SW Skye 2:

Preshal More and Preshal Beg

Preshal More and Preshal Beg dominate the Minginish skyline. In true Hebridean idiosyncratic style, Beg (small) is higher than More (big), admittedly by only 30m. When viewed from Talisker, Preshal More forms a spectacular prow rising up from the surrounding sea of Paleocene plateau lavas. These two peaks are the remnants of one of the youngest lavas on Skye that was impounded in a steep-sided valley carved out of older lavas. Present-day erosion has inverted the topography because of the more-resistant-to-erosion character of the valley-filling lava. In addition to their spectacular nature when viewed from below, both form wonderful viewpoints, especially towards the north and east.

Aspects covered: architecture and internal characteristics of Paleocene plateau lavas and interbedded sedimentary units; architecture, internal subdivisions and emplacement characteristics of a valley-filling ('intra-canyon') basaltic lava.

Route: Gleann Oraid – Buaile an Fharaidh – NE Preshal More – Sleadale – east Preshal Beg – Sgùrr nam Fiadh – west Preshal Beg – Sleadale – Dùn Sleadale – west Preshal More – Buaile an Fharaidh (- return Gleann Oraid).

Distance: 10 kilometres.

Time: 8-9 hours.

General comments: An inland excursion that deals almost exclusively with Paleocene lavas and associated sedimentary units, including the spectacular impounded ('intra-canyon') Preshal More/Beg lava. The excursion requires a fair level of fitness: after the initial sharp increase in elevation of *c.* 200m, much of the route is on ground with a topography that is subdued, although with some rises and falls. In misty weather, navigation on the ground below Preshal More is difficult and not advised. During periods of heavy rainfall, the Sleadale Burn, between Preshal More and Preshal Beg, might prove to be difficult to cross.

To see certain features in a (geologically) sensible order there is an element of retracing of steps. If this is to be avoided, it is recommended that the excursion text is read through before starting and an 'alternative' route is decided upon.

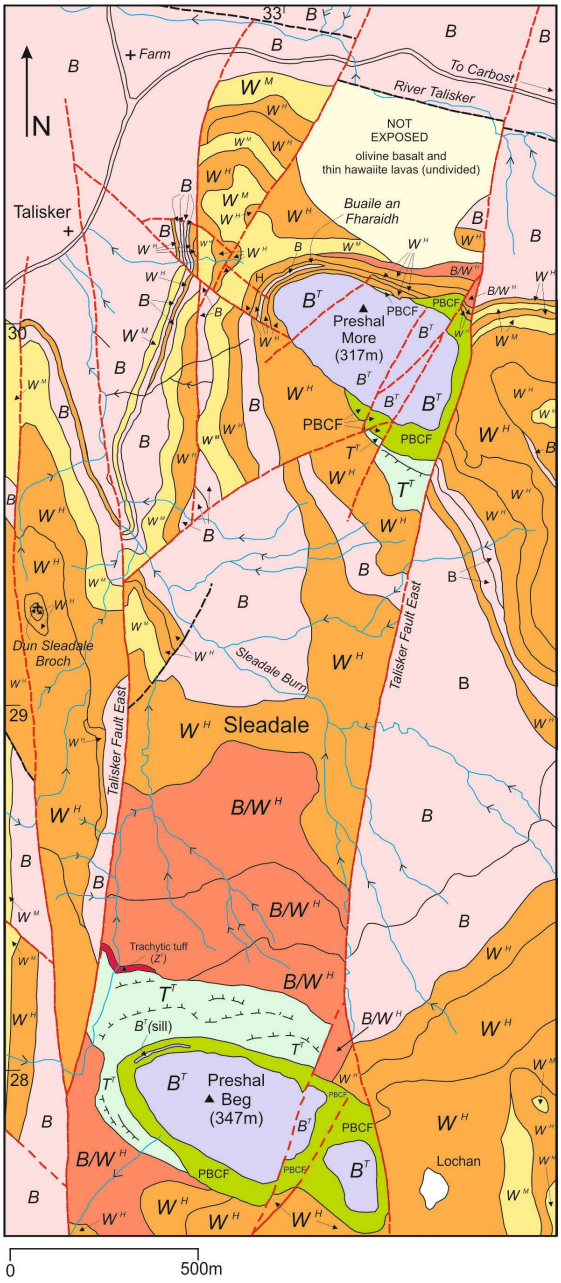

Figure SW Skye 2.1: Simplified geological map of the Preshal More – Preshal Beg area.

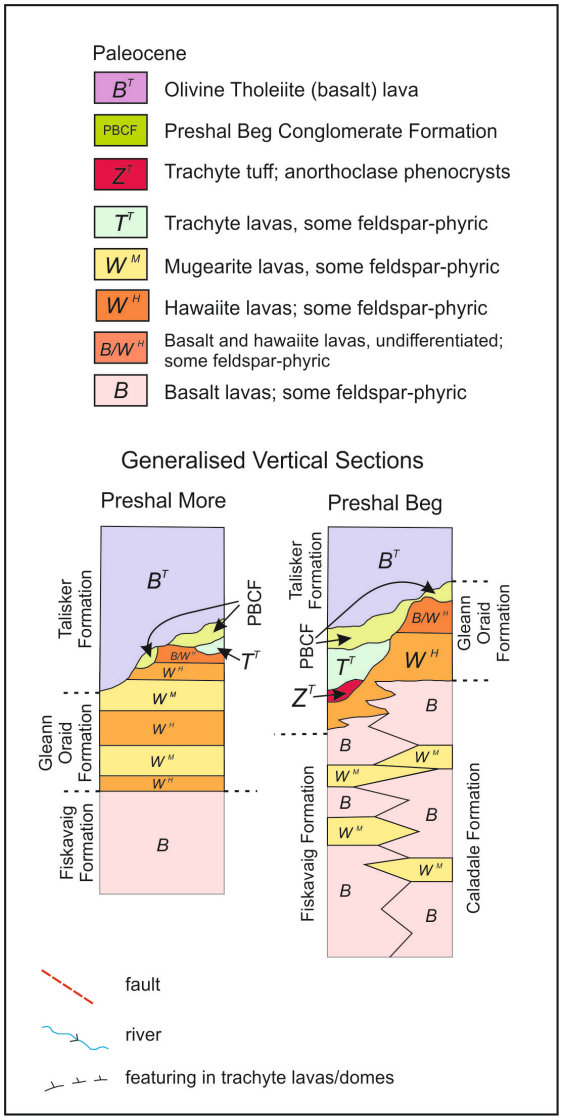

Figure SW Skye 2.2: Key to simplified geological map of the Preshal More – Preshal Beg area and generalised vertical sections at Preshal More and Preshal Beg.

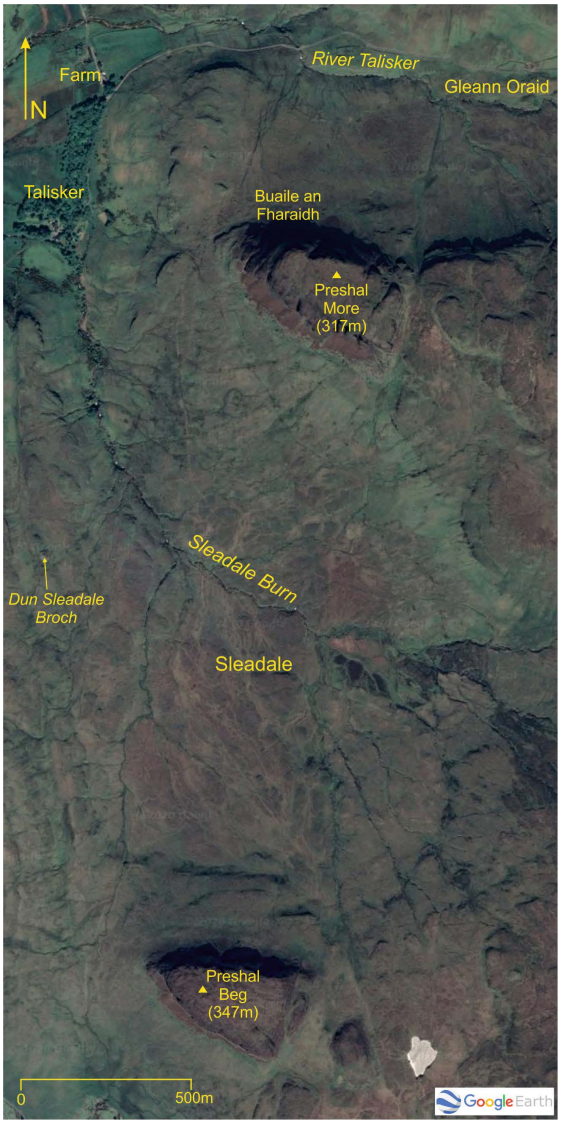

Figure SW Skye 2.3: Annotated Google Earth® image of the Preshal More – Preshal Beg area.

Follow the Broadford- Portree (A87) road to Sligachan (26km (16 miles) from Broadford and 14km (9 miles) from Portree). Take the Dunvegan (A863) road along Glen Drynoch to the Carbost (B8009) road (8km; 5 miles). From here, follow the Carbost road, along the south side of Loch Harport, towards Carbost. Continue west, bypassing Carbost by using the high road, to the Talisker junction and continue along Gleann Oraid to the end of the public road at Talisker Farm. Here, do a U-turn and head back up Gleann Oraid as far as the cattlegrid at [NG 3324 3070].

Limited parking is available on the north side of the road, east of the cattlegrid at [NG 3324 3070]. From here, access the ground south of the River Talisker (which will avoid having to cross it *en route* to the first location). The spectacular view in front (to the south) of Preshal More reveals its bulk, rising almost vertically to its summit at 320m OD. This excursion need not involve this summit, but rather will go to the summit of Preshal Beg. However, if a spectacular view is of interest, access from the east side of the hill is possible (see below).

The north face of the hill reveals the well-developed columnar joints of this single valley-impounded (or 'intra-canyon') lava, at least 120m thick: the top is not preserved. On the north face, most of the columns are vertical, implying a near-horizontal (valley floor) cooling surface. The more sheet-like plateau lavas below belong to the Gleann Oraid Formation. The lava that forms Preshal More is regarded as being part of a separate stratigraphic unit, the Talisker Formation. Continue up to the base of the north face, where the lowest part of the lava is locally exposed.

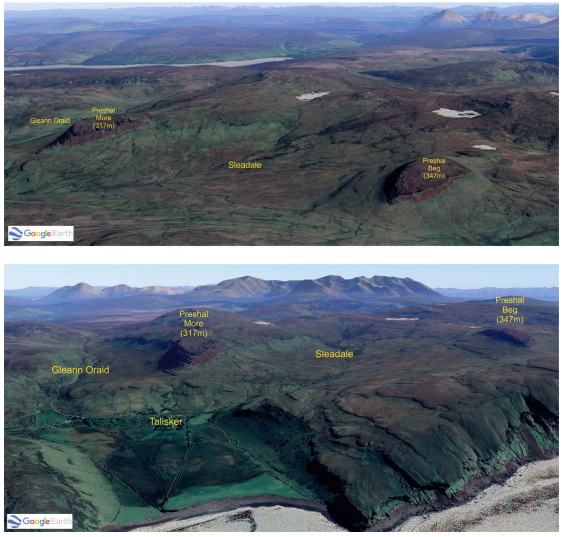

Figure SW Skye 2.4: Annotated oblique Google Earth® images of the Preshal More – Preshal Beg area.

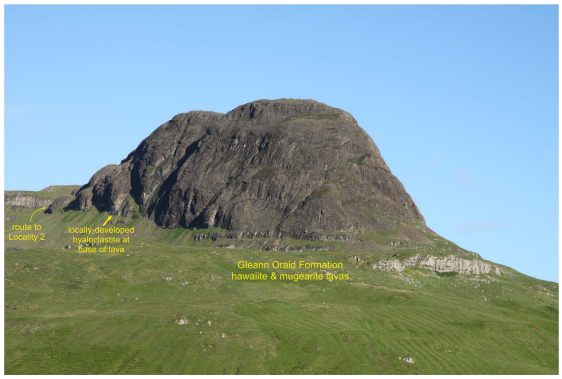

Figure SW Skye 2.5: Location of hyaloclastite at base of Preshal More lava outcrop.

Locality 1 [NG 3347 3002]:

At the base of the Preshal More lava, hyaloclastite is locally developed, comprising angular fragments of hydrothermally altered basalt in a matrix dominated by zeolites and carbonate. Fragmentation was caused by extrusion of magma onto a wet surface, possibly involving standing water, causing rapid cooling, essentially a type of thermal shock as the magma congealed to glass. Hydrothermal alteration of the hyaloclastite by circulating groundwater subsequently occurred, along with the precipitation of the matrix of zeolites and carbonates.

Figure SW Skye 2.6: Complex columnar joint pattern on the north face of Preshal More. Hyaloclastite at base of lava indicated, far left of exposure, above grass-covered slope.

Figure SW Skye 2.7: Orange-stained hyaloclastite at base of Preshal More lava outcrop. Note shallow dip of columnar joints at the (inclined) base of the lava. Pole *c.* 1m long.

Figure SW Skye 2.8: Detail of hyaloclastite at base of Preshal More lava outcrop, comprising angular fragments of fine-grained/glassy basalt in a carbonate-zeolite matrix. Ruler 30m long.

Follow the base of the crags, east, to where there is a small through valley, and head south through this gap. To the east is the Stockval Ridge, composed of terraces of basalt, hawaiite and mugearite lavas of the Gleann Oraid Formation. The gully marks the line of the Talisker Fault East. It is from here that the summit of Preshal More is most easily reached, giving excellent views of the

surrounding lava-dominated area, especially towards Loch Bracadale to the north.

Figure SW Skye 2.9: View towards the north from Preshal More, across the lava plateau, with Loch Bracadale in the distance. The distinctive (unnamed) flat-capped hill in the middle distance is typical of more evolved lavas (hawaiite, mugearite) in the lava field scenery. The summit on the far right of the view, with small lochs below, is Arnaval.

From the lower ground to the south of Preshal More, the view of the eastern end of the Preshal More lava outcrop reveals that the orientation of the columnar joints is not vertical, with an apparent inclination towards the east, implying that the cooling surface was not horizontal.

Figure SW Skye 2.10: View towards the north of the south face of Preshal More, illustrating the vertical attitude of the colonnade cooling joints at the base of the exposure. The grass-covered bench below the right-hand end of the exposure is a poorly exposed trachyte lava, to the right of which is the Talisker East Fault, forming a notch on the horizon.

Topographically and stratigraphically below the Preshal More lava outcrop at *c.* 210m OD, an obvious terrace marks the poorly exposed outcrop of a trachyte lava. The rock is locally vesicular and dull grey on fresh surfaces. The same, if not a similar, lava crops out north of Preshal Beg and offers a better opportunity to examine a compositionally-evolved lava.

Locality 2 [NG 3322 2983]:

The south face of Preshal More illustrates well the contrasting cooling joints in a lava that has cooled after ponding on either a wet land surface, or one with standing water. The lower, regular, wide-spaced joints define the colonnade of the lava, and where it is considered that heat has been lost out of the base of the lava. The upper part of the lava, with a more chaotic or irregular set of joints that are more closely spaced, is referred to as the entablature: cooling was most likely due to water ingress from the top, as the drainage system that was temporarily displaced as the lava was emplaced into the valley (or canyon) is re-established. The interface between the two different types of cooling joints is remarkably sharp and planar.

The gullies that cut through the outcrop show no obvious displacements of the colonnade-entablature boundary.

Figure SW Skye 2.11: View towards the north of the south face of Preshal More, illustrating the vertical attitude of the colonnade cooling joints at the base of the exposure. Vertical extent of lava outcrop is *c.* 120m.

Cross the poorly exposed ground of Sleadale where basalt and hawaiite lavas of the Gleann Oraid Formation crop out. As the Preshal Beg outcrop of the lava is approached, there is an obvious grass-covered terrace below the main crags. Here, a thick and laterally extensive trachyte lava crops out. It is exposed in the minor crags and is a relatively pale fine-grained rock with, locally, large and obvious vesicles.

Figure SW Skye 2.12: View towards the south, across Sleadale, of the north face of Preshal Beg.

Locality 3 [NG 3309 2795]:

The two-tier character of the south side of the Preshal More outcrop is repeated here on the north side of

Preshal Beg, although further details of the overall structure of the Preshal Beg outcrop can be better elucidated on the south side of the hill (see below).

Immediately below the lava on the NE side of Preshal Beg is up to 20m of pebble to boulder conglomerate, typically massive, poorly sorted and matrix supported, identified as the Preshal Beg Conglomerate Formation. The clasts are wholly of igneous lithologies typical of the subjacent lava field, with no pre-Paleocene lithologies identified. Similarly, the matrix is dominated by mud to coarse sand grade material of volcanic derivation. Such volcaniclastic sedimentary units are preserved throughout the lava field stratigraphy.

Figure SW Skye 2.13: Preshal Beg Conglomerate Formation on the NE side of Preshal Beg, comprising a very poorly sorted, unlayered, pebble to boulder conglomerate. Ian Williamson for scale.

Proceed south through the valley between the main outcrop and the isolated outcrop (337m OD) to the SE.

Locality 4 [NG 3317 2762]:

On the SW side of this small hill (337m OD), a different facies of the Preshal Beg Conglomerate Formation is preserved, comprising volcaniclastic sandstones with interbeds of pebbly sandstone and pebble conglomerate; sorting of these normally-graded strata is moderately good. The upper and lower contacts of the sedimentary unit are not exposed.

Figure SW Skye 2.14: Preshal Beg Conglomerate on the south side of the small satellite hill east of Preshal Beg, comprising volcaniclastic sandstones with interbeds of pebbly sandstone and pebble conglomerate. Pole *c.* 1m long.

From here, one option, if time permits, is to continue south to the cliff-fringed coastline at Sgùrr nam Fiadh to obtain an excellent view of the plateau lava sequences of the Glen Caladale Formation and the overlying Gleann Oraid Formation.

Figure SW Skye 2.15: Cliff below Sgùrr Buidhe composed of the plateau lava sequences of the Glen Caladale Formation and the overlying Gleann Oraid Formation. The islet is Stac a' Mheadais.

Otherwise, continue around the south side of Preshal Beg to take a panoramic view of the hill.

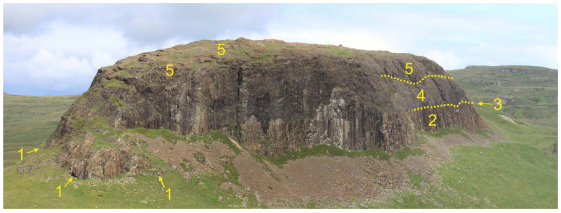

Figure SW Skye 2.16: Annotated view of the south side of Preshal Beg. Vertical extent of lava outcrop is *c.* 120m. See **Locality 5** for details of numbered features.

Locality 5 [NG 3317 2979]:

With reference to **Figures SW Skye 2.16, 2.17 & 2.18**, the basal portion of the lava is represented by a pillowed facies, indicative of eruption into water (1). Locally it is seen to directly overlie the Preshal Beg Conglomerate Formation. The colonnade (2) and entablature (4) facies have their respective positions, as in the Preshal More outcrop. Separating the two, locally, there is a narrow interval of weakly flow-banded rock, a so-called platy fabric or facies (3). Its formation is not fully understood but may be due to some form of syn-emplacement adjustments within the lava, involving simple compaction, compactional shear, or magma flow. On Preshal Beg, a further (higher) facies of the lava is preserved (not seen on Preshal More). Here, a variant of the entablature facies comprises intrusive material, essentially part of the lava. This type of intrusive/sheeted facies (5) formed by auto-intrusion and is recognised in the development of present-day lava fields.

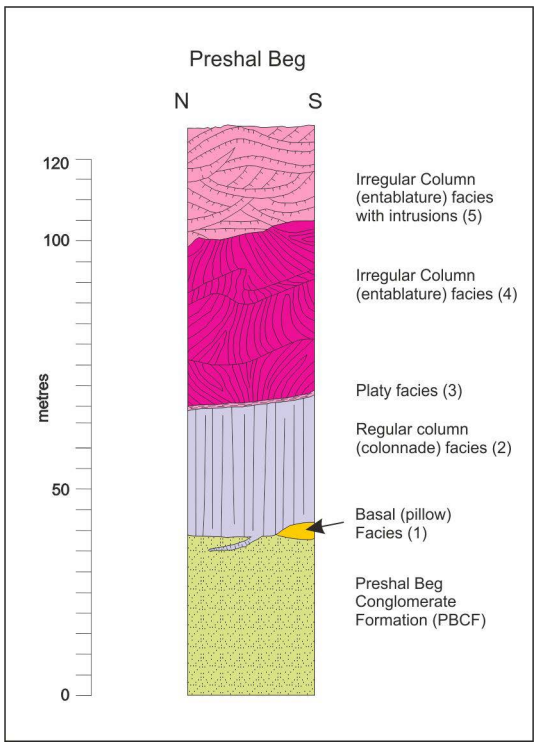

Figure SW Skye 2.17: Schematic section and subdivisions of the Preshal Beg outcrop of the Talisker Formation columnar-jointed lava.

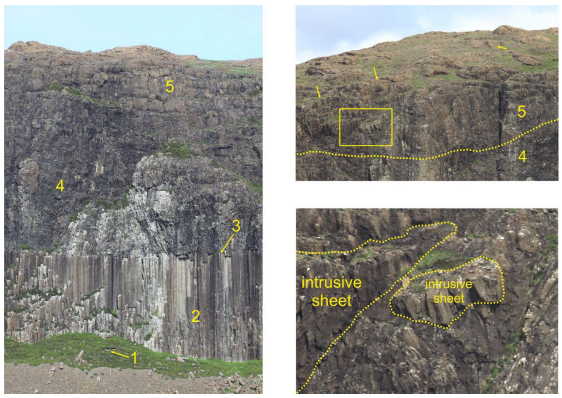

Figure SW Skye 2.18: Annotated views of the south side of Preshal Beg. Vertical extent of lava outcrop is *c.* 120m. See main text for details of numbered features.

Details of the basal pillowed facies can be examined on the SW side of Preshal Beg at [NG 3262 2795].

Figure SW Skye 2.19: Base of the Talisker Formation columnar-jointed lava on the SW side of Preshal Beg. The sequence from base to top is: Preshal Beg Conglomerate Formation (with obvious boulder immediately above grass); pillow facies of lava (at base of pole); columnar-jointed facies (colonnade) of lava at top of pole. Pole *c.* 1m long.

Figure SW Skye 2.20: Detail of the basal pillow facies of the Talisker Formation lava on the SW side of Preshal Beg. This 1-2m thick interval comprises pillows and angular fragments of basalt, formed by eruption into a (shallow) fluvial environment. Ruler 30cm long.

To examine the intrusive facies of the lava (5), either use binoculars from south of Preshal Beg, or return east to the gap between Preshal Beg and the small outlier (337m OD) of the lava to the SE, and ascend (westwards) along a faint track to the summit of Preshal Beg. *En route,* the platy facies (3) at the junction between the colonnade (2)

and entablature (4) facies, can be examined. Typically, it is a few decimetres thick, with a conspicuous fabric. Towards the western end of the summit plateau, the intrusive facies (5) can be seen in a mixture of plan and section views of the myriad of component sheets, with obvious contacts.

Figure SW Skye 2.21: Intrusive (sheeted) facies at top of the Preshal Beg, comprising variably dipping columnar-joined sheets of basalt.

Locality 6 [NG 3295 2788]:

From the summit of Preshal Beg there are excellent views in all directions, especially north to Preshal More and beyond to the Arnaval plateau north of Gleann Oraid, and to Loch Bracadale in the distance.

Figure SW Skye 2.22: View north across Sleadale towards Preshal More from the summit of Preshal Beg.

Return to the base of Preshal Beg using the reverse of the ascent route and head to the NW side of Preshal Beg, to where a small stream forms a prominent gully.

Locality 7 [NG 3256 2826]:

Here, a rusty-orange weathering trachyte tuff is exposed. Stratigraphically, it lies below the trachyte lava observed on the NE side of Preshal Beg and may represent an initial pyroclastic phase of eruption that then proceeded to be predominantly effusive. This rock is, despite its rusty-orange superficial coating, fresh, with crystals of alkali feldspar and biotite recognisable in hand specimen.

Figure SW Skye 2.23: Poorly-exposed trachyte tuff in the unnamed burn NW of the Preshal Beg outcrop of the Talisker Formation lava. Although of distinctly weathered appearance in hand-specimen, this material is remarkably fresh.

From here, the journey back to the starting point will be enhanced by a brief visit to the broch, Dùn Sleadale, at [NG 3238 2920], beside some old shielings (rough dwellings constructed whilst pasturing animals). Brochs are Iron Age drystone hollow-walled structures, the purpose of which is still somewhat controversial.

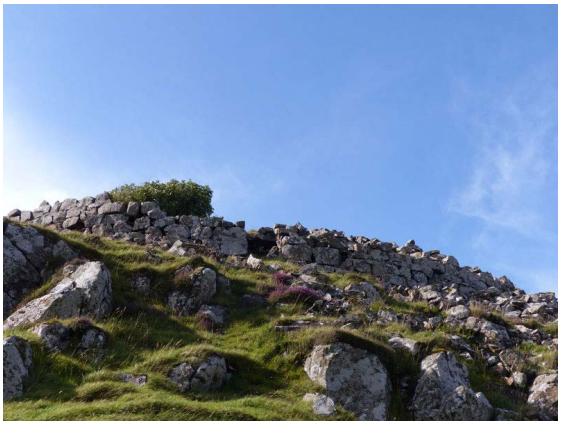

Figure SW Skye 2.24: The Iron Age broch, Dùn Sleadale, on the west side of Sleadale.

Continue north, cross the Sleadale Burn, and follow the old fence line around the west side of Preshal More to Buaile an Fharaidh, and the road in Gleann Oraid.

End of excursion.