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91532



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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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Level 3 Agricultural and Horticultural Science, 2015

91532 Analyse a New Zealand primary production environmental issue

9.30 a.m. Monday 30 November 2015
Credits: Five

Achievement	Achievement with Merit	Achievement with Excellence
Analyse a New Zealand primary production environmental issue.	Critically analyse a New Zealand primary production environmental issue.	Comprehensively analyse a New Zealand primary production environmental issue.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt BOTH parts of the task in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–12 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Not Achieved

TOTAL

2

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INSTRUCTIONS

This paper consists of ONE task, in TWO parts (A and B), which requires you to analyse water storage and irrigation as a New Zealand primary production environmental issue.

PART A

RESOURCE FOR PART A

The Blue Springs



New Zealand's natural freshwater resources underpin the Kiwi outdoor lifestyle and our "clean and green" brand.

The adverse effects of agricultural intensification are well understood, and are unambiguously evident in the ongoing deterioration of water quality and quantity in an increasing number of waterways.

The irrigation industry wants to see the estimated 650,000 hectares of irrigated land increased to in excess of a million hectares within the next two decades.

Image source: <http://www.gottalovenz.com/experience/the-blue-springs/>

Discuss the economic, environmental, and social impacts arising from the **use of irrigation** in agricultural and horticultural production systems.

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Environmental impacts of irrigation are if it can run off the paddocks into streams and waterways. This affects fish and other living organisms as well as the cleanliness of the water. To stop this you can use riparian management and buffer zones. This is when plants are put beside streams and waterways to ~~gather~~ reduce the amount of effluent entering the stream. Social impacts of irrigation are if it enters a waterway or a underground water supply where water is being taken for nearby houses it could contaminate the water. This would make the people living in the house using the water sick in turn making them not like you so much. If it enters a stream or other waterway the farmer could be fined massive amounts and made to fix the contamination. This is also a very costly operation. In southland only 1 river

More space for this answer is available on the next page.

Is clean enough to swim in because of top soil and effluent entering the water. This is another social effect. This is why dairy farmers are stereotyped as bad farmers although its only a handful of farmers in new Zealand that dont do any management practices to ~~de~~ minimise the effects of ~~effluent~~ irrigation use. Using irrigation at the wrong time can also cause pugging which is when the soil is compacted due to stock walking/standing on the soil when its wet and muddy. This causes poorly draining soil which then causes massive puddles in the winter months.

Recreational use ~~is also~~ one of ~~effect~~ ~~of~~ for streams and water ways is also an effect from irrigation. If it runs oh into a stream or waterway with aquatic life in it the fish will either die, leave the stream or ~~be~~ ~~and~~ have diseases so they cant be eaten any way. ~~The~~ ~~this~~ ~~was~~ ~~to~~ ~~happen~~ ~~The~~ Irrigation can also cause algae to grow in streams which

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also effects fish life ~~and~~ because it can change the temperature of the stream and waterway. Riparian management will decrease effects of irrigation because it gathers all of the nutrients entering the stream and it also provides ~~the~~ shelter for the stream keeping the water at a temperature thats cool in the summers. ~~and also shelters it from the~~ It also holds the banks together keeping them from collapsing and enclosing the stream or landing on a bed of trout eggs.

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This examination continues
on the following page.

PART B

RESOURCE FOR PART B

Opuha dam in normal conditions



Opuha dam in drought conditions



The Opuha Dam was planned to drought-proof a large area of South Canterbury for many years. However, the recent 2014 / 2015 summer drought was severe enough to halt all access to water into and out of the dam for a period of time.

Opuha has been lauded by politicians. It provides water for farms, an environment for aquatic life, a place for recreation, and minimum flows to the formerly summer-dry Opihi River.

Federated Farmers President Bruce Wills has said that New Zealand is on track to double primary exports to NZ\$64 billion by 2025 "so long as we stick to a sensible and sustainable mix of policies."

"Between now and 2025, NZ\$18 billion of this future growth is expected to come from water storage, irrigation, and aquaculture. New Zealand does not lack water as in Australia – just the means to store it in times of plenty, to use it in times of shortage," Wills said.

Source of text (adapted) and images: <http://www.interest.co.nz/rural-news/63700/bruce-wills-says-it-vital-we-store-water-irrigation-and-use-dry-periods-stored-water> (accessed 9 October, 2014)

"If water storage schemes are to provide for greater agricultural intensification, it must be at no further harm to the natural environment, which has already suffered too much damage."

"Therefore, Fish & Game supports water storage for agricultural use, provided both the direct and indirect freshwater environmental effects are benign."

Source (adapted): <http://www.fishandgame.org.nz/water-storage-irrigation>

A key issue for discussion during the 2014 General Election was the availability and quality of water associated with increasing agricultural intensification in New Zealand.

Justify the use of water storage schemes, like the Opuha Dam, over other water extraction options, such as bore water and pumping directly from rivers and tributary streams.

In your answer, evaluate various stakeholder viewpoints and the environmental impacts.

using dams can be better because the water is cleaner. There is more & more water which means its going to be alot harder to contaminate and with the right management practises it will be near impossible. There will most likely be laws that within a certain amount of space between the water and ~~dam~~ ~~the~~ farms that the farmer can not apply effluent, other fertilizers, ~~and~~ spray and pesticides. As shown in the pictures there is riparian planting beside most of the dam which will be getting most of the nutrients running off the farms. Pumping directly from rivers and tributary streams

More space for this answer is available on the next page.

is ~~bad~~ worse than dams because
 fleys ~~a~~ ~~are~~ ~~some~~ are usually
 contaminated. for example ~~it~~ in southland
 only one river is clean enough
 to swim in. If it isn't clean
 enough to swim in who
 would take water to drink
 out of it.

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Not Achieved exemplar for 91532 – 2015		Total score: 2
Grade score	Annotation	
N2	<p>The candidate explained positive and negative environmental, social, and economic impacts that irrigation schemes contribute to, but there were some inaccuracies, especially with the economic factor. Answers were not explained in depth. In part B, a lot of information was copied straight from the resource, and was not used well in the candidate's response. Statements were not backed up well, or applicable to the question.</p>	