
Land

Use this section to find out more about the geology, topography and soils of the Campbells River sub-catchment

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Soil type, land capability, groundwater, slopes and topography maps for the Campbells River sub-catchment are at the end of this section.

Topography

The topography of the Campbells River sub-catchment has been formed primarily by the Campbells River but also by larger tributaries such as Sewells Creek and Gilmandyke Creek. The Campbells River begins in the south-eastern part of the sub-catchment around Black Springs where altitudes exceed 1200 m above sea level (ASL). Nearly half of the sub-catchment is above 1000 m ASL and the higher ground runs to the north of Black Springs towards Norway and Essington Park and to the west around Mount David and Triangle Flat. The altitude falls as you move in a northerly direction and occurs sporadically as the slopes are broken into valleys by the multitude of watercourses throughout the sub-catchment, the largest of which is, of course, the Campbells River. The valley carved by the Campbells River is the main feature and runs in a northerly direction to where the Campbells River meets the Fish River, the start of the Macquarie River. It is this point that is the lowest in the sub-catchment at approximately 670 m ASL, however other areas in the sub-catchment (Table 1) are also relatively low when compared to Black Springs.

Elevation	Town/Locality
> 1000m	Black Springs, Norway, Driscolls Flat, Essington Park, Mount David, ground to the west of Triangle Flat, Mt Stromolo.
< 1000m	Judds Creek, Gilmandyke, Rockley, Charlton, Fosters Valley, Wisemans Creek, The Lagoon.

Soils

The different types of soils

There are 19 different soil types in the Campbells River sub-catchment. Of these three dominate the sub-catchment, Rockley (rl), Oberon (ob) and Mayfield (mf). The soils of the sub-catchment are derived from a range of rock types including igneous (granite and tuff), conglomerate (greywacke and limestone) and metamorphic (andesite). The characteristics of soils are too convoluted to include with this chapter. If you wish to acquire more information on the soils, obtain the *Soil landscapes of the 1 : 250 000 Bathurst sheet* book from your local library or the internet (see contacts section). The map provided with this chapter should be used as an indication only as local conditions can influence soils and small patches of soils that are not shown on the map may exist within a larger area of another type. Local variability also plays a role in determining soil quality. A general rule is that ridge tops and upper slopes will differ in soil properties to the lower slopes and flats. Lower slopes and flats will *generally* have better soils that have been washed down from the ridge tops leaving poorer rockier soils.

Soils erosion

More than half of the sub-catchment does not experience erosion however large areas of minor sheet and rill erosion exist, as do very small patches of moderate, severe and very severe sheet and rill erosion, and soil debris avalanches and mass

movement slumps. Gully erosion, ranging from minor to very severe, can also be found throughout the sub-catchment. Very little of the erosion occurs in the south-eastern areas of sub-catchment around Black Springs as this is where the higher ground is and watercourses have not carved out steep, easily erodable, slopes.

Many factors determine soil erosion. Some soil types are more prone to erosion than others and a lack of vegetation on a slope that is exposed to a high intensity rainfall event can cause erosion. Areas where a combination of these factors *i.e.* lack of vegetation, steep slopes and erodeable soils, exist occur sporadically within the sub-catchment and are generally river /creek banks. It is, therefore, important to maintain vegetation on ground especially on steep slopes and poor soils. Obviously, steeper slopes are also more prone to erosion and patches of severe erosion occur sporadically within the sub-catchment..

Land Classes and Uses

The land capability classes of the sub-catchment cover all classes (land class descriptions can be found in the Land chapter of the main toolkit). Patches of land classed I or II are located sporadically throughout the sub-catchment. The larger patches of this land can be found along the Campbells River and Davys Creek near The Lagoon, along Davys Creek near Fosters Valley, along Peppers Creek, along Campbells River and Gilmandyke Creek near their confluence, around Mount David and the upper reaches of Barneys Hut and Walbrook Creeks, and in areas around Black Springs and Essington Park. These areas can be used for grazing, vegetable production e.g. potatoes and dryland cropping and in this sub-catchment they are used primarily for pasture production but also for dryland cropping and horticultural crops. Areas with moderate land classes, *i.e.* classes III and IV, are interspersed throughout the sub-catchment and are found around Essington Park, Mount David, Black Springs and The Lagoon. These areas are suitable for grazing and that is their predominant use however these lands are also cropped, although the description states otherwise. When cropped these lands are not as productive as class I or III lands and may need higher inputs of fertilizer and/or lime. Land classed VI - VIII are also found in the sub-catchment as is non-agricultural land. The non-agricultural land makes up a significant proportion of the sub-catchment and is predominantly pine plantations around Charlton, Gilmandyke and Black Springs. Land classes are determined by multiple factors including soil type and slope. For this reason, the hilly areas of the sub-catchment where the higher elevations lead down to the creeks and rivers usually fall into the lower quality land classes, even where they might have high quality basalt soils. Much of the poorer country with lower classes has been appropriately left timbered as it holds very little agricultural value.

Groundwater

Although variation exists in the quality of ground water throughout the entire Campbells River sub-catchment, the majority of the sub - catchment has water of moderate quality. High quality water is found along the Campbells River downstream from the lagoon. High quality water can also be found under the ridge that Swallows Nest Rd runs along, under the ridge that runs between

Campbells River and Sewells Creek and in large patches around Mount David and Black Springs. The highest quality ground water is generally associated with fractured volcanic rocks, but also with an unconsolidated alluvial geology. Moderate water quality is found throughout the remainder of the sub-catchment and is associated with fractured igneous geology and fractured metasediment geology.

References

M. Kovac, B.W. Murphy and J.W. Lawrie (1990) Soil landscapes of the 1: 250 000 Bathurst sheet. Department of Land and Water Conservation