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1

91007



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

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Level 1 Geography 2020

91007 Demonstrate geographic understanding of environments that have been shaped by extreme natural event(s)

2.00 p.m. Wednesday 18 November 2020

Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate geographic understanding of environments that have been shaped by extreme natural event(s).	Demonstrate in-depth geographic understanding of environments that have been shaped by extreme natural event(s).	Demonstrate comprehensive geographic understanding of environments that have been shaped by extreme natural event(s).

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 ALL parts of the question 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 2–10 in the correct order and that none of these pages is blank.

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Low Merit

TOTAL

05

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INSTRUCTIONS

Name ONE type of **extreme natural event** and an **environmental case study** (or studies) of this event, that you will use to answer BOTH parts of the question in this booklet.

Extreme natural event: Boxing Day Tsunami 2004

Environmental case study(ies): Indian Ocean countries = Sri Lanka, Thailand, India, Indonesia, Somalia, Maldives.

In your answers, you should integrate case study evidence as well as geographic terminology and concepts.

Geographic concepts you may choose to use in your answers include:

Processes

A sequence of actions that shape and change environments.

Environments

May be natural and / or cultural. They have particular characteristics and features, which can be the result of natural and / or cultural processes.

Change

Involves any alteration to the natural or cultural environment. Change can be spatial and / or temporal. Change is a normal process in both natural and cultural environments. It occurs at varying rates, at different times, and in different places.

Interaction

Involves elements of an environment affecting each other and being linked together. Interaction incorporates movement, flows, connections, links, and interrelationships, which work together and may be one- or two-way interactions. Landscapes are the visible outcome of interactions. Interaction can bring about environmental change.

QUESTION**(a) Processes**

Processes involve a sequence of actions.

Fully explain the sequence of actions that produced the extreme natural event in your case study environment(s).

In your answer, include:

- geographic terminology
- a geographic concept from page 2
- integrated detailed supporting evidence from your case study (or studies).

On December the 26th 2004, the Boxing Day Tsunami took place in the Indian Ocean. The processes of the Boxing Day Tsunami (BDT) started off with two tectonic plates, Indo-Australian plate and the Burma plate. The Indo-Australian plate subducted 90cm under the Burma plate out in the deep sea of the Indian ocean. The subduction of the Indo-Australian plate under the Burma plate created an earthquake out at sea. The earthquake of a magnitude of 9.3 displaced billion of tonnes of water creating wave formations out at sea. The waves travelled toward west to Sri Lanka, India, the Maldives and Somalia, and east to Indonesia and Thailand at 900 km per hour. The interactions between the subduction of the Indo-Australian plate with the Burma plate, to the massive 9.3 magnitude earthquake, to the wave formation, interacted ~~to~~ altogether to create the Boxing Day Tsunami in 2004. The BDT first struck at Indonesia lasting for half an ~~hour~~ hour before ~~the~~ travelling to other Indian Ocean countries like Sri Lanka, Thailand, Maldives, ~~Somalia~~, Somalia and India. The result of the Boxing Day Tsunami

left 200,000 people dead including 200⁺ plus tourist
in the Indian Ocean.

(b) **Effects**

Effects of extreme natural events can occur to both the natural and cultural environment. They can also be positive and/or negative.

Fully explain **ONE natural effect** (on page 7) and **ONE cultural effect** (on page 8) that your chosen extreme natural event had on your case study environment(s).

You may answer in annotated map, diagram, and/or paragraph form.

In your answer, include:

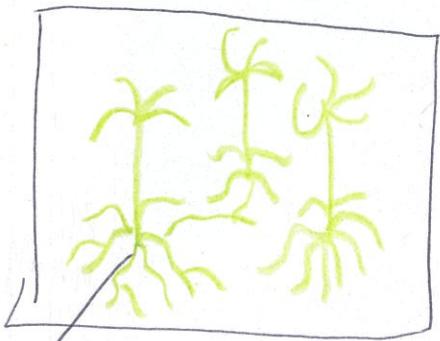
- geographic terminology
- a geographic concept from page 2
- integrated detailed supporting evidence from your case study (or studies).

Natural effect:

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USE ONLY

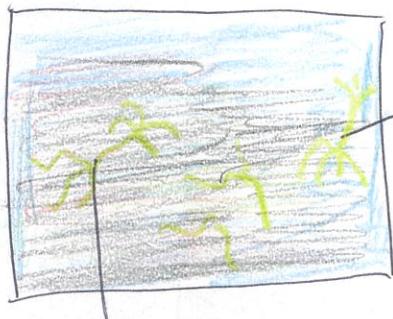
ANNOTATED MAP AND/OR DIAGRAM

before tsunami'



Mangroves

After TSUNAMI



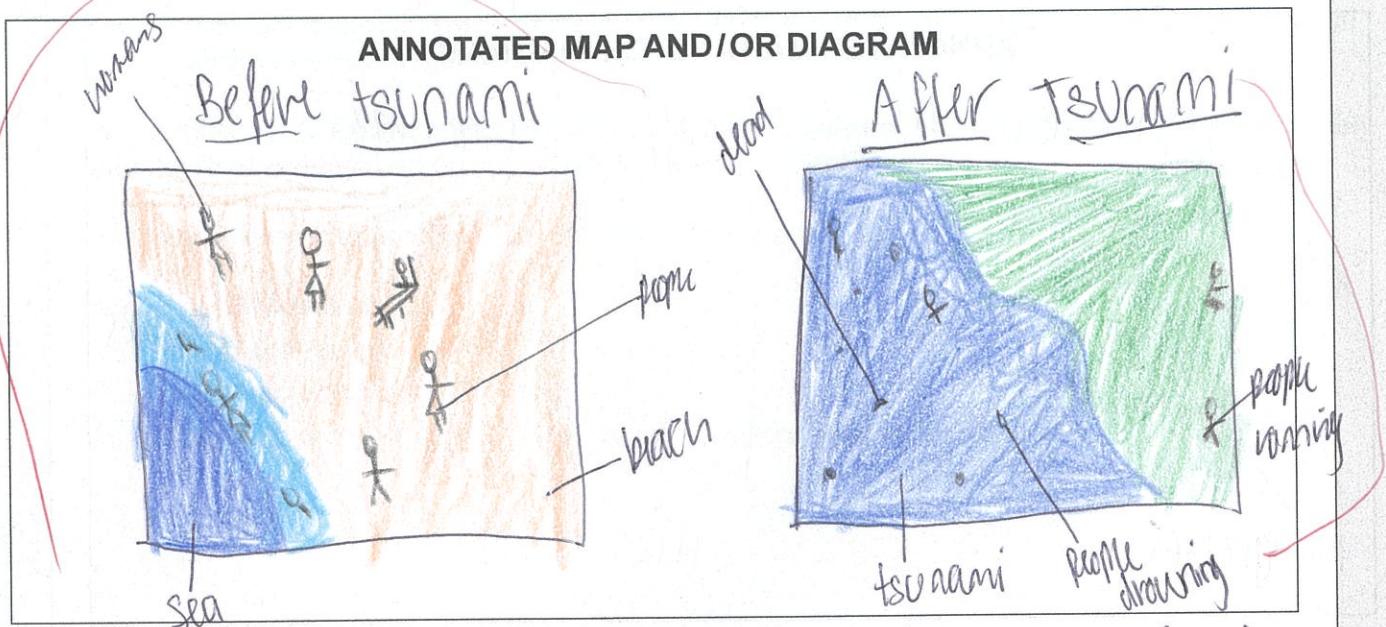
dead
mangroves

washed up mangroves

On December 26th 2004 the Boxing Day Tsunami (BDT) took place in countries in the Indian Ocean. One natural effect that the BDT had in countries in the Indian ocean like Thailand, is the damage the BDT left in ecosystem environments such as mangroves. 70% of mangroves were destroyed during the BDT in Pakarang cape, Thailand. This natural effect changed the surrounding environment where the mangroves once stood because the mangroves were removed by the BDT. This effected environments in the coastal areas such as Pakarang cape, Thailand because it means that the natural ~~barrier~~ barrier that helps decrease the wave velocity is destroyed which means that the waves can wash a big amount of the coastal environment.

Please turn over ➤

Cultural effect:

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A cultural effect of the Boxing Day Tsunami (BDT) that occurred on December 26th 2004 is the large number of people who died during the BDT. In Indonesia the death toll estimation around ~~was~~ effected countries in the Indian ocean is approximately 200,000 deaths. In Indonesia ~~was~~ 200 tourist lives were taken. This changed people's lives because a lot of people lost their love ones. for example cameraman Dendy ~~was~~ lost 50 members of his family to the BDT. While a lot of children in Sri Lanka are left as ~~orphaned~~ orphans after losing their parents.

* Who was filming when the Boxing Day Tsunami happen?

M5

Low Merit Exemplar 2020

Subject	Geography	Standard	91007	Total score	05
Q	Grade score	Annotation			
	M5	<p>This is an M5 as the candidate partially explains the processes producing the Boxing Day tsunami. There is a sequence, although it does get a bit repetitive, both in sequence and in the case study references. There are some good case-study references, and they understand how the tsunami was caused. However, it is only partially explained, as the main emphasis is on the earthquake rather than the tsunami itself. The earthquake evidence also has inaccuracies as the subduction did not happen suddenly and that in itself did not cause the earthquake – it is the stress building up and being released suddenly that caused the earthquake.</p> <p>The effect is shown in a basic diagram. The candidate partially explains the effect and uses some well-supported case study evidence – mangroves, 70% and Pakarang Cape, Thailand. A full explanation would have been how the wave removed the mangroves. The last part about future vulnerability needed to include explanations on how this creates further change. For example, how replanting helps protect the coast in the future.</p> <p>The cultural effect is a little weaker but still shows understanding of how the tsunami created change. The partial explanation includes how this change affects those who are still alive such as 'Dendy' and his wider family and that children became orphans. Again, there is some specific supporting evidence such as: Indian Ocean, 200,000 deaths, 200 tourists dead, 'Dendy'.</p>			

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High Merit

TOTAL

06

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INSTRUCTIONS

Name ONE type of **extreme natural event** and an **environmental case study** (or studies) of this event, that you will use to answer BOTH parts of the question in this booklet.

Extreme natural event:

Hurricanes

Environmental case study(ies):

Hurricane Katrina

In your answers, you should integrate case study evidence as well as geographic terminology and concepts.

Geographic concepts you may choose to use in your answers include:

Processes

A sequence of actions that shape and change environments.

Environments

May be natural and / or cultural. They have particular characteristics and features, which can be the result of natural and / or cultural processes.

Change

Involves any alteration to the natural or cultural environment. Change can be spatial and / or temporal. Change is a normal process in both natural and cultural environments. It occurs at varying rates, at different times, and in different places.

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QUESTION

(a) Processes

Processes involve a sequence of actions.

Fully explain the sequence of actions that produced the extreme natural event in your case study environment(s).

In your answer, include:

- geographic terminology
- a geographic concept from page 2
- integrated detailed supporting evidence from your case study (or studies).

The first process or action that occurs to produce Hurricanes is the ~~other~~ interaction between the sun and sea. The sun heats up the Atlantic Ocean to 26.5°C .

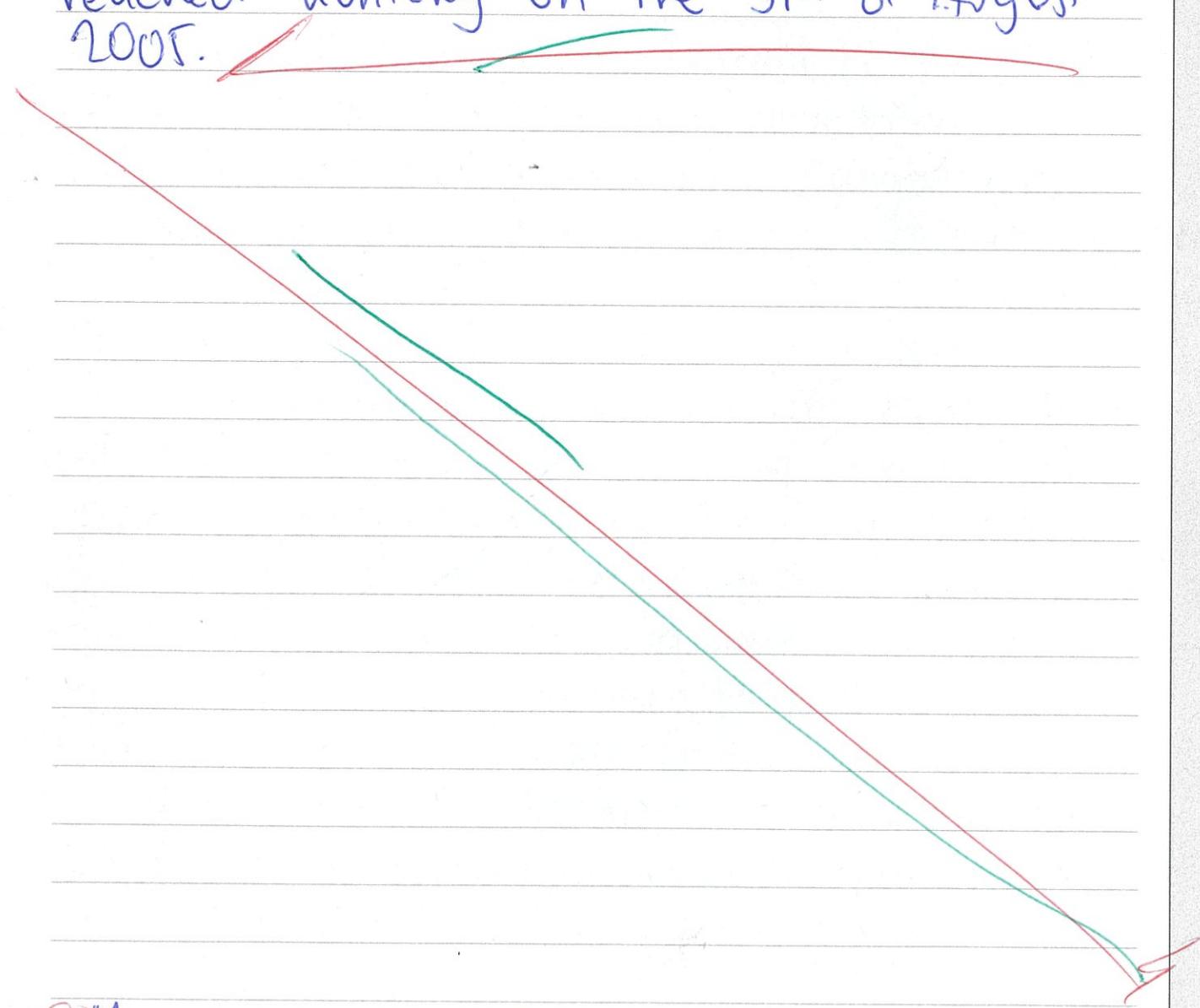
(than)

Hurricane Katrinas water was $1.5\text{-}2^{\circ}\text{C}$ higher needed. The second action involves the rapid evaporation of the water where it then begins to cool and condense.

Next, the ITCZ and coriolis force interact together to rotate the rising, moist air in a anticlockwise direction.

Due to the rising air cooling and condensing large storm clouds with heavy rain begin to form. Hurricane Katrina had 300mm of rain. Next a jetstream passes over the developing hurricane at $10^{\circ}\text{-}30^{\circ}$ latitude and draws the moist air out. As a result of this even more moist air is sucked back into the hurricane. Finally the last process ^{that} occurs ~~the~~ is the release of latent heat. When the jet stream

passes through and draws the moist air into the hurricane ~~when it gets~~ when it cools and condenses it releases huge amount energy. This energy is called latent heat. The latent heat interacts with the hurricane to give it the energy to keep spinning and rampage on. Hurricane ~~Katrina~~ formed out near the Bahamas on the 25th of August 2005 and didn't finish till it reached Kentucky on the 31st of August 2005.



This increases windspeed. Hurricane Katrina's windspeed was at 280km/h

(b) Effects

Effects of extreme natural events can occur to both the natural and cultural environment. They can also be positive and/or negative.

Fully explain ONE natural effect (on page 7) and ONE cultural effect (on page 8) that your chosen extreme natural event had on your case study environment(s).

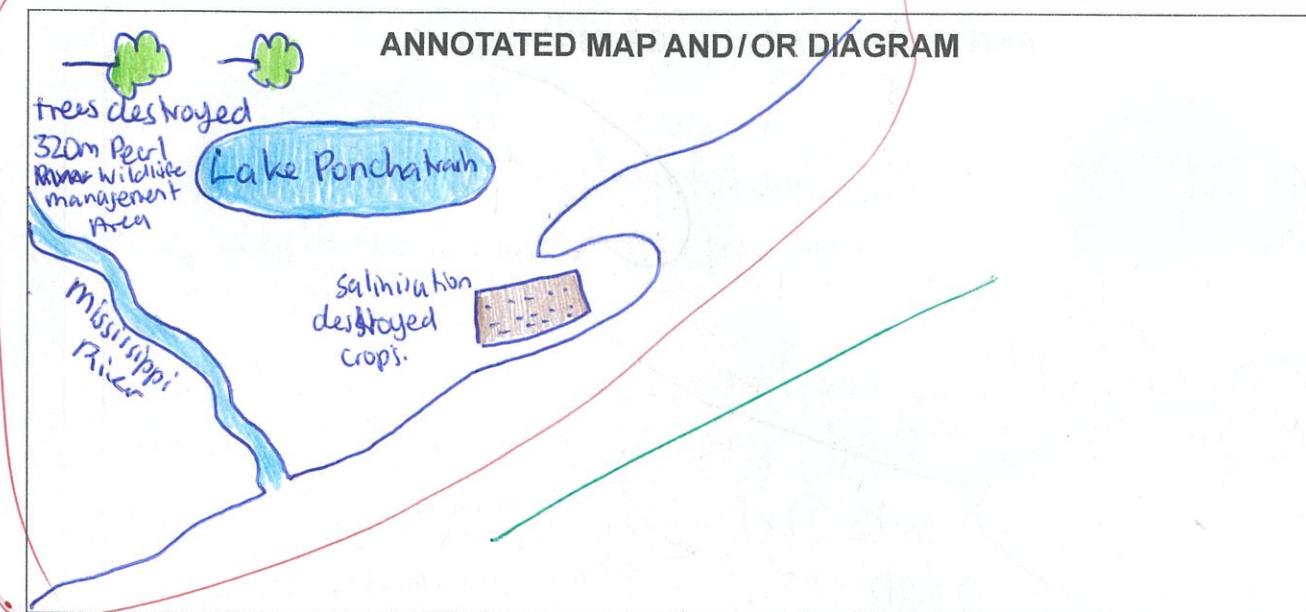
You may answer in annotated map, diagram, and/or paragraph form.

In your answer, include:

- geographic terminology
- a geographic concept from page 2
- integrated detailed supporting evidence from your case study (or studies).

Natural effect: Vegetation

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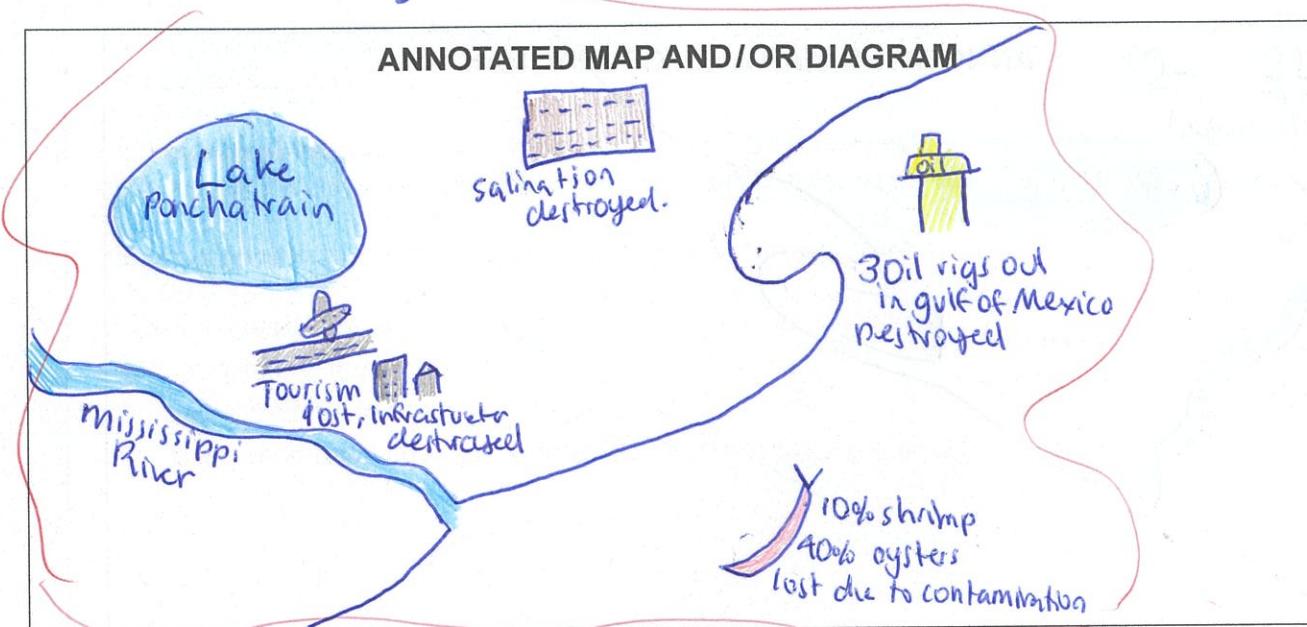
Hurricane Katrina hit New Orleans on the 29th of August 2005. It had many devastating effects to the natural environment and changed New Orleans's environment through the destruction of its vegetation.

Hurricane Katrina brought high winds of 280 km/h through New Orleans. As a result of these high winds New Orleans's vegetation was changed. 320 million trees were destroyed at the Pearl Wildlife Management Area. The types of trees including massive hardwood trees, oaks, pecan and sweet gum trees. As well as this Hurricane Katrina brought 6-8m storm surges which as a result, deposited salt onto soils and crops such as corn, soybeans and cotton. causing salinisation and therefore making the soil unusable. (see diagram)

Hurricane Katrina destroyed the vegetation of New Orleans, changing there natural environment.

Please turn over ►

Cultural effect: Economy



When Hurricane Katrina hit over New Orleans on the 29th of August²⁰⁰⁵ it not only changed the natural environment, it also changed its cultural environment. New Orleans's economy was changed and greatly effected the New Orleans environment.

30 oil rigs out in the gulf of Mexico were destroyed due to the 280km/h winds and 6-8m storm surges. This changed new orleans's economy because as a result of the rigs being destroyed, jobs and money was lost. It also meant oil prices were going up. (see diagram)

Jobs and money were also lost due to the loss of its shrimp and oyster produce. 10% of shrimp and 40% of oysters were lost out in the Gulf of Mexico due to contaminated water from oil and sewage. This shrimp and oyster produce, provided the whole of the USA and therefore as a result

mb

M6

Extra space if required.
Write the question number(s) if applicable.

(b) Cultural effect.

New Orleans lost a lot of money ~~which~~ from the destruction of this produce. (see diagram)

Salinisation of crops and soil also affected New Orleans' economy because once again money and jobs were lost due to the salinisation of the crops. such as corn, soya and cotton. (see map)

Finally, tourism New Orleans economy relied greatly on tourism to get money. When infrastructure was destroyed or shutdown due to hurricane katrina and its devastating wind and storm surges, such as the Louis Armstrong Airport, Biloxi Casino, Hyatt Regency hotel and its famous blues and Jazz festival 'Mardi Gras' tourism was shutdown because no one was coming into the city. Huge amounts of money was lost as well as jobs. (see map).

These 4 factors combined left New Orleans environment economy changed and destroyed, resulting in the cultural environment as a whole changed. Great deals of money was lost and many people lost their jobs.

High Merit Exemplar 2020

Subject	Geography	Standard	91007	Total score	06
Q	Grade score	Annotation			
	M6	<p>This is an overall merit attempt as the candidate explains the processes producing Hurricane Katrina. There is a clear sequence and there are some good case study references and they understand how the hurricane formed. However, it is not fully explained how the rotation occurs nor does the candidate explain that for the hurricane to form it needs warm water.</p> <p>The natural effects are clear, and a diagram with labels is included. They explain that strong winds and storm surges of 6 to 8m high caused changes to specific places such as the Pearl Wildlife Management Area and that specific species such as oaks and sweet gum have been affected. They do not fully explain that salinisation impacts on crops or that the soil is unsuitable for plant life to survive. To obtain higher grades, there needed to be evidence of insight.</p> <p>The cultural effect is explained and shows a good understanding of how Hurricane Katrina created change. A diagram with labels and statistics supports the explanation but lacks conventions and a sense of orientation. Four key economic points are made and explained and supported with details. Further explanations such as the oil prices, how many jobs were lost, and who uses oil would also have provided a more insightful response.</p>			