2009 Internal Assessment Resource

Subject Reference: **Education for Sustainability 2.2**

Channelled energy

Supports internal assessment for:

Achievement Standard: 90811

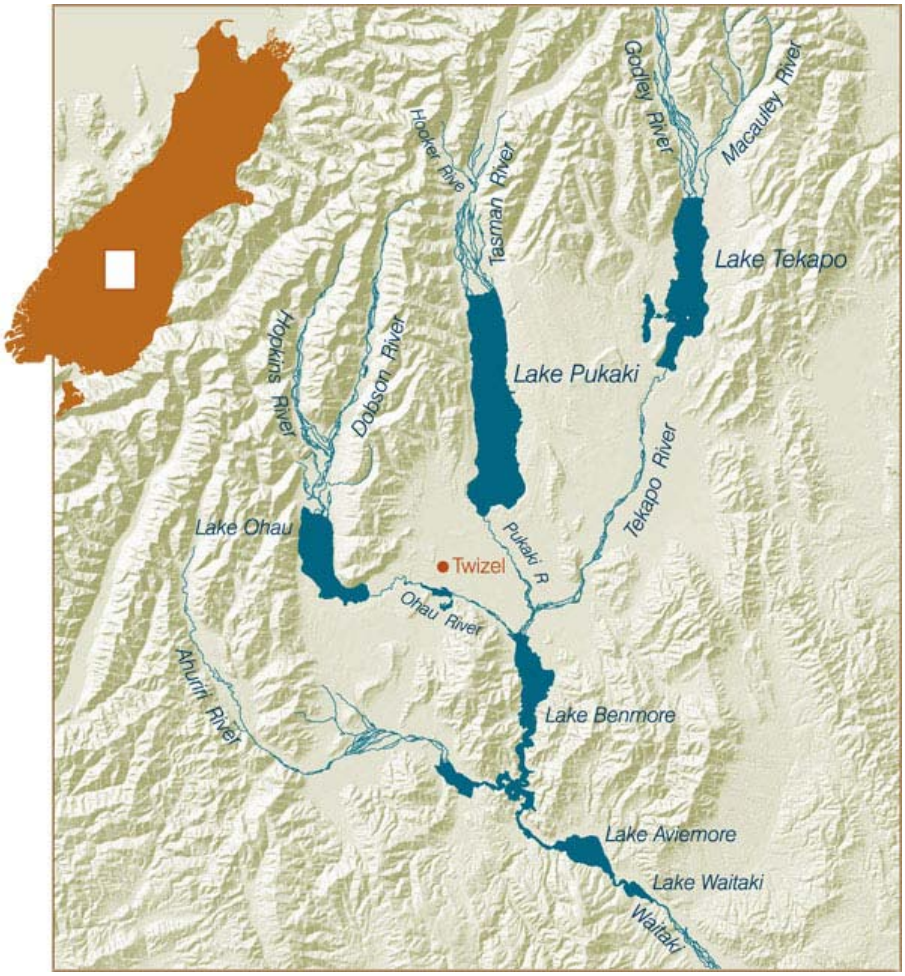
Credits: 4

Describe the consequences of human activity within a biophysical environment in relation to a sustainable future.

Teacher guidelines

The following guidelines are supplied to enable teachers to carry out valid and consistent assessment using this internal assessment resource.

Teachers may need to adapt this task and assessment schedule to suit the particular field trip programme they have organised.



Context/setting

The particular biophysical environment chosen for this task is in the Mackenzie Basin where there is ample evidence of the consequences of human actions over time.

Source: www.doc.govt.nz/upload/9050/map_2.jpg

It is expected that students will visit the Mackenzie Basin ecological area, the visitor centre at Twizel and Project River Recovery at the Department of Conservation. During that field trip they will be able to interact with various stakeholders as well as experience the unique nature of the biophysical environment and the human impact on it.

[This activity could be adapted to suit another river's catchment area, should that be more appropriate]

The biophysical environment includes, but is not limited to, geological, hydrological, climatic and biological systems. Students will be introduced to each of these different elements or systems both before and during the field trip.

Human activities are those that change the biophysical environment, for example land use, industrial development, transport, housing, waste management, recreation, tourism, establishment of marine reserves, energy production and consumption, political, fishing, water use and introduction of exotic species. The most obvious human activity in this environment is the hydro-electric schemes, which have had an impact since development started in1934. This is the main focus of this assessment activity.

Consequences could be the result of an activity that promotes or disrupts the sustainability of an environment. Actions taken for sustainability could be preventative, mitigating or remedial.

Conditions

Specific conditions must be stated on the student instruction sheet e.g. time, guidelines, equipment and resources available. This includes any specific safety requirements for visiting the site.
Whether this work is completed in class or out of school, teachers will need to include

strategies to ensure authenticity. These could include digital photos, conferencing at each milestone, regular checking of logbooks and signed authenticity statements. You will need to refer to the assessment policy of your school in this regard.

Assessment schedule: generic template

Task	Evidence/Judgements for Achievement	Evidence/Judgements for achievement with Merit	Evidence/Judgements for achievement with Excellence
	Describe consequences of human activities within a biophysical environment in relation to a sustainable future.	**Explain consequences of human activities within a biophysical environment in relation to a sustainable future.**	**Discuss consequences of human activities within a biophysical environment in relation to a sustainable future.**
1 2	Map shows key features related to the activity selected At least two systems described.	As for Achievement	As for Achievement
3	Activity is described		
4	Consequences are identified and described in terms of aspects of sustainability. A possible method of managing a consequence is **described**.	Consequences are fully explained in terms of aspects of sustainability. This will include reasons as to how or why human activity has had consequences on the biophysical environment. A possible method of managing a consequence is **explained**.	Consequences are discussed in terms of aspects of sustainability. This will include evidence of understanding the links between the biophysical environment and the human activity. It may involve justifying decisions, making judgements, stating opinions, considering implications, projecting future impacts, evaluating options, comparing and contrasting, analysing or suggesting alternatives, as appropriate. A possible method of managing a consequence is **discussed**.

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Describe the consequences of human activity within a biophysical environment in relation to a sustainable future.

Achievement criteria

Achievement	**Achievement with Merit**	**Achievement with Excellence**
Describe consequences of human activity within a biophysical environment in relation to a sustainable future.	Explain consequences of human activity within a biophysical environment in relation to a sustainable future.	Discuss consequences of human activity within a biophysical environment in relation to a sustainable future.

Comment:

Teacher Signature: _____ Date: _____

Student Signature: _____ Date: _____

Student instruction sheet

Conditions
You will be visiting the various hydro-electric schemes on the Upper Waitaki River in the Mackenzie basin, and the Department of Conservation in Twizel. In this task you will need to discuss the consequences of hydro-electricity developments on the Upper Waitaki River biophysical environment in relation to a sustainable future. In order to make the study manageable you may select from the following aspects of hydro-electricity development:

- Canal system
- Dams – Waitaki, Aviemore, Benmore
- Road network
- Rowing - Lake Ruataniwha
- Lake levels
- Power stations
- Or another activity approved by your teacher

You will use material from class and your own research to complete this task. If you interview people involved in any of these activities, remember to include photos and/or written responses to your questions.
The final report for this task will be completed on …..***(insert date and time)***

Your information must be presented in a format that is easy to understand and follow the flow of ideas, such as PowerPoint, wiki pages or a booklet format.

Your environment

Task one – the location
Using a map or a 'birds eye' sketch of the Mackenzie basin environment including the Upper Waitaki river, show the location of, and annotate, the key features and phenomena that are affected by the activity you will be describing in task three.

Task two – the natural environment
Using the material that you have collected, describe the biophysical nature of the environment using annotated diagrams, photographs, sketches, flow charts or paragraphs. Describe at least two systems.
e.g.

a. Ecological – indigenous species of the area; main food webs i.e. to show how plants and animals are connected in many ways to help them all survive; producers and consumers
b. Hydrological systems – water flow, capacity, stream inputs, clarity etc
c. Geology – history, structure, substrate, sedimentation
d. Climate – rainfall, temperature
e. Land use - pasture, pine forest, recreation, tourism

Task three – the human activity
Describe the activity – what it is, what and how it happens, where it happens, why it happens there. Illustrate your description with relevant visuals.

Task four – the discussion
Using the information from tasks one to three, present a report that discusses a range of consequences this activity has on the biophysical environment over time. The consequences are to be considered in relation to aspects of sustainability – environmental, social, cultural and economic. Consequences can be both positive and/or negative.

A discussion requires a thorough examination and analysis of the information. It may involve you stating opinions, evaluating options, making judgements, justifying decisions that were taken by others or decisions you suggest should be made, considering implications, projecting future impacts, comparing and contrasting, analysing or suggesting alternatives.

Suggest, with reasons, how some of these consequences could either have been mitigated or exacerbated. Remember your report must relate to the sustainable future of the environment.