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## 2. The Canisp Porphyry

(Porphyritic quartz-microsyenite)

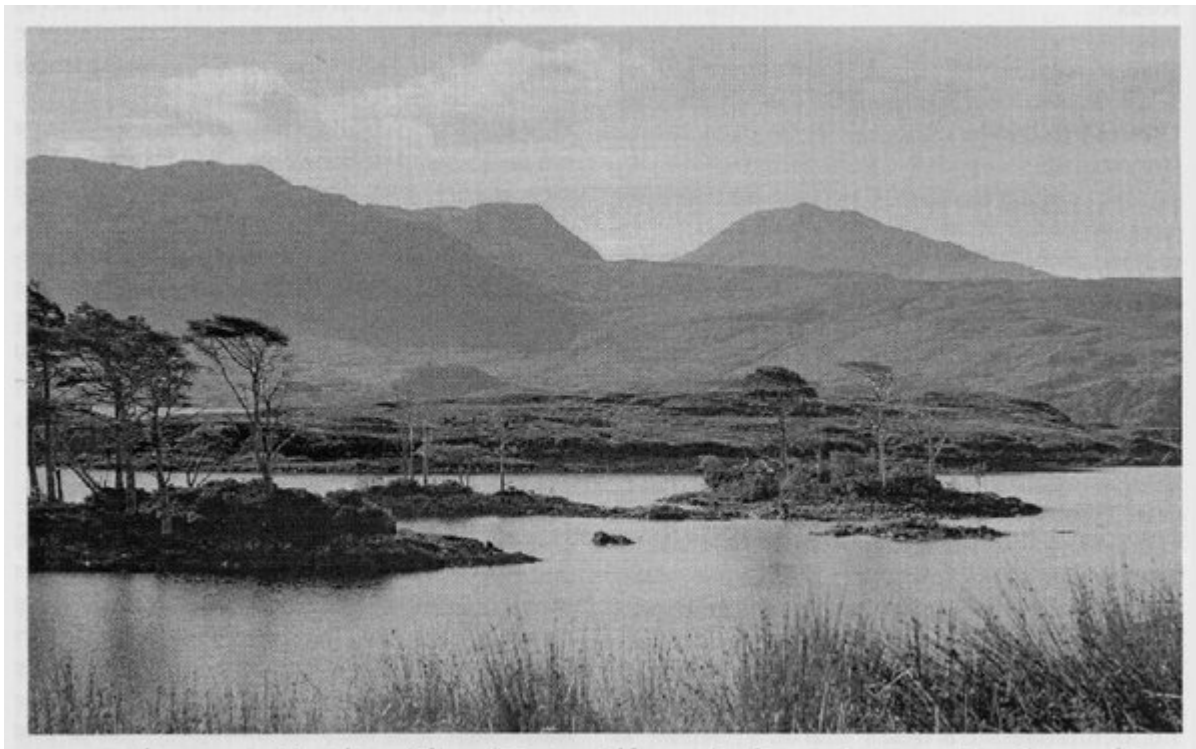
### Introduction

The 'Canisp Porphyry' is one of the most striking igneous rocks in Assynt both because of its appearance in hand specimen and because of the way its sills dominate the skyline in the profiles of the well-known peaks of Canisp, Suilven and Beinn Garbh (Figure 7.14). The rock has the composition of a quartz-syenite although it is very sodic and the norm is unusually albite-rich. Its composition is similar to the upper quartz-syenites of Cnoc-na-Sroine in the Loch Borralan intrusion. In hand specimen the typical Canisp Porphyry is reddish-brown in colour with a fine-grained aphanitic groundmass containing well-shaped alkali feldspar phenocrysts up to 20 mm in length. These were analysed and figured by Heddle (1881) who described the rock as 'one of the most striking porphyrys of Scotland'. Paler, creamy phenocrysts are albitic plagioclase. The fine-grained groundmass consists of turbid K-feldspar, plagioclase and quartz.

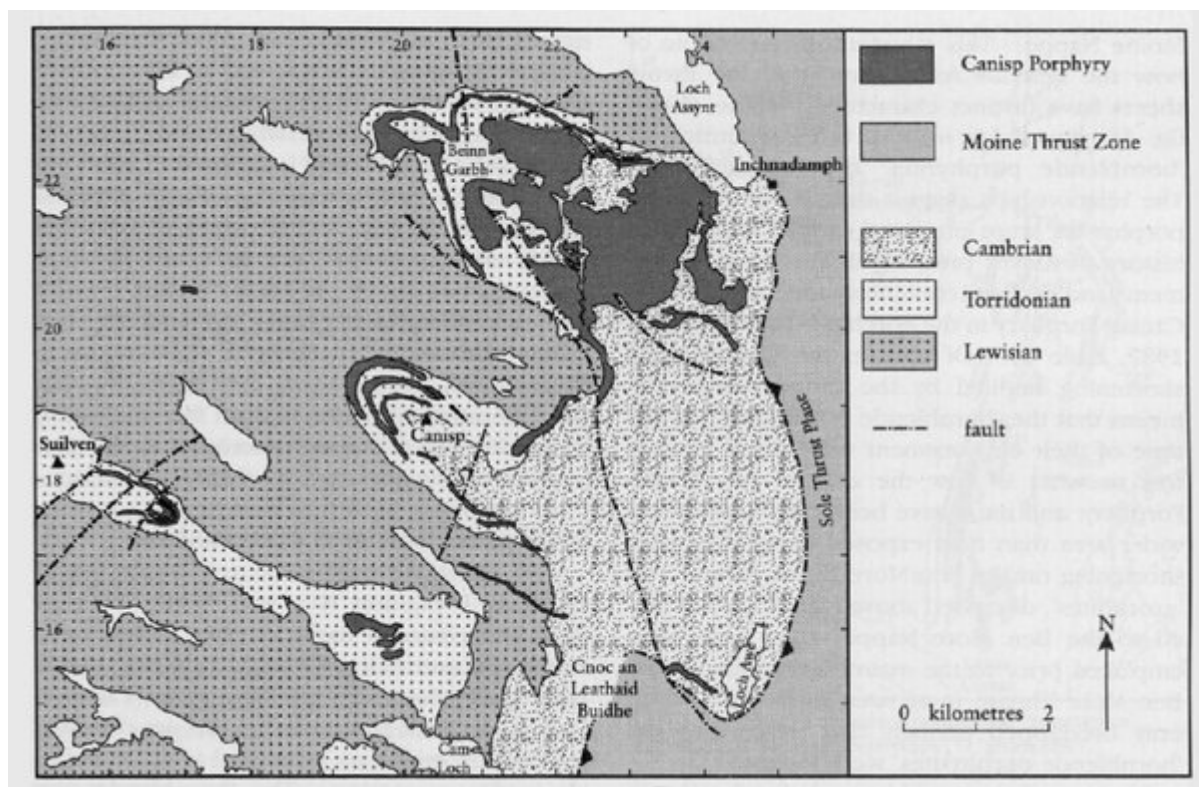
The Canisp Porphyry crops out over an extensive area (Figure 7.15), one sill forming a plateau on the summit of Beinn Garbh (Figure 7.14) and then following the dip-slope of the Cambrian quartzites down its eastern flank towards Inchnadamph (Beinn Garbh GCR site). On Suilven and Canisp it forms sills, five in number on Canisp, in the Torridonian sandstones. Sabine (1953) provided a section suggesting correlations between the sills on the three mountains. It also occurs as dykes cutting Lewisian gneisses to the west, of which the most distant exposure is 12 km away from Beinn Garbh, near Lochinver, at the Laird's Pool GCR site (Figure 7.13). As Sabine (1953) noted, in view of its widespread distribution to the west of the Sole Thrust, the restriction of the Canisp Porphyry to the Foreland only is rather remarkable. In two places, on the lowest eastern slopes of Beinn Garbh, around the stream Cam Alltan [NC 244 205] and near Loch Awe, on the Cnoc an Leathaid Bhuidhe GCR site (Figure 7.13), the Canisp Porphyry approaches close to the Sole Thrust, and although it is never seen to be truncated by the Sole it is certainly never seen in the rocks to the east.

The usual interpretation placed on the absence of Canisp Porphyry from the thrust zone (Parsons, 1979; Halliday *et al.*, 1987) is that it represents the earliest phase of magmatism in Assynt, so that its emplacement was complete before the thrust-sheets arrived. It could also be roughly synchronous with the emplacement of the Loch Ailsh pluton and the 'grorudites', albeit they were emplaced many kilometres to the east. Whatever the age relationships, there is no doubt that the source of the silica-oversaturated Canisp Porphyry magma was below the Foreland Lewisian, like that giving rise to the silica-under-saturated nepheline-syenite dykes that occur at the An Fharaid Mhór and Camas Eilean Ghlais GCR sites (Figure 7.13).

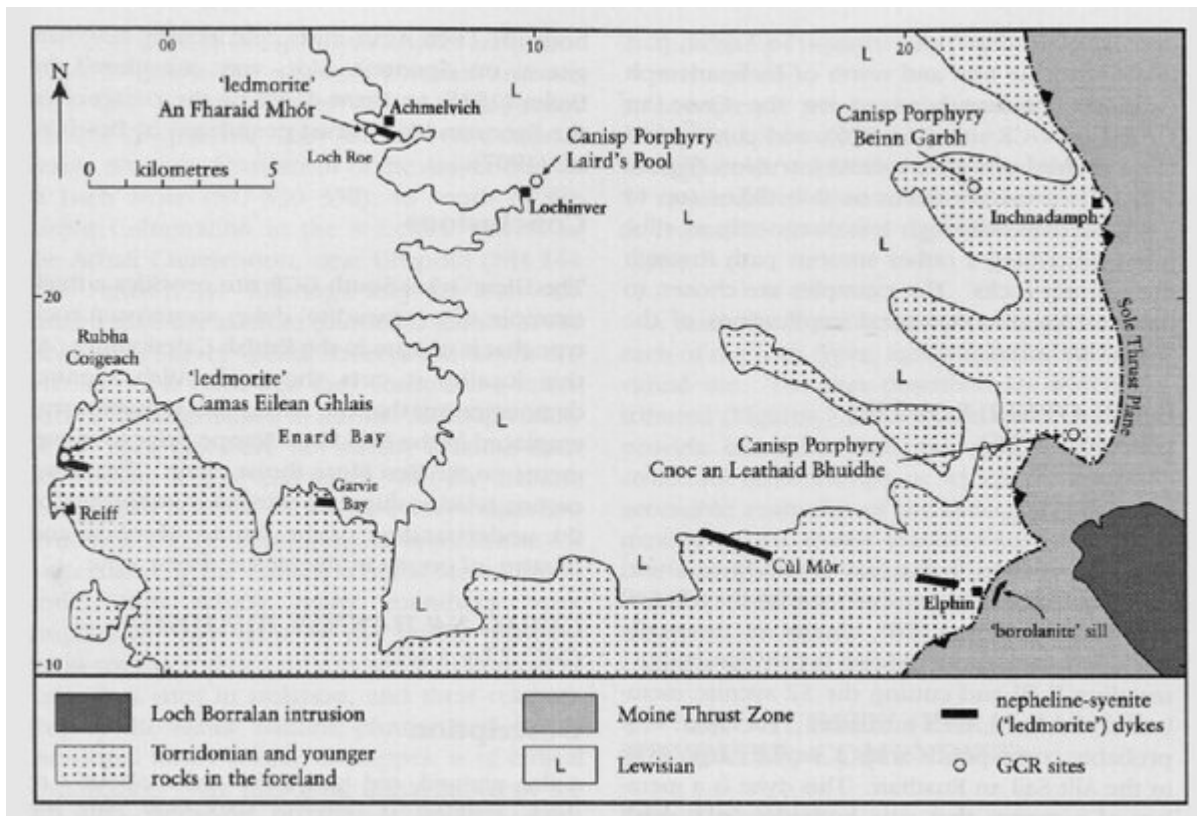
### [References](#)



(Figure 7.14) Beinn Garbh (540 in, left) and Canisp (846 m, right) from Loch Assynt. The plateau of Beinn Garbh and the steps in the skyline of Canisp are formed of sills of Canisp Porphyry. (Photo: I. Parsons.)



(Figure 7.15) Distribution of sills and dykes of Canisp Porphyry in the Foreland. The dyke at the Laird's Pool, Lochinver, is farther to the west (see Figure 7.13). Only faults that affect Canisp Porphyry are shown. (After the Geological Survey special sheet for Assynt, 1923.)



(Figure 7.13) Map of western Assynt showing distribution of nepheline-syenite ('ledmorite') dykes in the Foreland and their relationship to the Loch Borralan nepheline-syenites in the Moine thrust zone. GCR sites exemplifying the 'ledmorite' dykes and the Canisp Porphyry are also shown. The full extent of the Canisp Porphyry around Beinn Garbh is shown on Figure 7.15.