

CORK - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	Toe Head		
Other names used for site	East Toe Head		
IGH THEME	IGH10 Devonian, IGH2 Precambrian to Devonian		
	Palaeontology		
TOWNLAND(S)	Toehead, Gortacrossig, Farranconnor, Lickowen		
NEAREST TOWN/VILLAGE	Skibbereen		
SIX INCH MAP NUMBER	150, 151		
ITM CO-ORDINATES	514250E 526390N (Ballyhack Bay roadside)		
1:50,000 O.S. SHEET NUMBER	89	GSI BEDROCK 1:100,000 SHEET NO.	24
GIS CODE	CK084		

Outline Site Description

Headland with coastal outcrops and cliffs.

Geological System/Age and Primary Rock Type

Bedrock comprises Upper Devonian Toe Head Formation (grey-green sandstone with minor grey and purple mudstone), Old Head Sandstone Formation (sandstone and mudstone) and Lower Carboniferous (Mississippian) Kinsale Formation (Narrow Cove Member (mudstone)). The rocks occupy the axial core of an east-west trending fold that crosses the Toe Head headland. Purple lithologies, possibly of the Castlehaven Formation occupy the southern tip of Toe Head.

Main Geological or Geomorphological Interest

The Toe Head Formation occurs on the southern and northern sides of Toe Head, occupying the limbs of a syncline (U-shaped fold). The core of the fold is occupied by younger Old Head Sandstone Formation and the Kinsale Formation (Narrow Cove Member). The Toe Head Formation represents a change in the depositional environment during Upper Devonian times in southwest Ireland. The Toe Head Formation was deposited in an alluvial coastal plain environment at a time when the sea migrated (marine inundation) northwards onto the southern edge of the Old Red Sandstone continent. The formation occupies a position between terrestrial Old Red Sandstone (red beds) and tidal flat and marine shelf sediments. Plant fossils and mud-cracks are common throughout the Toe Head Formation: features that are indicative of a terrestrial environment. Plant fossils (fern-like species) have been identified at Ballyhack Bay. Plant microfossils (miospores) identified in the formation indicate an Upper Devonian (Upper Frasnian) age. U-shaped burrows (trace fossils) have been identified near Cork Harbour in the Toe Head Formation. A GSI Memoir published in 1864 refers to a fossil locality for the bivalve *Anodonta* at Gokane Point, west of Toe Head Bay. GSI six-inch field sheets identify a plant fossil locality near the roadside grass pull-in area at Ballyhack Bay. The Toe Head Formation occurs elsewhere at Grab-all Bay, Cork Harbour; along the southwest coast (e.g. Seven Heads, Toe Head); on the Mizen and Sheep's Head peninsulas; and along the north shore of Bantry Bay.

Site Importance – County Geological Site

Toe Head is the type locality for the Toe Head Formation and is an important County Geological Site. Its significance is owed to both its stratigraphic position at the transition from terrestrial red-beds to tidal and marine sediments, and to the fossil-bearing lithologies at the site. The formation is key to understanding of environmental and palaeobotanical conditions in the South Munster Basin during Upper Devonian times.

Management/promotion issues

The type-section for the Toe Head Formation is on the east side of Toe Head headland and is not publicly accessible. Access to outcrops at Ballyhack Bay beach is also limited due to cliffs and potential high-energy sea conditions. The site is not suitable for public promotion as a field location, however its geological heritage (fossils, transitional environment) warrants inclusion on information panels in the locality.



North dipping strata on Toe Head. The Stags visible 1.5 km offshore to the south.



Sea-arch at Ballyhack Bay beach.



Purple mudstone horizon between green sandstone layers at Ballyhack Bay beach.



Glacially deposited sediments overlaying Toe Head Formation at Ballyhack Bay. Cliff height ~ 20 m.

