ADOPT A COASTLINE

NAME

City of Joondalup

STUDENT ACTIVITY – YEARS SIX TO SEVEN

ACTIVITY 1: HOW DO WAVES ERODE A BEACH?

Ocean waves can cause sand to build up on a beach but they can also take it away. Storms which have large waves often dig out the sand dunes, this is called erosion. During calmer conditions the sand dunes and beach are built up. This is a much slower process called accretion.

Aim: To investigate how waves change the beach.

What I already know about waves and erosion:

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Prediction: Read the method and then make a prediction about what you think will happen to the beach with the different waves.

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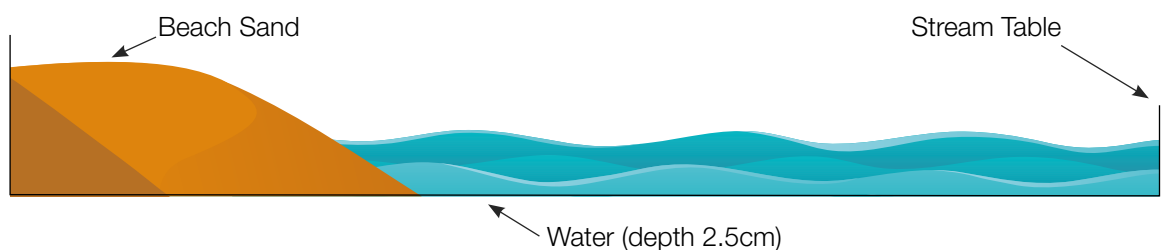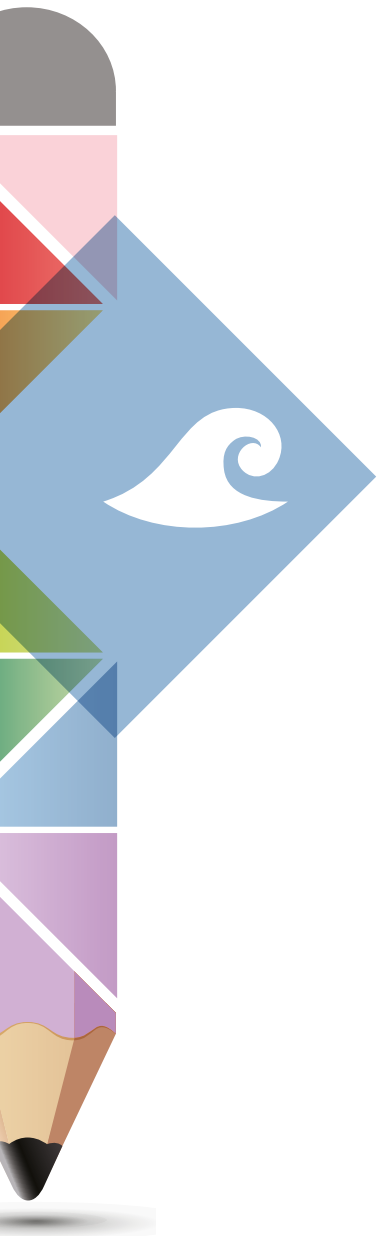
You will need:

- stream table (or long rectangular tray)
- wooden block (20cm x 10cm) or 30cm long ruler (a wide ruler works best)
- sand (needs to be free of any leaf litter)
- ruler
- timer (with seconds)

Diagram:

Beach Sand

Stream Table

Water (depth 2.5cm)

Method:

1. Fill the stream table with water to a depth of 2.5cm.

2. Add sand to one end of the stream table to make a beach.

3. Using a pencil, draw the profile of this beach - name it Beach 1 - calm.

4. Place the wooden block (or ruler) at the opposite end of the stream table to the beach.

5. Slowly move the block back and forth to create small waves. Do this for three minutes. The waves should only move the sand a little bit.

6. Using a pencil, draw the profile of this beach - name it Beach 2 - small waves.

7. Rebuild the beach.

8. Move the block back and forth rapidly to create large (storm) waves. Do this for three minutes.

9. Using a pencil, draw a profile of this beach - name it Beach 3 - storm waves.

Results:

Draw your beach profiles here.

Beach 1 – calm
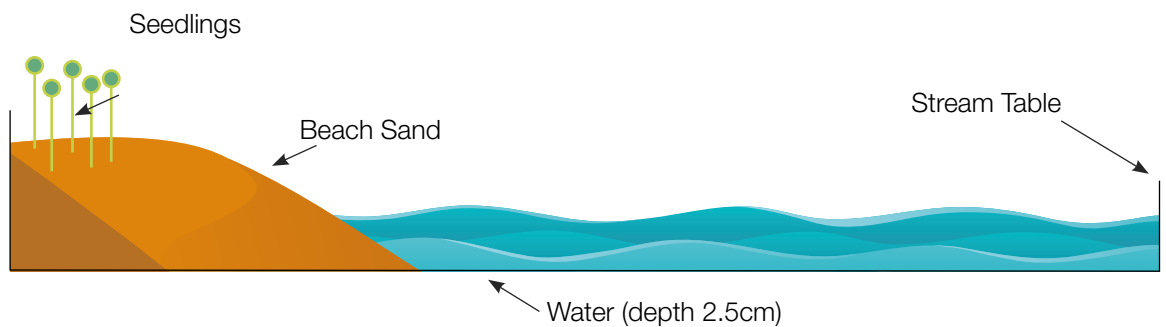
Beach 2 – small waves

Beach 3 – storm waves

City of **Joondalup**

NAME

STUDENT ACTIVITY

ACTIVITY 2 : HOW DO PLANTS HELP STOP EROSION?

You will need:

- stream table (or long rectangular tray)
- wooden block (20cm x 10cm) or 30cm long ruler (a wide ruler works best)
- sand (clean beach preferably)
- timer (with seconds)
- seedlings (to mimic beach plants)

Diagram:

Seedlings

Beach Sand

Stream Table

Water (depth 2.5cm)

Prediction: read the method and then make a prediction about what you think will happen to the planted beach with the different waves.

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Method:

1. Fill the stream table with water to a depth of 2.5cm.

2. Add sand to one end of the stream table to make a beach.

3. Plant seedlings across the top of the "sand dune". Leave a space of 3cm around each seedling.

4. Using a pencil, draw the profile of this beach - name it Beach 1 - calm.

5. Place the wooden block (or ruler) at the opposite end of the stream table to the beach.

6. Slowly move the block back and forth to create small waves. Do this for three minutes. The waves should only move the sand a little bit.

7. Using a pencil, draw the profile of this beach - name it Beach 2 - small waves.

8. Rebuild the beach.

9. Move the block back and forth rapidly to create large (storm) waves. Do this for three minutes.

10. Using a pencil, draw a profile of this beach – name it Beach 3 – storm waves.

Results:

Draw your beach profiles here.

Beach 1 with seedlings – calm
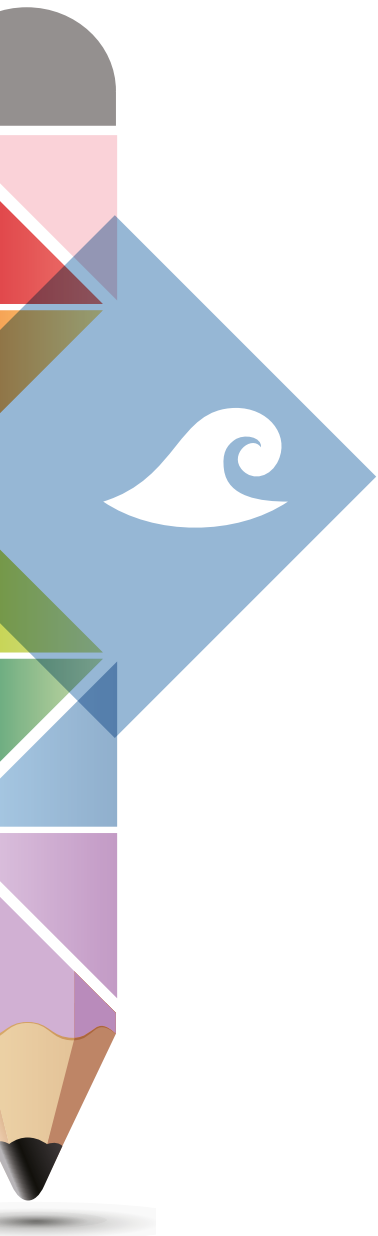
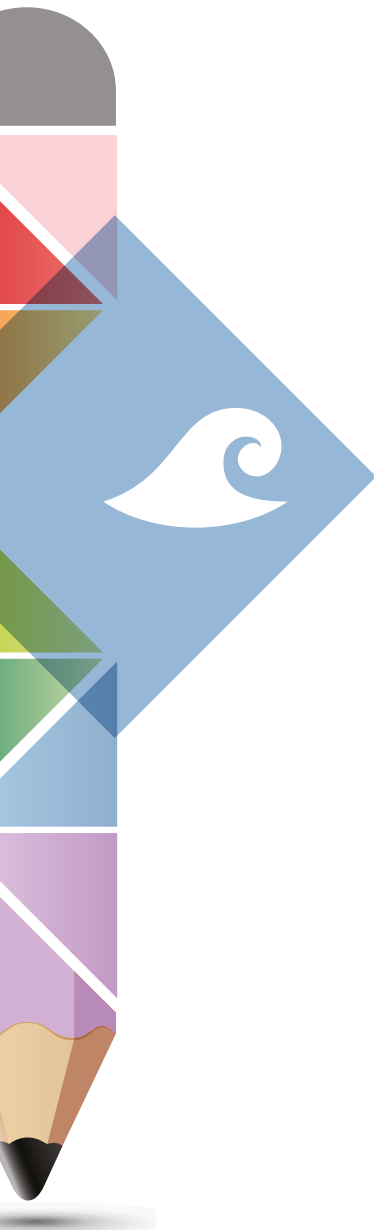**Beach 2 with seedlings – gentle waves**

Beach 3 with seedlings – storm waves

Discussion: Complete the table below by writing a description for each type of beach.

Type of waves	Beach Observations	
	Beach with no seedlings	Beach with seedlings
1. calm		
2. gentle		
3. stormy		

Questions:

1. Did your prediction match your results?_____

2. Which beach had the least amount of erosion?_____

3. Why do you think that beach had the least amount of erosion (use science ideas and evidence
   from the results)._____

   _____

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4. Which beach had the most amount of erosion?_____

5. Why do you think that beach had the most amount of erosion (use science ideas and evidence
   from the results)._____

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6. Did the seedlings stop the beach from being eroded?_____

7. How did the plants help to stop the erosion? You may have to reserach to find out this answer (use
   science ideas and evidence from the results)._____

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Evaluation:

8. Did you have any problems using the equipment?_____

9. If yes, how did this make your observations less accurate?_____

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10. How could you conduct the investigation better next time?_____

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Discussion: A discussion is a report on the findings of the investigation giving scientific reasons for why things happened. It should be written in paragraph and in the third person tense.

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Conclusion: Write a paragraph that summarises the results. Remember to write in the third person and use science ideas.

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