# Waka Kotahi rail safety resource – Social Sciences

Revised 2023

Primary and intermediate – Level 1 to Level 4

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| **What is the big idea or focus?**  | **What is the key understanding?** **Why is it important for my students right now?**  | **Driving question** | **Focus tasks for assessment**Understanding and skills |
| Citizenship.Social Sciences: Social Studies: Place and Environment: Place (how people perceive, represent, interpret and interact with places)In the context of keeping safe around the electrified rail network.  | When you are a citizen you belong, you matter and you make a difference. Citizens work together to keep everyone safe around the electrified rail network. | What is worth knowing and doing as a citizen around places on the electrified rail network?**Stay away from overhead wires carrying electrical energy.** *The electrical energy that moves trains is always dangerous and always on.**You cannot hear, see or smell electrical energy.**The electrical energy is 100 times more powerful than the electrical energy used at home.**The electrical energy can jump gaps of up to 3 metres.**When electrical energy passes through people, it kills or seriously injures them.* **Always use level crossings to get across the tracks.***Trains on the tracks are very big, very fast and very quiet.**Trains take a long time to stop.**It is dangerous to take shortcuts and trespass.***Watch out for the second train.***Obey all warning signs and signals.**Wait until all warning signs have stopped before crossing – there may be a second train.**Look and listen in both directions.* | 1. **Describe** a place on the electrified rail network. [multistructural] 2. **Explain why** this place on the electrified rail network is useful to citizens. [relational]3. **Take action** to help keep citizens in your community safe around places on the electrified rail network. [extended abstract] |

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| **Learning area**Essence statement | **Links to other learning areas** | **NZC Values** | **NZC Key Competencies** |
| ***Social Sciences***In the social sciences, students explore how societies work and how they themselves can participate and take action as critical, informed, and responsible citizens. | All learning areas | ExcellenceInnovation, inquiry, and curiosityDiversityEquityCommunity and participationEcological sustainabilityIntegrityRespect | **Thinking** – Critically analyse the factors contributing to safe electrified rail networks for all citizens.**Managing self** – Act responsibly when around the electrified rail network as a pedestrian, passenger, cyclist or driver to ensure all citizens keep safe. **Participating and contributing** – Display an awareness of the local issues around creating and maintaining safe electrified rail networks. Be actively involved in community issues around safe electrified rail networks. **Relating to others** – Interact with others to create safe electrified rail networks.**Making meaning from language, symbols and text** – Interpret and use language, symbols and text in ways that keep citizens safe around electrified rail networks.  |

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| **Strand** | **Achievement objectives**Select the achievement objectives that best match the concept and context for your students. | **Suggested learning intentions**(SOLO verbs – Define, Describe, Sequence, Classify, Compare, Contrast, Explain, Analogy, Analyse, Generalise, Predict, Evaluate, Create*)* Use constructive alignment to design SOLO differentiated learning intentions (intended learning outcomes) to match the unit’s content.[Learning intentions generator (HookED)](https://pamhook.com/solo-apps/learning-intention-generator/) |
| **Place and Environment**Students learn about how people perceive, represent, interpret, and interact with places and environments. They come to understand the relationships that exist between people and the environment. | **Social Studies****Level One** - Understand how places in New Zealand are significant for individuals and groups.**Level Two**- Understand how places influence people and people influence places.**Level Three** - Understand how people view and use places differently.**Level Four** - Understand how exploration and innovation create opportunities and challenges for people, places, and environments. | **Bringing in ideas – SOLO multistructural learning intentions** **Define** place.**Define** environment.**Define** exploration.**Define** innovation.**Define** opportunity.**Define** migration**Identify** a place/environment on the rail network that you care about.**Identify** a place/environment on the rail network that is useful to you.**Identify** a place/environment on the rail network that challenges you.**Describe** a place on the rail network in your local area.**Describe** a place on the rail network that you care about.**Describe** the usefulness of a place on the rail network. **Describe** the challenges related to a place on the rail network.**Describe** the discovery of a place on the rail network. **Describe** an explorer of a place on the rail network.**Describe** an innovative developer of a place on the rail network.**Describe** the development of a place on the rail network.**Describe** the movement of people to a place on the rail network since its discovery.**Describe** the people who use a place on the rail network now or who used it in the past.**Describe** how people use a place on the rail network.**Describe** the challenges involved in exploring a place on the rail network.**Describe** the opportunities for innovative development of a place on the rail network **Describe** a place/environment on the rail network that creates opportunities for people.**Describe** a place on the rail network that challenges people.**Describe** the different perspectives people hold about a place on the rail network. **Connecting ideas – SOLO relational learning intentions****Classify** places/environments on the rail network.**Classify** the different people connected to a place on the rail network – e.g. explorers, innovators, settlers.**Classify** the ways people use a place on the rail network.**Classify** the different uses of a place on the rail network since its discovery.**Classify** challenges created by exploration of and innovation on the rail network.**Classify** opportunities created by exploration of and innovation on the rail network.**Explain** why a place on the rail network is useful to you.**Explain** why people came to a place on the rail network.**Explain** why a place on the rail network was useful to others in the past.**Explain** why people hold different perspectives about a place on the rail network.**Explain** why a place on the rail network provides opportunities.**Explain** why a place on the rail network provides challenges.**Explain** how people influenced a place on the rail network in the past.**Explain** how people influence a place on the rail network in the present.**Explain** how the discovery of and subsequent changes to a place on the rail network provide opportunities for people.**Explain** how the discovery of and subsequent changes to a place on the rail network provide challenges for people.**Explain** how a place on the rail network influences people.**Sequence** the arrival of people to a place on the rail network.**Sequence** changes in the way people have used a place on the rail network over different timeframes – at different hours, on different days, in different months or over different years.**Sequence** the different ways in which people have used a place on the rail network since its discovery. **Sequence** the changes in a place on the rail network since its discovery.**Sequence** the different ways in which people have viewed a place on the rail network over time.**Compare and contrast** how different people view and use a place on the rail network.**Compare and contrast** the explorers of a place on the rail network with the innovators who have since developed that place.**Compare and contrast** the uses of a place on the rail network in the past with its present uses.**Compare and contrast** the significance of a place on the rail network to different people. **Compare and contrast** the challenges involved in exploring a place on the rail network with the challenges involved in developing it.**Compare and contrast** the opportunities provided by exploring a place on the rail network with the opportunities provided by developing it.**Compare and contrast** the challenges related to a place on the rail network with the opportunities related to it.**Analyse** a place on the rail network.**Analyse** the rail network.**Extending ideas - SOLO extended abstract learning intentions Predict** how different people might view and use a place on the rail network in the future.**Predict** the future challenges and opportunities for a place on the rail network.**Predict** the challenges and opportunities a place on the rail network might provide for people, places and environments in the future.**Evaluate** different points of view about exploration of a place on the rail network.**Evaluate** different points of view about innovative development of a place on the rail network.**Generalise** about the significance of places on the rail network to people in the local community.**Evaluate** how people use a place on the rail network from the perspective of different groups.**Evaluate** how people use a place on the rail network.**Create** a resource that helps keep citizens safe in one or more places on the rail network.**Generalise** about the way people view and use places on the rail network.**Generalise** about the challenges and opportunities provided by exploration and innovative development of places on the rail network. |

# Learning activities

Build learning activities and experiences for SOLO differentiated learning intentions.

Choose learning intentions that match your students’ prior learning, interests and abilities.

**Social Sciences: Social Studies: Place and Environment: Place (how people perceive, represent, interpret and interact with places).**

Think like a social scientist about places on the rail network.

*Over time “spaces” change into “places”.*

*At first only the point of entry is recognised; beyond lies space. In time more and more landmarks are identified and the subject gains confidence in movement. Finally the space consists of familiar landmarks and paths – in other words, place. From Yi-Fu Tuan (1977)* Space and Place*, p.71*

How can we take action to keep citizens safe when they interact with places on the electrified rail network?

**Determining prior knowledge, identifying misconceptions**

Ask students to:

Pause – clear your mind and then think deeply about the electrified rail network.

Discuss the following question prompts in turn.

* **Have you** or anyone you know been to a place on the electrified rail network (terminal facilities, rail yards, railway stations, the tracks, level crossings, pedestrian overbridges, trains etc.)?
* **What was it like?**
* **What are** the dangerous things you know to watch out for when you go to a place on the electrified rail network?
* **What have you done** around the electrified rail network that could be dangerous?
* **Why do you think** you behaved dangerously?
* **What have you seen** other people do around the electrified rail network that could be dangerous?
* **Why do you think** people behave in potentially dangerous ways around the electrified rail network?
* **How do you feel** when you see people behaving in potentially dangerous ways around the electrified rail network?
* **What do you do** when you see people behaving in potentially dangerous ways around the electrified rail network?
* **What do kids need to know** about keeping safe around the electrified rail network?
* **What do grownups need to know** about keeping safe around the electrified rail network?

Record (write or draw) your answers to each question on separate sticky notes. Label each sticky note with the date.

At the end of the discussion on each question, stick your answer onto a large piece of newsprint labelled with the question prompt.

Repeat this process with each question prompt. Keep a record of the prior knowledge of your class.

# Section 1: What is worth knowing and doing as a citizen around places on the electrified rail network?

**Bringing in ideas**

These activities provide opportunities for students to bring in ideas about energy and energy transfer in the context of citizens using the electrified rail network.

**Learning intention: Describe a place on the electrified rail network. [multistructural]**

Differentiated success criteria: We will know we have achieved this because …

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| *Multistructural* | *My description has several relevant ideas about a place on the electrified rail network* |
| *Relational* | *…. and explains why these ideas are relevant*  |
| *Extended abstract* | *… and makes a generalisation about the place on the electrified rail network.* |

**Key Competency self-assessment rubric**

Highlight the relevant Key Competencies for section 1.

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| **Thinking** | **Managing self** | **Participating and contributing** | **Relating to others** | **Using language, symbols and text** |
| Critically analyse the factors contributing to safe electrified rail networks for all citizens.Example – describe, explain and justify ways to stay safe at places on the electrified rail network. | Act responsibly when around the electrified rail network as a pedestrian, passenger, cyclist or driver to ensure all citizens keep safe.Example – adopt a “sort it and report it” approach to unsafe behaviour around the electrified rail network. | Display an awareness of the local issues around creating and maintaining safe electrified rail networks.Be actively involved in community issues around safe electrified rail networks.Example – listen, respond and act together to make the electrified rail network a system free of death and serious injury. | Interact with others to create safe electrified rail networks.Example – demonstrate a commitment to safer outcomes for self, friends, family and whānau at places on the electrified rail network. | Interpret and use language, symbols and text in ways that keep citizens safe around electrified rail networks.Example – share safe rules and behaviours for places on the electrified rail network. |

## 1.1. Think like a social scientist about the electrified rail network

How can we take action to keep citizens safe when they interact with places on the electrified rail network?

**Background: The rail network is a place where citizens interact – with each other and with the rail network.**

The electrified rail network is an example of an infrastructure that both supports and challenges citizens and society.

The rail network comprises physical assets (rail yards, railway stations, the tracks and overhead wires and masts, level crossings, pedestrian overbridges, substations, tunnels and bridges, signalling and communications systems), administrative processes and regulations, and people required to repair tracks, sell tickets, schedule trains etc.

Together these components provide a network for the mass movement of people, commodities and services that help shape both people and places.

The rail station is accessible to everyone. It is a shared public space much like the roads, parks, airports, parking lots and shopping malls. You do need to have money for a ticket to board the train, but you do not have to pay a membership fee to go into the station: citizens, tourists and the homeless can use it.

The station is designed so that everyone has access. For example, the physical layout of stations in Auckland are to be accessible to people who: are elderly, are visually impaired, have limited mobility, travel with strollers, are in wheelchairs or use guide dogs.

The shared public space presents challenges for some citizens. Signs and public announcements may provide barriers to people who struggle to make meaning because of physical or cognitive impairments or because they are unfamiliar with the languages used at the station. Others may feel excluded from the public space because they do not trust station security or are afraid of being physically harmed by others.

Because of the special hazards that are a feature of any place where high-voltage electrical energy is being transferred, everyone in that place must care about and look out for each other.

Although the rail network is a space that is accessible to everyone, it is not a community public space where people come to be together. Rather, it is a space where people pass through. “Passing through places” offers anonymity – you may be surrounded by other people but you can feel very alone. Travel involves transitioning between places where we belong.

This makes it harder to foster a sense of belonging on the rail network – harder to develop a shared concern for the well-being of other citizens in what can be a dangerous and unforgiving environment.

The electrified rail network benefits some people and places, dis-benefits others and leaves some unaffected.

For example, cities spread and satellite towns develop when people can commute to work from the outer suburbs. The amount of high-density housing, commercial buildings, convenience stores and car parking lots increases in the streets immediately around railway stations.

This in turn may contribute to areas of population growth, traffic congestion and streets with high pedestrian traffic around the station. When park and ride areas are supplied, rail stations can further encourage urban sprawl.

However, the structures on the rail network enable innovation and change. For example, new business operations become possible when freight and raw materials can be moved quickly and efficiently between ports, airports and points of manufacture.

What is worth knowing and doing as a citizen and a social scientist around places on the electrified rail network?

**Stay away from overhead wires carrying electrical energy.**

* The electrical energy that moves trains is always dangerous and always on.
* You cannot hear, see or smell electrical energy.
* The electrical energy is 100 times more powerful than the electrical energy used at home.
* The electrical energy can jump gaps of up to 3 metres.
* When electrical energy passes through people, it kills or seriously injures them.

**Always use level crossings to get across the tracks.**

* Trains on the tracks are very big, very fast and very quiet.
* Trains take a long time to stop.
* It is dangerous to take shortcuts and trespass.

**Watch out for the second train.**

* Obey all warning signs and signals.
* Wait until all warning signs have stopped before crossing – there may be a second train.
* Look and listen in both directions.

## 1.2. What is the rail network?

**Background: The New Zealand rail network**

The New Zealand rail network is owned and managed by KiwiRail. It is focused on moving freight and has some passenger services. The network consists of 4 main lines, plus secondary lines and branch lines. It covers over 4,000km of track in the North and South Islands.

The electrified sections of the rail network are located in Wellington, between Hamilton and Palmerston North, and in Auckland.

The electrified rail network uses electrical energy to make trains move.

Trains (or electric multiple units, EMUs) on the Auckland electrified rail network use electrical energy to move. The trains use this electrical energy to carry up to 375 passengers along with their bicycles, pushchairs, wheelchairs, guide dogs and luggage. To transport 375 passengers in another way, you would need approximately 8 buses or up to 375 cars.

The electrified rail network has many advantages over the old diesel-powered network. It offers a faster, more environmentally friendly way for people to get around the city. The train service is faster because trains powered by electrical energy can accelerate (and decelerate) twice as fast as diesel-powered trains. Electric trains are also more energy efficient and quieter and make no air pollution.

Citizens interact with the electrified rail network all the time: when waiting at the station platform for a train to arrive or depart, when travelling as passengers on trains using the rail network, and when crossing the rail network at level crossings or overbridges as pedestrians or cyclists, or in cars.

The electrified rail network has hazards as well as advantages.

Electrical hazards include shock hazards, arcing hazards, blast hazards and possible electromagnetic field hazards from the high voltage used to transfer energy to the train. The electricity is never switched off so these hazards are always present on and around the rail network.

You don’t need to touch an electrified source to be electrocuted – high-voltage electricity can jump from one conductor to another.

The electric wires over the track carry 25,000 volts, which is 100 times more powerful than the electrical energy used in homes. The electrical energy in the wires can jump a distance of 3 metres from the wires.

Any activity that brings you or objects you are holding (like a kite) close to the live wires is highly dangerous. Even if the shock doesn’t kill you, you will suffer horrible burns and injuries that will affect you for the rest of your life.

Other hazards are associated with the way trains move on the rail network. Heavy trains move along the track at high speeds. They cannot swerve or stop quickly to avoid you. Adding to the danger, the electric trains move very quietly – you cannot hear them coming.

Because they are travelling at high speed, trains need a long distance to stop. By the time the driver sees someone on the tracks, the train cannot stop soon enough to avoid hitting them.

The high speed makes it hard for people to predict how far away the train is so they can make the wrong decision about when it is safe to cross.

A train travelling at 110km/h takes only 5 seconds to travel 150m. Never try to “beat the train”.

Trains can travel in any direction, on any line, at any time. You can never be sure where the next train is coming from or which track it is using.

Even when you are certain the first train has passed, you can be hit by the second train travelling at high speeds on the other track.

The high speeds also create turbulence. If you are standing too close to the tracks or the edge of the platform, you can be dragged under the train.

A train track on the electrified rail network is like a corridor overstuffed with dangers you cannot see, hear or control. For all these reasons, crossing the tracks as a pedestrian or cyclist or in a car will always be highly dangerous.

The only safe way to get from one side of the tracks to the other is to use a railway overbridge, footbridge or level crossing.

There are many other safety systems and structures built into the rail corridor to keep people safe while they use trains. You can see these systems and structures at stations, on platforms and on trains and tracks.

Watch videos of places on the New Zealand rail network.

For example:

[Great Journeys NZ rail trips YouTube channel](https://www.youtube.com/user/KiwiRailScenic)

[How to stay safe at railway level crossings (Drive, Waka Kotahi)](https://www.youtube.com/watch?v=uXZA6zgSRsg)

[Living by the rail network (KiwiRail)](https://www.youtube.com/watch?v=azg4iG5MWdE)

[Track Talk (school students interview KiwiRail locomotive engineers)](https://www.youtube.com/watch?v=rrePZGR61gE) Includes discussion on the safe places to cross the tracks.

[City Rail Link Overview Animation (Auckland’s underground railway)](https://www.youtube.com/watch?v=K_fUHRpj708)

[Meet your stations (City Rail Link)](https://www.youtube.com/watch?v=CaFhKGHfsvo)

[From the train driver's seat: Kingsland to Grafton Auckland train journey 2022 (City Rail Link)](https://www.youtube.com/watch?v=lyTQg7sGl8w)

[CRL Auckland Chief Post Office – restored and reborn](https://www.youtube.com/watch?v=TVu1i2pryls)

[The new Puhinui Station is now open (Auckland Transport)](https://www.youtube.com/watch?v=W3W3c4BxzFg)

[Raurimu Spiral from Above Volume 2](https://www.youtube.com/watch?v=oH_AbzlN-Wc)

[24 hours at KiwiRail's Westfield freight terminal, Otāhuhu Auckland (our busiest rail freight terminal)](https://www.youtube.com/watch?v=O_4hSeiV0mI)

[KiwiRail Freight operations at Mosgiel distribution centre](https://www.youtube.com/watch?v=CkrsXDQOKTc)

[Experience Te Huia (Hamilton to Auckland train)](https://vimeo.com/542435341?embedded=true&source=vimeo_logo&owner=137437305)

[KiwiRail Makatote Viaduct Project](https://www.youtube.com/watch?v=aM_ZsOFc_O4)

[Trentham pedestrian underpass construction timelapse (KiwiRail)](https://www.youtube.com/watch?v=_ocwg4Gotls)

Ask your students:

Think about a particular place on New Zealand’s electrified rail network – a rail yard, station, an overbridge or a level crossing.

Imagine yourself in that place.

Ask yourself:

* Where am I? Where is here? How did I get here? What is this place?

Think about the history, geography, and the local, national and global perspectives of this place.

* How did this space become a place?
* Who discovered this place? How was it explored?
* Who lobbied for this place? Who argued against this place?
* Who can come to this place? Who is responsible for this place? Who came to this place in the past? Why did they come? Who comes to this place now? Why do they come?
* What is the future of this place?

Ask students to imagine the rail network could answer questions. What questions would they like to ask it? What questions do they have in particular for the station, the tracks, the overbridge, the pedestrian walkway, the level crossing, the railway yards, the park and ride areas?

Write these “what we know we don’t know” questions on sticky notes and display them on the classroom walls. Encourage students to add to them as they progress through the unit. Add a few of your own questions and invite any visitors to the class to add some as well.

## 1.3. Define terms

### 1.3.1. Define place (What is place?)

Define “place”. Try searching “define place” in Google. Use images of places in the local area and visit places in the school grounds. Ask students to talk about places that are special to them. Co-construct a class definition for “place” – e.g. “We think place is …”. Include reasons and examples in the class definition.

### 1.3.2. Define environment (What is environment?)

Define “environment”. Search Google for definitions. Ask students to talk about environments that are special to them. Co-construct a class definition for “environment” – e.g. “We think environment is …”. Include reasons and examples in the class definition.

**Extension**

Use Google Maps to explore the environment around a local rail station, level crossing or tracks. Use screen capture to collect images of these environments. Visit the environment and take video or images to share with the class. Use the images to write a description of environments around the local rail network.

### 1.3.3. Define rail network (What is the rail network?)

Discuss networks with students. Demonstrate how a network is a group of interconnected people, places or things.

[Social Networking in Plain English (YouTube)](http://youtu.be/6a_KF7TYKVc)

Create network grids of groups within the class, classes within the junior school, places to play in the playground, pathways that connect places in the school grounds. Use grids, meshes and webs to show how different people, places and things can be connected.

Locate your local rail network. Look at Google maps of your local railway station, and locate railway yards, railway tracks, railway bridges and pedestrian level crossings. Follow the tracks to see where the tracks come from, and where they go. Where are the stations that connect to the local station? Walk around part of your local rail network that has public access, taking photos of the different places and structures linked to the network.

Write a shared class definition of rail network – for example, “We think the rail network is (make a claim) because (insert a reason) because (provide evidence and examples).”

**Extension**

Model or map your local rail network using photos and drawings of different places and people – railway station, railway yards, railway tracks, railway bridges or pedestrian level crossings. You can include different items from model train sets. Ask students to make connections between the images or items and to explain why they think they are connected.

Ask students to draw a map of the local rail network based on their ideas.

Example:

[Auckland Train Network map](https://at.govt.nz/media/1972914/auckland-train-network-march-2017-large-view.pdf)

[KiwiRail Network Map (ArcGIS)](https://www.arcgis.com/apps/View/index.html?appid=556c4a9c73914fe1983529ddf9ae5099)

Co-construct a class definition for “rail network” – e.g. “We think the rail network is …”. Include reasons and examples in the class definition. Revisit your rail network diagram and definition as students deepen their understanding throughout the unit.

### 1.3.4. Define exploration (What is exploration?)

Define “exploration”. Search for definitions on Google. Use images of exploration in the local area and explore places in the school grounds. Co-construct a class definition for “exploration” – e.g. “We think exploration is …”. Include reasons and examples in the class definition.

**Extension**

Ask students to think about exploration in the context of the rail network. Describe how early railway tracks in New Zealand helped people explore the country.

[Te Ara: Building the Rail Network](http://www.teara.govt.nz/en/railways/page-1)

### 1.3.5. Define innovation (What is innovation?)

Define “innovation”. Search for definitions on Google. Use images of innovation in the local area and visit places of innovative practice.

Help students distinguish between innovation and invention. Innovation is doing something different – the use of a new idea or method to develop more effective or different products or processes. Innovation is not simply doing the same thing better (improvement) or creating a new idea or approach (invention).

Co-construct a class definition for “innovation” – e.g. “We think innovation is …”. Include reasons and examples in the class definition.

**Extension**

Ask students to think about innovation in the context of the rail network. For example, new business operations become possible when freight and raw materials can be moved quickly and efficiently between ports, airports and places of manufacture.

Innovation may also relate to new developments in the rail network with respect to the track (materials, installation, monitoring, maintenance, design and performance); trains and their safe operation; or signalling, communications and information management.

Examples of safety innovation in New Zealand:

[Gamification to increase site safety (LEARNZ)](https://vimeo.com/736722889?embedded=true&source=vimeo_logo&owner=18869783)

[Improving safety with virtual reality training (LEARNZ)](https://vimeo.com/736720533?embedded=true&source=vimeo_logo&owner=18869783)

## 1.4. Identify a place or environment on the rail network that you care about, is useful to you or influences or challenges you

Photograph, video and draw this place on the rail network. Locate it on a map of the local area. Make a Google map showing the place in the rail network. Arrange a supervised visit to this place. Use Google Maps to look at the environment around the station (and the tracks). Find places that are advantaged by connections across the rail network and places where there is no rail connection at all.

**Extension**

Talk to members of your local community about the rail network. Identify the places they care about, use, or are influenced or challenged by.

### 1.4.1. Describe a place or environment on the rail network that you care about, is useful to you or influences or challenges you

Use photographs, video, sketches, Google Maps and face-to-face visits to describe the attributes and characteristics of a place on the rail network e.g. platform, station, tracks, rail yards, level crossing.

Use the senses to consider: What does it look like, feel like, sound like and smell like? How does it influence who I am and what I do?

For example, a railway station is made up of:

* a platform with signage and the yellow line
* a station building, including ticket sales counter, waiting rooms and toilets
* communication systems (safety and arrival/departure information) – loudspeakers, signage, signals
* pedestrian and wheelchair access ramps, overbridges, steps
* a drop-off and collect parking area
* a left luggage area
* a lost and found office
* taxi ranks
* bus bays.

Identify features that you care about, features that are useful and features that are hazardous and need to be managed if you are to be safe on the rail network. Identify any features of the place designed to keep people safe.

For example, the following websites describe features that are hazardous in the electrified rail network and how to manage them.

[Live Wire](http://youtu.be/2TQ6QCs4rqo) (Public safety video about Auckland’s overhead wires)

[Be safe around electric trains (YouTube, Auckland Transport)](https://www.youtube.com/watch?v=sq_O7O8wRho)

[Safety around trains, stations & tracks (Auckland Transport)](https://at.govt.nz/bus-train-ferry/train-services/safety-around-trains-stations-tracks/)

[Train stations pedestrian level crossing](https://at.govt.nz/projects-roadworks/train-stations-pedestrian-level-crossing/) Auckland Transport and KiwiRail are installing automatic safety swing gates to keep pedestrians safe at stations across the city.

**Extension**

Explain how a place on the rail network in your local area influences you and your life.

Explain why this place is worth visiting and what you have to do to keep safe around this place. Draw a picture and write a description of the place on the rail network that you care about, is useful to you or challenges you.

Use the HookED Describe ++ (see think wonder) map and self-assessment rubric to draft student writing.

Ask students to work in groups of 2-3 and describe one or more places on the rail network:

* Draw the place (or insert a photograph) in the centre of the HookED Describe++ map.
* In the rectangles, describe the place. What does it look like? What can you see there?
* In the speech bubbles, explain why each of these features or characteristics makes the place useful to people.
* In the thought bubble, create one or more wonder questions for the place – I wonder what would happen if …?

### 1.4.2. Describe what a place or environment on the rail network was like in the past

Invite a local historian, long-time resident or town planner to share stories about the ways people discovered and developed a place on the electrified rail network.

Search for past images and video of this place and descriptions of how it was used.

Describe a place on the rail network in terms of its earliest discovery.

Locate resources that describe the early explorers of this place.

Map the explorers’ journey before and after they discovered it.

**Extension**

Describe this place in terms of its development. Include descriptions of the early developers of this place. Finally research the use of the place over time to the present.

Include descriptions of the different people who have used this place since its development. How did this place influence people in the past?

Refer to:

[Archives NZ: Railways of the Pacific Wonderland 1939](https://www.youtube.com/watch?v=yQv7P4VA4mI)

Other useful New Zealand sites include:

[DigitalNZ](https://digitalnz.org/) Search 30+ million New Zealand items across 300+ collections in one place.

[Te Ara The Encyclopedia of New Zealand](http://www.teara.govt.nz/)

[New Zealand History](https://nzhistory.govt.nz/)

[Ngā Taonga Sound & Vision](https://www.ngataonga.org.nz/) New Zealand’s film and TV archive

[Heritage New Zealand](https://www.heritage.org.nz/)

### 1.4.3. Describe how people have influenced the rail network

Identify a place on the rail network and find out how people have changed this place over time. Look for examples of how people have tried and are trying to influence the rail network in the past and in the present.

For example, research a regional railway lines that has been closed down, or one that is being reopened. Follow the history of the development of the electrified rail network in Auckland. Identify the different lobby groups involved and describe how (and explain why) people want to influence the regional rail network or Auckland’s rail transport network.

**Extension**

Describe how people influenced the development of the rail network in the past.

Refer to:

[Te Ara: Railways](https://teara.govt.nz/en/railways)

[Te Ara: Bridges and Tunnels](https://teara.govt.nz/en/bridges-and-tunnels)

[Rail history (KiwiRail)](https://www.kiwirail.co.nz/communities/rail-heritage/rail-history/)

[New Zealand History – Railways](https://nzhistory.govt.nz/keyword/railways)

[Off the tracks: New Zealand's lost railway network (RNZ)](https://www.rnz.co.nz/national/programmes/sunday/audio/2018821410/off-the-tracks-new-zealand-s-lost-railway-network)

[Rail Transport in New Zealand (Wikipedia)](https://en.wikipedia.org/wiki/Rail_transport_in_New_Zealand)

[Wikipedia: North Auckland Line](https://en.wikipedia.org/wiki/North_Auckland_Line)

[Wikipedia: Stratford–Okahukura Line](https://en.wikipedia.org/wiki/Stratford%E2%80%93Okahukura_Line)

[Wikipedia: Wairarapa Line](https://en.wikipedia.org/wiki/Wairarapa_Line)

[Wikipedia: Palmerston North–Gisborne Line](https://en.wikipedia.org/wiki/Palmerston_North%E2%80%93Gisborne_Line)

[Johnsonville Railway history by Raroa Intermediate students](https://www.livingheritage.org.nz/schools/intermediate/raroa/johnsonville/index.php)

### 1.4.4. Describe the rail network (What is the rail network like?)

Describe the physical attributes of the rail network. Describe the administrative processes and regulations of the rail network. Describe the people working on the rail network.

Describe the people and freight being moved by the rail network.

What are they like? Examples:

* terminal facilities
* rail yards
* railway stations
* tracks
* overhead wires and masts
* rail substations
* level crossings
* overbridges and pedestrian walkways
* tunnels
* bridges
* signalling systems
* communication systems
* administrative processes and regulations
* personnel and management required to repair tracks, sell tickets, schedule trains.

**Extension**

Explain why these elements are important to the rail network.

## 1.5. Invite members of the local community to share stories, images and artefacts about places on the local rail network

For example, collect stories about this place from diverse others in the local community. Invite someone to share stories about places on the local rail network.

You could invite a:

* local historian or long-time resident
* town planner
* train enthusiast
* commuter
* rail network employee
* member of the police
* someone whose home backs onto the rail network
* person with limited mobility
* person who uses the local rail network with pre-schoolers
* local teenagers
* ambulance driver
* local manufacturer, business owner, farmer or orchardist
* tourist.

Prompt the invited speakers to talk about how they use the place and how they manage to keep safe at this place on the rail network.

Use video or voice recording or take notes of the stories about local places on the rail network in the past.

**Extension**

Collate and curate the stories as oral histories on a class blog or wiki so other people in the local community can contribute to the stories explaining how they use or have used a place on the rail network.

# Section 2: Explain what is worth knowing and doing as a citizen around places on the electrified rail network

**Relating ideas**

These activities provide opportunities for students to connect ideas about place and the electrified rail network.

**Learning intention: Explain why a place on electrified rail network is useful to citizens. [relational]**

Differentiated success criteria: We will know we have achieved this because …

|  |  |
| --- | --- |
| *Multistructural* | *My explanation has several relevant reasons why this place on the electrified rail network is useful to citizens* |
| *Relational* | *…. and explains why these reasons are relevant* |
| *Extended abstract* | *… and makes a generalisation about the reasons.* |

**Key Competency self-assessment rubric**

Highlight the relevant Key Competencies for section 1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Thinking** | **Managing self** | **Participating and contributing** | **Relating to others** | **Using language, symbols and text** |
| Critically analyse the factors contributing to safe electrified rail networks for all citizens.Example – describe, explain and justify ways to stay safe at places on the electrified rail network. | Act responsibly when around the electrified rail network as a pedestrian, passenger, cyclist or driver to ensure all citizens keep safe.Example – adopt a “sort it and report it” approach to unsafe behaviour around the electrified rail network. | Display an awareness of the local issues around creating and maintaining safe electrified rail networks.Be actively involved in community issues around safe electrified rail networks.Example – listen, respond and act together to make the electrified rail network a system free of death and serious injury. | Interact with others to create safe electrified rail networks.Example – demonstrate a commitment to safer outcomes for self, friends, family and whānau at places on the electrified rail network. | Interpret and use language, symbols and text in ways that keep citizens safe around electrified rail networks.Example – share safe rules and behaviours for places on the electrified rail network. |

## 2.1. Sequence how often a place on the rail network is used by people over time

Track how often people interact with a place on the rail network.

Track what people do at this place over a period of time – hours, days, weeks.

Create a timeline or infographic showing how the number of people using the place changes over a given period of time.

**Extension**

Explain what the use patterns suggest about the importance of this place on the rail network to people in your local community.

## 2.2. Interview (or survey) people in your local community to find out the significance of this place on the rail network to different groups (Why is this place on the rail network useful?)

Develop questions to use when interviewing people in your local community about a place on the rail network.

Design your questions to find out how the person uses the place, how they keep safe around the place and their perspective of the place. How does the place influence them? How does the place make them feel? Invite people to answer your questions face to face at school, or in a place on the rail network, by email or through a video call.

Take photos and make voice or video recordings with the approval of the people being interviewed. Create a summary of the responses to share with other students.

**Extension**

Use your summary to explain why places on the rail network influence people and their lives. Identify ways in which the rail network challenges your local community and create an action group to address these challenges.

## 2.3. Compare and contrast the significance of this place on the local rail network to different groups

Compare and contrast the relative importance of the level crossing, station or rail network to different groups in your local community.

Compare and contrast the ways people use the level crossing, station or rail network.

Compare and contrast how people feel at the level crossing or station or around the rail network. Compare and contrast the safety measures different people use when they are around trains and tracks. Identify similarities and differences.

Explain the relevance of the similarities and differences.

Make a generalisation about the overall significance of any similarities and differences.

**Extension**

Identify a group in your local community who feel unsafe around the rail network. Work with them to address their issues.

## 2.4. Explain why the electrified rail network provides opportunities and challenges to citizens

Identify reasons why the rail network provides convenient connections for citizens in some places and no connection at all for citizens in other places.

Identify reasons why the electrified rail network is seen as providing safe, efficient transport for some citizens and danger and death to others.

Identify reasons why the electrified rail network contributes to urban sprawl in some places and encourages high-density, inner-city lifestyles in others.

Identify reasons the electrified rail network makes work, shopping and entertainment more accessible in some places and less accessible in others.

Identify reasons why living near the electrified rail network allows citizens to arrange their daily activities in a different way to citizens who live further away.

Identify why certain neighbourhoods, restaurants and hotels build around rail network hubs. Use these reasons to explain why the electrified rail network provides both opportunities and challenges.

**Extension**

Explain how discovery and subsequent changes to a place have provided opportunities and challenges for people.

Compare and contrast the challenges and opportunities provided by the exploration and development of a place.

Debate the claim that the electrified rail network provides more opportunities for the local community than it does challenges.

## 2.5. Compare and contrast the different uses of a place on the rail network in the past with the uses in the present

Research past uses of a place on the rail network in your local community. Describe how the place was used in the past. Describe how the place is used now.

Identify similarities and differences between how the place is used now and how it was used in the past. Give reasons for these similarities and differences.

Make a generalisation about the overall use of the place on the rail network: “Overall I think (insert claim) because (give reason) because (provide evidence and examples).”

**Extension**

Predict how the place on the rail network will be used 50 years in the future.

Refer to:

[Te Ara: Railways](https://teara.govt.nz/en/railways)

[Te Ara: Bridges and Tunnels](https://teara.govt.nz/en/bridges-and-tunnels)

[Rail history (KiwiRail)](https://www.kiwirail.co.nz/communities/rail-heritage/rail-history/)

[New Zealand History – Railways](https://nzhistory.govt.nz/keyword/railways)

[Off the tracks: New Zealand's lost railway network (RNZ)](https://www.rnz.co.nz/national/programmes/sunday/audio/2018821410/off-the-tracks-new-zealand-s-lost-railway-network)

[Rail Transport in New Zealand (Wikipedia)](https://en.wikipedia.org/wiki/Rail_transport_in_New_Zealand)

[Wikipedia: North Auckland Line](https://en.wikipedia.org/wiki/North_Auckland_Line)

[Wikipedia: Stratford–Okahukura Line](https://en.wikipedia.org/wiki/Stratford%E2%80%93Okahukura_Line)

[Wikipedia: Wairarapa Line](https://en.wikipedia.org/wiki/Wairarapa_Line)

[Wikipedia: Palmerston North–Gisborne Line](https://en.wikipedia.org/wiki/Palmerston_North%E2%80%93Gisborne_Line)

[Johnsonville Railway history by Raroa Intermediate students](https://www.livingheritage.org.nz/schools/intermediate/raroa/johnsonville/index.php)

## 2.6. Sequence the changes in a place on the rail network (or sequence the way people have used a place) since its discovery

List the changes in a place or ways in which it has developed since its discovery by early Māori and latter by European colonial settlers.

List the changes in the way people have accessed and used a place since its discovery.

Write paragraphs describing each change. Sort these changes into chronological order to create a timeline of how a place on the rail network has changed.

**Extension**

Find early maps of your local area and use them to map the changes to an identified place on the rail network since its discovery. Use annotations and images.

Refer to:

[National Library of New Zealand: Cartographic Collection](https://natlib.govt.nz/collections/a-z/cartographic-collection)

[Te Ara: Early Map of Auckland 1859](https://teara.govt.nz/en/zoomify/8704/early-map-of-auckland)

[Auckland City Library: Heritage Maps](https://kura.aucklandlibraries.govt.nz/digital/collection/maps/)

[Te Ara: Early Mapping](https://teara.govt.nz/en/early-mapping)

[Hocken Library: University of Otago Maps](https://www.otago.ac.nz/library/exhibitions/he_tirohanga_ki_muri/images.html#maps)

## 2.7. Analyse a place on the rail network

Locate a place on the rail network. Identify all the relevant parts that make up this place on the rail network.

For example, a railway station is made up of:

* a platform with signage and the yellow line
* a station building, including ticket sales counter, waiting rooms and toilets
* communication systems (safety and arrival/departure information) – loudspeakers, signage, signals
* pedestrian and wheelchair access ramps, overbridges, steps
* a drop-off and collect parking area
* a left luggage area
* a lost and found office
* taxi ranks
* bus bays.

Think about each element in turn. If the element was missing or malfunctioned, how would this affect the station as a whole?

Use this thinking to make a generalisation about the purpose or function of the element.

Step back from your analysis and make a generalisation about the relative importance of the parts to the whole place.

**Extension**

Evaluate the importance of the different parts of a railway station.

## 2.8. Analyse the rail network

Identify all the relevant parts that make up the rail network.

Think about each element in turn.

If the element was missing or malfunctioned, how would this affect the rail network as a whole?

Use this thinking to make a generalisation about the purpose or function of the element.

Step back from your analysis and make a generalisation about the relative importance of the parts to the whole network.

**Extension**

Draw a concept map to represent all the connections (nodes and internodes) in a rail network. Evaluate the importance of the different parts of a rail network to the whole network.

# Section 3: Extend your thoughts and your actions as to what is worth knowing and doing as a citizen around places on the electrified rail network

**Looking in a new way**

These activities provide opportunities for students to extend their connected ideas about place and the electrified rail network.

**Learning intention: Take action to help keep citizens in your community safe around places on the electrified rail network. [extended abstract]**

Differentiated success criteria: We will know we have achieved this because …

|  |  |
| --- | --- |
| *Multistructural* | *I have created a resource to help people keep safe around places on the electrified rail network* |
| *Relational* | *…. and I explain how and why the ideas in the resource will help people keep safe around places on the electrified rail network* |
| *Extended abstract* | *… and I seek and act on feedback to improve ideas in the resource that will help people keep safe around the electrified rail network.* |

**Key Competency self-assessment rubric**

Highlight the relevant Key Competencies for section 1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Thinking** | **Managing self** | **Participating and contributing** | **Relating to others** | **Using language, symbols and text** |
| Critically analyse the factors contributing to safe electrified rail networks for all citizens.Example – describe, explain and justify ways to stay safe at places on the electrified rail network. | Act responsibly when around the electrified rail network as a pedestrian, passenger, cyclist or driver to ensure all citizens keep safe.Example – adopt a “sort it and report it” approach to unsafe behaviour around the electrified rail network. | Display an awareness of the local issues around creating and maintaining safe electrified rail networks.Be actively involved in community issues around safe electrified rail networks.Example – listen, respond and act together to make the electrified rail network a system free of death and serious injury. | Interact with others to create safe electrified rail networks.Example – demonstrate a commitment to safer outcomes for self, friends, family and whānau at places on the electrified rail network. | Interpret and use language, symbols and text in ways that keep citizens safe around electrified rail networks.Example – share safe rules and behaviours for places on the electrified rail network. |

## 3.1. Generalise about the electrified rail network

### 3.1.1. Make a generalisation about the significance of the rail network to people in your local community

Ask students to reflect on all the different parts of the rail network, how they are used, who uses them and how easy it is to be safe.

Make a class generalisation – “Overall we think the rail network is (make a claim) because (give reasons), and our evidence is (give examples).”

### 3.1.2. Make a generalisation about the way people view and use rail networks in your local community

Ask students to reflect on all the different ways people use the rail network and all the different perspectives they hold.

Is the rail network a community of people who care for each other or simply a collection of strangers passing through?

Make a class generalisation – “Overall we think the rail network is (make a claim) because (give reasons), and our evidence is (give examples).”

### 3.1.3. Make a generalisation about the way to keep citizens safe when they use rail networks in your local community

Ask students to reflect on all the different ways people use the rail network and all the different measures needed to keep them safe.

Make a class generalisation – “Overall we think the best way to keep citizens safe on the rail network is to (make a claim) because (give reasons), and our evidence is (give examples).”

## 3.2. Predict the significance of the rail network to people in the future

Think about movement of people and freight. Think about the future – how will people and freight move from A to B? Will we need to move people or freight?

Predict the challenges and opportunities that further exploration of the rail network might provide for people, places and environments in the future.

Is the answer “more and faster” trains? Are the enormous costs of the physical structures of the rail network – the track and station and their fixed location – a barrier to flexibility and responsiveness in any future movement of freight and people?

Will the efficiencies of rail (land usage, energy consumption) mean rail has a future?

What will the new traveller want when moving from A to B?

What experiences can rail provide to meet the wants and needs of future citizens?

How will freight be delivered in the future? What advantages can rail offer to meet the needs and wants of business and manufacturing. Make a prediction about the future of the rail network and back it up with reasons and evidence.

Refer to:

[Faster, cleaner, greener: What lies ahead for the world’s railways (CNN)](https://edition.cnn.com/travel/article/future-rail-travel-cmd/index.html)

[Amazon Prime Air drone deliveries](https://www.aboutamazon.com/news/transportation/amazon-prime-air-prepares-for-drone-deliveries)

[The Martin Jetpack](https://en.wikipedia.org/wiki/Martin_Jetpack) New Zealand-based attempt at a single-person aircraft

[Future of Rail (Ministry of Transport)](https://www.transport.govt.nz/area-of-interest/infrastructure-and-investment/future-of-rail/)

## 3.3. Create a resource or plan an action to help keep citizens safe at one or more places on the local rail network

Imagine that you are a group of explorers who have just discovered your local community and its rail network.

Use digital images, video, drawings, local history, stories, interviews, links to articles in local media, latitude and longitude to bring in information about one or more places on the local rail network.

Detail how the place is affecting people (keeping them safe) and how people are affecting the place (creating safeguards for use of the place).

Create an exploration report, profiling your discovery of the place and the opportunities and challenges it provides for the different groups in your local community.

Explain how people can change their behaviours to be safe around the places on the rail network and how the places on the rail network have changed to accommodate people and keep them safe.

Use the opportunities and challenges of places as a context for communicating the following key messages.

**Stay away from overhead wires carrying electrical energy.**

* The electrical energy that moves trains is always dangerous and always on.
* You cannot hear, see or smell electrical energy.
* The electrical energy is 100 times more powerful than the electrical energy used at home.
* The electrical energy can jump gaps of up to 3 metres.
* When electrical energy passes through people, it kills or seriously injures them.

**Always use level crossings to get across the tracks.**

* Trains on the tracks are very big, very fast and very quiet.
* Trains take a long time to stop.
* It is dangerous to take shortcuts and trespass.

**Watch out for the second train.**

* Obey all warning signs and signals.
* Wait until all warning signs have stopped before crossing – there may be a second train.
* Look and listen in both directions.

Identify a need for safer behaviours around the rail network in your local community. Identify the group in your local community who most need help to manage their safety.

Include your recommendations for safer use of the places on the local rail network in the future.

Work in groups to develop your safety message targeting this group.

Brainstorm ways to communicate your message to the at-risk group using your local rail network.

Create a resource or plan an action that will communicate your message.
Plan how to communicate your safety message to people in the community.

Resources to communicate the message may include:

advertisement, animation, art work, baking, blog, board game, brochure, cake decoration, cartoon, carving, chart, comic book, computer game, cupcakes, dance, shop window display, drama, drawing, documentary, flyer, graph, game, Google map, haiku, “how to” guide, illustrated story, infographic, jingle, kete, letter, logo, mask, map, mime, montage, musical performance, mural, photo essay, pamphlet, performance, pick a path, postcards, poster, poem, puppet show, radio show, rap, recipe, role play, rubric, scrapbook, slideshow, sculpture, song, speech, t-shirt, television commercial, trading cards, whakataukī, wiki, video, webpage.