

# Sample extended field-based investigation assessment task

Compiled by the Redlands College  
2007

## **About this task**

This sample is intended to be a guide to help teachers plan and develop assessment tasks for individual school settings.

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## Purposes of assessment

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The purposes of assessment are to provide feedback to students and parents about the learning that has occurred and to provide feedback to teachers about the teaching and learning processes. Assessment also provides information on which to base judgments about how well students meet the general objectives of the course.

In designing an assessment program, it is important that the assessment tasks, conditions and criteria be compatible with the general objectives and the learning experiences. Assessment then becomes an integral aspect of a course of study. More information on school-based assessment is available from the QSA website.

## Developing assessment tasks

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An assessment task is work undertaken by a student in response to an assessment instrument and learning experiences and is outlined in a task sheet. In describing assessment tasks to students, teachers need to ensure that:

- the techniques and instruments chosen allow students to demonstrate achievement in the particular objective or objectives
- the tasks are written in clear, unambiguous language, thereby ensuring that the teacher and the student have the same understanding
- the criteria for both formative and summative assessment always refer to the individual's achievement, even if assessment has involved group work
- in the assessment of students, the guidelines for quality and equity apply; these are available from the QSA website
- task conditions, which are to be consistent with the conditions described in the syllabus, are stated on task sheets.

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# Unit 7 - Geological Mapping: Pt Arkwright, Coolum (ELF2)

## 1. Objectives

The major objectives of the field study at Point Arkwright are that, on completion of the investigation, you should be able to:

1. *employ a methodical investigatory process in the field;*
2. *construct a **geological fact map** which records information gathered in the field about rock types and structures;*
3. *produce a **geological interpretation map** to convey personal geological interpretations of the locality;*
4. *interpret the basic geological history of the area studied; and*
5. *compile a scientific report to communicate the results of field studies.*

## 2. Schedule

<u>Time</u>	<u>Activity</u>
7:30 a.m	Depart school.
9:30 a.m	Arrive at Point Arkwright, Coolum.
9:40 a.m.	Guided overview of the locality, significant geological features and rock types present. Students to make notes concerning each feature.
10:20 a.m.	Start traverse mapping of the locality.
1:00 p.m.	Lunch break.
1:45 p.m.	Recommencement of work.
2:45 p.m.	Completion of mapping activity. Collection of equipment. Afternoon tea - Coolum
3:30 p.m.	Depart Point Coolum.
5:30 p.m.	Arrive back at school.

## 3. Equipment

You are to supply the following:

- a packed lunch and a 2L water bottle;
- sturdy shoes (not sandals or thongs)
- sunscreen and a hat;
- raincoat or jacket;
- a field note book for recording all field data;
- a clipboard to rest your work on;
- writing materials and a camera (optional).

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The school will supply the following equipment:

- measuring tapes and compasses;
- geological hammers and hand lenses; and
- base map for the geological fact and interpretation maps.

#### 4. The Field Study

The field study centres on mapping the geological features of approximately 200m of the wave-cut platform (from sea level to the base of the cliffs) at Point Arkwright.

Mapping techniques involve tape and compass traversing (with offsets), plus exposure mapping. Special attention should be given in this area to the mapping of (i) geological boundaries (e.g. between shale and sandstone; between sandstone and shale breccia, etc) and (ii) the location and trends of faults. It is important that a sufficient number of dip and strike measurements are taken to allow a clear picture of the geology of the locality to be presented.

#### 5. The Written Report

Geological reports, like any scientific reports, **are not essays**. It is important that the information you present is done so in such a way that it is easily accessible to the reader. To facilitate this requirement, it is important that you write your report using the following format.

##### 1. Title Page

2. **Introduction** - a brief outline of the precise location of the area investigated and the major objectives of the study. [1 – 2 paragraphs only]

3. **Geological Setting** - information about the localised environment (i.e. the wave-cut platform) and the regional environment.

4. **Rock Types and Sedimentary Structures** - descriptions of the different rock types and associated structural features present. Photographs and/or diagrams of the significant rock types and structural features should be included where appropriate. You should propose how each rock type and structure formed.

5. **Analysis of Data / Maps** – you should analyse and comment on the accuracy and validity of the:

- data gathered, identifying any sources of error or inaccuracy.
- Maps (fact and interpretation) generated, evaluating their validity.

6. **Geological History of the Area Investigated** - it is at this point that interpretations of the region's geological features, and suggestions about the possible method of formation, are made. You should attempt to link the features that you observed and mapped at Pt Arkwright, with those of the Coolumb area. These interpretations should be based upon field data/observations. The attached information will be useful here.

7. **Summary** - a synopsis of the major geological features of the area investigated, plus the more significant interpretations arising from the study.

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- 8. References** - the bibliographic details of any texts consulted in the course of writing the report and/or constructing the maps.
- 9. Appendices** - a copy of your *personal* field notes, signed by me at the end of the day, must be submitted attached to your report.

The field report should be clearly and neatly presented (word-processed and spell checked). The report should be **approximately 1000 words** in length.

## **6. Maps**

When mapping a field location it is important to prepare two maps - (i) the fact map and (ii) an interpretation map.

### **(i) Geological Fact Map.**

The fact map is a representation of the traverse path and any offsets. It is an uncomplicated map that reports the data (or factual information) collected in the field in a diagrammatic form. This includes:

- the traverse path and offsets;
- dip and strike data;
- outcrops or exposures recorded; and
- rock types, geological boundaries, faulting structures and any other geological features present.

### **(ii) Geological Interpretation Map.**

The interpretation map represents your interpretation of the locality's geology, as it appears to you, from the data as drawn on your fact map. This map should be an overlay of the fact map. Where possible, different colours should be used for the each rock type of the locality as this makes the map easier to understand.

This is an opportunity for you to exercise your knowledge of stratigraphic and structural features by studying data collected in the field and then drawing conclusions based upon this data. Thus, such a map is not factual, but rather is one representation of geological data gathered in the region.

### **Both the fact and interpretation maps should include:**

- a title;
- an indication of the direction of magnetic north on the map;
- labels for significant features (unconformities, faults, etc.);
- an indication of the map's scale; and
- a key for the different rock-type symbols or colours.

## 7. Marking Scheme

You will be marked according to a set of criteria. See the attached marking scheme for details.

## 8. Due Dates

The due date for this report and maps will be

It should be submitted with the Marking Scheme sheet that attached to the front of the assignment.

## 9. Bibliography

Grenfell, A.T. (1990) SC 2056: Point Arkwright Field Study. Brisbane College of Advanced Education: Brisbane.

## Unit 7 - Geological Mapping: Pt Arkwright, Coolum (ELF2)

### Criteria Sheet

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Name: .....

Ownership statement: (to be signed before submission)

*Unless otherwise stated, I certify that this work is original and my own.*

Signed: ..... Dated: ...../...../.....

Parent/Guardian's Signature:.....

#### Working Scientifically Observation Checklist

Criteria		A	B	C	D	E
WS	How well was the traversing technique applied to the site?					
	How accurately and safely has the mapping techniques been used in the field?					

#### Progress Progression

Date	Item	Teacher's signature	Date
5/3	Field notes		
	Draft of report - sighted		
20/4	Fact map data drawn and positioned		

#### Results

Criteria		A	B	C	D	E	
K	How well has your knowledge of Earth Science and geological maps been applied to this task?						

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WS	How accurately has the data about the geological setting, rock types and structure been collected and organised?						
	How accurately has the traversing data been presented as a fact map?						
	How valid is the assessment of validity of traversing data?						

UIS	Does geological history effectively relate the data gathered with the information available about the regional geology?						
	Is the interpretation map a valid synthesis and interpretation of the data gathered?						
	Overall presentation of map.						
	Is the report communicated in the appropriate format/genre and include correct spelling, grammar and referencing?						

Comments:

Teacher's Signature: ..... Date: .....

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## Standards Schema: ELF 2 (Pt Arkwright, Coolum)

	Criteria	A	B	C	D	E
K	How well has your knowledge and understanding of Earth Science and geological maps been applied to this task?	Successful and considered application to all aspects of the report.	Successful application to most aspects of the report.	Successful application to the straightforward obvious aspects of the report.	Some application to the straightforward obvious aspects of the report.	Some application but with errors.
WS	How accurately has the data about the geological setting, rock types and structure been collected and organised?	All geological features are clearly and accurately described.	All features are described, but some descriptions may be unclear.	Most features are described, but some descriptions may be unclear.	Some descriptions are inaccurate and/or omissions evident.	Descriptions are inaccurate and significant omissions evident.
	How accurately has the traversing data been presented as a fact map?	Fact map clearly and accurately conveys data.	Fact map contains minor inaccuracies.	Minor errors or omissions are evident.	Data is missing from fact map or significant errors are evident.	Fact map is largely incomplete and significant errors are evident.
	How valid is the assessment of validity of traversing data?	Assesses and critically evaluates the validity and adequacy of the data	Assesses the validity and adequacy of the data	Assesses some aspects of the validity and adequacy of the data	Offers observations about the validity and adequacy of the data	Offers observations about the data
UIS	Does geological history effectively relate the data gathered with the information available about the regional geology?	Geological history is a valid and clearly expressed interpretation of the relationship data gathered and regional environment.	Geological history is valid, but contains some very minor errors / omissions.	Geological history is a valid interpretation of major events, but some minor errors / omission evident.	Geological history includes a significant number of invalid interpretations and/or partially incomplete.	Interpretation completely incorrect or not included.
	Is the interpretation map a valid synthesis and interpretation of the data gathered?	Map is a valid interpretation of major and minor trends in the data gathered.	Map is a valid interpretation of major and minor trends but contains minor inaccuracies.	Map demonstrates evidence of valid interpretation of the major trends.	Map demonstrates evidence of valid interpretation of some the major trends.	Map demonstrates evidence of valid interpretation of very few major trends.
	Overall presentation of maps.	Maps are very neat and well presented. All elements included. Significant effort demonstrated.	Maps are neat and all elements are included.	Maps presentation could be improved but all elements are included.	Map is missing some elements or poorly presented.	Most map elements are missing and poorly presented
	Is the report communicated in the appropriate format/genre and include correct spelling, grammar and referencing?	Report is correctly formatted and referenced; language is effectively used with only very minor errors	Report is correctly formatted and referenced; some errors in language are evident	Some minor errors in report formatting, referencing, and language use	Report or language use contains some significant errors	Report is incorrectly formatted and referenced; language contains a large number of errors

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