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| **The Curriculum** | **AS91247 (2.8) Apply spatial analysis, with guidance, to solve a geographic problem (Version 2) 3 credits** (as at Nov 2016) | **Conditions of Assessment** |
| **Level Seven Achievement Objective**   * Understand how the processes that shape natural and cultural environments change over time, vary in scale and from place to place, and create spatial patterns * Understand how people interact with the natural and cultural environments and that this interaction has consequences   **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Clarifications**  Updated May 2015. This document has been updated in its entirety to address new issues that have arisen from moderation.  The geographic problem must have a spatial dimension. It can be a hypothetical scenario, but it must be based on genuine ‘real’ data. It is advantageous for students if the problem is phrased as a question to answer. Students have been most successful when using a local setting.  The Conditions of Assessment provide guidance in relation to the input from the teacher relating to topic selection, provision of resources and use of geospatial technologies. The collection of sufficient spatial data Although teachers will provide resources, students need to select what and how much data is required to solve the geographic problem. Sufficiency of spatial data does not relate to volume. The student should demonstrate an ability to select the most relevant data to arrive at an appropriate solution, from the resources provided or collected. Completing manipulations to produce a layout A range of manipulations are listed in Explanatory Note 3 of the standard. The accuracy of the layout relates to both the appropriate geographic conventions being applied and precision of the data manipulations.  Evidence of the manipulations, as presented by the layout, should be logically planned to support problem solving. More than one manipulation may be combined to show more accurate and effective results of the manipulations in relation to the problem.  Students must be aware that the orientation, scale and key available on many images may need to be modified or added once a screen shot has been cropped or manipulated. Explaining an appropriate/valid solution to the geographic problem The proposed solution must be based on the manipulations and explained using supporting evidence from the layout. An appropriate solution required for Achieved and Merit can be interpreted as ‘what might work’, whereas a valid solution needed for Excellence can be interpreted as ‘what should work’. A valid solution will demonstrate deeper understanding of the environment and context.  **From Moderator Newsletters:** Similar contexts for more than one Geography standard Use of similar contexts can reinforce learning and result in greater depth of student understanding.  Opportunities for using similar contexts in more than one Geography internally assessed standard could occur with:   * geographic issue and spatial analysis standards | | **Achievement** | **Achievement with Merit** | **Achievement with Excellence** | | --- | --- | --- | | * Apply spatial analysis, with guidance, to solve a geographic problem. | * Effectively apply spatial analysis, with guidance, to solve a geographic problem. | * Comprehensively apply spatial analysis, with guidance, to solve a geographic problem. |  Explanatory Notes  1. This achievement standard is derived from the Level 7 Geography achievement objectives from the Social Sciences learning area of *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Geography*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.   This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](http://tmoa.tki.org.nz/Te-Marautanga-o-Aotearoa/Taumata-Matauranga-a-Motu-Ka-Taea) for the relevant learning area.   1. *Apply spatial analysis, with guidance, to solve a geographic problem* involves:    * collecting spatial data relevant to the geographic problem    * completing manipulations of the spatial data to produce a layout related to the problem    * explaining an appropriate solution, based on the manipulations, that is supported by evidence.   *Effectively apply spatial analysis, with guidance, to solve a geographic problem* involves:   * + collecting sufficient spatial data to address the geographic problem   + completing manipulations of the spatial data to produce an accurate layout related to the problem   + explaining, in detail, an appropriate solution, based on the manipulations, that is supported by evidence.   *Comprehensively apply spatial analysis, with guidance, to solve a geographic problem* involves:   * + fully explaining a valid solution, based on the manipulations, that is supported by detailed evidence.  1. *With guidance* refers to the degree of teacher guidance on the type and selection of data and data manipulative geospatial technique provided for students.   *Geographic problem* refers to a problem relating to aspects of the natural and/or cultural environment(s) at a given location, and which includes a spatial dimension. The problem cannot be a simulation.  *Collecting spatial data* refers to either collecting data with a spatial component in the field or accessing spatial data from other sources.  *Layout* refers to a map and may also include other visuals such as tables, graphs and images.  *Manipulations* refer to data transformations such as:   * + measuring   + layering   + changing the symbols used   + sorting and editing a table   + querying the map   + using coordinate systems   + displaying a graph based on the map.   *Spatial analysis* involves collecting, manipulating, and presenting spatial data.  Geospatial techniques should be used to manipulate and present the spatial data in ways that  support problem solving. Students may use appropriate technology for the manipulation and  presentation of data. | Assessment resources must be provided by the teacher and students may provide additional resource material.  Geospatial technologies (e.g. Google Earth, GIS software) should be used to manipulate and present the spatial data in ways that support problem solving.  Students should demonstrate understanding and application of spatial analysis, with guidance, to solve an actual geographic problem. The teacher should provide guidance in the selection of the topic and the use of geospatial technologies.  **Approaches to Assessment**  Suggested approaches to presenting assessment evidence include:   * a layout with written, visual and/or oral evidence.   Where a group approach is used the teacher needs to ensure that there is evidence that each student has met all aspects of the standard.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **From Moderator Newsletters:** Resource material and higher level thinking With standards that require in-depth geographic understanding and/or analysis, students need the opportunity to develop a relatively complex understanding of the context. The Conditions of Assessment indicate when assessment resources may be provided by the teacher. It also states that students should be encouraged to provide additional resource material. The provision of resources could be guidance about where to access information and suggested web sites.  Students who rely solely on a provided resource booklet frequently struggle to develop in-depth or comprehensive responses. Further issues arise when the resource material only focuses on selected aspects of the standard or is out of date. The spatial dimension requirement of the Geography standards The Geography achievement standards all refer to the requirement of a ‘spatial dimension’. This is often further defined as local, national or global, depending on the focus of the standard. Understanding of the spatial dimension needs to be evident throughout the description, explanation or analysis of the issue, topic or problem. Students could be encouraged to use maps to help them demonstrate this understanding. |