

Geological and geomorphological sites of state significance in state forests of the assessment area

Sites of state geological and geomorphological significance in state forests of Eastern Victoria

BR 078 Stony Creek and Nowa Nowa caves, 12 kms south-west of Nowa Nowa

Colquhoun/ Boyanga Gidi State Forest (37° 47.969'S 148° 0.319'E). Orbost 8522 mapsheet

Short description and significance

Outcrops of Gippsland Limestone in McCraes quarry. Two caves (3NN-01; 3NN-02) in Gippsland Limestone. STATE

Description

McRaes Quarry and the adjacent road cuttings expose highly fossiliferous partially ferruginized Gippsland Limestone. Large beds of *Ostrea* sp. are common while other pelecypods and echinoids occur and suggest that the lithology is equivalent to the upper unit of the Bairnsdale Limestone. Two caves are known in this area, Narguns Cave (3NN-1) and an un-named cave (3NN-2), through-flow, stream passage caves representing an old stream course of tributaries of Casey Creek. Narguns Cave is an incised meandering stream passage ~300 m long and up to 6 m high and has a lowing stream in wet conditions. Cave is a maternity site for the 2 bat species: Little Horseshoe Bat (*Rhinolophus megaphyllus*) and the Eastern Bent Wing Bat (*Miniopterus schreibersii oceanensis*).

Significance values and description

Excellent exposures of Bairnsdale Limestone occur at this site. Caves in Cenozoic limestone in Eastern Victoria are rare. Narguns Cave 3NN-1 has an interesting and unusual, for Victorian caves, meandering and incised stream. Although the main importance of the caves is not geological but biological as they are very important bat maternity sites; a major maternity site for the bat Little Horseshoe Bat and the only known maternity site for the critically endangered Eastern Bent Wing Bat in Eastern Victoria.

Management

Although caves are not common in Gippsland Limestone, the major significance of these is biological as they are a major maternity site for the bat Little Horseshoe Bat and the only known maternity site for Eastern Bent Wing Bat in Eastern Victoria. Inadvertent disturbance of the bat colony by fossil collectors, together with deliberate vandalism including shooting of bats is a problem at this site. It has been suggested that such disturbance has resulted in a significant reduction in the bat population over the last 15 years. Information and advice on cave management can be obtained via the Victorian Speleological Association Inc.

References

McRae-Williams, M.S., Rosengren, N.J. & Kraemers, 1981

BR 143 Mount Battery landforms, 10 km N of Cobungra; 22 km NW of Omeo; East of Mt Hotham Airport

Mt Battery State Forest (37° 2.425'S 147° 23.930'E). Dargo 8323 mapsheet

Short description and significance

Block slope deposits in Eocene Older Volcanics. STATE

Description

Olivine basalts of Eocene age cap Mt Battery and extend down the south-western side of the mountain as relict periglacial block slopes. These broad areas of angular blocks occur on steep gradients (20 degrees) and are characterised by matrix free boulders up to 60 cm in length, braided furrows and arcuate projections and pits. The blocks show a strong preferential alignment downslope. The Mt Battery block deposits are

distinctive as they lack the arcuate stepped form described in those deposits in the Mt Howitt and Mt Wombargo areas.

Significance values and description

Major relict periglacial landform and one of the largest in SE Australia. The block slopes are relict features and are indicative of the periglacial rather than the glacial regime which characterised the high country of Victoria during global glacial stages. The block deposits of Mt Battery are distinctive in form and provide a site for comparisons of Australian block stream morphology and evolution.

Management

Quarrying, roadworks and inappropriate forestry operations. The block streams were formed by processes which are no longer active in the area. The preservation of these features in their entirety is therefore recommended.

References

Rosengren, N.J. & White, S. 1997

TL 048 The Brothers Triassic syenite, 10 km NE of Benambra McKinnon Road

Uplands State Forest (36° 54.310'S 147° 44.762'E). Benambra 8424 mapsheet

Short description and significance

Exposures of Triassic syenites and trachytes. An alluvial basin and river gorge. STATE

Description

Triassic syenite of the Mount Leinster Complex forms the prominent hills of The Brothers and the best outcrops of The Brothers Syenite occur on the top of The Brothers. The syenite ranges from medium grained equigranular sodasyenite and sodagranite to strongly porphyritic including large (up to 8–9 cm in length) simply twinned perthitic K-feldspar in a coarse ground mass of plagioclase, quartz, hornblende, biotite and magnetite phenocrysts. Small black ovoid xenoliths are common. Prominent cliffs mark the north-eastern sides of both The Brothers. These cliffs have resulted from weathering and block collapse along steeply-dipping joint planes which strike approximately northwest. Weathering along joint lines has also resulted in the formation of large tors up to 10 m in height on the steep slopes of The Brothers Range.

Significance values and description

Excellent and extensive exposures of the youngest acid intrusive known in Victoria. Excellent examples of phenocrysts. Significant block weathering features.

Management

Because of the area covered by the site, the value of the significance geological/ geomorphological features is unlikely to be seriously reduced by localised land disturbance, e.g. road works or extractive industries.

References

McRae-Williams, M.S., Rosengren, N.J. & Kraemers, 1981

Rosengren, N.J. & White, S. 1997

WL033 Eaglehawk Creek Walhalla Group outcrops, Glengarry. Eaglehawk Creek Valley, 6 km west of Toongabbie.

Boola Boola State Forest (38° 4.008'S 146° 34.000'E). Moe 8121 mapsheet

Short description and significance

Outcrops of Palaeozoic Walhalla Group, Mesozoic Tyers Group sediments and Cenozoic Haunted Hills Gravels. STATE

Description

Beds of the Walhalla Group outcrop along Eaglehawk Creek upstream from the ford and in road cuttings. Conglomerates and coarse sandstones of the Lower Cretaceous Tyers Group outcrop on the western side of the Eaglehawk Creek Fault at two localities near the ford. Clear sections of Haunted Hill Gravels and Quaternary alluvium are exposed in channel-side cliffs. The creek valley displays contrasting morphology that is clearly related to variations in lithology and structure. Steep sided valleys and a gorge section with deeply entrenched meanders are developed in the Palaeozoic rocks upstream from the ford. Below the ford, the valley is wider and subject to frequent landslips on the undercut banks in the softer Tertiary sediments.

Significance Values and Description

The outcrops of the Tyers Group sediments are very important in the study of the stratigraphy and palaeontology of the Mesozoic in Victoria. The clear exposures of the Palaeozoic and Cainozoic materials together with the variations in valley morphology make this an important teaching and research locality.

Management

Because the best outcrops occur in the channel side cliffs, dam construction which would flood this valley section should be prohibited. Limited quarrying of the Palaeozoic rocks would not affect the significance of the site.

References

McRae-Williams, M.S., Rosengren, N.J. & Kraemers, 1981

WL 038 Rintoul Creek Tyers Group fossil flora, Glengarry West. Along Rintoul Creek including the tributaries Paradise Creek and Exalt Creek.

Boola Boola State Forest (restricted location). Traralgon 8221 mapsheet

Short description and significance

Outcrop of Tyers Group Lower Cretaceous sediments. STATE

Description

Exposures of Tyers Group Lower Cretaceous sediments occur along Rintoul Creek, paradise Creek, Exalt Creek and in several road cutting on the tracks between these. The sediments include conglomerates, sandstones, minor grits, mudstones, and a thin black coal seam. Well preserved plant fossils preserved as both compressions and impressions have been recorded from this sedimentary sequence.

Significance values and description

This is one of the best collected Victorian Cretaceous fossil flora areas. It contains some very good localities, and the fossils recorded are of great importance both in assessments of Cretaceous flora and environment and in determining stratigraphic relationships.

Management

Restricted location data. As the area contains a number of very important Lower Cretaceous plant localities detailed access information should not be made public to prevent over collecting.

References

McRae-Williams, M.S., Rosengren, N.J. & Kraemers, 1981

WN 020 Murrumbidgee Basin granite erosion features, 10 km S Yackandandah

Stanley State Forest. (36° 25.231'S 146° 42.788'E). Whitfield 8124 mapsheet

Short description and significance

Differential weathering of a more erosive granite intrusive and less erosive contact metamorphic aureole. STATE

Description

This is an almost circular amphitheatre approximately 9 km in diameter but only the eastern aureole is in the Stanley State Forest. It has formed as a consequence of differential weathering of a granitic intrusion and the surrounding more resistant metamorphic aureole, which now forms a steep sided annular ridge around the basin. The drainage from the amphitheatre has cut an outlet through the aureole and enters the Ovens River just north of Bowman. The only surface exposure of the Murmungee Basin Granite (a medium grained equigranular biotite granite) is on the northern rim of the basin. Good exposure of the aureole can be seen in the road cuttings at Taylor Gap. There are 4 variants of Murmungee Basin Granite recognised from the geochemical range. This is thought to be due to different degrees of crystalline fractionation of the magma. In road cuttings at Buckland Gap, a northwest striking fault can be seen. Red brown, loosely consolidated hillwash and scree sediments flank the basin and overlie the folded Ordovician sediments; good exposures can be seen in road cuttings and farm dams. Clay, silt, sandy silt, sand and gravel sheet deposits of the Quaternary Shepparton Formation are exposed in the creek crossing.

Significance values and description

A major and frequently cited erosion amphitheatre which shows the differential erosion of the granite in contrast to the more resistant metamorphic aureole. It is an important and clear example of geological and geomorphic interaction. The granite being more erodible than the aureole is not often seen in Victoria. A significant section of the feature is private land, but the forested areas are important for the exposures of the more resistant aureole.

Management

Large scale construction works may be a problem. This includes the use of 'shotcrete' on road cuttings and excessive re-vegetation of features.

References

Rosengren, N.J. & White, S. 1997

WR 020 Woods Point dyke swarm, from 13 km north-east of Licola. Many sites along general "line" several exposures of the dykes occur but the site is entire feature.

Aberfeldie State Forest to Big River State Forest (37° 45.276'S 146° 23.929'E). Matlock 8122

Short description and significance

Southern section of the 150 km Late Devonian dyke swarm intruded into the faulted Siluro-Devonian sediments of the Walhalla synclinorium. STATE

Description

The dyke swarm has a trend that broadly parallels the containing Silurian-Devonian sediments along the on the western limb of the Walhalla synclinorium, within and to the east of the Mount Easton Fault Belt. It extends north-south for over 150 km, with some dykes traceable along strike for >20 km. The dyke swarm was intruded into Late Devonian sedimentary rocks and into the steeply dipping fractures and have themselves been cut by numerous faults. Their composition ranges from peridotite to quartz porphyry but lamprophyres and diorite porphyrites predominate. Auriferous quartz veins have subsequently been introduced. The swarm is discontinuous in outcrop and therefore there are probably several sites of state significance as well as more less significant sites.

Significance values and description

The Woods Point Dyke Swarm is a significant gold bearing feature in central Victoria. The mafic to felsic dykes are associated with the Woods Point and Walhalla gold mineralisation. Its discontinuous outcrop results in several separate sites but is a significant feature in itself.

Management

The area is rugged and poorly explored but large-scale quarrying would need to avoid the actual Dyke Swarm exposures.

References

McRae-Williams, M.S., Rosengren, N.J. & Kraemers, 1981

WR 061 Walhalla goldfield, Walhalla to Woods Point.

Aberfeldie State Forest to Big River State Forest host various sites of the large area of the Goldfield (37° 56.498'S 146° 27.117'E). Matlock 8122

Short description and significance

A more or less auriferous belt extending 80km from Walhalla to Woods Point. STATE

Description

A more or less auriferous belt extends 80 km from Walhalla to Woods Point. The gold mineralisation is associated with dyke intrusion of Walhalla group sediments with the gold bearing quartz reefs commonly occurring along or sub-parallel to the dykes, or in shears or fractures cutting across dyke bulges. The Long Tunnel Group of mines at Walhalla is representative of the former type, while the Toombon mine is one of the few important mines in this area where the gold bearing quartz reefs were not associated with dyke rocks.

Significance Values and Description

The Long Tunnel group of mines were the largest in eastern Victoria and are representative of the mode of mineralisation which extends northwards to Woods Point. They are of particular importance for their historical interest as there is abundant evidence of the results of mining e.g., spoil heaps, adits, shafts and relict machinery.

Management

Most mines are now abandoned and derelict, and safe access to the mineralisation zones is no longer generally possible. Some reclamation and current tourism tours at Long Tunnel Extended mine at Walhalla occurs. Recommencement of commercial mining limited.

References

McRae-Williams, M.S., Rosengren, N.J. & Kraemers, 1981

Reference list

Rosengren, N. J., McRae-Williams, M.S., and Kraemers, S.M. 1981 Sites of Geological and Geomorphological Significance in Central Gippsland, Victoria, Environmental Study Series, Ministry of Conservation, Victoria 341.

McRae-Williams, M.S., Rosengren, N. J., and Kraemers, S.M. 1981 Sites of Geological and Geomorphological Significance in East Gippsland, Victoria, Environmental Study Series, Ministry of Conservation, Victoria 320.

Rosengren, N. J., 1984 Sites of Geological and Geomorphological Significance in the Gippsland Lakes Catchment, Victoria, Environmental Study Series, Ministry of Conservation, Victoria 402.

Rosengren, N. & White, S. 1997 Sites of Geological significance in part of Northeastern Victoria. Geological Society of Australia Inc. (Victoria Division)