

CPCSUS4003A Matrix Map

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ELEMENTS AND PERFORMANCE CRITERIA

Element	Performance Criteria	Task / Question Map
Identify energy efficiency aims of the project.	Building science principles are used to identify the energy efficiency expectations of the work based on plans, drawings and specifications.	Zero Energy Buildings: Q1 Q2 Q3 Building Sustainability Rating tools: Q1 Q2 Q3 Thermal Bridging: Q1 Q2 Q3 Steps of the energy efficient design and construction pyramid: Q1 Q2 Q3
	Relevant personnel and stakeholders are consulted to confirm the building envelope and energy efficiency requirements of the work, and identify specific instructions on priority areas.	NCC and Climate Zones: Q1 Q2 ACTIVITY: Investigating State Energy Efficiency Building Requirements: Q1 Communicating for Energy Efficiency: Q1 Q2 Getting in a Building Energy Assessor: Q1 Q2 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 Stakeholders for Energy Efficient Buildings: Q1 Q2 Q3 Q4 Q5
	Limitations to achieving the energy efficiency requirements are identified and communicated to relevant personnel in order to identify appropriate solutions.	ACTIVITY: Interpreting Plans for Energy Efficiency: Q4
Prepare for task.	Products and materials are identified based on building science knowledge and according to project energy efficiency specifications, substitutions are checked for comparable energy efficiency characteristics, and are approved with relevant personnel before use.	Insulation for Energy Efficiency: Q1 Q2 Q3 Q4 Vapour Barriers: Q1 Q2

	<i>Plant, tools and equipment selected to carry out tasks are consistent with building science principles and the requirements of the job to deliver energy efficient outcomes.</i>	ACTIVITY: APPLYING TRADE SKILLS: Q1
	<i>Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.</i>	ACTIVITY: APPLYING TRADE SKILLS: Q2 Vapour Barriers: Q1 Q2 Workplace Task: Prepare for task.
	<i>Material quantity requirements are calculated according to plans, specifications and energy efficiency.</i>	ACTIVITY: Quantify different insulation options for the building envelope: Q4 Q5 Workplace Task: Prepare for task.
	<i>Differences in standard practice to achieving energy efficient outcome are identified and factored into work plan to gain approval, and task timeframe is adjusted where appropriate.</i>	ACTIVITY: APPLYING TRADE SKILLS: Q3 Workplace Task: Prepare for task.
<i>Perform tasks using energy efficient techniques.</i>	<i>Unnecessary waste of products and materials is avoided through the use of energy efficient techniques, and greenhouse gas emissions are specifically minimised or eliminated.</i>	ACTIVITY: APPLYING TRADE SKILLS: Q5 Workplace Task: Prepare for task.
	<i>Products and materials are handled and used according to manufacturer specifications to ensure energy efficiency ratings are maintained when installed.</i>	ACTIVITY: APPLYING TRADE SKILLS: Q6 Handling and storage of materials on site: Q1 Q2 Q3 Q4 Q5 Workplace Task: Perform tasks using energy efficient techniques.
	<i>Planned cavities and openings created in the building envelope during the project are minimised or sealed to avoid unnecessary air leakages.</i>	Advanced Framing Strategies: Q1 Workplace Task: Perform tasks using energy efficient techniques.
	<i>Opportunities for achieving energy efficiency outcomes by minimising energy leakages are maximised by communicating with others on site when required.</i>	Minimising and Sealing Openings: Q1 Q2 Communicating for Energy Efficiency: Q1 Q2 Workplace Task: Perform tasks using energy efficient techniques.

<i>Finalise and evaluate work.</i>	<i>Assessment by qualified energy assessor of work undertaken is arranged to confirm extent of energy efficiency outcomes achieved.</i>	<i>Thermal Imaging Cameras: Q1 Q2 Getting in a Building Energy Assessor: Q1 Q2 Workplace Task: Finalise and evaluate work</i>
	<i>Improvements required in own work practices to ensure energy efficiency outcomes are identified and noted for future development.</i>	<i>SCENARIO: Insulation Quality Assurance: Q1 Workplace Task: Finalise and evaluate work</i>

REQUIRED SKILLS

Required Skill	Task / Question Map
learning skills to:	
<i>evaluate own actions and make judgments about performance and necessary improvements</i>	SCENARIO: Insulation Quality Assurance: Q1 ACTIVITY: APPLYING TRADE SKILLS: Q3 Communicating for Energy Efficiency: Q1 Q2 Workplace Task: Finalise and evaluate work
<i>respond to change such as differences in current work site environmental and sustainability requirements</i>	ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3 Communicating for Energy Efficiency: Q1 Q2 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 Workplace Task: Finalise and evaluate work
<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 Workplace Task: Finalise and evaluate work
oral communication skills to:	
<i>enable clear and direct communication, using questioning to identify and confirm requirements, and share information</i>	Communicating for Energy Efficiency: Q1 Q2 Workplace Task: Finalise and evaluate work
<i>report hazards on the work site, including faults in tools, equipment or materials</i>	White Card Check: Q1 Workplace Task: Finalise and evaluate work
<i>use language and concepts appropriate to cultural differences</i>	Communicating for Energy Efficiency: Q1 Q2 Workplace Task: Finalise and evaluate work
reading skills to:	
<i>interpret documentation, including drawings and specifications</i>	ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 Workplace Task: Prepare for task.
<i>understand written instructions, procedures and signage</i>	ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Workplace Task: Prepare for task.
<i>interpret manufacturer instructions for safe handling of tools and equipment</i>	Workplace Task: Prepare for task.

<i>writing skills to complete pre-operational checklists and simple equipment fault forms</i>	<i>Workplace Task: Prepare for task.</i>
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REQUIRED KNOWLEDGE

Required Knowledge	Task / Question Map
<i>general construction terminology</i>	<i>Energy and Buildings: Q1 Q2 Q3</i> <i>Vapour Barriers: Q1 Q2</i>
<i>introductory awareness of building science and energy efficiency principles</i>	<i>Energy and Buildings: Q1 Q2 Q3</i> <i>Zero Energy Buildings: Q1 Q2 Q3</i> <i>Steps of the energy efficient design and construction pyramid: Q1 Q2 Q3</i> <i>Thermal Mass: Q1 Q2 Q3 Q4</i>
<i>procedures for the safe handling and storage of materials, and environmentally friendly disposal of materials</i>	<i>Handling and storage of materials on site: Q1 Q2 Q3 Q4 Q5</i>
<i>processes for calculating material requirements</i>	<i>ACTIVITY: Quantify different insulation options for the building envelope: Q5</i>
<i>quality requirements relevant to the task</i>	<i>SCENARIO: Insulation Quality Assurance: Q1</i>
<i>types, characteristics, uses and limitations of tools and equipment</i>	<i>ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2</i>
<i>types, location and use of relevant safety information, such as:</i>	
<i>job safety analyses (JSA) and safe work method statements</i>	<i>White Card Check: Q1</i>
<i>safety data sheets</i>	<i>White Card Check: Q1</i>
<i>safety manuals and instructions for tools, plant and equipment</i>	<i>White Card Check: Q1</i>
<i>signage</i>	
<i>environmental and work site safety plans</i>	<i>White Card Check: Q1</i>
<i>workplace and equipment safety requirements</i>	<i>White Card Check: Q1</i>

CRITICAL ASPECTS

Critical Aspects	Task / Question Map
Assessment of this unit:	
<i>must be in the context of the work environment</i>	ACTIVITY: Quantify different insulation options for the building envelope: Q5 SCENARIO: Insulation Quality Assurance: Q1 ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3 Communicating for Energy Efficiency: Q1 Q2
<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>	ACTIVITY: Quantify different insulation options for the building envelope: Q5 SCENARIO: Insulation Quality Assurance: Q1 ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3 Communicating for Energy Efficiency: Q1 Q2
<i>must meet relevant compliance requirements.</i>	ACTIVITY: Quantify different insulation options for the building envelope: Q5 SCENARIO: Insulation Quality Assurance: Q1 Workplace Task: Products and materials are handled and used according to manufacturer specifications to ensure energy efficiency ratings are maintained when installed.
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: Quantify different insulation options for the building envelope: Q5 SCENARIO: Insulation Quality Assurance: Q1 ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3 Communicating for Energy Efficiency: Q1 Q2 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 Workplace Task: Perform tasks using energy efficient techniques.
<i>relevant specifications and work instructions</i>	SCENARIO: Insulation Quality Assurance: Q1
<i>tools and equipment appropriate to applying safe work practices</i>	ACTIVITY: APPLYING TRADE SKILLS: Q1 White Card Check: Q1 Workplace Task: Prepare for task.
<i>support materials appropriate to activity</i>	SCENARIO: Insulation Quality Assurance: Q1 ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3

<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>ACTIVITY: Investigating State Energy Efficiency Building Requirements: Q1</i>
<i>safety data sheets.</i>	<i>White Card Check: Q1</i> <i>Workplace Task: Prepare for task.</i>

RANGE STATEMENTS

Range Statements	Task / Question Map	
<i>Energy efficiency expectations may include:</i>	<i>acoustic insulation between zones and rooms</i>	
	<i>achieving relevant energy efficient requirements in the National Construction Code, and other relevant codes and regulations</i>	<i>Zero Energy Buildings: Q1 Q2 Q3 NCC and Climate Zones: Q1 Q2 ACTIVITY: Investigating State Energy Efficiency Building Requirements: Q1</i>
	<i>achieving or maintaining a home energy rating, commercial building rating, or equivalent energy rating or industry standards and regulations</i>	<i>Zero Energy Buildings: Q1 Q2 Q3 Building Sustainability Rating tools: Q1 Q2 Q3 ACTIVITY: Investigating State Energy Efficiency Building Requirements: Q1</i>
	<i>effectively selecting and using thermal mass</i>	<i>Thermal Mass: Q1 Q2 Q3 Q4</i>
	<i>energy conservation</i>	
	<i>minimising infiltration</i>	<i>Minimising and Sealing Openings: Q1 Q2</i>
	<i>minimising the heat loss and maximising the heat gain based on the requirements of the building reflective of the climatic zones</i>	<i>NCC and Climate Zones: Q1 Q2 Minimising and Sealing Openings: Q1 Q2</i>
	<i>minimising thermal bridging</i>	<i>Thermal Bridging: Q1 Q2 Q3</i>
	<i>passive solar design approach</i>	
	<i>reducing or minimising energy costs and consumption to heat and cool the building</i>	
	<i>thermal resistance</i>	<i>Thermal Bridging: Q1 Q2 Q3</i>
	<i>ventilation, heat and energy recovery</i>	
	<i>zero energy homes.</i>	<i>Zero Energy Buildings: Q1 Q2 Q3</i>
<i>Relevant personnel and stakeholders may include:</i>	<i>architect</i>	<i>ACTIVITY: Interpreting Plans for Energy Efficiency: Q1 Q2 Q3 Stakeholders for Energy Efficient Buildings: Q5</i>
	<i>builder</i>	<i>Stakeholders for Energy Efficient Buildings: Q4</i>
	<i>developer</i>	
	<i>draftsperson</i>	

	energy assessor	Getting in a Building Energy Assessor: Q1 Q2 Stakeholders for Energy Efficient Buildings: Q3
	energy modeller	
	facility manager	
	heating, ventilation and air conditioning (HVAC) designer	
	HVAC engineer	
	manufacturer	
	other trades working at the site	Communicating for Energy Efficiency: Q1 Q2
	owner	
	project manager	
	site manager	
	supplier.	
Building envelope must include:	building enclosure or shell	Sealing the Building Envelope: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
	the area separating the internal conditioned air from the outside unconditioned air	Sealing the Building Envelope: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
	the roof, walls, windows and doors.	Sealing the Building Envelope: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8
Materials may include:	building and construction materials, including:	
	aerated autoclaved concrete products	
	bricks	
	cement	Handling and storage of materials on site: Q5
	concrete	Handling and storage of materials on site: Q5
	mortar	
	plaster	
	plasterboard	
	plumbing	
	roofing materials	
	steel	
	timber	Advanced Framing Strategies: Q1 Handling and storage of materials on site: Q4
	building envelope - ceiling, floor, windows and wall insulating materials:	

	<i>air barriers</i>	
	<i>batts</i>	<i>Insulation for Energy Efficiency: Q1 Q2 Q3 Q4</i> <i>ACTIVITY: Quantify different insulation options for the building envelope: Q1 Q2 Q3 Q4 Q5</i>
	<i>expanded polystyrene</i>	<i>Minimising and Sealing Openings: Q3</i>
	<i>joining tape</i>	<i>Minimising and Sealing Openings: Q3</i>
	<i>reflective foils</i>	
	<i>sealant</i>	<i>Minimising and Sealing Openings: Q3</i>
	<i>vapour barriers.</i>	<i>Vapour Barriers: Q1 Q2</i>
<i>Energy efficient techniques may include:</i>	<i>advanced framing or optimal value engineering for energy efficient framing</i>	<i>Advanced Framing Strategies: Q1</i> <i>ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3</i> <i>Workplace Task: Perform tasks using energy efficient techniques.</i>
	<i>appropriate selection and installation of insulation without compressing it</i>	<i>ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3</i> <i>Workplace Task: Perform tasks using energy efficient techniques.</i>
	<i>conserving energy by effectively sealing the building envelope to minimise air leakage (exfiltration and infiltration) in the building envelope, shell or enclosure</i>	<i>ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3</i> <i>Sealing the Building Envelope: Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8</i> <i>Workplace Task: Perform tasks using energy efficient techniques.</i>
	<i>effectively installing windows and flashing without breaking the building envelope</i>	<i>Communicating for Energy Efficiency: Q2</i> <i>Workplace Task: Perform tasks using energy efficient techniques.</i>
	<i>effectively selecting and installing thermal insulation</i>	<i>Insulation for Energy Efficiency: Q1 Q2 Q3 Q4</i> <i>ACTIVITY: Quantify different insulation options for the building envelope: Q1 Q2 Q3 Q4 Q5</i> <i>ACTIVITY: APPLYING TRADE SKILLS: Q1 Q2 Q3</i> <i>Workplace Task: Perform tasks using energy efficient techniques.</i>
	<i>minimising embodied energy</i>	
	<i>sealing, insulating and minimising duct leakage</i>	<i>Workplace Task: Perform tasks using energy efficient techniques.</i>
	<i>sealing leaky joints</i>	<i>Minimising and Sealing Openings: Q1 Q2</i> <i>Workplace Task: Perform tasks using energy efficient techniques.</i>
	<i>selecting recycled materials to minimise production energy</i>	
	<i>sourcing materials or products locally to minimise transport energy.</i>	