

CONSTRUCTION
Training Group

LEARNER GUIDE

Trencher TS

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National Guidelines for OHS Competency Standards

Trencher Safety

PERFORMANCE ASSESSMENT

Assessor Guidelines – Specific (Performance Assessment)

ASSESSMENT INSTRUMENT – SPECIATIONS

The following performance assessment covers the Loadshifting Standard elements from [NOHSC:(1992) which apply to a Trencher

1. This assessment requires the operator to check the equipment, plan the work and to safely and competently operate the Trencher.

The Assessment is performed in three sections:
 - 1.1 Conduct routine pre-operational check on Trencher
 - 1.2 Inspect the site and plan the work
 - 1.3 Conduct pre-operational and post start up checks.
 - 2.1 Drive to the work area.
 - 2.2 Rolls and consolidates the material
 - 3.1 Shut down the equipment and secure the site
2. The performance assessment can be conducted at any location which has:
 - Sufficient clear space to operate the machine
 - Ground suitable for trenching
3. Equipment and Resources Required:
 - Trencher
 - Suitable site on which to use the Trencher and consolidate material.
4. Unless other arrangements are agreed to by the assessor, it will be responsibility of the applicant, applicant's employer or trainer to provide the required equipment and resources.
5. To be assessed, an applicant must wear:
 - Safety helmet (where required)
 - Appropriate footwear
 - Other protective clothing and equipment as appropriate
6. The performance of each applicant is to be recorded to the assessor's checklist.
7. Safety of personnel:
When an applicant is working dangerously, recklessly or without the necessary co-ordination, the assessor must direct the applicant to cease work and terminate those parts of the assessment immediately.

8. The items in the shaded boxes are critical importance. Failing to get any of these correct means that the competency has not been achieved.

9. In cases where criteria cannot be physically performed the applicant is required to demonstrate his/her understanding of these criteria by answering relevant questions orally, or my stimulation.

The type of answer provided is to be shown on the assessment sheet as:

O: Oral Assessment

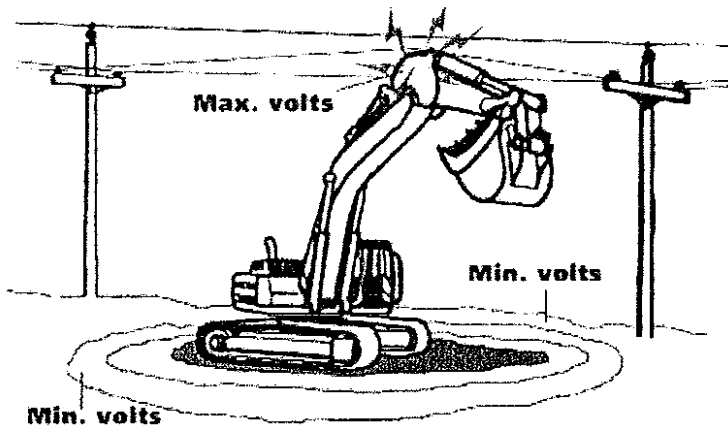
S: Stimulated Assessment

N/A: Not Applicable

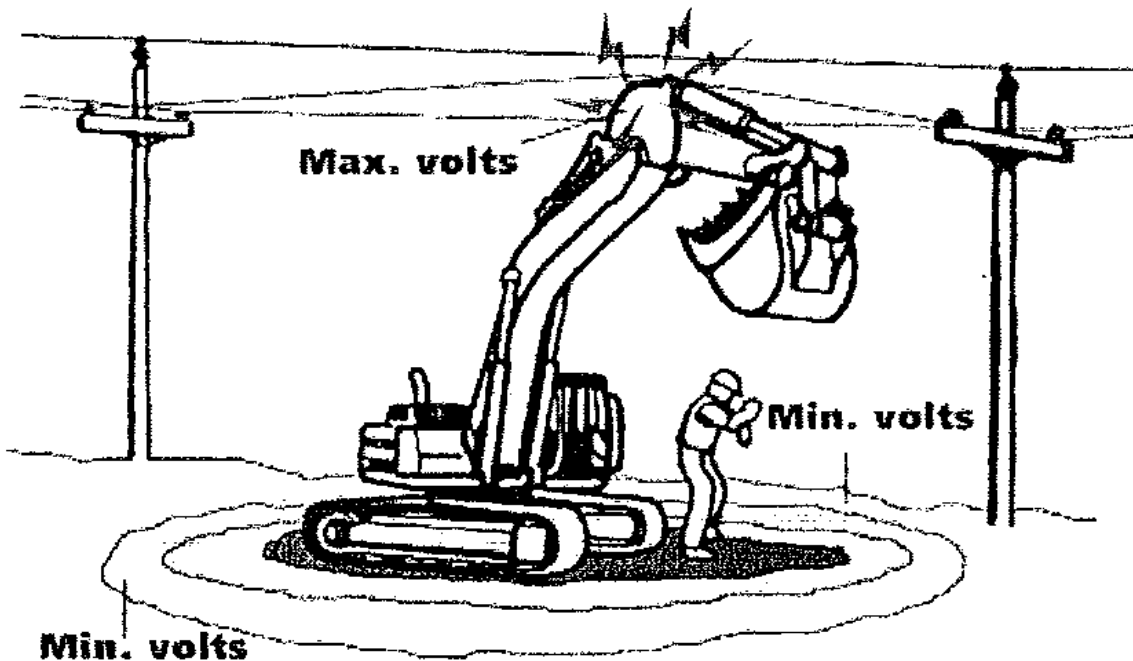
10. Where an applicant is assessed as 'Not Yet Competent' he/she must be informed of the reason for the failure in order to gain further appropriate training.
11. The full performance assessment can take up to forty minutes.
12. The applicant's competence in each unit is to be summarised for both performance and knowledge on the summary sheet. Competence is achieved for a unit when the required number of boxes for that unit have been ticked or marked as 'NA'.

Overall competence is achieved when competence in all units has been assessed.

Diagram 1:



If anything touches a high-voltage power line or if a power line falls to the ground, electricity will flow to the ground energising the tree or equipment and anything in contact with it. The surrounding ground may be extremely hazardous. The voltage gradually decreases from the point of contact until it reaches zero. The safe distance shown here—10 metres — is for line voltages up to and including 66 kV (66,000 V).

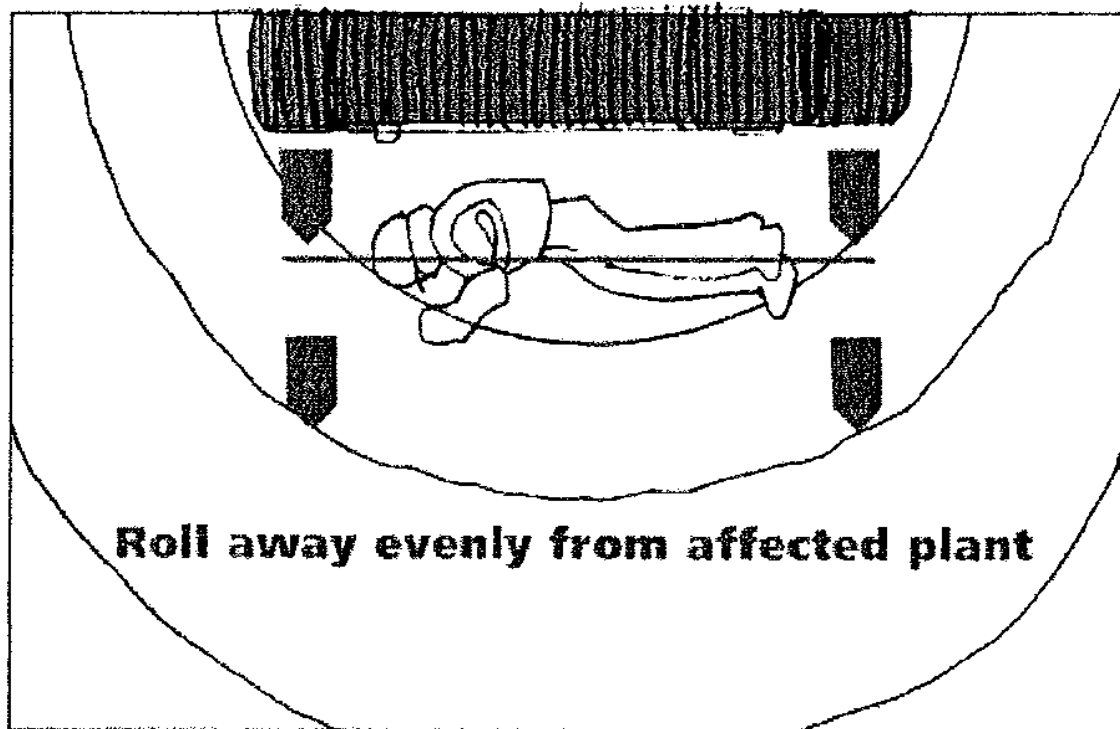
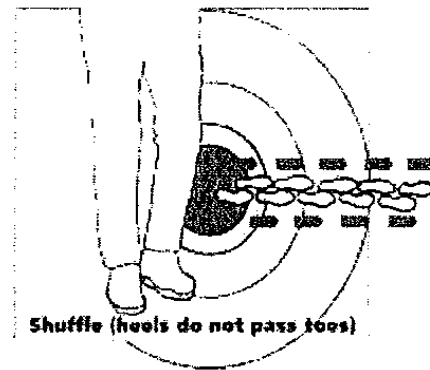
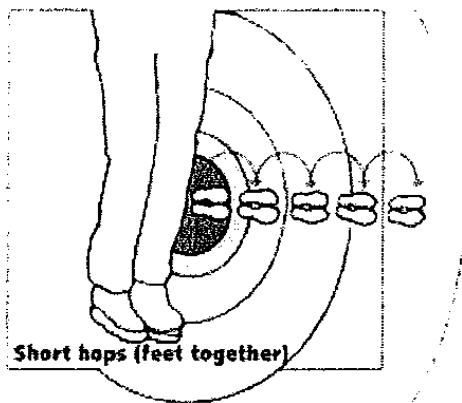


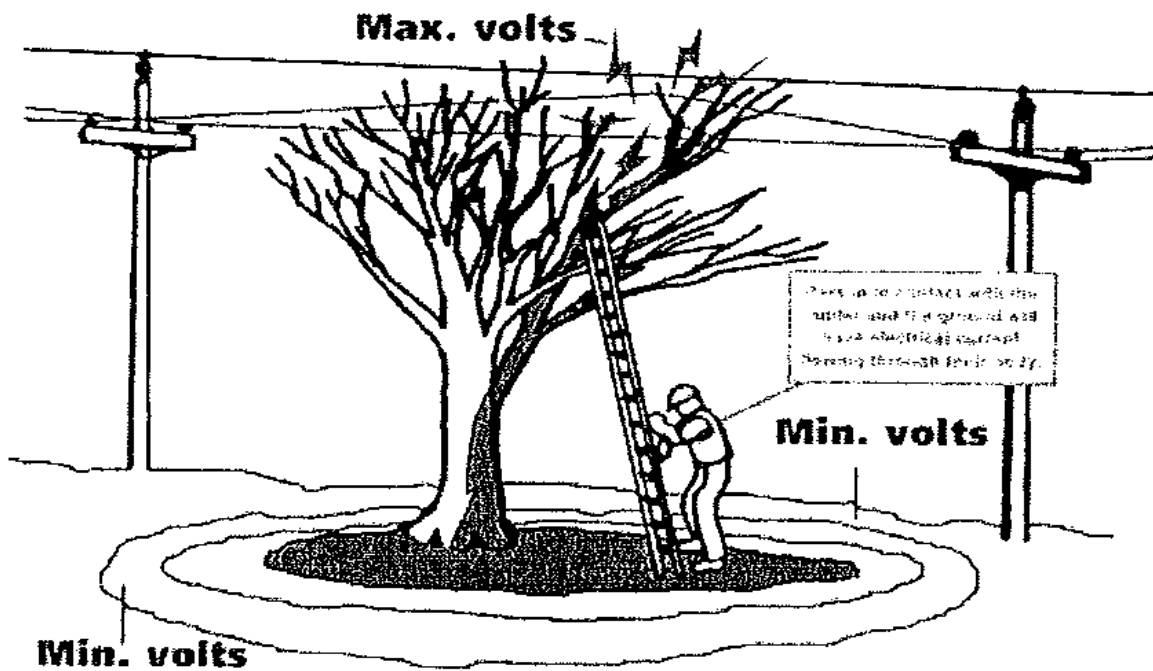
Step potential

Step potential is the voltage difference between two places that are a step apart on energised ground. For example, if you are standing on energised ground, there could be a significant difference in voltage between where one foot and the other are placed, and an electric current could flow up one leg and down the other.

Step potential. If your feet are spread apart on energised ground, electricity can flow through your body from the area of higher voltage to the area of lower voltage

If your feet are close together and touching, you are fairly safe. Since there is almost no voltage difference between the places your feet stand, there is little reason for electricity to seek a path through your body.





Touch potential

Touch potential is another danger that comes from the difference in voltage. It occurs when you touch something that is energised while standing on the lower voltage ground. For example, if some equipment is in contact with a power line, it will be energised to the same voltage as the power line; the surrounding ground will be energised to a lower voltage. If you touch the energised equipment or tree at the same time as you touch the ground with your feet, electricity will flow through your body from the higher voltage equipment to the lower voltage ground.

Touch potential: Trees and equipment become energised when they contact a power line. Electricity can flow through a worker who touches the energised tree or equipment, often causing serious injury or death.

Currents greater than 75 mA can cause ventricular fibrillation (rapid, ineffective heartbeat) and will cause death in a few minutes.

Conduct Routine Checks:

1. Routine checks on vehicle/equipment

- ☐ Tyre condition and inflation, condition of wheels or tracks

Checks liquid levels:

- ☐ Fuel
- ☐ Hydraulic Oil
- ☐ Engine Oil
- ☐ Battery
- ☐ Coolant
- ☐ Transmission

Checks equipment for defects:

- ☐ Warning signs
- ☐ Safety guards, covers
- ☐ Damaged, worn or broken parts
- ☐ Looks nuts, bolts
- ☐ Hoses and fittings
- ☐ Grease holes and grease pins
- ☐ Connections for missing pins or keepers.

PLAN WORK AND CHECK EQUIPMENT

2. Inspects site and plans work:

Identifies Hazards:

- ☐ Soft and sloping edges
- ☐ Rough/uneven/unstable terrain
- ☐ Service drains
- ☐ Inclines and declines

- ☐ Services eg: Power, Gas etc

- ☐ Plant, personnel
- ☐ Obstructions
- ☐ Wet slippery conditions
- ☐ Restricted operator vision area

Access and path of movement is indicated:

- ☐ To work area
- ☐ For loads

Appropriate equipment for the task:

- ☐ Equipment is appropriate for the task

OPERATIONAL CHECKS

3. Conducts pre-operations and post start-up checks in accordance with manufacturers specifications/operating manual

- ☐ Mounts correctly (if applicable)
- ☐ Adjusts seat, secures safety belt (if applicable)
- ☐ In neutral. Park, start
- ☐ Warning device
- ☐ Personnel clear
- ☐ Engine start
- ☐ Gauges, warning lights
- ☐ Braking system

- ☐ Steering
- ☐ Attachment Movement

DRIVES UNIT

4. Drives to the work area:

- ☐ Raises attachments
- ☐ Selects appropriate route
- ☐ Ensures travel direction clear
- ☐ Travels at safe speed
- ☐ Obeys road, warning signs

TRENCHER OPERATION

- ☐ Maintains safe distance from edge as directed by Supervisor, Site Instructions, Spotter, Signing or Barricades
- ☐ Marks line of trench to be excavated
- ☐ Positions trencher in correct position for trenching
- ☐ Ensures site is free from obstacles
- ☐ Locates underground services eg: power, gas, water, telephone
- ☐ Where underground power cables are suspected close to the excavation, rubber safety boots and wooden handled tools are used to establish exact position (if applicable)
- ☐ Personnel/plant kept clear
- ☐ Operates from operators station

- ☐ Operates at a safe and acceptable speed
- ☐ Avoids abrupt manoeuvres
- ☐ Ensures that excavated material does not create a hazard eg: Roadways, footpaths
- ☐ Signals are interpreted and observed

SHUT DOWN EQUIPMENT AND SECURE SITE

5. Shuts down equipment and secures site:

Parks equipment:

- ☐ Parks away from danger areas and in a suitable location
- ☐ Attachments lowered to the ground

Shuts down equipment:

- ☐ Neutralises controls
- ☐ Sets parking break, safety locks
- ☐ As per Operation Manual
- ☐ Removes keys
- ☐ Locks cabin (if applicable)
- ☐ Dismounts correctly (if applicable)

Post Operational check:

- ☐ Minor service
- ☐ Checks and reports any damage

National Guidelines for OHS Competency Standards

Trencher Safety

ORAL/WRITTEN ASSESSMENT

Assessor Guidelines – Specific (Knowledge Assessment)

ASSESSMENT INSTRUMENT – SPECIFICATIONS

The performance assessment covers the following Load shift elements:

1.1, 1.2, 1.3, 2.1, 3.1 & 3.2

1. Knowledge assessment for trencher is divided into three units.
2. To satisfy the requirements for competency the applicant must correctly answer (either in writing or orally) the specified number of questions in each of the following sections:

1.1 Conduct routine checks

Select 9

1.2 Plan work

Select 6

1.3 Check controls and equipment

Select 2

2.1 Drives Unit

Select 6

3.1 Shut down equipment

Select 4

3.2 Secure site

Select 1

3. The full knowledge assessment of twenty either (28) questions can take up to 45 minutes.

4. The items in the shaded boxes are of critical importance. Failing to get any of these correct means that competency has not been achieved and the applicant must fail.

CONDUCT ROUTINE CHECKS: (Select 9 from Q1-14 including shaded boxes)

1. What should be the first check of your Trencher at the start of your shift?

Walk around it looking for visual defects

☐

2. What precautions must be taken when an inspection of work has to be performed under a raised blade or attachment or a crush point area?

Provision provided to prevent personnel from being injured by striking or crushing

☒

3. Name three defects you would look for when conducting a routine check on the hydraulic system of the Trencher.

Hydraulic oil leaks, loose connections and hoses for splits, fractures or bulges

☐

4. Name five pre-operational checks that should be carried out on the Trencher before it is started

Radiator, battery, fuel, oil, hydraulic lines, wheels/drums, structural etc

☐

5. What warning device must function on the Trencher to warn personnel that the Trencher is to travel, or is travelling in reverse?

A reversing warning device

☒

6. If an air system is installed on the Trencher what daily action would you take with the air condensation in the air receiver?

Drain the water from the tank

☐

7. What problem could be indicated by bubbles or milky engine oil in the sump?

Water leaking into the sump

☐

8. Why shouldn't the hydraulic oil storage tank be filled above the filled mark?

Space in the tank is needed for displacement in the system

☐

9. When changing a battery which battery clamp should be removed first?

The earthed battery clamp

☐

10. What should be provided on the Trencher to prevent the operator from being dislodged from the seat?

If applicable, a safety belt

☒

11. How would you remove the radiator filler cap of a Trencher that has not completely cooled off?

Slightly loosen cap to release pressure and then slowly remove cap

☐

12. How would you establish the service and the frequency of the service to be carried out on the Trencher you are required to operate?

By the service manual provided

☐

13. To establish if the required service has been conducted what document would you refer to?

The log book/service sticker

☐

14. When should ground engagement tools be checked for wear?

At least four times daily. In hard conditions more regularly

☒

PLAN WORK:

(Select 6 from Q15-24 including shaded boxes)

15. What are the dangers of travelling near the edge of fill? (List 2)

The edge of fill may collapse. The Trencher could tip or rollover. Injury to operator

☒

16. If there is a likelihood of the Trencher being overturned what must be provided on the Trencher to protect the operator?

A rollover protective structure and safety belts

☒

17. When should ear protection be worn?

Where the noise could contribute to the loss of hearing

☐

18. When should a person wear a safety helmet?

Where the person could be struck on the head

☐

19. What is the minimum type of footwear that an operator should wear to operate a Trencher?

Non-slip footwear that encloses the foot

☐

20. What would you refer to in order to establish the location of underground services?

Supply authority or project plans, council maps, metal detector

☐

21. If you accidentally damaged an electrical cable, who would you immediately contact to render the power supply safe?

The electrical supply authority

☐

22. What protective aids must be used when establishing the exact location of electricity cables before commencing trenching?

*a) safety Rubber Boots
b) Wooden Handled Tools*

☒

23. What should be provided to prevent a person falling into a trench or excavation?

Barricades or guardrails or fencing

☐

24. How should the flow of road traffic be controlled where signs and barricades are considered inadequate to control a potential hazard?

By a Traffic Controller or by Police

☐

(Select 4 from Q25-31 including shaded boxes)

25. Which is the preferred route of travel, diagonally across or directly down a sloping surface?

Directly down the sloping surface

☒

26. What gear should be selected to travel down a steep sloping surface?

A low gear. The gear required to climb the sloping surface, if applicable

☒

27. In hazardous working areas where permission is required to work, what must the operator ensure before the work is commenced?

That the required permits have been obtained

☐

28. What is required to be obtained before an unregistered rubber tyred Trencher is driven along a public road?

An unregistered vehicle permit

☐

29. What Government licence do you require to drive a rubber tyred Trencher on a public road?

Relevant State Government Licence

☐

30. Is it permissible to carry passengers on a Trencher?

No, only if there is approved seating and seatbelts

☒

**CHECK CONTROLS AND EQUIPMENT
(Select 2 from Q32-35 including shaded boxes)**

32. What action would you take with damage and defects found on the machine?

Report the damage and defects to the authorised person and refrain from operating if a danger exists and 'tag out'

☒

33. What controls would you test to ensure that the Trencher can be slowed and stopped?

The braking control system pedals and levers

☐

34. On the start-up check you notice a bulge form in a hydraulic hose. What action would you take?

Switch off the machine and have the hose replaced

☐

35. When should tests, checks and inspections be made by the operator on the Trencher that is to be operated?

Daily before use

☒

DRIVES UNIT

(Select 2 from Q36-39 including shaded boxes)

36. Applicant to state the meaning of the hand signal of 'stop' as demonstrated by the assessor

Stop

☒

37. How would you dismount a machine that contacted live power lines?

Jump clear ensuring contact with the ground and machine is not at the same time

☐

38. When travelling, what would you do before travelling down a steep grade?

Reduce speed with service brake and select the appropriate gear for the grade

☐

39. Before reversing a Trencher what precautions should be taken?

Ensure the direction of travel is clear

☒

Select 4 from Q40-45 including shaded boxes)

40. Would you coast the Trencher downhill?

No

☒

41. With an air braking system what effect does fanning the brake control instead of a firm application of the brake control have on the air pressure for the brakes?

Fanning may exhaust the pressure faster than the compressor can replace it

☒

42. Why is it important to obey signals and directions?

Ground personnel may have better vision around the Trencher than the operator

☒

43. Describe why the cutter must be lowered slowly into the cut

The Trencher may directionally jerk causing injury to personnel

☒

44. Why is it important to check the depth of cut after moving?

To ensure that the specified cut depth is correct

☐

45. As an operator would you leave an unattended Trencher engine running?

No

☐

SHUT DOWN EQUIPMENT

(Select 4 from Q46-51 including shaded boxes)

46. Name three areas where you would not park the Trencher

Access ways, near overhangs, refuelling sites, tidal or flood areas, adjacent to an excavation

☐

47. Which direction should the Trencher face if it has to be parked on a sloping surface?

Across the slope

☐

48. Where possible what type of surface should be selected to park the Trencher on?

A level surface

☐

49. When leaving the Trencher what should be done with the attachments?

Attachments lowered, pressure removed from hydraulic lines, or safety bars/props in place if the attachment is to be left in a raised position

☐

50. What post-operational checks should be carried out by the operator at the end of the shift?

Check the equipment for defects and wear

☐

51. Describe why wheels/tracks, cutter, conveyor should be cleaned at the end of the days operation

Any residue will not set overnight and present a problem

☐

SECURE SITE

(Select 1 from Q52-53)

52. What shall be provided when a Trencher has to be parked on or protrudes onto an access way?

Barricades, lights and signs

☐

53. For what reason should the key be removed from the ignition of the Trencher?

To prevent unauthorised

☐

Unit	Form of assessment	Total number of boxes in the assessment	Number of boxes given or NA	Number of boxes required to meet standard	Were all critical boxes given or NA?		Assessment standard requirements achieved *		
1	Performance	35		26	Yes	No	Yes	No	
	Knowledge	21		16	Yes	No	Yes	No	
	Assessment completed within time allowed						Yes	No	NA
2	Performance	17		13	Yes	No	Yes	No	
	Knowledge	6		4	Yes	No	Yes	No	
	Assessment completed within time allowed						Yes	No	NA
3	Performance	10		7	Yes	No	Yes	No	
	Knowledge	5		3	Yes	No	Yes	No	
	Assessment completed within time allowed						Yes	No	NA

*Performance standard = Number of items required to meet standard (including all critical boxes)

Knowledge standard = Number of questions required to meet standard (including all critical boxes)

Summary

Candidate is:

☐

COMPETENT

☐

NOT YET COMPETENT

Date: _____

Name of Assessor: _____ Signature: _____

Name of Candidate _____ Signature: _____

Comments/feedback:
