

**SKILLS FRAMEWORK FOR PUBLIC TRANSPORT
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Rail Systems Maintenance					
TSC	Signal Interlocking Systems Maintenance					
TSC Description	Implement preventive and corrective maintenance activities of signal interlocking systems					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
	PTP-RSM-1034-1.1	PTP-RSM-2034-1.1	PTP-RSM-3034-1.1	PTP-RSM-4034-1.1		
	Carry out scheduled preventive maintenance on Signal Interlocking (SI) and Computer-based Interlocking (CBI) systems	Conduct corrective maintenance on Signal Interlocking (SI) and Computer-based Interlocking (CBI) systems	Troubleshoot faulty Signal Interlocking (SI) and Computer-based Interlocking (CBI) systems to locate faults and recommend rectification methods	Diagnose root causes of Signal Interlocking (SI) and Computer-based Interlocking (CBI) systems failure and review maintenance plans to prevent fault recurrence		
Knowledge	<ul style="list-style-type: none"> Fundamentals of train movement control Operating principles of Signal Interlocking and control tables Types of components in SI and CBI systems Types and functions of SI and CBI systems and equipment Procedures for servicing SI and CBI systems equipment in accordance to organisational maintenance procedure, Work Instructions (WI) and/or Original Equipment Manufacturer (OEM) technical manuals Types of tools and equipment for carrying out preventive maintenance on SI and CBI systems Safety guidelines on use of tools and equipment for preventive maintenance on SI and CBI systems Procedures required for track access 	<ul style="list-style-type: none"> Types of components in SI and CBI systems SI and CBI systems circuit drawing and schematic diagrams Types and functions of SI and CBI systems and equipment Common failures of SI and CBI systems equipment and its components Procedures to dismantle, repair, replace, and re-assemble SI and CBI components Procedures to normalise software faults on SI and CBI systems Methods of power isolation Fail-safe procedures in SI and CBI systems Types of tools and equipment for carrying out corrective maintenance on SI and CBI systems Safety guidelines on use of tools and equipment 	<ul style="list-style-type: none"> Functions of signal interlocking system circuits Fail-safe procedures in SI and CBI systems Common fault symptoms in SI and CBI systems equipment Methods of locating and rectifying faults Types of troubleshooting techniques, equipment and tools Safety guidelines for usage of tools and equipment to execute troubleshooting on SI and CBI systems Procedures to normalise software faults on SI and CBI systems 	<ul style="list-style-type: none"> Factors affecting equipment and system performance Failure investigation and prevention methods Methods and tools for diagnostic analysis Organisational maintenance procedures, Work Instructions (WI) and/or Original Equipment Manufacturer (OEM) technical recommendations Types and methods of continuity and functional tests on SI and CBI systems equipment Functional relationships between interlocking systems, other signalling systems and the overall rail systems 		

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	<ul style="list-style-type: none"> Organisational maintenance documentation and fault reporting procedures 	<p>for corrective maintenance on SI and CBI systems</p>				
Abilities	<ul style="list-style-type: none"> Perform preparation work to conduct maintenance on SI and CBI systems Follow organisational maintenance procedures WI and/or OEM technical manuals to carry out preventive maintenance on SI and CBI systems Perform serviceability checks on SI and CBI systems Use appropriate tools and equipment to carry out preventive maintenance on SI and CBI systems Adhere to safety guidelines and operating instructions for tools and equipment during maintenance work Record SI and CBI systems maintenance activities and report occurrences of faults identified 	<ul style="list-style-type: none"> Interpret work orders and prepare for corrective maintenance Apply power isolation procedures during SI and CBI systems maintenance Normalise software faults on SI and CBI systems Dismantle faulty signal interlocking equipment for corrective maintenance Carry out rectification, repair and/or replacement of faulty components Reassemble and reinstate signal interlocking systems Perform functional tests on signal interlocking systems Apply operating and safety measures in operating tools and equipment during maintenance work Record and collate documentation of SI and CBI systems maintenance activities 	<ul style="list-style-type: none"> Use troubleshooting tools, equipment and methods to locate and analyse causes of SI and CBI systems equipment faults Apply fault identification procedures to determine causes of SI and/or CBI equipment faults Perform system software restoration and/or upgrades Recommend corrective actions for identified faults on SI and CBI systems Implement procedures on safe usage of tools and equipment during maintenance work Analyse maintenance work documented for SI and CBI systems to identify possible workflow improvements 	<ul style="list-style-type: none"> Establish structured failure investigation and specify functional testing requirements Perform fault tree analyses to diagnose root cause failure on SI and CBI systems Review organisational SI and CBI systems maintenance procedures and/or WI Propose new and/or enhanced maintenance procedures and/or WI in reference to OEM technical recommendations Monitor overall maintenance progress of SI and CBI systems to ascertain effectiveness of maintenance procedures Develop solutions by analysing diagnostic data to prevent faults and failures recurrence Develop troubleshooting, rectification and fault analysis methods Develop test procedures for system performance checks Coordinate SI and CBI system maintenance with other rail systems maintenance needs 		