<table>
<thead>
<tr>
<th>TSC Category</th>
<th>Product Design and Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSC Description</td>
<td>Manage new product design and development from Research and Development (R&amp;D), including initial product design concepts, small batch piloting, market testing and evaluation</td>
</tr>
</tbody>
</table>

<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>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td></td>
<td></td>
<td></td>
<td>ECM-RND-4003-1.1</td>
<td>ECM-RND-5003-1.1</td>
<td>ECM-RND-6003-1.1</td>
</tr>
</tbody>
</table>

- Interpret new product development requirements and plans to conduct new product design and development
- Establish new product development strategies and plans to manage new product design and development
- Formulate strategies for new product design and development to maintain the organisation’s competitiveness

<table>
<thead>
<tr>
<th>Knowledge</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>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Principles and techniques of new product design and process development
- Integrated product development methods
- Principles of designing experiments
- Laboratory techniques
- Analytical and investigative techniques
- Problem-solving techniques
- Technical report writing
- Product specifications and production analysis
- Objective setting principles and practice
- Data analysis and analytical techniques
- Research methods
- Product and process development methodologies
- Integrated product development using technology developments
- Product trial policies and procedures
- Technical report presentation
- Strategic business planning methods
- Production processes, systems and technologies
- Market sector products, trends and new technologies
- Principles of formulating corporate Research and Development (R&D) projects
- Intellectual Property (IP) management
- Regulatory frameworks and laws related to new product development
- New technology developments in integrated product development strategies
| Abilities | • Interpret new product development requirements and plans  
|          | • Conduct new product design, development and testing activities  
|          | • Design and construct experiments  
|          | • Utilise established mathematical and scientific techniques to compile and analyse data  
|          | • Perform analysis on requirements of a product and determine suitable test protocol  
|          | • Perform analysis to determine design and manufacturing constraints  
|          | • Monitor and track the implementation of development plans  
|          | • Collaborate in integrated product development teams using new technology systems and tools  
|          | • Write technical reports detailing procedures, outcomes, and observations  
|          | • Establish new product development strategies and plans  
|          | • Establish Research and Development (R&D) objectives  
|          | • Review development trial product quality results and compare with trial objectives to identify variations  
|          | • Specify re-trial objectives and priorities to procedures  
|          | • Monitor re-trial variations to achieve trial objectives  
|          | • Formulate and propose solutions in dealing with complex products  
|          | • Verify whether products meet functional requirements and up-scaling feasibility  
|          | • Monitor and track R&D activities of new products  
|          | • Collaborate with sales and marketing teams for market testing and evaluation  
|          | • Formulate and lead product piloting trials  
|          | • Lead and direct the work of teams  
|          | • Drive technology developments in integrated product development methods and systems  
|          | • Plan and direct all aspects of the organisation’s R&D policies, objectives, and initiatives  
|          | • Maintain the organisation’s competitive position and profitability by formulating R&D programmes  
|          | • Research new technologies that align the development function with the goals of the organisation  
|          | • Lead product piloting trials, market testing and evaluation  
|          | • Assess the viability of product-to-market options  
|          | • Demonstrate expertise in a variety of the sector’s concepts, practices, and procedures  
|          | • Solve complex problems  
|          | • Lead and direct the work of teams  
|          | • Drive technology developments in integrated product development methods and systems  |