

Raasay 2:

Screapadal and Druim an Aonaich



The east side of Raasay, south of Screapadal, is fringed by dramatic inland cliffs composed of the Middle Jurassic Druim an Fhuarain Sandstone Member of the Berreraig Sandstone Formation. The eroded top of these shallow marine sandstones forms the ridge south from Creag na Bruaich to Druim an Aonaich. These crags have incipient landslips, for example in the far right of this view, partly due to the weak underlying shales of the Dùn Caan Shale Member. In the distance is the lava-capped summit of Dùn Caan, the highest point of Raasay at 444m OD.

Aspects covered: Late Proterozoic ('Torridonian') strata of the Brochel Member of the Diabaig Formation; Lower Jurassic Ardnish Formation strata adjacent to the Screapadal Fault; Middle Jurassic Druim an Fhuarain Sandstone Member of the Berreraig Sandstone Formation; Holocene landslips.

Route: [Brochel](#) – [North Screapadal](#) - [An Leth-allt](#) - [South Screapadal](#) - [Eaglais Breige](#) - [Druim an Aonaich](#) (- return [Brochel](#)).

Distance: 8 kilometres (5 miles).

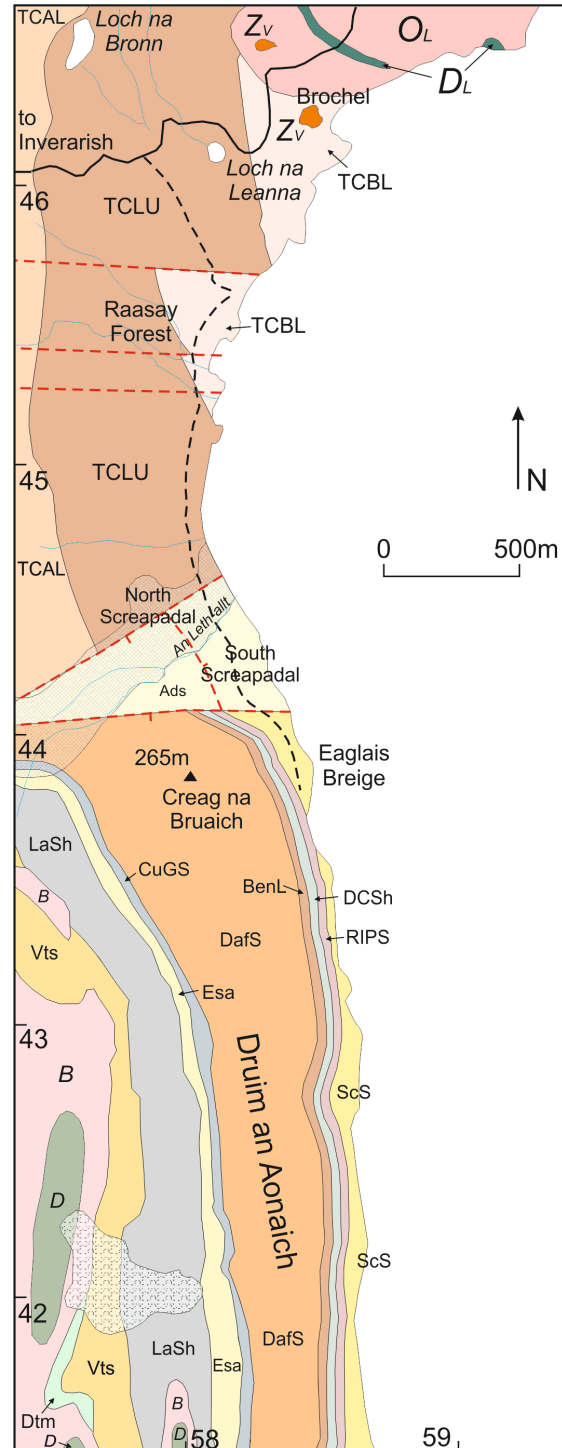
Time: 6-7 hours.

General comments: This excursion involves viewing the dramatic [Druim an Aonaich](#) exposures of the Middle Jurassic Druim an Fhuarain Sandstone Member from the coast. Low tide conditions are not required. The lowest part of the sequence can be examined along the base of the crags; for the more adventurous, the exposures forming the crags are accessible but requires ascending through scrub vegetation (and aggressive bracken in Summer months) and up a steep grass slope. Binocular views from the low ground are a viable substitute.

Take the road north from [Inverarish](#) for 13km (8 miles) to [Brochel](#), where parking is available. Before beginning this

excursion on foot, it is worth taking in the view from [Brochel](#) of the east-facing cliffs of [Screapadal](#), to be visited as part of the excursion (**Locality 1**, below).

The track, south to [Screapadal](#), from the public road is accessed c. 500m SW of [Brochel](#) (at [\[NG 5788 4612\]](#)). Limited parking is available near to the end of the track.



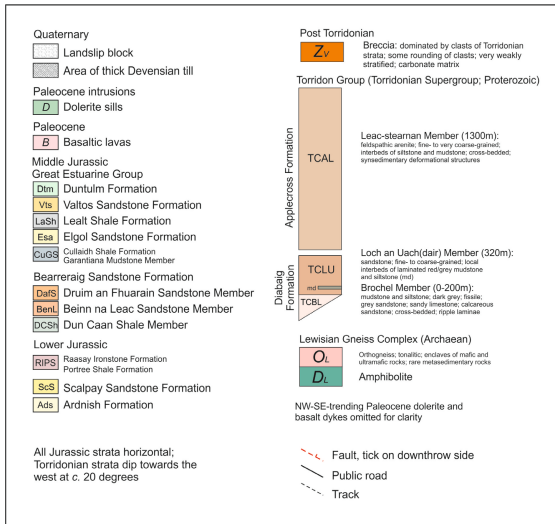


Figure Raasay 2.1: Simplified geological map and key of the Screapadal – Druim an Aonaich area.



Excursion Raasay 2: Screapadal – Druim an Aonaich

Figure Raasay 2.2: Annotated Google Earth® image of the Screapadal – Druim an Aonaich area.

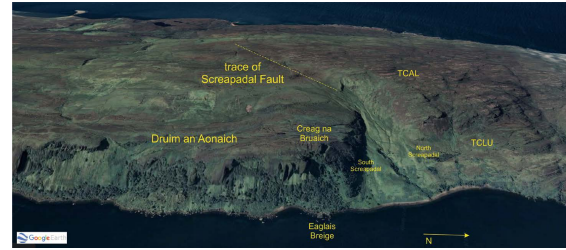


Figure Raasay 2.3: Annotated oblique Google Earth® image of the Screapadal – Druim an Aonaich area.

Locality 1 c. [NG 5847 4627]:

From [Brochel](#), the partially landslipped nature of the [Druim an Aonaich](#) cliffs is particularly clear. Also, it is possible to see the landslip much further south on the coast, the so-called Hallaig Landslip.



Figure Raasay 2.4: Annotated and unannotated views of the coastal section from Creag na Bruaich, south to Druim an Aonaich, viewed from Brochel. In the distance is Dùn Caan, Raasay's highest point at 444m OD.



Figure Raasay 2.5: The Hallaig Landslip, viewed from Brochel towards the south. This landslip is due to a combination of rotation, slumping and collapse of Lower Jurassic strata, most likely caused by weak shales acting as a slip plane. The back of the landslip is complex, with

multiple, near-vertical failure planes that show little evidence of erosion.

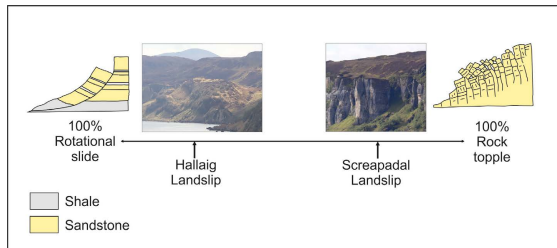


Figure Raasay 2.6: Contrasting mechanisms of failure of the Screapadal and Hallaig landslips.

Take the track (signposted for [Screapadal](#)) SE through the 'Raasay Forest' (now harvested), through a zig-zag and then south. At [\[NG 5812 4560\]](#) a track leads east to the shore. Here, Late Proterozoic ('Torridonian') strata of the Brochel Member of the Diabaig Formation crop out and are exposed on the north and south sides of the pebble beach.

Locality 2 [\[NG 5815 4547\]](#):

These dark grey fissile mudstones and siltstones and calcareous sandstones have well developed ripple laminae and cross-stratification, indicating either a lacustrine or low-energy shallow marine environment of deposition.



Figure Raasay 2.7: Dark grey fissile mudstones and siltstones and calcareous sandstones of the Brochel Member, south side of bay between Brochel and North Screapadal [5811 4533]. Pole c. 1m long.



Figure Raasay 2.8: Detail of laminated and massive calcareous siltstones of the Brochel Member, south side of bay between Brochel and North Screapadal. Coin c. 24mm across.

Return to the main track and head south towards [Screapadal](#).

This abandoned clachan (North and South Screapadal) is one of the 'clearance villages' on Raasay, comprising several ruined houses, ruined boat houses on the shore, and areas of lazy beds used to grow crops. George Rainy, an Edinburgh lawyer, purchased Raasay in 1846, funded by compensation from the British Government after the emancipation of slaves in 1833. He then set about clearing (or 'improving' as described at the time) the many clachans on the island to make way for large flocks of sheep. The Raasay poet, Sorley MacLean, commemorates and bemoans the history of the village in his poem *Screapadal*, concerned with nature and time, the clearances, and lamenting the use of the Inner Sound, between Raasay and Applecross, for activities associated with submarines. Take time to explore and ponder over the fate of [Screapadal](#).



Figure Raasay 2.9: The verdant slopes of Screapadal (underlain by Lower Jurassic Ardnish Formation strata), in contrast to the heather-covered craggy ground of Loch an Uach(dair) Member (Diabaig Formation) strata in the distance. View is towards the NW from South Screapadal.



Figure Raasay 2.10: Location/navigation device at South Screapadal.

The dramatic difference in topography and vegetation between [Screapadal](#) and the area to the north is due to a major fault, the NW-SE -trending Screapadal Fault, which brings Lower Jurassic Ardnish Formation strata to the south in contact with Torridonian Loch an Uach(dair) Member strata to the north. Ardnish Formation strata are poorly exposed in the [An Leth-allt](#), with very few small exposures on the [Screapadal](#) hillside. However, blocks of these strata are available to examine in the walls of the ruined buildings, mainly orange-weathering calcareous sandstone, and limestone. The valley has a significant cover of Devensian till that blankets the trace of the fault.

Locality 3 c. [NG 5797 4445]:

The Lower Jurassic marine Ardnish Formation is dominated by calcareous sandstones, with interbeds of siltstone and mudstone. The bivalve, *Gryphaea arcuata*, an oyster, is the most distinctive and easily recognised fossil that characterise the sequence. These strata are very poorly exposed, restricted to sporadic exposures and loose blocks in the [An Leth-allt](#), and on the grassy slopes of Screapadal.



Figure Raasay 2.11: Poorly exposed, weathered Ardnish Formation calcareous sandstones, Screapadal. Pole c. 1m long.



Figure Raasay 2.12: *Gryphaea arcuata* in Ardnish Formation calcareous sandstones, Screapadal. Coin c. 24mm across.



Figure Raasay 2.13: Orange-weathering blocks of calcareous sandstone and limestone of the Ardnish Formation, within the ruins of one of the houses in the abandoned village of South Screapadal. Pole c. 1m long.

The track south from [Screapadal](#) hugs the coast, passing through woods, with the crags of [Creag na Bruaich](#) to the west.



Figure Raasay 2.14: Gullies defining the margins of incipient landslips, Creag na Bruaich. View is towards the SW.



Figure Raasay 2.15: Fissures within the cliffs, leading to the formation of (unstable) rock pillars, Creag na Bruaich. View is towards the south.



Figure Raasay 2.16: Fissures within the cliffs, leading to the formation of (unstable) rock pillars, Creag na Bruaich. View is towards the NW.



Figure Raasay 2.17: Landslipped blocks of Druim an Fhuarain Sandstone Member strata, forming the promontory of Eaglais Briège. View is towards the north.



Figure Raasay 2.18: Landslipped blocks of Druim and Fhuarain strata at c. [NG 5842 4390].

The east-facing cliffs south of [Screapadal](#) at [Druim an Aonaich](#) comprise a thick sequence of Middle Jurassic (Upper Toarcian to Upper Bajocian) strata that were deposited in response to renewed subsidence of the Hebrides Basin, leading to a significant influx of coarse siliclastic sediments, the Berreraig Sandstone Formation. Subsidence was strongly affected by basin-bounding faults, which influenced the greater thickness of the sediment that was deposited adjacent to the faults;

the Screapadal Fault to the north playing a key role in the sequence at [Druim an Aonaich](#). Details of the lithologies of the Formation vary laterally within the basin. At [Creag na Bruaich](#), cross-bedded sandstones and sandy limestones formed of terrigenous sand and shell debris, were deposited in a high energy shallow marine setting as large (subaqueous) dunes under the influence of tidal currents.

A number of members are recognised, the thickest by far and best exposed is towards the top of the sequence, the Druim an Fhuarain Sandstone Member. This name refers specifically to the sandstone-dominated sequence/facies on [Strathaird](#) in south Skye, but is also applied, informally, to the thick sandstone sequence forming the [Druim an Aonaich](#) crags. In close stratigraphic association are poorly exposed marine shales, the Raasay Ironstone Formation and the Portree Shale Formation, below, and the Grantiana Mudstone Formation, above.

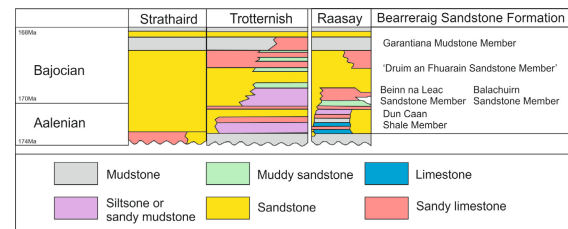


Figure 2.19: Lithostratigraphy of the Berreraig Sandstone Formation on Raasay and Skye.

Locality 4 c. [NG 5837 4239]:

The cliffs at [Druim an Aonaich](#) are up to 100m in height and only the lower parts are easily accessed. The accompanying figures illustrate these features and can also be viewed from afar with good binoculars.

Sandstones of the Druim an Fhuarain Sandstone Member dominate, comprising large down-cutting (by up to 10m) channels into planar cross-bedded sandstones. Typically, at the base of a channel, the sediment comprises coarse grade sand with pebbles, giving way (upwards) to coarse sand grade units with trough and planar cross-stratification. One example, at [NG 5831 4350], has a relief of c. 18m, with a poorly stratified, basal facies.

Other features include: uncommon mud drapes and layers with mud rip-up clasts; and, convoluted stratification (soft-sediment deformation) and intervals with ball-and-pillow structures (with reliefs of up to 5m), both due to dewatering and sediment disturbance.

The background sedimentation produced cross-stratified sandstones (up to 1.5m thick), typically of fine- to medium-grade sand, forming stacked sets. A bioclastic component, mainly mollusc shells, suggests (subaqueous) dune deposition by strong currents. The cross-stratification is bidirectional, implying a significant influence by tidal action.

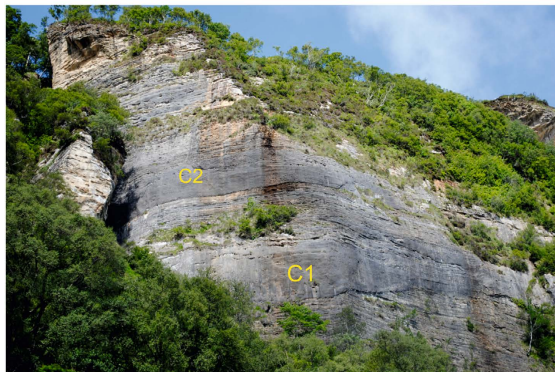
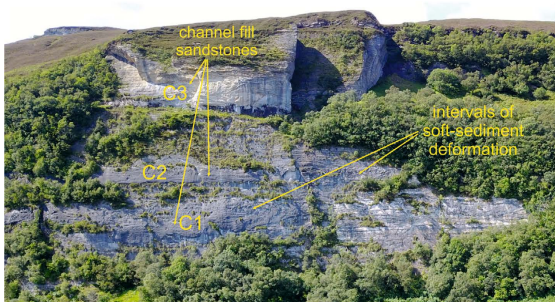
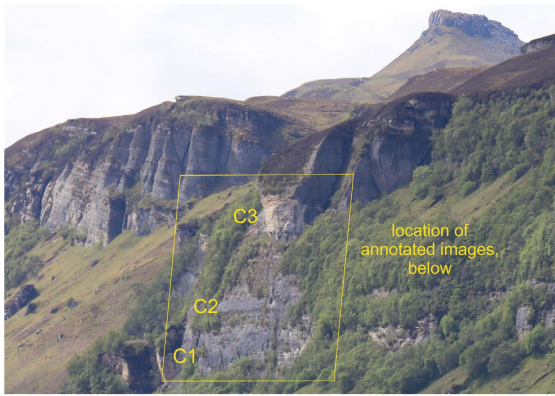


Figure Raasay 2.20: Annotated views of cliff section indicating the locations of dark-weathering channel-fill sandstones (C1, C2 & C3) with significant incisions into older sediment/strata, and intervals of pale-weathering dune-bedded sandstones with soft-sediment deformation. Thickness of section in view is c. 80m and length of section is c. 250m. View is towards the west.

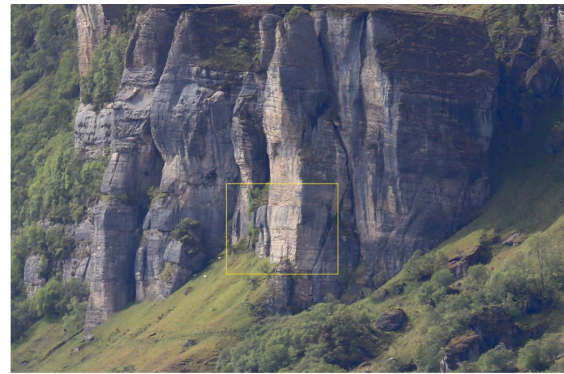


Figure Raasay 2.21: Thick, relatively homogeneous, channel-fill sandstone(s), interbedded with 'background' dune-bedded sandstones. Thickness of interval in image is c. 25m. View is towards the west.



Figure Raasay 2.22: Well-sorted, carbonate-cemented, medium- to coarse-grained, cross-stratified sandstones, part of the background tidally-influenced, dune facies sedimentation. Person for scale.



Figure Raasay 2.23: Narrow, steep-sided channel, c. 20m deep, comprising a weakly stratified coarse sand grade fill, within 'background' cross-stratified sandstones (up to 1.5m thick), typically of fine- to medium-grade sand, forming stacked sets. View is towards the south. Person for scale.

Return to the public road.

End of excursion.

*Figures Raasay 2.20-2.23 have generously been provided by Stuart Archer and appear in the publication:

Archer, S.G., Steel, R.J., Mellere, D., Blackwood, S. & Cullen, B. (2019). Response of Middle Jurassic shallow-marine environments to syn-depositional block tilting: Isles of Skye and Raasay, NW Scotland. *Scottish Journal of Geology*, 55, 35-68.