



# WAIRARAPA Glistening Water

Education Resources

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This document is to help teachers use resources from the Wairarapa Glistening Water project in their teaching activities. Though the document is primarily aimed at primary school teachers (Years 1-8) and high school teachers (Years 9-11) in Aotearoa New Zealand, the Wairarapa Glistening Water resources are also suitable for other age levels and audiences worldwide.

The document is organised by high school subject areas, with curriculum links and example learning activities provided for each subject. World Wetlands Day is highlighted at the end of the document, as the Wairarapa Glistening Water resources can effectively be used in education around this event.

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Ma te rongo, ka mohio,  
Ma te mohio, ka mārama,  
Ma te mārama, ka matāu,  
Ma te matāu ka ora

By awareness comes knowledge,  
By knowledge comes understanding,  
By understanding comes wisdom,  
By wisdom comes wellbeing.

## Overview of the Resources

The Wairarapa Glistening Water digital wetlands was codesigned by Ngāti Kahungunu ki Wairarapa and Mairéad de Róiste and researchers from the SpatialThink lab at Te Herenga Waka – Victoria University of Wellington. It draws on mātauranga Māori, indigenous science and Western science, and weaves together strands and layers of kōrero from different wetlands to uncover meaning and develop understanding of Wairarapa Moana.

The resources include:

- **Interview Videos** – Interviews with people from Ngāti Kahungunu ki Wairarapa with kōrero about their connection to the wetlands and the locations themselves. Themes include local histories and geography, art and culture, pūrākau (ancient legends/stories), and cultural practices.
- **Map Tour** – See maps and images of wetlands in the Wairarapa and hear waiata (song) and kōrero (stories) of each repo (wetland). Transcribed audio is also included.
- **Swipe Maps** – Two different maps are overlaid, and you can ‘swipe’ from one to the other to easily compare the two. The swipe maps available compare historical and current digital maps, and others show the pre-human and present-day extent of the wetlands in the Wairarapa.
- **Site Videos** – These 3D Panoramic videos showcase 5 wetlands in two different seasons with associated waiata (song), kōrero (stories) and natural sounds of each repo (wetland). These are the same sites on the Map Tour. Hosted on YouTube, viewers can change the viewing angle of the videos.
- **Virtual Reality (VR) Application** – This VR app allows you to virtually visit five key wetlands in the Wairarapa and experience them in two different seasons. The audio includes waiata and kōrero about each wetland by kaumātua from Ngāti Kahungunu ki Wairarapa. A VR Quest 2 headset is required to use the application available from Ngāti Kahungunu ki Wairarapa.

## Subject Areas

### Aotearoa NZ's Histories

The Wairarapa Glistening Water resources align well with this subject area, providing Māori perspectives on Aotearoa New Zealand’s history and examples of how colonisation and settlement have changed land use and people’s lived experiences.

#### [NCEA Links](#)

The Wairarapa Glistening Water resources can support teaching and learning activities associated with the following NCEA assessments in history from 2024:

History 1.1 Engage with a variety of primary sources in a historical context (92024, Internal)

History 1.2 Demonstrate understanding of the significance of a historical context (92025, Internal)

History 1.3 Demonstrate understanding of historical concepts in contexts of significance to Aotearoa New Zealand (92026, External)

History 1.4 Demonstrate understanding of perspectives on a historical context (92027, External)

### [Curriculum Links \(Years 1-10\)](#)

The Wairarapa Glistening Water resources can support teaching and learning activities associated with the Aotearoa New Zealand's histories curriculum (Years 1-10):

The Aotearoa NZ's histories curriculum has a three-part structure of **Understand, Know, Do**, which weave together to describe the learning that matters.

#### **Understand**

Through building knowledge about contexts and drawing on inquiry practices, I have a broader and deeper understanding that:

- Māori history is the foundational and continuous history of Aotearoa New Zealand
- Colonisation and settlement have been central to Aotearoa New Zealand's histories for the past 200 years
- The course of Aotearoa New Zealand's histories has been shaped by the use of power
- Relationships and connections between people and across boundaries have shaped the course of Aotearoa New Zealand's histories

## Know and Do

Selected Know and Do aspects that can be connected to the Wairarapa Glistening Water resources for Phases 1-4 are identified in the table below, but you may be able to make other connections.

Phase/ Years	Know	Do
Phase 1/ Years 1-3	<p><b>Rohe and local contexts</b> I have built my knowledge of stories about the people, events, and changes that have been important in my local area, including knowledge of the stories iwi and hapū share about their history in the rohe.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b> <b>Place and environment</b> Tangata whenua are deeply connected to the local area. Naming places was key to establishing and maintaining mana and tūrangawaewae. Many of the names of geographical features, towns, buildings, streets, and places tell stories. Sometimes there is more than one story.</p>	<p>In my learning in Aotearoa New Zealand’s histories, I can:</p> <ul style="list-style-type: none"> <li>• retell a story from the past and talk about how other people might tell it differently</li> <li>• use historical sources, giving deliberate attention to mātauranga Māori sources, to help answer my questions about the past</li> <li>• make observations about how people have acted in the past and how they act today.</li> </ul>
Phase 2/ Years 4-6	<p><b>Rohe and local contexts</b> I have built my knowledge of stories about the people, events, and changes that have been important in my local area, including knowledge of the stories iwi and hapū share about their history in the rohe.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b> <b>Place and environment</b> People adapted their technologies and tools to the new environment of Aotearoa New Zealand.</p>	<p>In my learning in Aotearoa New Zealand’s histories, I can:</p> <ul style="list-style-type: none"> <li>• construct an historical sequence of related events and changes, show how long ago they happened, and say how other people might construct the sequence differently</li> <li>• use historical sources, giving deliberate attention to mātauranga Māori sources, to gather evidence to answer my questions about the past. I can identify views that are missing and note how this may affect my answers</li> <li>• identify the attitudes and values that motivated people in the past and compare them with attitudes and values of today.</li> </ul>

<p style="text-align: center;"><b>Phase 3/Years 7-8</b></p>	<p><b>Rohe and local contexts</b> I have built my knowledge of stories about the people, events, and changes that have been important in my local area, including knowledge of the stories iwi and hapū share about their history in the rohe.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b></p> <p><b>Place and environment</b> Māori cared for and transformed te taiao, and expressed their connection to place by naming the land and its features.</p>	<p>In my learning in Aotearoa New Zealand’s histories, I can:</p> <ul style="list-style-type: none"> <li>• construct a narrative of cause and effect that shows relationships between events. By comparing examples over time, I can identify continuity or changes in the relationships. I can recognise that others might interpret these relationships differently</li> <li>• use historical sources with differing perspectives on the past, giving deliberate attention to mātauranga Māori sources. I can recognise that the sources may not fully answer my questions, and that my answers are themselves interpretations</li> <li>• make informed ethical judgements about people’s actions in the past, basing them on historical evidence and taking account of the attitudes and values of the times, the challenges people faced, and the information available to them.</li> </ul>
<p style="text-align: center;"><b>Phase 4/Years 9-10</b></p>	<p><b>Rohe and local contexts</b> I have built my knowledge of stories about the people, events, and changes that have been important in my local area, including knowledge of the stories iwi and hapū share about their history in the rohe.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b></p> <p><b>Place and environment</b> Settlers transformed and later cared for the natural world, and renamed places and features to reflect their own cultural origins. Widespread public awareness and collective action about damage to the environment became most strongly evident in the late twentieth century.</p>	<p>In my learning in Aotearoa New Zealand’s histories, I can:</p> <ul style="list-style-type: none"> <li>• construct a narrative of cause and effect that shows relationships between events. By comparing examples over time, I can identify continuity or changes in the relationships. I can recognise that others might interpret these relationships differently</li> <li>• use historical sources with differing perspectives and contrary views (including those that challenge my own interpretation), giving deliberate attention to mātauranga Māori sources. I can recognise that the sources available may not capture and fairly represent the diversity of people’s experiences</li> <li>• make informed ethical judgements about people’s actions in the past, basing them on historical evidence and giving careful consideration to the complex predicaments people faced, what they knew and expected, the attitudes and values of the times, and my own attitudes and values.</li> </ul>

### Example Learning Activities

Watch the videos of kōrero and discuss these Māori perspectives on the history of local areas. Watching the YouTube video about tuna (eels):

- Describe the narrators’ experience of catching tuna in the Wairarapa. What is important to them about this?



- How has the practice changed over time, and why? (e.g., other land use or resource pressures due to pākehā activities in the area)

Using the Wairarapa Moana map tour and listening to the narrators' kōrero (stories) about the repo (wetlands):

- Place names – Choose one Māori place name from the map tour that is described in the kōrero. What is its meaning? What do place names tell us about how Māori are connected to these places?
- Atua – Choose one wetland. Which atua (gods/ancestors) are described in the kōrero connected with the place? What are their roles?
- Based on the kōrero – what is important about these wetlands to Māori in the Wairarapa? How do Māori relate to these places?

The videos are also a good source for discovering local histories, for example, *The Battle of the Lakes and Recollections* by Nelson Rangī.

Use the Wairarapa Glistening Water Map Tour and videos to explore ideas of mana, whakapapa, and tūrangawaewae.

Invite local kaumātua, kuia, and long-term residents of the area to speak about the history, stories, and tikanga of the wetlands and what has changed and stayed the same over time.

Watch the video *Tuku Rangatira – A Chiefly Gift* and hear Haami Te Whaiti tell the story of colonisation of the Wairarapa and the history of Lake Wairarapa since 1896 when Ngāti Kahungunu ki Wairarapa gifted Lake Wairarapa to the Crown as a tuku rangatira – a chiefly gift.

## Geography and Social Sciences

The Wairarapa Glistening Water resources focus on particular wetlands in the Wairarapa, and many of them are map-based, so they lend themselves well to teaching both physical and human aspects of geography.

Through interacting with the resources, students can learn about Māori cultural values of wetlands and explore how Māori and colonial land uses have changed the landscape over time.

### [Geography NCEA Links](#)

The Wairarapa Glistening Water resources can support teaching and learning activities associated with the following NCEA assessments in geography from 2024:

Geography 1.1 Demonstrate understanding of the spatial distribution of phenomena and its impacts within te taiao (91932, Internal)

Geography 1.2 Explore te taiao using data (91933, Internal)

Geography 1.4 Demonstrate understanding of geographic decision-making in Aotearoa New Zealand or the Pacific (91935, External)

## Social Sciences Curriculum Links (Years 1-10)

The Wairarapa Glistening Water resources can support teaching and learning activities associated with the social sciences learning area of Te Mātaiaho, the refreshed New Zealand Curriculum. Te Mātaiaho has a three-part structure of **Understand, Know, Do**, which weave together to describe the learning that matters.

### Understand

- People’s lived experiences have been shaped by the use and misuse of power.
- People hold different perspectives on the world depending on their values, traditions, and experiences.
- People participate in communities by acting on their beliefs and through the roles they hold.
- Interactions change societies and environments.

### Know and Do

Selected Know and Do aspects that can be connected to the Wairarapa Glistening Water resources for Phases 1-4 are identified in the table below, but you may be able to make other connections.

Phase/ Years	Know	Do
Phase 1/ Years 1-3	<p><b>Rohe and local contexts</b> I have built my knowledge about social, economic, and environmental issues for iwi, hapū, and others in the community.</p> <p><b>Ngā ahurea me te tuakiri kiritōpū</b> <b>Culture and collective identity</b> People express their culture through their daily lives and through stories about their past.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b> <b>Place and environment</b> Places and environments are often significant for individuals and groups. People express their connection to places in different ways.</p>	<p>In my learning in te ao tangata   social sciences, I can:</p> <ul style="list-style-type: none"> <li>• generate questions that reflect my curiosity about people and communities and that can’t be answered by a simple yes or no.</li> <li>• define some social science concepts and explain how they relate to an investigation.</li> <li>• use at least two different types of information from a variety of sources</li> <li>• say what I think using kind words</li> <li>• listen to other people’s stories and points of view</li> <li>• talk about how people do things in different ways and understand that my way is not the only way.</li> <li>• communicate the information I have sorted about a topic or investigation to others and notice their reaction</li> <li>• reflect on the communication process I have used and how effectively I have communicated.</li> <li>• work with others to create a social action plan and explain the actions we think are best to take.</li> </ul>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Phase 2/Years 4-6</p>	<p><b>Rohe and local contexts</b> I have built my knowledge about social, economic, and environmental issues for iwi, hapū, and others in the community.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b> <b>Place and environment</b> People interact with places, resources, and environments for personal, social, cultural, economic, and spiritual reasons.</p> <p>People’s actions can have long-term positive and negative environmental impacts on places, the people who live in them, and the wider world.</p>	<p>In my learning in te ao tangata   social sciences, I can:</p> <ul style="list-style-type: none"> <li>• ask a range of appropriate questions to help focus an investigation on social issues and ideas.</li> <li>• define and explain concepts that are relevant to what I am learning about, using relevant examples.</li> <li>• use appropriate, relevant sources (e.g., oral stories and written research)</li> <li>• use literacy and numeracy tools (e.g., graphic organisers) to sort and group findings.</li> <li>• state my opinion, reflect on how I formed it, and acknowledge that it is one of many</li> <li>• remain open to changing my opinion based on evidence</li> <li>• discuss similarities and differences between people’s views and compare these views to my own.</li> <li>• communicate ideas I have sorted into key themes and present them logically, using examples as evidence and social science conventions</li> <li>• reflect on the communication process I have used and how effectively I have communicated.</li> <li>• work with others to generate a range of ideas to solve a problem</li> <li>• refer to actions others have taken, and the impact they have had, to help justify a social action plan</li> <li>• evaluate the outcomes of the actions I have taken with others.</li> </ul>
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<p>Phase 3/Years 7-8</p>	<p><b>Rohe and local contexts</b>  I have built my knowledge about social, economic, and environmental issues for iwi, hapū, and others in the community.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b>  <b>Place and environment</b>  People’s connections to places, resources, and environments can generate cooperation or lead to disputes over rights and responsibilities, with differing consequences.</p>	<p>In my learning in te ao tangata   social sciences, I can:</p> <ul style="list-style-type: none"> <li>• ask a range of questions that support meaningful investigations into social issues and ideas.</li> <li>• make connections between concepts by exploring different contexts.</li> <li>• gather information from primary and secondary sources, considering their reliability and identifying their limitations</li> <li>• use literacy and numeracy tools (e.g., graphic organisers) to sort and group findings.</li> <li>• engage with people in respectful and ethical ways in order to understand their perspectives</li> <li>• analyse and categorise people’s values, viewpoints, and perspectives, including my own</li> <li>• identify how language and messaging can be used to inform, to misinform, and to position people alongside particular values and perspectives.</li> <li>• communicate information, using social science conventions (e.g., graphs and maps), synthesising ideas, making claims supported by evidence, and drawing conclusions</li> <li>• communicate with an audience and purpose in mind</li> <li>• reflect on the strengths and limitations of the communication process I have used and how effectively I have communicated</li> <li>• generate ideas with others for possible social actions, using a range of decision-making processes</li> <li>• justify the social actions I take with others and consider their possible impact, after researching others’ actions and decisions</li> <li>• evaluate the outcomes of the actions I take with others and the impact they have had.</li> </ul>
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<p>Phase 4/Years 9-10</p>	<p><b>Rohe and local contexts</b> I have built my knowledge about social, economic, and environmental issues for iwi, hapū, and others in the community.</p> <p><b>Tūrangawaewae me te kaitiakitanga</b> <b>Place and environment</b> Climate change and environmental degradation are impacting inequitably on different communities. Groups are responding locally and internationally as they work towards environmental justice.</p>	<p>In my learning in te ao tangata   social sciences, I can:</p> <ul style="list-style-type: none"> <li>• ask challenging or provocative questions about social issues and ideas that I can investigate with others.</li> <li>• apply conceptual understandings across contexts and case studies in order to develop generalisations</li> <li>• explain that concepts are contested and mean different things to different groups.</li> <li>• consider whether my sources are valid and reliable, identify gaps in them, and reflect on limitations and biases in representing the people and groups involved</li> <li>• engage with sources and people in the community ethically and with generosity and care</li> <li>• process information, using social science conventions and literacy and numeracy tools to help organise my research.</li> <li>• describe the values behind diverse perspectives within and between groups, and explain the implications of missing perspectives</li> <li>• develop frameworks and criteria for analysing perspectives and considering why people think and act the way they do</li> <li>• use tools to identify and respond to attempts to influence or manipulate people’s values, perspectives, and actions.</li> <li>• communicate information using social science conventions (e.g., graphs and maps, comparing and contrasting, sorting) to synthesise ideas, present a reasoned argument using evidence, and draw conclusions</li> <li>• adapt my communication according to an audience</li> <li>• use tools to reflect on the strengths and limitations of the communication process I have used and how effectively I have communicated.</li> <li>• generate a wide range of solutions for societal problems and use evidence and logic to justify why some courses of action are better than others</li> <li>• recognise the strengths and limitations of social action campaigns</li> <li>• evaluate the impact of social actions and their personal and social significance.</li> </ul>
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## Example Learning Activities

Using the Map Tour and listening to the narration:

- Place names – choose one Māori place name from the map tour that is described in the kōrero. What is its meaning? What do place names tell us about how Māori are connected to these places?
- Based on the kōrero – what is important about these wetlands to Māori in the Wairarapa? How do Māori relate to these places?

Using the pre-human vs current wetlands swipe map, and historic swipe maps, consider:

- How have the wetlands changed since humans came to Aotearoa?
- Describe the spatial distribution of Wairarapa wetlands using the historic map and the current map and compare:
  - Are there more or less of them than before?
  - What human land uses changed these wetlands?

What are some of the features that still exist in the Wairarapa today, that you can see in the old historic maps?

Watch the video 'Tuku Rangatira – A Chiefly Gift' and consider:

- According to the video, what led to the relocation of many Wairarapa whānau to the King Country?
- How did the Treaty of Waitangi settlement influence land ownership and management at Lake Wairarapa?

Other videos also offer geography insights, such as 'Lake Nganoke' which covers land use changes over time and their influence on the ecology of this lake.

Describe and explore one of the Wairarapa wetlands in person and/or using the Wairarapa Glistening Water resources.

- Collect and process primary and/or secondary data for the wetlands (e.g. maps, photos, tables of data).
- Show findings, explain features, and draw a conclusion related to the findings.
- Reflect on the strengths and limitations of the data and identify what additional data would be beneficial.

## Te Reo Māori

Ko te reo Māori te kākahu o te whakaaro,  
te huarahi i te ao tūroa

The Māori language is the cloak of thought and  
the pathway to the natural world.

The Wairarapa Glistening Water Map Tour contains waiata in te reo Māori and kōrero in English. There are also explanations of Māori place names, and their significance. These may be useful source materials for students studying te reo.

## NCEA Links

The Wairarapa Glistening Water resources can support teaching and learning activities associated with the following NCEA assessments in te reo Māori from 2024:

Te Reo Māori 1.2 Te whakapuaki whakaaro i runga i te āta rere o te reo (92093, Internal)

Te Reo Māori 1.3 Te tautohu i ētahi mātāpono Māori kei roto i te reo (92094, External)

## Curriculum Links

The Wairarapa Glistening Water resources can support teaching and learning activities associated the Teaching and Learning of Te Reo Māori in the English-medium school’s curriculum. Selected achievement objectives, sociocultural themes, topics, and possible text types that can be connected to the Wairarapa Glistening Water resources for curriculum levels 1-5 are identified in the table below, but you may be able to make other connections.

Achievement objectives – curriculum levels 1-5	Possible sociocultural themes
<p>Students should be able to:</p> <p>1.1 greet, farewell, and acknowledge people and respond to greetings and acknowledgments;</p> <p>1.2 introduce themselves and others and respond to introductions;</p> <p>1.4 communicate about personal information, such as name, parents’ and grandparents’ names, iwi, hapū, mountain, and river, or home town and place of family origin;</p> <p>2.1 communicate about relationships between people;</p> <p>2.4 communicate about time, weather, and seasons;</p> <p>2.5 communicate about physical characteristics, personality, and feelings.</p> <p>3.1 communicate, including comparing and contrasting, about habits, routines, and customs;</p>	<p>Te marae (the marae)</p> <p>Te whare tupuna/te wharenuī (ancestral house/meeting hall)</p> <p>Te whānau (the family, belonging)</p> <p>Tūpuna (grandparents, ancestors, hapū, iwi)</p> <p>Whanaungatanga (kinship, relationships, connections)</p> <p>Ngā mihi (informal and formal introductions)</p> <p>Te wā (time, seasons, lunar calendar)</p> <p>Tuakana–teina (roles and responsibilities, reciprocity)</p> <p>Tūrangawaewae (my place to stand)</p> <p>Taiao (the natural world)</p> <p>Whakapapa (lines of descent, connections, history)</p> <p>Ahi kā (home fires, preserving one’s connection to the land, conservation)</p> <p>Tikanga me kawa (protocols and procedures)</p> <p>Tangata whenua (indigenous people, people with a bond to the land)</p>
<p>4.3 communicate about obligations and responsibilities;</p> <p>5.1 communicate about past activities and events;</p> <p>5.2 communicate about present and past states, feelings, and opinions;</p> <p>5.4 describe, compare, and contrast people, places, and things.</p>	<p style="text-align: center;"><b>Possible topics</b></p> <p>Whānau, hapū, iwi</p> <p>Origin, identity, location</p> <p>Fishing and food</p> <p>Recounting sport, leisure, and cultural activities</p> <p>The marae: its people and places</p>
	<p style="text-align: center;"><b>Possible text types</b></p> <p>Pepeha (iwi-specific sayings)</p> <p>Waiata Māori (Māori songs)</p>

	Whakataukī (proverbs) Greeting and leave-taking routines Simple written forms Kōrero pūrakau
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### Example Learning Activities

Listen to the kōrero of the repo (wetlands) and identify the language features used to enhance ideas and capture the attention of the audience, for example, metaphor and personification.

Listen to the waiata. What Māori principles are reflected in words and structures of the language used?

Listen to the kōrero of the repo and identify the atua they speak of. Discuss the stories of these atua.

Explore the 360° videos of Kiriwai, Onoke Spit, and Kahutara. Listening to the waitata and stories, describe the differences you notice between the seasons of Winter and Spring.

Watch the video Whakapapa Kōrero: What my grandfather told me and listen to the kōrero of Wairarapa residents who share their memories of the tuna heke; the seasonal eel migrations and traditional harvesting practices. [Note: there is a swear word in the interview at approx. 7:30-7:40]

Watch the video Tohi to hear the kōrero of Rawiri Smith who describes tohi, the traditional blessing of Māori newborn babies.

Watch the video Kei hea ngā tuna – Where are the tuna? to hear the stories behind the waitata and the tukutuku panels and murals that adorn the whareniui.

## Science

The Wairarapa Glistening Water resources provide a rich context for teaching and learning in science. There are a number of videos about scientific investigations of Wairarapa Moana and the kōrero of the repo in the Map Tours illustrate the biodiversity of the wetlands. Mātauranga Māori perspectives and approaches to kaitiakitanga feature throughout the resources.

### NCEA Links

The Wairarapa Glistening Water resources can support teaching and learning activities associated with the following NCEA assessments in the sciences from 2024:

Science 1.1 Demonstrate understanding of a science-informed response to a local issue (91920, Internal)

Science 1.2 Demonstrate understanding of the use of a range of scientific investigative approaches in a context (91921, Internal)

Science 1.3 Describe features of science that have contributed to the development of a science idea in a local context (91922, External)



Physics, Earth and Space Science 1.1 Demonstrate understanding of human-induced change within the Earth system (92044, Internal)

Chemistry and Biology 1.1 Demonstrate understanding of the relationship between a microorganism and the environment (92020, Internal)

[Curriculum Links \(Years 1-10\)](#)

Selected science achievement objectives at curriculum levels 1-5 of the New Zealand Curriculum that can be connected to the Wairarapa Glistening Water resources are identified in the table below, but you may be able to make other connections.

Curriculum levels (CL)	Achievement objectives
<p><b>CL 1-2</b></p>	<p>Students will:</p> <p><b>Nature of Science</b></p> <ul style="list-style-type: none"> <li>• Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation.</li> <li>• Extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.</li> <li>• Build their language and develop their understandings of the many ways the natural world can be represented.</li> <li>• Explore and act on issues and questions that link their science learning to their daily living.</li> </ul> <p><b>Living World</b></p> <ul style="list-style-type: none"> <li>• Recognise that all living things have certain requirements so they can stay alive.</li> <li>• Recognise that living things are suited to their particular habitat.</li> <li>• Recognise that there are lots of different living things in the world and that they can be grouped in different ways.</li> </ul> <p><b>Planet Earth and Beyond</b></p> <ul style="list-style-type: none"> <li>• Explore and describe natural features and resources.</li> <li>• Describe how natural features are changed and resources affected by natural events and human actions.</li> </ul>
<p><b>CL 3-4</b></p>	<p>Students will:</p> <p><b>Nature of Science</b></p> <ul style="list-style-type: none"> <li>• Appreciate that science is a way of explaining the world and that science knowledge changes over time.</li> <li>• Identify ways in which scientists work together and provide evidence to support their ideas.</li> <li>• Build on prior experiences, working together to share and examine their own and others' knowledge.</li> <li>• Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.</li> <li>• Begin to use a range of scientific symbols, conventions, and vocabulary.</li> </ul>

	<ul style="list-style-type: none"> <li>• Engage with a range of science texts and begin to question the purposes for which these texts are constructed</li> <li>• Use their growing science knowledge when considering issues of concern to them.</li> <li>• Explore various aspects of an issue and make decisions about possible actions.</li> </ul> <p><b>Living World</b></p> <ul style="list-style-type: none"> <li>• Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced.</li> <li>• Begin to group plants, animals, and other living things into science-based classifications.</li> </ul> <p><b>Planet Earth and Beyond</b></p> <ul style="list-style-type: none"> <li>• Appreciate that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth’s resources. Interacting systems (CL 3).</li> <li>• Develop an understanding that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth’s resources (CL 4).</li> <li>• Investigate the water cycle and its effect on climate, landforms, and life.</li> </ul>
<p><b>CL5</b></p>	<p>Students will:</p> <p><b>Nature of Science</b></p> <ul style="list-style-type: none"> <li>• Understand that scientists’ investigations are informed by current scientific theories and aim to collect evidence that will be interpreted through processes of logical argument.</li> <li>• Develop and carry out more complex investigations, including using models.</li> <li>• Show an increasing awareness of the complexity of working scientifically, including recognition of multiple variables.</li> <li>• Begin to evaluate the suitability of the investigative methods chosen.</li> <li>• Use a wider range of science vocabulary, symbols, and conventions.</li> <li>• Apply their understandings of science to evaluate both popular and scientific texts (including visual and numerical literacy).</li> <li>• Develop an understanding of socio-scientific issues by gathering relevant scientific information in order to draw evidence-based conclusions and to take action where appropriate.</li> </ul> <p><b>Living World</b></p> <ul style="list-style-type: none"> <li>• Identify the key structural features and functions involved in the life processes of plants and animals.</li> <li>• Investigate the interdependence of living things (including humans) in an ecosystem.</li> </ul> <p><b>Planet Earth and Beyond</b></p> <ul style="list-style-type: none"> <li>• Investigate the composition, structure, and features of the geosphere, hydrosphere, and atmosphere.</li> </ul> <p><b>Material World</b></p> <ul style="list-style-type: none"> <li>• Investigate the chemical and physical properties of different groups of substances, for example, acids and bases, fuels, and metals.</li> </ul>

## Example Learning Activities

Consider the perspectives different groups have about maintaining the health of repo (wetlands), for example, local iwi, scientists, conservation groups, or farmers, and how these perspectives have been informed by knowledge systems such as mātauranga Māori, science, politics, economics, or history.

Watch videos about scientific studies of the lakes, including water and sediment analysis, and the sharing of these findings with the local community:

- Kākahi – Freshwater messels cleaning out lakes
- Ngā tohu nō Onoke – Lakes380 Fieldwork
- Sharing scientific knowledge — mā tātou e tuaritia te pūtaiao

Watch the video about Pae tū Mōkai o Tauira, a group of Featherston residents who are working on restoration projects. Consider how their approach is informed by a strong foundation in tikanga Māori values as they work for a healthier future for Wairarapa Moana.

After watching the videos, explore the pre-human and current maps of the Wairarapa wetlands and consider how the wetlands have been negatively affected by human activity. Consider:

- How has human activity has changed the wetlands over time
- How do the stories of the area inform our understanding of how the wetlands have changed
- What steps are being taken in the local community to mitigate the impact of humans and to restore the wetlands.

Visit one of the repo (wetlands) and take water samples to measure the water clarity, flow rate, temperature, and pH.

Explore the interconnectedness of living things in the Wairarapa wetlands and link the environment with its plants, animals, and microorganisms and with humans. This can be informed by the Wairarapa Glistening Water resources, field trips, and hearing the kōrero of local kaumātua and kuia.

Research the role of the wetlands in the water cycle.

Study the biodiversity of one of the repo. Ākongā could:

- Identify the different species of plants and animals in the wetlands and categorise based on characteristics such as native, endemic, and introduced species
- Construct a food chain or food web
- Describe the habitats of different plants and animals in the repo
- Describe how plants from the wetland are used in rongoā, for example, Mānuka
- Identify the adaptations that plants and animals have developed that makes them suitable to the wetlands environment, considering the differences in the seasons
- Study the life processes of plants from the repo, including photosynthesis, growth, reproduction, germination, flowering
- Learn about the predators in the area and the different ways these are monitored and controlled, for example, tracking tunnels for monitoring animal footprints, chew cards, traps, and bait.

Listen to the kōrero of the repo to understand that te ao Māori acknowledges the interconnectedness of all living and non-living things and how the relationship of Māori and the environment stems from their whakapapa to Ranginui and Papatūānuku.

## Literacy and Numeracy

Foundational skills in literacy and numeracy are built in the English and mathematics and statistics learning areas and are then extended to other learning areas and beyond the classroom. There are many literacy- and numeracy-activities that use the context of the Wairarapa wetlands based on the Wairarapa Glistening Water resources and/or a visit to one of the repo. Below is a sample of the activities but you will be able to develop more depending on the level of your students and the focus areas within literacy and numeracy.

### Example Learning Activities

#### Literacy

Using the Map Tour resources, listen to and read the waitata and kōrero of the repo and explain how language features, for example, figurative language, style, syntax, symbolism and vocabulary, work together to create meaning and effects. Use supporting evidence to back up your explanation.

Identify examples of metaphors and similes in the kōrero of the repo. Have students write their own metaphors and similes based on one of the wetlands.

Construct a piece of persuasive writing on the importance of looking after the wetlands based on the information from the kōrero of the repo and/or the videos.

Listen to the kōrero of Tauwharerata in the Map Tour resources. The sights, sounds, feelings, and relationships of this repo are all described. Use this as inspiration to write a story about a tree or plant of the wetlands. Things to consider:

- What can the plant see and hear?
- Describe the appearance of the plant – its leaves, seeds, bark, flowers etc
- What insects and animals live or feed on the plant?
- Describe other characteristics of the plant, such as, how it moves, smells, the shade it creates, uses of the plant by Māori
- The adaptations the plant has developed to suit the environment and changing seasons.

Listen to the kōrero of Tauwharerata. Part of the kōrero of Tauwharerata is an interview. Listen to the kōrero of one of the other repo and write some interview questions for the repo itself or for one of the plants or animals that lives there.

Create information signs or factsheets about the plants and/or animals of one of the repo.

After visiting one of the wetlands or listening to the kōrero of the wetlands, write a poem based on the repo. This could be a haiku, sensory, listening, quintain poem etc.

#### Numeracy

Use the historic/pre-human and current maps of the wetlands to estimate how the the areas of wetlands have decreased over time:

- Brainstorm approaches to estimating areas in a map for comparison
- Work in pairs to estimate the areas
- Compare the estimations and discuss differences.

As part of a visit to one of the Wairarapa wetlands you could:

- Carry out a statistical investigation using the Problem, Plan, Data, Analysis, and Conclusion (PPDAC) enquiry cycle. Examples of data that could be collected:
  - Types and numbers of birds seen in a time period, for example, 5 minutes
  - Types of things people heard in a time period, for example, 5 minutes
  - Favourite animal or plant at the wetland for students in the class
  - The number of insects in an area, for example, in a 30 cm by 30 cm grid
  - Water measurements, for example, clarity, temperature, pH, water flow.
- Estimate the size of plants and trees
  - Discuss the best units for the estimates
  - What approaches could you use, for example, comparison to known lengths such as the height of your teacher, your arm span (which is approximately equal to your height)
  - Compare estimations between students and discuss differences
  - Measure the plant/tree and reflect on the differences from the estimate and consider how the estimates could be improved. Note: trigonometry could be used for trees that can not be directly measured for CL 5 and higher or a phone app can be used for measurement.
- Use a coordinate system to describe locations of landmarks at a repo
- Look for symmetry in objects in the wetlands, for example, rotational symmetry of flowers, reflection symmetry in a leaf
- Look for 2D and 3D shapes in the wetlands and the attributes of different shapes.

## Other Possible Subject Areas

Creative teachers may also find the Wairarapa Glistening Water materials useful for these subject areas. Students could seek information from the Wairarapa Glistening Water website as part of preparation for a field trip to one of the featured wetlands (or a local wetland in another part of Aotearoa). Further activities could be undertaken at the wetland and when back in the classroom. Example learning activities are given below for inspiration.

### Example Learning Activities

#### Digital Technologies

From 2024, the NCEA achievement standard Digital Technologies 1.2 (92005) Develop a digital technologies outcome (Internal) provides opportunities to use the context of the wetlands in the

assessment of the standard, using the Wairarapa Glistening Water resources and potentially a visit to a repo to provide the background information. For example, students could:

- Construct a digital technologies outcome, such as a website, inspired by one of the stories of the repo from the Map Tour waiata and kōrero or the stories shared in the videos that resonates with you.
- Develop a digital technologies outcome that will promote kaitiakitanga of the wetlands, aiding in the guardianship of the repo. This could be an advisory website, a game to promote restoration of the wetlands, or a database to support pest management or water quality monitoring.

### Education for Sustainability

A number of Education for Sustainability achievement standards could be linked to the Wairapapa Wetlands at Level 2 (until 2025) and Level 3 (until 2026), until they are replaced by Levels 2 and 3 Environment and Societies (ready for 2026 and 2027 – note this is a provisional subject name which is still to be confirmed).

### Music and Visual Arts

Watch the video *Kei hea ngā tuna – Where are the tuna?* to hear the stories behind the waiata and the tukutuku panels and murals that adorn the whareniui. Discuss what art and music the repo could inspire for your class that represent the interconnectedness of people with their lakes, rivers and wetlands, the coast, lands, fish, birds and trees.

During a trip to the wetlands:

- Take a few minutes to close your eyes and notice the sounds you hear. When back at school, use instruments or other objects to recreate the sounds of the wetlands
- Create a collage, mural, or other artwork to show the biodiversity of the wetlands.
- Create a dance to recreate the movement of an animal or plant that you saw at the repo.

## World Wetlands Day

World Wetlands Day was started by the United Nations and is held on **February 2nd** every year to raise awareness of the urgency of preventing the loss of wetlands, and to promote wetland conservation and restoration.<sup>1</sup>

The official website provides a range of resources and suggested activities that can be undertaken around World Wetlands Day, as well as actions that can be taken at any time of year to help protect and restore wetlands: <https://www.worldwetlandsday.org/>

The Wairarapa Glistening Water resources may be useful as part of World Wetlands Day activities, in helping students learn about Māori values of wetlands (e.g., the Map Tour), and land use pressures that

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<sup>1</sup> United Nations. (n.d.). World Wetlands Day—Background. United Nations; United Nations. Retrieved 15 March 2023, from <https://www.un.org/en/observances/world-wetlands-day/background>

impact wetlands in Aotearoa (e.g., the video about catching tuna (eels)). The resources could also be used to enhance understanding of the value of wetlands, in preparation for a site visit to a local wetland.

## Contact Information

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