# 22506VIC Course in Trenchless Technology Assistance

This course has been accredited under Part 4.4 of the Education and Training Reform Act 2006.

**Accreditation period: 1 February 2019 to 31 January 2024**

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# Table of contents

## Section A: Copyright and course classification information

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| **1. Copyright owner of the course** | Copyright of this course is held by the Department of Education and Training, Victoria.<br><br>© State of Victoria (Department of Education and Training) 2018. |
| **2. Address** | Executive Director<br><br>Engagement, Participation and Inclusion Division<br>Higher Education and Skills Group<br>Department of Education and Training (DET)<br>PO Box 4367<br>Melbourne VIC, 3001<br><br>**Organisational contact**<br><br>Manager Training Products<br>Higher Education and Skills Group<br>Telephone: (03) 7022 1619<br>Email: course.enquiry@edumail.vic.gov.au<br><br>**Day-to-day contact**<br><br>Curriculum Maintenance Manager (CMM),<br>Building Industries<br>Holmesglen Institute<br>PO Box 42<br>Holmesglen Vic 3148<br>Telephone: (03) 9564 1987<br>Email: teresa.signorello@holmesglen.edu.au |
| **3. Type of submission** | Accreditation |
| **4. Copyright acknowledgement** | Copyright of the following units of competency from nationally endorsed training packages is administered by the Commonwealth of Australia and can be accessed from training.gov.au available *here*.<br><br>© Commonwealth of Australia<br><br>The following unit of competency:<br>• CPCCWHS1001 Prepare to work safely in the construction industry<br><br>is from the **CPC Construction, Plumbing and Services Training Package**.<br><br>The following units of competency:<br>• RIIWHS201D Work safely and follow WHS policies and procedures<br>• RIICOM201D Communicate in the workplace<br>• RIICCM205E Carry out manual excavation<br>• RIICCM202D Identify, locate and protect underground services |

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| | • RIIWHS202D Enter and work in confined spaces<br>are imported from the **RII Resources and Infrastructure Industry Training Package**.<br>  |
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| **6. Course accrediting body** | Victorian Registration and Qualifications Authority |
| **7. AVETMISS information** | **ANZSCO code – 6 digit**<br>Australian and New Zealand Standard Classification of Occupations<br>721211- Earthmoving Plant Operator (General)<br>**ASCED Code – 4 digit**<br>Field of Education<br>0309 Civil Engineering<br>**National course code**<br>To be provided by the VRQA when the course is accredited |
| **8. Period of accreditation** | 1 February 2019 to 31 January 2024 |

## Section B: Course information

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| **1. Nomenclature** | ***Standard 1 AQTF Standards for Accredited Courses*** |
| **1.1 Name of the qualification** | Course in Trenchless Technology Assistance |
| **1.2 Nominal duration of the course** | 116 – 138 nominal hours |
| **2. Vocational or educational outcomes** | ***Standard 1 AQTF Standards for Accredited Courses*** |
| **2.1 Purpose of the course** | The *22506VIC Course in Trenchless Technology Assistance* provides an accredited training program and vocational outcomes for a person to be employed as an assistant in the inspection and cleaning of conduits within the trenchless technology sector.<br><br>On completion of the *22506VIC Course in Trenchless Technology Assistance*, participants will have the skills and knowledge to:<br>• communicate effectively with colleagues, contractors and the public in a trenchless construction environment<br>• handle and move industrialised trenchless technology inspection and cleaning equipment<br>• support the identification, location, excavation and protection of underground conduit services<br>• follow WHS/OHS procedures to work safely onsite and in confined spaces. |
| **3. Development of the course** | ***Standards 1 and 2 AQTF Standards for Accredited Courses*** |
| **3.1 Industry/enterprise/ community needs** | Water related conduit networks facilitate societal needs, through the supply of fresh drinking water, removal of sewage and waste water, and redirection of surface water run off (e.g. from road and rail grids).<br><br>Thousands of kilometers of conduit pipelines exist within Australia, which are subject to cleaning and inspection regimes to determine asset integrity and associated maintenance requirements.<br><br>The nations rising population has increased load pressure on existing conduit networks, necessitating State and Federal capital works to expand capacity, refer Victoria's Big Build as an example.Newly laid pipe within such infrastructure projects is also subject to post installation inspection to confirm pipe integrity prior to use. |

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| | The use of trenchless renewal methods (TRM) for the renewal, rehabilitation and renovation of existing and new pipes is the industry practice of choice, largely due to the benefits underground work affords, i.e. increased efficiency, minimal ecological disturbance and improved worker safety.<br><br>The use of trenchless technology involves new capabilities not previously required in trench work such as knowledge of camera, laser, sonar and electronic scanning technology / software, and remote pipe inspection equipment operation.The collection of reliable asset condition data is crucial for tender contract completions related to conduit infrastructure projects.<br><br>Knowledge and skill to support pipe cleaning and integrity assessment is therefore required within the industry.<br><br>This course will facilitate the development of these abilities to provide the proficient labour force required to resource major capital project and recurrent initiatives.<br><br>**Target group for the course**<br><br>Couse participants will include new entrants to the civil construction industry; they may be young people with limited or no on-site experience, or workers from other industries wanting to enter the civil construction industry.<br><br>Participants are not expected to have knowledge of the civil construction industry prior to enrolling into the course.<br><br>**Course consultation and validation process**<br><br>The development of the *22506VIC Course in Trenchless Technology Assistance* was overseen by a project steering committee comprising the following key industry representatives:<br><br>Chris Frangos (Chair) — Australasian Society for Trenchless Technology (ASTT)<br>Mark Tucker — M. Tucker & Sons<br>Eduardo Santos — UVS Trenchless Technologies<br>Marc Peril — South East Water<br>Carl Radford — Water Services Association of Australia (WASA)<br>Ryan Bickerton — Ventia Pty Ltd<br>Rob Garrard — Civil Contractors Federation Victoria<br><br>**In attendance:**<br><br>Teresa Signorello — Curriculum Maintenance Manager Building Industries Holmesglen Institute<br>Jenny Lehman — Curriculum Maintenance |

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| | Support Administrator<br>The project steering committee (PSC) met formally on three occasions to review and confirm the required skills and knowledge profile, course structure and final accreditation submission.These outcomes were based on their understanding of current work practices for trenchless technology workers within the civil construction industry. The members provided technical information throughout the project and were consulted via email and telephone where necessary.<br>Desktop reviews of current civil construction industry statistics and related trenchless technology research was also undertaken to support the development of the accredited course.<br>The outcomes of several national units were carefully considered by the PSC with respect to their potential relevance and application to the course context.<br>This course:<br>• does not duplicate, by title or coverage, the outcomes of an endorsed training package qualification<br>• is not a subset of a single training package qualification that could be recognised through one or more statements of attainment or a skill set<br>• does not include units of competency additional to those in a training package qualification that could be recognised through statements of attainment in addition to the qualification<br>• does not comprise units that duplicate units of competency of a training package qualification. |
| **3.2 Review for re-accreditation** | Not applicable, this is a course accreditation. |
| **4. Course outcomes** | ***Standards 1, 2, 3 and 4 AQTF Standards for Accredited Courses*** |
| **4.1 Qualification level** | *22506VIC Course in Trenchless Technology Assistance* meets an identified industry need, but does not have the breadth, depth or volume of learning of a qualification. |
| **4.2 Employability skills** | Not applicable. |
| **4.3 Recognition given to the course**<br>**(if applicable)** | Not applicable. |
| **4.4 Licensing/ regulatory requirements** | There are no licensing requirements for this course.<br>Participants who visit a construction site will require a Construction Induction Card (CIC) issued by Work Safe |

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| **(if applicable)** | Victoria, which can be achieved through the completion of the unit CPCCWHS1001 Prepare to work safely in the construction industry. Further information is available on the worksafe website.<br><br>Licensing, legislative, regulatory and certification requirements that apply to the imported units below can vary between states, territories, and industry sectors. |

**5. Course rules** ***Standards 2, 6, 7 and 9 AQTF Standards for Accredited Courses***

**5.1 Course structure**

To be awarded the 22506VIC *Course in Trenchless Technology Assistance*, 8 units of competency must be completed:

- 6 core units
- 2 electives units chosen from the elective list.

All electives chosen must contribute to a valid, industry-supported vocational outcome.

Where the full course is not completed, a Statement of Attainment will be issued for any units completed.

| Unit of competency code | Field of Education code (six-digit) | Unit of competency title | Pre-requisite | Nominal hours |
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| **Core units** | | | | |
| XXXXXX1 | 120505 | Work effectively in trenchless construction | Nil | 16 |
| RIIWHS201D | 061301 | Work safely and follow WHS policies and procedures | Nil | 20 |
| CPCCWHS1001 | 061301 | Prepare to work safely in the construction industry | Nil | 6 |
| RIICOM201D | 120505 | Communicate in the workplace | Nil | 20 |
| RIICCM205E | 030901 | Carry out manual excavation | Nil | 8 |
| RIICCM202D | 030905 | Identify, locate and protect underground services | Nil | 30 |
| **Elective units** | | | | |
| XXXXXX2 | 030907 | Identify and handle industrial conduit cleaning equipment | Nil | 8 |
| XXXXXX3 | 030907 | Identify and handle conduit inspection equipment | Nil | 8 |
| RIIWHS202D | 061301 | Enter and work in confined | Nil | 30 |

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| | | spaces | | |
| | | | **Total nominal hours** | **116 - 138** |

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| **5.2 Entry requirements** | There are no entry requirements for the *22506VIC Course in Trenchless Technology Assistance*.<br><br>Learners enrolling in the *22506VIC Course in Trenchless Technology Assistance* are best equipped to successfully undertake the course if they have as a minimum, language, literacy and numeracy skills that align to Level 2 of the Australian Core Skills Framework (ACSF). The ACSF can be accessed from the education department's website available *here*.<br><br>Learners with language, literacy and numeracy skills at a lower level than suggested will require additional support to successfully undertake the 'course in'. |
| **6. Assessment** | ***Standards 10 and 12 AQTF Standards for Accredited Courses*** |
| **6.1 Assessment strategy** | All assessment, including Recognition of Prior Learning (RPL), must be compliant with the requirements of:<br>• Standard 1 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 4.1 and 4.2 of the VRQA Guidelines for VET Providers,<br>or<br>• the Standards for Registered Training Organisations 2015 (SRTOs),<br>or<br>the relevant standards and Guidelines for RTOs at the time of assessment.<br><br>Assessment strategies for the course should reflect the practical nature of the work undertaken; It is recommended that assessment include:<br>• oral and written questioning related to underpinning knowledge<br>• practical demonstration of activites which combine a number of learning outcomes to provide depth and context to the training<br>• holistic assessment that reflects realistic job tasks.<br><br>Assessment of imported units of competency from nationally endorsed training packages must comply with the assessment requirements detailed in the source training product. |
| **6.2 Assessor competencies** | Assessment must be undertaken by a person or persons in accordance with:<br>• Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration |

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| | and Guidelines 3 of the VRQA Guidelines for VET Providers,<br>or<br>• the Standards for Registered Training Organisations 2015 (SRTOs),<br>or<br>• the relevant standards and Guidelines for RTOs at the time of assessment.<br>All assessment of units imported from Training Packages must reflect the requirements for assessors specified in the relevant source training product. |
| **7. Delivery** | ***Standards 11 and 12 AQTF Standards for Accredited Courses*** |
| **7.1 Delivery modes** | The course aims to develop practical competencies within an industry setting. Practical demonstrations and opportunity for application are considered to provide the most suitable strategy to reflect the objectives of the course. Some areas of content may be common to more than one element or more than one unit, therefore integration may be appropriate.<br>Delivery options, including grouping of learners and learning activities, should recognise the varying learning needs, educational backgrounds, preferred learning styles and constraints of the individual learner and the specific requirements of each unit. The units may be delivered singularly, or they may be integrated holistically with a number of units.<br>As the role involves practical skill development, the practical skill component of the course must be delivered in a:<br>• workplace,<br>or<br>• simulated workplace that accurately reflects workplace conditions. Practical exercises may take the form of realistic, holistic projects to provide the learner with a 'real work' experience.<br>The knowledge components of the course may be delivered using face-to-face, online or blended modes. |
| **7.2 Resources** | Training must be undertaken by a person or persons in accordance with:<br>• Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guideline 3 of the VRQA Guidelines for VET Providers, |

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| | or<br>• the *Standards for Registered Training Organisations 2015* (SRTOs),<br>or<br>• the relevant standards and Guidelines for RTOs at the time of assessment.<br>Delivery and assessment materials should reflect the local work environment as far as possible.<br>Refer to the individual units for specific tool and equipment requirements<br>Trainers of nationally endorsed units of competency must meet any additional requirements specified in the relevant training product. |
| **8. Pathways and articulation** | ***Standard 8 AQTF Standards for Accredited Courses*** |
| | There are no formal articulation arrangements in place.<br>Completion of imported units of competency provides credit into a range of vocational qualifications from nationally endorsed training packages.<br>Relevant vocational pathway for those who undertake this course is RII31615 Certificate III in Trenchless Technology. |
| **9. Ongoing monitoring and evaluation** | ***Standard 13 AQTF Standards for Accredited Courses*** |
| | The Curriculum Maintenance Manager for Building Industries is responsible for the ongoing monitoring and evaluation of the *22506VIC Course in Trenchless Technology Assistance.*<br>Formal course evaluations will be undertaken halfway through the accreditation period and will be based on student and teacher evaluation surveys and industry stakeholder surveys/consultations.<br>The Victorian Registration and Qualifications Authority (VRQA) will be notified of any changes to the course. |

## Section C–Units of competency

The following is a list of imported units of competency for the course, which can be downloaded from the National Register (more information is available *here*):

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| RIIWHS201D | Work safely and follow WHS policies and procedures |
| CPCCWHS1001 | Prepare to work safely in the construction industry |
| RIICOM201D | Communicate in the workplace |
| RIICCM205E | Carry out manual excavation |
| RIICCM202D | Identify, locate and protect underground services |
| RIIWHS202D | Enter and work in confined spaces |

The following is a list of the units of competency developed for the course that complies with the current requirements from the Training Package Development Handbook and is detailed in this section of the course document:

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| VU22718 | Work effectively in trenchless construction |
| VU22719 | Identify and handle industrial conduit cleaning equipment |
| VU22720 | Identify and handle conduit inspection equipment |

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| **Unit code** | | VU22718 | |
| **Unit title** | | Work effectively in trenchless construction | |
| **Unit Descriptor** | | This unit describes the performance outcomes, skills and knowledge required to work effectively within the trenchless construction sector of the civil construction industry.<br>It includes the ability to develop and apply knowledge of trenchless construction technologies and methods, work within workplace and industry standards and legislative requirements and maintain effective working relationships.<br>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication. | |
| **Employability Skills** | | This unit contains Employability Skills. | |
| **Application of the Unit** | | This unit applies to individuals who work in trenchless construction within the civil construction industry and apply knowledge of trenchless technologies and methods, industry standards, codes of practice, legislative and safe work practices to their own work processes. | |
| **ELEMENT** | | **PERFORMANCE CRITERIA** | |
| *Elements describe the essential outcomes of a unit of competency.* | | *Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.* | |
| 1. | Investigate and apply trenchless construction technologies and principles to work processes | 1.1 | Source information on new and emerging ***trenchless construction techniques.*** |
| | | 1.2 | Identify equipment types and attachments used in the trenchless construction industry and their application to given tasks. |
| | | 1.3 | Analyse the impacts of trenchless construction on efficiency, precision and productivity. |
| | | 1.4 | Investigate benefits of trenchless construction in reducing cost, time, waste and energy. |
| | | 1.5 | Investigate the relationship between trenchless and traditional open cut construction methods. |

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| | | 1.6 | Apply knowledge of trenchless construction technologies and methods to own work processes. |
| 2. | Work within industry and workplace requirements | 2.1 | Identify responsibilities and duties of trenchless construction roles according to industry codes and practices. |
| | | 2.2 | Identify and apply ***relevant industry standards and codes*** for trenchless construction. |
| | | 2.3 | Select and wear ***personal protective equipment (PPE)*** appropriate for work activities. |
| | | 2.4 | Identify and apply safe work methods and practices to meet Australian government and state and territory health and safety legislative requirements. |
| | | 2.5 | Work within scope of role and recognise when trenchless construction work requires licenced tradespersons. |
| 3. | Develop and maintain effective working relationships | 3.1 | Identify ***industry stakeholders*** and maintain a working relationship within the scope of your role. |
| | | 3.2 | Develop rapport with team members, contractor, service users(customers), service providers and suppliers of the trenchless construction project. |
| | | 3.3 | Seek input of team members and relevant persons into planning and operational tasks against job requirements and specifications. |
| | | 3.4 | Communicate effectively with others in a courteous and sensitive manner |
| | | 3.5 | Recognise and discuss issues which may lead to, or involve conflict, and refer to supervisor as required |

**REQUIRED SKILLS AND KNOWLEDGE**

*This describes the essential skills and knowledge and their level, required for this unit.*

**Required skills:**

- Effective verbal and non-verbal communication techniques
- reading skills to interpret a range of essential workplace documentation, including information on new and emerging trenchless construction techniques
- oral communication skills to:
    - develop effective working relationships, interact with team members and other personnel

- discuss issues.

- problems solving skills to:
    - identify issues that may lead to conflict
    - apply trenchless technology and methods to work process
    - work within scope of role.
- learning skills to actively seek new and unfamiliar situations and learning opportunities
- teamwork skills to ensure a safe working environment
- initiative and enterprise skills to keep up to date with knowledge on trenchless technology inspection equipment and cleaning equipment, types of laser control equipment, types of equipment thrust and rotation applications, industry standards and codes of practice within own area of responsibility
- technology skills to use information technology to source information on trenchless technology methods and practices for new installs and rehabilitation methods.

**Required knowledge:**

- different styles and techniques of communication skills relevant to working effectively
- fundamentals of the range of trenchless technologies, including which technologies are applicable for a range of circumstances.
- trenchless installation methods and technologies including:
    - horizontal directional drilling
    - micro tunnelling and pipe jacking
    - auger boring, impact moling
    - vacuum excavation potholing.
- trenchless rehabilitation methods and technologies including:
    - renovation:
        - cured-in-place pipelining
        - spiral wound pipe
        - slip lining
        - fold and form
        - spray lining
        - close-fit lining
        - flood grouting.
    - replacement:
        - Online replacement (i.e. reaming, eating extraction and pipe bursting).
- trenchless construction industry terminology
- stakeholders in the trenchless construction industry
- role,responsibilities and communication requirements for industry stakeholders, including authorities, service providers and suppliers relevant to trenchless construction

- team behaviour:
    - role and function of workplace teams
    - team dynamics.
- trenchless technology future trends
- workplace policies and procedures relating to work practices
- relevant state or territory legislation relating to employment rights including workplace safety requirements
- sources of information on employment rights and responsibilities including employment related laws covering rights and responsibilities of employees and employers
- relevant Australian Standards and codes in relation to trenchless construction.

| **RANGE STATEMENT** | |
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| *The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the Performance Criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.* | |
| ***Trenchless construction techniques*** may include: | • trenchless installation techniques and technologies such as:<br>  ○ horizontal directional drilling<br>  ○ micro tunnelling and pipe jacking<br>  ○ pilot tube<br>  ○ auger boring / thrust boring<br>  ○ pipe ramming<br>  ○ impact moling.<br>• trenchless rehabilitation techniques methods and technologies such as:<br>  ○ renovation<br>  ○ cured-in-place pipelining<br>  ○ spiral wound pipe<br>  ○ slip lining<br>  ○ fold and form<br>  ○ spray lining<br>  ○ close-fit lining<br>  ○ flood grouting<br>  ○ replacement<br>  ○ online replacement i.e. reaming, eating extraction.<br>• cleaning methods and technologies such as:<br>  ○ water jetting<br>  ○ drag scraping<br>  ○ pigging<br>  ○ abrasive cleaning<br>  ○ air scouring<br>  ○ rack feed boring.<br>• inspection equipment methods and technologies such as:<br>  ○ CCTV<br>  ○ laser<br>  ○ sonar |

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| | ○ potholing<br>○ electric current.<br>• soil displacement hammers<br>• vacuum excavators<br>• HDD tooling<br>○ pilot tube micro tunnelling systems. |
| ***Relevant industry standards, guidelines and codes*** may include: | • Plumbing Code of Australia (PCA) codes<br>• Building Code of Australia (BCA) codes<br>• construction code of practice<br>• Work/health and safety standards (WHS/OHS)<br>• Australian Pipelines and Gas Association (APGA) code of practice upstream polyethylene gathering networks- CSG industry<br>• Water Services Association of Australia (WSAA) codes and other technical documents<br>• utility providers code of practice<br>• Australian Society for Trenchless Technology (ASTT) guidelines for:<br>○ Horizontal Directional Drilling<br>○ Pipe Bursting<br>○ Micro tunnelling & Pipe Jacking |
| ***Personal protective equipment (PPE)*** may include: | • gloves<br>• work boots<br>• eye protection<br>• earplugs and muffs<br>• hard hats<br>• full body suits<br>• hi- vis work wear clothing |
| ***Industry stakeholders*** may include, but are not limited to: | • owners of lots affected by the works including absentee owners<br>• tenants<br>• indigenous people groups<br>• municipal councils, federal, state and/or territory governments<br>• water and other utility agencies including water way managers |

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| | • road, rail and tram authorities<br>• planning authorities<br>• developers of adjacent works<br>• environmental, cultural, heritage and community groups. |

| **EVIDENCE GUIDE** | |
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| *The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.* | |
| **Critical aspects for assessment and evidence required to demonstrate competency in this unit** | A person who demonstrates competency in this unit must be able to provide evidence of the ability to:<br>• investigate and apply methods and principles of trenchless construction to work processes<br>• apply relevant industry standards and codes of practice<br>• use safe work practices<br>• work effectively with stakeholders and team members. |
| **Context of and specific resources for assessment** | The application of competency is to be assessed in the workplace or close simulated environment, provided that simulated or project-based assessment techniques replicate civil construction conditions, materials, activities, responsibilities and procedures.<br>Assessment is to comply with relevant legislation and regulatory frameworks.<br><br>Assessment must ensure access to:<br>• sources of information on trenchless construction methods and principles and employment related laws<br>• relevant workplace policies and procedures which cover industry standards, codes and regulations<br>• PPE and other workplace health and safety equipment. |
| **Method of assessment** | A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:<br>• written and/or oral questioning to assess underpinning knowledge and its application<br>• observations of tasks in a real or simulated work |

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| | environment<br>• project activities, case studies and role plays that allow the candidate to demonstrate the application of knowledge and skills<br>• portfolio of evidence of demonstrated performance<br>• third party reports that confirm performance has been completed to the level required and the evidence is based on real performance. |

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| **Unit code** | | VU22719 | |
| **Unit title** | | Identify and handle industrial conduit cleaning equipment | |
| **Unit Descriptor** | | This unit of competency specifies the outcomes required to identify and safely handle industrial conduit cleaning equipment and remote pressure cleaning equipment and attachments for trenchless contruction.<br>It includes the ability to plan for, prepare and handle equipment, clean up after use, and report on faulty equipment.<br>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication. | |
| **Employability Skills** | | This unit contains Employability Skills. | |
| **Application of the Unit** | | This unit applies to entry level workers who work under supervison as part of a team in trenchless construction assisting in the cleaning of operational gravity sewers and stormwater conduits and new or rehabilitated sewers or stormwater conduits. Their work parameters are well established and responsibility for the quality of work outputs is expected. | |
| **ELEMENT** | | **PERFORMANCE CRITERIA** | |
| *Elements describe the essential outcomes of a unit of competency.* | | *Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.* | |
| 1. | Plan to handle industrial cleaning equipment | 1.1 | Review supervisor's instructions/job sheet and ***specifications*** for preparing and handling remote pressure cleaning equipment and attachments for specific tasks. |
| | | 1.2 | Identify the ***Occupational Health and Safety (OHS)/Work Health and safety (WHS)*** requirements for preparing and handling remote pressure cleaning equipment. |
| | | 1.3 | Identify and use the correct terminology when using cleaning equipment. |
| | | 1.4 | Identify ***pipe material*** and condition of pipes for industrial cleaning task. |
| | | 1.5 | Identify surface, soil condition and ***soil type*** for suitability of pressure washing. |

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| | | 1.6 | Identify the conduit to be pressure washed and review instructions/job sheet and specifications and clarify any issues. |
| | | 1.7 | Identify and apply principles of sustainability in the use of remote pressure cleaning equipment and attachments for a specific task. |
| | | 1.8 | Assess the effectiveness and suitability of a pressure wash in accordance with instructions/job sheet and environmental, legislative, WHS/OHS and company requirements. |
| 2. | Identify and prepare equipment | 2.1 | Identify the functions and applications of ***industrial cleaning equipment.*** |
| | | 2.2 | Select and use the appropriate ***personal protective equipment (PPE)*** for specific equipment. |
| | | 2.3 | Select, sign out and prepare the required equipment and materials appropriate for the tasks according to supervisor's instructions. |
| | | 2.4 | Complete pre-operational checks according to supervisor's instructions. |
| 3. | Select and use equipment and attachments | 3.1 | Identify the functions, applications and operating methods of industrial cleaning equipment. |
| | | 3.2 | Select and prepare equipment and attachments appropriate for the tasks according to supervisor's instructions and safety requirements. |
| | | 3.3 | Check equipment for safety before use and report any faults as required. |
| | | 3.4 | Conduct pressure washing using appropriate equipment, PPE and chemicals if appropriate in accordance with manufacturers' specifications and supervisor's instructions ensuring the safety of self and others. |
| | | 3.5 | Conduct all work in accordance with instructions/job sheet, manufacturers' specifications and legislative/ OHS/WHS requirements. |
| 4. | Clean up worksite and equipment | 4.1 | Clear work area and dispose of waste, reuse or recycle materials in accordance with environmental, legislative, OHS/WHS and supervisor instructions. |
| | | 4.2 | Clean, sign in, and store industrial cleaning equipment and attachments by following safe working practices. |

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| | | 4.3 | Identify malfunctions, faults, wear or damage to equipment and report for repair or replacement. |
| | | 4.4 | Restore site to safe condition. |

**REQUIRED SKILLS AND KNOWLEDGE**

*This describes the essential skills and knowledge and their level, required for this unit.*

**Required skills:**

- reading skills to interpret documentation, specifications and instructions:
  - read safety instructions in equipment manuals and SDS and on chemical labels.
- writing skills to complete basic documentation:
  - report and record progress and defects
  - record registered plant.
- oral communication skills to:
  - use appropriate terminology for cleaning equipment
  - use questioning to identify and confirm task requirements
  - report incidence and equipment faults to supervisor
  - request equipment and attachments.
- teamwork skills to:
  - ensure a safe working environment
  - work effectively with others.
- planning and organising skills to:
  - identify and prepare required cleaning tools and equipment
  - plan and complete tasks in appropriate sequence
  - restore, remove and/ replace covers on manhole/trench.
- problem solving skills to:
  - identify faults with cleaning equipment and attachments.
- technology skills to:
  - handle cleaning equipment and attachments safely
  - research new and improved cleaning equipment and attachments
  - handling and disposal of chemicals, toxic and contaminated waste safely.

**Required knowledge:**

- work/occupational health and safety (OHS/WHS):
  - workplace safety procedures
  - personal protective equipment (PPE)

- confined space
- traffic management
- asset owners requirements
- manual handling.

- relevant manufactures specifications in relation to pressure cleaning equipment and risks and hazards associated working with pressure cleaning equipment
- types of surfaces that are suitable for pressure washing
- restrictions or limitations on surfaces that can be pressure washed
- preparation requirements of areas for pressure washing
- principles of sustainability relevant to using pressure cleaning equipment and waste associated with cleaning conduit
- terminology used for industrial cleaning tools and equipment
- characteristics and functions of industrial cleaning tools and equipment
- current and emerging technologies for industrial cleaning equipment
- types of work site checks required prior to using industrial cleaning tools and equipment
- safe handling and maintenance checks of industrial cleaning tools and equipment
- soil properties and soil condition for suitability of excavation and handling
- drilled waste composition for correct disposal method
- pipe properties and appropriate pipe cleaning equipment to use
- historical data of previous works and pipe material and the common causes of failures
- operating principles and hazards of high industrial water jets, reaction force and possible injuries
- process for reporting the escalation of urgent faults to the supervisor.

| **RANGE STATEMENT** | |
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| *The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording in the Performance Criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.* | |
| ***Specifications*** may include: | • manufacturer specifications and instructions<br>• safety data sheets (SDS)<br>• regulatory and legislative requirements<br>• relevant Australian codes and standards<br>• safe work procedures<br>• work schedules, specifications and requirements<br>• company and asset owners procedures |

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| | • other verbal, written and graphic instructions issued by supervisor. |
| ***Occupational health and safety (OHS)/work health and safety (WHS) requirements*** may include: | • applicable commonwealth, state and territory legislation<br>• licensing arrangements and certification requirements<br>• relevant industry codes of practice<br>• relevant Australian codes and standards<br>• safe work procedures<br>• industry standards. |
| ***Pipe material*** may include: | • asbestos<br>• polyvinyl chloride (PVC)<br>• cast iron<br>• copper<br>• steel<br>• concrete<br>• clay. |
| ***Soil type*** may include: | • cohesive soils:<br>  ○ clay<br>  ○ silty clay<br>  ○ sandy clay<br>  ○ clay loam<br>  ○ silty clay loam<br>  ○ sandy clay loam.<br>• cemented soils such as caliche and hardpan<br>• granular cohesionless soils including:<br>  ○ angular gravel (similar to crushed rock)<br>  ○ silt.<br>• granular soils including gravel, sand. |
| ***Industrial cleaning equipment*** may include: | • pump motor/driver<br>• hoses<br>• nozzles<br>• starter bars<br>• anti-withdrawal devices<br>• easement reel<br>• jet trucks<br>• vacuum trucks |

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| | • combination trucks<br>• other current equipment, plant, tools and hazard control devices required by the job. |
| ***Personal protective equipment (PPE)*** may include: | • overalls<br>• protective headgear - safety helmets, wide brimmed hats to protect against the sun.<br>• safety boots<br>• disposable dust mask<br>• safety glasses or goggles<br>• gloves<br>• respirators and masks<br>• earmuffs and earpieces. |

| **EVIDENCE GUIDE** | |
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| *The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.* | |
| **Critical aspects for assessment and evidence required to demonstrate competency in this unit** | A person who demonstrates competency in this unit must be able to provide evidence of the ability to pressure clean gravity sewer or stormwater conduits including:<br>• identify, prepare and use industrial cleaning equipment and attachments/materials against specific task<br>• follow safe and effective work practices when using industrial cleaning equipment<br>• assist operator in conduit cleaning by handling pressure cleaning equipment in the correct manner<br>• clean and store industrial cleaning equipment in the correct manner<br>• report on condition and faults of equipment and attachments. |
| **Context of and specific resources for assessment** | The application of competency is to be assessed in the workplace or close simulated environment, provided that simulated or project-based assessment techniques replicate civil construction conditions, materials, activities, responsibilities and procedures.<br>Assessment is to comply with relevant regulatory or Australian Standards requirements.<br>The following resources must be made available:<br>• pressure cleaning equipment |

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| | • personal protective equipment (PPE)<br>• relevant work plans and specifications<br>• manufacturers specifications<br>• materials and tools appropriate for industrial cleaning of pipes. |
| **Method of assessment** | A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:<br>• written and/or oral questioning to assess underpinning knowledge of pipes and industrial cleaning equipment and techniques<br>• direct observations of the learner performing pipe cleaning using pressure cleaning equipment in a real workplace setting or simulated work environment<br>• third party reports and or project activities that allow the learner to demonstrate the application of knowledge and skills related to pressure cleaning of pipes. |

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| **Unit code** | | VU22720 | |
| **Unit title** | | Identify and handle conduit inspection equipment | |
| **Unit Descriptor** | | This unit of competency specifies the outcomes required to identify and safely handle inspection equipment used in trenchless construction.This may including inspection equipment and attachments, laser scanning and profiling, sonar scanning and profiling and electric current.<br>It includes the ability to plan for, prepare and handle equipment, clean up after use, and report on faulty equipment. It also includes a basic understanding of conduit inspections and coding defects.<br>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication. | |
| **Employability Skills** | | This unit contains Employability Skills. | |
| **Application of the Unit** | | This unit applies to entry level workers who work under supervison as part of a team in trenchless construction assisting in the inspection and reporting on the condition of operational gravity sewers and stormwater conduits and new or rehabilitated sewers or stormwater conduits.Their work parameters are well established and responsibility for the quality of work outputs is expected. | |
| **ELEMENT** | | **PERFORMANCE CRITERIA** | |
| *Elements describe the essential outcomes of a unit of competency.* | | *Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.* | |
| 1 | Plan to handle inspection equipment | 1.1 | Review supervisor's instructions/job sheets and ***specifications*** for preparing and handling inspection equipment and attachments |
| | | 1.2 | Identify the ***Occupational Health and Safety (OHS)/Work Health and Safety(WHS)*** requirements for preparing and handling inspection equipment |
| | | 1.3 | Identify the relevant codes and standards for preparing and handling inspection equipment |
| | | 1.4 | Identify ***pipe material*** and condition of pipes for inspection task |
| | | 1.5 | Identify and use the correct terminology when using |

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| | | | inspection equipment |
| 2 | Identify and prepare inspection equipment | 2.1 | Identify the functions and applications of conduit ***inspection equipment*** |
| | | 2.2 | Select and use the appropriate ***personal protective equipment (PPE)*** for inspection equipment |
| | | 2.3 | Select, sign out and prepare the required tools, equipment and materials appropriate for the task according to supervisor's instructions |
| | | 2.4 | Complete pre-operational checks according to supervisor's instructions |
| 3 | Select and use equipment and attachments | 3.1 | Set up and calibrate equipment to suit the size, type and conditions of conduit according to relevant ***industry codes and/or specifications*** |
| | | 3.2 | Check equipment and attachments for safety before use and report any faults to supervisor |
| | | 3.3 | Operate equipment according to relevant industry codes and/or specifications |
| | | 3.4 | Examine, record and report ***features of the conduit*** accurately according to supervisor's instructions ensuring the safety of self and others |
| | | 3.5 | Recognise ***potential risks to equipment and/or system operation*** and notify supervisor |
| 4 | Identify and code defects | 4.1 | Inspect conduit condition using inspection equipment according to supervisor's instructions and relevant industry codes and/or specifications |
| | | 4.2 | Identify and code structural defects, service conditions and other features of the conduit according to supervisor's instructions and relevant industry codes and/or specifications |
| | | 4.3 | Classify structural defects, service conditions and any other irregularities of the conduit in consultation with supervisor and using appropriate coding terminology |
| | | 4.4 | Record asset and inspection data using approved data capture software according to relevant industry codes and/or specifications |
| | | 4.5 | Identify a conduit at risk of imminent failure and notify supervisor |
| | | 4.6 | Identify and report defects or malfunctioning of access structures to supervisor |

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| | | 4.7 | Clean and inspect equipment for damage during and after withdrawal from the conduit |
| 5 | Review and record work | 5.1 | Check inspection data prior to removal of equipment for completeness, quality and accuracy |
| | | 5.2 | Compile conduit inspection reports and present to the supervisor in the required format |
| | | 5.3 | Complete job documentation and communication according to supervisors instruction and the asset owner or operator's, and statutory requirements |
| 6 | Clean up worksite and equipment | 6.1 | Clear work area and dispose of, reuse or recycle materials in accordance with supervisor’s instructions |
| | | 6.2 | Clean, sign in, and store inspection equipment and attachments by following safe working practices |
| | | 6.3 | Identify malfunctions, faults, wear or damage to tools and equipment and report for repair or replacement |
| | | 6.4 | Restore site to safe condition |

**REQUIRED SKILLS AND KNOWLEDGE**

*This describes the essential skills and knowledge and their level, required for this unit.*

**Required skills:**

- reading skills to interpret documentation, specifications and instructions
- writing skills to complete basic documentation
    - report and record progress and defects
    - record registered plant.
- oral communication skills to:
    - use appropriate terminology for inspection equipment
    - use questioning to identify and confirm task requirements
    - report incidence and equipment faults to supervisor
    - request equipment and attachments.
- teamwork skills to:
    - ensure a safe working environment
    - work effectively with others.
- planning and organising skills to:
    - identify and prepare required inspection tools and equipment
    - plan and complete tasks in appropriate sequence
    - restore, remove and/ replace covers of manhole/trench

- suitability of equipment requirements to access point.

- problem solving skills to:
  - Identify faults with inspection equipment and attachments
  - identify structural defects, service conditions and other features in a range of different conduits.
- technology skills to:
  - handle inspection tools and equipment safely
  - use data capture software.
  - operate inspection camera controls and recording systems.
- Learning skills to:
  - research new and improved inspection equipment and attachments.
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**Required knowledge:**

- Work/occupational health and safety (OHS/WHS):
  - workplace safety procedures
  - personal protective equipment (PPE)
  - confined space
  - traffic management
  - asset owners requirements
  - manual handling
  - industry inspection reporting code.
- relevant manufactures specifications in relation to inspection equipment and risks and hazards associated working with inspection equipment
- condition assessment standards and procedures including conduit defect codes e.g. Water Services Association of Australia (WSAA) conduit inspection codes for Closed Circuit Television (CCTV) (WSA-05)
- data capture, recording and reporting software
- terminology used for inspection tools and equipment
- characteristics, function and common faults of inspection equipment and attachments
- operation procedures and pre-operational checks of inspection equipment
- safe handling and maintenance of inspection equipment and attachments
- existing and emerging technology for conduit/pipe inspection including inspection equipment
- process for reporting the escalation of urgent faults to the supervisor.

**RANGE STATEMENT**

*The range statement relates to the unit of competency as a whole. It allows for different work environments and*

| *situations that may affect performance. Bold italicised wording in the Performance Criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.* | |
|---|---|
| ***Specifications*** may include: | • manufacturers specifications and instructions<br>• safety data sheets (SDS)<br>• regulatory and legislative requirements<br>• relevant Australian codes, standards and guidelines<br>• safe work procedures<br>• work schedules, specifications and requirements<br>• company and asset owners procedures. |
| ***Occupational health and safety (OHS)/work health and safety (WHS) requirements*** may include: | • applicable commonwealth, state and territory legislation<br>• licensing arrangements and certification requirements<br>• relevant industry codes of practice<br>• relevant Australian codes and standards<br>• safe work procedures<br>• industry standards. |
| ***Pipe material*** may include: | • asbestos<br>• polyvinyl chloride (PVC)<br>• cast iron<br>• copper<br>• steel<br>• concrete<br>• clay. |
| ***Inspection equipment*** may include: | • CCTV<br>• sewer serpent<br>• hand-held video inspection<br>• plumbing locating<br>• utility locating<br>• robotic crawlers<br>• control panels<br>• sonar pipe profiling<br>• push rod<br>• laser profiling |

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| | • software such as coding defect reporting programs. |
| ***Personal protective equipment (PPE)*** may include: | • hard hat<br>• disposable dust mask<br>• safety glasses<br>• water proof gloves<br>• ear muffs<br>• work wear<br>• work boots. |
| ***Industry codes and/or specifications*** may include: | • the Conduit Inspection reporting code of Australia WSA 05 2006<br>• other codes as nominated by the asset owner, operator or regulator<br>• contract specifications for work activity. |
| ***Features of the conduit*** may include: | • structural condition<br>• service condition. |
| ***Potential risks to equipment and/or system*** may include: | • loss of camera or equipment due to the condition of the conduit<br>• backup of sewage caused by camera or equipment and/or sudden changes in flow. |

| **EVIDENCE GUIDE** | |
|---|---|
| *The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.* | |
| **Critical aspects for assessment and evidence required to demonstrate competency in this unit** | A person who demonstrates competency in this unit must be able to provide evidence of the ability to conduct an inspection of gravity sewer or stormwater conduits including:<br>• identify and use inspection equipment and systems against specific task<br>• assist operator in conduit inspection by handling inspection equipment in the correct manner ensuring appropriate software updates and accurate storage for data<br>• conduct inspection and identify and code conduit defects and condition<br>• recording data using approved software program<br>• complete inspection documentation according to supervisor and organisational procedures<br>• follow safe and effective work practices when using inspection equipment<br>• report on condition and faults of equipment and attachments<br>• clean and store inspection equipment in the correct manner. |
| **Context of and specific resources for assessment** | The application of competency is to be assessed in the workplace or close simulated environment, provided that simulated or project-based assessment techniques replicate civil construction conditions, materials, activities, responsibilities and procedures.<br>Assessment is to comply with relevant regulatory or Australian Standards requirements.<br>The following resources must be made available:<br>• conduit inspection equipment<br>• personal protective equipment (PPE)<br>• relevant work plans and specifications<br>• manufacturers specification<br>• materials and standards appropriate for inspection and reporting code defects. |
| **Method of assessment** | A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: |

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| | • direct observation of the learner performing conduit inspection using inspection equipment in a real workplace setting or simulated environment<br>• written and oral questioning to assess underpinning knowledge of pipes and inspection equipment techniques and conduit inspection defect codes<br>• third party reports and or project activities that allow the learner to demonstrate the application of knowledge and skills related to the inspection of conduits/pipes and accurate use of conduit inspection defect codes. |