Our Changing World (Reading): Unit Standard 17363

The Secret Life of Estuaries

Adapted from the text 'The Secret Life of Estuaries', pp19-25, by Andrew Innes, in *Connected, 3, 2006*. Wellington: Learning Media.

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NCEA LEVEL 3	
Unit Standard	**Performance Criteria**
Unit standard 17363, version 3 Read independently information texts (ESOL) Range: at least three complete texts, each from a separate context.	1.1 The topic of each text is identified from the layout, headings, and graphics. 1.2 Specific sections of each text are located. 1.3 Any abbreviations used are interpreted to demonstrate understanding of their meaning. 1.4 Main ideas in each text are identified and linked to subordinate ideas. 1.5 Understanding is demonstrated of essential vocabulary within each text. Range: at least ten vocabulary items – meaning and grammatical form. 1.6 The effect on meaning of at least three cohesive devices is demonstrated. Range: cohesive devices may include but are not limited to – conjunctions, personal pronouns, demonstrative pronouns, articles.

RESOURCES

Other assessment activities for unit standard 17363:

- ‘Our Changing World’ (Reading): Marine worms: The weird and the wonderful
- ‘Our Changing World’ (Reading): Controlling Animal Pests in New Zealand

Assessment activities, for other unit standards, that could be used in conjunction with unit standard 17363:

- Listening: ‘Our Changing World’ (unit standard15009)
- Speaking: ‘Our Changing World’ (unit standard 17142)
- Writing: ‘Our Changing World’ (unit standard 17144)

Teacher Sheet: Task 2

The Secret Life of Estuaries *by Andrew Innes*

Unit standard 17363, version 3 **Read independently information texts (ESOL)** **Level 3** **5 Credits**
This unit standard has one element: **Element 1 -** Students must show that they can read at least **three** complete information texts, each from a separate context.
This is ONE of three reading assessments needed to complete the standard. **Conditions** • Student responses may be oral or written. • Written responses need not be grammatically correct, but errors must not interfere with meaning**.** • Assistance may be given to understand the requirements of the task. • Students may use an English dictionary but not an electronic translator**.** **Learning contexts** The *English Language Intensive Programme* (ELIP) Stage 3, has suggested teaching components, strategies, language features and sample texts on information report genre: 'Weta' (2c); The Planets (2d); 'Athens' (13c) and 'The Walrus' (13d). **Notes for Assessors** • It is important to be aware of the special notes in the standard. • Each of the three texts should be assessed at a different time as part of a wider area of study. • This assessment activity should follow class activities in which the students have had the opportunity to become familiar with the topic through a range of listening, speaking, reading and writing activities. The context and vocabulary should be familiar to the students. • The question types should also be familiar to the students and this can be achieved by including similar question types in the formative work. • Students should not have seen the text before the assessment activity. • If resubmission takes place, the assessor should ensure that the correct answers are not inadvertently indicated when scripts are returned. For example, in a true or false exercise, it would be inappropriate to indicate which ones were correct on the student's script. • Question 1 is a prediction exercise that must be completed before the students see the text. It cannot therefore be resubmitted once students have viewed the complete text.

Student Sheet: Task 2

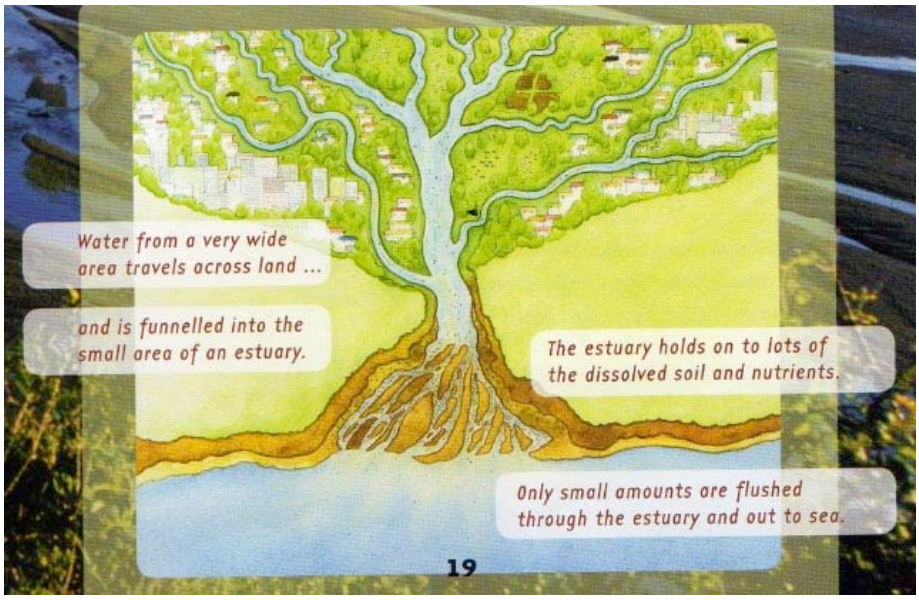
Unit standard 17363, version 3 **Read independently information texts (ESOL)** **Level 3** **5 Credits**
Element 1: Task 2 Name: _____ Date: _____
• Do this activity in class. • You may ask the teacher to explain the instructions. • You may use an English dictionary **but not** an electronic translator. • Your spelling and grammar do not need to be perfect but your teacher needs to be able to understand what you mean.

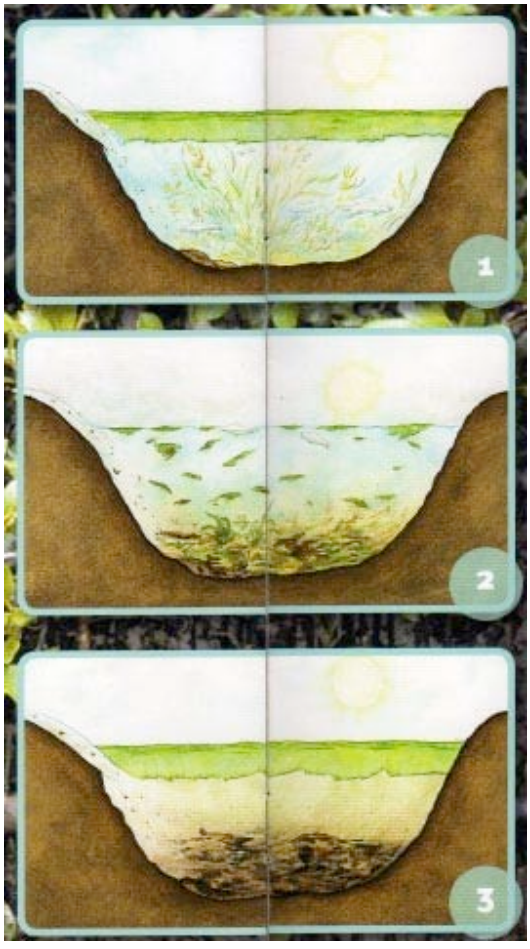
Student checklist
In this assessment task you will need to show that you can do the following.

Say what you think the topic of the text is by using the layout, headings and graphics to help you predict.	1.1
Find specific parts of the text and know what they will be about.	1.2
Understand what the abbreviations in the text mean.	1.3
Find the main ideas in the text and link them with supporting ideas.	1.4
Understand the meaning and grammatical form of ten important words in the text.	1.5
Show that you understand how cohesive devices (such as conjunctions, pronouns and articles) affect meaning in the text. Conjunctions e.g. ***However****, it once had a very bad rat problem.* Pronouns e.g. ***It*** *is a very beautiful place.* Word chains e.g. ***Glaciers*** *are found … These* ***frozen rivers****…*	1.6

Text for Question 1a and 1b

On the Move





The clean up crew

When good nutrients go bad

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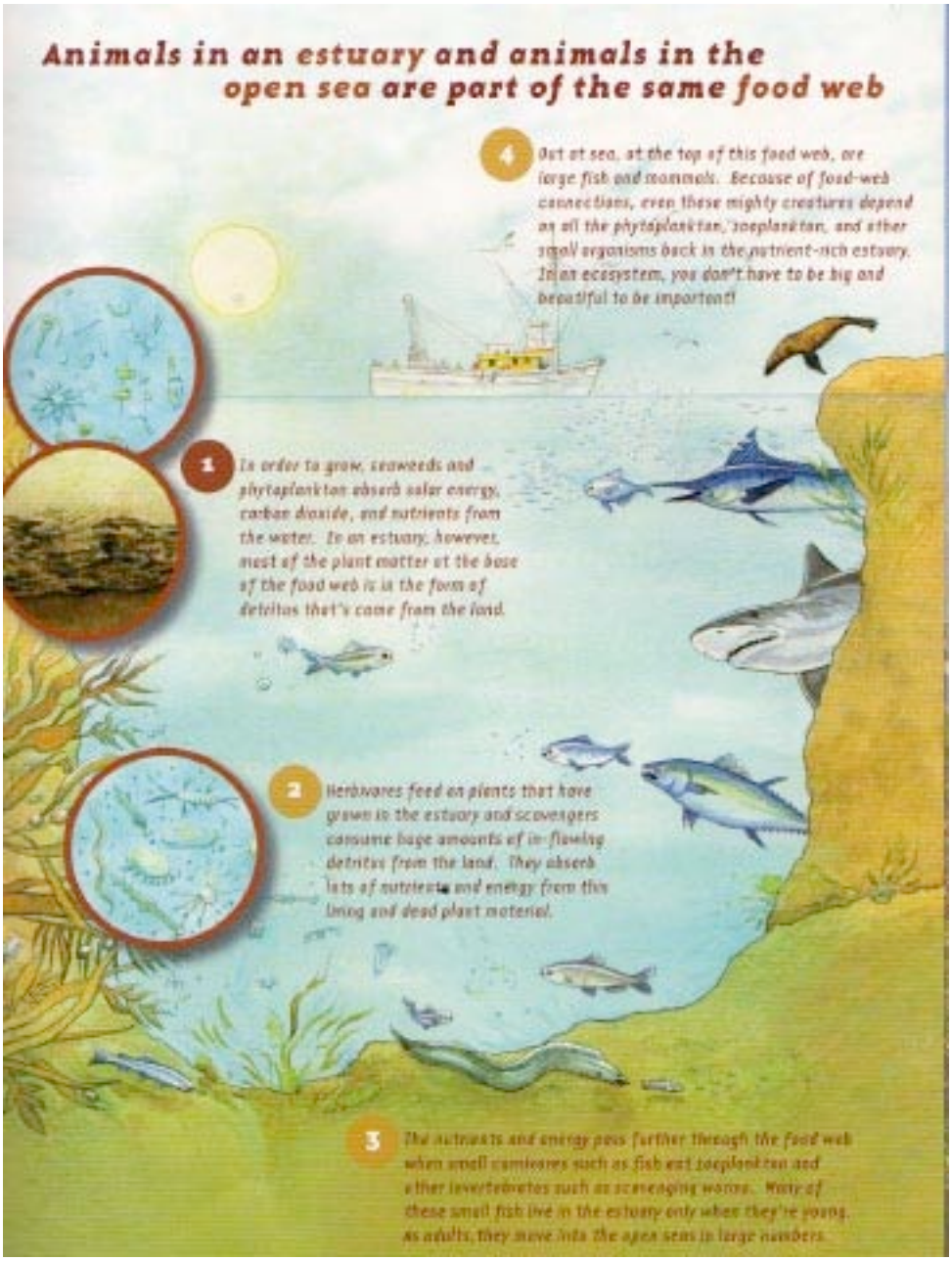
Healthy Harbours



What's so special about estuaries?

Housekeeping hints for harbours

Student sheet: Task 2

Assessment for unit standard 17363, version 3
Read independently information texts (ESOL)
Level 3 **5 credits**

Name …… Date……

1. Identifying the topic of the text and predicting the content (1.1)

Before you read the text, look at the layout, headings and graphics. Do not read the text.

1. Complete the diagram to show what you think the article will be about.

I think this text will be about

a. _____

and might have information about

b.

i)	ii)	iii)

When you have finished, give this first page to your teacher so that you can receive the rest of the assessment

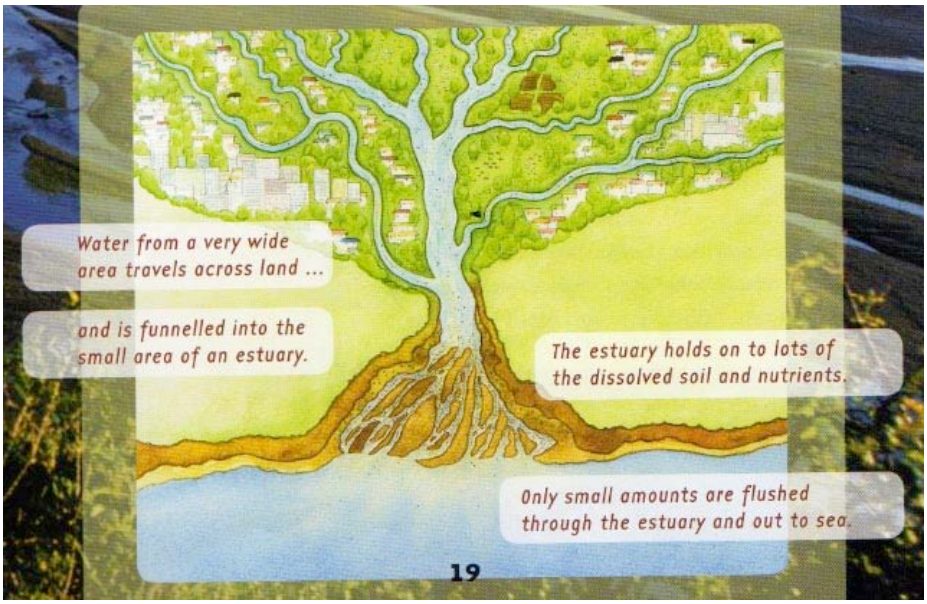
‘The Secret Life of Estuaries’

Adapted from a text by Andrew Innes, “The Secret Life of Estuaries” Connected 3, 2006.

On the move

1 Estuaries are parts of bays or harbours where fresh water and seawater meet.

2 A lot of water enters and leaves an estuary. Fresh water enters through rivers and streams, or it can arrive straight over the land. The tide moves in and out of a harbour twice a day. The plants and animals that live there depend on what’s dropped off and what is taken away by this moving water.



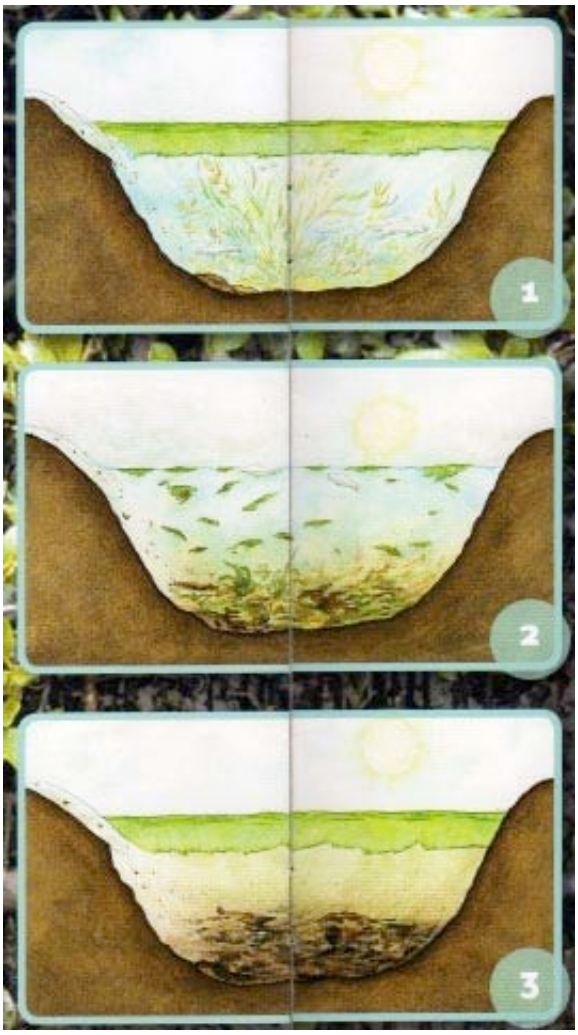
3 Estuaries absorb waterborne substances from a wide area of land and concentrate them in a small area of water. Fresh water from the land carries lots of soil, detritus (rotting plants and animals), and nutrients. Some of these nutrients move straight through the estuary and out to sea. Most stay in the mud and waters of the estuary.

The clean up crew

4 The bacteria and animals that help keep estuaries clean are often called ‘recyclers’. Lugworms and crabs suck up the sediment and digest the remains of

plants and animals. Lugworms also put oxygen back into the mud as they burrow through it. Filter-feeders, such as feather-duster worms and cockles, sift the detritus from the water. Healthy mudflats support 2,500 cockles per square metre! (2,500 per sq m). Plants grow in the soil and use the nutrients.

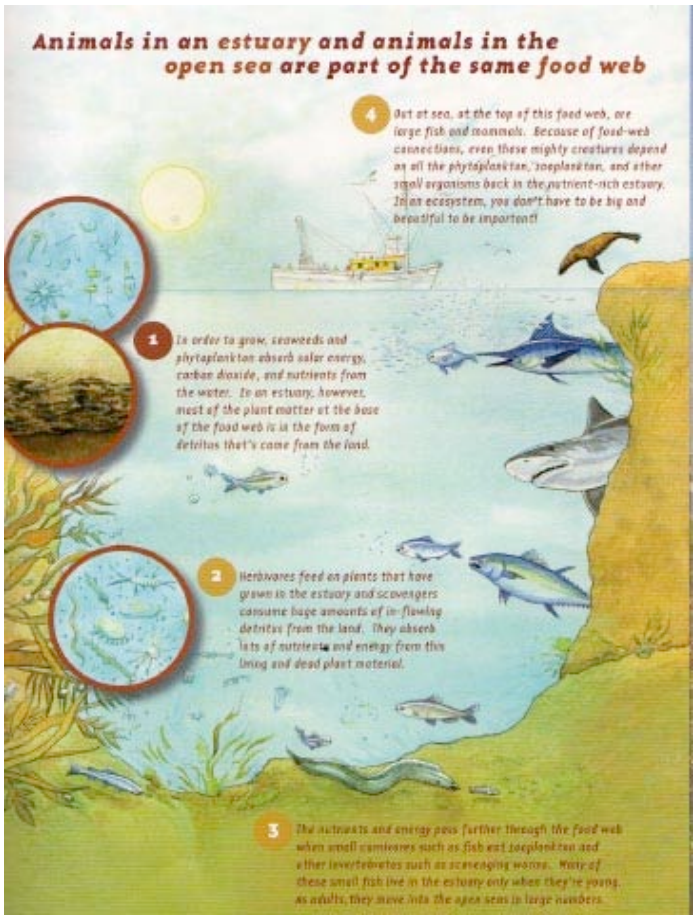
5 Bacteria are the main group of organisms that digest detritus. Aerobic (oxygen-dependent) bacteria use some of the nutrients for their own life processes – but they release many of them back into the mud and water. Then these nutrients are absorbed by plants.



When good nutrients go bad

6 If too many nutrients, such as farm fertilisers, come from the land, the estuary can begin to die.

- Large amounts of nutrients cause seaweed and phytoplankton to grow out of control
- When the weather gets colder, these plants begin to die.
- The plants sink and are added to the mud.
- Aerobic bacteria digest all this food, but eventually they use up all of the dissolved oxygen (O^2) in the water. Then they, and other animals, die.
- Anaerobic bacteria take over. Anaerobic bacteria do not need oxygen to live. As the anaerobic bacteria digest the detritus, they turn the sediment black and release toxic and smelly gases, such as hydrogen sulfide.
- Other living things cannot survive in this environment and the estuary begins to rot. This process is called eutrophication.



What happens in a healthy harbour

7 In a healthy harbour solar energy, nutrients and CO^2 are absorbed by phytoplankton (microscopic plants) and seaweed. This is the first part of a food chain.

8 Food chains and food webs are simple ways of showing feeding relationships. A food chain is very simple – but the reality is more complicated, with lots of organisms at each level. For this reason ecologists talk about food webs. A food web is made up of many food chains joined together.

9 But estuaries are a little unusual. The living phytoplankton and seaweeds are only a small proportion of the plants consumed by the herbivores. Most of the plant matter at the base of the food web is detritus that has flowed in from the land. It is all this dead plant matter from elsewhere that makes an estuary such a rich environment.

10 Zooplankton, scavenging polychaete worms and other herbivores consume living

plants and large amounts of plant detritus. Then these become food for small carnivores such as larger invertebrates and small fish. At the top of this food web, in the open ocean beyond the estuary, are larger carnivores; seabirds, large fish and mammals such as seals and people.

What's so special about estuaries?

11 Estuaries are essential for many animals and plants. A healthy estuary provides all sorts of habitats in which different plants and animals live. Estuaries are also important breeding grounds. They're sheltered places where immature fish and other young animals hatch and develop before they reach adulthood and move into the open seas.

Housekeeping hints for harbours

12 Our activities can upset an estuary ecosystem – but equally, we can be of great help. It's important for us to keep unhealthy chemicals (including fertilisers) and too much damaging soil out of estuaries. It is also important not to "reclaim" land in estuaries. Some of the mud might be dark and smelly, and some of the mangroves swamps and mudflats might seem like wasted space, but they play a very important role in the health of estuaries – and of the entire ocean.

728 words

Student sheet: Task 2

Assessment for unit standard 17363, version 3
Read independently information texts (ESOL)
Level 3 **5 credits**

Name …… Date……

Now read the text and answer the following questions.

2. Locating specific sections of text (1.2).

Skim the article to find the paragraph that has the following information. Write the paragraph number in the table.

	Paragraph number
i) Information about unhealthy harbours or estuaries.	
ii) Information about what we can do to keep harbours or estuaries healthy.	
iii) Information about food webs.	
iv) A definition of what estuaries are.	

3. Interpreting abbreviations in the text (1.3)

What do the following abbreviations mean?

i) sq. m. …….
ii) CO^2 ……
iii) O^2 …….

4. Identifying main ideas and linking to supporting ideas (1.4)

4a. There are six main ideas in the list below. One has been done already for you. Find **five** more and tick them.

A. Too many nutrients cause problems in estuaries.	
B. Filter feeders sift the detritus from the estuary water.	
C. Estuaries are where fresh water and sea water meet.	√
D. Estuaries concentrate waterborne substances in a small area.	
E. Estuaries are important for animals and plants.	
F. Carnivores are at the top of the food web.	
G. Human activity can damage estuaries	
H. 'Recyclers' help keep estuaries clean.	

4b. Now put the five main ideas you choose in Question 4a into the correct places in the table below.

Main Idea	Supporting ideas
C Estuaries are where fresh water and sea water meet.	Fresh water travels over land or down rivers and streams. The tide brings sea water in twice a day.
i) _____	Fresh water carries soil, detritus and nutrients into the estuary. Some of this leaves the estuary and goes out to sea. Some of it stays in the estuary.
ii) _____	They • digest detritus in the sediment. • put oxygen back into the water. • sift detritus out of the water.
iii) _____	Seaweed and phytoplankton grow out of control and then die. Aerobic bacteria digest the detritus but use up all the oxygen. Anaerobic bacteria take over. The estuary begins to rot.
iv) _____	• They provide different habitats. • They are important breeding grounds. • Young animals and fish hatch and live there.
v) _____	by • allowing chemicals to get into the water. • allowing sediment to get into estuaries. • destroying estuaries by reclaiming the land.

5. Understanding the vocabulary in the text (1.5)

5a. Meanings - Match the words with the meanings below

an invertebrate	to concentrate	to consume
a habitat	sediment	to recycle
to absorb	an organism	nutrients
an ecologist	to reclaim	bacteria

i)	food that plants or animals need to grow and be healthy
ii)	a place where a plant or animal lives
iii)	soil or mud on the bottom of a river or estuary
iv)	a person who studies the relationship between plants, animals and their environment
v)	to cause a large number of things to gather in a small area
vi)	a living plant or animal
vii)	to eat, drink or use something
viii)	to make land usable
ix)	to use something more than once
x)	to take in a liquid, gas, colour, heat, light etc.
xi)	an animal that does not have a backbone
xii)	microscopic living organisms

5b. Grammatical form - Put the correct word in the sentence. You must choose a word with the correct meaning and the correct grammatical form.

Lots of (i) …….. (nutrients / nutrient / nutritious) are carried into the estuary in fresh water.

These are (ii) ……. (concentrate / concentration / concentrated) into a small area in estuaries.

There is a lot of detritus in the (iii) …….. (sediment, sediments) at the bottom of an estuary.

Plants (iv) ……. (absorb / absorbs / absorbed) solar energy and turn it into chemical energy.

Different types of (v) ……. (organism / organisms) help recycle the detritus in estuaries.

Two examples of these are filter feeders and (vi)…… (bacteria / bacterium).

Lugworms help (vii) …….. (recycle / recycled / recycles) detritus.

The plant eaters in the estuary (viii) …….. (consume / consumed) detritus and living plants.

Many of these herbivores are (ix) …… (invertebrate, invertebrates).

Estuaries provide many different (x) ……. (habitat / habitats / habitation) for different animals.

Estuaries are destroyed when the land is (xi) ……(reclaim / reclaimed / reclaims) and built on.

Some (xii) …….. (ecology, ecologist, ecologists) study estuaries and the plants and animals that live there.

6. Understanding the effect on meaning of cohesive links in the text 1.6.

Read this section of the text.

The Clean-up Crew

Down in the mud of an estuary, lugworms and crabs, suck up the sediments and digest the good bits. **Also,** filter feeders, **such as** feather duster worms and cockles, sift the detritus from the water. Healthy mudflats support 2500 cockles per square metre! This shows the huge amount of food floating around an estuary.

Bacteria are the other main group of organisms that digest detritus. Aerobic (oxygen dependent) bacteria on the sea floor use some of the nutrients for **their** own life processes – **but they** release many of **them** back into the mud and water. These nutrients can then be absorbed again by plants. This is why bacteria and animals that eat detritus are often called "recyclers".

Lugworms help bacteria by oxygenating the mud – but not all bacteria need oxygen. Deep in the sediments, there's little or no oxygen and this is where the anaerobic bacteria live. (Anaerobic bacteria do not need oxygen for survival. In fact, some are poisoned by **it**). **As** anaerobes digest deeply buried detritus, they turn the sediment black and release toxic and smelly gases, such as hydrogen sulfide.

6a. Grammatical cohesion: Linking words
Find these highlighted words in the text above.

Also (line 2) **such as** (line 2) **but** (line 8) **As** (line 15)

Which word:

comes before an example i)……..

tells you something is happening at the same time ii) …….

adds a new piece of information iii)…….

introduces a contrasting piece of information. iv)…….

6b. Grammatical cohesion: Pronouns
Find these highlighted pronouns. What noun or phrase do these words refer to?

i) their (line 8) …….

ii) they (line 8) …….

iii) them (line 8) …….

iv) it (line 15) …….

6c. Lexical cohesions: Word chains

Word chains are words in a text that are linked. In this text there are word chains connected with the general classes of 'recyclers' and 'The remains of plants and animals'. These chains give examples from the general class. Complete the table below (one example has been done for you).

The clean up crew

The bacteria and animals that help keep estuaries clean are often called 'recyclers'. Lugworms and crabs suck up the sediment and digest the remains of plants and animals. Lugworms also put oxygen back into the mud as they burrow through it. Filter-feeders, such as feather-duster worms and cockles, sift the detritus from the water. Healthy mudflats support 2,500 cockles per square metre! (2,500 per sq m). Plants grow in the soil and use the nutrients.

Recyclers	The remains of plants and animals
e.g. bacteria	
i) …….	iv) ……..
ii)……	v) …….....
iii) ……..	

Assessment schedule: Task 2 - The Secret Life of Estuaries

Unit standard 17363, version 3: Read independently information texts (ESOL) **Level 3** **5 credits**			
Element 1: This task assesses one of three texts			
PC	**Question**	**Evidence**	**Judgement**
1.1	1	Answers show that key words, layout, illustrations and diagrams have been used to predict the topic and possible content. 1a) Answers similar to: Estuaries, harbours, 1b) Answers similar to: Cleaning estuaries or harbours, clean water, pollution, food webs, nutrients Allow for culturally different but possible answers e.g. students from other countries might produce answers focusing on knowledge of estuaries as places to be avoided or bad places to collect food	Topic is identified and content predicted from layout, headings and graphics. 1a. Any reasonable prediction. 1b. 2 out of 3 must be reasonable predictions.
1.2	2	i) 6 ii) 12 iii) 8 iv) 1	Specific sections of text are located: 3 out of 4 correct.
1.3	3c	Correct answers are i) square metres ii) carbon dioxide iii) oxygen	Abbreviations are interpreted to show understanding of meaning: 2 out of 3 correct.
1.4	4a 4b	Correct answers are, A, D, E, G and H Correct answers are i) D - Estuaries concentrate water borne substances in a small area. ii) H – 'Recyclers' help keep estuaries clean. iii) A - Too many nutrients cause problems in estuaries. iv) E – Estuaries are important for animals and plants. v) G - Human activity can damage estuaries.	Main ideas are identified: 4 out of 5 correct. Main ideas are linked to subordinate ideas: 4 out of 5 correct.

1.5	5a	Meaning i) nutrients ii) a habitat iii) sediment iv) an ecologist v) to concentrate vi) an organism vii) to consume viii) to reclaim ix) to recycle x) to absorb xi) an invertebrate xii) bacteria	Understanding of the meaning and grammatical form of ten items of essential vocabulary is demonstrated. Meaning - 10 out of 12 correct.
	5b	Grammatical form i) nutrients ii) concentrated iii) sediment iv) absorb v) organisms vi) bacteria vii) recycle viii) consume ix) invertebrates x) habitats xi) reclaimed xii) ecologists	Grammatical form - 10 out of 12 correct.
1.6	6a	Linking words i) such as ii) as iii) also iv) but	The effect on meaning of at least three cohesive devices is demonstrated.
	6b	Pronouns i) aerobic bacteria ii) aerobic bacteria iii) nutrients iv) oxygen	Linking words: 3 out of 4 correct. Pronouns: 3 out of 4 correct.
	6c	Lexical cohesion Any four of the following in the correct columns <u>Recyclers</u> animals, lugworms, crabs, filter-feeders, feather-duster worms, cockles <u>The remains of plants and animals</u> detritus, nutrients	Lexical cohesion: 4 correct and in the correct columns.