Brief site descriptions for proposed research by Dr. Robert Muir, University of the Free State

The two sites that I wish to visit to geologically describe and extract fossils are indicated on the EPHRA form and are depicted on the map attached. Here, I provide a brief description of the sites.

Site 1 – Coega Quarry (-33.7558, 25.6696)
The abandoned quarry is on the Coega Development Corporation land and I have been granted permission to visit and study the site. The Sundays River Formation is well-exposed in the quarry and is the focus of the intended research. The Sundays River Formation is Lower Cretaceous, spanning Late Valanginian to Hauterivian, ~140-130 Ma, based on foraminifera microfossils (McMillan, 2003). In the quarry it consists of heterolithic mudstone and sandstone facies that were deposited under tidal influence in a shallow marine setting. Additionally, sandstone facies are exposed, which signify submarine channel and/or tidal sand bar sub-environments. Within heterolithic and sandstone units, there are abundant marine mollusc fossils that are reworked, and also *in-situ*, that maintain their "life" positions. Common mollusc taxa and their sedimentological context will be the focus of study at the Coega Quarry. Additional information about the Sundays River Formation is reviewed in Muir (2019).

Site 2 – Jagtsvlakte (-33.8225, 25.4236)
The few small outcrops are situated around a naturally occurring pan at Jagtsvlakte, which is under the custodianship of the Coega Development Corporation, who have granted me permission to access and study. The outcrops expose the Kirkwood Formation, including the Bethelsdorp Member, which is a marine unit within the Kirkwood Formation that contains organic-rich mudstones and sandstones both of which contain oyster shells that are of interest for this study. The Bethelsdorp Member is considered Late Jurassic (~150-145 Ma) on account of foraminifera microfossils that have been described from the unit (McMillan, 2010). In addition to the Bethelsdorp Member, terrestrial mudstones and minor sandstones of the Kirkwood Formation are exposed, which are not the focus of the proposed study. Additional information about the Kirkwood Formation and its Bethelsdorp Member is reviewed in Muir et al. (2017).

References cited:

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