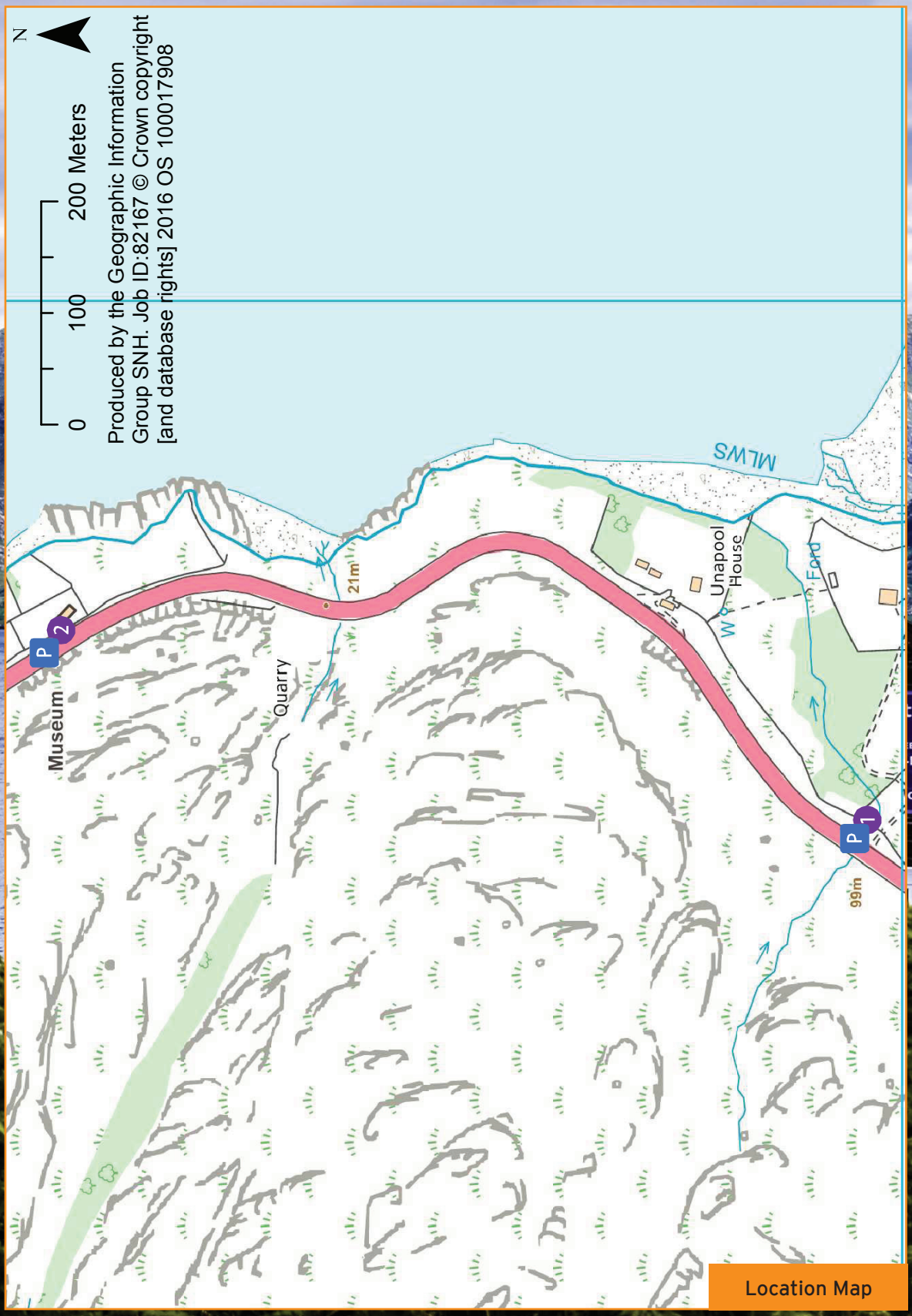
Loch Glencoul



Teacher's Sheet

The purpose of this short excursion is to observe from a distance the structures that have resulted from thrust faulting, deep within a mountain range. This happened during the late stages of the closing of an ocean associated with a destructive plate margin.

It is time consuming and may not very practical to take a group of students close up to the rocks involved. A small boat may be available from Unapool to take visitors up Loch Glencoul where a closer inspection may be made of the structures on the valley sides. An enquiry at the Kylesku Hotel about the boat may be worthwhile if that is being contemplated.



Location Map

Teacher's Notes

SUGGESTED STOPS	POINTS TO NOTE
Access:	Two easily accessible good viewpoints are available as sites 1 and 2. Both have interpretation boards. Two of the major thrust faults of the Moine Thrust Zone can be seen here.
1	The Moine Thrust itself crosses the Stac of Glencoul and is the major thrust of the Caledonian Mountain Building and has most movement. It marks the western limit of the Moine Schist. Often the lower few hundred metres of the Moine Schist has been stretched, streaked out and ground up to form a mylonite. At various points along the Moine Thrust Zone other rocks apart from the Moine have become involved in providing material for the mylonite production.
2	The Glencoul Thrust, which is part of the Ben More Thrust is physically below the Moine Thrust and hence crosses the valley further west just above the Cambrian sediments, particularly the Quartzite and Pipe Rock. It has 20 – 25 km of movement on it whereas the Moine Thrust has much more. Underneath the main thrust is often a complex structure, known as an imbricate zone, with more minor thrusts and accompanying these steeper curved faults which often break away from a lower thrust and join up to an upper thrust. This produces blocks, called horsts, which stack up on one another and causes a bulge in the overlying thrust. This stacking up produces repeating of the same rock sequence at the surface when later erosion reveals them. The whole Moine Thrust Zone may only have taken 1 or 2 million years to be produced about 430 million years ago.
Site 1	NC 235321 This is stop number 9 on the Rock Route, which is set up through the centre of the geopark on the A835, A837, A894 and A838. At all 14 stops of the Rock Route there is an interpretation board which tells something about the UNESCO Global Geopark and part of the overall story what can be seen at that stop. More information, including a downloadable leaflet is available from the Scottish Natural Heritage website on Knockan Crag. The main point of interest from Rock Route stop 9 is the Loch Glencoul (Ben More) Thrust. The hillside opposite has Lewisian Gneiss at the base with Cambrian Quartzite laid directly on it. This is a very flat unconformity, which slopes (dips) eastward at about 20 degrees. There would have been Torridonian deposited on the Lewisian at one time but it was eroded off, probably by the sea that deposited the quartzite. Above the quartzite is the Pipe Rock and a little of the Fuciod beds. Prior to the thrust faulting the full sequence including the Durness Limestone would have been deposited, but this has been cut out by the Glen Coul Thrust. The hillside therefore consists of Lewisan at the base with Cambrian Quartzite and Pipe Rock above that, with a little Fuciod beds that appears to have provided a layer which lubricated the thrust. Above the thrust is more Lewisian Gneiss, which has been moved about 25km up the fault plane from further east and deeper down.
Site 2	The Rock Stop Geocentre The Rock Stop is a centre for the North West Highlands UNESCO Global Geopark. It has an exhibition, shop, café and toilets. Geological books, maps and merchandise, as well as craft work are available in the shop. The exhibition includes interpretation of the view along the length of Loch Glencoul. The Moine Thrust Fault crosses the Stac of Glencoul just below the summit and below that is an imbrication zone that repeats the quartzite and Lewisian outcrops. Mylonatised Moine Schist sits on top of mylonitsed quartzite toward the base of the cliff at the top of the Stac and can be interpreted as the Moine Thrust itself. The imbricate zone below the Glencoul Thrust consists of the Fucoid beds, Salterella Grit and a little Durness Limestone. The Fucoid Beds and limestone in particular produce neutral soils and good drainage and hence green grass. This can be seen below the Glencoul Thrust on both side of the loch. The gneiss is above the thrust and gives rounded eroded shapes with heather growing on it. There is a lot of other geological content within the exhibition and hence is worth spending sometime looking at and explaining to a group.