1XXXXX Manage Irrigation Scheduling and Assess Seasonal Efficiency

Kaupae | Level	4
Whiwhinga | Credit	15
Whāinga | Purpose	The skill standard is for people working or seeking skills in irrigation scheduling and monitoring. People credited with this skill standard will be able to plan and manage seasonal irrigation scheduling and assess the efficiency of water usage on crop needs, climate trends and conducting cost-benefit analysis to inform efficient, sustainable water application across a season. This skill standard has been developed to align with the New Zealand Certificate in Irrigation System Management (Level 4)

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

Hua o te ako | Learning outcomes	**Paearu aromatawai |** Assessment criteria
1. Calculate and schedule irrigation event timing and water depth based on soil, crop, and climate data.	a. Calculate an irrigation event depth and return period using soil moisture, crop needs, and climate data.
2. Monitor and document a seasonal irrigation schedule that responds to environmental conditions and meets operational and regulatory requirements	a. Create a seasonal irrigation schedule that accounts for climate changes and crop demand across a season.
	b. Document the schedule to comply with operational requirements, environmental regulations and sustainability practices.
3. Analyse in season irrigation costs and benefits to optimise water use efficiency.	a. Monitor factors like rainfall, temperature, and soil moisture to guide schedule adjustments. b. Update the irrigation schedule to enhance water use and support crop health. c. Assess costs of water application, including energy, labour, and resources.
	d. Evaluate benefits based on crop response and yield projections to determine irrigation effectiveness.
4. Recommend adjustments to irrigation practices based on post season performance and value outcomes.	a. Identify areas for improvement in irrigation practices using performance data.
	b. Offer evidence-based recommendations for future scheduling, considering performance analysis and sustainability goals.

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

Assessment specifications:

Akōnga/learners must be collected from commercial irrigation systems, using naturally occurring evidence.

Akōnga/learners must be assessed using naturally occurring evidence.

Activities can be assessed against existing, new or modified irrigation system – applicability.

The irrigation system is for an agricultural or horticultural property, sports turf surface, landscape, golf course, amenities and irrigated wastewater but are not limited to.

All activities and evidence must meet the requirements of accepted industry practice, worksite safety procedures, and any subsequent amendments to legislation.

Evidence for all outcomes must be presented in accordance with; New Zealand Piped Irrigation Systems Design Code of Practice; and Irrigation; available from the Irrigation New Zealand website, http://irrigationnz.co.nz/ and any subsequent amendments.

Providers must give due consideration to embedding ngā kaupapa (principles) o Te Tiriti o Waitangi when designing delivery activities relevant to this standard. These principles are outlined in Guidelines for Providers: Embedding Tirohanga Māori.

Providers must give due consideration to the needs and values of Pacific peoples and other cultural groups when designing delivery activities relevant to this standard, ensuring practices are inclusive and equitable.

Definitions:

Accepted industry practice refers to approved codes of practice and standardised procedures accepted by the irrigation industry as examples of best practice.

Worksite procedures refer to documented procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to standard operating procedures, site safety procedures, equipment operating procedures, quality assurance procedures, housekeeping standards, procedures to comply with legislative and local body requirements.

Ngā momo whiwhinga* | *Grades available

Achieved.

Ihirangi waitohu | Indicative content

Determine Timing & Depth

- Calculate crop water demand using evapotranspiration (ET), rainfall and soil-moisture balance.
- Use weather forecasts, soil-moisture sensors and scheduling software to set irrigation events.
- Match depth and frequency to crop growth stage, root-zone depth and soil water-holding capacity.
- Define soil- and crop-specific trigger points for irrigation and refill.

Develop & Adjust Seasonal Schedules

- Build a seasonal calendar from climate data, planting dates and system limits.
- Include contingencies for extreme weather, water shortages and equipment faults.
- Apply adaptive management: adjust schedules in real time based on soil-moisture trends, forecasts and crop stress.
- Interpret monitoring data (sensor readings, rainfall logs) to update timing and volumes.

Evaluate Irrigation cost benefit

- Use cost benefit analysis tools to compare irrigation costs against yield and water productivity.
- Calculate marginal returns of each irrigation event and identify diminishing returns.
- Recommend schedule or system adjustments to optimise cost-benefit and resource efficiency.

Ensure Efficiency & Alignment with the codes of practice

- Reference efficiency benchmarks from the NZ Piped Irrigation System Performance Assessment Code.
- Verify practices comply with the regional water-use regulations.

Rauemi | Resources

Codes of Practice relevant to this skill standard include but are not limited to:

- Irrigation New Zealand website, http://irrigationnz.co.nz/
    - The New Zealand Piped Irrigation Systems Design Code of Practice

- The New Zealand Piped Irrigation System Performance Assessment Code of Practice
- The New Zealand Piped Irrigation Systems Design Standards
- The New Zealand Piped Irrigation Systems Installation Code of Practice
- The Irrigation New Zealand Guideline for Irrigation Management
- The Irrigation New Zealand Design Brief Checklist
- The Irrigation New Zealand Guideline for an Operations and Maintenance Manual
- Other

Legislation relevant to this skill standard includes but is not limited to:

- Site specific water resource consent or water supply agreement, weather data (e.g. NIWA), crop descriptions and soil profile data sheets (e.g. SMap)
- Health and Safety at Work Act 2015;
- Resource Management Act 1991;
- National Policy Statement for Freshwater Management 2014;
- Various Regional Council Land and Water Regulations

and any subsequent amendments or replacements.

Pārongo Whakaū Kounga | Quality assurance information

Ngā rōpū whakatau-paerewa | Standard Setting Body	Muka Tangata – People Food and Fibre Workforce Development Council
Whakaritenga Rārangi Paetae Aromatawai | DASS classification	Water Industry > Irrigation
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga | CMR	0052

Hātepe | Process	**Putanga |** Version	**Rā whakaputa |** Review Date	**Rā whakamutunga mō te aromatawai |** Last date for assessment
Rēhitatanga | Registration	<type here>	[dd mm yyyy]	[dd mm yyyy]
Arotakenga | Review	<type here>	[dd mm yyyy]	[dd mm yyyy]
Kōrero whakakapinga | Replacement information	This skill standard will replace Unit standard 28935 Carry out seasonal irrigation system scheduling for an irrigation site		
Rā arotake | Planned review date	31 December 2030		

Please contact Muka Tangata at qualifications@mukatangata.nz to suggest changes to the content of this skill standard.