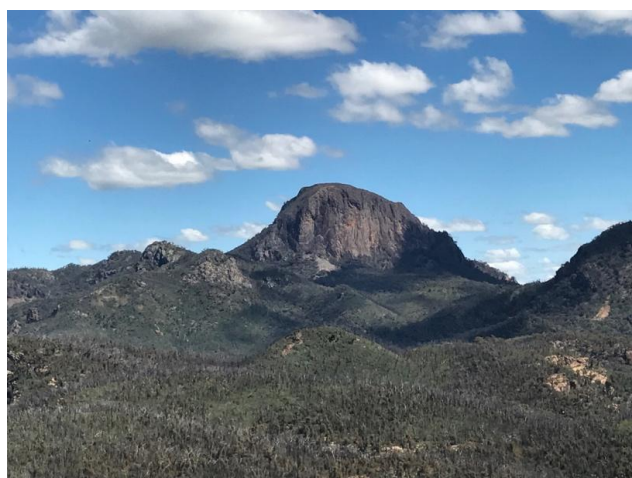




# Landforms and Landscapes - Grand High Tops

## Warrumbungle National Park

For a successful day of learning please allow 8-9 hours for this program.  
High fitness levels are required for all participants.



## Stage 4 Geography - Pre-excursion, Fieldwork and Post-excursion worksheets

Name: \_\_\_\_\_

Class: \_\_\_\_\_



Education



38  
37  
36  
35  
34  
33  
32



**SCALE 1:40 000**

0m 0.5 1 2 3km

CONTOUR INTERVAL 20 METRES

- Secondary road: (2 lanes) paved, unpaved
- Minor road: paved, unpaved
- Unpaved vehicular track: Locked gate
- 4x4 track: Management track within National Park
- Walking track: NPWS recommended walking track
- Causeway: Culvert: Bridge
- Water tank: Small dam: Spring
- Geodetic station (with height)
- Contours
- Cliff: with relative height: Rocky pinnacle: Spot height
- Building (with Homestead name): Landmark: feature
- National park
- Perennial lake
- Wet swamp
- Intermittent stream: waterfall
- Perennial stream
- Large dam or weir

## Pre-Excursion Worksheets

Using the topographic map of the Warrumbungle National Park on page 1 complete the following:

1. Use your compass to place North on the map.
2. Use the topographic map to give the grid coordinates for the following (the first is done for you):
  - a. Environmental Education Centre (EEC): 901383
  - b. White Gum Lookout: \_\_\_\_\_
  - c. Lughs Throne: \_\_\_\_\_
  - d. Ogma Camp: \_\_\_\_\_
  - e. Fans Horizon: \_\_\_\_\_
3. Identify the name and height of the highest natural geographical feature.  
\_\_\_\_\_ at \_\_\_\_\_ metres above sea level.
4. What is the altitude difference between White Gum Lookout and the Environmental Education Centre? \_\_\_\_\_
5. Describe the direction Mount Burbie is from the Environmental Education Centre.  
\_\_\_\_\_
6. Describe the direction the Environmental Education Centre is from White Gum Lookout.  
\_\_\_\_\_
7. Estimate the distance the Environmental Education Centre is from White Gum Lookout.  
\_\_\_\_\_
8. Identify West Spirey Creek and estimate the length of the creek from where it intercepts Spirey Creek to the headwaters at Ogma Camp. \_\_\_\_\_
9. What distance and direction is Lughs Throne from the Environmental Education Centre?  
\_\_\_\_\_ and \_\_\_\_\_
10. Measure the **return** distance from Pincham Carpark to Lughs Throne on the walking trail?  
\_\_\_\_\_

Using secondary sources research the following questions:

11. Plot the location of the Warrumbungle National Park and label three (3) towns near by the National Park.

# New South Wales



12. The Warrumbungle National Park is geographically unique. Identify four (4) geographical features of the park and explain how they contribute to making it such a special place.

- I. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- II. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- III. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- IV. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

12. What was the date of the catastrophic Warrumbungle Bushfire? \_\_\_\_\_

13. Identify the conditions which allowed this fire to be so devastating?

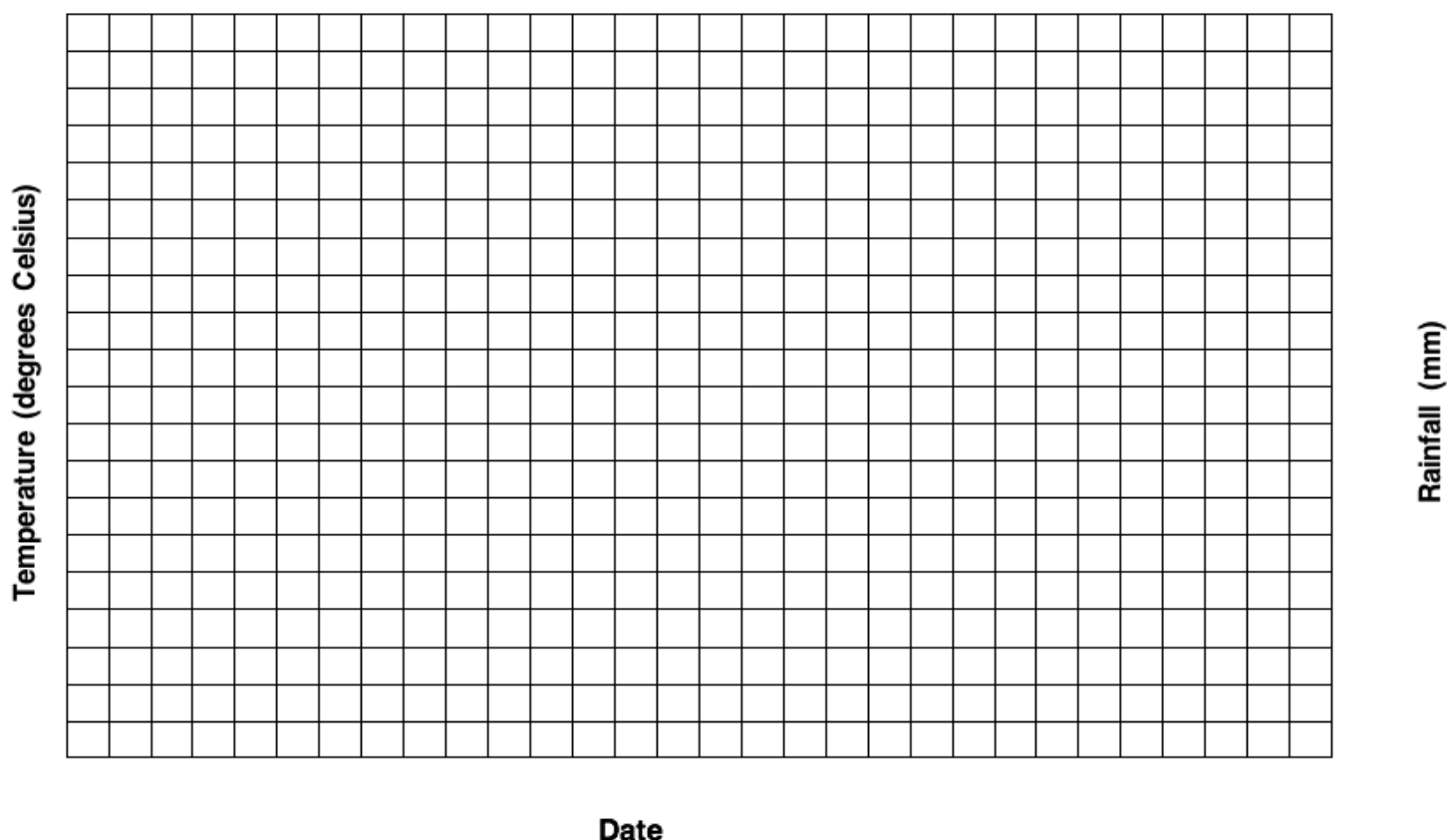
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

#### 14. Coonabarabran climate statistics (annual and January 2013)

Using Table 1 and Table 2 complete the questions below:

- a. Calculate how much rain fell between 1<sup>st</sup> – 18<sup>th</sup> January 2013. \_\_\_\_\_

Title: \_\_\_\_\_



- b. On the graph below plot January 2013's maximum and minimum temperatures and rainfall.  
c. Calculate the average maximum temperatures for 1<sup>st</sup> – 18<sup>th</sup> January 2013.

\_\_\_\_\_

- d. Describe how the average maximum temperatures shown in Q.15.c compares to the mean maximum January temperature shown in Table 2.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- e. Explain what time of the year would be best suited in planning a camping/ hiking trip to the Warrumbungle National Park?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

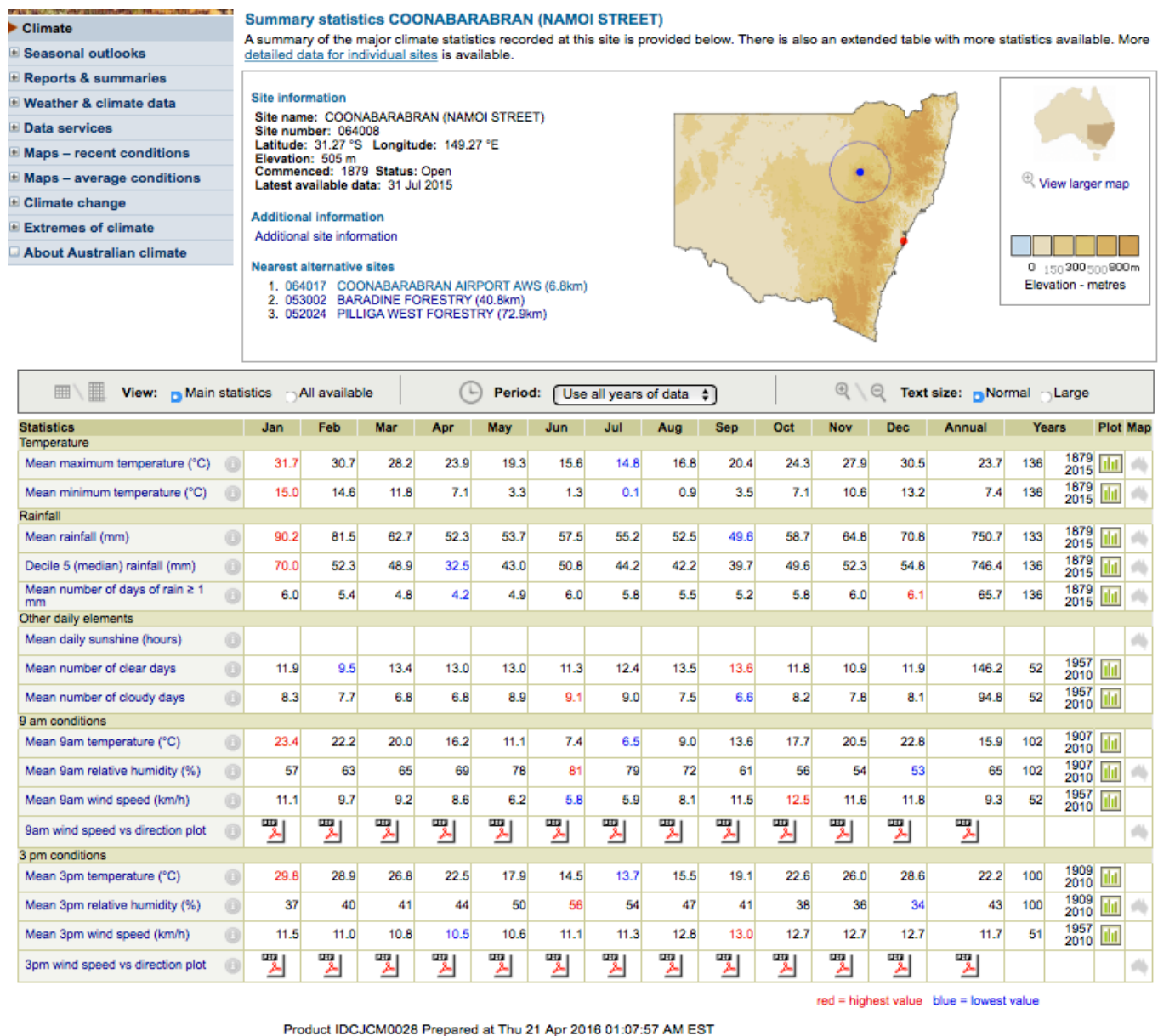
Daily Meteorological Observations for Coonabarabran Airport AWS for January 2013

Site Number 064017 • Locality: Coonabarabran • Opened Jul 2001 • Still Open • Latitude 31°19'59"S • Longitude 149°16'12"E • Elevation 645m

| Day           | Day | Maximum Temperature |      | Minimum Temperature |    | Minimum Terrestrial Temperature | 9am            |                     |                   |           |                  | 3pm            |                     |                   |           |                  | Maximum Wind Gust |        | Rainfall in 24 hours to 9am |  | Evaporation in 24 hrs to 9am |  | Bright Sunshine hours | Day |
|---------------|-----|---------------------|------|---------------------|----|---------------------------------|----------------|---------------------|-------------------|-----------|------------------|----------------|---------------------|-------------------|-----------|------------------|-------------------|--------|-----------------------------|--|------------------------------|--|-----------------------|-----|
|               |     | °C                  | °C   | °C                  | °C |                                 | Temperature °C | Relative Humidity % | Total Cloud oktas | Wind km/h | MSL pressure hPa | Temperature °C | Relative Humidity % | Total Cloud oktas | Wind km/h | MSL pressure hPa |                   |        |                             |  |                              |  |                       |     |
| Tue 1         |     | 34.8                | 20.2 |                     |    |                                 | 23.6           | 56                  |                   | NNW 28    | 1014.7           | 32.0           | 28                  |                   | N 20      | 1011.0           |                   | N 46   | 0.0                         |  |                              |  |                       | 1   |
| Wed 2         |     | 36.1                | 21.6 |                     |    |                                 | 28.8           | 29                  |                   | W 7       | 1011.1           | 34.8           | 10                  |                   | WSW 11    | 1008.8           |                   | WSW 61 | 0.0                         |  |                              |  |                       | 2   |
| Thu 3         |     | 33.5                | 14.1 |                     |    |                                 | 22.5           | 62                  |                   | ENE 17    | 1013.8           | 31.8           | 29                  |                   | E 15      | 1010.7           |                   | NE 30  | 0.0                         |  |                              |  |                       | 3   |
| Fri 4         |     | 34.5                | 16.8 |                     |    |                                 | 23.9           | 58                  |                   | NNW 13    | 1013.8           | 33.4           | 31                  |                   | WNW 7     | 1010.8           |                   | NNW 31 | 0.0                         |  |                              |  |                       | 4   |
| Sat 5         |     | 36.9                | 21.7 |                     |    |                                 | 25.2           | 52                  |                   | NNW 26    | 1015.0           | 34.5           | 29                  |                   | ESE 22    | 1013.5           |                   | N 46   | 0.0                         |  |                              |  |                       | 5   |
| Sun 6         |     | 37.3                | 21.2 |                     |    |                                 | 25.5           | 52                  |                   | N 15      | 1017.2           | 36.2           | 14                  |                   | SE 11     | 1014.9           |                   | ESE 37 | 0.0                         |  |                              |  |                       | 6   |
| Mon 7         |     | 34.3                | 17.1 |                     |    |                                 | 22.7           | 59                  |                   | NE 15     | 1019.9           | 32.8           | 18                  |                   | NE 19     | 1015.7           |                   | NE 30  | 0.0                         |  |                              |  |                       | 7   |
| Tue 8         |     | 34.4                | 20.1 |                     |    |                                 | 23.7           | 53                  |                   | N 28      | 1011.4           | 33.5           | 21                  |                   | NW 28     | 1005.6           |                   | NNW 48 | 0.0                         |  |                              |  |                       | 8   |
| Wed 9         |     | 32.7                | 23.0 |                     |    |                                 | 27.8           | 34                  |                   | NW 17     | 998.2            | 32.2           | 16                  |                   | SW 22     | 998.0            |                   | NNW 54 | 0.0                         |  |                              |  |                       | 9   |
| Thu 10        |     | 35.2                | 13.5 |                     |    |                                 | 21.2           | 65                  |                   | SE 11     | 1004.6           | 33.5           | 16                  |                   | NNE 13    | 1003.0           |                   | NW 43  | 0.0                         |  |                              |  |                       | 10  |
| Fri 11        |     | 37.8                | 17.0 |                     |    |                                 | 24.5           | 60                  |                   | N 20      | 1008.7           | 35.7           | 24                  |                   | NNW 17    | 1006.2           |                   | NW 48  | 0.0                         |  |                              |  |                       | 11  |
| Sat 12        |     | 41.4                | 24.5 |                     |    |                                 | 29.3           | 49                  |                   | N 35      | 1009.3           | 39.9           | 20                  |                   | NNW 20    | 1007.8           |                   | N 50   | 0.0                         |  |                              |  |                       | 12  |
| Sun 13        |     | 39.9                | 22.7 |                     |    |                                 | 29.9           | 38                  |                   | N 19      | 1008.1           | 36.8           | 29                  |                   | N 31      | 1002.5           |                   | N 65   | 0.8                         |  |                              |  |                       | 13  |
| Mon 14        |     | 30.1                | 18.2 |                     |    |                                 | 21.3           | 63                  |                   | SSE 22    | 1010.3           | 28.0           | 32                  |                   | SSE 28    | 1009.0           |                   | SSE 48 | 0.0                         |  |                              |  |                       | 14  |
| Tue 15        |     | 29.1                | 13.6 |                     |    |                                 | 18.3           | 58                  |                   | ENE 17    | 1015.2           | 27.6           | 38                  |                   | ENE 11    | 1011.8           |                   | E 41   | 0.0                         |  |                              |  |                       | 15  |
| Wed 16        |     | 31.7                | 18.3 |                     |    |                                 | 22.6           | 62                  |                   | NNW 22    | 1014.0           | 30.5           | 39                  |                   | W 11      | 1011.3           |                   | N 43   | 0.0                         |  |                              |  |                       | 16  |
| Thu 17        |     | 36.0                | 22.0 |                     |    |                                 | 27.2           | 42                  |                   | N 22      | 1010.7           | 34.6           | 26                  |                   | NW 28     | 1007.8           |                   | WNW 41 | 0.0                         |  |                              |  |                       | 17  |
| Fri 18        |     | 37.3                | 25.1 |                     |    |                                 | 29.5           | 37                  |                   | NNW 30    | 1007.3           | 36.8           | 25                  |                   | W 11      | 1004.2           |                   | NNW 48 | 0.0                         |  |                              |  |                       | 18  |
| Sat 19        |     | 31.7                | 23.0 |                     |    |                                 | 26.5           | 60                  |                   | Calm      | 1008.7           | 23.6           | 83                  |                   | SW 15     | 1008.2           |                   | S 52   | 2.2                         |  |                              |  |                       | 19  |
| Sun 20        |     | 28.4                | 16.1 |                     |    |                                 | 19.5           | 83                  |                   | ENE 20    | 1012.7           | 26.5           | 57                  |                   | ENE 15    | 1010.9           |                   | E 35   | 3.6                         |  |                              |  |                       | 20  |
| Mon 21        |     | 33.6                | 16.2 |                     |    |                                 | 22.0           | 70                  |                   | NE 15     | 1012.9           | 30.1           | 38                  |                   | SSW 9     | 1008.8           |                   | E 35   | 0.0                         |  |                              |  |                       | 21  |
| Tue 22        |     | 31.4                | 21.3 |                     |    |                                 | 24.1           | 68                  |                   | NNW 17    | 1010.4           | 29.3           | 46                  |                   | ENE 7     | 1008.4           |                   | SSE 48 | 0.0                         |  |                              |  |                       | 22  |
| Wed 23        |     | 32.3                | 17.0 |                     |    |                                 | 21.2           | 74                  |                   | S 15      | 1011.8           | 30.7           | 36                  |                   | S 15      | 1009.7           |                   | NNW 41 | 17.0                        |  |                              |  |                       | 23  |
| Thu 24        |     | 31.1                | 17.4 |                     |    |                                 | 21.1           | 72                  |                   | E 19      | 1012.9           | 28.9           | 38                  |                   | ENE 24    | 1010.8           |                   | E 37   | 0.0                         |  |                              |  |                       | 24  |
| Fri 25        |     | 33.9                | 17.4 |                     |    |                                 | 22.6           | 68                  |                   | E 13      | 1010.8           | 32.5           | 35                  |                   | ESE 13    | 1007.0           |                   | ENE 43 | 0.0                         |  |                              |  |                       | 25  |
| Sat 26        |     | 33.7                | 19.9 |                     |    |                                 | 24.1           | 61                  |                   | E 17      | 1009.6           | 31.8           | 34                  |                   | E 19      | 1006.1           |                   | NE 46  | 0.0                         |  |                              |  |                       | 26  |
| Sun 27        |     | 22.8                | 17.2 |                     |    |                                 | 18.8           | 100                 |                   | NNE 6     | 1007.2           | 20.6           | 96                  |                   | ENE 19    | 1005.6           |                   | S 31   | 7.6                         |  |                              |  |                       | 27  |
| Mon 28        |     | 20.6                | 18.5 |                     |    |                                 | 18.9           | 98                  |                   | SE 19     | 1003.4           | 18.6           | 100                 |                   | SSE 26    | 1000.9           |                   | SSE 56 | 5.0                         |  |                              |  |                       | 28  |
| Tue 29        |     | 30.5                | 17.6 |                     |    |                                 | 20.6           | 89                  |                   | SW 19     | 1003.2           | 29.4           | 40                  |                   | SW 22     | 1004.6           |                   | W 46   | 63.2                        |  |                              |  |                       | 29  |
| Wed 30        |     | 32.8                | 17.8 |                     |    |                                 | 22.0           | 47                  |                   | SSE 7     | 1011.3           | 31.5           | 18                  |                   | S 9       | 1009.9           |                   | WSW 28 | 0.0                         |  |                              |  |                       | 30  |
| Thu 31        |     | 31.9                | 17.8 |                     |    |                                 | 21.7           | 83                  |                   | NNW 30    | 1012.1           | 31.1           | 35                  |                   | N 20      | 1008.5           |                   | WNW 61 | 0.0                         |  |                              |  |                       | 31  |
| Mean Daily    |     | 33.2                | 19.0 |                     |    |                                 | 23.6           | 61.4                |                   | 18.0      | 1010.7           | 31.3           | 35.5                |                   | 17.4      | 1008.1           |                   |        |                             |  |                              |  |                       |     |
| Lowest Daily  |     | 20.6                | 13.5 |                     |    |                                 | 18.3           | 29                  |                   | 0         | 998.2            | 18.6           | 10                  |                   | 8         | 998.0            |                   |        | 63.2                        |  |                              |  |                       |     |
| Highest Daily |     | 41.4                | 25.1 |                     |    |                                 | 29.9           | 100                 |                   | 35        | 1019.9           | 39.9           | 100                 |                   | 31        | 1015.7           |                   | 65     | 99.4                        |  |                              |  |                       |     |
| Total         |     |                     |      |                     |    |                                 |                |                     |                   |           |                  |                |                     |                   |           |                  |                   |        |                             |  |                              |  |                       |     |

Table 1.

**Table 2. Coonabarabran Climate Statistics (Source: BOM, 2016)**



Product IDCJCM0028 Prepared at Thu 21 Apr 2016 01:07:57 AM EST

## Excursion Worksheets

**After the WNPEEC Geography Excursion you will be able to address these inquiry questions:**

- Why is there a diversity of landscapes and landforms in the Warrumbungle National Park (W.N.P.)?
- What environmental and human processes have formed and transformed landscapes and landforms in the W.N.P.?
- Why do people value landscapes and landforms in the W.N.P.?
- To what extent are landscapes and landforms sustainably managed and protected within the W.N.P.?

**To assist in answering the inquiry questions these will be completed during the day:**

- Walking Grand High Tops observing the natural and human managed environment.
- Altitude transect using a range of geographic/ scientific tools to complete recordings.
- Field sketch identifying natural and human formed landscapes from the top of Grand High Tops
- Reading of a topographic map and identifying coordinates



# Fieldwork Recordings - Site 1 – Northern Intersection of Gould Circuit and Pincham Trail (~540m altitude)

## General Characteristics

| Factors        | Notes                                           | Results |
|----------------|-------------------------------------------------|---------|
| Grid Reference | 6 digit reference + map on page 8               |         |
| Slope          | Flat <10, Gentle 10-20, Medium 20-30, Steep >30 |         |
| Aspect         | The direction the land is sloping               |         |
| Landform       | eg. creek, hill, valley                         |         |

## Vegetation Description

| Factors         | Notes                                   | Results |
|-----------------|-----------------------------------------|---------|
| Dominant Trees  | Discuss with WNPEEC teacher & peers     |         |
| Dominant Shrubs | Discuss with WNPEEC teacher & peers     |         |
| Ground cover    | Estimate %cover of plants & leaf litter |         |
| Forest Type     | eg. Dry Sclerophyll                     |         |

## Physical and Chemical Tests

| Factors        | Notes                                    | Results |
|----------------|------------------------------------------|---------|
| Air Temp. °C   | Use field multimeter                     |         |
| Wind Speed ( ) | Anemometer (check units)                 |         |
| Humidity %     | Use field multimeter                     |         |
| Rock Type      | Volcanic, Sedimentary, Metamorphic       |         |
| Soil Moisture  | Dry, moist or wet                        |         |
| Soil Texture   | Sandy, clay, silty - Discuss with WNPEEC |         |

|                    |                                                       |  |
|--------------------|-------------------------------------------------------|--|
|                    | teacher + peers                                       |  |
| <b>Soil Colour</b> | Smear some soil onto paper as a record of soil colour |  |
| <b>Soil Depth</b>  | Use tent peg & compass ruler to determine depth       |  |

**Other site observations:**

# Fieldwork Recordings - Site 2

## Wilsons Rest (~670m altitude)

### General Characteristics

| Factors        | Notes                                           | Results |
|----------------|-------------------------------------------------|---------|
| Grid Reference | 6 digit reference + map on page 8               |         |
| Slope          | Flat <10, Gentle 10-20, Medium 20-30, Steep >30 |         |
| Aspect         | The direction the land is sloping               |         |
| Landform       | eg. creek, hill, valley                         |         |

### Vegetation Description

| Factors         | Notes                                   | Results |
|-----------------|-----------------------------------------|---------|
| Dominant Trees  | Discuss with WNPEEC teacher & peers     |         |
| Dominant Shrubs | Discuss with WNPEEC teacher & peers     |         |
| Ground cover    | Estimate %cover of plants & leaf litter |         |
| Forest Type     | eg. Dry Sclerophyll                     |         |

### Physical and Chemical Tests

| Factors        | Notes                              | Results |
|----------------|------------------------------------|---------|
| Air Temp. °C   | Use field multimeter               |         |
| Wind Speed ( ) | Anemometer (check units)           |         |
| Humidity %     | Use field multimeter               |         |
| Rock Type      | Volcanic, Sedimentary, Metamorphic |         |
| Soil Moisture  | Dry, moist or wet                  |         |

|                     |                                                          |  |
|---------------------|----------------------------------------------------------|--|
| <b>Soil Texture</b> | Sandy, clay, silty - Discuss with WNPEEC teacher + peers |  |
| <b>Soil Colour</b>  | Smear some soil onto paper as a record of soil colour    |  |
| <b>Soil Depth</b>   | Use tent peg & compass ruler to determine depth          |  |

**Other site observations:**

# Fieldwork Recordings - Site 3

## Lughs Throne (~950m altitude)

### General Characteristics

| Factors        | Notes                                           | Results |
|----------------|-------------------------------------------------|---------|
| Grid Reference | 6 digit reference + map on page 8               |         |
| Slope          | Flat <10, Gentle 10-20, Medium 20-30, Steep >30 |         |
| Aspect         | The direction the land is sloping               |         |
| Landform       | eg. creek, hill, valley                         |         |

### Vegetation Description

| Factors         | Notes                                   | Results |
|-----------------|-----------------------------------------|---------|
| Dominant Trees  | Discuss with WNPEEC teacher & peers     |         |
| Dominant Shrubs | Discuss with WNPEEC teacher & peers     |         |
| Ground cover    | Estimate %cover of plants & leaf litter |         |
| Forest Type     | eg. Dry Sclerophyll                     |         |

### Physical and Chemical Tests

| Factors        | Notes                              | Results |
|----------------|------------------------------------|---------|
| Air Temp. °C   | Use field multimeter               |         |
| Wind Speed ( ) | Anemometer (check units)           |         |
| Humidity %     | Use field multimeter               |         |
| Rock Type      | Volcanic, Sedimentary, Metamorphic |         |
| Soil Moisture  | Dry, moist or wet                  |         |

|                     |                                                          |  |
|---------------------|----------------------------------------------------------|--|
| <b>Soil Texture</b> | Sandy, clay, silty - Discuss with WNPEEC teacher + peers |  |
| <b>Soil Colour</b>  | Smear some soil onto paper as a record of soil colour    |  |
| <b>Soil Depth</b>   | Use tent peg & compass ruler to determine depth          |  |

**Other site observations:**

# Fieldwork Recordings – Line Drawing

Looking North-East from the Grand High Tops, sketch the horizon first, then the main landscape features and then finally the human elements

|        |  |             |  |  |  |
|--------|--|-------------|--|--|--|
|        |  |             |  |  |  |
| Symbol |  | Description |  |  |  |
|        |  |             |  |  |  |
|        |  |             |  |  |  |
|        |  |             |  |  |  |
| Symbol |  | Description |  |  |  |
|        |  |             |  |  |  |
|        |  |             |  |  |  |
|        |  |             |  |  |  |
| Symbol |  | Description |  |  |  |
|        |  |             |  |  |  |
|        |  |             |  |  |  |
|        |  |             |  |  |  |

## **Post-WNPEEC Excursion Worksheets**

**Why is there a diversity of landscapes and landforms in the Warrumbungle National Park (W.N.P.)?**

**What environmental and human processes have formed and transformed landscapes and landforms in the W.N.P.?**

**Why do people value landscapes and landforms in the W.N.P.?**

**To what extent are landscapes and landforms sustainably managed and protected within the W.N.P.?**