

91429R



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD  
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

## Level 3 Geography, 2016

### 91429 Demonstrate understanding of a given environment(s) through selection and application of geographic concepts and skills

9.30 a.m. Wednesday 16 November 2016  
Credits: Four

## RESOURCE BOOKLET

Refer to this booklet to answer the questions for Geography 91429.

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

**YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.**

## Relevant geographic concepts

### **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. The particular characteristics of an environment may be similar to and / or different from another. A cultural environment includes people and / or the built environment.

### **Perspectives**

Perspectives are ways of seeing the world that help explain differences in decisions about, responses to, and interactions with, environments. Perspectives are bodies of thought, theories, or world views that shape people's values and have built up over time. They involve people's *perceptions* (how they view and interpret environments) and *viewpoints* (what they think) about geographic issues. Perceptions and viewpoints are influenced by people's *values* (deeply held beliefs about what is important or desirable).

### **Processes**

Processes are a sequence of actions, natural and / or cultural, that shape and change environments, places, and societies. Some examples of geographic processes include erosion, migration, desertification, and globalisation.

### **Patterns**

Patterns may be spatial (the arrangement of features on the earth's surface) or temporal (how characteristics differ over time in recognisable ways).

### **Interaction**

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-way or two-way interactions. Landscapes are the visible outcome of interactions. Interaction can bring about environmental change.

### **Change**

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. Some changes are predictable, recurrent, or cyclic, while others are unpredictable or erratic. Change can bring about further change.

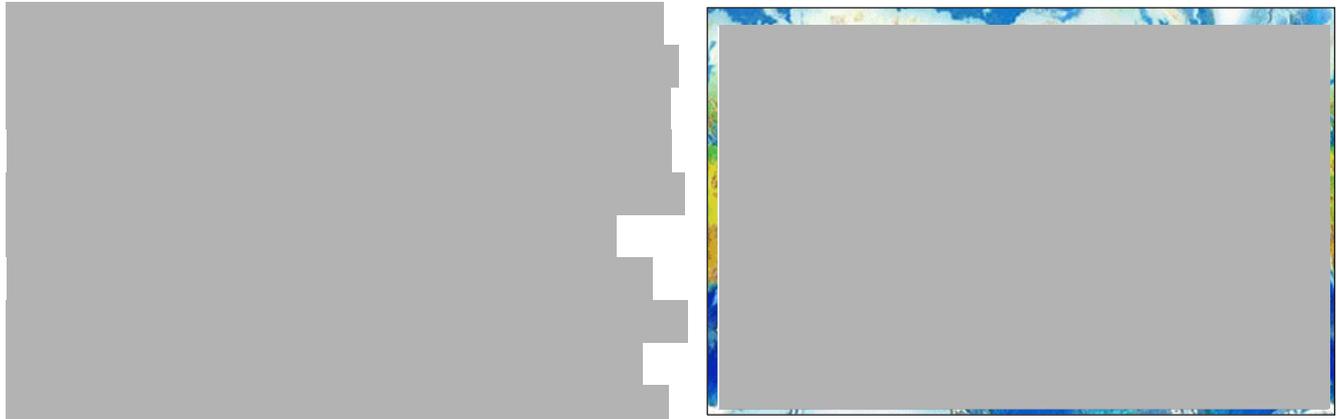
### **Sustainability**

Sustainability involves adopting ways of thinking and behaving that allow individuals, groups, and societies to meet their needs and aspirations without preventing future generations from meeting theirs. Sustainable interaction with the environment may be achieved by preventing, limiting, minimising, or correcting environmental damage to water, air, and soil, as well as considering ecosystems and problems related to waste, noise, and visual pollution.

# BACKGROUND TO THE GREAT PACIFIC GARBAGE PATCH

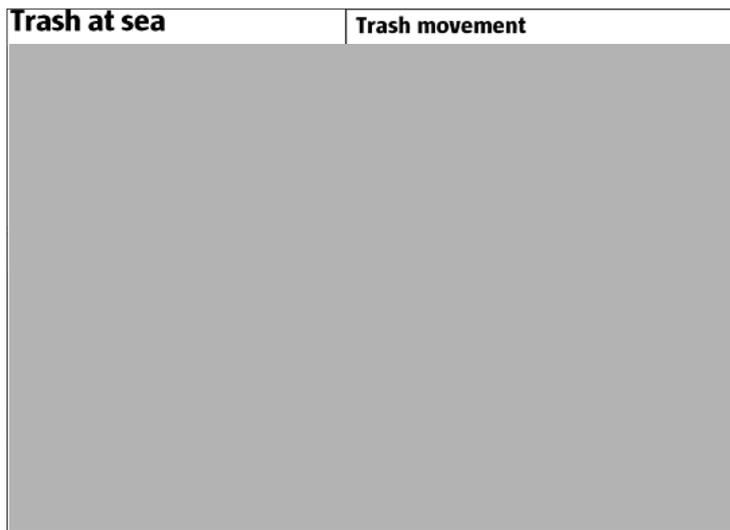
## Resource A: What is the Great Pacific Garbage Patch?

While the Pacific Ocean holds more than half of the planet's free water, it also unfortunately holds a lot of the planet's garbage (much of it plastic).



Many plastics, for instance, do not wear down; they simply break into tinier and tinier pieces.

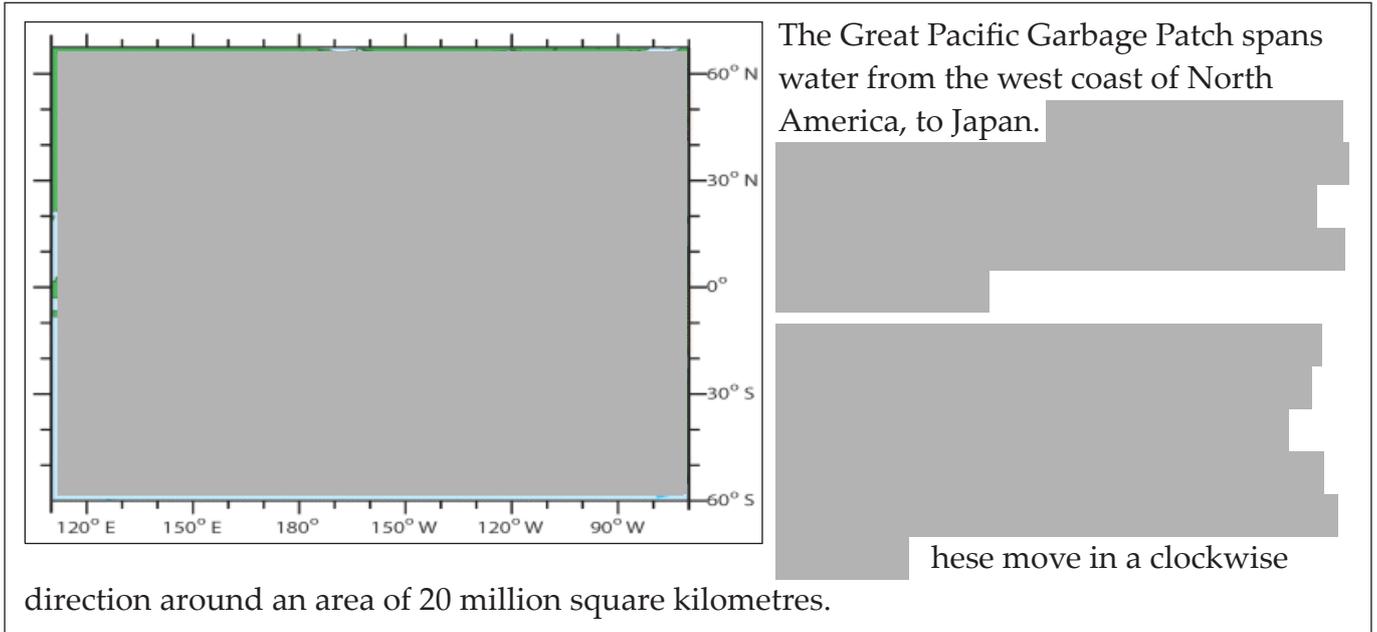
## Resource B: The size of the Great Pacific Garbage Patch



Distance between Tokyo (Japan) and Los Angeles (USA) is approximately 9 000 km

Distance between Hawaii and Los Angeles (USA) is approximately 4 000 km

### Resource C: Location of the Great Pacific Garbage Patch



### Resource D: What do ocean garbage patches look like?

In reality, the garbage patches are almost entirely made up of tiny bits of plastic, called microplastics.

This soup is intermixed with larger items, such as fishing gear and shoes.

## CAUSES OF THE GREAT PACIFIC GARBAGE PATCH

### Resource E: The ocean currents

The Great Pacific Garbage Patch formed gradually, as a result of rubbish in the ocean being gathered by oceanic currents.

The circular motion of the gyre means that once inside it, the garbage becomes trapped.



## Resource F: Development, consumerism, and the use of plastics

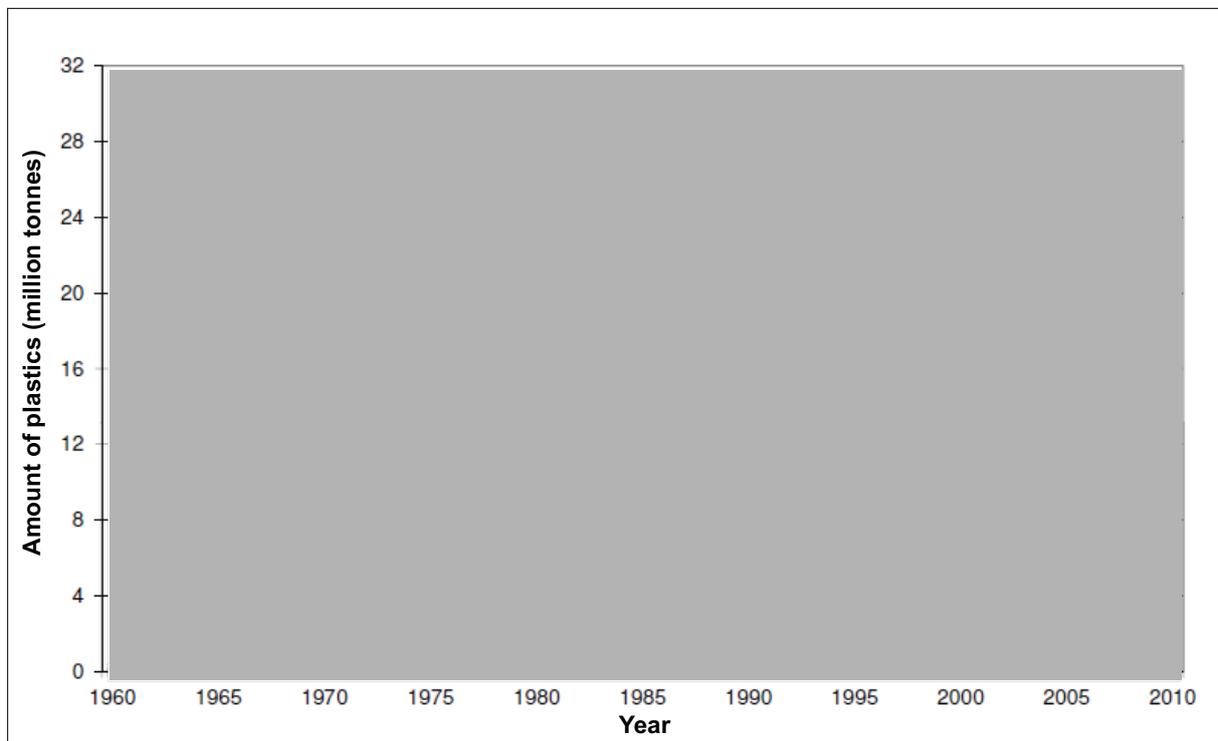
**PLASTIC OCEAN**

192 COUNTRIES BORDERING THE ATLANTIC, PACIFIC, INDIAN OCEANS AND MEDITERRANEAN AND BLACK SEAS PRODUCED **2.5 BILLION METRIC TONS OF SOLID WASTE IN 2010.**  
AN ESTIMATED **8 MILLION METRIC TONS** OF PLASTIC ENTERED THE OCEAN THAT SAME YEAR.

Ocean Conservancy

The infographic features a decorative border at the top consisting of a row of dark blue, scalloped shapes. To the right of the text, there are several orange and light brown abstract shapes resembling plastic fragments or oil spills. The main body of the infographic is a large, solid grey rectangle.



**Resource G: Top ten sources of the ocean's plastic waste in 2010****Resource H: Annual plastics generation and recovery in the USA (1960–2010)**

## CONSEQUENCES OF THE GREAT PACIFIC GARBAGE PATCH

### Resource I: Harm to marine life and the fishing industry

Impacts on marine life include sea turtles mistaking plastic bags for jellyfish, which they then eat; and albatrosses mistaking plastic pellets for fish eggs and feeding them to their chicks, which then die of starvation or ruptured organs.



Commonly reported fishing-related insurance claims are for “accidents, collisions with debris, entanglement of floating objects with propeller blades, and clogging of water intakes for engine cooling systems”.



**Resource J: Harm to people and communities**

Coastal communities are the most seriously affected by the garbage problem.

[Redacted]

[Redacted]

[Redacted]

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Chemicals that would otherwise have not made their way into the food chain reach the human body, accumulate over time, and increase the long-term damage to health, and the costs to treat the diseases caused by these toxins.



## POSSIBLE SOLUTIONS TO THE GREAT PACIFIC GARBAGE PATCH PROBLEM

### Resource K: Clean up the ocean

The Ocean Cleanup Foundation, founded in 2013, is currently developing a floating device that aims to collect plastic from the oceans.



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Other issues to consider include:

- **Who would fund a multinational clean-up?**

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- **Where would the waste go, once it has been removed from the ocean?**

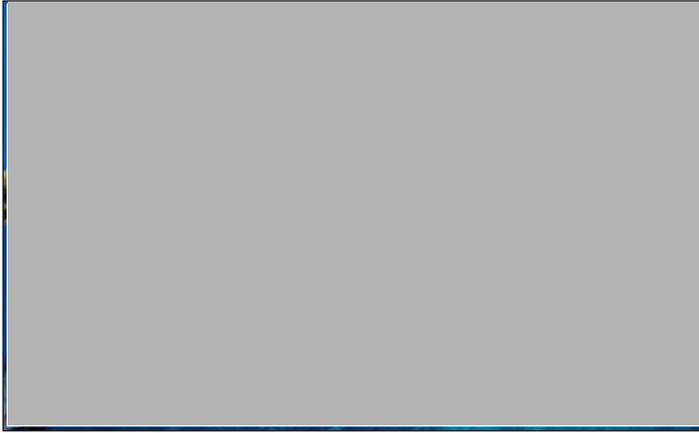
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- **How would plastic particles be removed without killing marine life at the same time?**

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[Redacted text block] The microscopical particles, which cannot even be seen, have mixed with the water and the sand and are the most difficult to extract.

## Resource L: Ban plastic bags



Developing biodegradable plastic without the long-lasting properties of plastic, would result in a piece of plastic being completely decomposed by the time it reached a gyre.



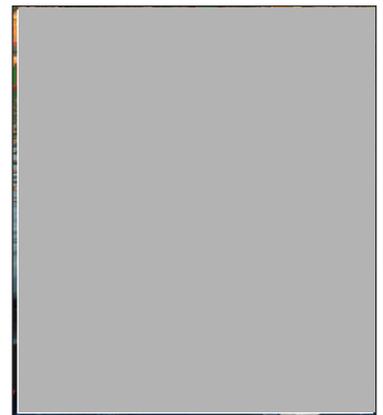
Ocean Conservancy, a non-profit environmental advocacy group, compiles an ocean trash index each year of the marine debris, and claims that plastic bags are number four on their top ten list after cigarettes, plastic wrap and packaging, and plastic bottles.

## Resource M: Educate the public

Many people in the industrialised world don't know the extent of marine pollution and the garbage patches.



As they are affected by ocean pollution, they have been receptive to the project.



## Acknowledgements

Material from the following sources has been adapted for use in this examination (accessed 10 March 2016).

### Geographic Concepts

<http://seniorsecondary.tki.org.nz/Social-sciences/Geography/Key-concepts>.

### Resource A

<http://response.restoration.noaa.gov/about/media/where-are-pacific-garbage-patches.html> (text) and [https://en.wikipedia.org/wiki/Great\\_Pacific\\_garbage\\_patch#/media/File:North\\_Pacific\\_Gyre\\_World\\_Map.png](https://en.wikipedia.org/wiki/Great_Pacific_garbage_patch#/media/File:North_Pacific_Gyre_World_Map.png) (image).

### Resource B

From Greenpeace in the McClatchy-Tribune, found on [http://axisoflogic.com/artman/uploads/1/Ocean\\_trash.gif](http://axisoflogic.com/artman/uploads/1/Ocean_trash.gif) (first image) and Google Earth (second image).

### Resource C

<http://nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/> (text) and <http://eatingjellyfish.com/wp-content/uploads/2011/10/gyres1-s.png> (image).

### Resource D

<http://nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/> (text) and [https://theultimatefundraiser.files.wordpress.com/2015/06/491241354\\_640.jpg](https://theultimatefundraiser.files.wordpress.com/2015/06/491241354_640.jpg) (image).

### Resource E

<http://nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/>, [https://en.wikipedia.org/wiki/Great\\_Pacific\\_garbage\\_patch](https://en.wikipedia.org/wiki/Great_Pacific_garbage_patch) (text), and [https://infogr.am/gurjotcheema\\_1403036576](https://infogr.am/gurjotcheema_1403036576) (image).

### Resource F

<http://www.oceanconservancy.org/our-work/marine-debris/ocean-plastic-full-2015.jpg> (image) and cartoon by Joel Pett for *Lexington (KY) Herald-Leader*, found on [https://nytsyn-production.s3.amazonaws.com/photos/0117/6439/1176439\\_525\\_350\\_w.jpg](https://nytsyn-production.s3.amazonaws.com/photos/0117/6439/1176439_525_350_w.jpg).

### Resource G

[http://www.solarnavigator.net/solar\\_cola/super\\_markets\\_stores/tesco.htm](http://www.solarnavigator.net/solar_cola/super_markets_stores/tesco.htm).

### Resource H

EPA 2010 Municipal Solid Waste Fact Sheet, found on <http://www.greenhome.com/blog/the-life-of-a-plastic-bottle>.

### Resource I

<http://www.onegreenplanet.org/environment/great-pacific-garbage-patch-is-destroying-the-oceans/> and <http://www.schwindelfrei.org/?p=928> (text).  
Cartoons by Mike Luckovich for *Atlanta (GA) Journal-Constitution*, found on <http://www.cartoonistgroup.com/subject/The-Ocean+Pollution-Comics-and-Cartoons.php> (first image), and by Pat Bagley for *Salt Lake (UT) Tribune*, found on <http://www.cagle.com/news/junk/> (second image).

### Resource J

<http://science.howstuffworks.com/environmental/earth/oceanography/great-pacific-garbage-patch2.htm> and <http://www.schwindelfrei.org/?p=928> (text).  
Cartoon by Mike Keefe from Daryl Cagle's The Cagle Post Cartoons & Commentary, found on <http://www.cagle.com/2014/08/pacific-garbage-patch/>.

### Resources K, L, and M

<http://www.oceanconservancy.org/our-work/international-coastal-cleanup/top-10-items-found-1.html?referrer=https://www.google.co.nz/>, <http://garbagepatch.net/solutions-what-can-you-do/>, <http://www.schwindelfrei.org/?p=928>, <http://news.nationalgeographic.com/news/2014/04/140414-ocean-garbage-patch-plastic-pacific-debris/>, and <http://education.nationalgeographic.org/encyclopedia/great-pacific-garbage-patch/> (text).  
Photos by Sam Chadwick, found on <http://inhabitat.com/ocean-plastics-absorb-other-toxins-become-even-more-dangerous-to-marine-life/> (first image), by Troy Mayne, found on <http://jawspaws.org/hawaiiangreenseaturtle/> (second image), and found on <http://www.oceanrecov.org/other-projects/hong-kong/plastic-catch.html> (third image).