



Australian Government

**Assessment Requirements for NWPTRT093
Assess and improve anaerobic digestion
processes**

Release: 1

Assessment Requirements for NWPTRT093 Assess and improve anaerobic digestion processes

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">• Assessment Requirements created drawing upon specified assessment information from superseded unit

Performance Evidence

Evidence required to demonstrate competence must satisfy all of the requirements of the elements and performance criteria. If not otherwise specified the candidate must demonstrate evidence of performance of the following on at least one occasion.

- coordinating anaerobic treatment process inspection, sampling and testing, including the following tests:
 - chemical oxygen demand (COD)
 - temperature
 - macro nutrients, including nitrogen or phosphorus
 - micro nutrients, including cobalt or iron
 - settling tests
 - pH
 - redox potential
 - volatile fatty acids
 - alkalinity
 - gas analysis
 - solids
- performing mathematical calculations to provide data for the analysis and development of options and solutions, including at least one of:
 - COD removal
 - volatile solids reductions
 - solids retention time
- 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
- evaluating system performance
- reviewing existing anaerobic treatment process performance with reference to historical data, differences in feed water quality and plant configuration
- identifying data deficiencies and organising additional data collection through appropriate sampling and testing
- assessing fault reports and investigating the current operational status of anaerobic treatment process plant components
- investigating current and potential chemical addition practices
- planning trials to test the performance of the determined anaerobic treatment process optimisation options:
 - recirculation rates
 - addition of nutrients
 - temperature
 - pre-treatment to remove inhibitory or toxic substances
 - alkalinity and pH correction
 - flow or feed rate
 - mixing rate
 - sludge wastage rate
- preparing reports with recommendations

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 anaerobic treatment processes including:
 - design parameters:
 - organic loading rate
 - solids retention time
 - hydraulic loading rate
 - temperature
 - mixing strategy
 - volatile solids reduction
 - recycle flow rates
 - detention time
 - chemical oxygen demand (COD) removal
 - volatile fatty acids to alkalinity ratio
 - intended plant configuration
 - feed water quality:

- chemical oxygen demand (COD)
- nutrients
- pH and alkalinity
- total and suspended solids
- salt
- inhibitory compounds
- temperature
- types of anaerobic treatment processes including:
 - up flow anaerobic sludge blanket reactors (UASB)
 - fluidised bed reactors
 - anaerobic digesters
 - high rate anaerobic lagoons (HRAL)
 - bulk volume fermenters (BVF)
- anaerobic microbiology
- pH
- VFA: alkalinity ratio
- nutrient requirements – macro and micro
- gas production and characterisation
- inhibitory substances
- system layout
- principles of anaerobic system maintenance
- range of appropriate procedures (measuring and testing, investigation)
- risk management principles relating to anaerobic treatment processes
- chemical and nutrient dosing processes
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Assessment Conditions

Competency should be assessed in an actual workplace or in a simulated environment, with access to equipment and infrastructure appropriate to the outcome. Competency should be demonstrated over time to ensure the candidate is assessed across a variety of situations.

Consideration must be given to holistic assessment for this unit. Refer to advice in the companion volumes.

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

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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