# Geography 11–12 – People, patterns and processes resource booklet



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## Rationale

This resource booklet is not a standalone resource. It has been designed for use by teachers in connection to Year 11 Geography ­– People, patterns and processes sample program. The material in this resource booklet is a sample and is intended to support teachers as they develop contextually appropriate teaching and learning resources for their students’ needs. It is not intended to be taught exactly as is presented in its current format. There are instructions for the teacher and instructions for the student throughout the resources and activities. Teachers using this resource should edit and refine these to suit their students’ needs, interests, abilities and the texts selected.

The content in this resource booklet has been prepared by the HSIE curriculum team, unless otherwise credited. The HSIE curriculum team have created a series of other support resources for Year 11 Geography, including sample assessment schedules, scope and sequences and assessment tasks. [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) contains key information to complement this resource.

Some of the information in this resource is collated from relevant NESA and department documentation. It is important that all users re-read and cross-reference the relevant syllabus, assessment and reporting information hyperlinked throughout. This ensures the content is an accurate reflection of the most up-to-date syllabus content. Links contained within this resource were correct as of 30 March 2023.

## Purpose, audience and suggested timeframes

The purpose of the program is to encourage and foster students' curiosity and wonder about human diversity across the Earth's surface by analysing the spatial patterns and characteristics of the human impact. They examine the ways in which human actions have shaped these patterns and processes. The program involves an in-depth exploration of geopolitical characteristics, political tension and conflict, and contested spaces, with a focus on understanding the impacts of human actions. Students develop critical thinking skills and gain a deeper understanding of the interconnectedness of political, economic, social, cultural and environmental factors in shaping our world. The timeframe is suggested as a 14-week program of approximately 3 to 4 lessons per week. People, patterns and processes focus area is allocated 40 indicative hours of teaching time and the Geographical Investigation is allocated 20 indicative hours of teaching time.

## Using this resource booklet

The program has been designed to align with the Year 11 sample scope and sequence which indicates this focus area is for delivery in Term 2. It provides opportunities for the teacher to develop a rapport with their class while getting to know their needs, interests and abilities. Short, engaging materials have been selected to examine the spatial patterns and extent of the human footprint and the human transformations shaping those patterns. This approach enables students to develop a strong foundation in Geography 11-12 while helping the teacher assess their comprehension and skills. The following is an outline of some of the ways this resource booklet can be used:

* use the resources and/or activities as samples and models, tailoring them to address contextual needs and specific learning objectives
* review the resources and activities during faculty meetings and/or planning days, refining them collaboratively to align with faculty or school goals
* discuss the resources and activities during faculty meetings or planning days, jointly planning opportunities for team teaching, mentoring, lesson observation, and sharing of student samples
* utilise the resources and/or activities as samples with students, to foster a deeper understanding of people, patterns and processes
* employ the examples of resources and/or activities as a blueprint for designing student-specific tasks that cater to individual learning styles and needs
* assign resources/activities independently or as flipped learning, preparing students for class collaboration and/or revision activities
* leverage the strategies, texts, assessment practices, pedagogical practices, and/or syllabus planning as an opportunity to backward map Years 7–10, ensuring a cohesive and comprehensive learning experience in geography.

## Activity 1 – plan and brainstorm

Table – plan and brainstorm

|  |  |  |  |
| --- | --- | --- | --- |
| What: | Why: | Where: | How: |
| * **issues are there in my community?**
* **area of geography do I enjoy?**
* **concepts am I interested in?**
* **interactions are there between people and environment?**
 | * is this change happening?
* should I investigate this?
* is this relevant to geography?
* are people concerned about this?
 | * can I carry out my study?
* in my area is there change happening?
* are there interactions between people and the environment?
 | * can I find out more?
* can I conduct fieldwork?
* can I measure this?
 |

## Activity 2 – geographical inquiry plan

Table – geographical inquiry plan

|  |  |
| --- | --- |
| Requirements of a geographical inquiry | Plan of geographical inquiry |
| Area for inquiry | Hypothesis or focus question. |
| Geographical questions | Key or minor questions. For example, when, where and what causes traffic congestion in the school’s vicinity? |
| Ethical considerations | How will you frame questions to make them culturally appropriate?How will you include safe practices?Are there intellectual property rights considerations? |
| Data collection | What primary and secondary data is required to inform a response to a hypothesis or focus question?How long will each method of geographical investigation take to complete? |
| Presentation of findings | How will the investigation be presented? For example, report, oral presentation, poster. |
| Recommendations of findings | What do you think you will learn? |
| How will the inquiry be assessed? | Is this an assessment task? |

## Activity 3 – population trends

Use [World Population Prospects 2022, Population Pyramids](https://population.un.org/wpp/Graphs/DemographicProfiles/Pyramid/900) to complete the following table.

Table – population trends

|  |  |  |  |
| --- | --- | --- | --- |
| Population feature | P – patterns that you see | Q – quantify what you see with specific statistics and details | E – exceptions to the patterns |
| Total population |  |  |  |
| Change in different age groups |  |  |  |
| Annual rate of population change |  |  |  |
| Total fertility |  |  |  |
| Life expectancy |  |  |  |

## Activity 4 – ethical practice in geography

Examine some of ethical dilemmas in geography, using the scenarios provided.

**Scenario 1** – **informed consent and vulnerable populations**

Students are conducting a geographical investigation on the impact of industrial pollution on a local community's health. The community predominantly consists of low-income families and has limited access to education. The students must decide how to obtain informed consent from the community members while ensuring they fully understand the purpose, risks and benefits of participating in the research.

**Scenario 2 – confidentiality and anonymity**

During a geographical investigation on land use and its effects on soil quality, students interview local farmers about their farming practices. Some farmers reveal potentially harmful or illegal practices they have been using. The students must decide how to handle this sensitive information while maintaining the confidentiality and anonymity of their research participants.

**Scenario 3 – cultural sensitivity and sacred sites**

Students are investigating the impacts of tourism on the local environment and culture in a region with Indigenous communities. They want to study the effects of tourism on sacred sites and cultural practices. The students must navigate the ethical challenges of respecting local customs, gaining permission to access sacred sites, and ensuring their research does not inadvertently contribute to cultural exploitation.

## Activity 5 – proportional circles

Proportional representation circles on a map are a type of thematic map used to display quantitative data. These maps utilise circles of varying sizes to represent the magnitude of a particular variable in a specific geographic area.

Provided below is a guide to understanding how to interpret proportional representation circles on maps:

* Take a moment to understand the purpose of the map by identifying the subject matter or theme it aims to represent. This information is usually found in the title, legend or accompanying text.
* The legend is crucial for understanding how the circle sizes correspond to the data values. It will show you the scale of the circles and provide a reference for comparison. Make sure to carefully study the legend to ensure accurate interpretation of the data.
* Determine the underlying geographic boundaries being used, such as countries, states or counties. Understanding the base map will allow you to recognise the areas being compared.
* The size of the circle is directly proportional to the data value it represents. Larger circles indicate higher values, while smaller circles signify lower values. Take note of the circles' sizes to gain a better understanding of the data distribution.
* The legend should provide information about the scale used to determine the size of the circles. This can be a linear or logarithmic scale. A linear scale means that the circle size increases proportionally with the data value, while a logarithmic scale means that the circle size increases at a slower rate as the data value increases.
* Study the distribution of the circles across the map and identify any noticeable patterns or trends. This could include clusters of large or small circles or an even distribution of sizes throughout the map.
* To make meaningful comparisons between regions, look at the relative size of circles in different areas. This will help you understand the disparities between different locations and give you an idea of how the data is distributed.
* When interpreting proportional representation circles on maps, it is essential to be aware of potential limitations and biases. The data may be outdated, incomplete or subject to inaccuracies.

## Activity 6 – flowline maps

Provided below is a process that outlines steps to construct a flowline map related to the movements of population in Australia as a result of sea level rise.

To support students in achieving the task, data sets, maps and legends may be provided or students may work in groups.

The steps include:

1. Introduce the concept of flowline maps and their application in understanding population movements due to sea level rise.
2. Discuss the effects of sea level rise on coastal communities and brainstorm potential solutions.
3. Describe the types of data required for creating a flowline map related to sea level rise, such as elevation, population density and infrastructure data.
4. Explain where to obtain the necessary data, including Australian government sources and geographic information system (GIS) datasets.
5. Gather data on the characteristics of these points, such as population size, demographics and infrastructure.
6. Obtain spatial data, such as geographic coordinates or administrative boundaries, to georeference your data.
7. Use reliable sources for data collection, such as government agencies, academic institutions or reputable organisations.
8. Establish a method for connecting origin and destination points, such as drawing straight lines or following transportation routes.
9. Represent the magnitude of flow by adjusting line width, colour or symbols. For example, thicker lines could indicate more significant population movements. Simplify or aggregate flowlines if needed to avoid clutter and improve map readability.
10. Choose a colour scheme that effectively communicates the magnitude of flow and contrasts with the background map.
11. Customise line styles, such as dashed or dotted lines, to differentiate between types of flows or to emphasise specific movements.
12. Create a legend that clearly explains the meaning of colours, line styles and symbols used on the map. Include a scale bar and north arrow to provide geographic context and orientation.

## Activity 7 – examples challenges arising from population change

Examples of environmental, economic and social challenges arising from population change in London (England) and Dhaka (Bangladesh).

Table – environmental, economic and social challenges

|  |  |  |  |
| --- | --- | --- | --- |
| Cities | Environmental challenges | Economic challenges | Social challenges |
| London | * **Urban sprawl**: as the population increases, demand for housing and infrastructure leads to the spread of the city, impacting green spaces and natural habitats.
* **Air quality**: rising traffic and industrial activity contribute to increased air pollution, affecting public health.
* **Waste management**: with a growing population comes an increase in waste production, posing challenges for efficient and sustainable waste management systems.
* **Energy consumption**: a larger population requires more energy, leading to increased greenhouse gas emissions and pressure on energy infrastructure.
 | * **Infrastructure**: upgrading and expanding infrastructure (transportation, utilities and public services) to accommodate a growing population can be costly and complex.
* **Unemployment**: a larger population increases competition for jobs, potentially leading to higher unemployment rates.
* **Housing**: rising demand for housing can lead to higher prices and shortages, making it difficult for people to find affordable homes.
* **Pressure on public services**: increased demand for education, healthcare, and social services can strain resources and lead to reduced quality of services.
 | * **Integration**: managing the integration of diverse cultural and ethnic groups to create a cohesive and inclusive society.
* **Inequality**: addressing socioeconomic disparities that can arise from increased population density and competition for resources.
* **Aging population**: as the population ages, there are challenges in providing adequate healthcare, social support and housing for the elderly.
* **Community engagement**: ensuring that residents have opportunities to participate in and shape their communities, despite the rapid pace of change.
 |
| Dhaka | * **Land use**: the rapid growth of Dhaka leads to the conversion of agricultural land and wetlands into urban areas, reducing natural resources and increasing vulnerability to flooding.
* **Water pollution**: high population density and industrial growth lead to water pollution, affecting the availability of clean water for consumption and irrigation.
* **Air quality**: poor air quality due to increased traffic, industrial activity and waste burning contributes to public health issues.
* **Climate change vulnerability**: as a low-lying coastal city, Dhaka is at risk of sea level rise and other climate-related disasters.
 | * **Unemployment**: the high population growth rate leads to increased competition for jobs, potentially exacerbating poverty and unemployment.
* **Informal economy**: a large portion of the urban population is engaged in the informal economy, lacking access to social security and legal protections.
* **Infrastructure**: rapid population growth requires significant investment in infrastructure, including transportation, water supply and waste management systems.
* **Slums and informal settlements**: high demand for housing leads to the growth of informal settlements, often lacking basic amenities and infrastructure.
 | * **Overcrowding**: insufficient urban planning, resulting in the proliferation of informal settlements or slums.
* **Inadequate access to education and healthcare**: the growing population, perpetuating cycles of poverty and inequality.
* **Rural migrants**: challenges in integrating rural migrants into urban society, leading to social tensions and cultural clashes.
 |

## Activity 8 – flow chart

Figure – example flow chart of challenges



## Activity 9 – characteristics and trends in 2 countries

Table – population characteristics and trends for Australia and India

|  |  |  |
| --- | --- | --- |
| Population characteristic | Australia – characteristics, trends and/or challenges | India – characteristics, trends and/or challenges |
| Current population |  |  |
| Population density |  |  |
| Growth rate |  |  |
| Fertility rate |  |  |
| Shape of population pyramid |  |  |
| Other |  |  |

## Activity 10 – fieldwork activity guide

**Fieldwork activity guide – local study on ageing population (optional)**

1. **Identify the research question**: before beginning any fieldwork, it is essential to identify the research question that the students will be investigating. For example, the research question could be: ‘What are the challenges faced by the ageing population in our local area and how is the government responding to these challenges?’ Once the research question has been identified, it will be easier to determine what data needs to be collected and which geographical tools will be most useful.
2. **Select appropriate geographical tools**: there are many different geographical tools that can be used to collect data on the ageing population and government responses in the area. Some examples include questionnaires, interviews and observations. The choice of tool will depend on the research question, the nature of the data being collected and the available resources. For example, if the research question is focused on the experiences of individual seniors, interviews might be the most appropriate tool. On the other hand, if the research question is focused on broader trends in the community, a questionnaire might be more appropriate.
3. **Determine the sample**: once the research question and tools have been identified, the next step is to determine the sample. The sample is the group of individuals or locations that will be studied. For example, the sample might be seniors living in a specific neighbourhood or seniors who attend a particular community centre. The sample should be selected based on the research question and the availability of participants.
4. **Collect data**: once the tools and sample have been determined, it's time to collect the data. This may involve administering questionnaires, conducting interviews or making observations. Students should be trained on how to use the tools effectively and ethically, including obtaining informed consent and protecting the privacy of participants.
5. **Analyse and interpret data**: after the data has been collected, students will need to analyse and interpret the data. This may involve statistical analysis or qualitative analysis, depending on the nature of the data and research question. Students should be taught how to analyse and interpret the data effectively and accurately.
6. **Applying geographical understanding: once the data has been collected and analysed, students should be encouraged** to apply their geographical understanding to the findings. This involves:
7. evaluating options in response to a geographical challenge
8. developing evaluation criteria based on environmental, social and economic considerations
9. making an on-balance judgement about the most appropriate option(s),
10. proposing actions and predicting outcomes
11. developing a plan to implement a proposal
12. assessing how causes, impacts, opportunities, challenges and responses relevant to one geographic context may be applicable to another.

For example, students could use their findings to propose strategies to improve the well-being of the ageing population in the local area, such as the development of community centres or improved healthcare services.

1. **Communicate findings**: finally, students should be encouraged to communicate their findings to others. This may involve creating a report, presenting at a conference or community meeting or using social media to share their results. Students should be encouraged to communicate their findings in a clear and concise manner and to consider the implications of their research for the local community and beyond.

Using geographical tools to collect data on the local ageing population and government responses in the area can be a valuable learning experience for students. It allows students to apply theoretical concepts to real-world situations, develop research skills and engage with the challenges that the local community are facing.

If fieldwork is not able to be accommodated at this point, consider organising a virtual fieldwork experience for students to explore a local community or neighbourhood with a significant ageing population. This could include:

* providing students with access to online resources, such as local government websites, reports and news articles, that contain information about the ageing population in the selected community or neighbourhood
* instructing students to analyse the online data and identify trends, challenges and government responses in the area
* Encouraging students to use additional online mapping tools, such as Google Maps or Google Earth, to virtually explore the community and examine its physical characteristics and infrastructure
* If available, consider utilising a virtual reality (VR) headset or 360-degree video tour of the selected community or neighbourhood. Guide students through the virtual experience, highlighting key aspects of the ageing population and government responses in the area. After the virtual tour, have students discuss their observations and compare them to the national trends and government responses discussed in the previous activities

## Activity 11 – population characteristics

Table – population characteristics and their impacts on the environment

|  |  |
| --- | --- |
| Population characteristic | Impact on the environment |
| Population size |  |
| Population distribution |  |
| Population composition |  |
| Population consumption |  |

## Activity 12 – plan and organise findings

The following table will provide a template for this task.

Table – plan and organise student investigation findings

|  |  |
| --- | --- |
| Headings | What is required |
| Introduction | Outline the background of the investigation.Why is the topic important?Develop the hypothesis or focus question. |
| Methods | Methods of data collection used and justification for choice. |
| Findings | Presentation of data. This should include any relevant maps, graphs, tables or photographs. |
| Analysis | What your results show. This could include relationships, trends and comparisons. |
| Conclusions and recommendations | Do you accept or reject your hypothesis? Identify realistic recommendations you would make based on this. If it is a focus question, conclude with answering the question, bringing examples from key or minor questions that were investigated. |

## Activity 13 – geopolitical boundaries

Geopolitical boundaries are the lines or physical boundaries that define and separate the territories of different countries or regions. There are several types of geopolitical boundaries, including:

* **physical boundaries**: these are natural boundaries that are created by physical features such as mountains, rivers and coastlines. They can be difficult to cross and can act as barriers to trade and movement.
* **political boundaries**: these are boundaries that are created by human-made factors such as treaties, agreements and laws. They can be changed through negotiations and political processes.
* **cultural boundaries**: these are boundaries that are defined by differences in language, religion or ethnicity. They can create cultural barriers between regions and countries.
* **economic boundaries**: these are boundaries that are defined by differences in economic systems, such as capitalism or communism. They can create economic barriers between countries.
* **geometric boundaries**: these are boundaries that are created by drawing lines on a map without regard to physical or cultural features. They are often used in colonial contexts and can lead to conflicts between different ethnic groups.
* **buffer zones**: these are neutral areas that are established between 2 or more countries to prevent conflict. They can be created through international agreements or by military force.
* **demilitarised zones**: these are areas where military activity is prohibited by international agreement. They are often created to reduce tensions between countries that are in conflict.

Types of shapes and boundaries of states:

* **compact state**: circular-like shape with relatively equal distances from the centre to any boundary. Examples include: Kenya, Rwanda, Uganda and Burundi.
* **elongated state**: long and narrow shape with internal communication problems and isolation of towns from the capital city. Example: Malawi.
* **prorupted state**: compact state with an extended portion of boundary, often for access to a specific resource or to separate 2 other nations. Example: Namibia.
* **perforated state**: has other state territories or states within them. Example: Lesotho, a sovereign state within South Africa.
* **fragmented state**: separated by large bodies of water or other states. Examples include Indonesia and Michigan.
* **landlocked state**: lacks direct access to major bodies of water, hindering its economy and trade. Many African states became landlocked after gaining independence from European powers. Example: Austria.

## Activity 14 – political ideologies

Table – political ideologies

|  |  |
| --- | --- |
| Political ideology | Key ideas |
| **Anarchism**[What is Anarchism? (0:39)](https://youtu.be/25idDeLPlXw)[Anarchism – definition and meaning](https://www.merriam-webster.com/dictionary/anarchism)[What is anarchism all about?](https://theconversation.com/what-is-anarchism-all-about-50373) |  |
| **Liberalism**[Liberalism (international relations)](https://en.wikipedia.org/wiki/Liberalism_%28international_relations%29)[An introduction to Liberalism (6:24)](https://youtu.be/uNKj5lv983E) |  |
| **Conservatism**[What is Conservatism? (1:55)](https://youtu.be/Who9JLgfzdc)[Conservatism](https://simple.wikipedia.org/wiki/Conservatism) |  |
| **Socialism**[Socialism](https://education.nationalgeographic.org/resource/socialism)[What is Socialism? (1:31)](https://youtu.be/8KQQtbBYvDs) |  |
| **Capitalism**[What is Capitalism? (1:44)](https://youtu.be/azVxrMIxbJU)[Capitalism](https://www.investopedia.com/terms/c/capitalism.asp) |  |

Examples of key geopolitical characteristics that shape global politics:

* Location: a country's location can influence its strategic importance in the world, its access to resources and trade routes, and its potential for conflict with neighbouring states.
* Natural resources: countries with abundant natural resources, such as oil or minerals, often have significant geopolitical power and influence in the global economy.
* Military capabilities: a country's military strength can determine its ability to project power and defend its interests, as well as its potential for conflict with other states.
* Economic power: economic strength is a key driver of geopolitical power, as it can enable a country to exert influence over other states through trade, investment and aid.
* Political stability: stable political systems are often viewed as more attractive for foreign investment and as reliable partners in international relations.
* Cultural and linguistic ties: shared cultural and linguistic ties can lead to closer relationships between countries, while differences in culture and language can create barriers to cooperation.
* Historical relationships: historical relationships between countries can shape current political dynamics and influence alliances and conflicts.
* Ideology: the ideological beliefs of a country's leaders and population can shape its foreign policy and alliances, as well as influence its relationships with other countries.

## Activity 15 – conflict and tension

**Driving question**: What are some of the key ways that local and international organisations like the United Nations are working to prevent or resolve conflicts around the world?

Table – conflict and tension locally and around the world

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Conflict or tension | Parties to the conflict or tension | Trigger | Impacts | Responses | Assess the response |
| Iraq war[The Iraq War](https://www.cfr.org/timeline/iraq-war) |  |  |  |  |  |
| Tension between USA and China[Timeline: US – China Relations](https://www.cfr.org/timeline/us-relations-china) |  |  |  |  |  |
| Blue Mud Bay[Wet or Dry, It's Aboriginal Land: The Blue Mud Bay Decision on the Intertidal Zone](http://classic.austlii.edu.au/au/journals/IndigLawB/2008/27.html) |  |  |  |  |  |

## Activity 16 – spatial patterns and characteristics

Table – Spatial patterns and characteristics

|  |  |  |
| --- | --- | --- |
| Antarctica – contested | Overview of the spatial patterns | Overview of the characteristics |
| **Location and size** |  |  |
| **Physical geography** |  |  |
| **Human geography** |  |  |

It is important when describing the spatial patterns of phenomena like mountain ranges, bases, seal colonies or mineral deposits that geographical terminology is used. This terminology may include linear patterns, sparse patterns, dense patterns, nucleated patterns, peripheral patterns or cluster patterns.

## Activity 17 – political tension and conflict

Table – influences on political tension and conflict in Antarctica

|  |  |  |  |
| --- | --- | --- | --- |
| Influences on political tension and conflict | Factors | Potential key points | Student response |
| Geopolitical Interests | Territorial claims | * Overlapping claims by various countries
* Unresolved disputes
 |  |
|  | Strategic location | * Proximity to shipping routes
* Access to resources in the Southern Ocean
 |  |
| Resource Competition | Oil and gas reserves | * Potential for vast hydrocarbon deposits
* Conflicting claims over resources
 |  |
|  | Freshwater reserves | * Melting ice caps as a source of freshwater
* Increasing global demand for freshwater
 |  |
|  | Fishing grounds | * Rich marine ecosystems
* Overfishing and disputes over quotas
 |  |
| Scientific Research | International collaboration | * Shared research facilities and stations
* Joint scientific projects
 |  |
|  | Espionage concerns | * Potential for military applications
* Dual-use technologies
 |  |
| Climate Change | Melting ice caps | * Rising sea levels
* Impact on coastal cities and ecosystems
 |  |
|  | Loss of habitat | * Impact on Antarctic wildlife
* Loss of biodiversity
 |  |
|  | Increased accessibility | * Opening of new shipping routes
* Easier access to resources
 |  |
| Tourism and Environmental Concerns | Impact of tourism | * Disturbance to wildlife
* Pollution and waste management issues
 |  |
|  | Preservation efforts | * Establishment of protected areas
* Balancing tourism with environmental conservation
 |  |
| Legal Frameworks and Governance | Antarctic Treaty System | * Principles of peace and cooperation
* Limitations and enforcement
 |  |
|  | Future governance challenges | * Adapting to changing environmental conditions
* Addressing emerging conflicts and disputes
 |  |

## Activity 18 – spatial patterns poster

Provided below are some guiding questions for students’ informative poster:

* What spatial patterns can be observed in the distribution of research stations and territorial claims in Antarctica?
* How do the spatial characteristics of Antarctica, such as its remoteness, harsh climate and vast ice sheets, impact human activity and influence the development of contested spaces?
* How do the spatial patterns of resource distribution, such as oil, gas and fish stocks, contribute to tensions and conflicts in Antarctica?
* How do international treaties and agreements, such as the Antarctic Treaty System, impact the spatial patterns of human activities in Antarctica?
* How do climate change and melting ice caps affect the spatial characteristics of Antarctica, and what are the implications for contested spaces in the region?
* How do spatial patterns of tourism and environmental preservation efforts intersect in Antarctica, and what challenges do they present for managing contested spaces?
* How do spatial patterns of scientific research and collaboration influence the development of contested spaces in Antarctica, particularly regarding concerns about espionage and dual-use technologies?
* How do geopolitical factors, such as the strategic location of Antarctica and proximity to shipping routes, influence spatial patterns of human activity and contribute to the region's contested spaces?

## Activity 19 – structured response

Students’ response should include:

* **Introduction**: students should start with an introduction that briefly explains the topic they are discussing and why it is important.
* **Background information**: students should provide some background information on the topic, such as key terms, definitions and historical context, to help the reader understand the issue at hand.
* **Research and analysis**: students should use evidence and research to support their argument and analyse the data to draw conclusions.
* **Examples and case study**: students should provide specific examples and case studies to illustrate their points and add depth to their analysis.
* **Conclusion**: students should conclude their response by summarising their main points and highlighting the implications and importance of their findings.
* **References**: students should include a list of references or sources they consulted during their research, properly cited according to the chosen citation style.

## Activity 20 – research station scenario

**Provided is a scenario for a group activity**

The Antarctic Treaty System has recently approved the establishment of a new research station in Antarctica. The goal of this research station is to conduct essential scientific research related to climate change, glaciology, marine biology and other important fields. The treaty requires that all new research stations adhere to strict environmental sustainability and human-wellbeing standards.

The government responsible for the construction and operation of this new research station has launched an open competition, inviting teams of architects, engineers and scientists to submit their proposals for the design of the station. The winning design will be awarded a grant to collaborate with the government in developing and constructing the new research station.

Each team must design a sustainable research station that meets the following criteria:

* **Energy efficiency**: the research station should primarily rely on renewable energy sources such as solar, wind or geothermal power, and incorporate energy-efficient building materials and technologies.
* **Waste management**: the station should minimise waste production, recycle materials whenever possible, and manage waste disposal in an environmentally responsible manner, ensuring no negative impacts on the Antarctic environment.
* **Biodiversity conservation**: the research station should minimise its ecological footprint and protect local flora and fauna. The design should include measures to prevent the introduction of invasive species and minimise the disturbance of wildlife habitats.
* **Human wellbeing**: the station should promote the mental and physical wellbeing of its inhabitants by providing comfortable living quarters, recreational facilities and opportunities for social interaction. The design should also ensure the safety and health of the researchers, considering Antarctica's extreme climate conditions.
* **Adaptability**: the research station should be able to accommodate changes in research priorities and technological advancements. The design should be flexible and adaptable to support the evolving needs of the scientific community.
* **International collaboration**: the research station should be designed to facilitate cooperation among scientists from different countries and disciplines, fostering a collaborative research environment.

## Quality assurance alignment

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

**Author**: Curriculum Secondary Learners

**Related resources**:

Year 11 Geography, including sample assessment schedules, scope and sequences, programs, resource booklets and assessment tasks:

* [Year 11 – People, patterns and processes sample program](https://education.nsw.gov.au/teaching-and-learning/curriculum/hsie/planning-programming-and-assessing-hsie-11-12/planning-programming-assessing-geography-11-12)
* [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)
* [Geography Year 11: Sample scope and sequence (DOCX 76.55 KB)](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/hsie/media/documents/geography-Year-11-scope-and-sequence.DOCX)
* [Geography Year 11: Sample assessment schedule (DOCX 74.0 KB)](https://education.nsw.gov.au/content/dam/main-education/teaching-and-learning/curriculum/hsie/media/documents/geography-Year-11-assessment-schedule.DOCX)

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