

# Substations training strategy

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## Introduction

TransGrid's *Substation Training* can be designed as modular program to provide substation fitters with the necessary skills to properly maintain and install substation equipment.

Training modules can be linked to specific items of equipment within substations, meaning that training could be delivered on as-needed basis, in response to the staffing levels required to perform maintenance and installation tasks. It would also ensure that only people who have met TransGrid's requirements work on its equipment.

It could also be delivered as accredited and non-accredited programs, with the accredited program providing participants with access to a Certificate IV in ESI – Power System Substations.

This document attempts to present a needs-responsive process and a flexible delivery strategy.

## **Substations training process**

The substations training process can be designed to be responsive to the needs of the business as team leaders review their work programmes and determine their labour requirements. For example, if a team leader realises that there may not be enough TransGrid-qualified people to perform maintenance on a particular component in six month's time, the team leader has six months to get enough staff trained.

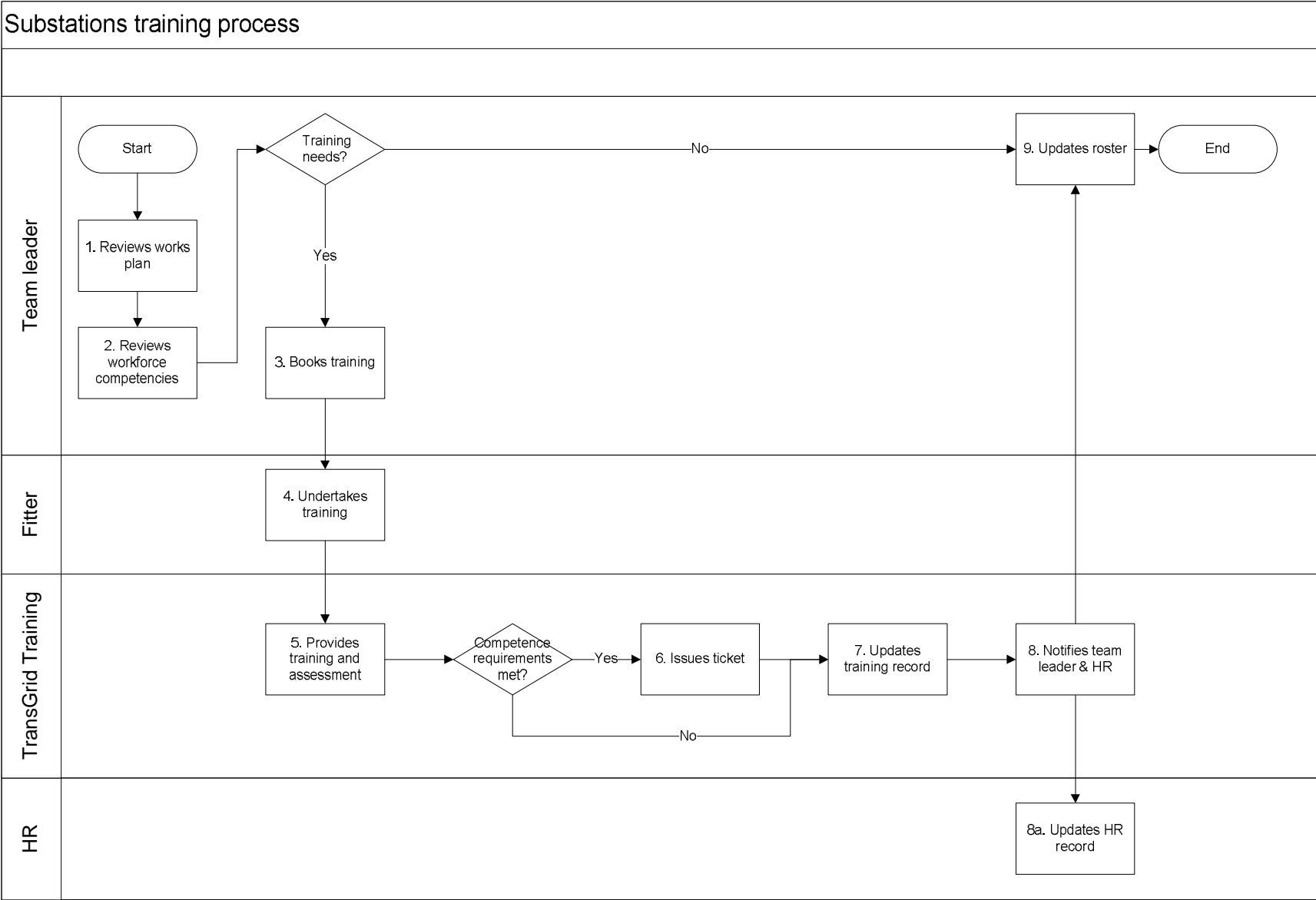
TransGrid Training could run programmes in response the team leader's needs if a flexible delivery method such as e-learning or workbook was used.

## **Process description**

Refer to the process flow on the following page.

1. The process begins with the team leader reviewing the works plan for the substations managed and determines the labour requirements.
2. The team leader reviews the competencies of fitters to determine if there will be enough TransGrid-certified staff to perform the tasks and to identify any training needs.
3. If there are training needs, (i.e. there are not enough competent fitters within the team to perform the scheduled work), then the team leader books fitters into training.
4. Fitters participate in training with TransGrid Training.
5. TransGrid Training provides training and assessment.
6. When a fitter is deemed to be competent, TransGrid Training issues a ticket (or certificate of competence).
7. TransGrid Training updates the fitter's training record.
8. TransGrid Training notifies Human Resources and the team leader.
  - a. Human Resources update HR records to reflect attendance at training and any new qualifications.
9. The team leader updates the roster.

Process flow



## Substations training structure

### Overview

TransGrid's substations training can be designed to provide fitters with the necessary skills and underpinning knowledge so that they can properly maintain and install equipment in TransGrid substations. A modular approach with flexible delivery could be taken so that the training can be responsive to the changing needs of the business.

### Pre-requisite

In order to enrol in the equipment-specific modules in TransGrid's *Substation Training*, participants would be required to hold an electrician's licence and a Certificate III in ESI — Power Systems.

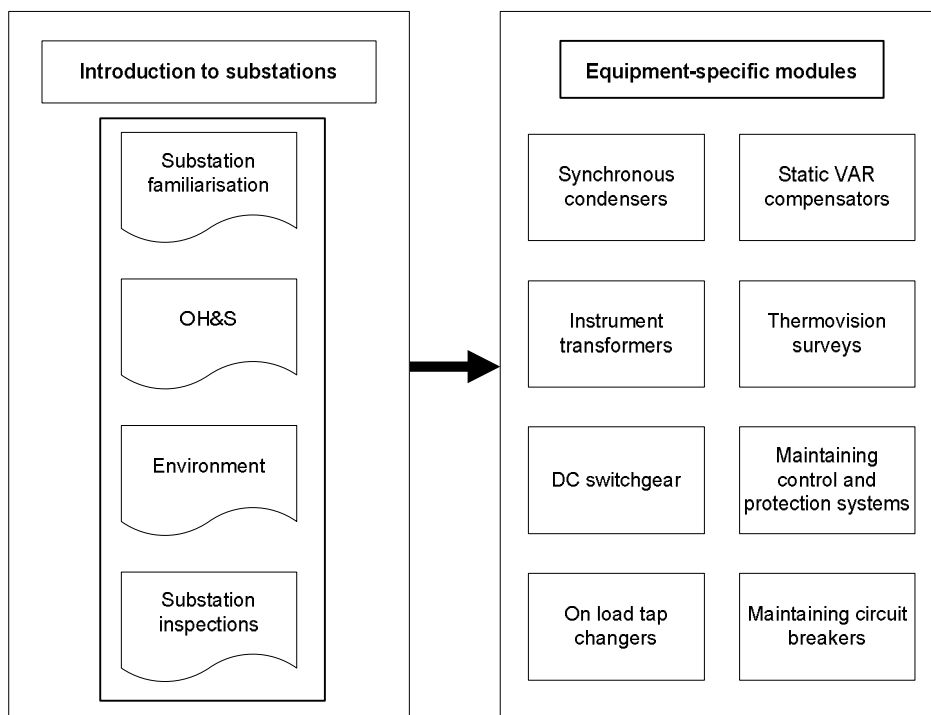
Final year apprentices would be able to enrol in the entry level module to gain underpinning knowledge. It would also enable them to be ready to receive training in the equipment-specific modules when they join a works team.

### Overall structure

There would be two main components to the substations training:

- an introduction to substations – the entry point
- equipment-specific modules

Participants would not be permitted to undertake any of the equipment-specific modules until they had successfully completed the introductory module.



## Entry point

The entry point to the proposed the training is the *Introduction to substations* module. The overall purpose of this module is to build upon the skills and knowledge that participants acquired in their apprenticeship training.

*Introduction to substations* would cover four major topic areas

- Substation familiarisation
- OH&S
- Environment
- Substation inspections

This module revolves around substation familiarisation. Participants would gather an awareness of what a substation is and why they are on the network. They would examine the components and their purpose. Workplace safety and environmental implications would be examined in the context of substation equipment and their associated risks. By the completion of this module, participants should have the skills and knowledge to perform a substation inspection.

This module would provide participants with foundation knowledge that would be used in the equipment-specific modules, including locating and interpreting TransGrid documentation, performing risk assessments and developing work plans while complying with TransGrid policies and procedures.

Participants would not be allowed to proceed to the equipment specific modules until they have successfully completed *Introduction to substations*.

If a suitably qualified assessor performed the assessment, then it would be expected that this module would meet the requirements of the Certificate IV substation inspections unit.

There would be two assessment tools – a participant workbook and a practical demonstration of a substation inspection. Participants would use the workbook to record answers to questions and exercises requiring research.

## Equipment-specific modules

Equipment-specific training modules would allow team leaders to better plan their labour requirements for forecast maintenance. Fitters would become qualified to work on specific items of equipment to a make and model level.

There would be three components to these modules:

1. introduction to the item
2. the maintenance process for the item
3. workplace practical assessment

For an example of this would strategy could apply to an item of substation equipment, refer to *Circuit breaker maintenance outline*.

## **Introduction**

An introductory topic with relevant theory would provide background and context for the maintenance tasks. Generally, theory presented would provide information on:

- what the equipment does
- why we have them have them on the network
- how they work
- the importance of properly maintaining them
- the maintenance requirements for the item
- safety and environmental issues and risks associated with the item

Only theory that is relevant to maintaining the item would be presented. In other words, the training's target audience is maintenance fitters, not engineers and designers, so deeper concepts would not be covered.

Delivery could be instructor-led in a classroom or self-paced through e-learning or with a workbook.

Formal assessment would not be required for the theory topic because the learning outcomes revolve around properly maintaining equipment, not its features. That said, a knowledge test would be useful to participants so that they check their understanding of the topic. Options would vary according to the delivery method. For example, a written question and answer test could be used for instructor-led training, online for e-learning delivery and completion of the workbook for that delivery method.

## **Performing maintenance**

Performing maintenance on the item would be an interactive practical exercise in the form of a desktop scenario. Participants would work through the process of performing maintenance on a piece of equipment that in a fictional environment from planning the maintenance, performing the maintenance and performing the post-maintenance tasks.

All aspects of performing the maintenance for item would be covered, including safety rules, environmental procedures and incident management. The scenario would include environmental and safety incidents that require participants to outline the actions they would take.

The scenario would also include maintenance difficulties causing delays and so on.

Delivery could be instructor-led in a classroom or self-paced through e-learning or with a workbook.

This topic would have a formal assessment component because the learning outcomes involve working with TransGrid processes and procedures. The preferred assessment tool would be workbook (either paper or electronic) that would allow participants to record the documentation they referred to and the actions taken in the maintenance scenario.

Participants would be required to successfully complete the relevant module before being allowed to work on the equipment with or without supervision.

## **Workplace practical assessment**

After successfully completing the performing maintenance topic, participants would be permitted to work on the particular item of equipment under supervision. When their team leader is of the opinion that they are ready to work on the equipment unsupervised, an observation-based assessment in the participant's workplace would be arranged.

## **Delivery methods**

Each delivery method has advantages and disadvantages.

### **Instructor-led**

#### **Advantages**

- Facilitators and participants can share their workplace experiences.
- Fosters group work and discussion.
- Allows for instant feedback.

#### **Disadvantages**

- Limited flexibility in delivery.
- Needs to be scheduled well in advance.
- Can be costly to run with small groups.
- Participants need to be released from work.
- Participants may have to travel, leading to increased cost.
- Costs associated with venues.
- Results need to be manually recorded.

### **E-learning**

#### **Advantages**

- Self-paced and highly flexible.
- Participants can access learning from virtually anywhere at any time – no need for travel or venues.
- Can include simulations of test equipment, leading to 'what if' scenarios.
- Low deployment costs.
- Can allow for training and assessment in one package.
- Can include a centralised results database with automated results collection.
- Can be easily and quickly updated to reflect changes in training requirements.

#### **Disadvantages**

- High initial development costs.
- Computer with fast internet access required.
- Limited scope for group work and discussion.
- Participants need to be allocated time for the training.

## **Workbook**

### **Advantages**

- Self-paced and highly flexible.
- Participants can access learning from virtually anywhere at any time – no need for travel or venues.
- Low deployment and development costs.
- Can allow for training and assessment in one package.
- Can be used as an on the job reference.

### **Disadvantages**

- Limited scope for group work and discussion.
- Limited scope for simulation.
- Some tasks may require internet access.
- Results need to be manually recorded.
- Potential for plagiarism.
- Participants need to be allocated time for the training.

## **AQF mapping, accredited and non-accredited training**

### **AQF mapping**

When completed, the proposed training would come very close to meeting the requirements of the AQF Cert IV ESI – Substations, with some gaps. Some modules would not necessarily map directly to all the elements of any one unit, but by the time a participant has successfully completed a number of modules, they would probably have met the requirements of any number of AQF units.

That said, at the completion of *Introduction to substations* (the entry point), participants would have probably have met the requirements of the Substations Inspections unit as well as any environment and workplace safety units.

There would be some gaps between the TransGrid training and the AQF requirements, but this would be limited to where the AQF unit covers tasks that are not performed at TransGrid. An example of this is the unit that deals with sampling, testing, filtering and reinstating insulating oil as competence in all of those tasks is not required by TransGrid. If a participant were to seek Cert IV, the participant would need to meet the requirements of the gap element elsewhere, using a partial recognition of prior learning pathway.

### **Accredited versus non-accredited training**

“Accredited” training is that which goes toward meeting the requirements of an AQF unit of competence, while “non-accredited” training meets TransGrid’s requirements. In reality, the content of the training would be much the same – the only significant difference would be in assessment. Accredited training would be assessed by an AQF-certified assessor.