

DUN LAOGHAIRE - RATHDOWN – COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Killiney Hill		
Other names used for site	<i>Cnoc Chill Iníon Léinín</i> , Mount Mapas		
IGH THEME	IGH7 Quaternary; IGH 6 Mineralogy		
TOWNLAND(S)	Scalpwiliam or Mount Mapas, Killiney		
NEAREST TOWN/VILLAGE	Killiney		
SIX INCH MAP NUMBER	23		
ITM CO-ORDINATES	725957E 725576N (obelisk at summit of crag)		
1:50,000 O.S. SHEET NUMBER	50	GSi BEDROCK 1:100,000 SHEET NO.	16

Outline Site Description

Killiney Hill is a coastal hill site, laid out as a public park. It is forested on its sides with a mixture of heathland and outcrop around the summit.

Geological System/Age and Primary Rock Type

Roche moutonnées occur on bedrock of Late Caledonian (405 Ma) Leinster Granite but they are Quaternary in age, having been formed at the base of the ice sheet moving northwest to southeast during the maximum period of the last Ice Age.

Main Geological or Geomorphological Interest

This is potentially the best large scale example of a number of composite roche moutonnée ridges in Dun Laoghaire-Rathdown. Roche moutonnées are formed when a glacier or ice sheet passes over an area that contains a particularly resistant mass of rock (in this case the rock summit of Killiney Hill itself). The passage and force of the glacier ice over underlying bedrock results in asymmetric erosional forms, creating smooth, polished rock surfaces as a result of abrasion on the "stoss" (upstream) side of the rock, and jagged rock forms resulting from plucking on the "lee" (downstream) side. These erosional features are seen on a scale of less than a metre to several hundred metres on Killiney Hill. The hill itself is a very large roche moutonnée, and most of the individual outcrops on the hill are themselves much smaller roche moutonnées.

The Leinster Granite is very well exposed on Killiney Hill and abundant veins of aplite (very fine grained granite) and pegmatite (very coarse grained granite), formed as fissure fillings at a late stage in the intrusion history, can be observed. Some of the pegmatite veins contain, at their centre, crystals of killinite, identified as a variety of spodumene ($\text{Li AlSi}_2\text{O}_6$) in 1818 and named after Killiney. The mineral is in fact largely composed of fine mica that has pseudomorphed the original spodumene, so that the crystals observed have the outward form of spodumene but the composition of mica.

Site Importance – County Geological Site

This is one of the best examples of a composite roche moutonnées in the country. The occurrence of killinite, named after Killiney, adds interest to the site. The hill is already a proposed NHA (pNHA Site Code 001206, Dalkey Coastal Zone and Killiney Hill) for biodiversity reasons.

Management/promotion issues

This is an excellent site in terms of macro-scale Quaternary subglacial geomorphology. The feature forms the area of Killiney Hill Park. A signboard in the park, ideally just west of the obelisk overlooking many of the small-scale features, and detailing the importance and formation of the feature(s), and their various scales, might add to the interest for visitors. The geodiversity of the hill should also be highlighted in any promotion of the proposed NHA. The killinite occurrence locality should not be identified, however, lest the mineral become a target for collectors.



View across the southeastern side of the hill summit, with the bedrock smeared and etched by the base of the ice flowing over the locality during the last glaciation.



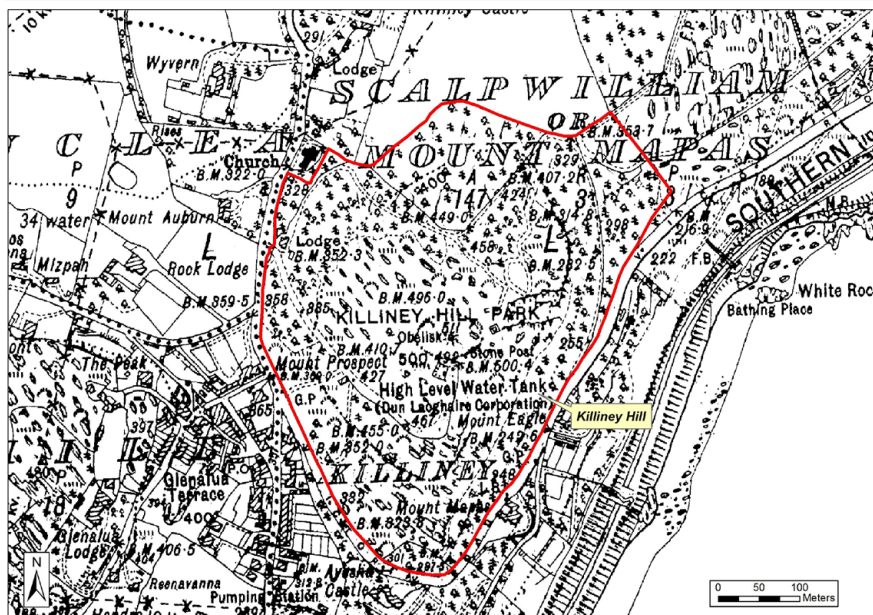
View southeastwards from the area just northwest of the obelisk, showing the dome-shaped roche moutonnée forms.

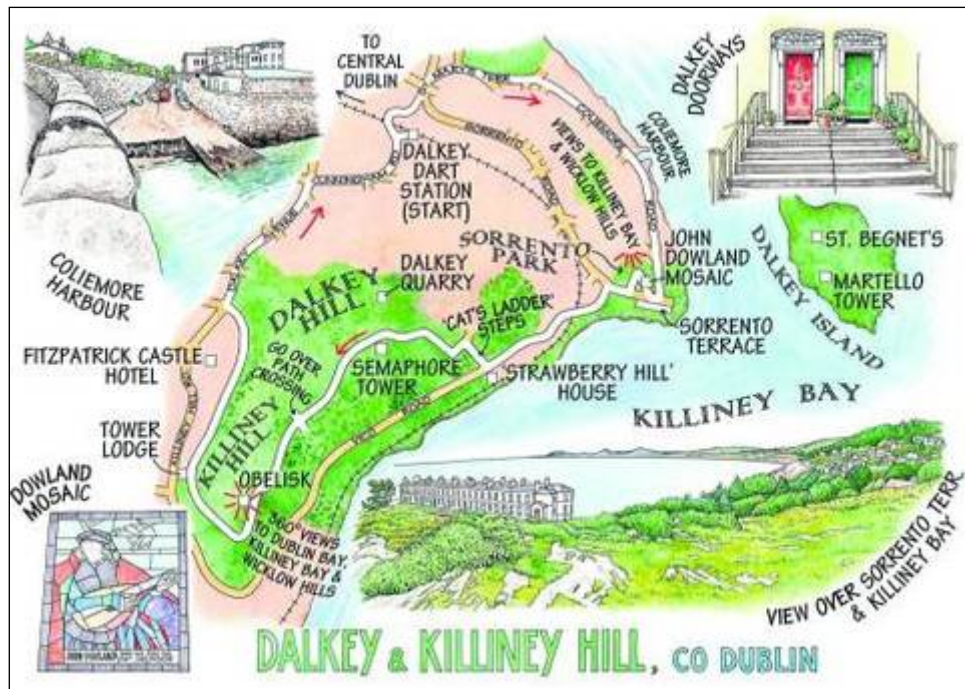


View northeast across some of the roche moutonnées.



Left: Killiney Hill, viewed from Killiney Beach to the south. Right: Killinite (long, thin broken green–white-coloured crystals at centre, below coin) in pegmatite on Killiney Hill.





A promotional leaflet illustrating Killiney and Dalkey Hill, to accompany walks in the area.