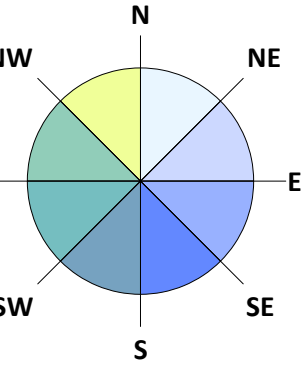


LEGEND



SOURCE: LINZ 8M DIGITAL ELEVATION MODEL (DEM)

MAP 11
BULLER PLATEAUX
ASPECT





LEGEND

- STOCKTON AND DENNISTON PLATEAUX
- RIVERS
- WETLANDS SCHEDULE 1
- WETLANDS SCHEDULE 2

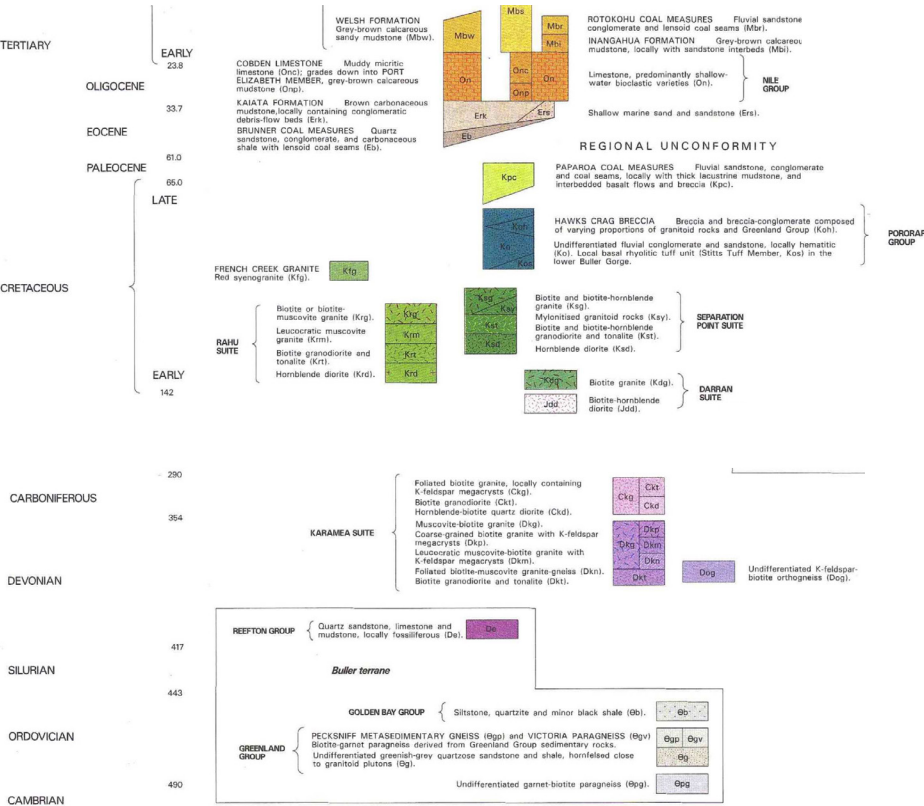
SCHEDULE 2 IDENTIFIES WETLANDS THAT EITHER ARE, OR LIKELY TO BE, ECOLOGICALLY SIGNIFICANT. A WETLAND IN SCHEDULE 2 IS CONSIDERED TO BE SIGNIFICANT IF IT MEETS ANY ONE OF THE ECOLOGICAL CRITERIA IN SCHEDULE 3. WETLANDS IDENTIFIED IN SCHEDULE 2 REQUIRE AN ASSESSMENT USING ECOLOGICAL CRITERIA ON SCHEDULE 3 DURING ANY RESOURCE CONSENT PROCESS.

SOURCE: LINZ 8M DIGITAL ELEVATION MODEL (DEM)

MAP 12
BULLER PLATEAUX
RIVER ENVIRONMENT

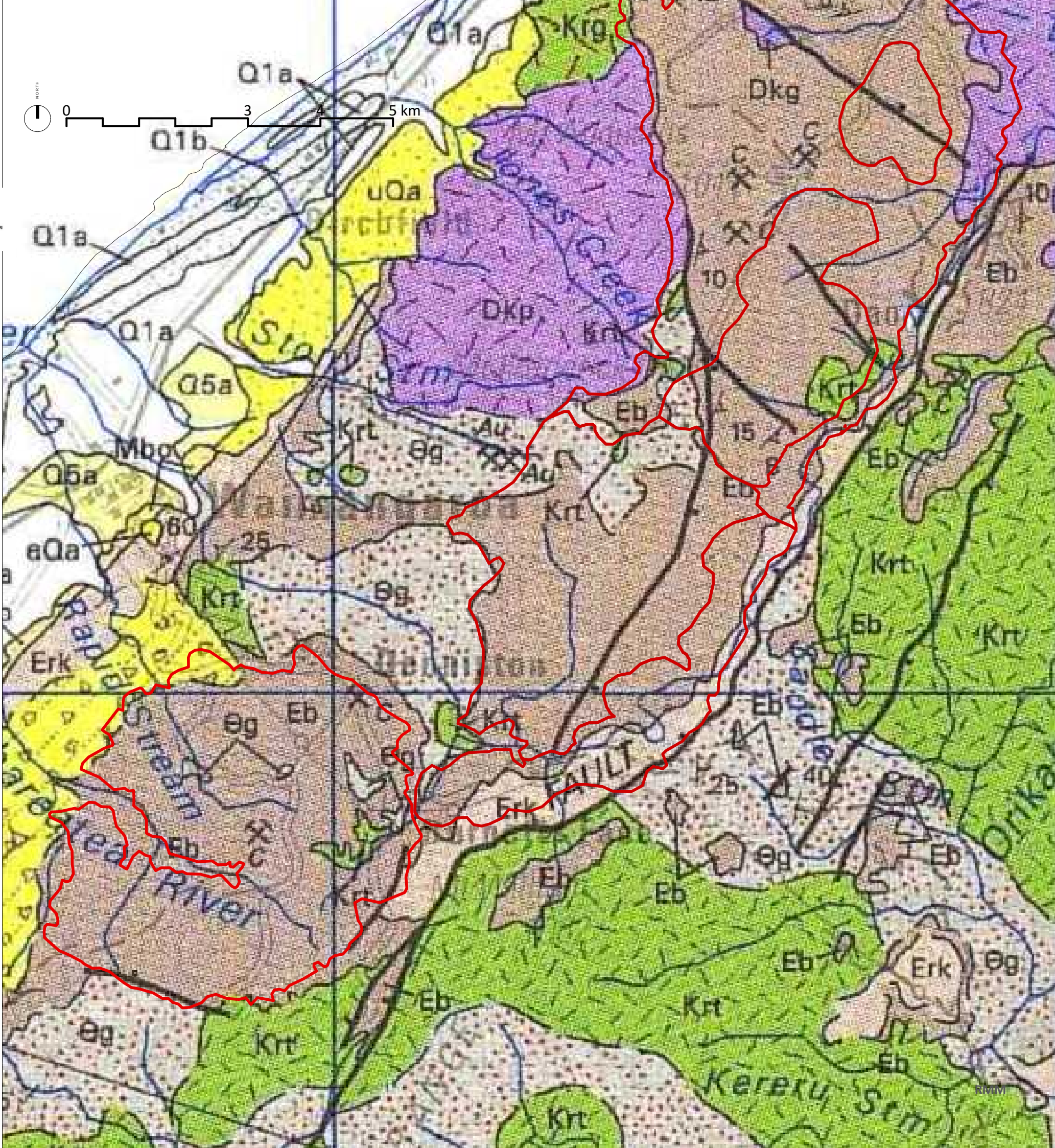
LEGEND

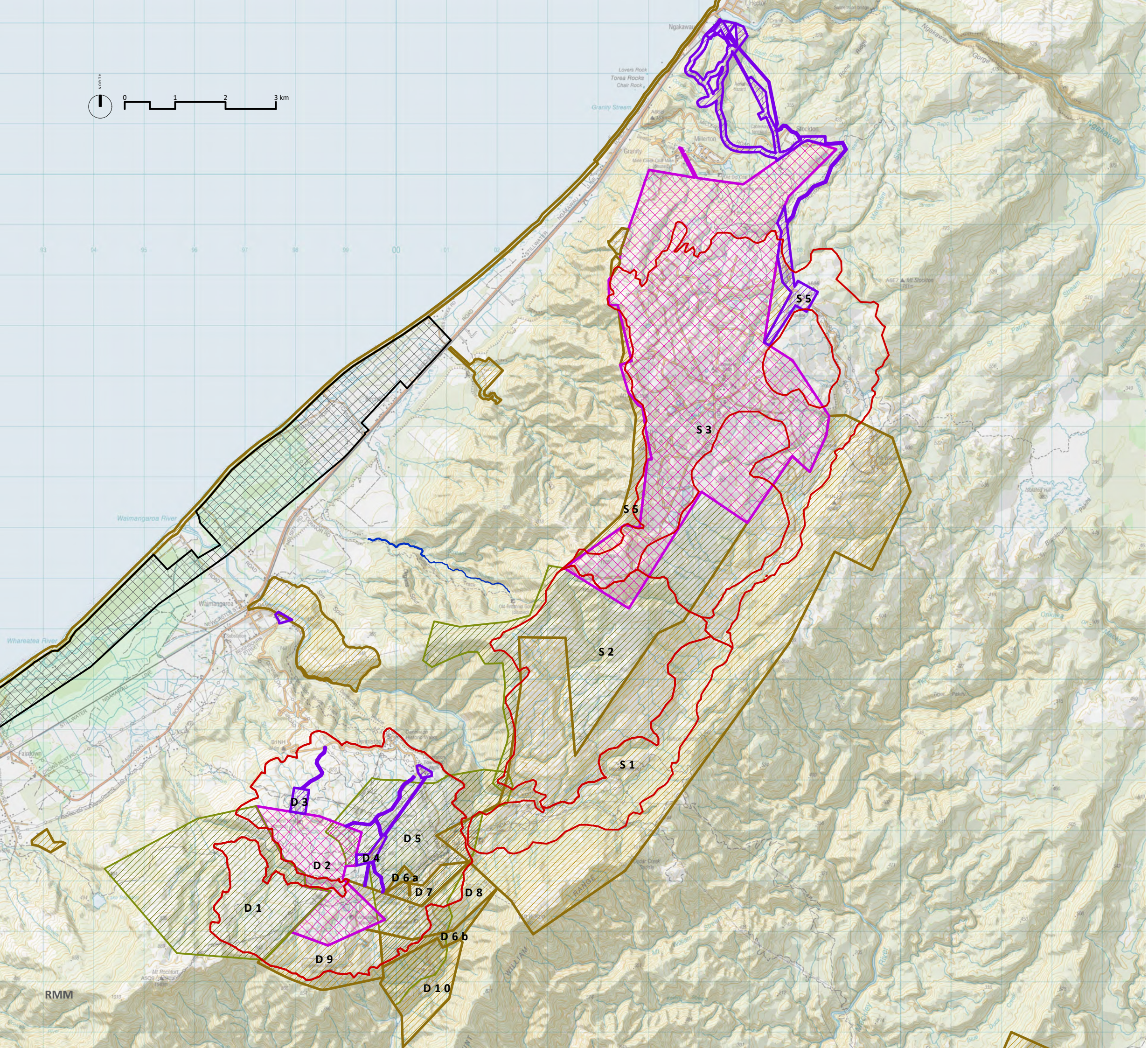
STOCKTON AND DENNISTON PLATEAUX



SOURCE: GNS NZ

MAP 13
BULLER PLATEAUX
GEOLOGICAL MAP





LEGEND

ACTIVE PERMITS

- STOCKTON AND DENNISTON PLATEAUX
- ANCILLARY COAL MINING LICENSE
- COAL MINING LICENSE
- EXPLORATION PERMIT
- MINING PERMIT
- PROSPECTING PERMIT
- GOLD FOSSICKING AREA

OWNERS

- S1. BT MINING LIMITED - 2905.739HA
 - S2. BULLER COAL LIMITED - 915.67 HA
 - S3. BT MINING LIMITED - 2335.712 HA
 - S4. BT MINING LIMITED - 183.825 HA
 - S5. BT MINING LIMITED - 85.29 HA
 - D1. BATHURST COAL LIMITED - 810HA
 - D2. BATHURST COAL LIMITED - 320HA
 - D3. BATHURST COAL LIMITED - 17.8HA
 - D4. BATHURST COAL LIMITED - 27.9HA
 - D5. BATHURST COAL LIMITED - 840HA
 - D6A. BULLER COAL LIMITED - 9.9HA
 - D6B. BULLER COAL LIMITED - 59.8HA
 - D7. BULLER COAL LIMITED - 49.4HA
 - D8. BULLER COAL LIMITED - 196.9HA
 - D9. BULLER COAL LIMITED - 199.4HA
 - D10. BATHURST COAL LIMITED - 186.8HA
- SOURCE: NZ PETROLUEM AND MINERALS

MAP 14
BULLER PLATEAUX
MINING PERMITS



DENNISTON PLATEAU LANDSCAPE



Denniston Plateau Landscape Description

Landform/Physical Environment

The Denniston Plateau is a roughly circular area about 4.5 km across and covers 17.5 km² / 1,750 ha (refer Map 15, page 47). It is accessed via 9 km of winding sealed road from Waimangaroa, which is 16.5 km east of Westport on State Highway 67 (SH67). The plateau is formed of relatively young sedimentary rocks, which rest on much older igneous and metamorphic rocks referred to as the Te Waipounamu Erosion Surface.

The central part of the plateau is elevated between 600 and 700 masl and is clearly defined by a steep coastal scarp to the west, steep scarp faces of the Waimangaroa River gorge to the north, and Cascade Creek to the southeast. The plateau includes a 2.8 km² upwarped part to the south, rising relatively gently from 700 to 840 masl where the plateau merges into Mount Rochfort. In the northwest the plateau is downwarped over 2.0 km² dropping from 600 to 480 masl at which point the gradient steepens as the land falls away to the coastal plain. The upwarped and downwarped sections share the relatively smooth topography of the plateau and have been tilted respectively, up to about 840 masl, and down to about 450 masl.

The overall plateau topography has a gently undulating surface with knolls rising to 50 m high, separated by deeply incised stream valleys (refer Photographs 36 - 38, Page 38). The most noticeable of these is the gorge formed by the Whareatea River, which separates the upwarped western section from the central section of the plateau. The gorge trends northwest southeast and is 2.5 km long up to 350 m wide, and incised to a depth of 60 m, with valley walls densely vegetated by southern rata mountain beech forest.

Along its northern side the plateau falls away very abruptly into the 500 m deep Waimangaroa Gorge, a well-defined valley system that flows west from the upper catchment of the Mt William Range and southeastern flanks of Mt Frederick for over 9 km towards the coast. The dramatic landforms and mature vegetation along the gorge section of the river contributes to a high natural character.

To the south, beyond the up-warped section, the topography rises in steps a further 200 m to the summit of Mt Rochfort, which is 1,040 masl. The southeastern side of the Denniston Plateau drops away steeply into the densely forested slopes enclosing Cascade Creek valley. Further east the plateau merges into the lower slopes of Mt William that rises to 1,062

masl, which is about 400 m above the plateau.

The plateau's western edge is bounded by the steep, forested, coastal escarpment that faces the Tasman Sea and is bisected by various watercourses including the Whareatea River, W W Rapid and Sandstone Streams.

The mean annual temperature on the Denniston Plateau is approximately 8.0° C, and frequent snowfalls occur in winter and spring. Cloud and fog are often present, and humidity is high¹⁶. Precipitation over the plateau is very high and often in the form of fog and snow in addition to rain. The Escarpment Mine application and hearing included information on precipitation suggesting an average annual precipitation level of 7,420mm with a variation between 4,950 and 10,170mm with extreme events potentially occurring throughout the year. Consequently, there are a network of streams flowing across the plateau as tributaries of the Whareatea River, Cascade Creek south of the plateau, Waimangaroa River north of the plateau and west to the coast.

Soils on the plateau are generally sparse, somewhat acidic, and generally of low permeability and low fertility. They occur in a very complex localised pattern and tend to be at or near saturation throughout the year. The soils are developed from Brunner Coal Measures, which comprise predominantly hard, thick-bedded quartzose and sandstone with subordinate carbonaceous mudstone and local coal seams (Nathan 1996) and related slope deposits of colluvium, and alluvium. They have very low fertility with plant nutrients probably supplied by organic regime rather than weathering of mineral soil. This is likely to account for the very slow growth rates of native plants on coal measures soils with a predominant pattern of stunted vegetation.

Although rock pavement is present over the entire Denniston Plateau; soils overtop much of the pavement and support a variety of vegetation, mainly low stature vegetation on shallow soils and taller vegetation on deeper soils mostly in gullies, and depressions. Approximately (from aerial photography) 50% of the pavement surfaces have a soil cover and the other 50% are rock pavements. The escarpments and steep-sided gullies to the streams also have partial soil cover, the balance being rock outcrops and large boulders¹⁷. This assessment differs from the Wildland Consultant Report (2010) discussed above, which found localised areas of sandstone erosion pavements with < 20% vegetation cover scattered over the plateau.



Photograph 29 : View of Denniston Plateau from SH67

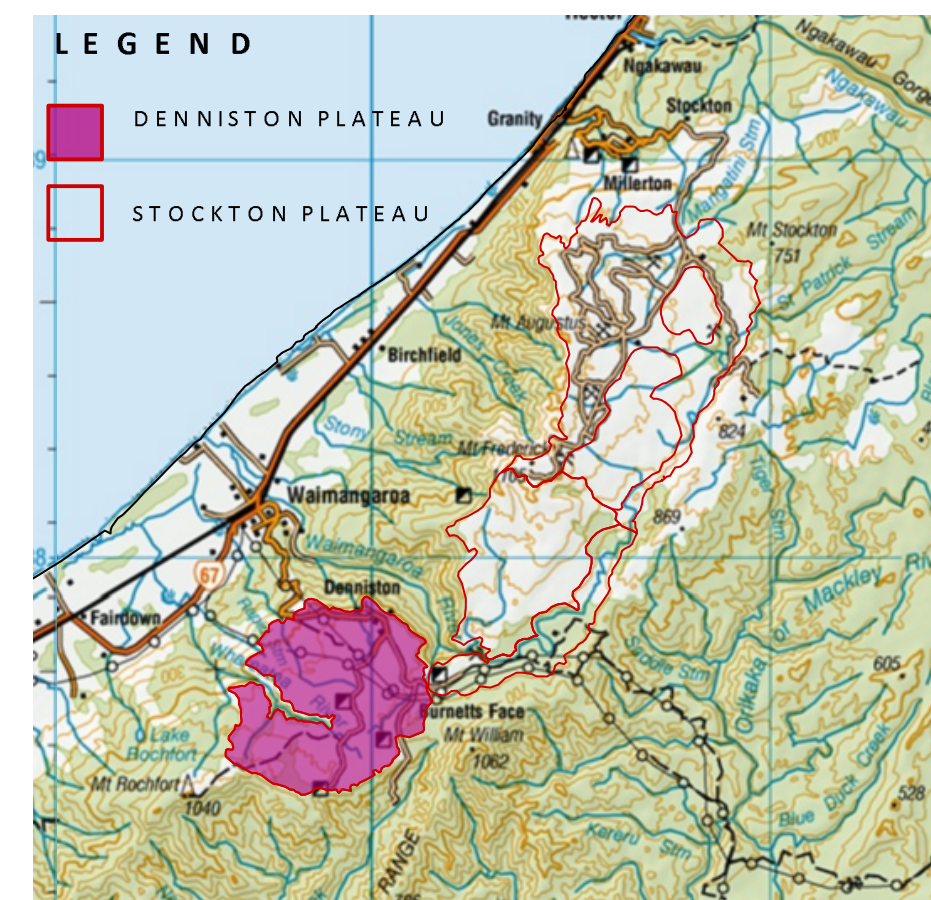


Figure 1 : Denniston Plateau location

¹⁶ Nichol, R., & Overmars, F. (2008). Vegetation and flora baseline survey, L&M Coal Ltd Escarpment Mine Project, Denniston Plateau. Resource and Environmental Management Limited.

¹⁷ Ross, Dr, C. (2008). Soils and indicative land rehabilitation, Escarpment Mine Project, Denniston Plateau, Buller (LC0809/20).