

# A new look at detrital iron deposit geology in the Hamersley Province of Western Australia

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## ABSTRACT

Detrital iron deposits ('DID') in the Hamersley Province of Western Australia have been successfully mined and processed into smaller quantities of saleable standalone or blended lump and fine ore products over many years. Despite their past, present, and potential future exploitation, they have received far less geological attention than the economically significant higher grade bedded iron deposits (BID) or channel iron deposits (CID).

There are at least three different geological stratigraphic unit classifications for DID currently used across the Hamersley Province. This paper attempts to document a new and more versatile geological stratigraphic classification for DID deposits based on improvements to the existing classifications. Five stratigraphic sub-units are recognised, denoted DID1 to DID5, each with distinctive detrital clast to silt matrix ratio, clast/pebble petrography, degree of lithification/cementation, geochemistry and spatial distribution. Examples are presented of DID depositional fan 3-D geometry, recorded from RC and Diamond drill hole information and exposure in mining faces at an active Pilbara mine. The detailed petrography also provides a new insight into DID geology and constraints on ore genesis models.