City of Casey | WILSON BOTANIC PARK

Virtual Geoheritage Walk of Wilson botanic Park Berwick - Transcript

Scene 1 - Welcome to Wilson Botanic Park

The City of Casey proudly acknowledge the traditional owners, Casey's Aboriginal communities and their rich culture and pays respect to their Elders past, present and future. We acknowledge Aboriginal people as Australia's first peoples and as the traditional owners and custodians of the land on which we work and live.

Scene 2 - Lakeside

The land the park covers has very interesting and regionally significant Geoheritage including the discovery of fossils.

The oldest rocks found at Wilson Botanic Park are sedimentary rocks. These are formed by sediments settling to the bottom of bodies of water … then turning into stone due to huge pressures.

The sedimentary rocks found here are Silurian siltstones and mudstones deposited around 400 million years ago when a vast sea covered virtually the whole Melbourne area – even before the dinosaurs

However, rocks from the Silurian period are not the only rocks found here.

After the Silurian siltstones and mudstones were laid down 400 million years ago, movement of the earth's tectonic plates compressive forces caused the Silurian rocks to fold and fault, resulting in a large swamp forming in the area of Berwick.

Next, pressures inside the Earth forced granitic magma up into the folds. This intrusion and heat of the magma changed the siltstones and mudstones into very hard rocks called hornfells, in a process called contact metamorphosis.

When the magma cooled it formed granodiorite. Rocks formed this way are known as igneous rock … similar to granite.

Later, the area was uplifted by forces inside the Earth and then eroded by wind and rain, exposing the intrusive granitic rock. Forests grew and decayed and were compressed into mudstones at the bottom of lakes and swamps around the granitic rock.

Much later, approximately 25 million years ago during the Tertiary period, Victoria was again an area of intense geological activity, with volcanoes erupting molten rock, known as lava and sculpting the landscape.

Scientists have tentatively identified seven volcanic eruptions in the Berwick area. The two most recent lava flows occurred 22 million years ago. The eruptions from these volcanoes sent basaltic magma to the surface of the Earth. This process is called extrusion. The basaltic lava crystallised into basalt rock lying over the Silurian rocks and mudstones.

The first of the recent eruptions was the major one. It was followed by a period of vegetation growth and flooding, resulting in sedimentation and the formation of sandstone and mudstone. The final series of eruptions started violently, covering the area in ash. Quieter minor eruptions followed.

The only geological processes that have taken place in Berwick for the last 20 million years have been erosion and soil development.

Today, the geology of the Wilson Botanic Park area can be summarised as two Tertiary basalt rock layers interspersed with a thin sedimentary layer lying over ancient Silurian granodiorites, hornfells, mudstones and sandstones. That is, Wilson Botanic Park sits on basalt rock formed from the lava and on mudstone formed from the flooding.

The mudstone has proved to be a valuable source of fossils and has given scientists insights into the climate and vegetation of the area millions of years ago.

The fossils tell us that the original rainforest gradually transitioned into open woodland dominated by Eucalyptus species

Scene 3 - Amphitheatre

And … that's how the lands formed, now how was this land used.

In the 18th century, European settlers drained marsh lands for farming and settlement and they also quarried the area.

In 1859, William Wilson began quarrying the volcanic basalt that was formed millions of years ago and is more commonly known as bluestone.

Anniversary Lake behind us is the site of the main quarry. It was converted to a lake as part of the development of the park. The lake covers approximately 3 hectares and is approximately 10 metres deep when full. On the *right or left* you can see a pylon … this is all that remains of the basalt crushing plant from all those years ago.

At one stage during quarrying a small pocket of coal was found here and in it, many fossils.

Did you know … Coal forms from the decomposition of plants and formation of sediments in lakes. Pressures and temperatures under the ground convert the dead plant material to peat and then into various types of coal.

The Wilson family donated land to the City of Casey for development as a botanical park. The remainder was purchased by the City of Casey.

The City of Casey began developing the 39 hectare park in 1988, the Friends of Wilson Botanic Park have also played an active role in the parks development.

The park opened in 1992 and has continued to develop into what you see here today.

Scene 4 – Rockface

This rock face is evidence of volcanic activity in Berwick area.

The columnar jointing shown on the basalt rockface indicates that an eruption was close to this hill. The columnar jointing happens when cooling lava is under stress. As the lava cools it cracks and the cracks continue to grow forming this columnar pattern.

The exposed basalt rock that you can see here shows radial fissures. Like columnar jointing, Fissures also result when molten rock cools and cracks.

Scientists have identified seven separate volcanic eruptions taking place here. With one of the lava flows beeing dated back 20.7 million years ago.

The last eruption is thought to have been a violent one and believed to have destroyed the vegetation and covered this area with ash.

Scene 5 – Fossil Site

Fossil specimens were discovered and studied during two main periods: in 1902 by Henry Deane an engineer and palaeontologist.

Then in the late 1980s, during the development of the park.

We are now standing at the site of the second fossil discovery in the park.

The fossil discoveries at the park are significant because flowering and coniferous plants, tropical and temperature species, and micro and macro specimens have all been found. The fossils have given scientists great insight into the climate and vegetation of the area millions of years ago.

About 60 million years ago the Australian climate was in transition. At first it was warm and wet, quite tropical … then it cooled, and it became temperate. The fossils found here provide evidence of this transition.

Plants require a permanently wet environment for preservation; therefore all fossil flora are from wetlands. Plants growing on ridges and hill tops have less likelihood of being found in the fossil record.

Because of this Micro-fossils, pollen, tell us about vegetation in the region, rather than the immediate area. On the other hand, macro-fossils, such as fossil leaves, fruits and seeds tell us what the vegetation at the edge of a lake was like.

Initial examination of the macro-fossils found eight plant families represented indicating that the vegetation at the quarry site was forest dominated by Southern Beech trees (*Nothofagus*) with scattered Eucalyptus trees close by. These are temperate plants, reflecting a temperate climate.

However, much of the pollen fossils are from tropical beech species, suggesting that tropical and temperate species co-existed here at the park.

Of particular interest to scientists is the fact that this site is the only known fossil site that contains specimens of both Nothofagus and Eucalyptus.

Wilson Botanic Park is of significant geoheritage importance because it is where the oldest usable Eucalypt fossils have been found in Australia … and in the words of Dr Robert Hill from the University of Tasmania,

"this is one of the key macro-fossil sites for our understanding of the evolution of the modern Australian flora".

Scene 6 – Visitor Centre – Wrap up

The administration building where our tour ends is built of bluestone, unfortunately we can't say it was from the Wilson Botanic Quarry.

However …. We can claim that all the fossils on display here were actually recovered from the park.

Thank you for joining us on this virtual tour. Join us for one of our scheduled walks or click the link for more information. See you next time!