



Australian Government

Department of Education, Employment and Workplace Relations

FPICOT6203A Develop engineered timber products to meet energy efficient building

Release: 1

FPICOT6203A Develop engineered timber products to meet energy efficient building

Modification History

Not Applicable

Unit Descriptor

Unit descriptor This unit describes the outcomes required to research and develop engineered timber products to meet the requirements of energy efficient design within residential buildings. It requires thorough knowledge of residential building design and building codes, and high level knowledge of engineered timber design and practice. General workplace legislative and regulatory requirements apply to this unit; however there are no specific licensing or certification requirements at the time of publication.

Application of the Unit

Application of the unit The unit involves the development of engineered timber products in a timber and wood products production setting at a senior project management or senior design level. The skills and knowledge required for competent workplace performance are to be used within the scope of the person's job and authority.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Explore commercial opportunities for engineered timber products	1.1. Applicable <i>Occupational Health and Safety</i> (OHS), <i>environmental</i>, <i>legislative</i> and <i>organisational requirements</i> relevant to developing engineered timber products to meet energy efficient building design needs are identified and followed 1.2. <i>Building Codes of Australia</i> (BCA) guidelines and <i>standards</i> relating to <i>climate zones</i> and <i>energy efficiency measures</i> are reviewed 1.3. Existing <i>information</i> that informs new product development is researched and evaluated 1.4. Gaps in current range of <i>engineered timber products</i> are identified and used as a catalyst for generating new products or <i>concepts</i> 1.5. <i>Market analysis</i> is undertaken using appropriate information sources to determine design and production requirements 1.6. Preliminary ideas on product/s are developed 1.7. Consultation with relevant <i>stakeholders</i> is undertaken to agree on broad parameters for developing product/s to meet market needs
2. Formulate and test design concept for product/s	2.1. Ideas/styles that complement design and production requirements are conceived and developed 2.2. Design concepts are communicated using appropriate <i>documentation methods</i> to produce preliminary representation of the product/s 2.3. Design concepts are critiqued and reviewed with stakeholders 2.4. Design concepts are reviewed to ensure energy efficiency is proven to sufficient level to progress project 2.5. <i>Business case</i> that includes a full cost benefit analysis and an appropriate risk assessment is undertaken 2.6. <i>Approval is sought for the project from all relevant stakeholders</i>
3. Develop the product	3.1. <i>Product development</i> is undertaken in line with design and production requirements 3.2. Product development outcomes and energy efficiency are reviewed and aligned with market analysis and organisational priorities 3.3. <i>Certification</i> processes and compliance of the engineered product and production system are initiated and/or achieved 3.4. Detailed implementation <i>specifications</i> are

ELEMENT**PERFORMANCE CRITERIA**

	developed and presented to relevant stakeholders for approval and funding
4. Develop product concept to an operational level	4.1. Organisational procedures for product development and marketing product are followed 4.2. Production resources are selected and organised in line with design and production requirements 4.3. Quality assurance system is designed 4.4. Safe operating procedures for handling and operating of plant, tools and process involved in production are developed and documented

Required Skills and Knowledge**REQUIRED SKILLS AND KNOWLEDGE**

This describes the essential skills and knowledge and their level required for this unit

Required skills

- Technical skills sufficient to develop engineered timber products; use and understand house energy rating software; use quality management systems; undertake risk analysis; undertake material analysis in relation to wood and associated products used in manufacturing of composites and engineered products; determine thermal capacity of materials and generate an R-value for products; apply principles of energy efficient design to building and developing building products
- Communication skills sufficient to use appropriate communication and interpersonal techniques with stakeholders, colleagues and others; utilise technical and theoretical concepts in operational applications
- Literacy skills sufficient to interpret legislation, standards and codes of practice; document control records; undertake market research and analysis

Project management skills in relation to engineering, product development, manufacturing and marketing operations

- Problem solving skills sufficient to identify problems and faults; demonstrate appropriate response procedures

Required knowledge

- Applicable Commonwealth, State or Territory legislation, regulations, standards, codes of practice and established safe practices relevant to the full range of processes for developing engineered timber products to meet energy efficient building design needs
- Environmental protection requirements, including the safe disposal of waste

REQUIRED SKILLS AND KNOWLEDGE

material

- Organisational and site standards, requirements, policies and procedures for developing engineered timber products to meet energy efficient building design needs
- Environmental risks and hazards
- Minimising environmental impact
- Using energy effectively and efficiently
- Using material effectively and efficiently
- Theory underpinning the development of R-values
- Standards associated with timber products
- Standards and certification schemes and chain of custody systems relating to forest products
- Timber engineering design applied to residential constructions and the application of energy use efficiency
- Timber species characteristics as they relate to engineering design and serviceability
- Other materials involved in composite products and their characteristics in relation to engineering design and serviceability
- Processes involved in developing, manufacturing and supplying wood products used in residential buildings
- House energy rating software and associated protocols for use
- Project management tools
- Quality management systems
- Risk assessment systems
- Cost benefit analysis tools, including discounting
- Market issues relating to products, zones and applications
- Established communication channels and protocols including notification of authorities
- Problem identification and resolution strategies
- Types of tools and equipment, and procedures for their safe use and maintenance
- Appropriate mathematical procedures associated with structural engineering and wood products
- Procedures for recording and reporting workplace information

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to provide evidence that they can safely and efficiently research and develop engineered timber products

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to, and satisfy, all of the requirements of the elements of this unit and include demonstration of:

- following applicable Commonwealth, State or Territory legislative and regulatory requirements and codes of practice relevant to developing engineered timber products
- following organisational policies and procedures relevant to engineered timber products
- developing engineered timber products to production stage
- identifying commercial opportunities for engineered timber products
- formulating and designing concepts for engineered timber products
- developing and exploiting engineered timber products

Context of and specific resources for assessment

- Competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of required knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to follow relevant regulatory or Australian Standards requirements
- The following resources should be made available:
 - workplace location or simulated workplace
 - materials and equipment relevant to undertaking work applicable to this unit
 - specifications and work instructions

EVIDENCE GUIDE

Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the FPI11raining Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required knowledge
- Assessment may be by direct observation of tasks, with questioning on required knowledge and it must also reinforce the integration of key competencies
- Assessment methods must confirm the ability to access and correctly interpret and apply the required knowledge
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

RANGE STATEMENT

OHS requirements:

are to be in line with applicable Commonwealth, State or Territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- fire fighting equipment
- hazard and risk control
- fatigue management
- elimination of hazardous materials and substances
- safe forest practices including required actions relating to forest fire
- manual handling including shifting, lifting and carrying
- use of tools and plant appropriate to a task and used to safe working procedures

Environmental requirements may include:

- legislation
- organisational policies and procedures
- workplace practices

Legislative requirements:

are to be in line with applicable Commonwealth, State or Territory legislation, regulations, certification requirements and codes of practice and may include:

- award and enterprise agreements
- industrial relations
- Australian Standards
- confidentiality and privacy
- OHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

Organisational requirements may include:

- legal
- organisational and site guidelines
- policies and procedures relating to own role and responsibility
- procedural manuals

RANGE STATEMENT

- continuous improvement processes and standards
- OHS, emergency and evacuation procedures
- ethical standards
- recording and reporting requirements
- equipment use, maintenance and storage requirements
- environmental management requirements (waste minimisation and disposal, recycling and re-use guidelines)

RANGE STATEMENT

Building Codes of Australia must include:

codes relevant to:

- sustainability
- climate zones
- thermal rating
- durability
- fire safety
- span tables

Standards may include:

- BCA
- all AS/NZ Standards associated with engineered wood products and associated design and construction
- industry practices for operating
- Forest Certification and Chain of Custody Standards
- material handling
- environmental monitoring and waste management
- engineering design parameters
- other serviceability minimum requirements in relation to durability and in serviceability of wood based products

Climate zones

are based on climate characteristics and local authority borders, and may include:

- any of zones 1-8

Energy efficiency measures may include:

- lifecycle factors
- thermal characteristics

Information may include:

- discussions with industry practitioners
- electronic/print media
- industry events
- government bodies and associated publications
- industry associations
- internet
- libraries and archives
- lifestyle and contemporary issues magazines
- museums/galleries/studios
- journals
- personal observations and experience
- retail/wholesale suppliers of products and services

RANGE STATEMENT

- technical publications/reference books
- training programs/seminars and professional development activities

RANGE STATEMENT

Engineered timber products may include:

- laminated beams
- laminated veneer lumber (LVL)
- plywood
- chipboard
- hardboard
- medium density fibre board (MDF)
- oriented strand board (OSB)
- laminated or engineered flooring

Concept may include:

- an abstract idea
- patent
- existing product

Market analysis should include: identification of:

- need
- placement
- financial certainty
- volume

Stakeholders may include:

- clients
- commissioning body/organisation
- competitors
- design team
- management staff
- manufacturers
- material importers and suppliers
- mentors
- peers
- production staff
- sales staff
- suppliers
- target market

Documentation methods may include:

- diagrams
- drawings or sketches
- electronic presentations
- illustrations
- layouts
- mock-ups
- models
- plans
- prototypes
- samples

RANGE STATEMENT

- verbal presentations
- written notes

Business case must include:

a review of all associated costs such as:

- capital cost
- material
- labour
- design expenses
- overheads
- margin
- running cost
- lifecycle analysis
- market uptake
- discount and internal rate of return on investment
- other opportunity cost analysis

Product development may include:

- prototyping
- testing
- acquiring/commencing certification
- gaining approval for developing infrastructure
- developing plant and infrastructure
- establishing methods and procedures

Certification may include:

- all AS/NZ Standards associated with engineered wood products and associated design and construction
- industry practices for operating
- Forest Certification and Chain of Custody Standards
- environmental monitoring and waste management

Specifications may include:

- purpose
- audience
- budget
- resources - human, plant and equipment
- ownership of final product
- operational plan

Quality assurance

involves benchmarks and standards which may be set by:

- BCA
- AS/NZ Standards

RANGE STATEMENT

- organisational and market criteria
- federal, State or Territory and council legislation

and may use:

- forms completed by operators and supervisors
- digital or remote methods of monitoring and reporting

Unit Sector(s)

Not Applicable

Competency field

Competency field Common Technical