

SUSTAINABLE TOURISM AT THE RAILWAY

MAPS IN MOTION

LEVEL

Year 11

Geography Unit 2 Tourism: Issues and Challenges

ACTIVITY DESCRIPTION

Puffing Billy Railway is Australia's foremost operating steam railway, and one of the largest narrow-gauge steam and heritage railways in the world. Its history spans a period of 123 years. The narrow gauge 2'6", 24km line between Belgrave and Gembrook in Victoria survives as one of the most intact examples of pioneering railway infrastructure in Australia. But how do the Locomotive crew, and visitors know where it went in the past, and where it goes today?

Diagrams, graphs, and maps are visual texts that are fundamental to Geography. Maps are one of the geographer's greatest and key tools for representing and explaining spatial information, patterns, and processes. The construction of visual representations of geographical concepts and relationships supports students in developing understanding and showcasing their knowledge. To effectively design and read maps, students need to develop a range of interrelated skills including location skills, symbol skills, understanding of scale and interpretation of data. Students explore changes to Puffing Billy Railway over time, using secondary data to create a map of the railway including border, orientation, legend, title, scale, source (BOLTSS) conventions.

THEME

Area of Study 1 – Characteristics of Tourism

Area of Study 2 – Impact or tourism: issues and challenges

MATERIALS REQUIRED

- “Maps in Motion” Information sheet
- Graph paper
- Ruler
- Multiple coloured pens or pencils
- Eraser

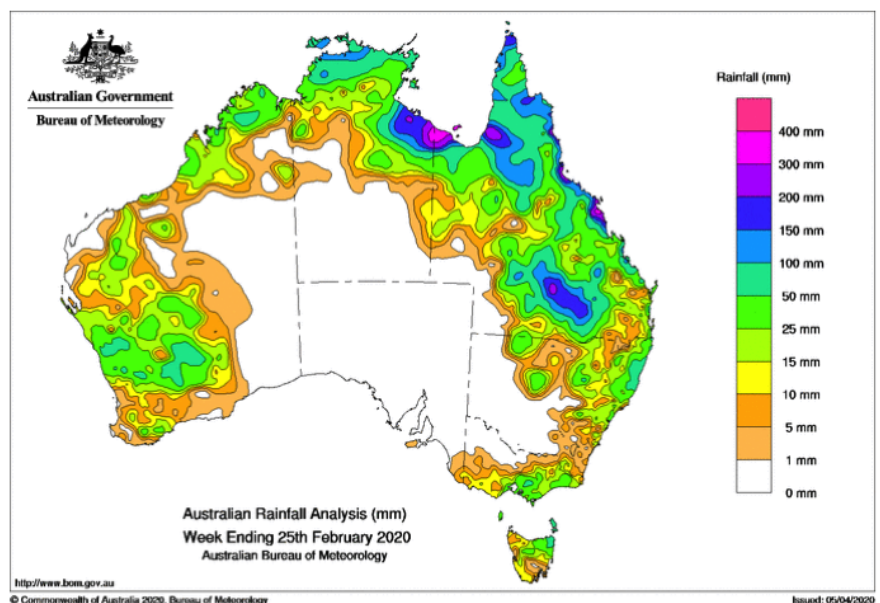
INSTRUCTIONS

1. Using the background information provided, discuss why we use maps and the common features of a map.
2. As a whole group activity provide the following step-by-step example of reading and constructing a map.
3. In addition to teaching each of these features, teachers can show students a range of map types and engage them in discussion to explicitly teach the various semiotic systems each map employs (an example of a rainfall map is below). As a whole group activity, you can discuss each feature of BOLTSS, which is demonstrated by teacher questioning in the table below. Responses to these questions will differ depending on the type of map being shown.

TEACHER QUESTIONS:

Map feature	Semiotic considerations
Border	<ul style="list-style-type: none"> • How do the borders differentiate/separate parts of the map? • Why are these important? • What do the borders represent?
Orientation	<ul style="list-style-type: none"> • Which direction is north? • Why is the map orientated with north at the top of the page? • Why is north not orientated at the top of the map?
Legend	<ul style="list-style-type: none"> • Is there a legend? • What do the different colours represent? • What do these different shapes mean? • Why do you think they've selected those colours/shapes?
Title	<ul style="list-style-type: none"> • Can you easily see the title of the map? • Does it explain what the map shows? • Are there nouns, adjective or verbs in the title?
Scale	<ul style="list-style-type: none"> • Is there a scale? • Is there more than one scale? • What do the numbers represent? • How is the scale represented: as a line scale, number scale, something else?
Source	<ul style="list-style-type: none"> • Where did the mapmaker get the information to make the map? • Is this information from a well-respected organisation? • Is the information recent? Does this matter?

The example right is a secondary student's semiotic analysis of the Australian Rainfall Analysis for the week ending 25 February 2020.



TEACHER ANSWERS:

Map feature	Semiotic considerations
Border	<ul style="list-style-type: none"> • There is only one border which contains the map of Australia, the legend, and the title (as well as the BoM logo). There is no surrounding text.
Orientation	<p>There is no orientation. Most people reading this map would understand that the north is towards the top of the page.</p> <ul style="list-style-type: none"> • An orientation should be included.
Legend	<ul style="list-style-type: none"> • The legend uses colour to show how much rainfall has fallen. Different colours indicate different amounts of rainfall. • The legend is clearly separate from the map of Australia to avoid confusion. It also has a title with units (mm) • On the map, the different coloured areas indicate how much rain has fallen in the week.
Title	<p>The title is at the bottom of the page. It explains that the map shows the amount of rainfall across the week ending 25 Feb 2020.</p> <ul style="list-style-type: none"> • It is an extended noun group to describe the graph. • ‘Analysis’ is the noun; the map is a detailed examination of something. • ‘Australian’ and ‘Rainfall’ are pre-modifiers. ‘Rainfall’ is a pre-modifying classifying adjective that modifies ‘Analysis’ to let the reader know that the analysis map is about rainfall. ‘Australian’ is also a pre-modifying classifying adjective that indicates the rainfall is for Australia. Classifying adjectives are used to divide people or things into particular groups, types or classes and cannot take intensifiers such as ‘very’ or ‘rather’. • ‘Week Ending 25th February 2020’ is the qualifier and adds complementary information. The map shows rainfall in Australia from 19 to 25 February 2020.
Scale	<ul style="list-style-type: none"> • There is no scale. Information about distance is not central to the meaning generated by the map. The map is informing us about the volume of rainfall.
Source	<ul style="list-style-type: none"> • This data is collected by the Bureau of Meteorology. It is a respected source. The date the data is collected is current (at the time of writing).

4. As a whole group show students the topographic maps of Puffing Billy Railway on the “Maps in Motion” information sheet. Advise students that they are to draw a map of Puffing Billy Railway using the information provided. If they require more information or inspiration, they can visit the Puffing Billy Railway website at: <https://puffingbilly.com.au/visit-us/the-journey/>

Students can also use google maps via app or desktop to find more information.

5. Ask students to gather their materials and complete a visual representation, a map, of Puffing Billy Railway, including all 6 essential features (BOLTSS). Students may wish to add some historical landmarks.

EXTENSION: Students to include Longitude and Latitude location of stations on map.

✓ SUGGESTIONS FOR ASSESSMENT

Ability to follow step by step guided instructions and successfully interpret secondary data to construct a map of Puffing Billy Railway.

🔍 BACKGROUND INFORMATION

MAPS – WHAT DO WE USE THEM FOR?

There are many different types of maps, which are usually classified according to what they are attempting to show. Interpretation of maps varies but one common point of view is that there are two main types of maps:

- those which summarise the actual landscape (topographic and general reference maps); and
- those which describe / comment on specific features using the landscape as a background or for context (all other maps – usually called thematic maps).

Map examples are:

- General Reference (sometimes called planimetric maps)
- Topographic Maps
- Thematic
- Navigation Charts
- Cadastral Maps and Plans

To read more visit here: <https://www.icsm.gov.au/education/fundamentals-mapping/types-maps>

All of the above maps have one thing in common – they have a set of rules which determine how they are made and what they show. This is called a **Specification**. When designing or labelling a map you must provide the rules and guidelines for the issues associated with making the map.

BOLTSS

BOLTSS is an acronym. It helps us to remember the 6 essential features of a map. It stands for: Border, Orientation, Legend, Title, Scale and Source. A legend (or key) is a list of symbols used on a map, that tells us what each symbol means.

Geography teachers would be familiar with explicitly teaching the six features of a map using BOLTSS (this acronym represents the first letters of the six features listed below):

- **B – Border:** A line around the map to show the edges of the map to prevent confusion with other text
- **O – Orientation:** Shows direction using a compass rose or North arrow
- **L – Legend:** Key to the symbols and colours used
- **T – Title:** A precise name of the map, usually placed above the map or sometimes in the figure caption
- **S – Scale:** A measure between the map and real-world usually a linear scale, and sometimes a ratio or statement
- **S – Source:** A source is the origin of the data shown on the map so that the reader knows where the information comes from.

TOPOGRAPHIC MAPS

If you have ever been bushwalking, camping or taken part in other outdoor activities, you have most likely used a topographic map.

Topographic maps show detailed physical features on the Earth's surface. Vicmap uses topographic maps that cover the entire state of Victoria with features including:

- **constructed** roads, railways, buildings, airports, walking tracks and reserves
- **administrative** local council boundaries, crown land, state and international borders, place names
- **natural** vegetation, national park areas, water ways, coastal features
- **terrain** contours, mountains, valleys and cliffs

- Topographic maps have a map legend (or key). The map legend lists the features shown on the map with their matching symbols.
- They also have location reference systems. These include longitude, latitude and a coordinate grid, so you can accurately work out the position of mapped features.
- Magnetic information displayed on the map also allows for accurate navigation.
- Our landscape is changing all the time, so a topographic map is a graphic representation of a moment in time.

Vicmap topographic maps have a regular update cycle for both digital and printed maps.

LONGITUDE AND LATITUDE

Latitude and longitude are parameters or **coordinates** that help determine the location of any place on Earth. Both latitude and longitude are angles that uniquely define points on the Earth's sphere. They constitute a coordinate system or scheme to locate or identify geographic positions anywhere on the Earth's surface.

Latitudes are horizontal lines that measure distance north or south of the equator. Longitudes are vertical lines that measure east or west of the meridian in Greenwich, England. Together, latitude and longitude enable cartographers, geographers and others to locate points or places on the globe. They also show the angular distance of any place from the Earth's centre. Latitude and longitude are both measured in degrees (°) and minutes (').

Latitude and longitude make up the grid system that helps us identify absolute, or exact, locations on the Earth's surface. You can use latitude and longitude to identify specific locations. Latitude and longitude are also helpful in identifying landmarks, such as Puffing Billy Railway.

PUFFING BILLY RAILWAY- THE JOURNEY

The student's task will involve the creation of a map showcasing the 24km journey from Belgrave-Gembrook on Puffing Billy Railway. Information about each of the stations, locations and the Railway line can be found here: <https://puffingbilly.com.au/visit-us/the-journey/>

CURRICULUM LINKS

Geography Skills

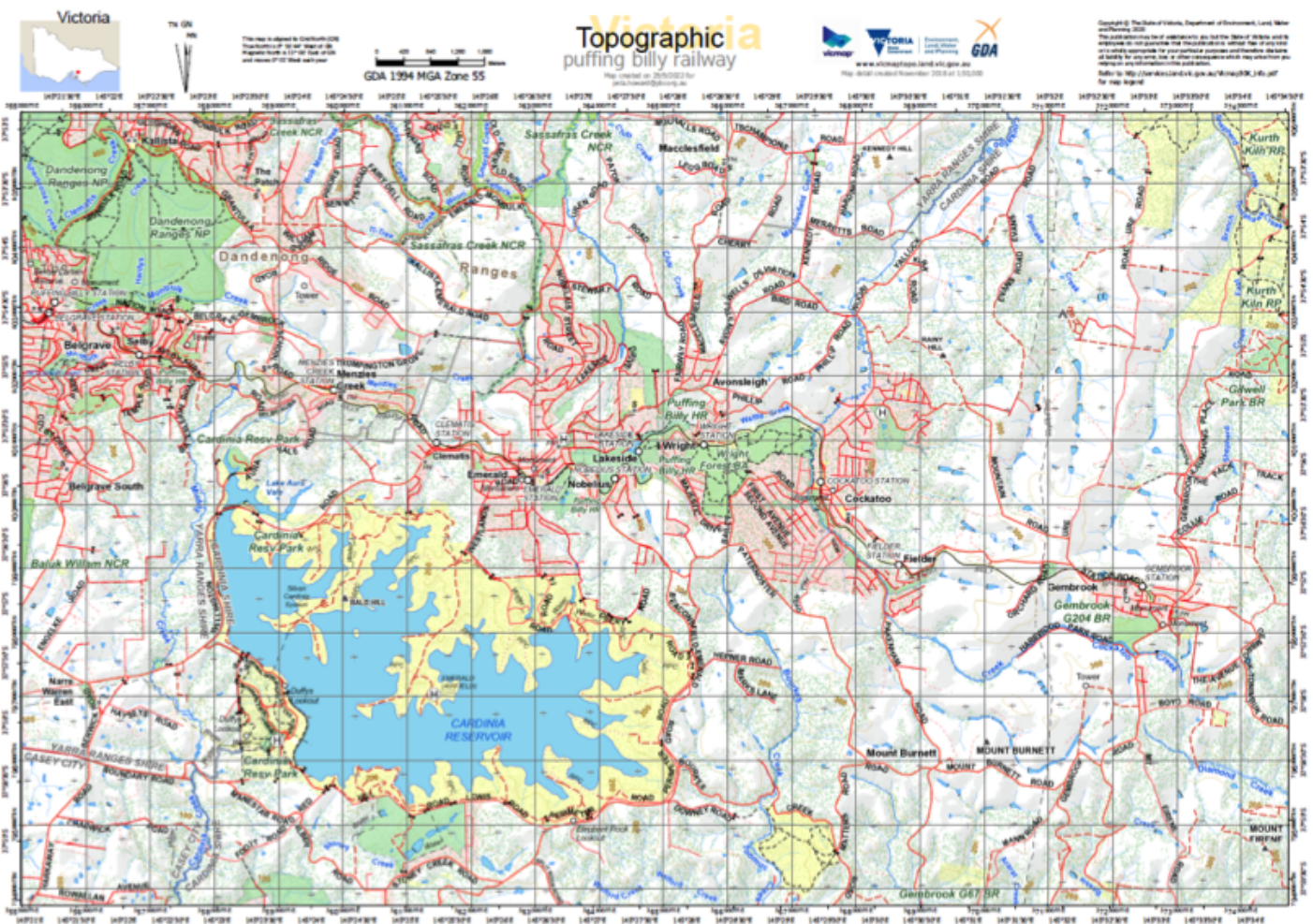
Cartography – Map Creation

- Use border, orientation, legend, title, scale, source (BOLTSS) conventions when creating or completing a map.
- Use of both primary data collected in the field and secondary data from online databases to create maps and map layers using geospatial technologies. These maps should be at an appropriate scale and follow geographic conventions.

MAPPING YOUR JOURNEY – INFORMATION SHEET

Use the Maps of Puffing Billy Railway below to design, create and annotate your own map of the railway. Remember to include the 11 stations found on the railway and the 6 essential features (BOLTSS).

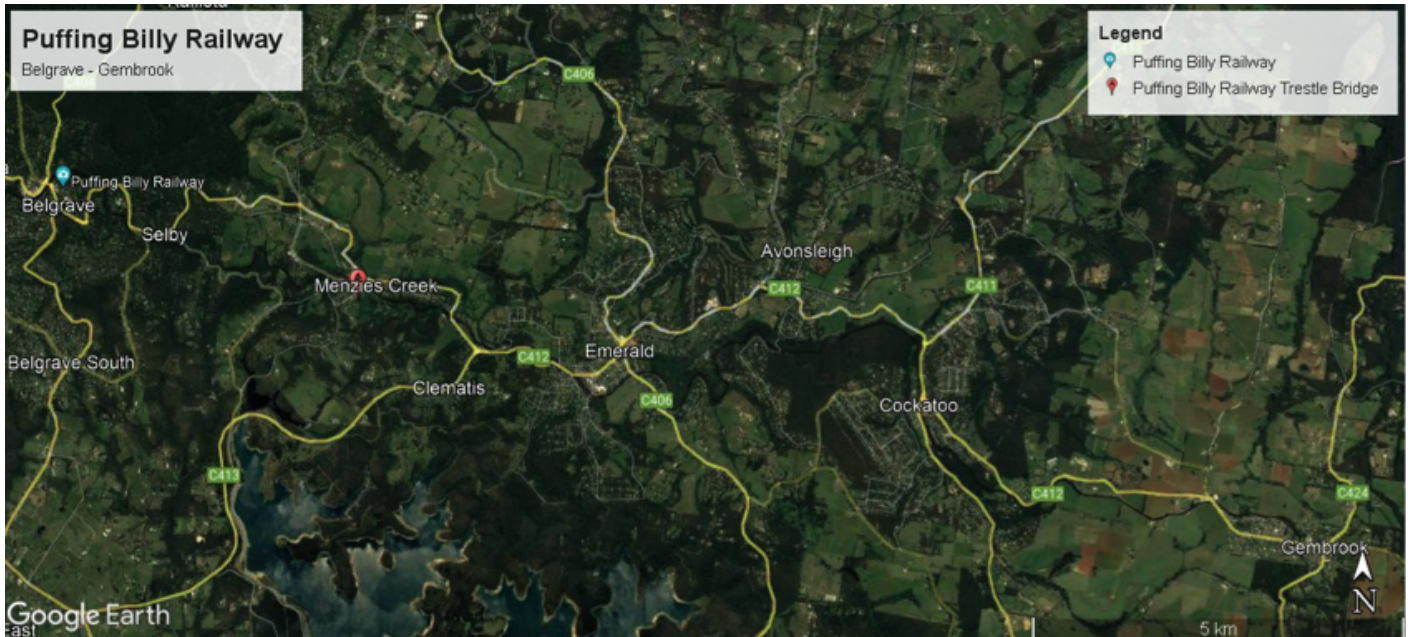
Image 1. Puffing Billy Railway Topographic Map 2021



State of Victoria (Department of Environment, Land, Water and Planning). (n.d.). [Puffing Billy Railway topographic Map].

Retrieved September, 2021, from <https://vicmaptopo.land.vic.gov.au/#/discover-map>

Image 2. Puffing Billy Railway aerial photograph



Puffing Billy Railway (2021). [Puffing Billy Railway aerial photograph]. Retrieved September, 2021, from Google Earth Pro.

Image 3. Puffing Billy Railway Journey



Puffing Billy Railway. [Puffing Billy Railway Journey Map].

Retrieved September, 2021, from <https://puffingbilly.com.au/visit-us/the-journey/journey-map/>

2. Describe what you see in the satellite image for the specific years below.

1984	2000	2020

3. Can you identify any differences in the area across this 26-year period. Are there any common trends or patterns across the years at this location?

4. Is there any evidence of Human impact at Puffing Billy Railway? Is it positive or negative to the surrounding environment?

5. What could the local Councils introduce or do to mitigate this impact in the Dandenong Ranges?

6. What could Puffing Billy Railway introduce or do to mitigate its impact in the Dandenong Ranges?