40124 Assess and manage risks to freshwater from horticultural production

Kaupae | Level	4
Whiwhinga | Credit	10
Whāinga | Purpose	This skill standard is for people who are growers, horticultural advisors, auditors, and horticulture ākonga/learners. Ākonga/learners will be able to determine freshwater values and uses, assess the potential risks to them posed by horticultural production systems, then propose suitable mitigations to the risks posed. Ākonga/learners who complete this skill standard will be familiar with industry environmental codes of practice and guidance. This skill standard can be used in a range of qualifications and/or micro-credentials for the horticultural sector

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

Hua o te ako | Learning outcomes	**Paearu aromatawai |** Assessment criteria
1. Assess the potential risks from horticultural production activities on freshwater values and uses, and the impact on ecosystem health.	a. The values and uses of freshwater are described. b. The potential risks to the values and uses of freshwater are outlined along with the potential consequences if not managed. c. An evaluation is conducted to determine each risk's potential impact on overall ecosystem health.
2. Assess on-farm biophysical and management risk factors from horticultural production systems that contribute to freshwater risks.	a. Describe biophysical and management risk factors associated with cultivation, other soil disturbance, farm drains, nutrient use, irrigation use, washwater, and greenhouse nutrient discharge. b. Assess and prioritise potential on-farm biophysical and management risk factors linked with cultivation, other soil disturbance, farm drains, nutrient use, irrigation use, washwater and greenhouse nutrient discharge according to their impact on freshwater quality.

3. Recommend practices to manage biophysical and management risk factors to freshwater from horticultural production systems.	a. Evaluate erosion and sediment control, farm drains, nutrient management, irrigation management washwater and greenhouse nutrient discharge management as freshwater management practices. b. Recommend appropriate freshwater management practice for the risk profile presented. c. Recommend appropriate monitoring practice for the risk profile presented.

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

Assessment specifications:

The skills outlined in the assessment criteria must be applied to one or more horticulture production systems.

Types of horticulture production systems include – outdoor soil cultivation, indoor (hydroponic), orchard trees/vines, on-farm produce washing facility.

Learning outcomes two and three must be completed in accordance with industry codes of practice and guidance.

Industry references applicable to this standard include –

- Industry codes of practice and guidance
- NZGAP Environment Management System add-on

Terms and definitions

Freshwater risks are risks to the receiving environment, from activities like horticulture on land, including sediment loss, nutrient loss, habitat loss.

Ecosystems are biological communities of living organisms, such as plants, animals, and micro-organisms found in lakes, ponds, rivers, streams and wetlands. These ecosystems play key roles in the environment by providing biological habitats, regulating water quality, supporting biodiversity and hold cultural significance to Māori.

Biophysical risk factors are risks factors associated with the natural environment, for example, terrain, soils, climate.

Management risk factors are risk factors associated with management of a horticulture operation, for example, on-farm practices, systems, critical source areas.

Mahinga kai is to ‘work the food’.

Freshwater values are characteristics, attributes and qualities of freshwater bodies and their receiving environments that are of cultural, social, economic or ecological significance.

Ngā momo whiwhinga | *Grades available*

Achieved.

Ihirangi waitohu | Indicative content

Learning outcome 1

Assess the potential risks from horticultural production activities on freshwater values and uses, and the impact on ecosystem health.

- Understanding the current state of a local river or stream.
  - monitoring sites for states and trends e.g. nitrates, phosphorous, sediment and E. coli.
- Freshwater values and uses.
  - Ecosystem health e.g. native or threatened species and habitats.
  - Cultural value/uses e.g. supporting practices of manaakitanga and mahinga kai.
  - Impact of farming activities.

Learning outcome 2

Assess on-farm biophysical and management risk factors from horticultural production systems that contribute to freshwater risks.

- Cultivation and other soil disturbance.
- Examination of soil types to determine their vulnerability to erosion.
- Effect of rainfall as well as slope and soil types.
- Nutrient use.
- Importance of nutrients for plant growth.
- Processes by which nutrients can be lost to freshwater.
- Nutrient use risk factors for an operation.
- Irrigation use.
- Efficiency of various irrigation systems.
- Farm drains, washwater and greenhouse nutrient discharges.
- Activities associated with greenhouse discharges that may be subject to local council rules.
- Use of decision and analytical tools (including industry codes of practice and other industry guidance) to analyse on-farm biophysical and management risk factors.

Learning outcome 3

*Recommend practices to manage biophysical and management risk factors to freshwater from horticultural production systems***.**

Examples of record keeping evidence for:

- Cultivation and other soil disturbance
- Nutrient use
- Irrigation use
- Farm drains.

Wastewater and greenhouse nutrient discharges

Rauemi | Resources

Industry codes of practice and guidance
NZGAP Environment Management System add-on
DairyNZ resource drains-waterway-technote.pdf (dairynz.co.nz).

Pārongo Whakaū Kounga | Quality assurance information

Ngā rōpū whakatau-paerewa | Standard Setting Body	Muka Tangata, People Food and Fibre Work Force Development Council
Whakaritenga Rārangi Paetae Aromatawai | DASS classification	Agriculture, Forestry and Fisheries > Horticulture > Production Horticulture
Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga | CMR	CMR 0052

Hātepe | Process	**Putanga |** Version	**Rā whakaputa |** Review Date	**Rā whakamutunga mō te aromatawai |** Last date for assessment
Rēhitatanga | Registration	1	25 July 2024	N/A
Kōrero whakakapinga | Replacement information	N/A		
Rā arotake | Planned review date	31 December 2029		

Please contact Muka Tangata People, Food and Fibre – Work Force Development Council at qualifications@mukatangata.nz to suggest changes to the content of this skill standard.