FIELD TRIP – INVESTIGATING COASTAL LANDFORMS

Aim: To investigate beach landforms and processes and attempt to determine the impact of various land use proposals on the future integrity of such places in terms of selected criteria.

Photo: *View of beach front Rainbow Beach*

Arrange to visit a suitable coastal location accessible and safe for students. These field experiences are not only great ways for students to engage with the real environment and contextualise background information, but are learning experiences filled with adventure, great social opportunities and creative opportunities.

Important considerations –

1. Discuss your proposed visit with the relevant local authorities (council or national parks) to ensure you are able to access it in safety and they might provide a guest speaker or guide.
2. Complete a risk assessment
3. Always carry out a comprehensive reconnaissance of the study area well in advance (say 3-4 weeks) to evaluate the best learning opportunities, access points for numbers and possible safety considerations.
4. Have extra supervisors so that you may divide into small groups for each activity
5. Avoid hot weather; these excursions are best in cool months.

Equipment – Appropriate clothing (depending on weather) with a spare shirt, shoes with good grip, hat, sun screen, plastic bags for dirty / sweaty items, water, food, rubbish bags, camera and note pad.

Suggested activities to do on the day -

- Sketch a rough map of where key features are located such as trail, observation tower, etc.
- As you walk the trail, observe its many landform attributes, species of plants and wildlife, human alterations (eg signs) and any unusual items of interest. Photograph as many items as possible to discuss back at school.
- Draw a field sketch showing the main features of a selected area
- Analyse local land use by completing a field sketch from a strategic point
- Complete a human impact survey
- Make notes on the inter-relationships between coastal landforms and agents of erosion and other coastal processes.

TASK ONE – Human Impact Survey

Human Impact Survey – Gold Coast Spit beaches

In small groups / pairs, record your observations on a Tally Sheet for various sections of the walk trail. Photograph items as you record them for further discussion later. Use a + if you think the impact is beneficial to the area eg an information sign, and use a – if you think the impact is negative, eg graffiti on rocks.

Item	Tally	Total
Human Alteration eg pathway, drains		
Litter eg paper, cans		
Vandalism eg graffiti		
Removal of rocks, plants		
Signs		
Introduced Species		
Dead Animal / Fish		
Fire		
Pedestrian traffic		
Other		

Student Name: …….…….

Date: …… Time: ……..

- Compare your results with others in the class.
- Construct either a pie graph or column graph to compare the different types of impact

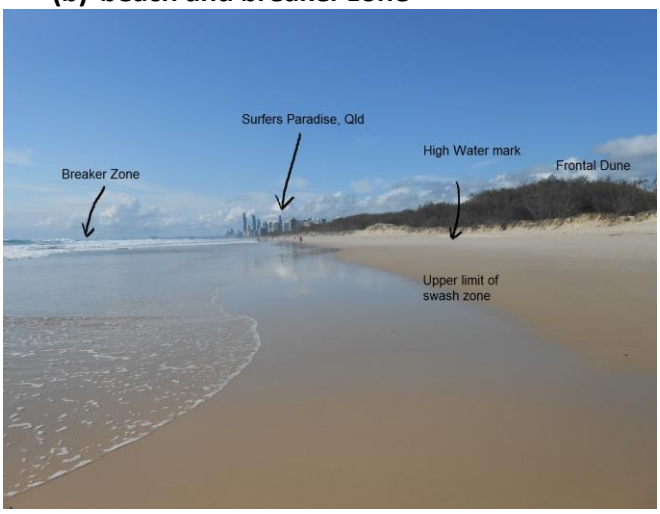
TASK TWO – Recording notes / photographs of different features along the coastline

(a) Frontal dunes and vegetation

What is the role of frontal dunes and vegetation in protecting the coastline?

Take some photos of places where pioneer species like coastal spinifex are holding the sand against agents like wind or salty air. How does this vary as you go from exposed sections to protected sections of dune?

(b) beach and breaker zone



What are the effects of high energy sources such as waves, wind and stormy weather on the structure of the beach?

How is beach construction affected by calm or rough seas weather or between periods of off-shore wind and on-shore wind? Show how it may vary according to the weather or phase of the tide.

(c) Efforts to stabilise dunes

Because the frontal dunes are very important for beach stabilization, a range of native plants are planted to reduce the effects of erosion.

Take photographs of different types of native species used to help restore dune stability and the measures used to reduce erosion.

TASK THREE – Identifying features of the coastal landscape

Select a viewing point, eg rock wall, and jot down as many features as you can identify.

This could be divided into –

- **Natural features**
- **Human features**
- **Processes**

Jot down what changes may have occurred to any of these in recent years.

TASK FOUR – Complete a COMPARISON MATRIX

…… to develop student's observational skills by comparing features of the beach front and the dune system

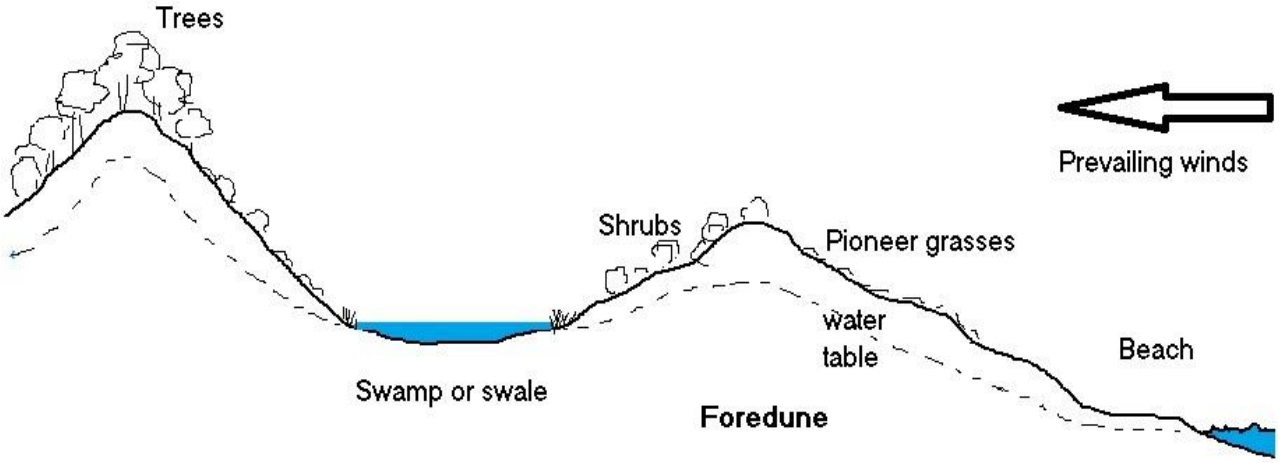
Characteristics	Beach front	Dune system / spit
Location and general physical appearance		
Main landform features		
Dominant physical process eg erosion, deposition, etc		
Vegetation and wildlife		
Human impact and effects		

TASK FIVE – Complete a fauna & vegetation study using a checklist

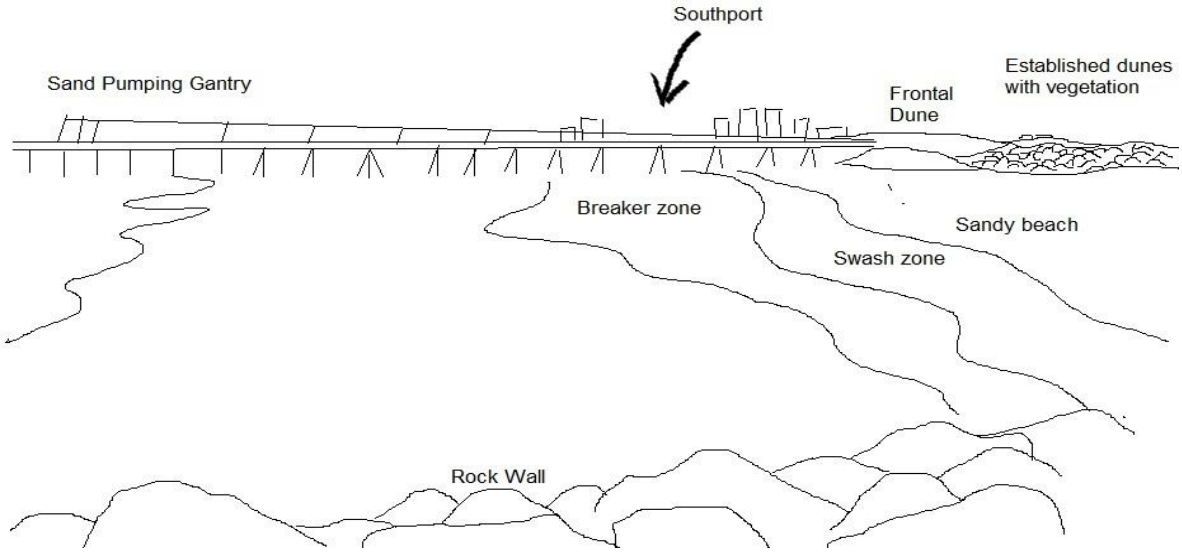
Before going on the trip, find out the names of any wildlife (fauna) that occupy the area and vegetation (plants) endemic to the coastal landscape. You may be able to get some assistance from the local dune rehabilitation group or GCCC.

Use the coastal fauna guide to identify as many plants as possible. Photograph a sample of each type and put its location on the coastal profile diagram to show its relative location from the ocean.

TASK SIX – Complete a labelled sketch of a dune profile to show its main features



TASK SEVEN – Complete a labelled field sketch to show the main physical and human features of the area



Add a title, direction arrow, scale and other details like wind direction, tidal period, etc

TASK EIGHT – Beach / Wave Observations and Recording data

Investigating features of coastal beach and dunes

Location: …….. Date: …….

Map grid reference: ……

Study boundaries :…….

Weather Conditions: Fine Dry Cloudy Rainy

Air Temperature: …….. Water Temperature: ……..

Wind Strength:. ……. Wind Direction: ……

Wave Direction:……. Wave Frequency: (no. per minute) ……..

Tide: High Outgoing (ebb) Incoming (flood) Low

Approx distance between HWM and LWM: ……..

Distance of swash zone: …….

Distance (m)	25	50	75	100	?
pH of top sand layer					
Estimate of beach angle					
Evidence of berm					
Evidence of living fauna					
Evidence of human impact					

1. Translate selected data into graphical format eg wave frequency
2. Apply relevant information to your field sketch
3. Look for patterns and predict what might happen if ....?

BACK AT SCHOOL

Write a report