Howth DIY field trip

All the following geological locations can be accessed as short detours from the Howth cliff walk (Bog of the Frogs loop), or you can visit Claremont Strand and Balscadden Bay and then enjoy the views from the shorter Howth cliff walks. Further information on the routes, including maps, can be found here:

https://www.theirishroadtrip.com/howth-cliff-walk/

All routes start and finish at Howth DART station, from there head east for 20 minutes to the ascent of the Nose of Howth. A google map showing the geological points of interest can be found here:

https://maps.app.goo.gl/vXjC4bYHM88hLCFeA

Most loop walks go past, or close enough to detour to, the Summit Stores where they sell the biggest '99' ice cream cones. On the other side of the road is the Summit Inn pub for a beer or other refreshments.

Some other things to bear in mind:

- There is no shortage of ice cream and fish and chip shops, as well as numerous restaurants and bars along the sea front in Howth.
- Public toilets are located at the ends of both the east and west piers.
- Make a note of the tides, Ireland has a large tidal range and some of these locations are not visible at high tide. High tide on 21st August is a very high tide and it's at 13.30. Those seriously wanting to look at coastal outcrops should best go to them before 11 or after 4 pm.

Claremont Beach

500m long section of limestone along Claremont Strand (particularly at the head of the beach beside the Claremont apartments). From the DART station exit turn left and left again around the end of the rail line and follow a narrow access route to the beach.

Pale grey, shallowly dipping beds of Lower Carboniferous limestone. This is a particular type of Carboniferous limestone known as Waulsortian, which formed as mounds of lime mud on the sea floor. Typically massive with few beds and characterised by calcite filled cavities. Overlain by Quaternary aged glacial till.

Balscadden Bay

Coastal cliffs within a small bay, accessible through a gate and down the stepped path that strikes down from the hill above Asgard apartments (residential building between the road and the sea).

The northern part of the bay comprises gently dipping lower Carboniferous (Waulsortian) limestone, displaying abundant fossils of solitary coral (Amplexizaphrentis), gastropods (Straparollus), crinoids (Platycrinites or Actinocrinites), brachiopods (Dictyoclostus). Often fragmented and accumulated. The limestone is only visible at low to medium tide.

In the southern part of the bay, making up the cliffs and high ground, are Cambrian quartzites. There is a significant time gap between the 500Ma quartzites and the 300Ma limestones. The contact between the quartzite and the limestones is a wide fault with Carboniferous limestone downthrown to the north. Fault breccia, an altered and fractured polymict melange with a white sericitic matrix is visible in the cliff face at the south side of the beach.

Jameson's Beach

Coastal cliffs with a swimming beach, accessible from a steep path down from the Howth loop

The cliffs are composed of steeply dipping Cambrian quartzite and mudstone formed on the floor of the early Iapetus Ocean at about 510 Ma. Some volcaniclastic layers visible on the east side of the bay. The mudstone and quartzites are turbidite deposits and show slumping, with slump folds plunging to the north, and sedimentary sliding. Look out for way up structures

Bottle Quay

Coastal cliffs and foreshore section located immediately north of the Martello tower on the south side of Sutton and accessible from the Howth cliff walk.

The southern section of the cliff is composed of 10m high cliffs of Overlain by Quaternary glacial till, a mix of sand, gravel and clay deposited by glacial meltwaters. These overlie Cambrian slaty mudstone and quartzite showing soft sediment deformation (slumping) similar to that observed at Jameson's Beach. Here, in addition to tectonic fractures and quartz vein infill, there is evidence of ice shearing of the quartzites by glaciers.

Hill of Howth

Valley below Howth Hill as it passes through the woods/rhododendron garden

A steep sided valley just below the summit of Howth Hill marks a large fault plane in which the Cambrian quartzite are melanges showing small- and large-scale deformation and faulting structures.

Also of interest, a small Neolithic site known as Aideen's grave.

Irelands Eye

Take a boat trip out to see or land on the island. Boats leave from the end of the west pier in Howth harbour:

https://www.irelandseyeferries.com/ - particularly good for wildlife spotting
https://www.islandferries.net/ - good if you want to land on the island

The geology here is the same as Howth head comprising Cambrian greywacke, sandstone and quartzite, but better exposed.

In addition, the island hosts the remains of a 7th century monastery and a Martello tower, build to defend against possible attack by the French in the Napoleonic wars. Today, the island is a bird sanctuary home to colonies of oceanic sea birds (gannets, guillemots, razorbills, terns and some puffins) in summer and to cormorant and gulls all year round. The island also hosts a

seal colony and the surrounding waters are visited by porpoise, dolphin and occasionally whales.

Lambay Island

Not a site to visit, but in the distance behind Island's Eye you can see a second, slightly larger island. This is Lambay, it is an Ordovician volcanic island comprising a variety of rock types including the well-known Lambay porphyry, a grey-green andesite. It forms one of several such arc volcanic complexes which formed during the closure of the Iapetus Ocean, with others on the mainland at Portrane and Balbriggen.