## TSC Category
Rail Systems Maintenance

## TSC<br>Drainage, Plumbing and Sanitary Systems Maintenance

## TSC Description<br>Implement preventive and corrective maintenance of drainage, plumbing and sanitary systems

## TSC Proficiency Description

<table>
<thead>
<tr>
<th>TSC Proficiency Description</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
<th>Level 6</th>
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<tbody>
<tr>
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<td>PTP-RSM-1008-1.1</td>
<td>Carry out scheduled maintenance work on drainage, plumbing and sanitary systems</td>
<td>Conduct corrective maintenance on drainage, plumbing and sanitary systems</td>
<td>Troubleshoot and locate faults on drainage, plumbing and sanitary systems and recommend rectification methods</td>
<td>Diagnose root causes of drainage, plumbing and sanitary systems failure and review maintenance plans to prevent fault recurrence</td>
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### Knowledge
- Types, functions, configurations and operating principles of drainage, plumbing and sanitary systems
- Schematic diagrams of drainage, plumbing and sanitary systems
- Types and specification of drainage, plumbing and sanitary components that includes:
  - Pump control panel
  - Sump pump motor
  - Sump pump supervisory system monitoring
  - Sump pit
  - Level sensors and/or switches
  - Ejector pump system
  - Domestic water pump
- Procedures for servicing drainage, plumbing and sanitary systems in accordance to organisational procedures, Work Instructions (WI) and/or Original Equipment Manufacturer (OEM) technical manuals

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  - Sump pit
  - Level sensors and/or switches
  - Ejector pump system
  - Domestic water pump
- Risk assessment procedures
- Types of drainage, plumbing and sanitary systems fault indicators and response procedures
- Procedures to dismantle, repair, replace, and re-assemble drainage, plumbing and sanitary components

- Common fault symptoms in drainage, plumbing and sanitary systems
- 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 drainage, plumbing and sanitary systems
- Cause and effect diagrams
- Schematic and control diagrams of drainage, plumbing and sanitary systems
- Functional relationships between drainage, plumbing and sanitary systems and the overall rail systems

- Factors affecting equipment and system performance
- Failure investigation and prevention methods
- Methods and tools for diagnostic analysis
- Procedures for defect diagnosis and root cause analysis
- Types and methods of functional and integrated testing
- Organisational maintenance procedures, Work Instruction (WI) and Original Equipment Manufacturer (OEM) technical recommendations
- Functional relationships between drainage, plumbing and sanitary systems and the overall rail systems
- Public Utilities Board (PUB) discharge of trade effluent requirements
### Abilities

<table>
<thead>
<tr>
<th>Activities</th>
<th>Skills</th>
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<tbody>
<tr>
<td>Perform preparation work to conduct preventive maintenance on drainage, plumbing and sanitary systems</td>
<td>Safety guidelines on use of tools and equipment for preventive maintenance on drainage, plumbing and sanitary systems</td>
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<tr>
<td>Follow organisational procedures WI and/or OEM technical manuals to carry out preventive maintenance on drainage, plumbing and sanitary systems</td>
<td>Types and usage of Personal Protective Equipment (PPE) for drainage, plumbing and sanitary systems maintenance</td>
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<td>Perform serviceability checks on drainage, plumbing and sanitary systems</td>
<td>Organisational maintenance documentation and fault reporting procedures</td>
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<tr>
<td>Adhere to safety guidelines and operating instructions for tools and equipment during maintenance work</td>
<td>Procedures for conducting system performance checks and identifying faults on drainage, plumbing and sanitary systems</td>
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<td>Record drainage, plumbing and sanitary systems maintenance</td>
<td>Safety guidelines on use of tools and equipment for corrective maintenance on drainage, plumbing and sanitary systems</td>
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<tr>
<td>Use troubleshooting tools, equipment and methods to locate and analyse causes of faults in drainage, plumbing and sanitary systems</td>
<td>Types and usage of Personal Protective Equipment (PPE) for drainage, plumbing and sanitary systems maintenance</td>
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<tr>
<td>Implement procedures on safe usage of tools and equipment during maintenance work</td>
<td>Organisational maintenance documentation and fault reporting procedures</td>
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<td>Guide Establishment structured failure investigation and specify functional testing requirements</td>
<td>Perform fault tree analyses to diagnose root cause failure of drainage, plumbing and sanitary systems</td>
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<tr>
<td>Perform fault tree analyses to diagnose root cause failure of drainage, plumbing and sanitary systems</td>
<td>Review organisational drainage, plumbing and sanitary systems maintenance procedures</td>
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<td>Implement procedures on safe usage of tools and equipment during maintenance work</td>
<td>Propose new and/or enhanced maintenance procedures and/or WI in reference to OEM technical recommendations</td>
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<td>Analyse maintenance work documented for drainage, plumbing and sanitary systems to identify possible workflow improvements so as to prevent fault recurrence</td>
<td>Monitor overall maintenance progress of drainage, plumbing and sanitary systems</td>
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| activities and report occurrences of potential faults identified | • Perform functional and tripping tests on drainage, plumbing and sanitary systems  
• Apply operating and safety measures in operating tools and equipment during maintenance work  
• Record and collate documentation of drainage, plumbing and sanitary systems maintenance work | ascertain effectiveness of maintenance procedures  
• Develop long-term 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 drainage, plumbing and sanitary systems maintenance with other rail systems maintenance needs |