



Rockminolutions Pty Ltd has identified the most promising and extensive resource of the appropriate rock formation in Australia. The Buckland Basaltic Sequence, up to 330m thick, is an aerially extensive accumulation of basaltic ignimbrites that should have extensive lateral permeability. While basalt rock is common, it is rare for such a thick and extensive ignimbrite formation to be found with the right lithological characteristics. The resource is also ideally situated in relation to coal, gas, forestry and agricultural resources and would underpin a leading global hub for negative emissions technology including energy (gas, electricity), hydrogen, CCS (Carbon capture and storage) and BECCS (Bioenergy with carbon capture and storage) while enhancing forestry and agricultural productivity across large tracts of central and southern Queensland. These basaltic ignimbrites are capped and preserved by an extensive welded tuff horizon below which the material is largely poorly lithified and very amenable to crushing. Ideal for applying to agricultural land with the benefits of advanced weathering carbon capture as well as improved soil structure, water holding capacity and fertility. Research into this application is already underway on one property.

Field mapping and sampling to date has focused on identifying the nature of the Buckland Volcanic Sequence. Field evidence indicates that the sequence is comprised mostly of devitrified basaltic ignimbrite with some welded horizons. The limited lithification of this material has resulted in extensive collapses around the edge of the plateau as indicated on the Springsure 1:250,000 Geological Series Map. We are of the opinion that we can conservatively sequester up to half a billion tonnes of carbon dioxide through the Carfix process. Alternatively, if all of this basaltic material were to be finely crushed and spread on agricultural land, over 15 billion tons of carbon dioxide could be drawn down by enhanced chemical weathering while at the same time increasing crop yields and soil fertility. Ideally a combination of both methods will be employed.

EPM application 27970 on the eastern flank of the Buckland Plateau is more amenable to the production of crushed material for agricultural application. The potential applications to produce geopolymers and/or low carbon cement from this material are currently being investigated at University of Southern Queensland.

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