

REGISTERED NATIONAL STANDARD



UNIT OF COMPETENCY

Title:	Install floor tiles¹		
TQF Level:	4	Credits:	10
Version:	1		
National standard code:	NS173-04		
Associated qualification (and code):	National Certificate in Wall and Floor Tiling Level 3 QR-03-NQ-028-03-1005-26-01		
Approval date:	10 September 2026	Review date:	10 September 2031
Purpose:	This unit describes the skills and knowledge required to plan, prepare, and install floor tiles to a range of substrates in residential and commercial construction. It includes the full tiling process covering surface preparation, set-out, cutting, installation, and grouting of floor tiles, including tiling of steps, stairs, and thresholds. The unit ensures that tiles are installed to achieve correct alignment, fall, drainage, and finish while complying with Tonga National Building Code, OHS, environmental requirements, manufacturer specifications, and workplace procedures. It emphasises accuracy in layout, careful material selection, correct installation techniques, and ensuring finished tiled surfaces are durable, functional, and aesthetically consistent. It ensures that learners can efficiently install floor tiles while working with others as a member of a team. In successfully completing this unit standard, learners are able to: • Apply OHS, environmental, and site safety requirements • Interpret drawings, specifications, and standards for floor tiling installation • Plan and organise tiling tasks to ensure efficient workflow and quality outcomes • Identify and control hazards associated with tiling work • Select and prepare tools, equipment, and materials for tiling installation • Calculate material quantities required for the task • Inspect substrates and waterproofing membranes for suitability and compliance		

¹ Due to safety issues inherent in working with electricity and combustible substances, all training and assessment activities must be in accordance with Tonga National Building Code.

	• Set out tiling layout to achieve symmetry, balance, and minimal material waste • Cut tiles accurately to fit edges, penetrations, and design requirements • Prepare substrates by cleaning, levelling, and applying screed where required • Mix and apply adhesives compatible with tile and substrate materials • Install tiles maintaining correct alignment, joint spacing, and surface finish • Insert movement joints to accommodate expansion and prevent cracking • Tile steps, risers, and thresholds ensuring compliance with building requirements • Mix and apply grout to fill joints and complete surface finish • Clean and polish tiles to achieve required finish quality • Protect completed tiled surfaces during ongoing construction work • Finish surfaces to specified tolerances, including applying correct falls for drainage • Ensure prepared surfaces meet best work practices and tiling requirements • Maintain and store tools and equipment according to manufacturer and workplace requirements • Dispose of waste materials, reuse, or recycle in accordance with environmental requirements and codes of practice • Minimise environmental impact during plastering preparation tasks • Work under supervision while following workplace instructions and coordinating with experienced workers
Learning Outcome 1 (LO1)	Prepare and organise work to install floor tiles
Performance standards	1.1 Obtain work instructions and operational details using relevant information, confirmed and applied for planning and preparation purposes for installing floor tiles; 1.2 Follow safety (OHS) requirements in accordance with safety plans and policies; 1.3 Identify and implement signage and barricade requirements; 1.4 Select tools and equipment to carry out tasks and are consistent with the requirements of the job; 1.5 Calculate material quantity requirements in accordance with plans and specifications; 1.6 Determine materials appropriate to the work application are prepared, safely handled and located ready for use; 1.7 Determine environmental requirements for the project in accordance with environmental plans.

Learning Outcome 2 (LO2)	Set out for floor tiling work
Performance Standards	2.1 Prepare area to be tiled to requirements of job specification in accordance with workplace procedures; 2.2 Determine tiles and check for conformity to size, patterns, colours and characteristics in accordance with plans and specifications; 2.3 Set out floor tile work for symmetrical and balance, and to produce minimal waste in accordance with specifications and standards; 2.4 Install waterproof membrane in wet areas to conform to manufacturer specifications and regulatory requirements.
Learning Outcome 3 (LO3)	Cut tiles as required
Performance standards	3.1 Cut tiles to requirements; 3.2 Prepare templates to cut holes, curves and shapes; 3.3 Cut recess hole or curve by hand or machine to shape and size and to specified tolerance; 3.4 Form a mitre to tile edged at the joint; <i>(Range so that biscuit is not exposed and is in accordance with workplace procedures and manufacturer recommendations)</i> 3.5 Check and replace tiles with jagged edges or damage to tile surfaces.
Learning Outcome 4 (LO4)	Lay floor tiles
Performance standards	4.1 Check floor for level/falls and square and membranes or underlay are installed in accordance with workplace procedures and manufacturer recommendations; 4.2 Prepare substrate surface free from contaminants and residues to receive adhesive or screeded mortar in accordance with plans and specifications; 4.3 Check tiles for conformity to size, patterns, colours and characteristics in accordance with plans and specifications; 4.4 Match adhesive with tile and substrate material and mixed according to usage, climatic conditions and manufacturer specifications; 4.5 Mix and apply adhesive/mortar to appropriate consistency and screeded to specifications;

	4.6 Install tiles in conformance to standards and specifications, maintaining bond with joints that are uniform in size and a finished surface that is flat and smooth or to fulls; 4.7 Insert control joints in accordance with manufacturer specifications.
Learning Outcome 5 (LO5)	Install tiles to treads, risers, steps and thresholds
Performance standards	5.1 Determine step rises and goings from formed concrete steps/stairs; 5.2 Set out steps for uniform rise and even cut on both sides of steps; 5.3 Install step riser packing or render support where applicable; 5.4 Install riser tiles to true alignment and uniform set out; 5.5 Install thresholds/nosing tiles on treads in line with the top edge of risers within specified tolerances.
Learning Outcome 6 (LO6)	Grout and seal tiles
Performance standards	6.1 Clean and prepare joints to receive grout according to manufacturer specifications; 6.2 Mix and apply grout in accordance with workplace and manufacturer specifications and to meet job requirements; 6.3 Clean and polish tiles with dry cloth to specifications, removing all dust from surface and joints to industry standards; 6.4 Seal and protect tiles in accordance with manufacturers' instructions and job specifications.
Learning Outcome 7 (LO7)	Clean up floor tiling area
Performance standards	7.1 Clear the work area and dispose waste following environmental requirements; 7.2 Clean tools and equipment, check for serviceability; 7.3 Report damage or faults to relevant personnel; 7.4 Store tools and equipment following workplace procedures; 7.5 Store materials for reuse or recycle following workplace procedures.
Pre-requisites	NS133-03 Apply <i>Occupational Health and Safety</i> (OHS) requirements, policies and procedures
Co-requisites	N/A

Underpinning skill and knowledge

The following skills and knowledge underpin this unit standard:

Skills:

Planning and organisational

- Interpret drawings, specifications, and workplace instructions
- Plan and sequence tiling tasks to achieve efficient workflow
- Calculate material quantities and set-out requirements
- Organise tools, materials, and work areas effectively

Tiling techniques

- Set out floor tiling to achieve symmetry, alignment, and minimal waste
- Prepare substrates, including cleaning and screeding surfaces
- Mix and apply adhesives/mortar and grouts to required specifications
- Cut tiles accurately, including shaping around penetrations and edges
- Install tiles maintaining correct line, level, and joint spacing
- Insert and manage movement joints for structural performance
- Tile complex areas including steps, risers, and thresholds
- Grout, clean, and finish tiled surfaces to required standards

Measurement and numeracy

- Measure surfaces, tile layouts, and materials accurately
- Apply geometry for layouts, angles, and diagonals
- Determine falls for drainage in wet areas

Problem-solving

- Identify substrate defects, alignment issues, or installation challenges
- Adjust layouts to suit site conditions and minimise waste
- Select appropriate materials for different substrates and conditions

Communication

	• Communicate with supervisors, team members, and other trades • Report faults, hazards, and defects • Follow workplace instructions and documentation Safety and compliance • Apply OHS procedures and safe work practices • Use PPE correctly • Identify and control hazards in tiling operations • Follow Australian Standards and manufacturer requirements Tool and equipment • Select and operate hand and power tools safely • Maintain and store tools and equipment • Use cutting equipment such as tile cutters and grinders effectively Environmental and housekeeping • Manage waste through reuse, recycling, or disposal • Maintain clean work areas • Minimise environmental impact during tiling activities <u>Knowledge:</u> Standards and compliance • Tonga National Building Code relating to floor tiling installation • OHS requirements, including Job Safety Analysis (JSA) • Environmental requirements for waste and material handling Materials and systems • Types and characteristics of tiles, including: ○ Ceramic ○ Terracotta ○ Porcelain ○ Natural and reconstituted stone ○ Large-format tiles ○ Vinyl ○ Carpet ○ Wood ○ Epoxy ○ Linoleum flooring etc. • Adhesives/mortar, including types, classifications, and compatibility
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	• Grouts, including cement-based and epoxy grouts • Substrates, including: ○ Concrete/fibre cement/cementitious ○ Screed ○ Waterproofed surfaces • Waterproofing membranes and systems • Movement joint materials and systems Processes and techniques • Floor tiling processes, including: ○ Set-out and layout planning ○ Tile cutting and shaping ○ Adhesive application techniques ○ Tile fixing methods ○ Grouting and finishing techniques • Tiling of steps, stairs, and thresholds • Matching tile joints between adjoining areas • Installation over different substrates and systems Measurement and calculations • Material quantity calculations • Determining falls and drainage requirements • Tile layout geometry (symmetry, diagonals, borders) Tools and equipment • Types and uses of tiling tools and equipment: ○ Tile cutters ○ Wet/dry saws ○ Grinders ○ Trowels ○ Levels • Safe operation and maintenance of tools • Manufacturer's recommendations for use Quality and performance requirements • Tolerances for alignment, level, and finish • Joint spacing and uniformity • Prevention of lippage and defects • Durability and performance of tiled surfaces Safety • Hazards associated with tiling work, including: ○ Manual handling risks ○ Dust and silica exposure ○ Cutting equipment hazards
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	• Risk control measures and safe handling practices • Emergency procedures and reporting requirements • Environmental requirements for waste management, reuse, and recycling on construction sites
Assessment requirements	<u>Assessment methods</u> may include more than one of the following: Direct Observation Assessment of learners while they are performing tasks in real time in a real simulated environment. • The learner performs practical tasks. • The assessor watches the learner complete these tasks against a checklist or performance standards. Assessor Requirements • Use a structured observation checklist aligned to performance standards • Observe multiple occasions to ensure consistency of competence. • Record evidence of safe work practices, correct use of equipment, etc. • Provide immediate feedback where appropriate. • Ensure conditions reflect real workplace standards. Oral Questioning Verbal questions asked to assess the learner’s understanding of knowledge and reasoning. • Conducted during or after practical tasks. • Can be structured (planned questions) or informal (follow-up probing). Assessor Requirements • Ask questions that test underpinning knowledge • Use open-ended questions • Confirm learner understanding where practical performance is not enough. • Record responses clearly (notes or checklist). • Adjust language to suit learner literacy levels.

Written Test

A structured assessment requiring learners to provide written responses.

- Short-answer questions, multiple choice, or case scenarios.
- Typically conducted off-site or in a classroom environment.

Assessor Requirements

- Design questions that assess knowledge.
- Ensure the test is clear, aligned to unit requirements and appropriate for language, literacy, numeracy levels
- Mark responses using a marking guide or model answers.
- Provide feedback and identify gaps in knowledge.
- Ensure results reflect the learner's independent performance.

Work-Based Activity

Assessment conducted in a real workplace while the learner performs actual job tasks.

- Learners complete normal workplace duties.
- Evidence is collected over time.

Assessor Requirements

- Coordinate with workplace supervisors.
- Gather evidence such as - Observation reports, Supervisor feedback, etc.
- Verify that tasks meet unit performance standards.
- Ensure authenticity (learner's own work).
- Confirm competence across different situations and timeframes.

Assessment should use a combination of the above methods to ensure sufficient, valid, authentic, and current evidence of competence in both skills and knowledge, in line with unit requirements.

Context of Assessment:

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects a real workplace setting.

Assessment is to comply with relevant regulatory or relevant standards' requirements. Assessment of essential knowledge will usually be conducted in an off-site situation.

Moderation arrangements	1. Training providers must have their own moderation system approved by TNQAB before accreditation is granted: a) Relevant internal moderation processes are documented; b) Assessment is planned for each unit, and moderation processes are integrated into such plan. 2. Unless specified elsewhere, external moderation is conducted by the National Qualifications unit of TNQAB for all unit components of a national qualification: a) Samples of assessed activities are submitted for moderation; b) Moderation (external) forms are available on request.
Resource requirements	1. Power point presentations 2. Trainer's Guide 3. Learner's Guide 4. Tonga National Building Code 5. Videos on installing floor tiles 6. Plans and Specifications 7. Floor tiles (including large-format and specialty tiles) 8. Adhesives suitable for tile type and substrate 9. Grouts (cement-based and epoxy types) 10. Screed materials (cement, sand, water) 11. Waterproofing membranes (if required) 12. Movement joint materials and sealants 13. Tape measures 14. Spirit levels 15. Straight edges 16. Squares 17. String lines 18. Tile cutters 19. Wet saws 20. Angle grinders 21. Hole saws 22. Trowels (notched) 23. Spacers and wedges 24. Floats

	25. Sponges 26. Buckets 27. Mixing equipment (manual or mechanical mixers) 28. Hand and power tools 29. Mortar boards 30. Wheelbarrows 31. Personal Protective Equipment (PPE): Safety boots 32. Gloves 33. Eye protection 34. Respiratory protection (dust control) 35. Safety signage and barricades 36. Safety Data Sheets (SDS) 37. Job Safety Analysis (JSA) 38. Cones and Connector arms
Requirements to complete this unit	There are six (7) Learning outcomes and thirty-seven (37) Performance standards to measure competence. To demonstrate competence, the person studying this unit is: - Required to demonstrate all LOs to the expected standards; - Required to attain an Achieved Grade (Competent) to fulfil the requirements of the Unit Standard; - Eligible to three (3) attempts to achieve the required competency within 14 days of the first attempt. Failure to achieve the required competency after three (3) attempts on the specific part of the assessment will require the person studying this Unit to re-enrol for the same Unit.
Important notes and definitions	<u>Notes:</u> - All training and assessment activities must be in accordance with Tonga National Building Code. - Assessors must comply with the Tonga national assessment and moderation requirements. <u>Definitions:</u> <i>Adhesive</i> is a bonding material used to fix tiles to the substrate.

2. *Environmental Requirements* refer to regulations and workplace procedures aimed at reducing environmental impact, including waste management and recycling.
3. *Fall* is a slight slope in floors to allow water to drain effectively.
4. *Floor Tiling* refers to the process of installing tiles to floor surfaces for functional and decorative purposes.
5. *Grout* is a material used to fill joints between tiles, providing stability and finish.
6. *Hazard* refers to potential source of harm.
7. *Joint Spacing* refers to the uniform gap between tiles to allow for grout placement.
8. *JSEA (Job Safety and Environmental Analysis)* refers to the process to identify risks.
9. *Large Format Tiles* are tiles typically larger than 600 mm × 300 mm, requiring special handling and installation techniques.
10. *Lippage* refers to uneven alignment between adjacent tiles creating height differences
11. *Movement Joint* is a joint designed to allow expansion and contraction of tiled surfaces.
12. *OHS (Occupational Health and Safety)* refers to framework for safe work practices.
13. *Rectified Tiles* are tiles with precisely cut edges for minimal joint spacing.
14. *Riser* refers to vertical face
15. *Risk control* refers to measures to reduce workplace risks.
16. *Screed* is a layer of mortar applied to level a surface or create a fall for drainage.
17. *Set Out* refers to the process of planning and marking tile layout to ensure symmetry and alignment.
18. *Substrate* refers to the base surface (e.g., concrete, screed, timber) to which tiles are applied.
19. *Threshold* refers to the edge or transition area between different floor surfaces.
20. *Tile Alignment* refers to the positioning of tiles to ensure straight lines and consistent joint spacing.
21. *Tolerance* refers to the allowable variation in surface level, alignment, or finish
22. *Tonga National Building Code* is a set of technical standards governing the design and construction of buildings in Tonga.

	23. <i>Tread</i> is a horizontal surface 24. <i>Waterproof Membrane</i> is a protective layer applied to prevent water penetration in wet areas.
Public comments on unit	Please contact TNQAB National Qualifications Unit (email EnquireNQ@tnqab.to or Telephone 28136) if you like to discuss or suggest changes to the details of this unit.