40867 Use specialist rope rescue techniques in complex environments

Kaupae | Level	5
Whiwhinga | Credit	10
Whāinga | Purpose	This skill standard is for people who are required to perform and supervise specialist rope rescue in complex rope rescue environments. People credited with this skill standard are able to: demonstrate specialist techniques in rope rescue; and perform and supervise specialist techniques in complex rope rescue environments to recover a casualty. This skill standard can be used for assessment within qualifications across the Emergency Management sector.
Whakaakoranga me mātua oti | Pre-requisites	Unit standard 6400, *Manage first aid in an emergency situation* or Unit standard 23406, *Provide first aid for trauma and medical emergency situations*; Unit standard 6401, *Provide first aid*; Unit standard 6402, *Provide basic life* support; and Skill standard 40866, *Perform technical rope rescue;* or equivalent knowledge and skill.

Hua o te ako me Paearu aromatawai \| Learning outcomes and assessment criteria

Hua o te ako | Learning outcomes	**Paearu aromatawai |** Assessment criteria
1. Demonstrate specialist techniques in rope rescue.	a. Construct and use an artificial high anchor point to support rope rescue operation.
	b. Construct and operate a highline system as part of a team.
	c. Calculate and use complex mechanical advantage systems to manage heavy loads.
	d. Use a tag line offset or deflection, to control the position of the load and avoid hazards or obstacles.
2. Perform and supervise specialist techniques in complex rope rescue environments to recover a casualty.	a. Develop a plan to recover a casualty in complex rope rescue environments.
	b. Package and extricate a casualty in a complex environment.
	c. Supervise specialist techniques in complex environments to recover a casualty.

Pārongo aromatawai me te taumata paearu | Assessment information and grade criteria

Assessment specifications:

- Assessment of this standard must be consistent with:
  - current legislation.
  - organisation's Standard Operating Procedures (SOPs).
- Assessment must align with current best practice as described in industry manuals and texts. Various examples are listed to the resources section below.
- This standard may be assessed in simulated conditions.
- Assessment criteria 1b – either Kootenay or Reeving highline systems may be used.

Definitions:

- *Artificial high anchor point:* improvised or proprietary (gin-pole, A-frame or multipod).
- *Complex environment:* Environments as outlined in the Australian and New Zealand National Council for Fire and Emergency Services (AFAC) guidelines as specialised vertical environments: "Those that involve complex-3-dimmensional rigging solutions and/or rescue operators with advanced on rope mobility skills to safely access, move within and extricate from. A specialised environment may include:
  - vertical heights greater than 100m;
  - complex multipoint anchoring;
  - tower lead climbing;
  - tree climbing;
  - rescuer based pick-off techniques;
  - line and personal mobility skills (e.g. rope to rope, climbing);
  - rappelling greater than 100m;
  - sophisticated deviations, offsets and highlines;
  - man-made features such as large scale high rise buildings, lift shafts, tensile structures, cranes, enclosed spaces, complex mine shafts, and high hazard industrial buildings (e.g. chemical, electrical, biological, radiation, heat hazards); and
  - natural features such as complex cave systems, ice cliffs, snow cornices, high volume waterfalls and straight or high cliffs with complex features (e.g., large overhangs)."

Ngā momo whiwhinga | Grades available

Achieved.

Ihirangi waitohu | Indicative content

- Twin tensioned rope systems.
- Artificial high anchor points: types (gin-poles, A-frames and multipods); principles of directionals; equipment; load testing and stability; safe set-up and takedown; and applications in confined space and over-edge rescues.
- Highline systems: principles of tensioned systems and rope dynamics; types of highlines; system components; load calculations and safety factors; communication protocols; and risk management.

- Complex mechanical advantage systems: theory of mechanical advantage and force manipulation; identification and use of compound and complex systems; pulley systems; friction consideration; anchoring and load testing; and practical applications.
- Tag line offset or deflection: purpose and applications of tag line systems; setup and operation; managing swing and pendulum effects; directional control and movement of stretcher systems; and communication and coordination in multi-point movement.
- Rescue plan: scene assessment and hazard identification; casualty status and access considerations, rescue vs. recovery decision making, rope system selection based on terrain; resource planning; and documentation and communication.
- Packaging and extracting casualties: packaging techniques; extraction through vertical shafts, over edges, or from confined spaces; securing casualties; and environmental considerations.
- Supervision: roles and responsibilities; safety oversight; delegation and coordination in rescue teams; and post rescue debrief and evaluation.

Rauemi | Resources

Where the resources have been updated, please refer to the latest version.

- Civil Defence and Emergency Management Act 2002. https://www.legislation.govt.nz/act/public/2002/0033/latest/whole.html.
- Delaney, R. (2022). *Physics for roping technicians*. https://www.ropelab.com.au/files/physics.pdf.
- Frank, J. A [Ed]. (2021*). CMC rope rescue technician manual* (6th ed.). https://www.cmcpro.com/equipment/rope-rescue-manual/#learn_more.
- Health and Safety at Work Act 2015. Parliamentary Council Office, Te Tari Tohutohu Parēmata. https://www.legislation.govt.nz/act/public/2015/0070/latest/DLM5976660.html.
- Prattley, G. (2020). *Rope rescue and rigging: Field guide*. Over The Edge Rescue.
- Rigging Lab. Free resources. https://rigginglabacademy.com/resources/.
- Rhodes, P. (2020). *A practitioner's study: About rope rescue rigging* (2nd ed). Rhodes.
- Rhodes, P. (2020). *A practitioner's study – volume 2: Confined space rescue considerations for industry, construction and fire/rescue.* Rhodes.
- Rhodes, P. (2019). *A practitioner's study – volume 3: Minimalist wilderness rigging REMS and search and rescue rope rescue skills*. Rhodes.
- Worksafe. (2019). *Best practice guidelines for working at height in New Zealand.* https://www.worksafe.govt.nz/topic-and-industry/working-at-height/working-at-height-in-nz/.

Pārongo Whakaū Kounga | Quality assurance information

Ngā rōpū whakatau-paerewa | Standard Setting Body	Toitū te Waiora Community, Health, Education, and Social Services Workforce Development Council
Whakaritenga Rārangi Paetae Aromatawai | DASS classification	Community and Social Services > Specialist Rescue > Rope Rescue
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga | CMR	0024

Hātepe | Process	**Putanga |** Version	**Rā whakaputa |** Review Date	**Rā whakamutunga mō te aromatawai |** Last date for assessment
Rēhitatanga | Registration	1	25 September 2025	N/A
Kōrero whakakapinga | Replacement information	N/A		
Rā arotake | Planned review date	31 December 2030		

Please contact Toitū te Waiora Community, Health, Education, and Social Services Workforce Development Council at qualifications@toitutewaiora.nz to suggest changes to the content of this skill standard.