

# CPCSUS5003A Matrix Map

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## ELEMENTS AND PERFORMANCE CRITERIA

Element	Performance Criteria	Task / Question Map
Plan and prepare to construct an energy efficient building.	Relevant stakeholders are consulted to identify the purpose for which the building is to be used and the energy efficiency expectations of its owners or occupiers.	ACTIVITY: Electricity Audit Scenario: Q1 Q2 Q3 Legislative and planning requirements for thermal efficiency to the building process: Q1 Q2 Q3 ACTIVITY: Communicating as part of building process: Q1 Q2 Q3 Stakeholders for Energy Efficient Buildings: Q1 Q2 Q3 Q4 Q5
	Plans, drawings and specifications are reviewed to identify energy efficient requirements of finished building or works.	ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3
	Project is resourced with appropriately skilled tradespeople with energy efficiency competency.	Training Sub-contractors in Energy Efficiency: Q1 Q2 Q3
	Works to be undertaken are scheduled to support energy efficient building strategy.	Sequencing Activities Correctly: Q1 Q2 Q3 Steps of the energy efficient design and construction pyramid: Q1 Q2 Q3 PROJECT: Scheduling for Energy Efficiency: Q1
	Construction materials and products are costed, selected and sourced to conform to and meet energy efficiency expectations of the building or works.	Cost effective energy efficiency measures: Q1 Q2 ACTIVITY: Quantify different insulation options for the building envelope: Q1 Q2 Q3 Q4 Q5 Vapour Barriers: Q1 Q2
	Strategies for the disposal or reuse of waste materials are developed for the project.	Designing to Avoid Waste: Q1 Q2 Specifying to Avoid Waste: Q1 Q2 Q3 Q4 Recycling Building Waste: Q1 Q2 Q3 PROJECT: Waste Management Plan Checklist: Q1 Q2 Q3 Q4

	<i>Impact of energy efficient project on timelines and budget is communicated to owner or occupier and other stakeholders.</i>	<i>ACTIVITY: Electricity Audit Scenario: Q3 Types of Insulation: Q5 ACTIVITY: Communicating as part of building process: Q1 Q2 Q3 ACTIVITY: Marketing Energy Efficiency: Q1 Q2</i>
<i>Communicate and monitor energy efficiency awareness among tradespeople.</i>	<i>Trades and other works on the building project are briefed with expectations for techniques to be used, quality of works to be undertaken, and energy efficiency outcomes required.</i>	<i>Training Sub-contractors in Energy Efficiency: Q1 Q2 Q3</i>
	<i>Sealing of building envelope is assessed for capacity to maximise energy efficiency and improvements are made in sealing the building envelope before other works continue.</i>	<i>Sealing the Building Envelope: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8</i>
	<i>Requirements to maintain energy efficient techniques are communicated to subsequent trades to ensure benefits of the work are not lost.</i>	<i>Training Sub-contractors in Energy Efficiency: Q4</i>
	<i>Alterations to works, construction methods and selected materials are evaluated against project energy efficiency expectations, and impact on energy efficiency is quantified to assist in decision-making processes.</i>	<i>How alterations affect energy ratings: Q1 Q2 Q3</i>
<i>Evaluate and communicate energy efficiency outcomes.</i>	<i>Works undertaken are assessed for adherence to energy efficiency processes.</i>	<i>Quality control of thermal efficiency measures: Q1 Q2 SCENARIO: Insulation Quality Assurance: Q1</i>
	<i>Hand held thermal imaging assessment of building or works is conducted to determine presence of unwanted heat and air leakages, and findings are addressed where necessary.</i>	<i>Thermal Imaging Cameras: Q1 Q2</i>
	<i>Duct testing is conducted where appropriate to identify location of leakages and works are implemented to address findings where necessary.</i>	<i>Conducting Duct Testing: Q1</i>

	<p>External rating of energy efficiency, including star ratings, is sought from recognised expert to verify efficiency of construction.</p>	<p>Getting in a Building Energy Assessor: Q1 Q2</p>
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## REQUIRED SKILLS

Required Skill	Task / Question Map
<b>learning skills to:</b>	
<i>evaluate own actions and make judgments about performance and necessary improvements</i>	SCENARIO: Insulation Quality Assurance: Q1 Thermal Imaging Cameras: Q2 How alterations affect energy ratings: Q3 PROJECT: Scheduling for Energy Efficiency: Q1
<i>respond to change, such as differences in current work site energy efficiency requirements</i>	ACTIVITY: Communicating as part of building process: Q2 Q3 SCENARIO: Insulation Quality Assurance: Q1 Thermal Imaging Cameras: Q1 Q2 How alterations affect energy ratings: Q1 Q2 Q3
<i>numeracy skills to calculate and confirm correct quantities of materials for work tasks</i>	ACTIVITY: Quantify different insulation options for the building envelope: Q5
<b>oral communication skills to:</b>	
<i>enable clear and direct communication, using questioning to identify and confirm requirements, and share information</i>	ACTIVITY: Communicating as part of building process: Q1 Q2 Q3 ACTIVITY: Marketing Energy Efficiency: Q1 Q2 Training Sub-contractors in Energy Efficiency: Q3 Q4
<i>report hazards on the work site, including faults in tools, equipment or materials</i>	Safety considerations when insulating building envelope: Q1 Q2 White Card Check: Q1
<i>use language and concepts appropriate to cultural differences</i>	Training Sub-contractors in Energy Efficiency: Q4
<b>reading skills to:</b>	
<i>conduct own research into current building and construction methodologies and new materials technology</i>	Types of Insulation: Q1 Q2 Q3 Q4 Q5 Cost effective energy efficiency measures: Q1 Q2 How alterations affect energy ratings: Q3
<i>interpret documentation, including drawings and specifications</i>	ACTIVITY: Investigating State Energy Efficiency Building Requirements: Q1 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3
<i>follow written instructions, procedures and signage</i>	Steps of the energy efficient design and construction pyramid: Q1 Q2 Q3

*writing skills to develop reports and recommendations about energy efficient projects*

*ACTIVITY: Communicating as part of building process: Q1 Q2 Q3*  
*PROJECT: Scheduling for Energy Efficiency: Q1*

## REQUIRED KNOWLEDGE

Required Knowledge	Task / Question Map
<i>approaches to waste management consistent with principles of energy efficiency, including processes for minimising and reusing materials</i>	<i>Embodied Energy in the Built Environment: Q1 Q2 Q3 Designing to Avoid Waste: Q1 Q2 Specifying to Avoid Waste: Q1 Q2 Q3 Q4</i>
<i>benchmarks to meet standards and rating systems (such as star rating) for energy efficiency</i>	<i>Building Sustainability Rating tools: Q1 Q2 Q3 NABERS: Q1 Q2 Q3 NAThers: Q1 Q2 Q3 Q4 Q5 NCC Requirements for thermal efficiency: Q1 Q2 ACTIVITY: Investigating State Energy Efficiency Building Requirements: Q1</i>
<i>compliance requirements relating to construction materials and methods, including:</i>	
<i>Australian standards</i>	<i>Standards: Q1 Q2 Q3 Q4 Q5</i>
<i>energy efficiency and sustainability requirements in different jurisdictions</i>	<i>Energy Efficiency and the Building Code of Australia: Q1 Q2 Q3 Q4 Q5 Q6 NCC and Climate Zones: Q1 Q2 Legislative and planning requirements for thermal efficiency to the building process: Q1 Q2 Q3 ACTIVITY: Investigating State Energy Efficiency Building Requirements: Q1</i>
<i>National Construction Code deemed-to-satisfy requirements</i>	<i>NCC and Climate Zones: Q1 Q2 Passive Cooling - Ventilation Design: Q2 Q3 Electrical Lighting: Q1</i>
<i>general construction terminology</i>	<i>Thermal Mass: Q1 Q2 Q3 Q4 Types of Insulation: Q1 Q2 Q3 Q4 Q5 Insulation for Energy Efficiency: Q1 Q2 Q3 Q4 PROJECT: Scheduling for Energy Efficiency: Q1</i>
<i>impacts of different climate zones and environmental conditions on the built environment</i>	<i>Energy Efficiency and the Building Code of Australia: Q1 Q2 Q3 Q4 Q5 Q6 NCC and Climate Zones: Q1 Q2 Climate and House Design: Q1 Q2 Q3 Q4 Q5 Q6</i>

<p><i>performance characteristics and benefits of energy efficiency policies, practices, products and services</i></p>	<p><i>Energy and Greenhouse Gas Emissions: Q2 Q3 Q4 Q5 Q6 Q7 Q8</i>  <i>ACTIVITY: Electricity Audit Scenario: Q1 Q2 Q3</i>  <i>Embodied Energy in the Built Environment: Q1 Q2 Q3</i>  <i>Advanced Framing Strategies: Q1</i>  <i>How alterations affect energy ratings: Q3</i></p>
<p><i>processes for constructing different building types</i></p>	<p><i>PROJECT: Scheduling for Energy Efficiency: Q1</i></p>
<p><i>processes for evaluating energy efficiencies in buildings</i></p>	<p><i>ACTIVITY: Communicating as part of building process: Q2 Q3</i>  <i>SCENARIO: Insulation Quality Assurance: Q1</i>  <i>Thermal Imaging Cameras: Q1</i>  <i>Sealing the Building Envelope: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8</i>  <i>How alterations affect energy ratings: Q3</i></p>
<p><i>theories and principles of energy efficiency applied to buildings and construction processes</i></p>	<p><i>Energy and Buildings: Q1 Q2 Q3</i>  <i>Operational Energy: Q1 Q2 Q3</i>  <i>Zero Energy Buildings: Q1 Q2</i>  <i>Embodied Energy in the Built Environment: Q1 Q2 Q3</i>  <i>Solar passive design II: Q1 Q2 Q3 Q4 Q5</i>  <i>Thermal Mass: Q1 Q2 Q3 Q4</i>  <i>Sealing the Building Envelope: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8</i>  <i>Steps of the energy efficient design and construction pyramid: Q1 Q2 Q3</i></p>
<p><i>types, uses and limitations of different construction materials</i></p>	<p><i>Embodied Energy in the Built Environment: Q1 Q2 Q3</i>  <i>Thermal Mass: Q2 Q3 Q4</i>  <i>Types of Insulation: Q1 Q2 Q3 Q4 Q5</i>  <i>HVAC system and controls: Q1 Q2 Q3</i>  <i>Structural Insulated Panel System (SIPS): Q1 Q2 Q3 Q4</i>  <i>How alterations affect energy ratings: Q3</i></p>
<p><i>use and limitations of new and advanced construction materials that improve the energy efficiency of buildings</i></p>	<p><i>Glazing and Thermal Performance: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8</i>  <i>Types of Insulation: Q1 Q2 Q3 Q4 Q5</i>  <i>Insulation for Energy Efficiency: Q1 Q2 Q3 Q4</i>  <i>Structural Insulated Panel System (SIPS): Q1 Q2 Q3 Q4</i></p>

## CRITICAL ASPECTS

Critical Aspects	Task / Question Map
Assessment of this unit:	
<i>must be in the context of the work environment</i>	SCENARIO: Insulation Quality Assurance: Q1 Training Sub-contractors in Energy Efficiency: Q3 Q4 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 PROJECT: Scheduling for Energy Efficiency: Q1
<i>may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills</i>	Training Sub-contractors in Energy Efficiency: Q3 Q4 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 PROJECT: Scheduling for Energy Efficiency: Q1
<i>must meet relevant compliance requirements.</i>	White Card Check: Q1
Resource implications for assessment include:	
<i>an induction procedure</i>	White Card Check: Q1
<i>realistic tasks or simulated tasks covering the mandatory task requirements</i>	ACTIVITY: Communicating as part of building process: Q1 Q2 Q3 SCENARIO: Insulation Quality Assurance: Q1 Thermal Imaging Cameras: Q2 Training Sub-contractors in Energy Efficiency: Q3 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 How alterations affect energy ratings: Q3 PROJECT: Scheduling for Energy Efficiency: Q1
<i>relevant specifications and work instructions</i>	ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3
<i>tools and equipment appropriate to applying safe work practices</i>	CPCSUS5003A Trainer Checklist: Q8
<i>support materials appropriate to activity</i>	Energy Efficiency and the Building Code of Australia: Q1 Q2 Q3 Q4 Q5 Q6 SCENARIO: Insulation Quality Assurance: Q1 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 How alterations affect energy ratings: Q3 PROJECT: Scheduling for Energy Efficiency: Q1



<i>workplace instructions relating to safe work practices and addressing hazards and emergencies</i>	<i>White Card Check: Q1</i>
<i>research resources, including industry-related systems information</i>	<i>NCC Requirements for thermal efficiency: Q1 Q2 Specifying to Avoid Waste: Q4 How alterations affect energy ratings: Q3</i>
<i>safety data sheets.</i>	<i>White Card Check: Q1</i>

## RANGE STATEMENTS

Range Statements	Task / Question Map	
<i>Construction materials and products may include:</i>	<i>cladding</i>	<i>Structural Insulated Panel System (SIPS): Q1 Q2 Q3 Q4</i> <i>How alterations affect energy ratings: Q3</i>
	<i>floors</i>	
	<i>framing</i>	<i>Advanced Framing Strategies: Q1</i> <i>Training Sub-contractors in Energy Efficiency: Q3</i>
	<i>heating, ventilation and air conditioning (HVAC) systems</i>	<i>Passive Cooling - Ventilation Design: Q1 Q2 Q3 Q4 Q5</i> <i>HVAC system and controls: Q1 Q2 Q3 Q4</i>
	<i>insulation</i>	<i>Types of Insulation: Q1 Q2 Q3 Q4 Q5</i> <i>Insulation for Energy Efficiency: Q1 Q2 Q3 Q4</i>
	<i>interior and exterior paints</i>	<i>Heat-reflective Coatings: Q1 Q2 Q3 Q4 Q5 Q6 Q7</i>
	<i>interior and exterior wall materials</i>	<i>Structural Insulated Panel System (SIPS): Q1 Q2 Q3 Q4</i> <i>Vapour Barriers: Q1 Q2</i>
	<i>lights and lighting systems</i>	<i>Electrical Lighting: Q1 Q2 Q3</i>
	<i>plaster</i>	
	<i>roof materials</i>	<i>Vapour Barriers: Q1 Q2</i>
	<i>types and uses of water tanks and recyclable grey water systems</i>	
	<i>windows.</i>	<i>Embodied Energy in the Built Environment: Q2</i> <i>Glazing and Thermal Performance: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8</i> <i>Training Sub-contractors in Energy Efficiency: Q4</i>
<i>Techniques to be used to support energy efficiency may include:</i>	<i>protecting the air barrier by minimising and sealing gaps using advanced framing techniques to increase construction productivity, reduce thermal bridging and increase operational energy efficiency</i>	<i>Advanced Framing Strategies: Q1</i> <i>Training Sub-contractors in Energy Efficiency: Q3 Q4</i>

	<i>installing insulation on the outside of the frame and in the roof, walls and floor</i>	<i>Types of Insulation: Q1 Q2 Q3 Q4 Q5 Insulation for Energy Efficiency: Q1 Q2 Q3 Q4 SCENARIO: Insulation Quality Assurance: Q1</i>
	<i>reducing the effect of thermal bridging</i>	<i>Advanced Framing Strategies: Q1</i>
	<i>selecting appropriately sized HVAC system, which considers the tightness of the structure and incorporates heat or energy recovery systems as appropriate for ventilation</i>	<i>HVAC system and controls: Q4</i>
	<i>using air or vapour barriers to ensure the entire building envelope is sealed, separating the inside environment from the outside</i>	<i>Vapour Barriers: Q1 Q2</i>
	<i>using thicker insulation to improve the building's thermal performance.</i>	<i>Types of Insulation: Q5 Insulation for Energy Efficiency: Q1</i>
<i>Evaluated may involve:</i>	<i>occupier</i>	<i>Stakeholders for Energy Efficient Buildings: Q1</i>
	<i>owner or developer</i>	<i>NAThers: Q1 Q2 Q3 Q4 Q5 ACTIVITY: Communicating as part of building process: Q1 Q2 Q3 ACTIVITY: Marketing Energy Efficiency: Q1 Q2</i>
	<i>relevant trades.</i>	<i>Training Sub-contractors in Energy Efficiency: Q3 Q4</i>