

Title	Describe and operate activated sludge processes in wastewater treatment		
Level	4	Credits	16

Purpose	People credited with this unit standard are able to: describe activated sludge processes; monitor and adjust activated sludge processes; carry out maintenance procedures on activated sludge process equipment; and describe the storage, handling, and preparation of chemicals, and chemical dosing systems used in activated sludge processes in wastewater treatment.
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Classification	Water Industry > Wastewater Treatment
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Available grade	Achieved
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Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry requirements.
- 2 Legislation relevant to this unit standard includes the Health and Safety at Work Act 2015, Water Services Act 2021, Resource Management Act 1991, Hazardous Substances and New Organisms (HSNO) Act 1996, and subsequent amendments.
- 3 Definitions
Industry requirements include manufacturers' specifications; and enterprise requirements which may include documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
Wastewater may include stormwater and sewage systems.
- 4 In the context of this unit standard, activated sludge treatment includes the separation process.
- 5 Learning and assessment activities for this unit standard must be informed by Te Mana o te Wai (refer to [Taumata Arowai](#)) and the *National Policy Statement for Freshwater Management 2020* available from <https://environment.govt.nz/>.

Outcomes and performance criteria

Outcome 1

Describe activated sludge processes in wastewater treatment.

Performance criteria

- 1.1 The purpose and principles of activated sludge treatment are described in terms of the stabilisation of pollutants and reduction of contaminants.
- 1.2 Plant configuration options for activated sludge treatment are described in terms of their hydraulic layout options, solids wasting and return methods, advantages, and disadvantages.
- Range two plant configuration options.
- 1.3 The activated sludge process is described in terms of the function of its component parts and consequences of process failure.
- 1.4 Activated sludge treatment is described in terms of the process outputs.
- Range Biochemical Oxygen Demand (BOD), total suspended solids (TSS), dissolved oxygen (DO), nutrients, indicator organisms.

Outcome 2

Monitor and adjust activated sludge processes in wastewater treatment.

Performance criteria

- 2.1 Process tests are described for activated sludge treatment.
- Range includes but is not limited to – Mixed Liquor Suspended Solids (MLSS), sludge volume index (SVI), pH and alkalinity, sludge age, Dissolved Oxygen (DO) control.
- 2.2 The performance measures for activated sludge treatment are described in terms of efficiency and downstream effects.
- Range BOD, suspended solids, nutrients, indicator organisms.
- 2.3 Testing equipment is calibrated, tests or measurements for monitoring process inputs are carried out, and results are recorded.
- 2.4 Processes are adjusted.
- Range reasons for adjustment – results of testing, analysis and identification of trends, response to process failure.
- 2.5 Any relevant consumables are checked and ordered.

Outcome 3

Carry out maintenance procedures on activated sludge process equipment in wastewater treatment.

Performance criteria

- 3.1 Preventative maintenance procedures are carried out and recorded.
- 3.2 Any required repairs are carried out according to process and/or equipment failure.
- 3.3 Actions for maintaining process continuity are carried out.

Outcome 4

Describe the storage, handling, and preparation of chemicals, and chemical dosing systems used in activated sludge processes in wastewater treatment.

Performance criteria

- 4.1 The storage, handling, and preparation of chemicals used in activated sludge processes are described in terms of the HSNO Act 1996.
- 4.2 Chemical dosing systems used in activated sludge processes are described in terms of the components, methods, and points of application.

Replacement information	This unit standard replaced unit standard 24930.
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Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 March 2017	31 December 2023
Review	2	28 April 2022	N/A

Consent and Moderation Requirements (CMR) reference	0101
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihanga.nz if you wish to suggest changes to the content of this unit standard.