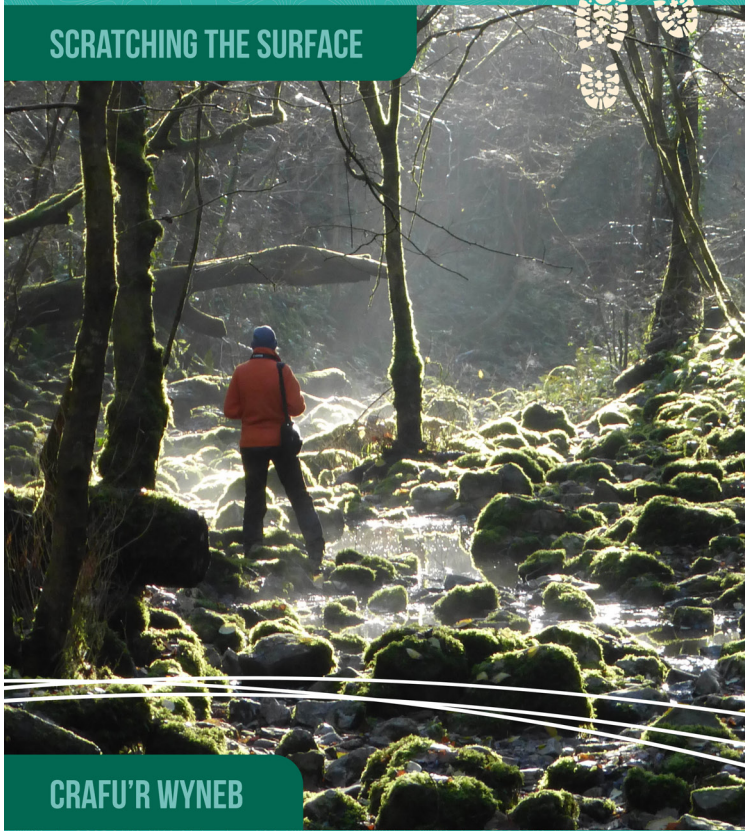


BISHOPSTON VALLEY AND BARLAND COMMON

CONTRASTING LANDSCAPES OF LIMESTONE AND SHALE

Discover geology and landscape: walking trails in rural Swansea

SCRATCHING THE SURFACE



CRAFU'R WYNEB

DYFFRYN LLANDEILO FERWALLT A CHOMIN BARLAND TIRWEDDAU CYFERBYNIOL CALCHFAEN A SIÂL

Darganfod daeareg a thirwedd:
llwybrau cerdded yn ardal Abertawe

6 KM
3 HOURS
GPS COMPATIBLE




6 KM
3 AWR
YN CYDWEDDU
Â GPS

START GRID REF. SS 57830 89620

at Kittle Corner, where there is space to park. Buses pass this point.

PATH CONDITIONS

The trail follows paths that are well marked but can be rough, slippery and muddy.

MAPS 

Ordnance Survey 1:50,000 map 159 (Swansea & Gower)
1:25,000 Explorer map 164 (Gower)
Geological Survey 1:50,000 Sheet 247 (Swansea)

REFRESHMENTS 

Kittle and Bishopston

SAFETY

Take care on rough, rocky ground, close to steep drops, near water and crossing roads. Limestone is very slippery when wet. Grid references are for guidance only. Follow the Countryside Code (<http://naturalresourceswales.gov.uk>) and the Geological Fieldwork Code (www.rockwatch.org.uk/geological_code). Respect people, protect the environment and stay safe. Wear sensible clothing and footwear.

FURTHER INFORMATION

Local walking groups www.swansea.gov.uk/walking
Local geology www.swga.org.uk
For junior geologists www.rockwatch.org.uk
Geology and geological maps www.bgs.ac.uk
Gower Society www.thegowersociety.org.uk
National Trust www.nationaltrust.org.uk
Wildlife Trust www.welshwildlife.org
South Wales Caving Club www.swcc.org.uk

The Geology of South Wales: A field guide
by Gareth T. George (gareth@geoserv.co.uk, 2008)

A Guide to Gower edited by Don Strawbridge and Peter J. Thomas (Gower Society, 1999)

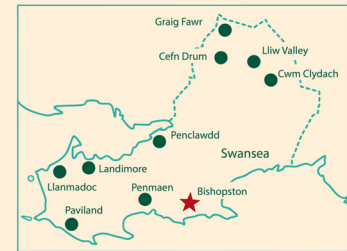
Text and images: Geraint Owen, Siwan Davies (Swansea University)
Welsh translation: Dyfed Elis-Gruffydd
Design: iconcreatedesign.com

Bishopston Valley is a leafy haven on the edge of Swansea where a stream from Barland Common disappears underground as it flows from shale onto limestone. This trail follows a dry valley, exploring the interactions between water, rock and landscape. The trail is 6 km (4 miles); allow 3 hours.

Mae Dyffryn Llandeilo Ferwallt yn llecyn coedlog braf ar gyrion Abertawe lle mae un o'r nentydd sy'n tarddu ar Gomin Barland yn diflannu dan ddaear wrth iddi lifo oddi ar siâl ac ar draws calchfaen. Mae'r daith hon yn dilyn dyffryn sych, hwn archwilio'r rhyngweithiadau rhwng dŵr, craig a thirwedd. Mae'r daith yn 6 km (4 milltir) o hyd ac mae'n cymryd tua 3 awr.



Look for other trails in this series!



SCRATCHING THE SURFACE



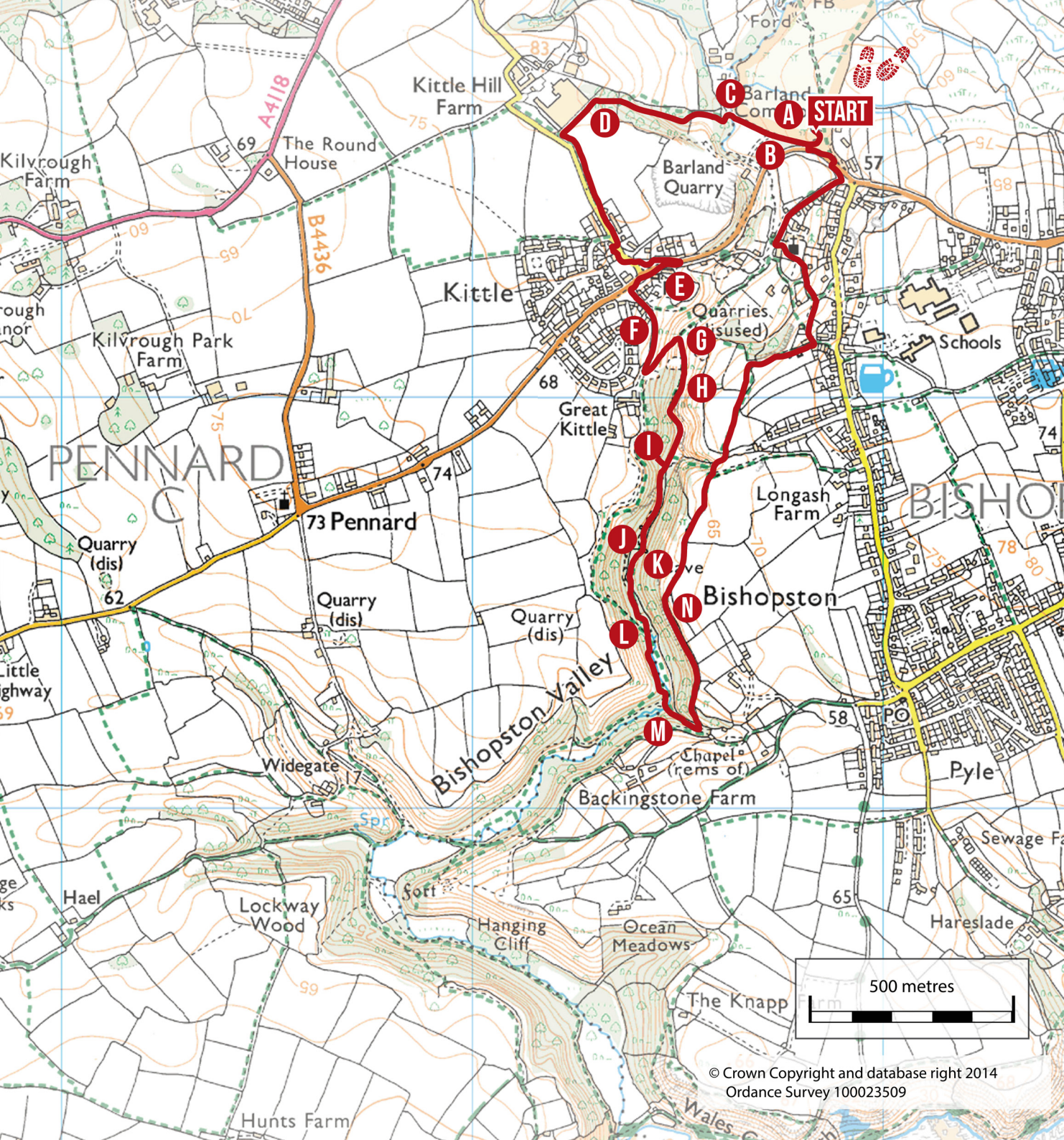
CRAFU'R WYNEB

Discover geology and landscape: walking trails in rural Swansea

Darganfod daeareg a thirwedd: llwybrau cerdded yn ardal Abertawe

© 2015 Geraint Owen and Siwan Davies (Swansea University)
email: g.owen@swansea.ac.uk #[scratchingthesurface](https://twitter.com/scratchingthesurface)
<http://geography.swan.ac.uk/scratchingthesurface/>





Follow the lane uphill for 70 metres to the first right-hand bend. Look across Barland Common to the left. [0.1 km; SS 57837 89670]

A Barland Common is underlain by mudstone, an impermeable sedimentary rock made from mud that accumulated 320 million years ago. The landscape is typical of the commons of north-east Gower - poorly drained, with surface streams, marshy ground and wetland vegetation.



In the distance through the trees is disused Barland Quarry, which extracted limestone. This formed about 350 million years ago, early in the Carboniferous period, and underlies the younger mudstone in the rock succession. It formed over millions of years and is about 1000 metres thick. It was buried beneath several kilometres of younger rocks before the whole pile was tilted, uplifted and worn down by erosion, forming today's ground surface. The rocks are tilted to the north so limestone underlies much of south Gower. Further north you reach the Coal Measures, which are above the mudstone in the rock succession.

Return through the parking area and continue downhill through a gate towards the kennels. Stop after 60 metres, by some stone blocks. [0.3 km; SS 57739 89640]

B These are limestone from Barland Quarry, which is ahead of you across a flat area underlain by quarry waste. Limestone is made of the mineral calcite (calcium carbonate), most of which comes from the shells of invertebrate animals such as gastropods (snails), corals, brachiopods and echinoderms. Similar animals flourish today in warm, tropical seas. You may find their fossils in the blocks. White crystals in the rock are calcite. They formed while the limestone was buried. Calcite was dissolved from parts of the rock and precipitated in cracks as veins.



Fossils

Calcite veins

Continue down the lane for 140 metres to a bridge.
[0.4 km; SS 57645 89700]

C Mudstone is exposed in the stream banks. It breaks into flat pieces and is also called shale. It is easily eroded and is usually covered by soil and vegetation. It belongs to a rock unit called the Bishopston Mudstones. The mud accumulated under conditions like today's Mississippi Delta. Thin horizons called marine bands are rich in fossils of animals that were abundant when the delta was flooded by the sea. Each marine band contains different fossils, which can be matched up with others across Britain and northern Europe. Barland Common is a protected geological site because of these fossils.

Later in the Carboniferous period, plants growing on the deltas formed peat that is preserved as coal. These younger Coal Measures have been eroded from above the mudstone on Barland Common.

Cross the bridge. Turn left across a boardwalk. Cross a stile and continue up the wooded valley. Cross a stile into a field.
[0.8 km; SS 57356 89722]

D The path separates areas underlain by limestone and mudstone. The rocks meet along a fault, where they have slipped past each other. Fault movements break the rock and cause earthquakes. The movements here occurred hundreds of millions of years ago and the broken rock has been eroded by the stream. As you continue, notice that Barland Common forms a shallow bowl eroded below a level surface.

Follow the side of the barn and turn left along the hedge. Leave the field at a stile and follow the pavement ahead. Cross the road at the end of the pavement and cross back at the pub car park entrance. Follow the old road down over rocky ground, keeping the trig point on your left. Carefully cross the main road and turn right along the pavement uphill for 30 metres. [1.5 km; SS 57456 89310]



Barland Common from D

E Limestone is exposed in the cutting opposite. The tilted layers (beds) represent successive levels of the Carboniferous sea floor and were horizontal before geological forces tilted them.

Continue uphill past the shop. Take the sign-posted track to the left, past Kittle Green. Stop at a bench by a National Trust sign.
[1.6 km; SS 57450 89216]

F The ground ahead of you is underlain by limestone. Notice how deeply the river has cut its valley. This is very different from the shale landscape of Barland Common.



Bishopston Valley from F

Continue for 140 metres and take the marked path on the left down to a bridge. [2.0 km; SS 57530 89165]

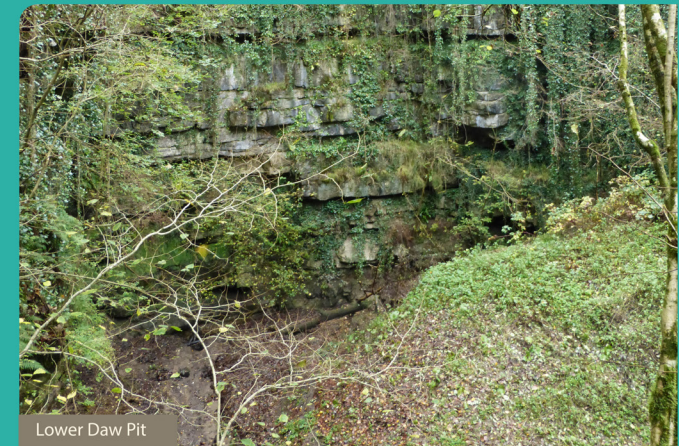
G The river bed is often dry here, although this is the course of the stream you crossed at C. Limestone is dissolved by weak acids, which are common in nature from rainfall and the decay of plant material. As the stream flows from mudstone onto limestone, it dissolves some rock, widening cracks, and forming cave systems through which it flows beneath the surface. Early in 2014 a new sinkhole opened upstream; the path has been diverted because that area is unstable.



Dry stream bed

The stream bed is littered with blocks of limestone carried by occasional floods. Beds of limestone beneath the bridge dip to the north. Cracks have been widened by solution, and you may find fossils.

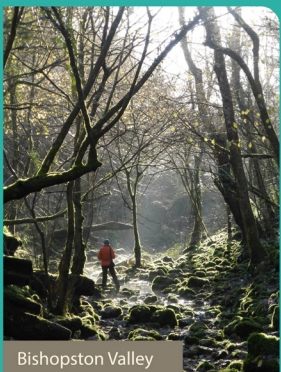
Cross the bridge and turn right. After 100 metres the path skirts a deep hole on the right - take care! [2.1 km; SS 57510 89074]



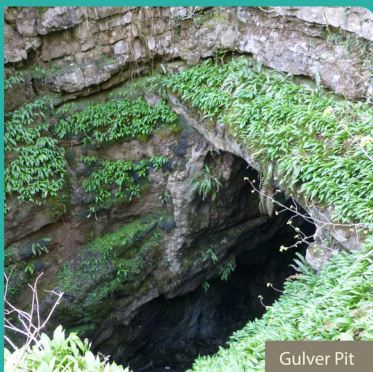
Lower Daw Pit

H The hole - Lower Daw Pit - is a doline, formed by collapse above a cave. In very wet conditions it fills with water, but beyond here it is very rare for water to flow at the surface. The channel is less incised into the valley floor and the path becomes more muddy. Tree roots cross the valley floor and scattered angular limestone blocks have fallen from the valley sides. They make walking difficult so be careful!

The valley is densely wooded, with a variety of tree species, ferns and mosses. Look out for epiphytes - ferns, mosses and lichens growing on trees rather than in the soil. They use trees for support but do not harm them. The dense vegetation and abundant epiphytes are a sign of humid conditions; you are in a temperate rainforest!



Bishopston Valley



Gulver Pit

After 400 metres, pass a marked path on the left and take the next path on the right. Follow this a short way up steps to a fence on the left. [2.8 km; SS 57449 88857]

I The fence surrounds Gulver Pit, a deep doline. Notice the damp-loving ferns and mosses growing around it. Dolines, dry valleys, caves and swallow-holes are typical features of limestone landscapes shaped by solution. Together they form karst landscapes, named after a region of Slovenia.

For a shorter walk, continue up the path and turn right to return to Kittle. For the main trail, retrace your steps to the valley floor. Turn right and continue 300 metres to a cave entrance on the right, 50 metres after a prominent cliff. [3.2 km; SS 57426 88672]



Guzzle Hole

J This is Guzzle Hole. You can hear the stream flowing underground. In very wet conditions some water overflows to the surface where it has eroded a channel. Beds of limestone in the path between I and J dip to the left (north-east), a change from what you have seen so far.

100 metres ahead is a slight rise. Look for a cave with a gated entrance on the left. [3.3 km; SS 57434 88625]



Old adit

K This is an adit - an old mine. Miners were looking for lead ore along the line of a fault. There was another lead mine at Brandy Cove, along the same fault. The raised ground is the mine waste.

In 140 metres cross a low wall and then the stream bed. 200 metres further, stop at a wooden sign-post. [3.6 km; SS 57450 88424]



Stream resurgence

L Here the stream emerges from the ground at several springs and flows to the sea at Pwlldu Bay. This resurgence occurs where the level of water in cracks in the rock meets the ground surface.

Continue 300 metres to a bridge. [3.9 km; SS 57487 88268]

M Between L and M the path crosses dark, fractured limestone with many thin calcite veins. This is fault breccia, rock that has been shattered by movements along another fault. There are many fossils in the rocks here.



Fault breccia

Bedding near here dips to the south. Between Kittle and here you have crossed an anticline - an arch-shaped fold of the rocks. It formed 300 million years ago when movements of the Earth's tectonic plates caused continents south of Britain to collide, forming a chain of mountains. This process is called orogeny, and the events affecting Gower are called the Variscan Orogeny. Erosion has since removed the overlying rocks. Plate movements also cause continental drift, which explains why fossils in the Carboniferous Limestone are like animals living in warm seas today; at that time, Gower was in tropical latitudes south of the equator!

Unless you want to continue to beautiful Pwlldu Bay, 2 km further, cross the bridge and take the path climbing out of the valley. Turn left at a junction before steps and a building. After another short climb and some steps, follow the valley rim for 200 metres to a bench. [4.4 km; SS 57504 88464]

N Bishopston Valley is deep, steep-sided, and cuts sharply into a plateau underlain by limestone. These features are typical of valleys eroded rapidly by flowing water. But most of the Bishopston Valley is dry and the water flows underground, so how did this erosion occur? 20,000 years ago, in the last glacial episode, most of Britain was covered by an ice sheet. Its southern margin was near here and it is likely that meltwater eroded the Bishopston Valley when it was unable to drain underground because cracks leading into caves were blocked by either sediment or ice.

Continue along the path. After a stile, cross a field to a kissing gate that leads back into woods. In 50 metres, cross a stile on the left and turn right. A gate leads into a field. Cross the field to another gate and cross an area of rough ground, curving to the right through a gateway onto a track. Continue ahead, to the right of a house. At a lane, turn left downhill, keeping to the right of a house. Cross a lane and continue downhill. Turn left before a driveway and fork right along a narrow path leading to St Teilo's churchyard. Cross the churchyard, turn right and follow the lane uphill to the road. Turn left and cross carefully to the start point.

FINISH