Geography 11–12

Rural and urban places learning sequence

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This resource has been developed to assist teachers in NSW Department of Education schools to create learning that is contextualised to their classroom. It can be used as a basis for the teacher’s own program, assessment, or scope and sequence, or be used as an example of how the new curriculum could be implemented. The resource has suggested timeframes that might need to be adjusted by the teacher to meet the needs of their students.

# Content focus

Students investigate the nature of rural and urban settlements and the global pattern of urban change. They examine the factors causing change in rural and urban locations.

Students study a rural place (Broken Hill), an urban place (Wollongong) and a large city (Los Angeles), to develop an understanding of the geographical processes influencing their character, and responses and strategies for enhancing sustainability and the quality of life.

**Duration**: this sequence of learning is designed to be completed in 40 indicative hours.

# Outcomes

* **GE-12-01** analyses rural and urban places, ecosystems, global biodiversity and economic activity, for their characteristics, spatial patterns, interactions, and nature and extent of change over time
* **GE-12-02** analyses geographical processes and influences, at a range of scales, that form and transform places and environments
* **GE-12-03** assesses geographical opportunities and challenges, and the role of varying perspectives and responses in their management
* **GE-12-04** evaluates responses and management strategies, at a range of scales, for sustainability
* **GE-12-05** synthesises and evaluates relevant geographical information from a variety of sources
* **GE-12-06** justifies geographical methods used in geographical inquiry and their relevance in the contemporary world
* **GE-12-07** selects and applies geographical inquiry skills and tools, including spatial technologies, fieldwork, and ethical practices, to investigate places and environments
* **GE-12-08** applies mathematical ideas and techniques to analyse complex geographical data
* **GE-12-09** communicates and applies geographical understanding, using geographical knowledge, concepts, terms and tools, in appropriate forms

Related Life Skills outcomes: **GE-LS-01, GE-LS-02, GE-LS-03, GE-LS-04, GE-LS-06, GE-LS-07, GE-LS-08, GE-LS-09, GE-LS-10, GE-LS-11, GE-LS-12**

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# Learning sequence 1 – Rural and urban settlement

**Teacher note**: examples included in the syllabus are provided to support delivery of course content. These examples are not mandatory and teachers might choose to use the examples provided or select appropriate alternatives.

## Syllabus content

* The size, pattern and spatial distribution of settlements

**Including:**

* different types of settlements – remote settlement, village, suburb, regional centre, city, megacity and urban mega-region
* settlement patterns
* influences on size and spatial distribution – location, climate, topography, natural resources, population and economic development
* National and global urban hierarchies of settlements, based on population and urban function, and spheres of influence
* The nature of urbanisation and urban growth at a global scale

**Including:**

* challenges facing rural and urban places
* the interdependence of rural and urban places
* Settlements in the world today that have maintained a small ecological footprint and a high level of wellbeing
* Strategies for the sustainable management of rural and urban places, including at least one successful initiative or project

### Learning intentions and success criteria

**Teacher note**: these learning intentions and success criteria are general and should be contextualised to suit your school and students’ needs.

#### Learning intentions

Students:

* understand and differentiate between various types of settlements (remote settlements, villages, suburbs, regional centres, cities, megacities and urban mega-regions) and analyse their size, patterns and spatial distribution
* investigate the factors that influence the size and spatial distribution of settlements, including location, climate, topography, natural resources and population
* examine the role of natural resources in the economic development of different countries and the importance of these resources in their respective economies
* understand the concept of urban hierarchies and spheres of influence and analyse how settlements can be classified based on population size and urban functions
* investigate the factors that influence urban hierarchies and how they vary across different regions and countries, and explore how urban hierarchies can inform urban planning, resource allocation and sustainable development
* develop skills in using online tools to gather data, create custom maps and visualise urban hierarchy information, as well as analyse and compare the factors contributing to the classification of cities within the urban hierarchy
* **analyse data and interpret maps related to urbanisation and urban growth trends**
* **identify and critically evaluate the challenges facing rural and urban places and explore their interconnectedness**
* **understand the concepts of ecological footprint and wellbeing, and their relationship to sustainable communities or eco-villages**
* **compare settlements (sustainable communities or eco-villages) and their practices for reducing ecological footprints and improving wellbeing**
* **investigate the role of individual, community and government actions in settlements for reducing ecological footprints and promoting sustainable development**
* understand the importance of strategies for sustainable management strategies of specific case studies and learn to assess the credibility of sources in their research
* engage in collaborative learning and critical thinking through group discussions and presentations, as well as evaluating various aspects of success criteria for sustainable management strategies.

#### Success criteria

Students can:

* correctly define and identify characteristics of each type of settlement
* use online resources, such as the United Nations Population Division site and World Bank, to gather data and examples of different types of settlements
* effectively analyse data and identify patterns or trends related to the size and distribution of settlements
* create and present a case study on a specific settlement type, discussing its size, pattern, spatial distribution and unique characteristics or challenges
* investigate the influence of factors like location, climate, topography, natural resources and population on the size and spatial distribution of settlements
* identify and describe the key features of urban hierarchies and provide examples of cities that fit into different categories within the hierarchy
* effectively participate in class discussions and group activities related to the factors that influence urban hierarchies and how they vary across different regions and countries
* gather and analyse relevant data and statistics about population size and urban functions for various cities in Australia and around the world
* demonstrate proficiency in using online mapping tools to create custom maps displaying urban hierarchies and spheres of influence, as well as in analysing their maps to identify patterns and factors influencing urban hierarchies
* create a clear and well-organised visual representation of a chosen city’s sphere of influence, effectively presenting and discussing the factors that contribute to the city’s sphere of influence within the urban hierarchy
* identify key indicators and trends in urban development using data
* construct and interpret various graphs to represent patterns, trends and relationships related to urban growth and challenges facing rural and urban places
* create a photo essay or slideshow that explores the challenges and opportunities of urbanisation and urban growth, with captions or annotations to provide context and support the narrative
* compare and contrast the challenges and opportunities of rural and urban places and analyse their interconnectedness
* **explain the concepts of ecological footprint and wellbeing, and describe the characteristics of sustainable communities or eco-villages**
* **calculate their personal ecological footprint and identify factors that contribute to it, such as transportation, housing and energy use**
* **research and present information on specific sustainable communities or eco-villages and their core principles for reducing ecological footprint**
* **compare and contrast the location, environment and land use of 2 sustainable communities or eco-villages using maps and other geographical tools**
* **analyse factors that contribute to the success of settlements in maintaining a small ecological footprint and high level of wellbeing, using evidence from case studies and geographical tools**
* effectively participate in class discussions, sharing their thoughts on implementing sustainable management strategies in rural and urban settings
* conduct research using reputable sources, evaluating their credibility and justifying the current outcomes of their chosen case study
* create and deliver a clear, concise and engaging group presentation that summarises their research findings and highlights the key elements of their assigned case study, including the use of credible sources
* evaluate the sustainable management strategies in their case study using a success criteria
* use Geographic Information System (GIS) software or online mapping tools to analyse the spatial distribution of their case study initiatives or projects, identifying patterns and relationships with geographical factors
* effectively communicate their findings by creating a custom map or cartogram that highlights the locations and spatial patterns of their case study’s sustainable management initiatives or projects.

## The size, pattern and spatial distribution of settlements

Examine the features of different types of settlements, including:

* remote settlements
* villages
* suburbs
* regional centres
* cities
* megacities
* urban mega-regions.

Provide brief definitions and characteristics of each type of settlement in Table 1 below.

Table 1– types of settlements, definitions, examples and characteristics

|  |  |  |  |
| --- | --- | --- | --- |
| Types of settlements | Definition | Examples | Characteristics |
| Remote settlements |  |  |  |
| Villages |  |  |  |
| Suburbs |  |  |  |
| Regional centres |  |  |  |
| Cities |  |  |  |
| Megacities |  |  |  |
| Urban mega-regions |  |  |  |

Use the [United Nations – Population Division](https://www.un.org/development/desa/pd/) site to develop an understanding of the differences between settlement types.

In small groups, use a large world map (or use an online mapping tool such as [Google Earth](https://earth.google.com/web/)) to identify and label examples of each type of settlement, using different coloured markers or pins.

Use the [United Nations – Population Division](https://www.un.org/development/desa/pd/) website or [World Bank](https://data.worldbank.org/) to research information and data on different settlements.

Present research findings to the class and discuss the patterns and spatial distribution of settlements. Engage in [peer discussion](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/547) to build on the research findings.

Locate data related to the population, land area and population density of different types of settlements. Create a table to organise the data collected.

Analyse the data to identify any patterns or trends related to the size and distribution of settlements.

Write a brief summary of the findings, highlighting key patterns or trends.

Research a specific settlement type using reputable sources, for example, [National Geographic](https://www.nationalgeographic.com) or [The Guardian's – Cities section](https://www.theguardian.com/cities).

Create a brief report on the settlement type, discussing the size, pattern and spatial distribution of the settlement type, as well as any unique characteristics or challenges.

Review the main concepts learned in the lesson, including the different types of settlements and their size, pattern and spatial distribution.

Discuss the patterns or trends identified during the activities and how these patterns might change in the future.

**Teacher note**: students need to think critically about the role of geography in shaping settlements and the challenges and opportunities presented by different types of settlements.

Complete Table 2 below and use specific examples from your case study.

Table 2 – influences on size and spatial distribution

|  |  |  |
| --- | --- | --- |
| Influence | Influence on size | Influence on spatial distribution |
| Location |  |  |
| Climate |  |  |
| Topography |  |  |
| Natural resources |  |  |
| Population |  |  |
| Natural resources |  |  |
| Economic development |  |  |

Use the [Australian Bureau of Statistics](https://www.abs.gov.au) to gather population and economic data for different regions in Australia.

Create choropleth maps (using free online mapping tools such as [CARTO](https://carto.com/) or [QGIS](https://qgis.org)) to visualise the spatial distribution of population and economic activity in relation to the information covered in Activities 1 and 2.

Analyse the maps and identify patterns in size and spatial distribution.

Discuss common themes and differences among the case studies.

**Teacher note**: divide the class into small groups and provide each group with a list of different natural resources (for example, minerals, fossil fuels, water, forests and arable land).

Have students complete the following research and data analysis tasks in the small groups.

Research the importance and uses of each natural resource in relation to economic development, using reputable websites such as [World Bank](https://www.worldbank.org) and the [United Nations Environment Programme](https://www.unep.org).

Select a country with a resource-based economy (for example, Australia for minerals, Saudi Arabia for oil, Brazil for agriculture or Canada for forestry). Students research the role of their assigned natural resource in the country’s economic development, focusing on factors such as exports, gross domestic product (GDP) and employment.

Use free online data visualisation tools, such as [Gapminder](https://www.gapminder.org) or [Datawrapper](https://www.datawrapper.de), to create graphs or charts illustrating the importance of a natural resource in the country’s economy.

Present the graphs and findings to the class as part of a [gallery walk](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/555), highlighting the key role of natural resources in economic development.

## National and global urban hierarchies of settlements

**Teacher note**: urban hierarchies classify settlements based on factors such as population size and urban functions, including administration, commerce, transportation and services. Urban hierarchies are not static. They change over time due to factors such as economic development, population growth, infrastructure investments and global trends. Understanding these hierarchies helps geographers and urban planners make informed decisions about resource allocation, transportation planning and sustainable development.

Access the syllabus glossary to define and discuss urban hierarchies and spheres of influence.

Conduct a class [brainstorm](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542) on how settlements can be classified based on population size and urban functions such as administration, commerce, transportation and services.

Discuss the main factors that influence urban hierarchies and how they vary across different regions and countries. Reflect on how understanding urban hierarchies can help inform urban planning, resource allocation and sustainable development.

Read the information in Table 3 below and complete the reflection columns for national and global cities.

Table 3 – key factors of urban hierarchies

|  |  |  |  |
| --- | --- | --- | --- |
| Factor | Key information | National | Global |
| Population size | One of the simplest ways to classify urban settlements is by population size. Large cities with millions of inhabitants, such as megacities and metropolitan areas, usually occupy the top tiers of the urban hierarchy, while smaller towns and villages fall into the lower tiers. |  |  |
| Urban function | Cities and towns can also be classified based on the functions they perform within a region or a country. These functions include administration such as capital cities, commerce such as major trading hubs, transportation such as ports and transit hubs, education such as university towns and services such as healthcare and tourism. Cities with more diverse and specialised functions generally rank higher in the urban hierarchy. |  |  |
| Spheres of influence | Spheres of influence are the areas surrounding a city that are directly or indirectly impacted by its activities and decisions. |  |  |
| Centrality | Centrality refers to the influence a city has over its surrounding areas. A city with a high degree of centrality often serves as a regional or national centre for economic, political and cultural activities. As a result, these cities have a more significant role in the urban hierarchy. |  |  |
| Connectivity | Cities that are well-connected to other cities and regions through transportation networks such as highways, railways, airports and communication infrastructures, such as internet and telephone, tend to have a higher position in the urban hierarchy. Connectivity enables the flow of people, goods and information, which contributes to the growth and development of urban centres. |  |  |
| Global influence | In the context of global urban hierarchies, some cities hold a dominant position due to their international influence in areas such as finance, politics, culture and technology. These global cities, sometimes referred to as ‘world cities’ or ‘alpha cities’, include major hubs like New York, London and Tokyo. |  |  |

Make predictions about how urban hierarchies might change in the future due to factors such as population growth, technological advancements and global trends.

In small groups, access the [United Nations](https://www.un.org) or the [Australian Bureau of Statistics](https://www.abs.gov.au) to gather information, data and statistics about population size and urban functions for various cities in Australia and around the world.

Summarise the key features of urban hierarchies and provide examples of cities that fit into different categories within the hierarchy.

Use free online mapping tools such as [Google My Maps](https://www.google.com/mymaps) or [QGIS](https://qgis.org) to create a custom map displaying urban hierarchies, using the research from the previous activity. (Maps should include markers for cities, indicating their rank within the urban hierarchy and the size of their spheres of influence.)

Analyse the maps and identify patterns in the distribution of settlements and the factors influencing urban hierarchy and spheres of influence.

Select 5 cities or towns from different regions or countries and create a table or spreadsheet comparing the factors contributing to their classification within the urban hierarchy.

Select one city from the urban hierarchy map and research its sphere of influence, focusing on factors such as economic activity, transportation networks and cultural influence.

Create a visual representation (for example, infographic, poster or digital presentation) of the selected city’s sphere of influence, using tools such as [Canva](https://www.canva.com) or [Piktochart](https://www.piktochart.com).

Using a [gallery walk](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/555), present the visual representation to the class and discuss the factors that contribute to the chosen city’s sphere of influence.

In groups, examine a specific case study that represents a unique urban hierarchy, for example:

* a global city (for example, New York)
* a national capital (for example, Canberra)
* a regional centre (for example, Bendigo)
* a transportation hub (for example, Singapore)
* a university town (for example, Cambridge).

Each group should use a different case study.

In groups, complete the following research tasks, focusing on the factors that contribute to the city’s position within the urban hierarchy. Use the information from Table 3 and further research to complete the tasks:

* **Population size**: research the current population size and historical population trends of the assigned city. How does the population size compare to other cities within the country or region?
* **Urban functions**: describe the primary urban functions of the assigned city, such as administration, commerce, transportation, education and services. How do these functions contribute to the city’s position within the urban hierarchy?
* **Centrality**: examine the assigned city’s centrality, considering factors such as economic, political and cultural influence. How does the city’s centrality affect its position in the urban hierarchy?
* **Connectivity**: investigate the assigned city’s transportation and communication infrastructure, including highways, railways, airports and internet connectivity. Explain how the city’s connectivity influences its position within the urban hierarchy.
* **Global influence** (if applicable): for global cities, explore the city’s international influence in areas such as finance, politics, culture and technology. What factors contribute to the city’s status as a global city?

Create a table to display key information and data for the selected city or town, representing different levels of the urban hierarchy. The table will have the following columns:

* City or Town name
* Population size
* Urban functions (for example, administration, commerce, transportation, education, services)
* Centrality (for example, regional, national or international influence)
* Connectivity (for example, transportation and communication infrastructure)
* Global influence (if applicable).

Each row in the table represents a different city or town, with data provided for each of the columns. The table should easily compare the various factors contributing to the urban hierarchy classification for each city or town.

Use a bar chart or column chart to effectively visualise the urban hierarchy based on population size or centrality scores. For example, create a bar chart with the x-axis representing different cities or towns and the y-axis representing either population size or centrality scores.

## The nature of urbanisation and urban growth at a global scale

[Brainstorm](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542) ideas on the nature of urbanisation and urban growth, and the differences between rural and urban places.

Access [World Bank – Urban Development](https://data.worldbank.org/topic/urban-development) and complete the following questions:

* What are the key indicators and trends in urban development according to the data provided by the World Bank?
* How has the urban population growth rate changed globally over the past decades?
* What factors contribute to the rapid urbanisation of developing countries as per the World Bank’s data?

Access and interpret the maps from [United Nations – World Urbanization Prospects 2018](https://population.un.org/wup/Maps/). Complete the following questions:

* Which urban agglomerations (referring to densely populated areas that consist of a central city and its surrounding urban areas, often including smaller cities, towns and suburbs) are experiencing the fastest growth rates according to the World Urbanisation Prospects 2018 maps?
* How is the percentage of urban populations and urban agglomerations by size class represented on these maps?
* Which regions of the world have the highest percentage of urban populations according to the World Urbanisation Prospects 2018 maps?
* What are the key trends and projects in urbanisation and urban growth shown by these maps?
* How can the information from the World Urbanisation Prospects 2018 maps be used by urban planners and policymakers?

**Teacher note**: the following activities will be completed as a group task – one group will research the challenges facing rural places, while the other will focus on urban places.

Use websites such as the [World Health Organisation](https://www.who.int/) and the [International Labour Organisation](https://www.ilo.org/), to gather information.

Create a poster or digital presentation highlighting the main challenges facing the assigned area. Include visual representations, such as photos, graphs and charts.

Present the findings to the class, and complete a [quick write](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/548?clearCache=ea9e9927-20d3-c294-e0d7-50f3ad5c29a0) on how these challenges are interconnected.

Discuss the meaning of interdependence and how it relates to rural and urban places.

Select an example to demonstrate the interdependence of rural and urban places, such as the relationship between agricultural production and urban markets.

* [Improved rural urban linkages: Building sustainable food systems (5:40)](https://www.youtube.com/watch?v=DJgMzxUTx2U)
* [Shifting Demographics](https://www.un.org/en/un75/shifting-demographics)
* [Food and Agriculture Organization](https://www.fao.org/policy-support/tools-and-publications/resources-details/en/c/1152258/).

Use further research and websites including [World Bank – DataBank](https://databank.worldbank.org/home.aspx) and [United Nations Human Settlements Programme (UN-Habitat)](https://data.unhabitat.org/) to create a [concept map](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542) or diagram illustrating the interdependence between rural and urban places. The guiding questions below can be used as a prompt for the concept map or diagram:

* What is the current percentage of the world’s population living in urban areas?
* What percentage of the world’s population is expected to live in urban areas by 2050?
* What challenges does urbanisation pose for food production and supply?
* What are some challenges faced by both rural and urban residents when it comes to access to nutritious, safe and affordable food?
* What are some of the challenges faced by cities and surrounding areas and how can food systems help to address them?
* Who should be involved in the decision-making process when it comes to designing sustainable and inclusive food systems?

Calculate absolute and proportional changes, and identify patterns, trends and relationships within the data and represent findings using various graphs (for example, bar graphs, line graphs, scatter graphs).

Complete [Plus, Minus, Interesting (PMI)](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/551) about the relationship between urban growth and challenges facing rural and urban places.

Complete Table 4 below and include data to support interdependencies and challenges facing rural and urban places.

Table 4 – challenges and interdependencies of rural and urban places

|  |  |  |
| --- | --- | --- |
| Location | Challenges facing rural and urban places | Interdependence of rural and urban place |
| Rural places |  |  |
| Urban places |  |  |

Provided below are some possible challenges facing rural areas:

* **Declining population**: many rural areas are facing a declining population as young people move to urban areas in search of better economic opportunities.
* **Lack of infrastructure**: rural areas often lack the infrastructure needed to support economic growth, including access to high-speed internet, transportation networks and healthcare facilities.
* **Agricultural challenges**: rural areas are often heavily reliant on agriculture, which can be vulnerable to changes in climate, commodity prices and government policies.
* **Poverty**: rural areas often have higher poverty rates than urban areas, due to limited economic opportunities and access to services.

Provided below are some possible challenges facing urban areas:

* **Housing affordability:** many urban areas are facing a housing affordability crisis, as demand for housing outstrips supply, driving up prices and making it difficult for low-income residents to find affordable housing.
* **Congestion**: urban areas often suffer from traffic congestion, which can lead to longer commute times, decreased productivity and increased pollution.
* **Environmental concerns**: urban areas often have higher levels of pollution and waste, which can have negative impacts on the environment and public health.
* **Social inequality**: urban areas can be characterised by significant social and economic inequality, with wealthier residents living near poorer residents, which can lead to disparities in access to services and opportunities.

Provided below are some examples of interdependencies between rural and urban areas:

* **Food production**: rural areas are major food producers and suppliers to urban areas. They provide the necessary resources such as land, water and labour to cultivate crops and livestock. Urban areas, in turn, consume these food products.
* **Energy production**: rural areas also play a critical role in energy production, as they are major producers of renewable energy sources such as wind, solar and hydroelectric power. These energy sources are vital for powering urban areas.
* **Labor force**: rural areas provide labour for many industries, including agriculture, forestry and mining. These industries are often essential to the functioning of urban areas, which rely on the products and resources produced by these sectors.
* **Natural resources**: rural areas are often home to valuable natural resources such as minerals, timber and water. These resources are critical for urban areas, which rely on them for economic growth and development.

Create a photo essay or slideshow that explores the challenges and opportunities of urbanisation and urban growth. Use primary sources (own photos) or secondary information (images online), ensuring the proper permissions and credits are provided for any images used. The photo essay should include captions, annotations or brief descriptions to provide context and support the narrative.

Using the photo essay, compare and contrast the rural-urban interdependence and the challenges presented by the class.

## Settlements with a small ecological footprint and a high level of wellbeing

Access a short video or presentation introducing the concepts of ecological footprint and wellbeing. For example, the [Global Footprint Network](https://www.footprintnetwork.org/), [Educational videos](https://www.footprintnetwork.org/educational-videos/) and [How much Nature do we have? How much do we use? (16:21)](https://www.youtube.com/watch?v=3M29BY86bP4).

‘Settlements in the world today that have maintained a small ecological footprint and a high level of wellbeing are often referred to as sustainable communities or eco-villages. These communities prioritise environmental stewardship, social cohesion and economic stability. They strive to minimise their negative impact on the planet while maintaining a high quality of life for their residents’.

Discuss the statement above, the concept of an ecological footprint and its importance in raising awareness about personal and community resource consumption.

Complete the [Footprint calculator](https://www.footprintcalculator.org/) based on personal lifestyle, household and consumption habits.

Take notes on the factors that contribute to ecological footprints, such as transportation, diet and energy use.

In small groups, discuss the results and share ecological footprint scores, as well as the factors that contributed to these scores.

Conduct a [Think-Pair-Share](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/645) to discuss how personal choices and habits impact a community’s ecological footprint and what changes could be made to reduce it.

Research sustainable communities or eco-villages. Some examples of settlements who have a reduced ecological footprint are provided below.

* [Auroville, India](https://www.auroville.org/): Auroville is an experimental township in southern India that was founded in 1968 with the goal of promoting human unity and sustainable living. The community practices organic farming, rainwater harvesting and renewable energy generation. Auroville also focuses on education, arts and cultural activities to foster personal growth and development.
* [Serenbe, United States](https://www.serenbe.com/): Serenbe is a sustainable community located in Georgia, United States, which was founded in the early 2000s. The community emphasises green building, sustainable agriculture and wellness. Serenbe features energy-efficient homes, organic farms and extensive walking trails. The community also supports local businesses and offers a variety of cultural and wellness programs.
* [Findhorn, Scotland](https://www.findhorn.org/): the Findhorn Foundation, established in 1962, is an eco-village and spiritual community located in north-eastern Scotland. The community emphasises renewable energy, waste reduction and sustainable food production. Findhorn is also known for its educational programs and workshops that promote ecological awareness and personal development.
* [The Federation of Damanhur, Italy](https://www.damanhur.org/): Damanhur, located in the Piedmont region of Italy, is a spiritual community and eco-village founded in 1975. The community values art, spirituality and sustainability, with residents living in eco-homes made from local, natural materials. Damanhur promotes renewable energy, organic agriculture and social entrepreneurship.
* [Tamera, Portugal](https://www.tamera.org/): established in 1995, Tamera is a peace research village and community located in south-western Portugal. The community emphasises cooperative living, permaculture and water conservation. Tamera is also known for its educational programs that focus on peace, ecology and personal growth.
* [Svanholm, Denmark](https://svanholm.dk/english/): Svanholm is an eco-village founded in 1978 in Denmark. The community practices organic farming, renewable energy production and sustainable forestry. Svanholm is also committed to reducing waste and promoting resource-sharing and cooperative living.

Share the research results about settlements reducing their ecological footprint and improving wellbeing.

Using Table 5, create a community action plan about reducing the community ecological footprint and improving wellbeing. The community could be a hypothetical settlement or the local community. The goal is to reduce the community’s ecological footprint through sustainable practices and environmental stewardship.

SMART goals are a framework for setting clear, specific and achievable objectives. The acronym SMART stands for:

* **S – Specific**: the goal should be well-defined and clear, focusing on one specific area of improvement.
* **M – Measurable**: the goal should be quantifiable, so that progress towards achieving it can be tracked and evaluated.
* **A – Attainable**: the goal should be achievable, given the available resources and abilities.
* **R – Relevant**: the goal should be relevant to the individual's overall aspirations and objectives.
* **T – Time-bound**: the goal should have a specific timeframe for achievement.

For more information, access [SMART goals](https://www.mindtools.com/a4wo118/smart-goals).

Table 5 – community action plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Goals | Community action | Plan | Impact of change | Timeline |
| SMART goal 1 |  |  |  |  |
| SMART goal 2 |  |  |  |  |
| SMART goal 3 |  |  |  |  |

Share the SMART goals table with the class and discuss the potential challenges and benefits of adopting more sustainable lifestyles.

Using the settlements examples provided and further research, select 2 settlements (sustainable communities or eco-villages) as case studies. Using a [Venn diagram](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/599), compare and contrast the location, environment and land use of the settlements.

Access relief maps, political maps and land use maps of the selected settlements to determine the sustainable practices. Annotate the maps to highlight features that contribute to the small ecological footprint and high wellbeing.

Write a brief description of each settlement, including:

* location
* population
* key features
* reasons for its success in maintaining sustainability and wellbeing.

**Teacher note**: organise ‘Case study carousel’ stations around the classroom, each with information about one of the settlements from students’ case studies, along with photographs, maps and other visual aids. Have groups rotate to the next station and repeat the process until all groups have visited each station.

In small groups, access the ‘Case study carousel’ information and discuss the key features of the settlement. Rotate to new stations and repeat the process until all groups have visited each station.

After completing the carousel, discuss the similarities and differences between the settlements, and the factors that contribute to their small ecological footprint and high wellbeing.

Research information on various sustainable practices of their settlements such as renewable energy, zero-waste initiatives, public transportation, green spaces and local food production. Write a short response to the question: ‘Explain the settlement practices that contribute to a small ecological footprint and high wellbeing’.

Create a poster or digital presentation on one sustainable practice of the settlement and its benefits, using maps, graphs, statistics and visual representations.

Share the posters or presentations with the class and discuss how the sustainable practices of the settlement can be applied to other settlements or their local community.

Write a structured extended response, using evidence and examples from the previous activities and case studies to the following question: ‘Analyse the factors that contribute to the success of settlements in maintaining a small ecological footprint and high level of wellbeing’. Incorporate geographical tools and techniques such as maps, graphs and statistics, spatial technologies and visual representations to support the analysis.

Conduct a peer-review of the written responses and provide feedback on the organisation, clarity and use of evidence.

Access the [Data Global Footprint Network](https://data.footprintnetwork.org/#/??_ga=2.8988981.1427104011.1682471893-926670318.1682471893), focusing on the following aspects:

* compare countries
* trends
* solutions.

Discuss the following questions as a class:

* Compare the ecological footprints of 3 countries. What factors might explain the differences in their ecological footprints? How could the sustainable settlement practices identified in previous activities be valuable to those countries?
* What trends can be identified in the ecological footprints of countries? Describe any patterns or relationships between a country’s level of development and its ecological footprint.
* What actions can be taken by individuals, communities and governments to reduce their ecological footprints and move towards sustainable development? Use examples from settlements that were previously researched.
* How might an understanding of ecological footprints of settlements contribute to decision-making processes related to sustainable development? Consider the role of policy makers, businesses and individual citizens.

## Strategies for the sustainable management of rural and urban places

Complete a [KWHL](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/562) chart about strategies for the sustainable management of urban and rural places:

* Know – what is already known?
* Want – what do we want to learn?
* How – ways to find answers or gather information about sustainable management strategies.
* Learned – leave blank and complete throughout the focus area.

Conduct a brief class discussion on the importance of sustainable management strategies and the potential challenges in their implementation in rural and urban places.

**Teacher note:** students can choose their own case study. A list of sources has been provided. Provide students with information on evaluating the credibility of sources, such as the [CRAAP Test](https://researchguides.ben.edu/source-evaluation) (Currency, Relevance, Authority, Accuracy and Purpose).

In small groups, select one of the case studies provided in Table 6. Complete the ‘Strategies’ column to identify strategies that have been successfully employed by the city to achieve sustainable management outcomes. Where appropriate, add to or modify the description and outcomes to suit the case study.

Table 6 – strategies for the sustainable management case studies

|  |  |  |  |
| --- | --- | --- | --- |
| Case study | Brief description | Examples of outcomes | Strategies |
| Freiburg, Germany – green city | Freiburg is known for its commitment to sustainable urban development, renewable energy and environmentally friendly transportation. | * Reduced greenhouse gas emissions * Increased use of renewable energy * Improved public transportation system * Enhanced urban liveability and sustainability |  |
| Masdar City, United Arab Emirates (UAE) – carbon-neutral city | Masdar City is a planned city in Abu Dhabi, designed to be a carbon-neutral, zero-waste city powered by renewable energy. | * Carbon-neutral status * Zero waste generation * Sustainable urban planning * Energy-efficient architecture * Innovative transportation solutions |  |
| The Eden Project, United Kingdom (UK) – sustainable rural development | The Eden Project is an educational and environmental initiative in Cornwall, UK, transforming a disused clay pit into a thriving ecosystem with diverse plant species. | * Sustainable land use * Rural development * Environmental education * Promotion of ecotourism * Enhanced biodiversity and ecosystem conservation |  |
| Curitiba, Brazil – urban planning and public transportation | Curitiba is known for its innovative urban planning and efficient public transportation system. | * Reduced traffic congestion * Lower greenhouse gas emissions * Enhanced green spaces * Increased recycling initiatives * Sustainable urban environment |  |
| Copenhagen, Denmark – bicycle-friendly city | Copenhagen is often cited as one of the world’s most bicycle-friendly cities, with extensive cycling infrastructure and policies promoting bike use. | * Increased bicycle use * Reduced traffic congestion * Lower greenhouse gas emissions * Enhanced urban liveability * Carbon-neutral goal by 2025 |  |

Provided below is a list of resource for the case studies.

Freiburg, Germany – green city

* [City of Freiburg official website](https://www.freiburg.de/pb/,Lde/205243.html)
* [The Guardian – Is this the greenest city in the world?](https://www.theguardian.com/environment/2008/mar/23/freiburg.germany.greenest.city)
* [Deutsche Welle – The 'Green City' of Freiburg](https://www.dw.com/en/the-green-city-of-freiburg-is-this-germanys-future/a-60438622)

Masdar City, United Arab Emirates (UAE) – carbon-neutral city

* [Masdar City official website](https://masdarcity.ae/)
* The Guardian – [Masdar's zero-carbon dream could become world’s first green ghost town](https://www.theguardian.com/environment/2016/feb/16/masdars-zero-carbon-dream-could-become-worlds-first-green-ghost-town)
* National Geographic – [Masdar City: The World's Most Improbable Green City](https://www.nationalgeographic.com/environment/article/dubai-ecological-footprint-sustainable-urban-city)

The Eden Project, United Kingdom (UK) – sustainable rural development

* [The Eden Project official website](https://www.edenproject.com/)
* The Guardian – [The Eden Project](https://www.theguardian.com/uk/eden-project)
* British Broadcasting Corporation (BBC) – [A tropical paradise found in Cornwall](https://www.bbc.co.uk/cornwall/attractions/stories/eden.shtml)

Curitiba, Brazil – urban planning and public transportation

* [Curitiba City official website](https://www.curitiba.pr.gov.br/)
* The Guardian – [Story of cities #37: how radical ideas turned Curitiba into Brazil's 'green capital'](https://www.theguardian.com/cities/2016/may/06/story-of-cities-37-mayor-jaime-lerner-curitiba-brazil-green-capital-global-icon)
* BBC – Curitiba's Eco-friendly Transport System: [Living in: The world’s most eco-friendly cities](https://www.bbc.com/travel/article/20141215-living-in-the-worlds-most-eco-friendly-cities)
* ArcGIS story maps – [Curitiba: A case example for Green Urban Planning](https://storymaps.arcgis.com/stories/e3a574137a374799bc844a08a6ea3891)

Copenhagen, Denmark – bicycle-friendly city

* [City of Copenhagen official website](https://international.kk.dk/)
* The Guardian – [Copenhagenize your city: the case for urban cycling in 12 graphs](https://www.theguardian.com/cities/gallery/2018/jun/11/copenhagenize-case-urban-cycling-graphs)
* The Guardian – [Copenhagen's ambitious push to be carbon-neutral by 2025](https://www.theguardian.com/environment/2013/apr/12/copenhagen-push-carbon-neutral-2025)

Use Table 6 as a starting point for further research and add to the content. Review the statement and outcomes of the project.

Conduct online research on the selected case study, focusing on the sustainable management initiatives and the outcomes of the project.

Create a presentation summarising the research findings, including the key elements of the sustainable management initiative or project and how geographical tools were used to achieve the sustainable outcomes. Include slides identifying the sources used and evaluating the credibility of each source.

Present the findings to the class, highlighting the key learnings and insights gained from the research, as well as the importance of using credible sources.

Use and add to the success criteria, in Table 7, to evaluate the sustainable management strategies of the initiatives or projects, including different aspects of success, such as short-term versus long-term outcomes, local versus global impacts and stakeholder perspectives.

Complete the evaluation of outcomes column in the following table. Where appropriate, add to or modify the success criteria and description to suit your case study.

Table 7– evaluating the success of the strategies for sustainable management initiatives or projects

|  |  |  |
| --- | --- | --- |
| Success criteria | Description | Evaluation of outcomes |
| Environmental impact | What is the extent to which the initiative or project reduces negative environmental impacts, such as pollution, waste generation and habitat destruction, while promoting positive environmental outcomes, such as biodiversity conservation, natural resource management and ecosystem restoration? |  |
| Social impact | Does the initiative or project’s ability to enhance the quality of life for residents address social inequalities, promote community engagement and maintain cultural heritage? |  |
| Economic impact | What is the financial viability and long-term economic sustainability of the initiative or project, including job creation and local economic growth? |  |
| Stakeholder satisfaction | To what extent does the initiative or project address the needs and concerns of diverse stakeholders, such as residents, businesses, government agencies and non-governmental organisations, and foster collaboration and communication among these groups? |  |
| Adaptability and resilience | Outline the initiative or project’s ability to adapt to changing conditions, such as population growth, climate change and technological advancements, and contribute to the overall resilience of the community or region. |  |
| Measurable outcomes | Determine the extent to which the initiative or project has met its stated objectives, using quantifiable indicators and benchmarks to track progress and assess overall success. |  |
| Long-term sustainability | What is the long-term viability of the initiative or project, considering factors such as ongoing funding, stakeholder support and the ability to adapt and evolve over time to maintain and enhance its positive impacts? |  |

Discuss the completed table, and the strengths and weaknesses of the initiative or project and provide recommendations for future sustainable management efforts.

Use GIS software or online mapping tools to explore the spatial distribution of the case studies’ initiatives or projects on different types of maps, such as political, topographic, choropleth, land use and thematic maps.

Analyse the spatial patterns and relationships between the initiatives or project from the case study and various geographical factors, such as population density, climate and land use. Create a custom map or [cartogram](https://www.data-to-viz.com/graph/cartogram.html) displaying the findings, highlighting the locations of the sustainable management initiatives or projects, and any significant spatial patterns or relationships identified.

# Learning sequence 2 – Investigation of a rural and an urban place

**Teacher note**: students study ONE place in a rural setting and ONE place within a larger urban settlement.

Conducting fieldwork will provide students with a hands-on experience allowing them to observe:

* location
* character of place
* social, economic and environmental changes
* links to other places.

It provides an opportunity to apply geographical tools and skills in a real-world context. Broken Hill and Wollongong might not be the preferred case studies in your context; however, this section can be adapted to another geographical rural and urban context more suitable to the school’s accessibility. Virtual field trips to Broken Hill or Wollongong might be developed using Google Earth, Google Street View and other online resources.

These examples are not mandatory and teachers might choose to use the examples provided or select appropriate alternatives.

## Syllabus content

Students study ONE place in a rural setting and ONE place within a larger urban settlement, to investigate:

* The location and character of the place
* Geographical processes, both physical and human, that have shaped the identity of the place
* Links to other places

**Examples:**

* Cultural.
* Economic.
* Political.
* The nature of changes affecting the place, including social, economic and environmental
* Responses and strategies, including for sustainability

### Learning intentions and success criteria

**Teacher note**: these learning intentions and success criteria are general and should be contextualised to suit your school and students’ needs.

#### Learning intentions

Students:

* develop a comprehensive understanding of Broken Hill (rural) and Wollongong (urban) in terms of their location, historical significance, economic activities and challenges faced by their residents
* gain proficiency in using various maps and spatial technologies to investigate, interpret and represent the physical and human geography of both locations
* delve into the rich cultural heritage of Broken Hill and Wollongong, encompassing art, history and architecture, and examine how cultural heritage shapes the identity and character of a place
* propose responses to the potential futures for Broken Hill and Wollongong, informed by research and their learning, and present their findings in a creative format.

#### Success criteria

Students can:

* accurately describe the location, historical significance and primary economic activities of both Broken Hill and Wollongong
* use resources such as the Australian Bureau of Statistics, to extract and interpret data relevant to their study
* demonstrate the ability to create detailed maps, highlighting specific aspects such as land use, population distribution and economic activities
* articulate their learning experiences, developed skills and acquired knowledge in a reflection piece, emphasising the role of geography in understanding the world
* show a deep appreciation and understanding of the cultural sites, events or organisations in Broken Hill and Wollongong and can articulate the role of cultural heritage in shaping a place’s identity
* successfully compare and contrast Broken Hill and Wollongong based on various aspects, employing visual aids like graphs and maps in their analysis.

## The location and character of the place

Use the background information about Broken Hill and Wollongong below to construct a brief history of the area, its economic activities and the challenges it faces.

**Broken Hill (rural place) background**

**History**: the Wilyakali people traditionally occupied the lands around Broken Hill and visited the Paakantji people on the Menindee Lakes in the Darling Riverine Plains bio-region each year. The 3 major language groups for the Broken Hill region are the Paakantji, Mayyankapa and Nyiimpaa. The town came into existence after the discovery of silver, lead and zinc ores in the region in 1883. This led to the formation of the Broken Hill Proprietary Company (BHP), which went on to become one of the world’s largest mining companies. The city is sometimes referred to as ‘The Silver City’ or ‘The Capital of the Outback’ due to its mining history.

**Culture and art**: Broken Hill has a rich cultural heritage. Its isolated location led to the development of a strong and unique arts community. The city has more than 20 galleries and has been the filming location for numerous movies and TV shows, including Mad Max 2 and Priscilla, Queen of the Desert.

**Biodiversity and conservation**: Broken Hill is surrounded by national parks and reserves that host a diverse range of flora and fauna. The nearby Mutawintji National Park is particularly known for its Aboriginal rock art sites.

**Geography and climate**: Broken Hill is located in the far west of New South Wales, in the semi-arid zone of Australia. Its climate is characterised by hot summers and mild winters. It is located near the Barrier Ranges and is part of the Darling Basin.

**Education**: Broken Hill has several schools and an adult education centre. The School of the Air, a distance education initiative for remote students, also operates from the city.

**Infrastructure and transport**: the city is connected to Sydney and Adelaide by the Indian Pacific railway line. The Broken Hill Airport offers flights to Adelaide and Dubbo. The Barrier Highway runs from Broken Hill to Adelaide, and the Silver City Highway leads north to Tibooburra and the Queensland border.

**Economic transition and sustainability**: as the mining resources depleted, the town started to diversify its economy. It now focuses on solar power, with the Broken Hill Solar Plant being one of the largest in Australia. The town is also promoting tourism, with a focus on its unique landscape and cultural heritage.

**Challenges**: Broken Hill faces several challenges. The city’s population is declining due to a lack of job opportunities. It also struggles with water scarcity and the environmental impacts of its mining history.

**Wollongong (urban place) background**

**History**: Wollongong was originally inhabited by the Dharawal Aboriginal peoples for at least 40,000 years before European settlement in the early 19th century. The region was initially used for farming before the discovery of coal led to the establishment of the area as an industrial centre. The city’s name, Wollongong, is believed to mean ‘sound of the sea’ in the local Dharawal language.

**Culture and art**: Wollongong has a thriving arts scene with a large number of galleries, including the Wollongong Art Gallery which holds one of Australia’s most significant collections of Aboriginal art. The city is also home to a range of festivals such as the annual Viva la Gong festival.

**Biodiversity and conservation**: the region is surrounded by significant natural beauty, including the Illawarra escarpment and numerous beaches. Wollongong’s coastline is a habitat for a variety of wildlife and the nearby Royal National Park is a hotspot for biodiversity.

**Geography and climate**: Wollongong is situated in the Illawarra region of New South Wales, between Sydney and the Shoalhaven. It has a temperate oceanic climate, with mild, wet winters and warm, dry summers. The city is bordered by the Tasman Sea on the east and a steep sandstone precipice known as the Illawarra Escarpment on the west.

**Education**: the city is home to the University of Wollongong, one of Australia’s top-ranked universities. There are also numerous schools, both public and private, providing education from pre-school to secondary level.

**Infrastructure and transport**: Wollongong has a network of bus, train and cycle routes, and the city’s location on the Pacific Ocean provides it with a significant port. It is linked to Sydney by the Princes Highway and the South Coast railway line.

**Economic transition and sustainability**: traditionally an industrial centre, Wollongong has diversified its economy in recent years, with education, tourism and digital services playing a larger role. The city has a strong focus on sustainability, with numerous initiatives aimed at promoting renewable energy and reducing carbon emissions.

**Challenges**: Wollongong faces the challenges of managing its economic transition while preserving its natural environment. The city also faces issues related to urban development and the need to provide adequate infrastructure and services for its growing population.

Conduct further research on Broken Hill and Wollongong to construct a brief history of the area, their economic activities and the challenges they face. Resources to support this research include [Broken Hill City Council](https://www.brokenhill.nsw.gov.au/), [Wollongong City council](https://wollongong.nsw.gov.au/visitor-home) and the [Australian Bureau of Statistics](https://www.abs.gov.au).

Create maps of Broken Hill and Wollongong, focusing on specific aspects such as land use, population distribution or economic activities.

Resources to support development:

* [Google Maps](https://maps.google.com/) for general mapping and satellite imagery
* [Geoscience Australia](http://www.ga.gov.au/) for topographic maps
* [Australian Bureau of Meteorology](http://www.bom.gov.au/) for weather and climate.

Research and discuss the various issues and challenges affecting environments, communities and residents in Broken Hill and Wollongong.

Examine the role of local and regional government, community organisations and individual residents in addressing these challenges.

Write a reflection on the importance of studying in rural and urban places and the role of geography in understanding our world.

Examine the cultural heritage of Broken Hill and Wollongong, including history, art and architecture. Use Table 8 below to record evidence for each location.

Table 8 – cultural heritage

|  |  |  |
| --- | --- | --- |
| Cultural heritage | Broken Hill | Wollongong |
| History |  |  |
| Art |  |  |
| Architecture |  |  |
| Other |  |  |

Research specific cultural sites, events or organisations in Broken Hill and Wollongong, such as:

* Pro Hart Gallery
* Broken Hill Regional Art Gallery
* Broken Hill Heritage Walk
* Wollongong Art Gallery
* Nan Tien Temple.

Write a short response on the role of cultural heritage in shaping the identity and character of Broken Hill and Wollongong.

Compare and contrast the following aspects of Broken Hill and Wollongong:

* population density
* land use
* economic activities
* environmental challenges.

Use maps, graphs and visual representations to illustrate the differences between the 2 areas.

**Teacher note**: plan a field trip to Broken Hill and/or Wollongong for students to conduct readings, surveys, interviews and observations. Provide students with guidance on how to use various fieldwork instruments such as compasses, clinometers, Global Positioning System (GPS) and cameras. Sample site studies can be found on the [Planning, programming and assessing geography 11–12](https://education.nsw.gov.au/teaching-and-learning/curriculum/hsie/planning-programming-and-assessing-hsie-11-12/planning-programming-assessing-geography-11-12) webpage in the following documents:

* Rural and urban places case study and fieldwork – Broken Hill
* Rural and urban places case study and fieldwork – Wollongong

Collect data on various aspects of Broken Hill and/or Wollongong, such as land use, population, economic activities and environmental conditions.

Analyse and interpret the data collected during the fieldwork. Table 9 and Table 10 below provide some sample data.

Table 9 – Wollongong fieldwork data recorded 7/6/2023

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Fieldwork site | Coordinates | Wind speed | Temperature | Barometer | Sound |
| Nan Tien Temple 11:20 am | Latitude: S34°27′  Longitude: E150°51′ | 0 | 25.2 °C | 1020 hPa | 51–73 dB  Average –  58 dB |
| Wollongong Lighthouse 2:26 pm | Latitude: S34°25′  Longitude: E150°54′ | 4.9 m/s | 23.9 °C | 1021.7 hPa | 70–92 dB  Average –  83 dB |
| Wollongong CBD 2:55 pm | Latitude: S34°42′  Longitude: E150°89′ | 1.5 m/s | 23 °C | 1023 hPa | 59–79 dB  Average –  71 dB |

Table 10 – Broken Hill fieldwork data recorded 15/6/2023

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Fieldwork site | Coordinates | Wind speed | Temperature | Barometer and altitude | Sound |
| Information centre – CBD 1:58 pm | Latitude: S31°96′  Longitude: E141°46′ | 0.9–2 m/s | 17.3 °C | 984.8 hPa  319.8 m | 54–85 dB  Average –  69 dB |
| Line of Lode 2:10 pm | Latitude: S31°96′  Longitude: E141°46′ | 2–4.6 m/s | 18.4 °C | 978.8 hPa  371 m | 56–88 dB  Average –  70 dB |
| Mundi Mundi Lookout 2:50 pm | Latitude: S31°85′  Longitude: E141°20′ | 2.5–4.1 m/s | 21.1 °C | 991.4 hPa  262 m | 62–81 dB  Average –  71 dB |

Create graphs, charts and other visual representations to display findings. Use spatial technologies such as GIS and remote sensing to further analyse the data and create maps.

Create a map of Broken Hill and Wollongong that displays different layers of information, such as:

* land use
* population density
* transportation networks.

Use reputable websites and resources to collect relevant data that can be input into the GIS software.

Create a future vision for Broken Hill and Wollongong. Imagine what Broken Hill and Wollongong might look like in 10, 20 or 30 years from now. Create visual representations, such as drawings, models or digital designs, of the future vision for Broken Hill and Wollongong. Present the visions to the class.

## Geographical processes, both physical and human, that have shaped the identity of the place

Investigate the physical and human processes that have shaped the identity of Broken Hill and Wollongong.

Work in pairs or small groups and select a specific geographical process (for example, mining, agriculture, erosion, weathering, urbanisation, and so on). Use maps, satellite images, aerial photographs and online resources to investigate the geographical process and its impact on Broken Hill and Wollongong.

Research the native plants and animals found in and around Broken Hill and Wollongong, focusing on the adaptations to the semi-arid and coastal environment.

Investigate the role of these species in the local ecosystem and the threats they might face, such as human impact, habitat loss or climate change.

Create species fact sheets to present the findings. [WorldClim](https://www.worldclim.org/) and [Atlas of Living Australia](https://www.ala.org.au/) might provide support.

Create visual representations to showcase the diverse aspects of Broken Hill and Wollongong, including their landscapes and landforms. Include:

* photographs (vertical and oblique aerial photographs, satellite images)
* illustrations
* transects
* flow charts
* annotated diagrams
* field and photo sketches
* cartoons
* mind maps
* web tools.

Investigate the history and impact of the mining industry in Broken Hill and Wollongong, including the extraction of silver, lead, coal, iron and zinc. Examine the environmental and socio-economic implications of mining in the area and discuss potential solutions for mitigating its negative effects. Create presentations or reports to showcase the findings.

Explore the climate of Broken Hill and Wollongong, focusing on their classifications as semi-arid and coastal climates.

Research historical weather data and climate trends to understand the challenges of living in such a climate. Resources such as the [Bureau of Meteorology](http://www.bom.gov.au/) and [Climate Data Online](https://www.ncdc.noaa.gov/cdo-web/) might be helpful. Create climate graphs for each location to visualise the findings.

Research the history of Aboriginal peoples in the Broken Hill and Wollongong areas, focusing on:

* the traditional custodians of the land
* customs and traditions
* how people adapted to and managed the local environment.

Create an interactive map, highlighting significant cultural sites and/or a presentation on the traditional ecological knowledge of the local Aboriginal peoples including the [Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Map of Indigenous Australia](https://aiatsis.gov.au/explore/map-indigenous-australia).

Research traditional land use and stewardship practices. Prepare a report or presentation on the findings, discussing how indigenous practices have shaped the environment and how they might be applied today for sustainable land use.

Discuss the geographical processes that have shaped Broken Hill and Wollongong.

In small groups, select a geographical process that has significantly influenced the landscape of Broken Hill and Wollongong, for example:

* erosion
* sedimentation.

**Extension activity**: create a 3D model demonstrating the process and its impact on the landscape. Present and explain the model to the rest of the class, discussing how the process has shaped the location.

Develop a choropleth map of population distribution to understand the population distribution in Broken Hill or Wollongong and their surrounding areas, using [Australian Bureau of Statistics data](http://www.abs.gov.au) and mapping software such as ArcGIS or QGIS.

Access the [Australian Bureau of Statistics](https://www.abs.gov.au/) to gather population data for Broken Hill, Wollongong and their surrounding areas.

Analyse the choropleth map, discussing the possible reasons for the observed population distribution patterns and the implications for the region.

Investigate the water and soil quality in Broken Hill and Wollongong, including their surrounding areas and discuss the implications for sustainability. Use water and soil testing equipment to collect samples from various locations during the field trip. Record the findings on fieldwork recording sheets, noting the location, date and time of each sample.

Analyse the data and discuss the implications for sustainability in the region.

Recommend strategies for improving water and soil quality and promoting sustainable development in the region.

## Links to other places

Examine the connections between Broken Hill and other places, and Wollongong and other places. Research the links, focusing on:

* trade
* transportation
* communication
* cultural exchanges.

Research the links between Broken Hill and other places, record your findings in Table 11, including any data and statistics to support your responses.

Table 11 – Broken Hill connections to other places

|  |  |  |
| --- | --- | --- |
| Links | Description | Evidence |
| Trade |  |  |
| Transportation |  |  |
| Communication |  |  |
| Cultural exchanges |  |  |
| Other |  |  |

Research the links between Wollongong and other places, record your findings in Table 12, including any data and statistics to support your responses.

Table 12 – Wollongong connections to other places

|  |  |  |
| --- | --- | --- |
| Links | Description | Evidence |
| Trade |  |  |
| Transportation |  |  |
| Communication |  |  |
| Cultural exchanges |  |  |
| Other |  |  |

Examine the transportation infrastructure in and around Broken Hill and Wollongong, including:

* roads
* railways
* air transport.

Annotate a map to illustrate Broken Hill and Wollongong’s transportation network and any proposed changes.

Analyse the importance of transportation infrastructure for the region’s physical and human aspects and consider potential improvements or expansions.

Investigate the urban planning and infrastructure of Broken Hill and Wollongong. Respond to questions including:

* How has the city’s mining history influenced its urban design?
* How does infrastructure meet the needs of residents and support industry?
* What challenges exist for future urban development?

Research the role of tourism in Broken Hill and Wollongong’s economy, focusing on the main tourist attractions, visitor numbers and the benefits and drawbacks of tourism for the local community.

Propose strategies for promoting sustainable tourism in Broken Hill and Wollongong, considering both the economic and environmental aspects. Supporting resources include:

* [Visit Broken Hill](https://www.visitbrokenhill.com.au/) and [Destination Wollongong](https://www.visitwollongong.com.au/) – for tourism information and suggested itineraries
* [Tourism Research Australia](https://www.tra.gov.au/) – for tourism statistics and research.

Create a promotional brochure or website, to showcase the sustainable tourism ideas for one of the selected case studies.

In small groups, select a specific link to investigate, such as:

* trade partnerships
* transportation networks
* cultural connections.

Research the selected topic to gather relevant data, maps and statistics. Identify features of each source that evidence why they are a reputable or trustworthy source of information.

Analyse the findings and create a visual representation, such as a flow chart, diagram or map, to illustrate the links between Broken Hill or Wollongong and other places.

Write a short response explaining the implications of these connections for Broken Hill and for Wollongong.

As a class, discuss the concept of urban-rural linkages and their significance for sustainability.

Research the connections between Broken Hill or Wollongong and their surrounding areas, such as:

* trade
* transportation
* employment
* migration.

Write an extended response analysing the potential benefits and challenges of the connection for rural and urban places.

## The nature of changes affecting the place

Investigate the nature of social, economic, and environmental changes in Broken Hill and Wollongong using a variety of maps. This includes [relief maps](https://www.theworldofmaps.com/), [topographic maps](https://www.ga.gov.au/scientific-topics/national-location-information/topographic-maps-data) and [land use maps](https://www.planningportal.nsw.gov.au/spatialviewer).

In groups, select a different type of map to study (relief maps, topographic maps, land use maps and so on). Identify changes in Broken Hill and Wollongong over time.

Write a [structured response](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/625) that explains the social, economic and environmental changes they observed.

As a class, discuss the similarities and differences in the changes observed at different locations across different map types.

Explore Broken Hill and Wollongong using spatial technology (for example, [Google Earth](https://www.google.com/earth/), [ArcGIS Online](https://www.arcgis.com/index.html) and [QGIS](https://www.qgis.org/en/site/)), focusing on identifying changes over time.

Create a presentation showcasing the changes observed, including the social, economic and environmental impacts of these changes.

Complete a response on the findings by analysing the advantages and limitations of the spatial technology in Broken Hill and Wollongong.

In pairs or small groups, analyse historical photographs of Broken Hill and Wollongong, identifying changes in the landscape, infrastructure and population over time. Collections of photographs can be found through the [State Library of New South Wales](https://www.sl.nsw.gov.au/) and the [National Library of Australia](https://www.nla.gov.au/).

Discuss the potential causes and consequences of these changes, considering social, economic and environmental factors.

As a class, discuss the insights gained from examining historical photographs and the importance of considering multiple sources when studying the changes affecting a place like Broken Hill or Wollongong.

**Teacher note**: staff should determine if it is appropriate to distribute the surveys or conduct interviews with members of the public. Where surveys and interviews are conducted, consideration should be given to the appropriate use and storage of participants’ information.

Create surveys and interview questions related to the social, economic and environmental changes in Broken Hill and Wollongong. Survey tools like [SurveyMonkey](https://www.surveymonkey.com/) or [Google Forms](https://www.google.com/forms/about/) might be useful. Where appropriate, distribute surveys and conduct interviews with local residents, either in person or via video conferencing.

Interpret and analyse the collected data, identifying patterns and trends in the perspectives of Broken Hill and Wollongong residents.

Present the findings to the class, discussing how the perspectives of residents can help us better understand the nature of changes in Broken Hill and Wollongong.

Create a [story map](https://storymaps.arcgis.com/stories/cea22a609a1d4cccb8d54c650b595bc4) that showcases the social, economic and environmental changes in Broken Hill, incorporating various geographical tools and skills, such as maps, photographs, graphs and spatial technologies. Include multimedia elements in the story map, such as videos, audio recordings and interactive features. [ArcGIS StoryMaps](https://storymaps.arcgis.com/) and [Google My Maps](https://www.google.com/maps/d/) might support this.

Investigate a specific period or aspect of Broken Hill and Wollongong’s mining history using sources such as:

* [Broken Hill City Council](https://www.brokenhill.nsw.gov.au/Community/Heritage-Highlights)
* [Australasian Mining History Association](http://www.mininghistory.asn.au/)
* [NSW Mining History](https://www.nswmining.com.au/mining-history).

In groups, research the selected topic using the provided resources, focusing on the social, economic and environmental changes related to mining in Broken Hill and Wollongong.

Each group presents the work to the class, encouraging a discussion about the various impacts of mining on Broken Hill and Wollongong’s community, economy and environment.

## Responses and strategies, including for sustainability

As a class, discuss the concept of sustainable development and its relevance to rural areas like Broken Hill and urban areas like Wollongong.

Research and explain the various sustainability initiatives and projects in Broken Hill and Wollongong, such as renewable energy, water management and tourism. Explore the role of local government, community organisations and residents in promoting sustainable development.

[Brainstorm](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542?clearCache=388f677a-b661-7864-4826-ae803bfe9f26) a list of environmental and human challenges facing Broken Hill and Wollongong (for example, water scarcity, soil degradation, air pollution).

In groups, research potential sustainable solutions to one or more of these challenges. Outline proposed solutions, including descriptions of the human and environmental challenges and the potential benefits and drawbacks of each solution.

As a class, discuss and compare the proposed solutions to create a dialogue about the future of Broken Hill and Wollongong and the importance of sustainable development.

Investigate and evaluate the environmental initiatives and policies implemented in Broken Hill and Wollongong to mitigate the negative impacts of social and economic sustainability. [Broken Hill City Council's Projects and Initiatives](https://www.brokenhill.nsw.gov.au/Council/Projects-and-Initiatives), [Broken Hill Solar Plant](https://www.agl.com.au/about-agl/how-we-source-energy/broken-hill-solar-plant) and [Wollongong City council](https://wollongong.nsw.gov.au/visitor-home) websites might be helpful.

Research one initiative, focusing on the objectives, implementation and effectiveness of the initiative or policy in addressing environmental issues, response and strategies in Broken Hill and/or Wollongong.

Identify and explain how water management issues have evolved in Broken Hill and Wollongong due to various factors, including climate, economic development and social needs. Australian Broadcasting Corporation (ABC) news articles on [Broken Hill's water crisis and solutions](https://www.abc.net.au/news/2019-02-26/wentworth-to-broken-hill-pipeline-turned-on/10844986) and [Wollongong City Council](https://wollongong.nsw.gov.au/visitor-home) are useful starting points.

Assess the potential for renewable energy sources in Broken Hill, Wollongong and their surrounding regions, including solar, wind and other technologies. [Australian Renewable Energy Agency](https://arena.gov.au/), [Clean Energy Council](https://www.cleanenergycouncil.org.au/), [Wollongong City Council](https://wollongong.nsw.gov.au/my-community/sustainable-living/sustainable-food) and [Broken Hill City Council](https://www.brokenhill.nsw.gov.au/Home) might be helpful resources.

As a class, discuss the concept of sustainable agriculture and its importance in maintaining ecological balance and feeding the population.

Research different sustainable agriculture techniques that could be implemented in Broken Hill and Wollongong, considering their climate and geographical characteristics.

Create a detailed report or presentation about the benefits, costs and practicality of implementing these techniques in the urban and rural place.

Discuss the challenges of modern agriculture and how sustainable practices can help overcome these issues.

Complete a [Think-Pair-Share](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/645) about the significance of indigenous knowledge and practices in environmental conservation and sustainability.

Research local Aboriginal peoples in Broken Hill and Wollongong and how traditional practices support sustainability.

Write an essay on the ways in which traditional practices could be incorporated into modern sustainability efforts in the rural and/or urban place.

Engage in a debate on the challenges and opportunities of sustainability in Broken Hill and Wollongong, using geographical tools, skills and knowledge to support the arguments. Conduct the debate, allowing each group to present their arguments, counterarguments and evidence. Write a reflection on the various perspectives and discuss the complexity of sustainability in Broken Hill and Wollongong, including the potential ways to address the challenges and opportunities identified.

**Teacher note**: the following activity is a theoretical exercise and letters should only be sent if deemed appropriate. A covering letter explaining the task should accompany the student responses.

Write a mock letter to the Mayor of Broken Hill and/or Wollongong, addressing an environmental, resource or sustainability issue identified during the course of the learning in this topic. Use persuasive language and well-reasoned arguments in the letter, including using evidence and data from the research and fieldwork activities. The letter should:

* clearly explain the issue
* outline the importance to Broken Hill and/or Wollongong
* outline any potential solutions or recommendations they have.

Conduct a peer-review of the letters for content, clarity and persuasiveness, and provide feedback.

Using one of the scenarios outlined below, engage in a simulated stakeholder meeting, role-playing as different community members to discuss a social, economic, and environmental changes in Broken Hill and/or in Wollongong.

To prepare for the meeting, form groups where each group represents a stakeholder role (for example, local miners, city council members, environmental activists, local business owners, tourism operators, indigenous community leaders and so on). Each group will research their stakeholder’s perspective on the issue, preparing arguments, concerns and proposed solutions.

**Scenario 1 – the future of mining**

**Setting – a town hall meeting in Broken Hill, a city with a rich history in mining**.

Local miners, environmentalists and residents gather to discuss the declining profits and increasing environmental concerns associated with mining. The latest report indicates that the primary mine might close within the next decade, potentially leaving hundreds jobless. At the same time, students from a nearby HSC geography class are collecting data on the ground to understand how the closure might impact urban planning, demographic changes and local economies. They’re faced with the challenge of balancing the need for economic growth with long-term sustainability.

**Scenario 2 – water security**

**Setting – a community centre in Broken Hill and Wollongong during a particularly dry summer**.

Broken Hill and Wollongong face one of their harshest droughts in decades. Water sources are depleting rapidly, and the cities’ reservoirs are at record lows. Meanwhile, geography students from a local HSC school are tasked with developing a water management plan that can be implemented at the community level. As they research, they must consider not just the immediate need but also long-term solutions like rainwater harvesting, greywater recycling and desalination. They soon realise that solving the Broken Hill and Wollongong water crisis requires both technological interventions and community collaboration.

**Scenario 3 – environmental conservation**

**Setting – coastal Wollongong, where industrial growth and environmental conservation collide.**

The once pristine beaches of Wollongong are now dotted with industrial units. The local marine ecosystem is under threat due to pollution and commercial fishing. Residents, including the Dharawal local community, face the loss of their cultural and natural heritage. HSC geography students from Wollongong are working on a project to assess the environmental damage and propose sustainable development methods. They explore strategies such as ecotourism, coastal reforestation and tighter pollution controls. Through their work, they aim to propose a roadmap that protects Wollongong's environment while allowing for sustainable growth.

Participate in a simulated ‘meeting’ where each group presents their stakeholder’s perspective and engages in a discussion about the issue, including the responses and strategies for sustainability.

[Brainstorm](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542) to identify a community service project related to the environmental issues in Broken Hill and Wollongong. This could be:

* a tree planting day
* a community clean-up
* a water conservation initiative
* an awareness campaign about a local environmental issue.

Plan the project as a class, with each person taking on a role or task.

Research and develop a sustainable development plan for either Broken Hill or Wollongong addressing social, economic and environmental challenges. Create a presentation or poster to share their sustainable development plan with the class. Consider the current strategies in place, as well as any additional measures that would be beneficial to the community.

Discuss the various proposed plans, comparing and contrasting the different approaches and strategies.

Research the specific impacts of climate change on Broken Hill and Wollongong, such as:

* changing rainfall patterns
* increasing temperatures
* geographical processes changes (for example, coastal erosion)
* extreme weather events.

Analyse the findings and create graphs, maps or other visual representations to illustrate the impacts of climate change on Broken Hill and Wollongong.

Write a short response that explains potential adaptation and mitigation strategies that Broken Hill and Wollongong could sustainably implement to address the challenges of climate change.

# Learning sequence 3 – Investigation of a large city outside Australia

**Teacher note**: examples included in the syllabus are provided to support delivery of course content. These examples are not mandatory and teachers might choose to use the examples provided or select appropriate alternatives.

## Syllabus content

Students study ONE large city of 5 million people or more, outside Australia, to investigate:

* The character and spatial dimensions of the large city
* Geographical processes shaping the large city and change over time relating to demographic trends; social and economic patterns; political and economic roles; and regional and global linkages
* Challenges of living in the large city

**Examples**:

* rapid population growth
* access to services and facilities
* affordability
* liveability
* ecological footprint
* climate change
* Responses to these challenges and opportunities for enhancing sustainability, including strategies to improve people’s quality of life and reduce spatial inequality.

### Learning intentions and success criteria

**Teacher note**: these learning intentions and success criteria are general and should be contextualised to suit your school and students’ needs.

#### Learning intentions

Students:

* understand and analyse various types of maps to identify key characteristics of Los Angeles (LA)
* comprehend the importance of zoning, land use and community plans in shaping a city’s growth and structure
* appreciate the significance of historical and cultural resources, focusing on Historic Preservation Overlay Zones (HPOZ) in Los Angeles
* understand the challenges of urban living with specific emphasis on Los Angeles, while contrasting these challenges with those experienced in rural and other urban areas
* develop research, analytical and presentation skills to explore, comprehend and articulate the urban challenges faced by residents of Los Angeles
* understand and appreciate the range and depth of sustainable urban planning initiatives, water and energy management, waste and pollution reduction, and social and environmental justice challenges faced by communities in Los Angeles
* develop skills to critically analyse, interpret and present data, using a variety of resources and methodologies, and engage in meaningful discussions about sustainable and equitable urban development.

#### Success criteria

Students can:

* identify and describe differences between relief, political, topographic and land use maps
* accurately interpret and extract relevant data from the Los Angeles Department of City Planning GIS Portal
* understand and can explain the purpose and influence of community plans and area planning commissions in Los Angeles’ development
* can identify and discuss the goals, objectives, and policies of a chosen community plan and its influence on a specific area
* identify key historic districts in Los Angeles using the HPOZ page and understand their cultural and architectural significance
* source and validate information from reputable resources such as LAistory or the Los Angeles Public Library Collections
* understand and explain the impact of significant events like the 1984 Olympics or the 1992 LA riots on Los Angeles’ urban fabric
* articulate both short-term and long-term effects of chosen historical events on Los Angeles’ development, land use and societal dynamics
* reflect on the topics discussed, share personal insights and experiences, and articulate the significance of public participation and the role of various stakeholders in promoting sustainable urban development.

## The character and spatial dimensions of the large city

In groups, analyse and compare a range of maps of Los Angeles (for example, relief, political, topographic, land use and so on) to identify the city’s main characteristics, including physical geography, population distribution and land use patterns.

Using [Los Angeles City Planning – Maps](https://planning.lacity.org/resources/maps), [Los Angeles City Boundary maps](https://ladcp.maps.arcgis.com/apps/View/index.html?appid=bb34a3ae0beb4574aa6051c928899e01) and [Council Districts maps](https://ladcp.maps.arcgis.com/apps/View/index.html?appid=7491e53e169043c98e44f77313c13c74), explore zoning and land use maps for Los Angeles City. Interpret the zoning and land use maps of Los Angeles to identify patterns, trends and notable features. The focus should be on specific neighbourhoods or areas of interest.

Examine the concept of community plans and identify their role in guiding the city’s growth and development. [Community Plan Areas](https://ladcp.maps.arcgis.com/apps/View/index.html?appid=6c1e477eb9e8491483aac6fd37a46e53) and [Area Planning Commissions maps](https://ladcp.maps.arcgis.com/apps/View/index.html?appid=d014186a1fa64ea8b9258411375fd7ef) are useful starting points.

Explain the role of legends, base maps and layers, in understanding and interpreting maps of the [Los Angeles Department of City Planning GIS Portal](https://ladcp.maps.arcgis.com/apps/View/index.html?appid=d014186a1fa64ea8b9258411375fd7ef). Use the legend, layers and base maps to understand the meaning of various symbols and colours, to explore the various GIS maps.

Present the findings to the class, discussing the goals, objectives and policies of the chosen Community Plan and how they have influenced the development of the area.

Explore the Local Historic Districts using the [Historic Preservation Overlay Zones (HPOZs)](https://planning.lacity.org/preservation-design/local-historic-districts) page to learn about the various historic districts in Los Angeles and understand their significance in preserving the city’s cultural heritage. As a class, discuss the concept of [Historic Preservation Overlay Zones (HPOZs)](https://planning.lacity.org/preservation-design/local-historic-districts) and their importance in preserving local historical and cultural resources in Los Angeles.

In small groups, select one specific historic district to research. Investigate the history, architectural styles and cultural significance of the selected district, using the resources provided on the HPOZs page and additional research as needed. Compare and contrast the similarities and differences between the districts, identifying any unique characteristics or trends.

Design a walking tour of the selected district, selecting key historical and architectural sites to visit and providing background information and context for each site. Create a visual representation of the walking tour, such as a map or brochure, or digitally using Google tour. The walking tour presentation should include images and other useful maps’ geographical tools. Present the walking tour to the class.

Provided in Table 13 is a list of examples of architectural, cultural and historical (ACH) sites in Los Angeles. Complete the table as a research task.

Table 13 – architectural, cultural and historical sites of Los Angeles

|  |  |  |  |
| --- | --- | --- | --- |
| Sites | Key information and details | Coordinates | ACH significance |
| Griffith Observatory | An iconic observatory, planetarium and exhibition space offering breathtaking views of Los Angeles and the Hollywood Sign. | 34.1184° N, 118.3004° W | For example, it is an important centre for public astronomy and a classic example of Art Deco architecture. |
| Union Station | The largest railroad passenger terminal in the Western United States, Union Station. | 34.0562° N, 118.2365° W | For example, historic landmark that showcases a blend of Spanish Colonial Revival, Mission Revival, and Art Deco architectural styles. |
| The Hollywood Sign |  |  |  |
| The Bradbury Building |  |  |  |
| Los Angeles County Museum of Art (LACMA) |  |  |  |
| The Getty Center |  |  |  |
| Watts Towers |  |  |  |
| The Hollywood Bowl |  |  |  |
| Olvera Street |  |  |  |
| The Gamble House |  |  |  |

Research and analyse the impact of major historical events on the character and spatial dimensions of Los Angeles, such as the 1984 Olympics or the 1992 LA riots.

Gather information on the selected event and its impact on the character and spatial dimensions of Los Angeles. [Laistory](https://laist.com/news/laistory-mapping-laists-laistory-se) and [Los Angeles Public Library Collections and Resources](https://www.lapl.org/collections-resources) are a good starting point. Analyse the short-term and long-term effects of the chosen event on the city’s development, land use patterns and social dynamics

## Geographical processes shaping the large city

Collect data from various graphs and statistics related to Los Angeles, such as:

* demographics – population profiles, ethnic composition, age distribution and migration patterns
* economy – employment rates, income distribution, economic sectors and GDP
* environment – air quality, water consumption, waste production and green spaces.

Resources to support collection and interpretation of data and statistics include [United States Census Bureau](https://www.census.gov/quickfacts/fact/table/losangelescitycalifornia,US/PST045221), [Los Angeles Almanac (LAA)](https://www.laalmanac.com/index.php), [LAA Weather](https://www.laalmanac.com/weather/index.php), [LAA Geography](https://www.laalmanac.com/geography/index.php) and [LAA Government](https://www.laalmanac.com/government/index.php). These resources show changes over time in Los Angeles.

In small groups, select a specific dataset to analyse. Ensure that each dataset focuses on a different aspect of Los Angeles and requires the application of specific skills, such as data interpretation, trend identification or statistical analysis.

Different types of maps of Los Angeles include:

* [ArcGIS relief map](https://www.arcgis.com/home/webmap/viewer.html)
* [LA county political map](https://lacounty.gov/government/about-la-county/maps-and-geography/)
* [United States Geological Survey (USGS) topographic map](https://www.usgs.gov/programs/national-geospatial-program/topographic-maps)
* [LA county land use map](https://planning.lacity.org/zoning/zoning-search).

Using these maps, identify key features of Los Angeles, such as urban areas, transportation infrastructure, parks and landforms.

Using the graphs and statistics from the previous activities, interpret and identify trends and patterns using the assigned skills. For example:

* a group assigned to analyse population profiles should focus on identifying patterns in age distribution or population growth
* a group assigned to analyse economic indicators should focus on interpreting trends in employment rates or income distribution.

Write a short response to explain how these findings contribute to our understanding of the character and spatial dimensions of Los Angeles. Reflect on the skills applied during the analysis and as a class, discuss the importance of these skills in the field of geography.

Use historical climate data for Los Angeles from sources such as [Climate Data Online (CDO)](https://www.ncei.noaa.gov/cdo-web/)and or [World Climate data](https://www.worldclim.org/data/index.html)**.** Create a climate graph for a time period, plotting temperature and precipitation trends on the same graph. Interpret and analyse the climate graphs to identify patterns, trends and potential impacts of climate change, such as increasing temperatures, droughts or changes in precipitation patterns.

Predict potential future trends and mitigation strategies.

Access data tables (for example, the [Bureau of Economic Analysis](https://www.bea.gov/)) related to the economic and political roles of Los Angeles, such as employment rates, GDP and the distribution of different industries. Create bar graphs, line graphs and/or scatter graphs to interpret, analyse and visualise the data, looking for trends and correlations.

Write a short response that explains how economic and political roles have changed over time, and how this has influenced the city’s regional and global linkages.

Create a visual representation of Los Angeles using aerial photographs, satellite images, illustrations and/or flow charts. [USGS EarthExplorer](https://earthexplorer.usgs.gov/) and [California Environmental Data Exchange Network](http://ceden.org/) might be helpful resources to support the task. The visual representation should identify key features and patterns related to the city’s geography, such as transportation networks, land use patterns and urban development. The visual representations should include annotated diagrams and/or flow charts, to explain the geographical processes shaping Los Angeles and the changes occurring over time.

Using [United Nations Geospatial Information Section](https://www.un.org/geospatial/) as a starting point, create a flowline map or cartogram illustrating the global and regional linkages of Los Angeles. This could include:

* trade routes
* transportation networks
* migration patterns.

Using the map, work in groups to analyse and identify key patterns, connections and trends in Los Angeles’ regional and global linkages. Discuss the implications of these linkages on the city’s economy, politics and society, and how these relationships have evolved over time.

Research and present case studies of specific linkages, such as a major trade partner, a transportation hub or a significant migration source, to further explore the city’s connections to the wider world.

## Challenges of living in the large city

Examine the concept of urban challenges and identify examples specific to Los Angeles.

Provided are examples of challenges of living in the large city: [Los Angeles Times](https://www.latimes.com/), [Urban Institute](https://www.urban.org/) and [Southern California Association of Governments (SCAG)](https://scag.ca.gov/).

Using maps, graphs, statistics and other resources related to Los Angeles, Broken Hill and Wollongong, compare and contrast the challenges of living in the large city of Los Angeles with rural and urban places. Use a [Venn diagram](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/599) to organise your evidence.

Compare and contrast challenges of Los Angeles, including population, land use, transportation networks, urban issues and environmental factors. [City-Data](http://www.city-data.com/) and [Demographia](http://www.demographia.com/) might be useful sources.

Explain the similarities and differences between living in the large city of Los Angeles with the rural and urban places studied.

In groups, develop a list of questions related to the challenges of living in Los Angeles, such as traffic congestion, air pollution and housing affordability. Design a survey or prepare interview questions.

Conduct virtual fieldwork to explore different neighbourhoods in Los Angeles and identify the challenges faced by residents.

In groups, select a specific neighbourhood in Los Angeles. Some examples of neighbourhoods could include Hollywood, Downtown Los Angeles, Santa Monica and Boyle Heights. Using [Google Earth](https://www.google.com/earth/), [Google Maps](https://maps.google.com/) and/or [Google Street View](https://www.google.com/maps/streetview/), explore the neighbourhood from a bird’s-eye view, taking note of geographical features, land use patterns and the overall layout.

View the neighbourhood at street level, observing architectural styles, street conditions and the general atmosphere. Identify key features and challenges faced by residents in the chosen neighbourhood. Challenges might include traffic congestion, lack of green spaces, gentrification, air pollution and/or homelessness.

Conduct a green space analysis of the distribution and accessibility of parks and recreation areas in Los Angeles. Using the [Los Angeles Department of Recreation and Parks](https://www.laparks.org/) and the [Trust for Public Land ParkScore](https://www.tpl.org/city/los-angeles-california), analyse the distribution and accessibility of green spaces in Los Angeles, considering factors such as population density, distance to parks and park amenities.

Create a visual representation of the findings.

Write a short response focusing on the challenges associated with providing adequate green spaces for residents and the benefits of green spaces in urban environments.

Using [Los Angeles Department of Transportation (LADOT)](https://ladot.lacity.org/) and [INRIX Global Traffic Scorecard](https://www.inrix.com/scorecard/), create isoline maps to visualise traffic congestion in Los Angeles. The isoline on traffic congestion in Los Angeles should focus on factors such as travel time, traffic density and areas with the highest levels of congestion.

As a class, discuss the challenges associated with traffic congestion and potential solutions to improve transportation efficiency.

Using a [Think-Pair-Share](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/645), discuss the concept of natural hazards and their impact on cities like Los Angeles. Using the [United States Geological Survey (USGS) Earthquake Hazards Program](https://earthquake.usgs.gov/) and the [Southern California Earthquake Data Center (SCEDC)](https://scedc.caltech.edu/), explore historical earthquake data and the risks faced by Los Angeles.

Create a map or chart to illustrate the earthquake risk in Los Angeles. Conduct research and write a short response on the challenges associated with earthquake preparedness, infrastructure resilience and emergency response in Los Angeles.

Research the homelessness crisis in Los Angeles using case studies and data analysis. Provided are some websites to support research: [Los Angeles Homeless Services Authority (LAHSA)](https://www.lahsa.org/data) and [United States Interagency Council on Homelessness](https://www.usich.gov/). In groups, investigate the homelessness crisis, such as causes, demographics or services available.

Research the housing crisis in Los Angeles and explore strategies to address housing inequality and affordability. Using cadastral and land use maps to investigate housing distribution, land ownership and zoning regulations in Los Angeles. Useful websites for this include: [Los Angeles County GIS Data Portal,](https://planning.lacounty.gov/maps-and-gis/gis-data/) [City of Los Angeles – Zone Information Map Access System (ZIMAS)](http://zimas.lacity.org/)**,** [United States Census Bureau](https://data.census.gov/cedsci)and[Los Angeles Homeless Services Authority](https://www.lahsa.org/data)**.** Use population profiles, housing data and socioeconomic indicators to analyse spatial inequality in Los Angeles.

Access public transportation data from[Los Angeles GeoHub](https://geohub.lacity.org/)and/or [ArcGIS Online](https://www.arcgis.com/home/index.html)**.** Using a blank map of Los Angeles, map public transportation networks, such as bus routes, subway lines and bike lanes. Annotate and overlay transportation data with other data such as population density, socio-economic factors or land use.

Complete a [Brainstorm](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542), focusing on the challenges related to public transportation, such as accessibility and efficiency. In groups, prepare a presentation to share the findings with the class, identifying patterns, gaps and challenges related to public transportation in Los Angeles.

Select a challenge, such as housing affordability, traffic congestion or air pollution. Create a photo essay that represents the chosen challenge. The photo essay should include captions and short descriptions to highlight the challenges of living in Los Angeles.

Share and discuss photo essays as a class.

## Responses to these challenges and opportunities for enhancing sustainability

Identify examples of sustainable urban planning initiatives in Los Angeles, such as green infrastructure projects, public transportation improvements or affordable housing programs.

In small groups, select a specific sustainable urban planning initiative to research. Use articles and resources, such as [Los Angeles Department of City Planning](https://planning.lacity.org) and Los Angeles [Sustainable City pLAn](https://plan.lamayor.org), to gather information on the selected initiative, its goals and its progress.

Evaluate the effectiveness of the initiative and discuss its potential impact on the character and spatial dimensions of Los Angeles.

Present the findings and engage in a class discussion about the future of sustainable urban planning in Los Angeles.

Research the water resources, distribution and management in Los Angeles. Explore strategies for sustainable water use, using isoline maps and/or thematic maps to analyse water resources, distribution and water scarcity in Los Angeles. Resources to support research include: [United States Geological Survey](https://www.usgs.gov/) and [California Department of Water Resources](https://water.ca.gov/).

Virtually access water treatment facilities, reservoirs or water conservation projects to identify the water management and sustainability practices in Los Angeles. For example, [Los Angeles Department of Water and Power](https://www.ladwp.com) and [Metropolitan Water District of Southern California](https://www.mwdh2o.com).

Investigate urban planning initiatives in Los Angeles and explore the concept of smart cities as a means to improve sustainability and reduce spatial inequality. Research smart city initiatives in Los Angeles using the [City of Los Angeles Department of City Planning](https://planning.lacity.org) and [Smart Cities – Los Angeles](https://www.smartcitiesworld.net/smart-cities?topics=Los-Angeles).

Write a short response that explains a smart city solution that contributes to more sustainable and equitable urban development in Los Angeles.

Conduct a role-playing activity to simulate a community meeting focused on urban planning, environmental conservation or social justice issues in Los Angeles. Assign students various roles, such as community members, local officials and urban planners, and provide them with background information and talking points relevant to their role. [EmpowerLA](https://empowerla.org/) and [Los Angeles Neighborhood Councils](https://www.ncwpdr.org/) might be useful sources for the role-play.

As a class, discuss the importance of public participation in shaping sustainable and equitable urban development. Share experiences from the role-playing activity and discuss the challenges and opportunities encountered in the process of community engagement and participatory planning.

As a class, discuss waste management and recycling practices in Los Angeles and explore strategies to improve waste reduction and resource conservation.

In small groups, access data related to waste generation, recycling rates and landfill capacity in Los Angeles. Use data tables and bar graphs, to interpret and analyse data, and identify patterns and trends related to waste management and recycling in the city. [Los Angeles County Solid Waste Information Management System](https://dpw.lacounty.gov/epd/swims/) and [CalRecycle](https://www.calrecycle.ca.gov/) might support this task.

In groups, [brainstorm](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/542) potential strategies for improving waste reduction and recycling in Los Angeles, considering various approaches such as policy changes, technological innovations and public education campaigns.

Present the proposed strategies to the class, providing an opportunity to share ideas and engage in discussions about waste management and resource conservation.

Conduct a small group discussion about the energy resources, distribution, management and strategies for sustainable energy use in Los Angeles.

Create thematic maps to analyse energy resources, distribution and renewable energy potential in Los Angeles. [California Energy Commission](https://www.energy.ca.gov/) and [Southern California Edison](https://www.sce.com) might support this task. The research should include renewable energy facilities, such as solar farms or wind farms, to learn about sustainable energy practices and their impact on Los Angeles, for example, [Los Angeles Department of Water and Power](https://www.ladwp.com) and [Clean Power Alliance](https://cleanpoweralliance.org/).

Create line graphs and data tables to analyse the data, identifying patterns and trends related to air quality and pollution in the city. Use satellite images and aerial photographs as tools for visualising the spatial distribution of air pollution sources, for example, [NASA Worldview](https://worldview.earthdata.nasa.gov/) and [European Space Agency's Copernicus Sentinel-5P satellite data](https://www.esa.int/Applications/Observing_the_Earth/Copernicus/Sentinel-5P). Use these visual representations to identify major sources of air pollution in Los Angeles.

Discuss the potential health and environmental impacts of air pollution in the city. Brainstorm potential strategies for reducing air pollution in Los Angeles, considering various approaches such as policy changes, technological innovations and public education campaigns.

Create an infographic about the air quality and pollution issues in Los Angeles that explores strategies for reducing emissions and improving air quality. Use [AirNow](https://www.airnow.gov/), to include air quality data and trends for Los Angeles. Information should include the main pollutants and their sources.

In small groups, select a specific social or environmental justice issue, such as affordable housing, access to public services or environmental quality in disadvantaged communities. Research and analyse case studies of organisations or community groups working on social and environmental justice issues in Los Angeles, focusing on their initiatives and impact. For example, [Communities for a Better Environment](https://www.cbecal.org/) and [Los Angeles Community Action Network](https://cangress.org/).

Create a multimedia presentation documenting the social and environmental justice issues faced by communities in Los Angeles and the initiatives being taken to address them. Include photographs, videos, interviews or other visual elements to effectively communicate the stories and experiences of the communities they are studying.

Present the work to the class. Reflect on the social and environmental justice issues explored, and discuss the role of geographers in addressing these challenges and promoting sustainable and equitable urban development.

# Additional information

The information below can be used to support teachers when using this teaching resource for Geography 11–12 (2022).

## Support and alignment

**Resource evaluation and support**: all curriculum resources are prepared through a rigorous process. Resources are periodically reviewed as part of our ongoing evaluation plan to ensure currency, relevance and effectiveness. For additional support or advice contact the HSIE Curriculum team by emailing [hsie@det.nsw.edu.au](mailto:hsie@det.nsw.edu.au).

**Alignment to system priorities and/or needs**: [School Excellence Policy](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468)

**Alignment to the School Excellence Framework:** this resource supports the [School Excellence Framework](https://education.nsw.gov.au/policy-library/policies/pd-2016-0468) elements of curriculum (curriculum provision) and effective classroom practice (lesson planning, explicit teaching).

**Alignment to Australian Professional Teaching Standards**: this resource supports teachers to address [Australian Professional Teaching Standards](https://educationstandards.nsw.edu.au/wps/portal/nesa/teacher-accreditation/meeting-requirements/the-standards/proficient-teacher) 3.2.2, 3.3.2.

**Consulted with**: Curriculum and Reform, Inclusive Education, Multicultural Education, Aboriginal Outcomes and Partnerships and subject matter experts.

**NSW syllabus**: Geography 11–12 Syllabus (2022)

**Syllabus outcomes**: **GE-12-01, GE-12-02, GE-12-03, GE-12-04, GE-12-05, GE-12-06, GE-12-07, GE-12-08, GE-12-09**

**Author**: Curriculum Secondary Learners

**Publisher**: State of NSW, Department of Education

**Resource**: Learning sequence

**Related resources**: further resources to support geography 11–12 can be found on the [HSIE curriculum page](https://education.nsw.gov.au/teaching-and-learning/curriculum/key-learning-areas/hsie) and the [HSC hub](https://www.hschub.nsw.edu.au/).

**Professional learning**: relevant professional learning is available through the [HSIE statewide staffroom](https://teams.microsoft.com/l/team/19%3ace47173b5fe14e16918eac8ca5e40913%40thread.skype/conversations?groupId=cc91cc45-b966-4333-b01f-31e78225fac4&tenantId=05a0e69a-418a-47c1-9c25-9387261bf991).

**Universal Design for Learning**:[Curriculum planning for every student – advice](https://education.nsw.gov.au/teaching-and-learning/curriculum/planning-programming-and-assessing-k-12/advice-on-curriculum-planning-for-every-student-k-12). Support the diverse learning needs of students using inclusive teaching and learning strategies.

**Creation date**: 1 September 2023

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[Geography 11–12 Syllabus](https://curriculum.nsw.edu.au/learning-areas/hsie/geography-11-12-2022/overview) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2022.

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