Title	**Evaluate options and issues for managing recoverable resources**		
Level	**5**	**Credits**	**25**

Purpose	This unit standard is for people working in the public or private sectors of the resource recovery and solid waste industries who have responsibility for achieving resource recovery, recycling, waste management, and zero waste outcomes. People credited with this unit standard are able to: demonstrate knowledge of options and issues for organic and inorganic resources; and evaluate options for processing recoverable resources, as a manager, and assess their outcomes.

Classification	Resource Recovery > Resource Recovery Theory

Available grade	Achieved

Guidance Information

1 References relevant to this unit standard include but are not limited to:
Hazardous Substances and New Organisms Act 1996;
The New Zealand Waste Strategy: Reducing Harm, Improving Efficiency 2010 Ministry for the Environment, available at http://www.mfe.govt.nz;
The New Zealand Packaging Accord 2004, available at http://www.mfe.govt.nz/publications/waste/new-zealand-packaging-accord-2004/new-zealand-packaging-accord-2004;
REBRI (Resource Efficiency in Building and Related Industries) guidelines for reducing building material wastes, available at https://www.branz.co.nz/REBRI;
Life Cycle Assessment of Waste and Resource Recovery Options 2003, available at http://www.sustainability.vic.gov.au;
Patterson, Chris J, Guide for Construction Waste Audits, 1999, Auckland Regional Council, available at http://www.branz.co.nz.

2 Definitions
Inorganic refers to materials that do not have the structure or characteristics of living organisms, and includes for this unit standard recyclable materials such as paper, glass and plastic.
Issues (with resources) may include contaminated materials that are not currently recoverable.
Organic refers to materials that are putrescible or are of animal or vegetable origin.
REBRI stands for Resource Efficiency in Building and Related Industries. Its purpose is to promote, advocate, and assist resource efficiency measures in the building and related industries.
Waste in this unit standard excludes wastewater.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of options and issues for managing organic resources.

Performance criteria

1.1 Composting options are related to geographical regions and population distribution areas, and are described in terms of the technologies available.

Range options include but are not limited to – home composting, open windrowing, in-vessel composting, vermiculture;
technologies include but are not limited to – equipment, methods.

1.2 Alternatives to composting of organic resources are identified for geographical regions and population distribution areas, and are detailed in relation to availability.

Range thermal combustion (of woody biomass), anaerobic digestion, biodiesel.

1.3 Options for processing food waste are identified and described, and related issues are explained, in terms of the current New Zealand situation.

Range options include but are not limited to – collection, handling, storage, treatment;
issues include but are not limited to – food oils, volume, availability, stabilisation, odour control, pathogen control, contamination.

1.4 Issues with, and processes for, contaminated green waste and biological matter are identified and explained in terms of the current New Zealand situation.

Range issues include but are not limited to – spray residues, biomedical matter, pathogenic material, quarantine waste;
processing includes but is not limited to – handling, stabilisation, storage, control of nuisance, disposal.

Outcome 2

Demonstrate knowledge of options and issues for managing inorganic resources.

Performance criteria

2.1 Processing options for the recovery of non-hazardous inorganic resources are outlined in relation to national strategies consistent with government policy as expressed in *The New Zealand Waste Strategy*.

Range glass, metals, paper and related fibres, plastics, textiles, reusable goods.

2.2 Issues with construction and demolition waste are identified, and processing options are detailed in relation to national strategies consistent with government policy as expressed in *The New Zealand Waste Strategy* and REBRI guidelines.

2.3 Issues with and treatments for inorganic hazardous wastes are identified and explained in relation to the current New Zealand situation, and processing options are outlined for their removal from the waste stream to be available for recycling or controlled disposal.

Range hazardous wastes include but are not limited to – asbestos, batteries, bituminous material, chemicals (including agrichemicals and printing inks), explosives, oils, gases, paint types, electronic materials, pharmaceuticals, radioactive material, tyres; evidence is required of the above list of hazardous wastes in the context of domestic, commercial, and/or industrial sources in any combination.

Outcome 3

Evaluate options for processing recoverable resources, as a manager, and assess their outcomes.

Performance criteria

3.1 The evaluation compares options in terms of issues, costs, and benefits.

3.2 Options for deriving energy from waste are evaluated in relation to their use of conventional and new technologies and their outcomes are assessed in relation to benefits and concerns.

Range includes but is not limited to – aerobic composting, biogas, incineration of tyres, pyrolysis, gasification, anaerobic digestion.

3.3 Options for deriving end use products from waste are identified and assessed in relation to benefits and viability.

Range two products or two waste materials.

3.4 Options for processing specified resources for their recovery are detailed.

Range processing of two dissimilar resources.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	26 January 2007	31 December 2025
Rollover and Revision	2	28 March 2019	31 December 2025
Review	3	24 April 2025	31 December 2025

Consent and Moderation Requirements (CMR) reference	0014

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.