

SITE

Name: Hope's Nose to Walls Hill

Parish: Torquay

Local Authority: Torbay

National Grid Ref: SX 932 654 - 947 635

OS Sheets: 1:50K, 202, 1:10K, SX96 SW, NW

Locality Description: The site forms the coastal strip along the eastern margin of Torquay.

Nature and Status of Site: The site comprises coastal cliffs, foreshore, a disused quarry, mineral veins and a raised beach. The site is designated as a [Site of Special Scientific Interest](#) (SSSI), includes a County Geological Site feature (www.devonrigs.org.uk) and lies within the English Riviera Geopark.

Summary of Geological / Geomorphological Interest: Hope's Nose exhibits excellent exposures of the Devonian Daddyhole Limestone (of Eifelian age) and displays an abundant fossil fauna including well preserved corals. Mineralised veins on the eastern side of Hope's Nose consist of calcite, haematite and dolomite as well as small quantities of native gold and rare palladium and selenium minerals. This is the only known location within Britain for this type of assemblage of minerals. Shore platforms overlain by raised beaches provide evidence for sea level-change. Hope's Nose displays a flat-lying thrust fault on the southern point of the headland with the west facing cliff showing excellent exposure of a large recumbent fold. The Long Quarry area includes the type section of the Devonian Walls Hill Limestone, where the best exposure of the coral-rich unit can be seen in the quarry floor. The dip of the beds allows an easy bed-by-bed examination to be made. Important tectonic features, including folding and faulting within the limestones, are also well exposed.

Safety Considerations: Hard hats should be worn at all times around cliff faces. The path down to Long Quarry is hazardous and boulders may fall from the surrounding cliff face. Access is not advisable for younger educational groups. A sewage outlet lies on the coast near the coastguard lookout tower at Hope's Nose and close examination of the surrounding rocks is, therefore, potentially hazardous.

Educational Age Groups: Secondary, College/6th Form, University.

Parking and Access: This site is easily accessed via the numerous minor roads and footpaths east of Torquay (The South West Coast path runs through the site) however, one of the best ways to view the geology of this coastline is from the sea and cruises are available from Torquay, Paignton and Brixham Harbour. High tides and/or offshore storms will inhibit site visits. The path down to Long Quarry is very steep and badly damaged and is not suitable for groups. Parking can be made at a number of pay and display areas along the coastal section, although no charge is made above Hope's Nose. Torquay has good public transport links via both rail and bus services. For timetable details, visit www.traveline.org.uk.

Permission to collect samples from Hope's Nose is required from Torbay Coast and Countryside Trust and Natural England. Please do not damage or attempt to remove delicate features and fossils from the outcrops. As parts of the site has been severely

damaged by commercial mineral collectors using rock saws, it is now regularly monitored.

For further information about Hopes Nose, Walls Hill and other geological sites within Torbay, visit the [English Riviera Geopark](http://www.englishrivierageopark.org.uk) website. The English Riviera Geopark team is happy to facilitate group visits to this and other sites located within the Geopark, which can be tailored to requirement. For more information contact Geopark Education and Community Officer on 01803 528841 or email e.beale@englishrivierageopark.org.uk.

References

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Detailed Geology: Hope's Nose consists of thin-bedded limestones of Eifelian age with a shelly fauna and tuff beds. Massive limestones with abundant and well preserved coral fauna, including stromatoporoids are present on the extreme northern tip of the headland.

Shelly raised beach deposits, some 6m above sea level can be found on the southern tip of the promontory and are thought to be from the Pleistocene Eemian Interglacial stage. They include hillwash and limestone debris, 1m of blown sand, 4m of fine sand passing down into coarse, current banded sand cement with calcite, and 0.5m of basement deposits, made up of limestone and slate pebbles and boulders in a matrix of sand.

The eastern side of Hope's Nose shows the limestones arched into anticlines and synclines cut off at the top by a thrust plane. The lower folding has its axis striking in a SSE direction, with the upper fold striking in a NNE direction. These later cut the lower folds.

The mineralisation comprises gold-bearing carbonate veins in Middle Devonian limestones, containing rare palladium and selenium minerals. The gold deposits were first recognised by Gordon in 1922. The veins are nearly vertical and trend at 34°. Due to pinching and swelling, their thickness ranges from 0.02m to 0.3m. Three periods of deposition have been recorded by Scrivener et al. (1982): -

1. Coarse, euhedral, purple and yellowish ferroan calcites, enveloping angular clasts of the host limestone.
2. Biscuit-coloured, fine-grained, anhedral calcite and dolomite and less coarser, cream-coloured anhedral calcite with cavities infilled with Fe-hydroxides. The calcite yields native gold and other minerals when dissolved.
3. Various-weathering, buff-coloured calcite or massive, white aragonite and chalcedonic quartz.

The Long Quarry area contains the type section of the Walls Hill Limestone, which forms the youngest unit of the Upper Devonian (Frasnian). They overlie the massive limestone of the Givetian and are in turn overlain by red slaty limestones. The steep dip of the beds allows an easy bed-by-bed examination. The site is unique for well displaying the development growth and form of a stromatoporoid reef.

Tectonic features: Exposed in the cliff face close to the raised beach on Hope's Nose is one of Torbay's best known structural geological features - an overturned F1 fold, verging north-west, in thinly bedded limestones and shales of the Daddyhole Member of the Torquay Limestone Formation, associated with a low-angle thrust. Elsewhere on the foreshore and in the disused quarry at Hope's Nose and well exposed fault plains and related carbonate veining. Locally the limestones and shales show some development of cleavage and some recrystallisation. Some of the latter are mineralised. [Variscan Structures site network]. *Reasons for registration as a Regionally Important Geological / Geomorphological Site:* The fold at Hope's nose is one of Torbay's best known structural features, useful for inclusion in educational visits to Hope's Nose by older groups (due to proximity to a high cliff). Features elsewhere show very well the effects of tectonic activity on the Devonian limestones.

Suggested Questions

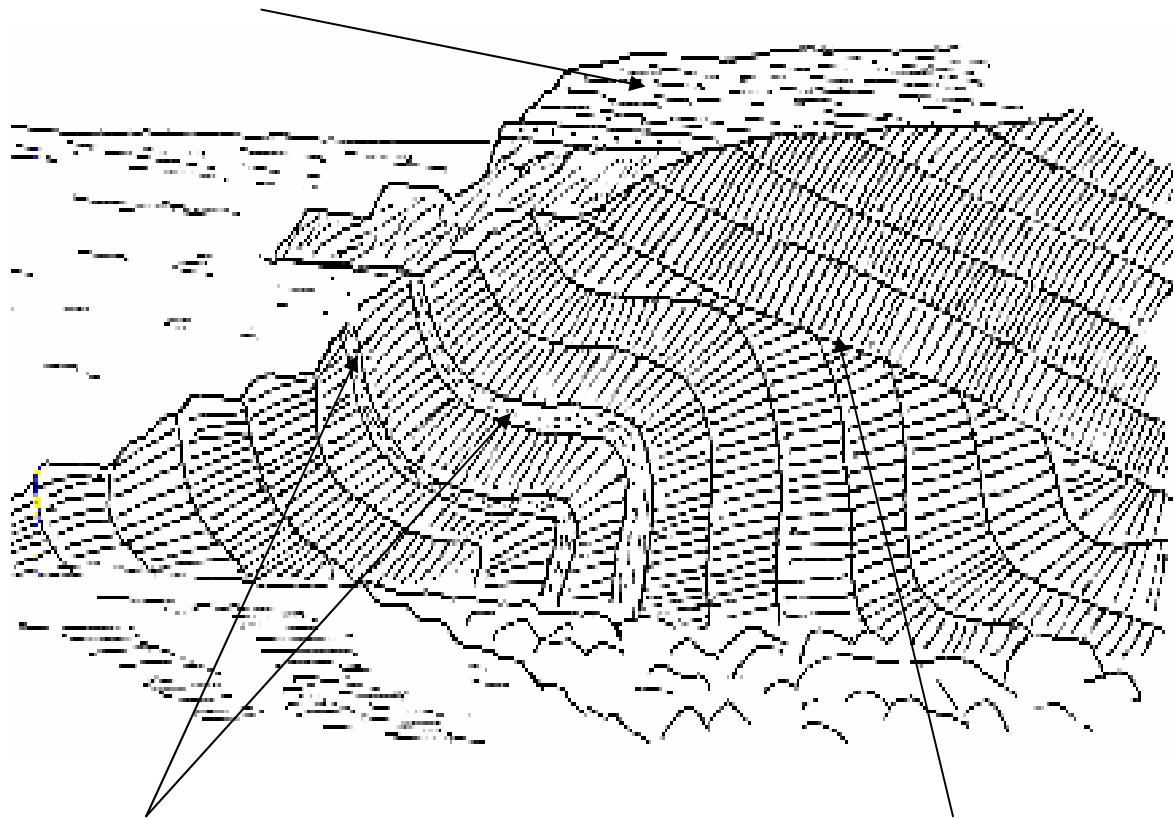
1. What structural features can be seen in the cliffs at Hope's Nose?
2. What can be interpreted by the presence of the shore platform and raised beach?
3. Identify and label three different fossils within the beach deposit. What can be interpreted from the environmental conditions from these fossils?
4. Using a quadrant, survey the Devonian reef deposits at Hope's Nose.
5. Conservation of the mineralised veins at Hope's Nose is a major geoconservation issue – how would you ensure their protection?

Hope's Nose to Walls Hill

Sketch diagram looking towards the raised beach of Hope's Nose

Adapted from Perkins. J, 1973. *Geology Explained in South and East Devon*. David & Charles: Newton Abbot

Raised Beach of Hope's Nose



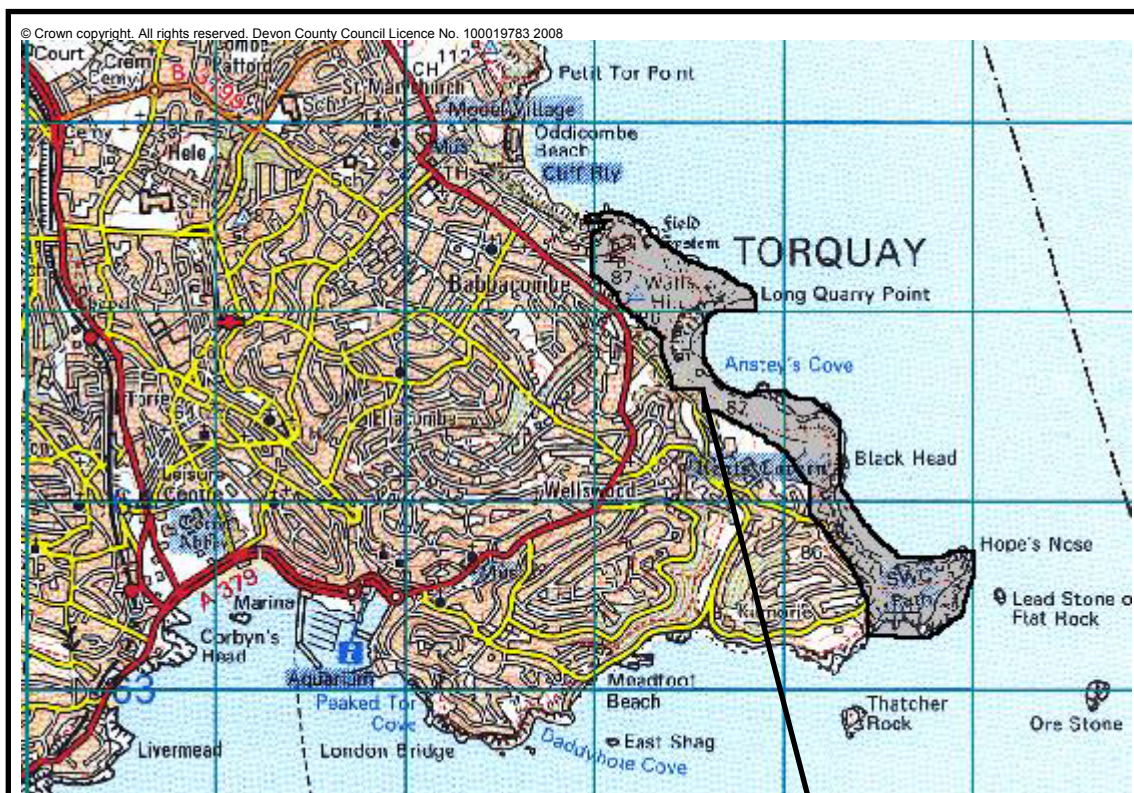
Volcanic Tuff Bands

Thrust Fault

LOCATION PLAN

HOPE'S NOSE TO WALLS HILL, SSSI TORQUAY, TORBAY

National Grid Ref: SX 932 654 - 947 635



Scale 1: 40,000



Approx. SSSI
Boundary

Coastal strip located to the east of the A379 in Torquay.

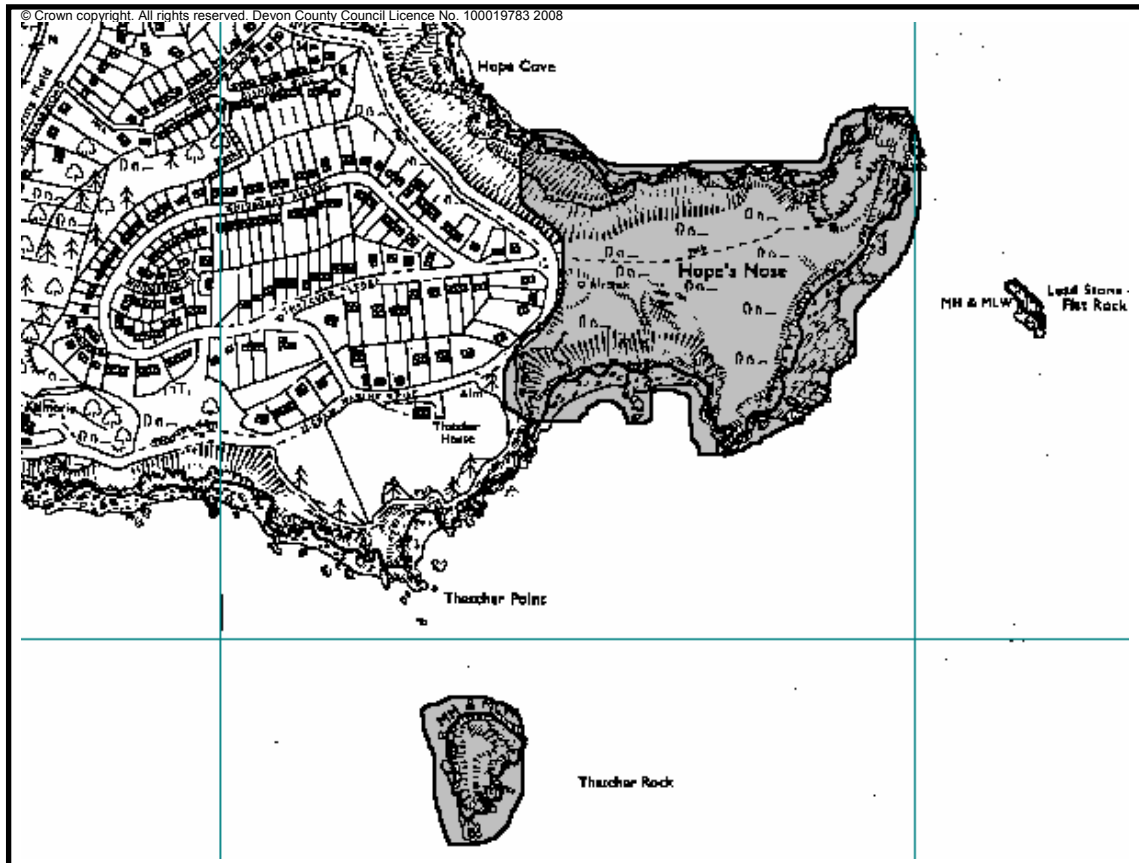
Parking and Access

- One of the best ways to view the geology of this coastline is from the sea and cruises are available from Torquay, Paignton and Brixham Harbour.
- Torquay has good public transport links both via rails and bus services. For timetable details, visit the [traveline](http://traveline.co.uk) website.
- Roadside parking in south at Hope's Nose and at Devil's Point along Anstey's Cove Road near Palace Hotel.
- Access from here can be gained via paths and tracks which extend along the coastline.
- Hammers should not be used in this area and the collection of specimens requires permission from both Torbay Council and Natural England.

SITE PLAN

HOPE'S NOSE TO WALL'S HILL TORQUAY, TORBAY

National Grid Ref: SX 932 654 - 947 635



Key Focal Point

Scale 1: 10,000

Main Points of Interest:

- Hope's Nose exhibits excellent exposures of the Devonian Daddyhole Limestone, with many fossils visible.
- Unusual mineral deposits at Hope's Nose which have yielded rare gold.
- Raised beach deposits at Hope's Nose and Thatcher Rock are particularly important for their assemblages of fossil marine molluscs.
- Folding and faulting of limestones.
- Volcanic tuff bands in limestones.

HOPES NOSE QUARRY



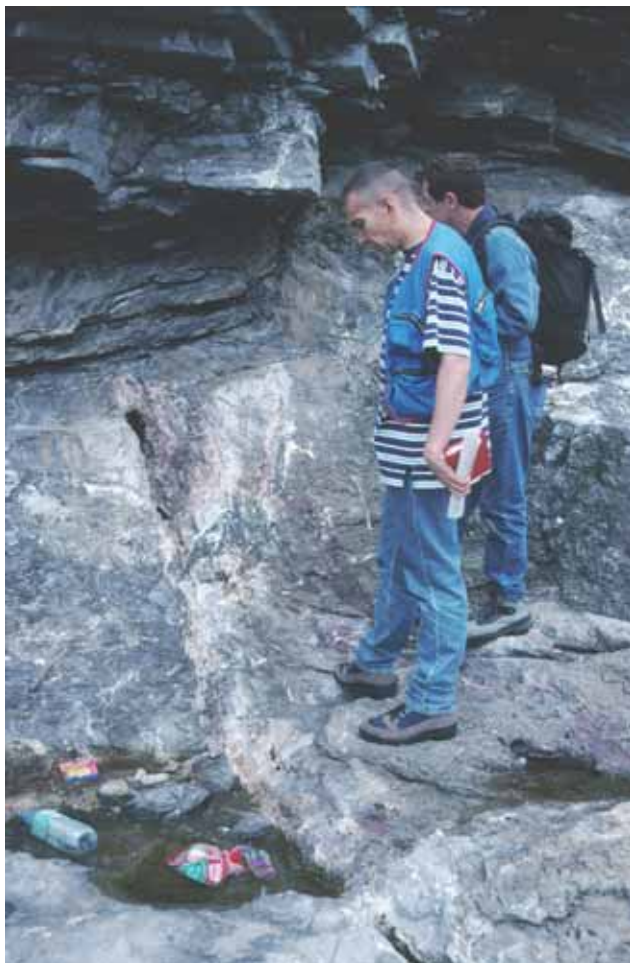
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Thin bedded Eifelian (Middle Devonian) limestones and shales with a shelly brachiopod fauna above an irregular surface (probably a fault parallel to the face) at the top of a thick sequence of massive limestones with a rich reef-phase fauna (corals, stromatoporoids etc)

HOPE'S NOSE



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The remains of gold-bearing mineral veins in the Devonian limestone at Hope's Nose after illegal extraction by mineral collectors using rock saws

© Kevin Page

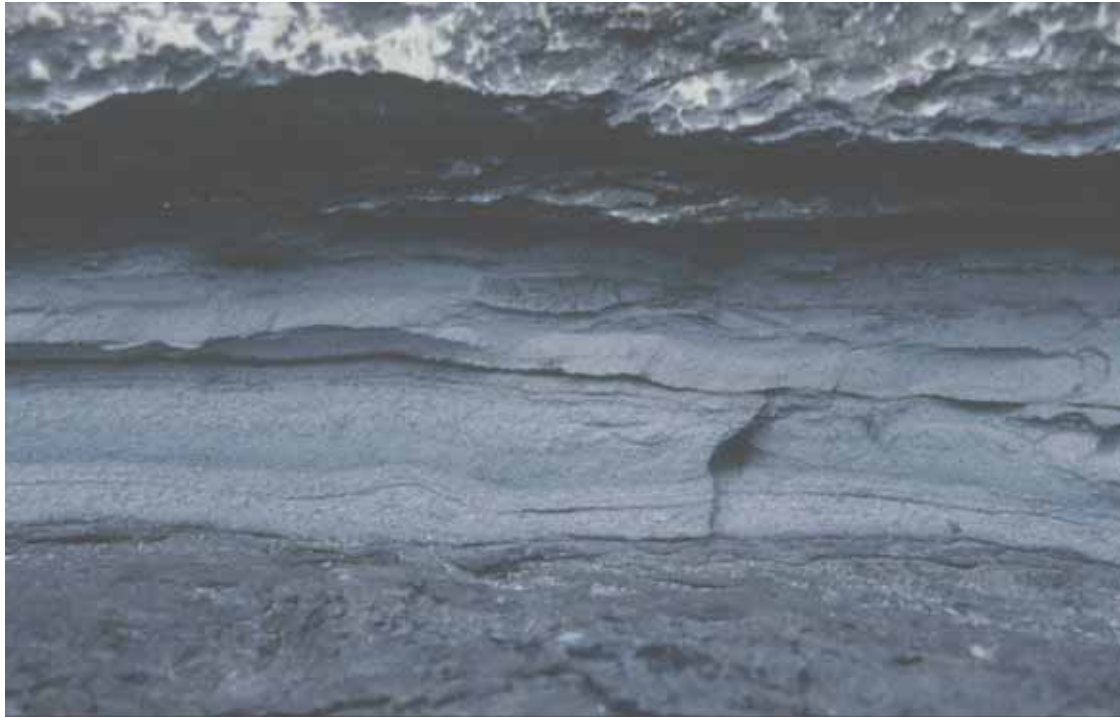


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Examples of typical Middle Devonian reef fossils weathering out on the coastal platform at Hopes Nose, Torquay . Below: pieces of the branching tabulate coral *Thamnopora* (up to 3 cm long). Above: broken and bun-shaped stromatoporoid coralline sponges (up to 15 cm across).

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Volcanic ash band around 15cm thick within the Middle Devonian limestones on the S side of Hope's Nose.

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Hopes Nose viewed from the South showing a tight fold in thin bedded Middle Devonian and the position of the raised beach

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Hope's Nose raised beach (Ipswichian) around 120,000 years old

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Detail of gastropod shell within the raised beach at Hope's Nose (c.15mm long)