

Surname	Centre Number	Candidate Number
Other Names		0



GCSE

4242/04



S15-4242-04

**GEOGRAPHY
(Specification B)
HIGHER TIER
UNIT 2
SECTION B**

P.M. WEDNESDAY, 3 June 2015

1 hour 30 minutes

For Examiner's use only		
Part	Maximum Mark	Mark Awarded
A	24	
B	22	
C	14	
SPaG	4	
Total	64	

This paper is to be given out after Section A has been collected in.

ADDITIONAL MATERIALS

Resource folder.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all parts of this question**.

Write your answers in the spaces provided in this booklet.

If additional space is required you should use the lined pages at the end of this booklet. The question number(s) should be clearly shown.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [] at the end of each question or part-question.

You are reminded that assessment will take into account the quality of written communication used in your answer that involves extended writing (**Part C**).

In addition, your ability to spell, punctuate and use grammar accurately will be assessed in your answer to **Part C**.

This paper examines how urban areas can be managed to reduce the risk of coastal flooding.

	Marks
Part A: considers urban growth and causes of coastal flooding in New Jersey State, USA.	24
Part B: considers the effects of coastal flooding, and explores three options for managing the coastline of New Jersey State.	22
Part C: you will advise the Government of New Jersey State which option <i>or</i> combination of options will provide the most sustainable solution to managing the coastline of New Jersey State.	14+4
Total marks	64

Part A

You are advised to spend about 30 minutes on this part.

This part considers urban growth and causes of coastal flooding in New Jersey State, USA.

(a) Study the maps on **page 2** of the separate **Resource Folder**.

Describe the location of New Jersey State in the USA.

[3]

.....

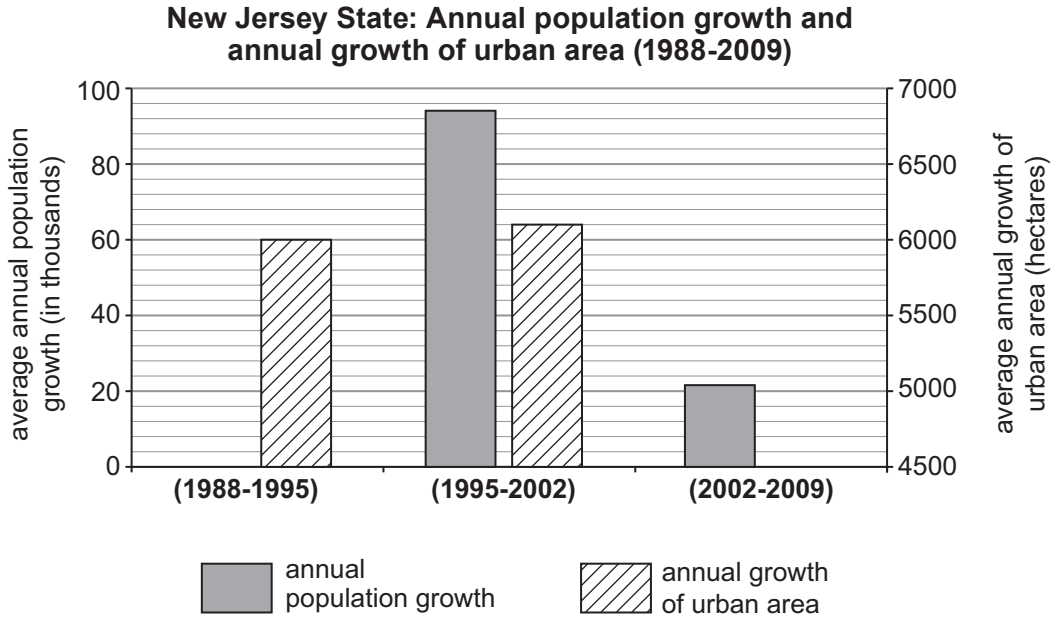
.....

.....

.....

.....

- (b) The population of New Jersey State is growing. Study the graph below. It shows annual population growth and annual growth of urban area in New Jersey State from 1988 to 2009.



- (i) Complete the graph using the following information:

[2]

Feature	Value
Average annual population growth (1988-1995)	31,000
Average annual growth of urban area (2002-2009)	6,600

- (ii) Compare annual population growth with annual growth of urban area shown on the graph.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

(iii) Suggest reasons for changes in population growth in New Jersey State.

[2]

.....

.....

.....

.....

.....

.....

.....

(iv) Suggest reasons for changes in the growth of urban areas.

[3]

.....

.....

.....

.....

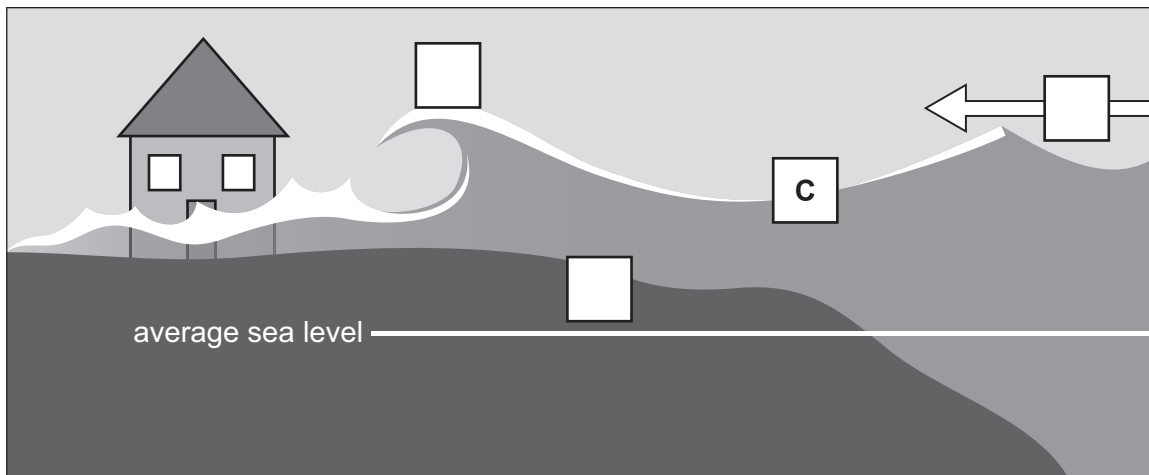
.....

.....

.....

(c) Coastal flooding occurs in New Jersey State as a result of sea surges caused by tropical storms.

Study the diagram below and statements on page 5, which show how sea surges develop.



	Statement
A	Strong winds create large waves on top of the surge.
B	Low pressure creates tropical storms.
C	Storm tides add to the height of the surge.
D	Tropical storms create strong winds that force sea water towards the coast.
E	As the sea bed shallows, the sea surge is forced upwards.

Complete the diagram on page 4 using **three** of the statements from the box. [3]

(d) Study the graph on **page 3** of the separate **Resource Folder**.

(i) Compare changes in sea surface temperature with the number of tropical storms per year shown on the graph. [2]

.....

.....

.....

.....

(ii) Explain why some scientists think that these changes may continue in the future. [2]

.....

.....

.....

.....

(iii) Suggest possible effects of these changes on urban areas in New Jersey State. [4]

.....

.....

.....

.....

.....

.....

.....

.....

End of Part A

Part B

You are advised to spend about 30 minutes on this part.

*This part considers the effects of coastal flooding, and explores **three** options for managing the coastline of New Jersey State.*

(a) Study the information on **pages 4 and 5** of the separate **Resource Folder**. It shows the popular tourist resort of Seaside Heights before and after coastal flooding in 2012.

(i) Describe the location of Seaside Heights. [2]

.....
.....
.....
.....

(ii) For **two** different groups of **local** people, suggest how they were affected by coastal flooding. [4]

Local group 1:

.....
.....
.....
.....

Local group 2:

.....
.....
.....
.....

The **Government of New Jersey State** is considering three options to manage the coastline of New Jersey State.

The options are:

- Option 1: Retreat the line (also known as Managed Retreat).
- Option 2: Hold the line using 'soft' engineering.
- Option 3: Hold the line using 'hard' engineering.

Option 1: Retreat the line (also known as Managed Retreat): People are moved away from the coast. The coastline will be allowed to retreat naturally to a new position.

(b) Study the information on **page 6** of the separate **Resource Folder**.

- (i) Measure the distance along Route 37 between the existing coastline at Seaside Heights and the future coastline at Bay Shore. [1]

.....

- (ii) For **one** group of people who support this option, explain why they may consider it to be sustainable. [2]

Group:

.....

.....

.....

.....

.....

.....

- (iii) Use **map evidence** to suggest why the **Town Council of Toms River** would object to this option. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Option 2: Holding the line using ‘soft’ engineering: A combination of beach nourishment and sand dune stabilisation could be used to protect Seaside Heights.

(c) Study the information on **page 7** of the separate **Resource Folder**.

(i) Choose **either** beach nourishment **or** sand dune stabilisation. [3]
Explain why your chosen strategy reduces the risk of coastal flooding.

.....

.....

.....

.....

.....

.....

.....

.....

(ii) Suggest **one** potential disadvantage of **either** of these strategies for **local** businesses. [2]

.....

.....

.....

.....

.....

.....

Option 3: Hold the line using ‘hard’ engineering: A combination of rock armour and concrete sea walls could be used to protect Seaside Heights.

(d) Study the information on **page 8** of the separate **Resource Folder** and the diagram below.

(i) Explain how each feature helps reduce the risk of coastal flooding. [3]

Curved section at the top of wall:

.....

.....

.....

.....



Rock armour at the base of wall:

.....

.....

.....

.....

.....

Stepped wall at 30 degree angle:

.....

.....

.....

.....

(ii) Give **one** reason why some **environmentalists** may think this is not a sustainable option. [2]

.....

.....

.....

.....

.....

.....

End of Part B

Part C

*You are advised to spend **about 30 minutes** on this part.*

In this part you will advise the Government of New Jersey State which option or combination of options will provide the most sustainable solution to managing the coastline of New Jersey State.

Use the information from this paper and ideas of your own.

You should explain your choice of option(s) and if appropriate why you didn't recommend the other options.

You should also comment on the sustainability of your plan.

The options are:

Option 1: Retreat the line (also known as Managed Retreat).

Option 2: Hold the line using 'soft' engineering.

Option 3: Hold the line using 'hard' engineering.

Use the Factfile on **page 9** of the separate **Resource Folder** to help you organise your ideas.

Should you wish you can use the matrix on the next page to organise your ideas, but you should spend no more than **10 minutes** completing the matrix.

	Sustainable feature	Unsustainable feature
<p>Option 1: Retreat the line (also known as Managed Retreat).</p>		
<p>Option 2: Hold the line using 'soft' engineering.</p>		
<p>Option 3: Hold the line using 'hard' engineering.</p>		

Examiner
only

You should advise the Government of New Jersey State about the most sustainable way to manage its coastline at places like Seaside Heights.

Use the information in your matrix on **page 11** to help you write your letter. You may also use information from other parts of this paper as well as ideas of your own.

Marks for spelling, punctuation and the accurate use of grammar are allocated to this question.

[14+4]

14	4

To the Government of New Jersey State

I am writing to advise you about the most sustainable way to manage coastal flooding.

I advise you to

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

For continuation only.

Dotted lines for writing continuation.

A series of 25 horizontal dotted lines for writing.



GCSE

4242/04-A



S15-4242-04A

GEOGRAPHY

(Specification B)

RESOURCE FOLDER UNIT 2, SECTION B

HIGHER TIER

P.M. WEDNESDAY, 3 June 2015

RESOURCE FOLDER

This folder is for use with questions in **Unit 2, Section B Higher Tier**.

This folder need not be handed in with your answer.

How should New Jersey State manage coastal flooding?



Seaside Heights, New Jersey

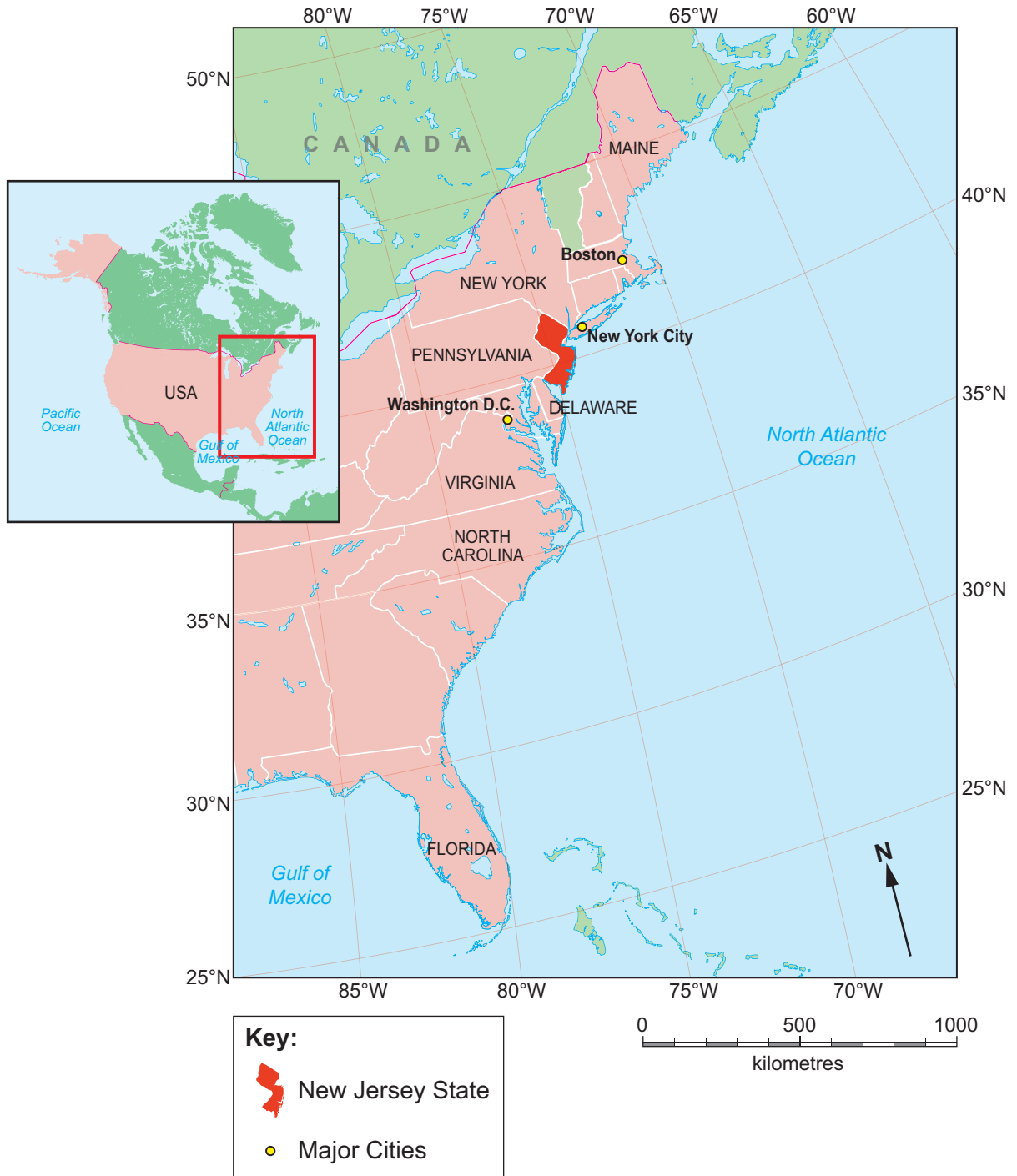


Seaside Heights was damaged by coastal flooding in 2012



Seaside Heights, New Jersey

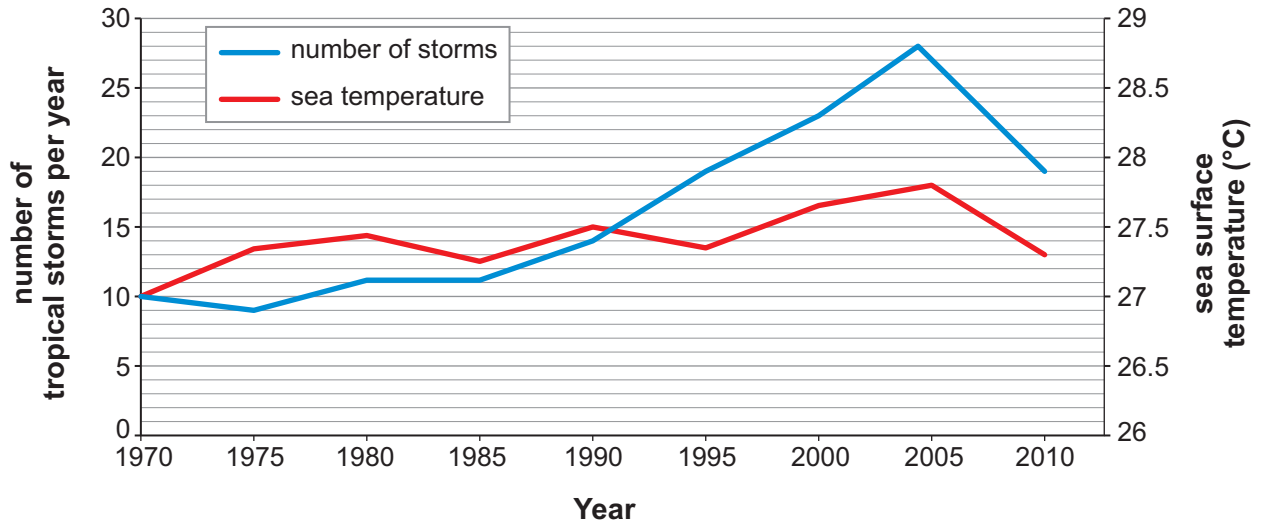
The location of New Jersey State



How sea surface temperatures and the number of tropical storms per year has varied in the North Atlantic Ocean.

Tropical storms may form when sea temperatures are 27°C or higher.

Graph 1: Number of tropical storms and sea temperature in the North Atlantic



Location of Seaside Heights



Key:	
	Route (road)
	Settlement

Seaside Heights	
	A popular coastal resort with 400,000 visitors each year.
	The beach and sea front stretches for 3km, with amusements, rides, clubs and bars.
	The highest point is 3 metres above sea level.



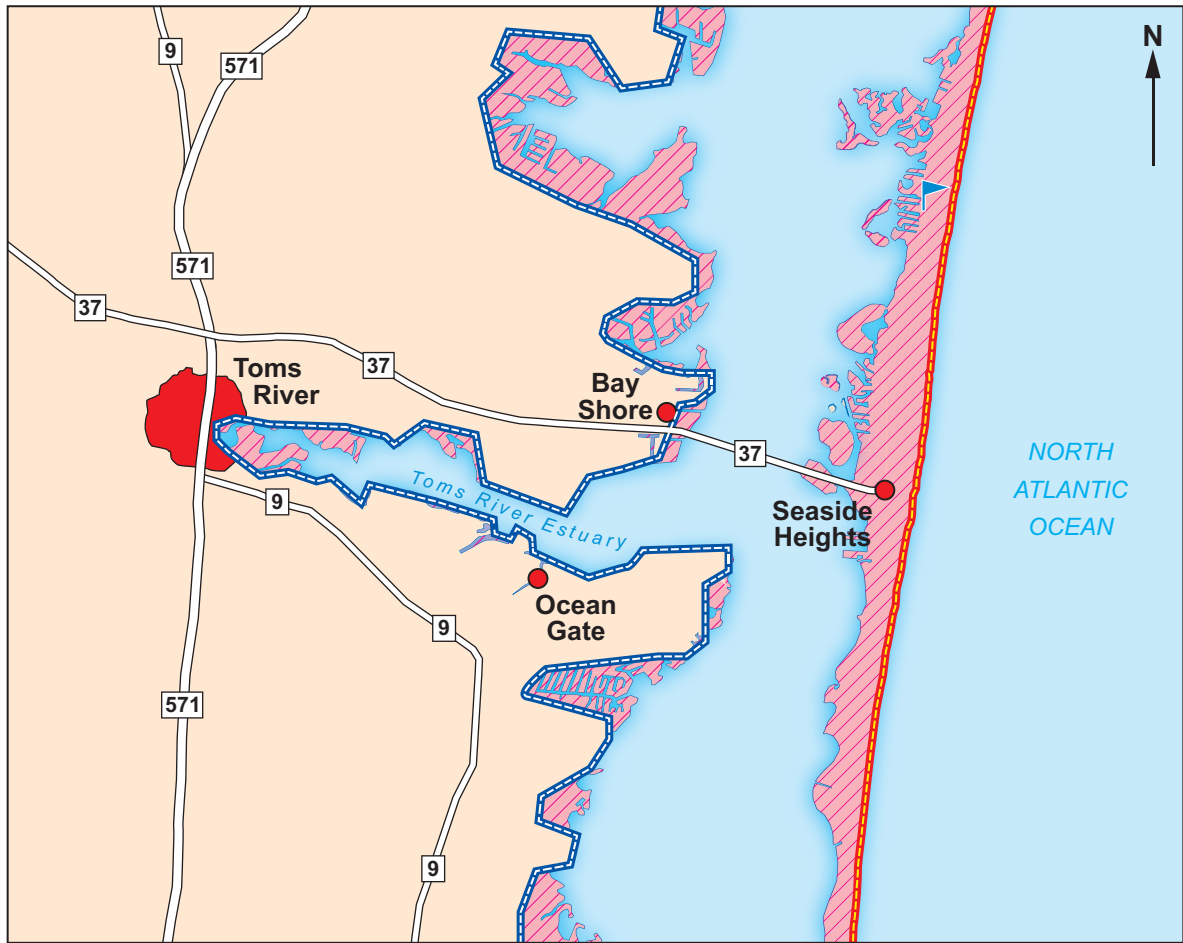
Coastal flooding in Seaside Heights

Coastal flooding in Seaside Heights, 2012

- The sea surges were 2 metres higher than normal high tide levels.
- 37 people died and 340,000 homes in New Jersey State were damaged.
- The flooding caused US \$35 billion of damage in New Jersey State.

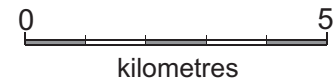


Option 1: Retreat the line



Key:

- Existing coastline
- Future coastline (after managed retreat)
- Coastline that will be lost (due to managed retreat)
- Route (road)
- Settlement
- Golf course



Groups of people	Support Option 1	Some viewpoints
Seaside Heights Residents	NO	We love it here. We don't want to move home
Environmentalists	YES	Coastal flooding is getting worse
Town Council of Toms River	NO	The town of Toms River will be at greater risk of coastal flooding
Property Insurance companies	YES	Insurance claims are increasing

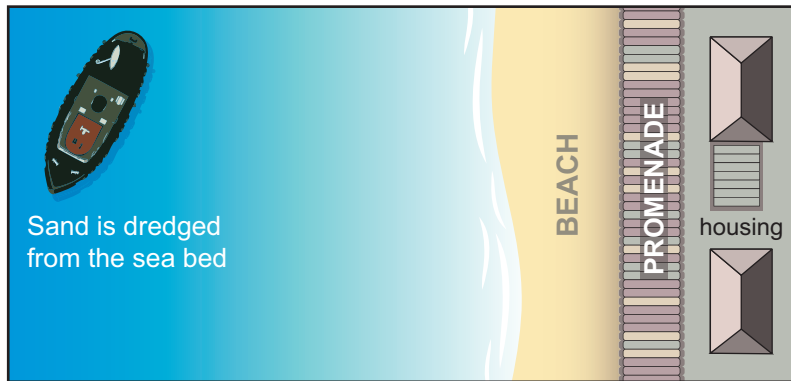
Option 2: Hold the line using 'soft' engineering

Sand dune stabilisation

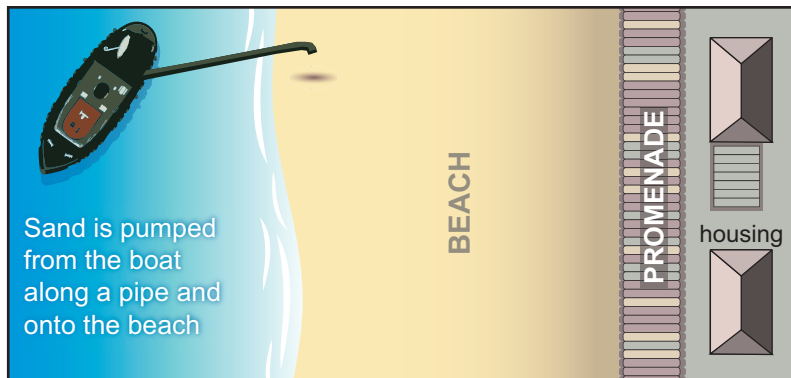


Beach nourishment

Before



After



Option 3: Hold the line using 'hard' engineering



Factfile

Option 1: Retreat the line (also known as Managed Retreat)

- Global sea levels are expected to rise by between 50 cm and 97 cm by 2100.
- The US national government is having to provide a lot of money to help people move away from urban areas at risk from coastal flooding.
- The tourist industry on this coastline will have to move elsewhere.
- The direct cost of this option is the cheapest.

Option 2: Hold the line – ‘Soft Engineering’ Sand dune stabilisation and beach nourishment

- Beach nourishment needs to be continuous for it to be effective.
- Beaches will be much bigger than they were before.
- Sand dunes will block views and the value of coastal homes will reduce.
- This is a relatively cheap option.

Option 3: Hold the line – ‘Hard Engineering’ Rock armour and concrete sea wall

- This option is the most expensive to put in place.
- Sea walls and rock armour take up a lot of space.
- This option has reduced flooding in other urban areas on the New Jersey State coastline.
- 3.7 million people in the USA now live within a few metres of the sea.

BLANK PAGE

BLANK PAGE