



**Australian Government**

# **NWPTRT042 Assess and improve granular media filters**

**Release: 1**

## NWPTRT042 Assess and improve granular media filters

### Modification History

| Release | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | <p>This unit was released in NWP Water Training Package release 1.0 and meets the Standards for Training Packages.</p> <p>This unit supersedes and is equivalent to NWP406A Investigate and plan the optimisation of granular media filtration processes.</p> <ul style="list-style-type: none"><li>• Unit code updated</li><li>• Content and formatting updated to comply with the new standards</li><li>• All PC transitioned from passive to active voice</li><li>• Unit title changed to better reflect unit outcomes</li><li>• One new PC added to Element 2</li></ul> |

### Application

This unit describes the skills required to evaluate and report on system performance and process quality control and may require the control and coordination of granular media filtration processes used in water and wastewater treatment.

This unit applies to those working as technical staff with responsibility for optimising granular media filtration processes in water or wastewater treatment plants. This role may include coordination or supervision of a work team, or may be performed by a single operator, depending on the size of the treatment plant.

The skills and knowledge described in this unit must be applied within the legislative, regulatory and policy environment in which they are carried out. Organisational policies and procedures must be consulted and adhered to, particularly those relating to manufacturers' specifications.

Those undertaking this unit would work under indirect supervision, while performing complex tasks within a range of familiar contexts.

No licensing, legislative or certification requirements apply to unit at the time of publication.

### Competency Field

Treatment

## Elements and Performance Criteria

| ELEMENTS                                                                     | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elements describe the essential outcomes                                     | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions section.                                                                                                                   |
| <b>1. Assess granular media filtration process performance</b>               | 1.1 Review existing process performance data.<br>1.2 Review existing operational <b><i>processes</i></b> .<br>1.3 Identify the impact of incoming water quality on granular media filtration processes.<br>1.4 Identify any additional sampling and testing required for valid evaluation of current process performance. |
| <b>2. Investigate granular media filtration plant or equipment operation</b> | 2.1 Review existing fault reports and other relevant plant asset information.<br>2.2 Investigate the operational status of plant components.<br>2.3 Carry out investigations to identify potential deficiencies.                                                                                                          |
| <b>3. Investigate the operational options for process optimisation</b>       | 3.1 Review relevant fault and incident reports and remedial actions taken.<br>3.2 Investigate current media status with reference to manufacturer or plant designer specifications.<br>3.3 Investigate potential changes to operational processes to identify possible optimisation strategies.                           |
| <b>4. Develop and record a plan for process optimisation</b>                 | 4.1 Determine plant configuration or media options and revised operational procedures for process optimisation.<br>4.2 Plan a trial to test the performance of the determined optimisation options.<br>4.3 Compile a report making recommendations on optimisation options.                                               |

## Foundation Skills

The foundation skills demands of this unit have been mapped for alignment with the Australian Core Skills Framework (ACSF). The following tables outline the performance levels indicated for successful attainment of the unit.

ACSF levels indicative of performance:

|          |   |   |   |   |         |   |   |   |   |         |   |   |   |   |                    |   |   |   |   |          |   |   |   |   |
|----------|---|---|---|---|---------|---|---|---|---|---------|---|---|---|---|--------------------|---|---|---|---|----------|---|---|---|---|
| 1        | 2 | 3 | 4 | 5 | 1       | 2 | 3 | 4 | 5 | 1       | 2 | 3 | 4 | 5 | 1                  | 2 | 3 | 4 | 5 | 1        | 2 | 3 | 4 | 5 |
| Learning |   |   |   |   | Reading |   |   |   |   | Writing |   |   |   |   | Oral communication |   |   |   |   | Numeracy |   |   |   |   |

Performance variables:

|         |   |   |   |   |         |   |   |   |   |                 |   |   |   |   |                 |   |   |   |   |
|---------|---|---|---|---|---------|---|---|---|---|-----------------|---|---|---|---|-----------------|---|---|---|---|
| 1       | 2 | 3 | 4 | 5 | 1       | 2 | 3 | 4 | 5 | 1               | 2 | 3 | 4 | 5 | 1               | 2 | 3 | 4 | 5 |
| Support |   |   |   |   | Context |   |   |   |   | Text complexity |   |   |   |   | Task complexity |   |   |   |   |

Further information on ACSF and the foundation skills underpinning this unit can be found in the Foundation Skills Guide on the GSA website.

## Range of Conditions

|                    |                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Processes include: | <ul style="list-style-type: none"> <li>gravity filters</li> <li>pressure filters</li> <li>continuous backwash processes</li> </ul> |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------|

## Unit Mapping Information

This unit supersedes and is equivalent to NWP406A Investigate and plan the optimisation of granular media filtration processes.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=26336bc0-04e5-49d9-8c31-46c49b6a0037>

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# Assessment Requirements for NWPTRT042 Assess and improve granular media filters

## Modification History

| Release | Comments                                                                                                                                                                                                                                                                                      |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | <p>These Assessment Requirements were released in NWP Water Training Package release 1.0 and meet the Standards for Training Packages.</p> <ul style="list-style-type: none"><li>Assessment Requirements created drawing upon specified assessment information from superseded unit</li></ul> |

## Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. The candidate must be assessed in at least one type of process listed in the Range of Conditions. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- conducting system investigation and reporting on operational or control system problems
- coordinating filter inspection, sampling and testing
- conducting trend analysis for long-term filter monitoring
- performing calculations to provide data for the analysis and development of options and solutions, including backwash rates and filtration rates
- determining filter run and backwash profiles and times
- interpreting a range of complex and technical documents, including at least one of:
  - regulatory, legislative, licensing and organisational requirements
  - codes and standards
  - specifications
  - organisational policies
- analysing problems and recommending appropriate remedial solutions
- reviewing existing filtration process performance with reference to historical data, initial specifications and differences in incoming water quality
- identifying data deficiencies and organising additional data collection through appropriate sampling and testing
- assessing faults and incident reports and investigating the status of filtration plant components and media
- investigating potential changes to filtration operational processes to identify possible optimisation strategies
- planning trials to test the performance of the determined filtration optimisation options

- compiling recommendation reports

## Knowledge Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the depth of knowledge demonstrated must be appropriate to the job context of the candidate.

- principles that form the basis of granular media filtration processes
- types of filters and their range of applications, conditions for use and manufacturers' requirements
- backwash principles and optimisation
- filter run profiles
- the range and performance of filter aids
- filter media properties and selection
- filter inspection and sampling
- principles of filter maintenance, including:
  - filter cleaning
  - double backwashes
  - surface cleaning
  - lancing
  - caustic washing
- filter ripening and turbidity breakthrough
- pilot filters
- pumping and valving systems
- range of appropriate measuring and testing procedures

## Assessment Conditions

Competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace, the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

## Links

Companion Volume implementation guides are found in VETNet -

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