The cliffs in the opposite river-bank expose shales, coal seams and thin sandstone beds of the Limestone Coal Formation under the sill. The base of the sill is marked by an overhang where the river has eroded away the shale and sandstone underneath it (photo).

Returning to and crossing the Halfpenny Bridge, turn left along the tarmac avenue, walking downstream but uphill to a side path with a seat. Here there is another viewpoint above the waterfall.

Locality 4 [NS 5819 5929]

Linn Waterfall (South side)

The top of the sill with its closely-spaced cooling joints can be clearly seen here. The intrusion is known as the Cathcart Sill, is part of an extensive set of sills of early Permian age underlying the Glasgow area. Here the sill is approximately 3m thick and dips gently to the west-south-west, consistent with the surrounding strata. In the sides of the avenue to the south some more of the dolerite rock has been exposed.

Some rubble walling was part of an old weir and a slot near the viewpoint was a water-wheel tail-race that powered an 18th century waulk mill and a saw mill.

Return to the bridge where the trail finishes. There are options to explore the park further. There are narrow and often slippery paths alongside the river on its east bank upstream where it turns east uphill with a small burn to the right.

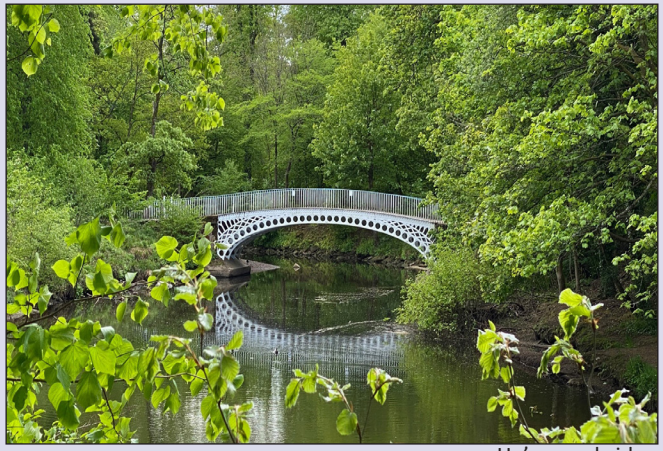
Most of the geology in the park is hidden by vegetation, but here the low cliffs on the far side of the burn exposes an approximately 15m high section through strata of the Limestone Coal Formation. Here the gently dipping sedimentary sequence consists of repeating beds of sandstones, siltstones and mudstones resulting from rises and falls of sea level (photo below).

There are signs around the Park noting longer walks (The Magnificent 11) and the trail can be extended downstream following the river gorge (with lots of steps) to the Snuff Mill bridge. There is an old quarry in the Cathcart Sill at Cathcart Castle (access now from the road) and glimpses of sedimentary strata.

The spectacular gorge was cut by meltwater from the waning glacial ice that had formed on the high ground to the south during the most recent part of the Ice Age between 18,000 – 10,000 years ago. At Locality 3 there is some diamicton (a deposit left by melting ice) at the top of the exposure.

Produced by the Strathclyde Geoconservation Group.
A subcommittee of the Geological Society of Glasgow
More information at: www.geologyglasgow.org

A Geological Trail around Linn Park



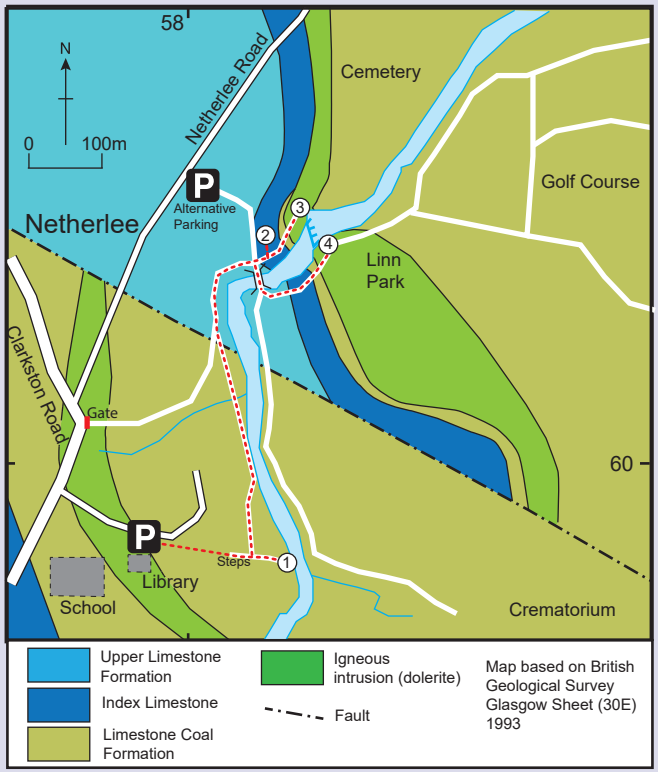
Ha'penny bridge

Linn Waterfall

Strathclyde Geoconservation Group

THE GEOLOGICAL SOCIETY OF GLASGOW

Trail Map



Most of the rocks under Glasgow were formed during the Carboniferous Period (350 to 300 million years ago). They contain coal, iron-ore, oil-shale, fireclay and limestone - all essential resources for the industrial revolution. Sandstone was an important building stone and the igneous dolerites were quarried for roadstone. Most of these rocks are hidden beneath the city and it is only in places such as Linn Park where the White Cart Water has cut a gorge that the rock strata are exposed.

This trail follows the White Cart Water as is winds its way north through Linn Park. The trail starts and finishes at the car park at Netherlee Library on Linnpark Avenue.

The main access point to the park is the gates on Clarkston Road (B767). The 4A and 6 buses run through Netherlee along the Clarkston Road and there are half-hourly trains to Muirend from Glasgow Central. Muirend station is a 10 minute walk to the main gate and a further 5 minutes to the start of the trail.

Parking is also available on Clarkston Road and off Netherlee Road.

Glasgow City Council have produced a leaflet about the Park and Friends of Linn Park have information on their website and on several information posts around the park..

The Trail can be joined at any of the access points; however this description starts at the Netherlee Pavilion carpark. From the carpark head eastwards over the grass towards the trees, past the children's play area and follow some steps (with handrails) leading down towards the river, crossing the riverside path en-route, to the banks of the river where rocks can be seen on the opposite bank (photo).

Locality 1 [NS 5814 5885]

River Bank south of White Bridge

The rocks exposed on the opposite river bank are beds of sandstone, siltstone and coal – sedimentary rocks that are part of the Limestone Coal Formation. The feature to note here is the inclination of the beds which is about 10 degrees to the west, and shows that the strata in this area get younger to the west.

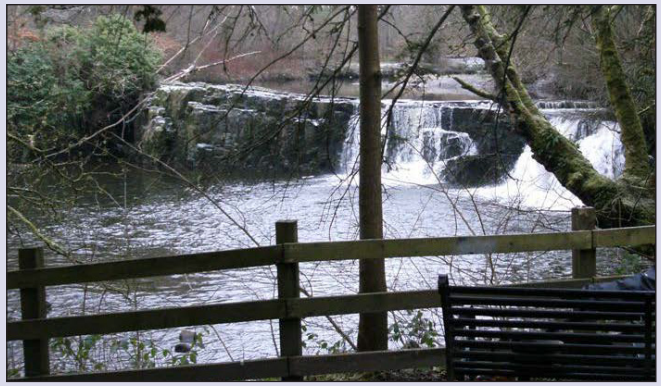
Follow the riverside path northwards and through a gap in an old wall for about 400 m to the bridge over the White Cart Water – variously called the White Bridge or the Ha'penny bridge (see cover photo). It is the oldest known complete cast iron bridge in Glasgow and is approximately 200 years old. Before crossing the bridge follow the path on the northern bank for about 50 m where there is a old excavation in the bank to the left of the path (photo).

Locality 2 [NS 5808 5928]

White Bridge quarry

Although mostly covered in soil now, some rock exposure can be seen. This was a limestone quarry and the rock is known as the Index Limestone, so-called because for the old coal-miners it gave a reliable indicator of the location of economic coal beds (coal was mined in "bell pits" close to the park). The limestone was formed in a shallow tropical sea during the Carboniferous period about 330 million years ago. The lime was probably used as mortar for masonry buildings and as a soil improver. Lime-loving plants sometimes grow here.

Continue along the tarmac path on the west bank of the White Cart Water. The full extent of the waterfall can be viewed by going down a short flight of steps to a bench (photo).



Locality 3 [NS 5817 5934]

Linn Waterfall (North side)

The waterfall is formed from a sill of igneous rock called dolerite that was intruded into the slightly older Carboniferous strata about 270 million years ago in the Permian period. A sill is formed when liquid rock – magma – is intruded into the pre-existing rocks, wedging its way between the strata. When it cools and solidifies it makes a slab-like body of rock. Dolerite is very hard so the river cannot erode through it as easily as it can through the softer rocks above and below, so the sill forms a step in the river bed.

At the bottom of the steps the dark dolerite rock forming the sill can be seen at the side of the river. Take care as the ground can be wet and slippery. In the low cliff the sill has numerous vertical cracks ("joints") that break the rock into vertical columns. The joints formed when the hot rock cooled and contracted as it lost its heat to the colder strata above and below.