THE BENEFITS OF PUBLIC TRANSPORT TO THE ENVIRONMENT

	Key Learning Area	Unit or lesson title and main focus questions	Most appropriate level and suggested number of lessons
9) Geography	The benefits of public transport to the environment How will the Sydney Metro Northwest work towards an environmentally sustainable future for my community?	Stage 2-3
	English		2-4 lessons

Teacher briefing

Students explore the environmental effects of car transport and highways and examine how these issues are addressed by the Sydney Metro Northwest environmental impact statements. They create environmental scorecards for cars and trains, and devise information podcasts that identify the benefits public transport brings to the environment.

Requirements for these lessons

- ► Interactive whiteboard
- Internet connection
- ► Laptops, computers, iPads with bookmarked sites
- Hard copies of articles
- Digital cameras.

Assessment

Opportunities for formal or informal assessment include retrieval charts, environmental scorecards and podcasts created either individually or in small groups.

Key terms and vocabulary

Sydney Metro Northwest, environmental impact statements, sustainability, air quality, ozone layer, ozone depletion, water quality, resources.

Web links

Free podcast recording software - Audacity

https://sourceforge.net/projects/audacity/

Apple Garageband is also very easy-to-use podcasting software.

The links to articles and documentaries on the environmental impact of cars on the environment are only a guide. Teachers should use any suitable material in their library or through their own web research.

Sydney Trains Environment page

http://www.sydneytrains.info/about/environment/

National Geographic

https://www.nationalgeographic.com/environment/green-guide/buying-guides/car/ environmental-impact/

Royal Automobile Club

https://rac.com.au/about-rac/advocating-change/sustainability

Green Vehicle Guide

https://www.greenvehicleguide.gov.au/

Clean up Australia

http://www.cleanup.org.au/au/Factsheets/batteries.html?kw=batteries

ABC Behind the News: 'Ozone Layer'

http://www.abc.net.au/btn/story/s2986293.htm

ABC Behind the News: 'Congestion tax'

http://www.abc.net.au/btn/story/s2428050.htm

The Hills Shire Council: Greenhouse Gas Reduction PDF (1.7MB)

https://www.sydneymetro.info/sites/default/files/19 Ch 17 Climate Change and Greenhouse_Gas_Emissions.pdf%3Fext%3D.pdf

Topic Three: Planning, designing and building a railway

Syllabus links

Geography K-10

Stage 3 - Factors that shape places - humans shape places

(GE3-1) describes the diverse features and characteristics of places and environments

(GE3-2) explains interactions and connections between people, places and environments

(GE3-3) compares and contrasts influences on the management of places and environments

(GE3-4) acquires, processes and communicates geographical information using geographical tools for inquiry.

Science K-10

(ST2-4WS) investigates their questions and predictions by analysing collected data, suggesting explanations for their findings, and communicating and reflecting on the processes undertaken

(ST3-4WS) investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations.

English K-10

(EN2-6B) identifies the effect of purpose and audience on spoken texts, distinguishes between different forms of English and identifies organisational patterns and features

(EN3-1A) communicates effectively for a variety of audiences and purposes using increasingly challenging topics, ideas, issues and language forms and features.

Learning experiences

Step 1 - Groups (two to three students)

Research the environmental effects of cars and report back to the class. Ideas:

- Students form small groups and research different key environmental issues from the examples listed: air quality, Greenhouse gases, ozone depletion, and water quality, use of non-renewable resources, fuel costs, and noise issues
- Provide students with bookmarked websites and articles to research (See web links)
- ▶ Visit the school or local library and find relevant books and information, collect relevant newspaper articles, watch ABC 'Behind the News' reports (See web links)
- ▶ Gather data from the school community. Arrange with other teachers for students to ask other classes and teachers about their ideas on how cars affect the environment.

Step 2 - Groups (three to five students)

Groups use what they have found in their research, and participate in environmental roundtable discussions to organise their information into a retrieval chart. This will be used to present the key issues they have found to the class.

lssue	Cause	Effect on the environment

Topic Three: Planning, designing and building a railway

Each group decides their own way of presenting their information to the class. For example, one group may create a mock version of 'Behind the News' using their retrieval charts, iPads and Apps such as iMovie or digital cameras and laptops. Another group may create a short play depicting the key issues they developed in their retrieval chart.

Step 3 - Class activity

Students investigate Sydney Metro Northwest Environmental Impact Statements 1 and 2 and create an 'Environmental Scorecard' for cars and trains.

The headings for an 'Environmental Scorecard' might be the following:

Key environmental and sustainability issues	How can we work to minimise the effects cars and highways have on the environment?	How we can work to minimise the effects trains and railways have on the environment?

As a class, read and research the Sydney Metro Northwest Environmental Impact Statements 1 and 2 and discuss the ways in which the Sydney Metro Northwest is working towards improving the local environment and global sustainability. Students work in small groups or pairs to create their scorecards. These can be presented to the class.

Sydney Metro Northwest Environmental Impact Statement 1

https://www.sydneymetro.info/sites/default/files/NWRL_EIS_No-1_overview_summary_ EMAILversion.pdf%3Fext%3D.pdf

Sydney Metro Northwest Environmental Impact Statement 2

https://www.sydneymetro.info/sites/default/files/NWRL_EIS_2_Section_1.pdf%3Fext%3D.pdf

Background information

Environmental Impact Statement 2 is a very large and detailed document. It covers the development of measures to avoid, mitigate and manage a wide range of potential effects. These include soils and groundwater, traffic and transport, noise and vibration, ecology (terrestrial and aquatic), climate change and Greenhouse gas assessment, surface water and flooding, air quality, waste management and cumulative impacts over time.

There is too much detail across the whole document for students to research and understand. A good place for students to start is Chapter 4 'Sustainability', which lists sustainability objectives and initiatives, and targets to achieve them.

https://www.sydneymetro.info/sites/default/files/05 Ch 4 Sustainability.pdf%3Fext%3D.pdf

Another useful chapter for this exercise is Chapter 10 Noise and Vibration.

https://www.sydneymetro.info/sites/default/files/document-library/05 NWRL%20EIS%20 Stage%202 %20Chapters%2010%20to%2013.pdf





Figure 96: This diagram from Sydney Trains Environment page and the information found there, will help students get started.

Source: Sydney Trains website. http://www.sydneytrains.info/about/environment/

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Step 4 - Groups (two to three students)

Students create short (two to three minute) information podcasts identifying the benefits of public transport .

Ideas:

- A group discussion highlighting a key benefit of public transport to the local area, or to Sydney, New South Wales or the whole of Australia
- Discussion of an action plan that will lead to improving public transport in the local area.

Students record their podcasts using free software such as Audacity on their laptops or computers and upload them to the class blog or website.

https://sourceforge.net/projects/audacity/

Teacher references and extension work

Extension ICT activities

Students can use their new knowledge and create digital posters, urging students and families to use cars less often. The posters could be printed and used around the school, or attached to the school website, class website or blog.

Students work as a class to create a visual advertisement that advocates using public transport such as the Sydney Metro Northwest. This filmed advertisement could be presented to the school during assembly or attached to the school's website.

