

# WORKFORCE SKILLS QUALIFICATION SYSTEM (WSQ) COMPETENCY MAP FOR WASTE MANAGEMENT INDUSTRY

**INDUSTRY KEY PURPOSE**  
Safely and responsibly supplying our customers in the global process industry with high quality innovative products and services through a competent and dynamic workforce

**SECTOR KEY PURPOSE**  
To provide cost effective, reliable and environmentally sustainable Waste Management services that, enhance productivity and optimize the value of resources through waste minimisation and recovery, using the principles of re-use, reduce and recycle, hence implementing technologies and best practices to enhance safety and meet the needs of customers and the community.



LEVEL	QUALIFICATION TITLE	Competency Unit Category	COMPETENCY CATEGORY			QUALIFICATION MATRIX	TYPICAL JOB TITLES
			WASTE HANDLING AND TRANSPORTATION	WASTE PROCESSING AND RECYCLING	WASTE DISPOSAL AND CONTROL		
MANAGERIAL / PROFESSIONAL	WSQ CERTIFIED WASTE MANAGEMENT MANAGER	INDUSTRY CORE	1. Manage teams in workplace (PE-CE-402C-1) 2. Manage WSH policies in the workplace (PE-CE-403C-1) 3. Interpret and comply with Environmental Law and Policy			<b>3 core CUs + 4 specialisation elective from the same track</b> <b>Total = 7 CUs</b>  <b>Total training hours: 200-250 Hrs (approx)</b>	<b>MANAGERIAL / PROFESSIONAL</b> • Operation Manager • Plant Manager • Maintenance & Facility Manager • Waste Processes Manager • Waste Recycling Manager • Site Manager • Waste Facilities Maintenance Manager • Waste Management Manager • Fleet Maintenance Manager
		SPECIALISATION ELECTIVE	<a href="#">04 X Specialisation electives</a>	<a href="#">04 X Specialisation electives</a>	<a href="#">04 X Specialisation electives</a>		
SUPERVISORY	WSQ CERTIFIED WASTE MANAGEMENT SUPERVISOR	INDUSTRY CORE	1. Supervise workplace safety and health practices (MF-COM-301E-1) 2. Supervise team at work (MF-COM-303C-1) 3. Supervise work improvement processes (MF-COM-303E-1)			<b>3 core CUs + 3 specialisation elective from the same track</b> <b>Total = 6 CUs</b>  <b>Total training hours: 150-200 Hrs (approx)</b>	<b>SUPERVISORY</b> • Waste Packaging Supervisor • Waste Processes Supervisor • Waste / Hazardous Supervisor • Site Supervisor • Route Coordinator • Fleet coordinator • Waste Management Specialist • Production Engineer
		SPECIALISATION ELECTIVE	<a href="#">03 x Specialisation electives</a>	<a href="#">03 x Specialisation electives</a>	<a href="#">03 x Specialisation electives</a>		
OPERATIONS / TECHNICIANS	WSQ CERTIFIED WASTE MANAGEMENT CREW	INDUSTRY CORE	1. Apply workplace safety and health practices (MF-PRO-102C-1) 2. Apply teamwork in the workplace (MF-PRO-101C-1)			<b>2 core CUs + 3 specialisation elective from the same track</b> <b>Total = 5 CUs</b>  <b>Total training hours: 100-150 Hrs (approx)</b>	<b>OPERATIONS</b> • Waste Equipment Maintenance Technician • Equipment Technician • Boilerman • Site Technician • Material Handler • Fleet Maintenance Operator • Production Operator • Front /Back Load Driver
		SPECIALISATION ELECTIVE	<a href="#">03 x Specialisation electives</a>	<a href="#">03 x Specialisation electives</a>	<a href="#">03 x Specialisation electives</a>		



AOP

- UNIVERSITY
- DIPLOMA
- WORKPLACE
- CROSS-TRAINING



AOP

- NITEC
- 'O' Level
- WORKPLACE
- CROSS-TRAINING



AO

- PSLE
- WORKPLACE
- CROSS-TRAINING

**ALTERNATE PATHWAY**

- DIRECT**
- SCHOOLS
  - NEW EMPLOYEES

**Waste Handling & Transportation**

Waste handling and transportation sector includes the collection of waste using waste collection vehicles and maintenance of equipment and fleet. It also include the deployment of technology, equipment and methods to provide a overall value chain in the waste collection process.

**Waste Processing & Recycling**

Waste processing involves the segregation of recyclable and non-recyclable materials. Waste recycling involves processing the recyclable materials into re-usable raw materials, new products or energy resources in an economically viable manner.

**Waste Disposal & Control**

Waste Disposal and Control includes activities such as operating, maintaining, supervising and managing a waste disposal plants or sites.



## Industry Core

S/N	Competency Unit Code	Competency Unit Title	Course Descriptor
<b>MANAGERIAL / PROFESSIONAL</b>			
1	PE-CE-402C-1	Manage teams in workplace	On completion of this unit, learners will have the knowledge and application skills in participating in work teams and will be able to apply them to the workplace. These skills include relating to team members from a diverse range of backgrounds and abilities, communicating with others, assist team establishment, assist development of a team culture and assist improving team performance
2	PE-CE-403C-1	Manage WSH policies in the workplace	On completion of this unit, learners will have the knowledge and application skills to apply workplace safety and health procedures and practices to ensure the employees own and others safety at work. These skills include manage Workplace Safety and Health (WSH) and Environmental practices within a workplace environment, including an engineering workplace, oversee and ensure compliance with standards applicable for any work within a WSH system, manage identification of hazards and assessment of risks, manage and apply control measures and manage, maintain and review risk control measures
3	TBC	Interpret and comply with Environmental Law and Policy	On completion of this unit, learners will have the knowledge to ensure compliance with permits, regulation and legislation.
<b>SUPERVISORY</b>			
4	MF-COM-301E-1	Supervise workplace safety and health practices	On completion of this unit, learners will have the skills and knowledge in planning WSH activities, implement safe work practices and maintain workplace risk control measures at their workplaces
5	MF-COM-303C-1	Supervise team at work	On completion of this unit, learners will have the skills and knowledge in Supervising Teams at Work and be able to put it into practice at their workplaces
6	MF-COM-303E-1	Supervise work improvement processes	On completion of this unit, learners will have the skills and knowledge in identifying improvement goals for work teams, implement work improvement processes and standardise improved work processes at their workplaces
<b>OPERATIONS / TECHNICIANS</b>			
7	MF-PRO-102C-1	Apply workplace safety and health practices	On completion of this unit, learners will have the skills and knowledge in applying workplace safety and health practices to ensure the safety of oneself and others at work
8	MF-PRO-101C-1	Apply teamwork in the workplace	On completion of this unit, learners will have the skills and knowledge in working as a team and participating in team activities in their work area

WSQ CERTIFIED WASTE MANAGEMENT MANAGERS

S/N	Competency Unit Code	Competency Unit Title	Course Descriptor	Waste Management Sub-sector		
				Waste Handling & Transportation	Waste Processing & Recycling	Waste Disposal & Control
1		Manage waste collections activities	This unit of competency cover the skills and knowledge to plan work assignments and equipment allocations to meet transportation, operations, or production goals. It also includes confer with customers, supervisors, contractors, and other personnel to exchange information and to resolve problems to improve organisational performance	√		
2		Manage waste collection depot	This unit of competency covers the skills and knowledge to oversee the whole operation of waste collection depot from planning of collection route to manpower deployment.	√		
3		Manage recycling process	This unit of competency covers the skills to oversee recycling pick-up or drop-off programs to ensure compliance with community ordinances. It also includes the coordination of recycling collection schedules to optimize service and efficiency		√	
4		Manage waste sustainability	This unit of competency covers the skills and knowledge to monitor or track sustainability indicators, such as energy usage, natural resource usage, waste generation and recycling. It includes identifying or procure needed resources to implement sustainability programmes or projects.		√	
5	PI-WM-407E-0	Manage waste preparation for re-use	This unit of competency describes the preparation of waste products capable of re-use (scavenging operations). It requires the ability to identify re-usable waste products and organising for this to occur. Personnel are required to identify waste products capable of re-use match client specifications; suitable products are set aside and stored to maintain quality; rejected products are disposed of appropriately. A detailed knowledge is required of waste types able to be re-used; storage methods; causes of product contamination; relevant industry standards, legislation and codes of practice; emergency response procedures; relevant occupational health and safety requirements and environmental legislation.		√	
6	UK Functional Map	Manage waste treatment and processes	This unit of competency covers the skills and knowledge to establish procedures to audit compliance and assess effectiveness of waste treatment processes and procedures. It also includes establishing procedures for safe handling and containment of waste at treatment facilities and criteria for determining best practice in the treatment and processing of waste.		√	
7		Manage Landfill	This unit of competency covers the knowledge to implement landfill operational and emergency procedures, and inspect landfill or conduct site audits to ensure adherence to safety and environmental regulations			√
8		Manage disposal technologies	This unit of competency covers the knowledge to manage waste through technologies to prevent harm to the environment or long term progressive damage to health. It also includes understanding to review, evaluate and report on technological developments for potential application to waste management within the organisation.			√
9	PI-WM-408E-0	Review, evaluate and document waste assessment findings	This unit of competency covers the review and evaluation of waste assessment findings, and documentation of evaluation and findings made. It requires the ability to review and evaluate company/client waste practices and issues that impact upon their operations.	√	√	√
10		Manage fleet operations	This unit of competency covers ability to direct, supervise and coordinate activities to enforce safety rules and regulations of transportation. It also includes planning, organising and managing the work of subordinate staff to ensure that the work is accomplished in a manner consistent with organizational requirements.	√	√	
11		Manage fleet maintenance	This unit of competency covers the skills and knowledge to supervise and coordinate the activities of mechanics, installers, and repairers. It also includes developing, implementing and evaluating maintenance policies and procedures to improve fleet equipment systems.	√	√	
12		Manage energy recovery	This unit of competency covers the skills and knowledge to identify the energy savings opportunities and make recommendations to achieve more energy efficient operation.		√	√
13	PI-WM-409E-0	Select and obtain waste management plant, equipment and materials	This unit of competency covers selection of all types of waste management plant, equipment and materials and associated procurement procedures. Personnel are required to identify services to be provided, determine performance characteristics of plant, equipment and materials, ensure access to plant equipment and materials and maintain up-to-date information on industry plant, equipment and materials.		√	√

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14		Manage maintenance of waste equipment & facilities	This unit of competency covers the skills and knowledge to manage the maintenance of machines, mechanical equipment, or the structure of an establishment in repair. In addition, it is necessary to demonstrate the ability to repair or replace defective equipment parts, using hand tools and power tools, and reassemble equipment.		√	√
15	UK Functional Map	Forecast future demand	This unit of competency covers the skills and knowledge to forecast trends in new waste management technologies and techniques. It also includes the skills and knowledge to forecast the demand for products and outputs derived from waste and waste management services.		√	√
16	UK Functional Map	Manage waste management facilities	This unit of competency covers the skills and knowledge to maintain the efficiency of operation on sites, manage plants and equipments and control on-site access and security to minimise nuisance and maintain agreed standards of cleanliness and good order monitoring and management services.		√	√
17		Plan mode of disposal	This unit of competency describes the planning of disposal operations and monitoring activities undertaken at a waste site (including testing). This may include long-term monitoring (including post-closure management).	√		√
18		Manage waste management solution	This unit of competency describes the development of waste management strategies for clients to meet their individual needs. It requires the ability to analyse practices and develop strategies by working effectively with clients. These work functions would be carried out under minimal supervision within organisational guidelines.	√		√
19		Manage waste storage	This unit of competency covers the skills and knowledge to supervise and coordinate the activities of waste storage prior to transport and further treatment or disposal. The unit also covers the long-term storage of wastes that are unable to be disposed of in any other way. This unit requires the ability to organise activity and apply safe work practices.	√	√	√
20		Manage green work activities	This unit of competency covers the skills and knowledge to create and implement methods to market green products and services. It also includes development of comprehensive marketing strategies, using knowledge of green energy products, markets, and regulations.	√	√	√
21		Manage waste education	This unit of competency covers all contexts in which information may be provided to clients on education to public on waste management issues.	√	√	√
22		Manage plant safety and operations	This unit of competency covers the skills and knowledge to develop a site safety plan where operation can be carried out safely according to organisation procedures.	√	√	√
23		Manage logistics	This unit of competency covers the skills and knowledge to plan, direct, or coordinate purchasing, warehousing, distribution, or planning services. It also includes the skills to manage logistics personnel and logistics systems and direct daily operations.	√	√	√
24		Plan environmental safety and control	This unit of competency covers the skills and knowledge to design and plan duties in the prevention, control, and remediation of environmental health hazards. It also includes the ability to inspect industrial and municipal facilities and programs to evaluate operational effectiveness and ensure compliance with environmental regulations.	√	√	√
25	PI-PRO-401C-0	Manage process resource planning	This unit of competency covers management of human and physical resources in accordance with planned business strategies. It includes analysing resource requirements, developing resource plans, allocating resources, and reviewing and reporting on resource usage to meet business objectives	√	√	√
26		Organize waste management operation	This unit of competency describes the monitoring of waste management operations including the allocation of work to personnel. This unit is applicable where supervision of a small field work team is required. Personnel are required to identify work requirements; organise equipment and materials; allocate work areas and activities; provide suitable training and assessment opportunities; and document waste management organisational plan.	√	√	√
27	UK Functional Map	Develop technology solutions	This unit of competency cover the skills and knowledge to review, evaluate and report on technological developments for their potential application to waste management and also, to commission research into potentially useful waste management technologies.	√	√	√

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28	UK Functional Map	Manage risk assessment	This unit of competency cover the skills and knowledge to identify, assess and advice on the management and mitigation of operational risk. It also includes the establishment of contingency arrangements to minimise operational impact of incidents and emergencies.	√	√	√
29	UK Functional Map	Develop organisational strategies for changes in waste management services including equipment	This unit of competency cover the skills and knowledge to develop business strategies, seek and obtain funding and develop compliance strategies to manage change.	√	√	√
30	UK Functional Map	Plan methods for assessment, evaluation, sorting and storage of waste	This unit of competency cover the skills and knowledge to establish criteria for determining recoverable and non-recoverable materials and estimating value. It also includes specify procedures for safe handling of materials , storage of hazardous materials and establishing procedures for identifying and dealing with hazardous, contaminated and rejected waste material.	√	√	√
31	UK Functional Map	Manage integrated waste management and quality assurance systems	This unit of competency covers the skills and knowledge to prepare waste audit, evaluating waste management option for optimum solution, specifying methods and procedures for quality assuring waste management system and developing procedures and guidance for implementation and monitoring.	√	√	√

WSQ CERTIFIED WASTE MANAGEMENT SUPERVISORS

S/N	Competency Unit Code	Competency Unit Title	Course Descriptor	Waste Management Sub-sector		
				Waste Handling & Transportation	Waste Processing & Recycling	Waste Disposal & Control
1		Handle customer inquiry and complaints on waste collection and recycling services	This unit involves the skills and knowledge to respond effectively to client inquiries or complaints regarding company services.	√		
2		Supervise recycling process	This unit of competency covers the skills and knowledge to supervise recycling technicians or other recycling operations employees and assigning of truck drivers or recycling technicians to routes		√	
3		Implement green work activities	This unit of competency cover the skills and knowledge to implement methods to market green products and services. It also includes the ability to conduct research on consumer opinions and marketing strategies related to green energy technologies.		√	
4		Supervise waste recycling and treatment process	This unit of competency cover the skills and knowledge to supervise reprocessing and treatment operation		√	
5		Supervise plant equipment operation	This unit of competency covers the skills and knowledge to monitor equipment operation and performance and make necessary adjustments to ensure optimal performance. It also involves basic understanding on how to perform equipment maintenance and repair as necessary			√
6		Supervise disposal of waste	This unit of competency describes the various maintenance functions carried out at a waste site such as identifying maintenance work to be undertaken on waste site from physical observation of site environment, maintenance schedule and job requirements			√
7		Supervise logistics	This unit of competency covers the skills and knowledge to direct inbound and outbound logistics operations, such as transportation or warehouse activities, safety performance, and logistics quality management.			√
8		Conduct lab test on waste	This unit of competency covers the skills and knowledge to collect samples of industrial waste to conduct tests on pollutant levels and identify sources of pollution.			√
9		Plan and evaluate maintenance of treatment facilities	This unit of competency covers the provision of minor maintenance and repairs on waste processing plant and facilities.			√
10	PI-WM-303E-0	Implement waste management plan	This unit of competency describes the implementation of a waste management plan. It requires the ability to plan and coordinate activity. These work functions would be carried out under routine supervision within organisational guidelines.			√
11		Supervise general waste containment	This unit of competency covers the skills and knowledge to observe machine operations to ensure quality and conformity of filled or packaged products to standards.	√	√	
12	UK Functional Map	Supervise waste management facilities and services	This unit of competency describes the skills and knowledge required to supervise waste management facilities. This competency may be expected to apply to a worker who has significant team-leading responsibilities. This unit would usually be carried out under managerial supervision, within organisational guidelines.		√	√



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13		Supervise drivers	This unit of competency covers the supervise and coordinate the activities of drivers. In addition, it is necessary to demonstrate the ability to counsel employees about work-related issues and assist employees to correct job-skill deficiencies	√	√	√
14	PI-WM-303E-1	Plan, coordinate and supervise waste collection route	This unit of competency covers the skills and knowledge to plan for direct and indirect waste collection using rear end loaders and hook lift trucks from designated places. It also covers the skills and knowledge to participate in rerouting exercise.	√	√	√
15		Supervise waste collection vehicle depot environment	This unit of competency cover the skills and knowledge to supervise the premises of depot and demonstrate the ability to analyze chart and work orders.	√	√	√
16		Supervise environmental pollution control compliance	This unit of competency covers the skills and knowledge to prepare, review, and update environmental investigation and recommendation reports.	√	√	√
17		Supervise collection and handling of toxic industrial waste	This unit of competency covers the skills and knowledge to oversee the collection and handling of hazardous waste observing prescribed safety procedures.	√	√	√

WSQ CERTIFIED WASTE MANAGEMENT CREW

S/N	Competency Unit Code	Competency Unit Title	Course Descriptor	Waste Management Sub-sector		
				Waste Handling & Transportation	Waste Processing & Recycling	Waste Disposal & Control
1		Perform bulky waste removal services	This unit of competency cover the skills and knowledge to carry out bulky waste collection services	√		
2		Perform collection of general waste from medical health institutions	This unit of competency cover the skills and knowledge to carry out collection of toxic and biohazard waste from medical health institutions	√		
3		Perform rubber tyre recycling process	This unit of competency cover the skills and knowledge to carry out recycling of rubber tyre		√	
4		Perform recycling of construction waste	This unit of competency cover the skills and knowledge to carry out construction waste recycling		√	
5		Perform waste oil recycling process	This unit of competency cover the skills and knowledge to carry out waste oil recycling in a safe working environment		√	
6		Perform waste food recycling process	This unit of competency cover the skills and knowledge to carry out the skills and knowledge to carry out waste food recycling		√	
7		Perform waste metal recycling process	This unit of competency cover the skills and knowledge to carry out the skills and knowledge to carry out waste metal recycling		√	
8		Perform waste plastic recycling process	This unit of competency cover the skills and knowledge to carry out the skills and knowledge to carry out waste plastic recycling		√	
9		Perform waste paper recycling process	This unit of competency cover the skills and knowledge to carry out the skills and knowledge to carry out waste paper recycling		√	
10		Perform waste glass recycling process	This unit of competency cover the skills and knowledge to carry out the skills and knowledge to carry out waste glass recycling		√	
11		Sort fine specific waste streams	This unit of competency cover the skills and knowledge to carry out the skills and knowledge to perform sorting operation according to the type, condition and quality.		√	
12		Perform waste management control	This unit of competency cover the skills and knowledge to conduct waste management operations			√
13		Perform site maintenance	This unit of competency covers the skills and knowledge to inspect equipment or monitor operating conditions, meters, and gauges to determine load requirements and detect malfunctions			√
14		Perform hazardous waste control	This unit of competency covers the skills and knowledge to identify, remove, pack, transport, or dispose of hazardous materials, including asbestos, lead-based paint, waste oil, fuel, transmission fluid, radioactive materials, contaminated soil			√
15		Perform waste treatment	This unit of competency describes the processing or treatment of waste which includes identifying and checking of waste types for processing to ensure absence of non-conforming waste streams and maintaining visual observation of processing to ensure safe operation and optimal processing			√
16		Perform wastewater treatment	This unit of competency covers the disposal of wastewater to sewer. Waste water may be the outcome of treatment at a waste processing facility, treatment plant, or industry source			√
17		Operate plants and machinery	This unit of competency cover the skills and knowledge to operate mechanical, electrical and turbine generating plant and equipment and the ability to response to accidents and emergencies			√



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				Waste Handling & Transportation	Waste Processing & Recycling	Waste Disposal & Control
18	PI-ES-102C-1	Respond to emergency situation	This unit of competency relates to the appropriate response to emergency situations for any new workers at the workplace, possibly delivered as part of an induction programme. On completion, the learner knows the signals when an emergency situation takes place as well as the proper procedures to follow in order to save oneself from possible injury			√
19	PI-PRO-104E-1	Perform basic maintenance works	On completion of this unit, learners will have the knowledge and skills to carry out basic maintenance works in a process plant			√
20	PI-WM-103E-1	Carry out collection of sludge and greasy waste	On completion of this unit, learners will have the knowledge and application skills in preparing for non-toxic sludge and greasy waste collection activities, collecting sludge and greasy waste from grease traps / portable toilets / holding tanks from ships and aircraft / waste sumps, disposing sludge and greasy waste and reinstating tools and equipment.	√	√	
21	UK Functional Map	Perform waste assessment	This unit of competency describes the skills and knowledge required to carry out waste assessment of a generator's waste stream (which includes recycling streams). The assessment process should be conducted in accordance with health and safety principles.	√	√	
22		Perform pneumatic collection of waste	This unit of competency cover the skills and knowledge to carry out pneumatic waste collection	√		√
23		Perform waste collection	This unit of competency covers the competency to perform waste collection and operate equipment that compresses the collected refuse. It should also demonstrate the ability to inspect trucks prior to beginning routes to ensure safe operating condition	√	√	√
24		Maintain equipment and facilities	This unit of competency covers the maintenance of equipment and facilities. It is intended for operational personnel working in waste collection sector of the waste management industry. Personnel are required to operate equipment, carry out preventive maintenance; and perform inspection	√	√	√
25	PI-WM-106E-1	Operate waste collection vehicle to collect waste	On completion of this unit, learners will have the knowledge and application skills in preparing work activities for collecting waste, preparing vehicles (hook-lift and rear end loader) for waste collection, operating waste collection vehicles to collect waste and reinstating work area and vehicle at depot / heavy vehicle park	√	√	√
26	PI-WM-104E-1	Carry out collection of waste and recyclable waste	On completion of this unit, learners will have the knowledge and application skills in preparing waste and recyclable waste collection activities, carrying out waste collection from Central refuse chute, Residential / Commercial / Industrial bin centres, Shophouses / Landed property / Bulky waste / Commercial / Industrial waste, carrying out recyclable waste collection from domestic, Commercial and Industrial premises, discharging waste and recyclable waste, and reinstating work area at depot / heavy vehicle park.	√	√	√
27		Perform industrial waste disposal	This unit of competency cover the skills and knowledge to carry out the disposal of industrial waste according to waste disposal requirement	√	√	√
28		Perform toxic industrial waste disposal	This unit of competency cover the skills and knowledge to handle and dispose toxic industrial waste	√	√	√

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29		Perform collection of horticultural and woodwaste	This unit of competency cover the skills and knowledge to carry out collection of horticultural and woodwaste	√	√	√
30	PI-WM-101E-1	Identify waste types and work hazards	On completion of this unit, learners will have the knowledge and application skills in preparing work activities for collecting and sorting waste, identifying waste and hazards during waste collection and sorting process and reinstating work area on completion of work activities	√	√	√
31	PI-WM-108E-1	Perform sorting of recyclables	This unit of competency covers the skills and knowledge to sort materials, such as metals, glass, wood, paper or plastics into appropriate containers to ensure correct processing and usage at the Material Recovery Facility (MRF). It also includes knowledge to discard inferior or defective products and/or foreign matter, and place acceptable products in containers for further processing.	√	√	√
32		Operate waste recycling and treatment plant	This unit of competency cover the skills and knowledge to carry out operating procedures for safe handling and containment of waste at treatment facilities	√	√	√
33		Operate Co-generation Biomass activities	This unit of competency covers the skills and knowledge to process the waste collected such as woodchip into fine materials that can later be processed to product energy for the premises.	√	√	√
34		Sort mixed municipal solid waste	This unit of competency describes the manual sorting of municipal solid waste, which may occur at source or at a transfer station, materials recycling facility or waste processing plant.	√	√	√