Technical Note - TN 014: 2016

Issued date: 23 February 2016
Effective date: 23 February 2016
Subject: Changes to T MU CY 01000 GU – Partially superseded by T HR MD 10001 GU

This technical note has been issued by the Asset Standards Authority (ASA) to notify the changes to T MU CY 01000 GU TNSW Competency Standards Guidelines and Glossary, Version 1.0.

The definitions of the terms in Section 4 of T MU CY 01000 GU should now be read as provided in T HR MD 10001 GU Glossary of Defined Terms – Competency Management, Version 1.0.

T HR MD 10001 GU is a new document and partially supersedes T MU CY 01000 GU.

The ASA is currently developing the discipline specific competency standards and the contents of T MU CY 01000 GU (except Section 4) will be incorporated into relevant standards so that they contain the recommended guidance in its entirety. The new standards will be made available on the ASA website, progressively. Until such time all other sections of T MU CY 01000 GU are still in use.

Authorisation:

<table>
<thead>
<tr>
<th>Technical content prepared by</th>
<th>Checked and approved by</th>
<th>Interdisciplinary coordination checked by</th>
<th>Authorised for release</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Jocelyn Edwards</td>
<td>Mark Smith</td>
<td>Graham Bradshaw</td>
</tr>
<tr>
<td>Position</td>
<td>Manager Competency Systems</td>
<td>Principal Manager Industry and Technical Development</td>
<td>Principal Manager Industry and Technical Development</td>
</tr>
</tbody>
</table>
Guide

TfNSW Competency Standards Guidelines and Glossary

Version 1.0

Issued date: 09 July 2015

Effective date: 01 October 2015

Important Warning

This document is one of a set of standards developed solely and specifically for use on public transport assets which are vested in or owned, managed, controlled, commissioned or funded by the NSW Government, a NSW Government agency or a Transport Agency (as defined in the Asset Standards Authority Charter). It is not suitable for any other purpose.

You must not use or adapt it or rely upon it in any way unless you are authorised in writing to do so by a relevant NSW Government agency. If this document forms part of a contract with, or is a condition of approval by a NSW Government agency, use of the document is subject to the terms of the contract or approval.

This document may not be current. Current standards are available for download from the Asset Standards Authority website at www.asa.transport.nsw.gov.au.

© State of NSW through Transport for NSW
Standard governance

Owner: Manager Competency Systems, Asset Standards Authority
Authoriser: Principal Manager Industry and Technical Development, Asset Standards Authority
Approver: Director, Asset Standards Authority on behalf of the ASA Configuration Control Board

Document history

<table>
<thead>
<tr>
<th>Version</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>First Issue</td>
</tr>
</tbody>
</table>

For queries regarding this document, please email the ASA at standards@transport.nsw.gov.au or visit www.asa.transport.nsw.gov.au

© State of NSW through Transport for NSW
Preface

The Asset Standards Authority (ASA) is an independent unit within Transport for NSW (TfNSW) and is the network design and standards authority for defined NSW transport assets.

The ASA is responsible for developing engineering governance frameworks to support industry delivery in the assurance of design, safety, integrity, construction, and commissioning of transport assets for the whole asset life cycle. In order to achieve this, the ASA effectively discharges obligations as the authority for various technical, process, and planning matters across the asset life cycle.

The ASA collaborates with industry using stakeholder engagement activities to assist in achieving its mission. These activities help align the ASA to broader government expectations of making it clearer, simpler, and more attractive to do business within the NSW transport industry, allowing the supply chain to deliver safe, efficient, and competent transport services.

The ASA develops, maintains, controls, and publishes a suite of standards and other documentation for transport assets of TfNSW. Further, the ASA ensures that these standards are performance-based to create opportunities for innovation and improve access to a broader competitive supply chain.

ASA seeks to assist AEOs in setting the competence requirements of its personnel to carry out services and meet the capability requirements of technical standards. In response, a suite of Competency Pathway Standards shall be published which set the minimum competency requirements to perform certain functions on the TfNSW Network. These functions are identified based on industry-wide need for assistance in articulating competency and will not be exhaustive of all functions across the asset life cycle.

This guide provides context by which these Competency Pathways are being developed including key influences, structure and application of the standards.
# Table of contents

1. **Introduction** ................................................................................................................................. 5

2. **Purpose** ........................................................................................................................................ 5

   2.1. Application ........................................................................................................................................ 6

3. **Reference documents** .................................................................................................................... 6

4. **Terms and definitions** .................................................................................................................. 7

5. **TfNSW competence, compliance and licensing** ........................................................................... 7

6. **Pathway categories** ....................................................................................................................... 9

   6.1. New entrants ....................................................................................................................................... 9

   6.2. Existing skilled and experienced ...................................................................................................... 9

   6.3. Transferable skills .......................................................................................................................... 10

7. **Key elements of the standards** ..................................................................................................... 10

   7.1. Roles and functions .......................................................................................................................... 10

   7.2. Elements and evidence criteria ....................................................................................................... 11

   7.3. Variables ............................................................................................................................................ 11

8. **Application of the standards** ......................................................................................................... 11

   8.1. Structure of the competency standards .......................................................................................... 12

   8.2. Customisation of the standards ....................................................................................................... 12

   8.3. Evidencing ........................................................................................................................................ 14
1. Introduction

There are many definitions and ideas of what constitutes competency. For our purposes, competency requires the application of an individual's specified skills, knowledge and attitudes, attained by experience and knowledge, which enable effective participation at work.

The traditional approach to managing competency within TfNSW has involved breaking-down functions (as defined in Section 7.1) into a series of related tasks which are then grouped into broad units of competency or courses, made up of underpinning skills, knowledge and behaviours. Whilst this approach is appropriate for a vast majority of functions performed across TfNSW, it relies heavily on the Australian Qualifications Framework (AQF). The AQF nationally recognised training catalogue does not currently cater for certain functions being performed across the railway control systems, electrical and signalling disciplines which are complex in conceptual, analytical and behavioural nature.

These functions have traditionally been carried out by RailCorp resources that possessed a unique and complex body of domain knowledge and skills which have been developed over many years working on the TfNSW network. With the restructuring of RailCorp and emergence of Sydney Trains, NSW Trains, and the Authorised Engineering Organisation (AEO) model there has been redistribution of the legacy workforce. This has resulted in a number of competent personnel recognised as competent by legacy systems only.

This issue has prompted the competency pathways initiative by TfNSW to enable the existing and future workforce to becoming authorised to undertake these present and future functions. ASA is developing standards that specify the level of performance and defines what a competent individual would do in terms of observable outputs or behaviours against functions. This will allow the competency standards to serve as an external measure of expected performance against which competence can be identified and assessed by AEOs.

The value of the competency standards rests in their capacity to allow AEO to meaningfully assess competency of personnel and provide a competent workforce.

2. Purpose

This document provides guidance on how the Competency Standards, currently under development by ASA, are intended to be used and incorporated by AEOs in assessing competency of their personnel. It provides context, drivers and definitions behind the standards that serve as point of reference for AEOs and other key stakeholders.
This guide supports but does not cover network specific licensing requirements (for example; Rail Infrastructure Manager (RIM) or Operator and Maintainer (O&M) specific requirements).

2.1. **Application**

This guide is to be used by AEOs who require a more detailed understanding of how the Competency Pathway Standards are intended to be used. This is designed to be incorporated into an AEOs Competency Management System to deem personnel competent for certain functions.

This guide is also designed to provide AEOs and individuals a high level understanding of the wider TfNSW competency framework and layers of knowledge that might be required to become authorised and licensed to work.

3. **Reference documents**

The following documents are cited in the text. For dated references, only the cited edition applies. For undated references, the latest edition of the referenced document applies.

**International standards**

ISO 10015 Quality Management Guidelines for Training

ISO 9001 Quality Management Systems

**Australian standards**

Rail Safety National Law (NSW) pursuant to the Rail Safety (Adoption of National Law) Act 2012 (NSW)

Australian Qualifications Framework (AQF) 2013

**Transport for NSW standards**

AEO Authorisation Governance Framework


**Legislation**

Rail Safety National Law (NSW) pursuant to the Rail Safety (Adoption of National Law) Act 2012 (NSW)

Work Health and Safety Act 2011 (NSW)

Work Health and Safety Regulation 2011 (NSW)
4. **Terms and definitions**

The following terms and definitions apply in this document:

**AEO** Authorised Engineering Organisation

**ASA** Asset Standards Authority

**authorisation** the conferring of authority, by means of an official instruction and supported by assessment and audit, to a supplier, to self-perform assurance of its competence and systems to provide services

**authorised engineering organisation** a supplier of a defined engineering service or product that has been assessed and granted AEO status by TfNSW

**CMS** competency management system

**competent person** a person identified or certified within an organisation to have required skills and knowledge to perform specified tasks

**domain knowledge** specific to an application or industry, as opposed to generic knowledge that is independent of the details of any particular application or industry

**O&M** Operator and Maintainer

**responsible** a duty or obligation to satisfactorily perform or complete a task (assigned by someone, or created by one's own promise or circumstances) that one must fulfil, and which has a consequent penalty for failure. Responsibility can be delegated

**role** commonly a job title or occupation. A role will vary in relation to organisation structures, HR processes and business structures

**RIM** rail infrastructure manager

**SME** subject matter expert

**TfNSW** Transport for New South Wales

5. **TfNSW competence, compliance and licensing**

ASA has presented competency standards which are generic, transferable between AEOs and considered the minimum requirements of satisfaction to work on the TfNSW network. The standards are independent of network specific domain or product knowledge requirements that may be required to perform services or operate the network. Therefore, personnel may
be required to fulfil additional domain and product competency requirements, before carrying out certain functions on the network.

Figure 1 represents the requirements, regulations and laws that are factored into the process of permitting personnel to work on the TfNSW network. ASA publishes technical standards to ensure that engineering services are performed on the NSW transport assets to an approved standard. To achieve the required overall technical standard, people performing the work must be deemed competent to do so.

An individual must be assessed and deemed competent through the AEO’s competency management system, which should be based on ASA’s competency standards, technical standards and any network specific additional domain and product knowledge requirements. Following this process, personnel may be submitted for licensing and accreditation by the network authority (for example; O&M, RIM), if further required.

In summary, AEOs should ensure the following criteria are recognised and incorporated within its competency management system.

1. applicable ASA base requirements retrieved from the Competency Pathway Standards, as detailed in Section 8.2

2. network specific domain and product criteria to fulfil competency requirements of the function within the AEO (which includes the O&M as an AEO)

3. specific licencing criteria fulfilled in order to perform duties within the network environment
6. Pathway categories

Broadly, there are three categories of existing and future rail industry workers that are catered for as described below. These categories are the basis of the pathways that have been documented within each competency standard. Each has different training and development requirements but share a common competency standard, relative to a function.

6.1. New entrants

This pathway will identify the pre-requisite qualifications and training requirements for those personnel with little to no experience in the specific discipline and network domain who wish to forge a career in the specific network discipline (that is train control systems). This group is the future skilled workforce and fundamental to sector workforce planning.

6.2. Existing skilled and experienced

This pathway will benefit those personnel with current or previous experience working on the TfNSW network and can demonstrate combinations of relevant domain or product knowledge
or both. It provides a function-specific competency standard including evidence criteria to guide assessment of personnel.

### 6.3. Transferable skills

This pathway is intended for personnel who are able to demonstrate they have some of the skills and knowledge required to carry out the required functions but with domain skillset gaps or product skillset gaps or both. This includes personnel with national experience or international experience or both with the specific discipline proficiency but without specific local knowledge.

### 7. Key elements of the standards

The key elements of the standards are described below.

#### 7.1. Roles and functions

The competency standards describe the generic competencies that are relevant to functions or tasks that are being performed in a fully effective manner. ASA has elected to specify functions that exist over the asset life cycle as opposed to roles. This is in recognition that role titles may not be consistent across all AEO organisations. Figure 2 shows the relationship between a role and a function.

![Figure 2 – Roles versus functions](image)

The role may also be referred to as ‘job’ or ‘position’ depending on the organisation and is made up of a number of functions. There is also a possibility that a collection of roles makes higher level roles within an organisation.

The function is a speciality area of a role comprised of a collection of task elements.
7.2. **Elements and evidence criteria**

Functions are further broken down into (task) elements and evidence criteria that can be practicably demonstrated, evaluated, measured or assessed. An ‘element and evidence criteria’ expresses what a competent person would do in terms of observable results and behaviours. A single element within a standard could be applicable to more than one function (that is; transferable). Elements are designed to be transferable and provide foundation for the domain specific functions.

The specific competency attributes that underpin expected performance are embedded within the elements and evidence criteria. These include common core competencies such as the ability to communicate effectively, the capacity to problem-solve, risk adversity and accept responsibility and accountability. This allows the competency standards to serve as a measure of expected performance against which actual performance can be assessed and evidenced by an AEO.

7.3. **Variables**

Domain and product requirements are varied across the network and likely to evolve and change continuously. For that reason the standards do not specify particular product or domain requirements. Instead, the standards list variables to indicate the types of domain and product knowledge that should be considered. This enables the AEO to investigate further with the network authority (for example; RIM, O&M) for the scope of work being undertaken.

For example, Variable item C2.5 in Appendix C of the *Control Systems Competency Pathways Standard* notes ‘computer design specifications.’ The items listed under this heading are dependent upon the network O&M control system product. This might be ATRICS for Sydney Trains, or Phoenix for CRN or could be another system in the future. The AEO is responsible for determining the specific product information with the relevant network O&M.

In another example, Variable item C2.2 lists ‘test and release strategy’ as a core document which would be applicable for undertaking certain elements. Each network may have differing requirements, contents or templates for this strategy document and this should be investigated with the responsible O&M for the work being carried out.

8. **Application of the standards**

The application of standards is described below.
8.1. **Structure of the competency standards**

The competency standard tables, located in the appendices of the Competency Pathways Standards, are the key part of the document. The tables include Functions, Elements, Evidence Criteria and Variables, as described in Section 7. Each Evidence Criteria Item is identified as being required or not, with respect to each function, with denotation ‘Y’ (Yes) or ‘N’ (No). The order in which the Elements and competency items are presented is not intended to imply relative importance; each however has attempted to correspond with the logical sequence of tasks performed across the Asset Life Cycle model. Figure 3 below shows the structure and layout of a typical competency standard.

**Figure 3 – Structure and content of a competency standard**

8.2. **Customisation of the standards**

The competency pathway standards are designed to be as flexible as possible. A prescriptive approach to advising how to incorporate the standards into an organisation has been avoided so not to contradict the AEO model and responsibility an AEO has to develop, deploy and manage competency of its personnel. Not all the elements documented within the
competency standard will be relevant to the particular the scope of work or service an AEO is authorised to provide. Also, role profiles and function proficiency levels vary across organisations.

The AEO may tailor the minimum competence requirements to meet project or industry needs in consultation with relevant stakeholders, including aligning to activities on particular projects.

The competency standards present a central point of reference that can acceptably be tailored in the following ways and as demonstrated in Figure 4 below:

- elements can be customised and packaged as required, to create competency profiles to fit the specific roles within an AEO organisation
- elements can be discounted if not relevant to the specific scope of work being undertaken
- language can be revised to suit organisational language so long as the original essence of each element or evidence criteria is preserved

Table X - Design and Construct Control Systems Infrastructure Competency Standard

<table>
<thead>
<tr>
<th>Elements</th>
<th>Evidence criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1</td>
<td>Performs testing activities and system health checks throughout the installation process, as specified in the installation packages.</td>
</tr>
<tr>
<td>10.2</td>
<td>Completes required documentation for installation activities to indicate work has been completed according to specifications and required standards.</td>
</tr>
<tr>
<td>12</td>
<td>Demolishes and removes existing infrastructure</td>
</tr>
<tr>
<td>12.1</td>
<td>Identifies infrastructure components and parts to be decommissioned and removed in accordance with drawings, specifications and the installation packages.</td>
</tr>
<tr>
<td>12.2</td>
<td>“Rads out” identified components after the communication and confirmation with stakeholders.</td>
</tr>
</tbody>
</table>

Figure 4 – Example of customised standard
The following restrictions to the standards apply:

1. Customisation to the standards must be justified and will be auditable by ASA so ability to cross reference is essential.

2. Unacceptable to customise the evidence criteria against elements as these are vital in determining critical evidence of competence. (That is; the evidence criteria must all be selected for an element that is deemed applicable)

The process of incorporating and customising the standards to create a profile that shows the competencies required for specific organisation roles or services is shown below.

**Step 1:** Select the function that that defines the key activities of the role or scope of work under consideration.

**Step 2:** Assess and select the Elements that represent the function and service being carried out.

**Step 3:** Incorporate the Evidence Criteria specified against the selected Elements.

**Step 4:** Assess and select the variables applicable to each Evidence Criteria.

**Step 5:** Use the selections made in Step 1 to Step 4 to complete the profile for the work being carried out and evidence appropriately (integrating into the AEO CMS).

### 8.3. Evidencing

In accordance with the *AEO Guide to Engineering Competence Management*, AEOs are required to maintain competency evidence for audit purposes. Examples of the types of evidence acceptable are provided in Table 1 below.

<table>
<thead>
<tr>
<th>Elements</th>
<th>Evidence criteria</th>
<th>Appropriate evidence examples</th>
</tr>
</thead>
</table>
| Develops a quality design and construction solution that meets project requirements | Identifies, interprets and analyses the relevant design, industry and regulatory standards and design the infrastructure solutions to comply | - design reports or plans  
- interviews  
- log books  
- references |
<table>
<thead>
<tr>
<th>Elements</th>
<th>Evidence criteria</th>
<th>Appropriate evidence examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undertakes peer review or independent review</td>
<td>Provides constructive feedback to the designer, questioning and challenging decisions made</td>
<td>• meeting Minutes</td>
</tr>
<tr>
<td>or both</td>
<td></td>
<td>• design review comments registers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• reports of corrective actions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• reassessment engineer reports</td>
</tr>
</tbody>
</table>

© State of NSW through Transport for NSW