

Recommended Qualification Structure for Tunnelling Operations (Construction) Level 2

This structure has been recommended by employers and stakeholders from the above occupational area for organisations to form the basis of academic capability and competence outcomes. Qualifications with a competence outcome at the above level must have units derived from the following National Occupational Standards (NOS) and consist of the mandatory groups as stated for the individual option route.

MANDATORY (all option routes)

- VR641 v2 Conform to general workplace health, safety and welfare
- VR642 v1 Conform to productive work practices
- VR643 v1 Move, handle or store resources

PLUS ONE OF THE FOLLOWING OPTIONAL ROUTES

Hand Miner Option Route (Total 5)

Mandatory

- VR175 v4 Construct temporary or permanent tunnel linings
- VR177 v4 Excavate and profile tunnels

Additional for Hand Miner Option (not compulsory)

- VR390 v3 Operate plant or machinery to construct or form

Shaft Miner Option Route (Total 4)

Mandatory

- VR178 v4 Construct shafts

Additional for Shaft Miner Option (not compulsory)

- VR390 v3 Operate plant or machinery to construct or form

Tunnelling Machine Operator Option Route (Total 6)

Mandatory

- VR177 v4 Excavate and profile tunnels
- VR386 v3 Prepare plant or machinery prior to operational performance
- VR390 v3 Operate plant or machinery to construct or form

Machine Tunnelling Operative Option Route (Total 6)

Mandatory

- VR174 v4 Install tunnelling services
- VR175 v4 Construct temporary or permanent tunnel linings
- VR400 v3 Operate powered units, tools or pedestrian plant, machinery or equipment

Continued ...

Spoil Removal Conveyor Operative Option Route (Total 6)

Mandatory

- VR174 v4 Install tunnelling services
- VR176 v4 Operate a spoil removal conveyor
- VR396 v2 Direct and guide the movement of vehicles, plant or machinery

Overground Spoil Removal Conveyor Operative (Total 4)

Mandatory

- VR809 v1 Operate an overground spoil removal conveyor

Tunnelling Operative Option Route (Total 6)

Mandatory

- VR174 v4 Install tunnelling services
- VR396 v2 Direct and guide the movement of vehicles, plant or machinery
- VR400 v3 Operate powered units, tools or pedestrian plant, machinery or equipment

Tunnel Transport Operator Option Route (Total 5)

Mandatory

- VR386 v3 Prepare plant or machinery prior to operational performance
- VR391 v2 Operate plant or machinery to receive and transport loads

Tunnel Fitter's or Tunnel Electrician's Mate Option Route (Total 5)

Mandatory

- VR174 v4 Install tunnelling services
- VR768 v2 Routine maintenance of tunnelling plant, machinery, and equipment

Sprayed Concrete Lining Tunnelling Nozzleman Option Route (Total 7)

Mandatory

- VR123 v2 Prepare substrate for sprayed concrete
- VR124 v3 Apply sprayed concrete
- VR386 v3 Prepare plant or machinery prior to operational performance
- VR390 v3 Operate plant or machinery to construct or form

Pipejacking, Box jacking or Micro-tunnelling Machine Operator Option Route (Total 5)

Mandatory

- VR174 v4 Install tunnelling services
- VR569 v3 Install tunnels by pipe jacking, box jacking or micro-tunnelling operations

Continued ...

Separation Plant Operative Option Route (Total 6)

Mandatory

VR174 v4 Install tunnelling services

VR233 v3 Prepare for and carry out slurry or fluid plant operations

VR400 v3 Operate powered units, tools or pedestrian plant, machinery or equipment

Additional for all options (not compulsory)

VR492 v2 Carry out structural waterproofing

Continued ...

Unit endorsements for Tunnelling Operations Level 2

Where industry requests; qualifications can be endorsed to show an option route and the type of resources and/or activities that relate to the unit. Listed below are the endorsements that can apply for units derived from the following NOS.

NOS	Endorsement
VR123	Seven of the following: Locate and protect services Break out loose and de-bonded materials using mechanical means Clear and clean Surface profile levels Tie and secure reinforcement bar and/or mesh Fit guide wires Fit depth pins Erect formwork
VR124	Five of the following: Pre-wet surfaces for spraying Spray concrete to profile Produce samples for testing Cure and protect concrete Record and report on test Record and report on spraying Operate spraying nozzle Operate pump Clean pump Clear lines
VR174	Three of the following: Ventilation systems Pressurised systems (slurry lines, or air and water supply systems) Walkways Cables and pipelines Materials handling systems (rail, or conveyor, or piped) Service brackets
VR175	One of the following: Mechanised Non-mechanised
VR177	One of the following: Hand mining Drilling and blasting Mechanised tunnel excavation
VR178	One of the following: Underpinning Caisson sinking Sheet piles and frames or concrete piles and frames Drilling and blasting
VR233	One of the following: Tunnelling Pipe jacking Shaft sinking
VR386	One of the following: Construction plant or machines Formation plant or machines Receiving plant or machines Transporting plant or machines

Continued...

NOS	Endorsement
VR390	One of the following: Unshielded rock tunnel boring machine Shielded rock tunnel boring machine Shield mounted hydraulic excavating arm Road header above 50te Road header below 50te Road header bucket below 50te Pre vault method Drill rig (rail, gantry or truck mounted) Excavator Sprayed concrete plant and equipment Remote and/or pedestrian control operation Remote tunnel excavation machine or equipment
VR391	One of the following: Loco and rolling stock Underground bulk systems (explosives transportation)
VR396	Movement guide marshaller Loader/securer
VR400	One of the following: Generators Pumps Pedestrian operated plant or machines Mixers Compressors Self-powered tools
VR569	One of the following: Pipe jacking Box jacking Micro-tunnelling
VR768	At least three of the following: Cooling systems Oils and lubricants Fuels Pressurised systems Ventilation or ducting systems Power cabling and equipment Electrical control systems Communication systems Lighting, or signalling, or monitoring, equipment

Note: Where industry requests an Awarding Organisation to further endorse a unit, the Awarding Organisation must first seek approval from the Standards Setting Body to ensure the endorsement is appropriate to the unit.