

08

# Stimulus Booklet: Student Activities





# STUDENT ACTIVITIES

- 
- KN **KNOW**
  - UN **UNDERSTAND**
  - AP **APPLY**
  - AN **ANALYSE**
  - EV **EVALUATE**
  - CR **CREATE**
- 

## TWEED/GOLD COAST LOCATION AND ENVIRONMENT AP AN

1. Refer to Sources B, C and D to identify the following coastal features:
  - › Tweed River
  - › Duranbah Beach
  - › Letitia Spit and Letitia Beach
  - › Coolangatta Beach
  - › Point Danger
  - › Snapper Rocks.
2. Refer to Source C. AP
  - a. Describe the location of the Tweed-Gold Coast region within Australia.
  - b. Explain how the NSW-Queensland border complicates the management of the Tweed Gold Coast coastal environment between Letitia Spit and Currumbin.
  - c. How far inland from Kirra is the border between Queensland and NSW?
  - d. Measure the distance from the northern side of the Tweed River to:
    - › Point Danger
    - › Tugun (measure along the coastline).
  - e. State the direction from the Tweed River mouth to:
    - › Currumbin
    - › Snapper Rocks.
  - f. State the direction of Coolangatta from Snapper Rocks.

3. Refer to Source M: Topographic Map AP CR UN
  - a. State the natural features at the following area and grid references (GR):
    - › AR 5483
    - › AR 5381
    - › GR 542845
    - › GR 540838
    - › GR 530843
    - › GR547830.
  - b. State the human feature at the following grid references:
    - › GR 545840
    - › GR 520841
    - › GR 545836.
  - c. Determine the following directions:
    - › Greenmount Beach from Snapper Rocks
    - › Letitia Beach from Kirra Beach
    - › the flow direction of the Tweed River between Northing 81 and Northing 83
    - › the direction of flow of the Tweed River between Easting 54 and Easting 55
    - › the direction Kirra Beach faces
    - › the direction Duranbah Beach faces.
  - d. Use the scale to:
    - › calculate the length of Letitia Beach shown on the map.
    - › calculate the straight-line distance between Point Danger and Kirra Beach at Easting 52.
  - e. Draw a precise map of the area shown on the topographic map. On your map:
    - › label all coastal landforms (sandy and rocky)
    - › add the Tweed River and Tweed River breakwaters
    - › shade the built-up urban area
    - › draw wave lines to show waves generated by a prevailing south-east wind and resulting longshore drift on Letitia Spit
    - › draw wave lines to show wave refraction around Snapper Rocks
    - › add a title, scale and orientation (N) to your map.

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## 4. Refer to Sources G, H, J, and K. AP AN EV

- What was the predominant wave direction at Tweed Heads in May 2018?
- Draw a conclusion about the prevailing wind direction for the month of May. Justify your answer.
- Identify the significant weather event that took place to the east of Australia in February 2019? Describe features of that weather event.
- How did the weather event impact the prevailing wave direction and size during February?
- Compare wave sizes during May 2018 and February 2019.
- What impact would the February weather event have on coastal processes operating on the Tweed Gold Coast beaches?
- What is the connection between Cyclone Oma and the Kirra Point surf break?

## TWEED SAND BYPASSING UN AP AN CR

### 1. Refer to Source D.

- Name the two permanent outlets for sand pumped via the Tweed Sand Bypassing (TSB) network.
- Identify and suggest reasons for the temporary transfer pipelines.
- Calculate the total distance of the entire TSB network (water and sand pipelines).
- Develop two optional 'travel journeys' for a grain of sand travelling northwards along Letitia spit towards the jetty. The sand must travel through TSB pipelines and the final destination will be North Kirra Beach. Natural processes should be referred to in your story. (This is a repeat of a question in Part 4 of this resource).

- Add the TSB pipeline locations to your precise map from activity 3.
- Use the scale to calculate the area covered by the map.

### 2. Refer to Sources E and F. KN UN

- What is the coastal-management strategy shown in Source F?
- What geographical process has necessitated the use of this management strategy?
- Provide evidence from the photograph and map that dredging has taken place at the Tweed River entrance.
- What direction was the photographer facing when taking the photo in Source F?
- Where is an accumulation of sand shown on the map? What should happen to this sand?
- Define the terms bathymetry and dredging in your own words.
- Name stakeholders who would benefit most from changes to Tweed River bathymetry.

### 3. Use Sources I and L. KN UN

Photographs are an important monitoring tool for TSB.

- What is ARGUS?
- What other types of photographs are used for coastal monitoring? How are different images obtained?
- Suggest the instrument used to provide wave data for the TSB smart phone app.
- Identify the source of weather data shown on the app.
- Describe the wave and weather conditions for the day shown in this image.
- Name stakeholders who would find the TSB smart phone app useful.
- Name other instruments used for coastal monitoring by TSB.

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## STAKEHOLDERS AP AN EV

1. Refer to Sources A and H.
- Surfboard riders are considered a stakeholder in the management of the Tweed/Gold Coast coastal environment. The area is also a World Surfing Reserve.
- a. Identify the coastal locations in Sources A and H.

b. What direction was the photographer facing when taking the each of these photos?

c. Explain why surfers are considered important stakeholders in coastal environments.

d. Complete the table below by identifying other stakeholders and justifying their stakeholder status.

STAKEHOLDER	REASON FOR STAKEHOLDER STATUS
Surfboard riders	

2. Refer to Source O. 

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- a. Rank the activities from most to least importance to the local economy.

b. Graph the estimated annual values of activities associated with TSB as a pie graph.
- Hints
- i. Calculate each activity value as a % of the total value. Convert % to degrees 1 % = 3.6 degrees.

ii. Draw segments from largest to smallest in a clockwise direction from North.
- c. Create a heading for your graph that clearly identifies the nature of the listed activities.
3. Refer to Source P. 

AP

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- a. Identify two differences in the activities of domestic and international overnight tourists to the Gold Coast.

b. Calculate the difference in the % of international and domestic tourists who identified visits to national parks/state parks as an activity they would undertake on the Gold Coast.

c. Suggest reasons for these differences.



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## COMMUNITY CONSULTATION AP AN EV

1. Refer to Sources N, Q, S and R.
  - a. Identify the two aims of TSB shown on the cover of the TSB Brochure and Newspaper report.
  - b. Match the options in the community survey (source N) that go with each of the aims.
  - c. Calculate the total number of people who completed the survey in Source N.
  - d. Which options provided in the survey (Source N) would most likely be selected by:
    - » surfers
    - » fishermen
  - e. Evaluate the success of TSB in achieving their two aims (the criteria) based on your knowledge of the project and community perceptions.
  - f. Suggest a reason why Letitia Spit is more popular for locals than tourists (Source Q).
  - g. Calculate the number of locals and tourists who completed the survey.
  - h. List the three most popular beaches for both tourists and locals and add the state location of each.
  - i. Suggest a reason for the popularity of these three beaches.

