Thinking about causes and effects of issues

Example answers

Example issues or human impacts	Causes and why we have this issue	Effects of this issue	Alternative possibilities and kaitiakitanga	Future consequences of alternatives
Issues for drinking water and supply				
More demands for water but limited water supply	Lack of care and kaitiakitanga for water sources, pollution, population growth and other issues. Often there is a need for more water in summer when there is less water available.	Not having enough water to go around for every person and business. Water restrictions necessary (limits on what you can use water for especially in summer).	Everyone is much more careful and smarter with how they use water. Water conservation. We look after our precious water sources and prevent pollution and problems in them.	There is enough water for everyone now and in the future.
Climate change, more extreme weather events	Carbon emissions through travel, food waste, agriculture, electricity generation and other causes. Water vapour and methane emissions through farming and transportation.	Climate change could affect water supplies, cause more frequent droughts and extreme weather events. This could mean less reliable access to clean drinking water. Less frequent rain could lower lake and river levels. There could be hotter, drier summers.	Sustainable, low-carbon and reduced-methane farming methods, composting, sustainable travel options such as cycling, busing and walking. Water conservation.	Sustainable, low-carbon and reduced-methane farming methods, composting, sustainable travel options such as cycling, busing and walking. Water conservation.
Other water-related issues				
Stormwater run-off	Stormwater run-off prevents flooding in urban areas.	Pollutants from stormwater run-off can make water unsafe to drink or swim in.	Low-impact stormwater design, rain gardens, wetland restoration, green roofs, other new stormwater technologies. Monitoring of water quality. Kaitiakitanga and public education to reduce pollution.	Reducing run-off will reduce pollution, improve water quality and improve the health of aquatic animals and ecosystems.

www.smartwater.org.nz/smart-water-schools

SCIENCE LEARNING HUB
POKAPŪ AKORANGA PŪTAIAO
sciencelearn.org.nz

Smart Water
starts with you!

Find your flow: Water issues and effects Activity 8

Thinking about causes and effects of issues

Example answers

Example issues or human impacts	Causes and why we have this issue	Effects of this issue	Alternative possibilities and kaitiakitanga	Future consequences of alternatives
Other water-related issues				
Hydroelectric power stations, dams and lakes	Dams provide the ability to regulate the flow to hydroelectric power stations and to store large amounts of water for water supply. Electricity production: hydro power produces large amounts of electricity.	Dams can dramatically change water flow patterns in rivers, lakes and streams. They can help sediment to settle but cause issues too. They reduce the flow of water, increasing the time to get to the sea, leading to increased algal growth and decreased water quality. Dams can be a barrier for fish, preventing them from completing their life cycles. Hydro lakes cause increases in algal growth and slowing down of water transit, changing flows and habitats for aquatic animals.	Renewable energy solutions such as solar power and wind power. Alternative electricity generation, energy self-sufficiency, new technologies. Kaitiakitanga and monitoring of water quality.	Avoiding constructing new hydro dams and lakes would lead to stable levels or increases in biodiversity, more water security, water in the landscape's functions are retained. More renewable power solutions will mean less pollution and healthier, cleaner water.
Farming, horticulture and agriculture	Provides foods: meat, dairy and other products.	Poorly managed sheep, beef and dairy farms contribute to poor water quality. Traditionally managed farms usually cause increases in nutrients such as phosphates, nitrates and bacteria, making water unsafe to drink or swim in. Farms can also produce bacteria and E. coli problems. Farming and horticulture can also involve the use of chemicals that can pollute waterways.	Alternative farming practices, less-intensive farming (fewer animals on more land), fencing and planting near waterways, regenerative farming methods. Keeping stock out of waterways. Riparian planting. Nutrient management, water testing and water quality limits. Good pasture management systems, effluent ponds and management. Organic horticulture with minimal use of chemicals. Kaitiakitanga and education.	Less-intensive farming will improve water quality and nutrient levels. Alternative farming practices, organic farms and low chemical horticulture can improve or maintain the health of waterways.

www.smartwater.org.nz/smart-water-schools

SCIENCE LEARNING HUB
POKAPŪ AKORANGA PŪTAIAO
sciencelearn.org.nz

Smart Water
starts with you!

Thinking about causes and effects of issues

Example answers

Example issues or human impacts	Causes and why we have this issue	Effects of this issue	Alternative possibilities and kaitiakitanga	Future consequences of alternatives
Other water-related issues				
Invasive weeds and pest plants in waterways	People introducing pest plants through their gardens, poor understanding of weed species.	Can overrun catchments and alter water flow.	Remove pest plants using sustainable, healthy alternatives. Plant native plants instead of pest plants. Kaitiakitanga and public education.	Reduced and controlled weeds: waterways remain healthy, improved flow and water quality.
Sewage or wastewater leaks	Sewage treatment plants and systems deal with our waste.	Wastewater and sewage leaks can lead to bacteria, viruses, chemicals and microplastics entering waterways. This can cause people to get very sick.	Alternative wastewater treatment, fixing wastewater leaks and issues, private wastewater treatment systems powered by worms and sustainable technologies.	Less sewage and effluent mean less pollution and water will be cleaner and healthier.
Deforestation – land clearance	Clearance for farming and development	Soil erosion and sedimentation can cause more nutrients like phosphorus to enter waterways, making it unsafe to drink/swim in.	Planting trees and plants, especially near waterways.	Planting and revegetation improve water quality and biodiversity.
Discharges from point sources such as factory wastewater, sewage, paper mills	Factories and industry not disposing of waste ethically or unknowingly discharging harmful substances.	Discharges and nutrients can cause water pollution and make people and animals sick	Controlling discharges. Monitoring of water quality.	Fewer discharges will mean less pollution and water will be healthier.

SCIENCE LEARNING HUB
POKAPŪ AKORANGA PŪTAIAO
sciencelearn.org.nz

Smart Water
starts with you!

Thinking about causes and effects of issues

Example answers

Example issues or human impacts	Causes and why we have this issue	Effects of this issue	Alternative possibilities and kaitiakitanga	Future consequences of alternatives
Other water-related issues				
Urban influences and roads	People need to travel around the region for work and play.	Heavy metals, habitat destruction.	Sustainable transport options such as cycling, walking and buses.	Fewer urban influences and heavy metals will mean less pollution and water will be safer to interact with and swim in.
Sediment from development and earthworks	A little sediment is natural in waterways. Increased sediment arises from earthworks and erosion.	Excessive sediment can change habitat for aquatic animals and make it difficult to see and hunt for fish.	Sediment control measures such as silt fences and ponds, drains and diversions. Monitoring of water quality.	Less sediment will mean more biodiversity and increased suitable habitat for aquatic animals.

SCIENCE LEARNING HUB
POKAPŪ AKORANGA PŪTAIAO
sciencelearn.org.nz

Smart Water
starts with you!