

# Red Hills 1: Loch Ainort



*Beinn Dearg Mhór, or 'big red mountain', is located west of Loch Ainort and typifies the granite-dominated Red Hills of central Skye. The distinctive coloration of these granites is the result of the propensity of their feldspars to alter when exposed to groundwater and the atmosphere. Significant parts of these distinctive hills are covered by scree, making access a challenge.*

**Aspects covered:** the Beinn Dearg Mhòr Granite; the Loch Ainort Granite; ferrodiorite unit of the Marscoite Suite; the Marsco Granite; the Ruadh Stac and Meall Dearg granites of the Srath na Crèitheach Intrusive Centre; the Outer Bytownite Gabbros of the Cuillin Intrusive Centre; explosion breccias; the Glas-Bheinn Mhòr Granite of the Eastern Red Hills Intrusive Centre.

**Route:** [Gleann Torra-mhichaig](#) - [Allt Coire nam Bruadaran](#) - [Eas a' Bhradain](#) - [Coire nam Bruadaran](#) - [Am Fraoch-choire](#) - [Druim Eadar Dà Choire](#) - [Coire na Seilg](#) - [Belig](#) - [Coire Choinnich](#) (- return [Gleann Torra-mhichaig](#)).

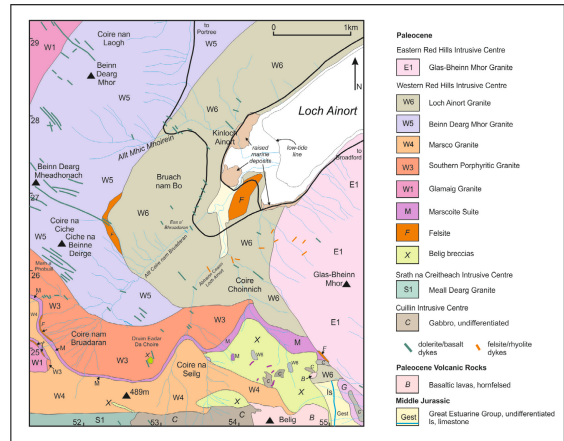
**Distance:** 10 kilometres.

**Time:** 8 hours.

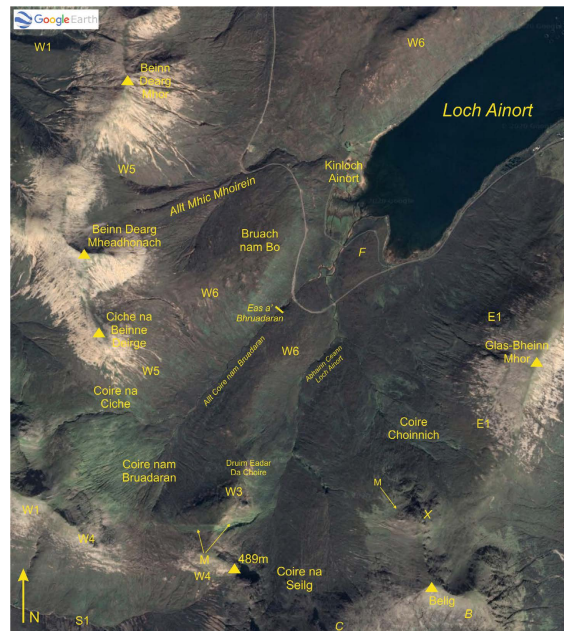
**General comments:** In good weather conditions, the colour contrast between many of the rock-types to be examined on this excursion enables them to be readily distinguished from afar. The [489m summit](#) south of [Druim Eadar Dà Choire](#) provides a superb panoramic viewpoint, as does [Belig](#).

A circular route that covers many of the units of the Paleocene Western Red Hills Intrusive Centre, including various granites, the Marscoite Suite/Ring-dyke, and granite-related explosion breccias.

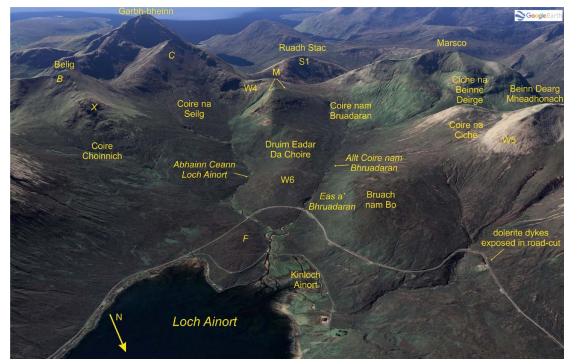
Care should be taken at any of the roadside localities.



**Figure Red Hills 1.1:** Summary map of the Loch Ainort area.



**Figure Red Hills 1.2:** Annotated Google Earth® image of the Loch Ainort area.



**Figure Red Hills 1.3:** Annotated oblique Google Earth® image of the Loch Ainort area, viewed towards the SW.

The southern end of [Gleann Torra-mhichaig](#) is on the Broadford-Portree (A87) road, 16km (10 miles) from [Broadford](#) and 24km (15 miles) from [Portree](#). On the east side of the road, below [Beinn Dearg Mhòr](#), is a large [parking area](#) overlooking [Loch Ainort](#). The road immediately to the south is through a [prominent road cut](#) within the Beinn Dearg Mhòr Granite.

**Locality 1 [\[NG 5303 2791\]](#):**

Within the cutting c. 100m south of the [parking area](#), the Beinn Dearg Mhòr Granite of the Western Red Hills Intrusive Centre is cut by Paleocene alkali olivine dolerite dykes of the so-called Beinn Dearg Type: relatively alkali-rich by comparison with the dominant tholeiitic basaltic dykes of the Skye Regional Dyke Swarm. Obvious features of this granite include its general rusty appearance and mottled red coloration, both caused by the breakdown of feldspars and ferromagnesian minerals. When fresh, this rock is greenish blue, with glassy phenocrysts of anorthoclase in a glomero-porphyrritic (clusters of phenocrysts) arrangement. Clinopyroxene and hornblende are the dominant ferromagnesian minerals. The groundmass consists of a granophyric intergrowth of quartz and alkali feldspar. A network of fine, sealed fractures, containing various hydrothermal minerals, occurs throughout.



**Figure Red Hills 1.4:** Typical Beinn Dearg Mhòr Granite. Coin c. 24mm across.

The Beinn Dearg Type dykes are up to 3m wide and commonly show brecciated margins. They are generally feldspar-phyric dolerites with uncommon amygdales of various zeolites.



**Figure Red Hills 1.5:** Dark Beinn Dearg type alkali olivine dolerite dykes intruded into orange-weathering Beinn Dearg Mhòr Granite in the west side of the roadcut at the southern end of Gleann Torra-mhichaig. Pole at granite-dyke (left-hand-margin) contact, c. 1m long.

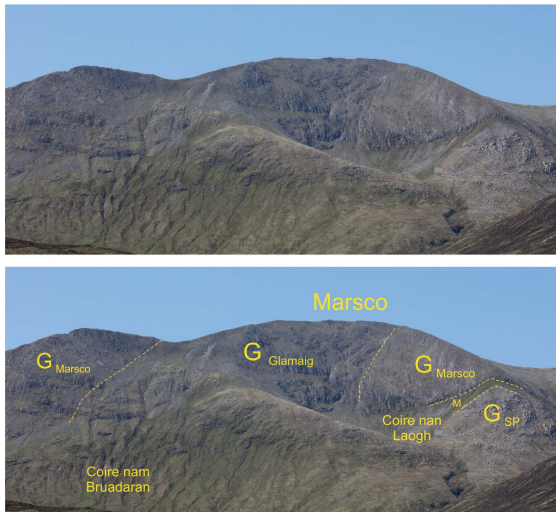
Return to the parking place and proceed south towards [Broadford](#) for 2km (1.2 miles) to the head of [Loch Ainort](#). [Parking](#) is available on the east side of the road c. 100m north of the bridge over the [Allt Coire nam Bruadaran](#), below [Eas a' Bhradain](#). Proceed c.150m upstream from the waterfall (the waterfall is itself c. 150m upstream from the bridge over the river).



**Figure Red Hills 1.6:** Exposure of Loch Ainort Granite in the Eas a' Bhradain of the Allt Coire nam Bruadaran, head of Loch Ainort. View is towards the SW.

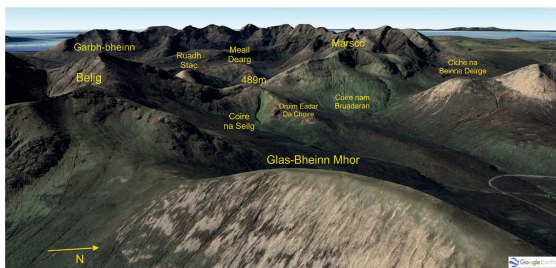
**Locality 2 [\[NG 5318 2641\]](#):**

The eastern portion of the Western Red Hills Intrusive Centre is dominated by granites, members of the mixed-magma Marscoite Suite, and various breccias. Many of these rock-types can be distinguished from this locality. From the head of [Coire nam Bruadaran](#), the [NE face of Marsco](#) is composed of the Southern Porphyritic Granite on the lower slopes (from [Coire nam Bruadaran](#) NW over [Màm a' Phobuill](#)), the Marsco Granite in [Coire nan Laogh](#), and the Glamaig Granite on the [upper ridge of Marsco](#).

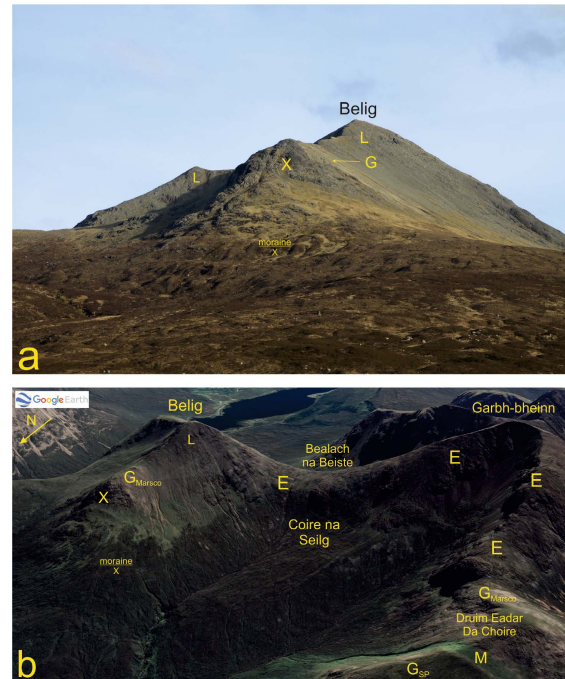


**Figure Red Hills 1.7:** Marsco viewed towards the west from Drumm Eadar Dà Choire, with Coire nan Laogh located below the summit crags. G<sub>Glamaig</sub>, Glamaig Granite; G<sub>Marsco</sub>, Marsco Granite; G<sub>SP</sub>, Southern Porphyritic Granite; M, Marscoite Suite.

Both the Southern Porphyritic Granite and the Marsco Granite can be traced across [Drumm Eadar Dà Choire](#). The summit of [Belig](#) is composed of highly altered, Paleocene basaltic lavas, flanked to the SW by the Outer Bytownite Gabbros of the Paleocene Cuillin Intrusive Centre on [Garbh-bheinn](#), and to the north (on the [northern slopes of Belig](#) and in the upper part of [Coire Choinnich](#)) by various breccias.



**Figure Red Hills 1.8:** Annotated oblique Google Earth® image of the Loch Ainort area, viewed towards the SW from above Glas-Bheinn Mhòr.



**Figure Red Hills 1.9:** (a) Belig from the head of Loch Ainort; and, (b) annotated oblique Google Earth® image of Belig and Coire na Seilg, viewed towards the SE. L, hornfelsed basaltic lavas; G<sub>Marsco</sub>, Marsco Granite; G<sub>SP</sub>, Southern Porphyritic Granite; M, Marscoite Suite/Ring-dyke; X, polyolithic breccia; E, various gabbros of the Cuillin Intrusive Centre.

The Scar on the northern arête (ridge) of [Belig](#) consists of a large block of bytownite gabbro surrounded by or within the breccias. On this ridge, between the lavas and the breccias, the Marsco Granite crops out. To the east, the Glas-Bheinn Mhòr Granite of the Paleocene Eastern Red Hills Intrusive Centre crops out on the red hill of that name.

In the immediate area, as well as on the NE-SW -trending ridge of [Leathad Chrithinn](#), NW of [Loch Ainort](#), the Loch Ainort Granite of the Western Red Hills Intrusive Centre crops out. This granite, when fresh, is greenish blue and contains glassy phenocrysts of anorthoclase in a glomeroporphyritic arrangement. The groundmass consists of quartz and alkali feldspar in a granophyric intergrowth, together with pyroxene, amphibole and Fe-Ti oxides.

Proceed SW along the west side of the [Allt Coire nam Bruadaran](#) to its [confluence with the Allt Màm a' Phobuill](#). Continue up the [Allt Màm a' Phobuill](#) for c. 400m to the confluence of a [southern tributary within a prominent area of boulder-strewn ground](#).

**Locality 3 [NG 5199 2552]:**

Approximately 100m NW of this confluence, the main river forms a small gorge with c. 20m of continuous exposure of a marginal, chill facies of the Southern Porphyritic Granite in the stream bed. This rock consists of obvious phenocrysts of alkali feldspar (3–5mm) in a blue-green, felsitic groundmass. A few metres upstream

from three rowan (mountain ash) trees (on the south bank) normal facies of the Southern Porphyritic Granite may be examined in the stream bed. From here, proceed SSE to the top (south) of the [waterfall](#) of the [Allt Coire nam Bruadaran](#).

**Locality 4 [NG 5202 2478]:**

Here, the pale Southern Porphyritic Granite crops out. The phenocrysts that typify this granite are of quartz and alkali feldspar, set in a granophyric intergrowth of the same two minerals. Continue south from the waterfall for c. 150m to where the main river is cut by a NW-SE - trending [tract of bright green grass](#), which marks the ring-dyke outcrop of the Marscoite Suite of rocks. This approximately 80m-wide ring-dyke separates the Southern Porphyritic Granite to the north from the Marsco Granite to the south and consists of the mixed-magma rock-type marscoite, the Southern Porphyritic Felsite, and a basic rock, ferrodiorite. It is the ferrodiorite, rich in calcium and phosphorus, which gives rise to the bright green grass. In the west bank of the river the ferrodiorite is identified by its distinctive onion-skin weathering associated with brown soils, although more fresh material crops out in the east bank. Enclosed within the weathered ferrodiorite is a large (at least 1m x 0.5m) xenolith of Lewisian Gneiss. This rock is a two-pyroxene basic granulite with a distinctive, coarse-grained foliation. In part, the xenolith has been recrystallised to pyroxene-amphibole hornfels by Paleocene thermal metamorphic events. The ring-dyke can be traced to the east, across [Druim Eadar Dà Choire](#).



**Figure Red Hills 1.10:** The outcrop of the Marscoite Suite (M) ring-dyke on Druim Eadar Dà Choire, flanked to the north (right) by the Southern Porphyritic Granite ( $G_{sp}$ ) and to the south (left) by the Marsco Granite ( $G_{Marsco}$ ). View is towards the west from the northern ridge of Belig.

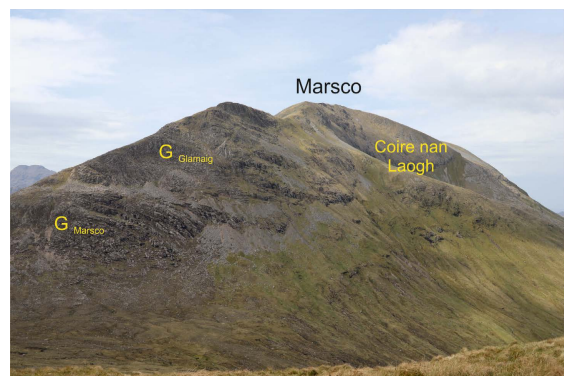


**Figure Red Hills 1.11:** Typical onion-skin weathered ferrodiorite and associated verdant grass.

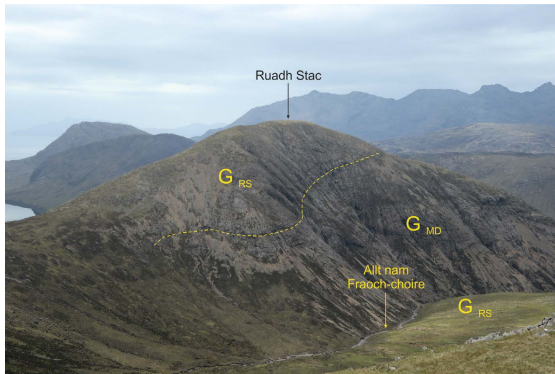
Continue south along the [Allt Coire nam Bruadaran](#), over Marsco Granite, to the head of the corrie, where there are the remains of an [old deer fence](#). Follow the line of the fence, eastwards, to summit of the [489m conical hill](#).

**Locality 5 [NG 5251 2439]:**

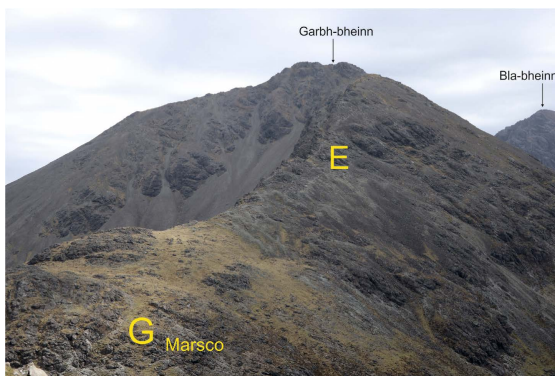
From the summit of the [489m conical hill](#) there is an excellent view of the main Cuillin Ridge to the SW, with [Druim nam Ramh](#) below, and the red hill [Meall Dearg](#) in the foreground. The dome-shaped summit of [Ruadh Stac](#) lies directly to the south, with the irregular ridge of [Blà-bheinn](#) forming the eastern margin of the Cuillin Intrusive Centre, to the SSE. To the SE, the lower granitic slopes of [Garbh-bheinn](#) are capped by rocks of the Outer Bytownite Gabbros. The conical hill to the north of [Garbh-bheinn](#) is composed of Marsco Granite, as is the [south face of Marsco](#) to the west. Looking NE, down [Coire nam Bruadaran](#), the flat-capped hill of [Dùn Caan](#) on Raasay (an outlier of the north Skye lava field) is seen in the distance. The red hills on the west side of the corrie are composed of the Beinn Dearg Mhòr Granite.



**Figure Red Hills 1.12:** Marsco from the summit of the 489m conical hill.  $G_{Glamaig}$ , Glamaig Granite;  $G_{Marsco}$ , Marsco Granite. View is towards the west.



**Figure Red Hills 1.13:** Ruadh Stac from the summit of the 489m conical hill.  $G_{RS}$ , Ruadh Stac Granite;  $G_{MD}$ , Meall Dearg Granite. View is towards the SW.



**Figure Red Hills 1.14:** Garbh-bheinn from the summit of the 489m conical hill.  $G_{Marsco}$ , Marsco Granite; E, gabbro of the Cuillin Intrusive Centre. View is towards the SE.

Walk SE, around the southern side of the [489m conical hill](#) composed of Marsco Granite, towards a saddle on the lower part of the N-S -trending ridge of [Garbh-bheinn](#) at the head of the [Allt nam Fraoch-choire](#). En route note, to the SW, the clear boundary relationship of the Meall Dearg Granite of the Srath na Crèitheach Intrusive Centre with the 'overlying', but older, Outer Bytownite Gabbros of the Cuillin Intrusive Centre that form the main [Garbh-bheinn](#) ridge.

#### Locality 6 [\[NG 5270 2418\]](#):

Near the saddle, four rock-types may be examined. The junction between the Meall Dearg Granite and the Outer Bytownite Gabbros shows severe alteration of the latter against the former, indicating the granite to be of a younger age. Both these units are cut by the still-younger Marsco Granite. An elongate (WNW-ESE) mass of breccia crops out c. 100m below (WSW of) the saddle and can be traced up to the saddle. The small dark exposures of these rocks stand proud of the surrounding Marsco Granite and consist of unsorted, sub-angular fragments of fine-grained basic and silicic rock-types in a pale green matrix. In proceeding up to the saddle, note a block of orange-weathering peridotite within the Outer Bytownite Gabbros [c. 20m up on the west side of the \[Garbh-bheinn\]\(#\) ridge](#), close to the old deer fence.

Looking east from the top of the saddle, the [N-S-trending ridge \(arête\) of Belig](#) forms a distinctive topographic feature. The most southerly part, including the [summit](#), is composed of hydrothermally-altered plateau lavas.

Approximately two-thirds of the distance along the ridge, north from the [summit](#), the lavas give way to pale-weathered Marsco Granite. This in turn gives way, at the [northern end of the ridge](#), to breccia containing a large slab of bytownite gabbro. Beyond [Belig](#), to the NE, is the "whale-backed" ridge of [Glas-Bheinn Mhòr](#), composed of the granite of that name, the oldest of the major intrusions of the Eastern Red Hills Intrusive Centre.

Proceed into the upper part of [Coire na Seilg](#), where highly altered rocks of the Outer Bytownite Gabbros crop out.

#### Locality 7 [\[NG 5308 2418\]](#):

Immediately to the [north of the prominent waterfall in the Allt Coire na Seilg](#), the Outer Bytownite Gabbros can be examined. They are coarse-grained, locally layered, basic rocks cut by several generations of anastomosing veins of epidote and chlorite. Locally, the rock is stained white due to feldspar alteration. Follow the base of the crags on the south side of [Coire na Seilg](#) into the headwaters of the [Eas a' Chait](#), staying close to the line of an old deer fence. West of the summit of [Belig](#) the Outer Bytownite Gabbros give way, abruptly, to Paleocene plateau lavas. Upon reaching the western slopes of [Belig](#), climb gradually upwards to the NE, towards the crags at the northern end of the ridge. The route taken may cross over the eastern end of a generally poorly-exposed mass of polygenetic breccia, consisting of sub-angular to rounded blocks of obvious quartz porphyry, granite and bytownite gabbro, typically less than 5cm across, set in a matrix of comminuted grains of the blocks. Clearly exposed on the west side of [Belig](#) is the boundary between the hydrothermally-altered plateau lavas and the Marsco Granite. This boundary dips at a steep angle to the south. The lavas have been crushed, with chlorite and epidote as common secondary minerals within numerous anastomosing veins. Continue north along the western slope of [Belig](#) to the boundary between the Marsco Granite and grey breccias.

#### Locality 8 [\[NG 5419 2480\]](#):

These unstratified, poorly-sorted, matrix-supported breccias consist of sub-angular to rounded blocks up to 1m across, although typically most of the fragments are less than 20cm across. Block-sizes vary markedly over short distances. The dominant block-types are of granite, gabbro, bytownite gabbro, basalt, dolerite, and (Jurassic?) sedimentary material. The matrix is pale green and composed of grains, up to 0.5mm, of the block material.

The make-up, distribution, and close association of the breccias with the granitic intrusions, suggests their formation by hydraulic fracturing and comminution of country-rocks by late-stage volatiles released by the crystallising granitic magmas during their shallow

emplacement. Rapid pressure release may have enabled surface venting, although no direct evidence of this is preserved. Initially, the volatiles would have been capable of hydraulic fracturing the country-rocks. Thereafter, the rapid increase in volume of the gas if venting occurred, would result in a high energy fluid capable of fragmentation and comminution of the disaggregated country-rocks. Subsequent ingress of hydrothermal fluids would result in the precipitation of low-temperature minerals in cavities and within fractures.



**Figure Red Hills 1.15:** Typical explosion breccia on the ridge north of Belig. Pole c. 1m long.

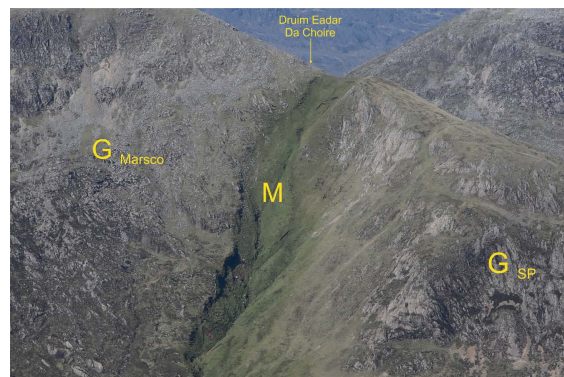


**Figure Red Hills 1.16:** Typical explosion breccia on the ridge north of Belig. Pole c. 1m long.

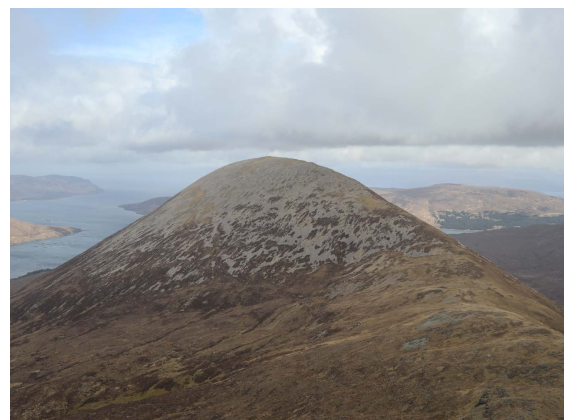


**Figure Red Hills 1.17:** Detail of typical explosion breccia on the ridge north of Belig. Coin c. 24mm across.

To the west is [Druim Eadar Dà Choire](#), where the prominent, grass-filled gully marks the line of the ring-dyke of the Marscoite Suite. The associated brown soils represent ferrodiorite degradation. At the foot of the gully the ring-dyke trends NE across the lower (northern) part of [Coire na Seilg](#).

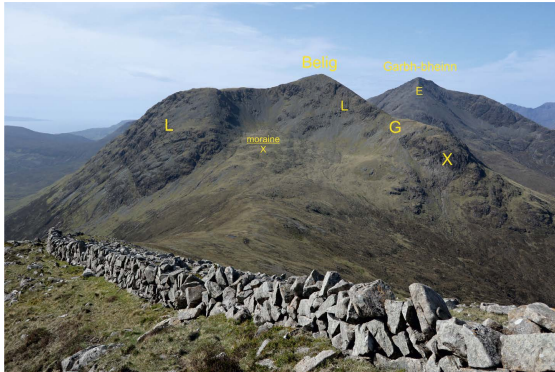


**Figure Red Hills 1.18:** The obvious outcrop of the Marscoite Suite ring-dyke (M) on Druim Eadar Dà Choire, flanked to the north (right) by the Southern Porphyritic Granite ( $G_{SP}$ ) and to the south (left) by the Marsco Granite ( $G_{Marsco}$ ). View is towards the west from the northern ridge of Belig.



**Figure Red Hills 1.19:** Glas-Bheinn Mhòr, viewed towards the NE from the north ridge of Belig, composed of the

Glas-Bheinn Mhòr Granite of the Eastern Red Hills Intrusive Centre.



**Figure Red Hills 1.20:** The northern ridge (arête) of Belig. The summit of Belig is composed of hornfelsed basaltic lavas (L); downhill along the ridge is the outcrop of the poorly exposed Marsco Granite (G). The crags at the lowest point on the ridge are dominated by polyolithic breccia (X) formed by sub-surface degassing and auto-brecciation of silicic magma, which incorporated blocks of country-rock lithologies. In the distance is Garbh-bheinn, composed of various gabbros (E) of the Cuillin Intrusive Centre. The corrie below (north of) Belig contains abundant mounded glacial moraine.

Descend into the [Coire Choinnich](#) and thence to the main road.

Roadside exposures of the Glas-Bheinn Mhòr Granite may be examined along the SE side of [Loch Ainort](#). This intrusion is the oldest of the large plutons of the Eastern Red Hills Intrusive Centre and contains phenocrysts of sodic plagioclase (1–5mm). The dominant dark minerals are biotite and a Ca-rich amphibole. Also present are small druses (cavities) containing calcite, fluorite, zeolites and an Fe-rich epidote. Small clots of mafic minerals are dispersed throughout this intrusion.

Return to the parking area.

End of excursion.