underground.
Steve Clark BSc (Eng) Hons, CEng, FSaRS, FIMechE	Steve is a Chartered Engineer with over 30 years’ experience specialising in safety and reliability. Steve has a successful track record both as a consultant in a commercial environment and as an internal company specialist. His experience ranges a wide variety of industries including Rail, Aviation, Oil & Gas, Defence and Nuclear. He has demonstrated success and versatility both as a technical analyst and as a manager, with excellent client management skills and commercial awareness. He has previously served on the Council of the Safety and Reliability Society (SaRS) and was the 2010/11 SaRS Chairman.



KSEL Capability Statement

Name	Biography
Kimberley Harding BEng	Kimberley has been a member of the KSEL team since 2013 and is currently working towards a Masters' degree in Railway Systems Engineering and Integration, following completion of her Product Design Engineering undergraduate degree in 2020. She has gained experience as a design engineer for HS2, Semmco Ltd and TfL, with expertise in inclusive design, CENELEC compliance and British Standard technical drawings.
Matthew Elsmore MEng	Matt is a Junior Systems Engineer, having joined KSEL in April 2021, working alongside the completion of a PhD in Mechanical Engineering. He achieved a Masters' degree in Mechanical Engineering in 2017 and has gained experience in a range of engineering and research settings. Matt has participated in projects spanning multiple industrial sectors including Civil, Aerospace, Automotive, Materials, Chemical and Nuclear engineering. His research background provides a critical and analytical approach to engineering problems, being a named author on multiple journal publications.

In addition to our core team, we are privileged to work alongside several associates with backgrounds such as Safety Engineering, Human Factors, Systems Engineering, Performance, Reliability, Availability, Maintainability, Safety (PRAMS), Quality Assurance and EMC.



4 Commercial Offer

4.1 Terms & Conditions

Each commission will be conducted in accordance with the agreed set of Terms and Conditions.

4.2 Finance

KSEL works with its clients to define a pricing methodology best suited to the scope of services and programme duration required.

KSEL has worked on contracts featuring fixed price, target price, time & expense, and capped pricing structures. KSEL also considers incentivising mechanisms against agreed KPI metrics.



Appendix A: Example Projects

Customer Name	Project / Contract Name	Scope of project	Services Provided by KSEL Staff
Alstom (Belgium)	ERTMS	Product Safety Assurance Manager (All products designed and developed in Alstom Belgium and supporting development of products in Alstom, France)	<ul style="list-style-type: none"> • Programme Management • Safety, Reliability, Availability & Maintainability • Independent Professional Reviews
Alstom (UK)	WCML	Safety and RAM Engineering	<ul style="list-style-type: none"> • Safety, Reliability, Availability & Maintainability
Bellwether	Network Rail LINX project	Independent safety advisor to Network Rail's Layered Information Exchange (LINX) to understand the safety implication of the first deployment of the LINX system on Network Rail	<ul style="list-style-type: none"> • Safety • Independent Professional Reviews
Bellwether	TfL Cable Car for London	Independent safety advisor to TfL reviewing and approving the TfL cable car for London Safety Case	<ul style="list-style-type: none"> • Safety • Independent Professional Reviews
Bilfinger Berger, Siemens, CAF (BSC) and Transport initiatives Edinburgh (TIE)	Edinburgh Tram System Design Services	Develop the concept design through to provision of a comprehensive set of detailed construction drawings	<ul style="list-style-type: none"> • Programme Management • Systems Engineering, Assurance & Integration • Safety
Cross London Rail Links	Communications and Control Systems Package C170	Progress GRIP3 Communications and Control Systems Design Options to GRIP 4 I.E. Single Option Solution	<ul style="list-style-type: none"> • Programme Management
Emcor Rail	CTRL 588 Tunnel & Ventilation Systems	Mechanical and Electrical (M&E) Systems for Section 2 of the Channel Tunnel Rail Link (CTRL)	<ul style="list-style-type: none"> • Programme Management • Safety, Reliability, Availability & Maintainability • Independent Professional Reviews



KSEL Capability Statement

Customer Name	Project / Contract Name	Scope of project	Services Provided by KSEL Staff
GHD	TfL FRAMEWORK: Station Capacity & Infrastructure and 4LM System Safety Support	Provision of system safety expertise to review the system safety activities required by TfL to deliver their Station Capacity & Infrastructure and 4LM Programmes.	<ul style="list-style-type: none"> • Programme Management • Systems Assurance • Safety
Heathrow Airport Limited (HAL)	Heathrow Terminal 2B Integrated Communications System (ICS)	Design, development, and implementation of the Integrated Communications System for Terminal 2B	<ul style="list-style-type: none"> • Programme Management
High Speed 2 Ltd	High Speed 2	Systems Design and Systems Integration Lead Systems Safety Support for all Phase 1, 2a and 2b works	<ul style="list-style-type: none"> • Safety, Reliability, Availability & Maintainability
Irish Rail (Iarnród Éireann)	Implementation of GSM-R	Systems Assurance Manager	<ul style="list-style-type: none"> • Programme Management
Irish Rail (Iarnród Éireann)	Implementation of CAWS-ATP	Systems Assurance Manager	<ul style="list-style-type: none"> • Programme Management
Irish Rail (Iarnród Éireann)	Iarnród Éireann Consultancy Services for Independent Verification	Dublin City Centre Re-signalling Phase 1 Scheme	<ul style="list-style-type: none"> • Independent Professional Reviews
Irish Rail (Iarnród Éireann)	Dublin City Centre Re-signalling	ISA of safety assurance work covering Signalling command and control systems, S&C, Level crossings, Telecoms, Low voltage (<1000V) power supplies	<ul style="list-style-type: none"> • Independent Professional Reviews
Mor Smith	TPWS STM System for Bombardier Crossrail project for the class 345 train	Engineering Safety Management	<ul style="list-style-type: none"> • Safety



Customer Name	Project / Contract Name	Scope of project	Services Provided by KSEL Staff
Mott MacDonald	RFLI Crossrail Infrastructure Acceptance and Readiness for Trial Running	<p>KSEL performed a process review of RFLI's compliance with the RFLI Assurance and Business management systems to be applied to meet RFLI's obligation as an Infrastructure Manager under ROGS.</p> <p>The process required KSEL to produce an RFLI version of the CESAC that gave:</p> <ul style="list-style-type: none"> • a high level GSN that could be modified by RFLI for use if required; and • RFLI the reassurance that the information required to satisfy the high level GSN would be provided in time to support Trial Running. <p>Provided Safety Assurance support for RFLI Crossrail.</p>	<ul style="list-style-type: none"> • Safety, Reliability, Availability & Maintainability • Independent Professional Reviews • Systems Assurance
Mott MacDonald	HS2 Principal Assurance Lead	Providing Technical Assurance support on one of the HS2 Main Works Civils projects.	<ul style="list-style-type: none"> • Systems Assurance
Network Rail	Great Western Electrification Programme	Lead design organisation and systems integrator	<ul style="list-style-type: none"> • Safety, Reliability, Availability & Maintainability
Network Rail	Digital Railway	The creation of a generic end-state solution that could be deployed as a Digital Railway	<ul style="list-style-type: none"> • Systems safety & assurance Manager • Programme Management • Systems Engineering, Assurance & Integration • Safety, Reliability, Availability & Maintainability • Independent Professional Reviews
Ricardo Rail	TfL FRAMEWORK: TfL Principal System Safety Capability Analysis	Provision of system safety expertise to review the TfL System Safety documentation, competence and allocated resource profiles to determine whether the approach is sufficient to deliver the suite of TFL programmes.	<ul style="list-style-type: none"> • Independent Professional Reviews



Customer Name	Project / Contract Name	Scope of project	Services Provided by KSEL Staff
Siemens Mobility	Crossrail SCADA	<ul style="list-style-type: none"> • Safety Assessment • Production of Engineering Safety Justification. • Validation of the derived safety requirements, • EN50128 Compliance for Software developed using AGILE development process, • Software configuration management 	<ul style="list-style-type: none"> • Safety, Reliability, Availability & Maintainability
Siemens Rail – Invensys Rail	PPP BCV Independent Assessment of Self Assurance Approval Process	Review the format, structure, and contents of a series on LUL DTG-R CENELEC based Safety cases	<ul style="list-style-type: none"> • Independent Professional Reviews
Siemens Rail – Westinghouse Rail Systems Limited	Transmission Based Signalling (TBS) Distance to Go – Radio (DTG-R) System.	Safety Assurance Support	<ul style="list-style-type: none"> • Programme Management • Safety, Reliability, Availability & Maintainability
Siemens Rail – Westinghouse Rail Systems Limited	Kiel Bad Schwartau Signalling System	Delivery of a Metro ATC System for the German Railways	<ul style="list-style-type: none"> • Programme Management • Safety, Reliability, Availability & Maintainability
Siemens Rail – Westinghouse Rail Systems Limited	Jubilee Line Extension Project	WESTRACE Train Control System (Transmission Based Signalling System)	<ul style="list-style-type: none"> • Programme Management • Safety, Reliability, Availability & Maintainability
Steer	Operational, safety and security benefits of a connected rail corridor	<p>Consider use cases that rely on connectivity across the following parts of the rail infrastructure which are considered to cover all relevant locations within the rail environment:</p> <p>Identifying how real-time access to data gathered from these areas could, if collectively used across the whole rail sector, deliver the type of benefits to support a business case for investment in a connected rail corridor</p>	<ul style="list-style-type: none"> • Cost-benefit assessment • Safety Impact Assessment
Synergy Rail	Network Rail COMPASS project	Independent safety advisor to Network Rail’s COMPASS project to analyse all the documentation produced for the safety submissions of Phase 1C: Development and Deployment of the Points Inhibit and Detection Repeat System (PIDR)	<ul style="list-style-type: none"> • Safety • Independent Professional Reviews



Customer Name	Project / Contract Name	Scope of project	Services Provided by KSEL Staff
Transport for Greater Manchester (TfGM)	Manchester Metrolink Delivery Partner	Delivery of a Tram system comprising the Thales Tram Management System (TMS)	<ul style="list-style-type: none"> • Systems Engineering, Assurance & Integration • Safety • Independent Professional Reviews
Transport for London (TfL)	Victoria Line Upgrade	ATO Signal Upgrade	<ul style="list-style-type: none"> • Programme Management • Safety, Reliability, Availability & Maintainability
Transport for London (TfL)	WRSL's LU Signalling immunisation projects.	Process Audit of WRSL's Signalling immunisation projects' design process	<ul style="list-style-type: none"> • Independent Professional Reviews
Transport for London (TfL)	Tunnel Cooling Project	Develop a suite of tools and techniques to understand the likely changes in temperature on the Underground	<ul style="list-style-type: none"> • Lead Systems Engineer • Programme Management • Systems Engineering, Assurance & Integration • Safety
Transport for London (TfL)	Subsurface Lines Upgrade (SSL)	Application of the Invensys Rail CBTC system on the Circle, District, Metropolitan and Hammersmith & City	<ul style="list-style-type: none"> • Systems Assurance • Safety
Transport for London (TfL)	Four Lines Modernisation Programme (4LM)	Introduction of Seven and Eight Car S Stock and infrastructure upgrade (new rolling stock) on the Circle, District, Metropolitan and Hammersmith & City	<ul style="list-style-type: none"> • Lead systems safety engineer • Lead safety assurance engineer • Programme Management • Systems Assurance • Safety
Transport for London (TfL)	Four Lines Modernisation Programme (4LM)	Application of the Thales Seltrac CBTC system on the Circle, District, Metropolitan and Hammersmith & City	<ul style="list-style-type: none"> • Lead systems safety engineer • Lead safety assurance engineer • Programme Management • Systems Assurance • Safety