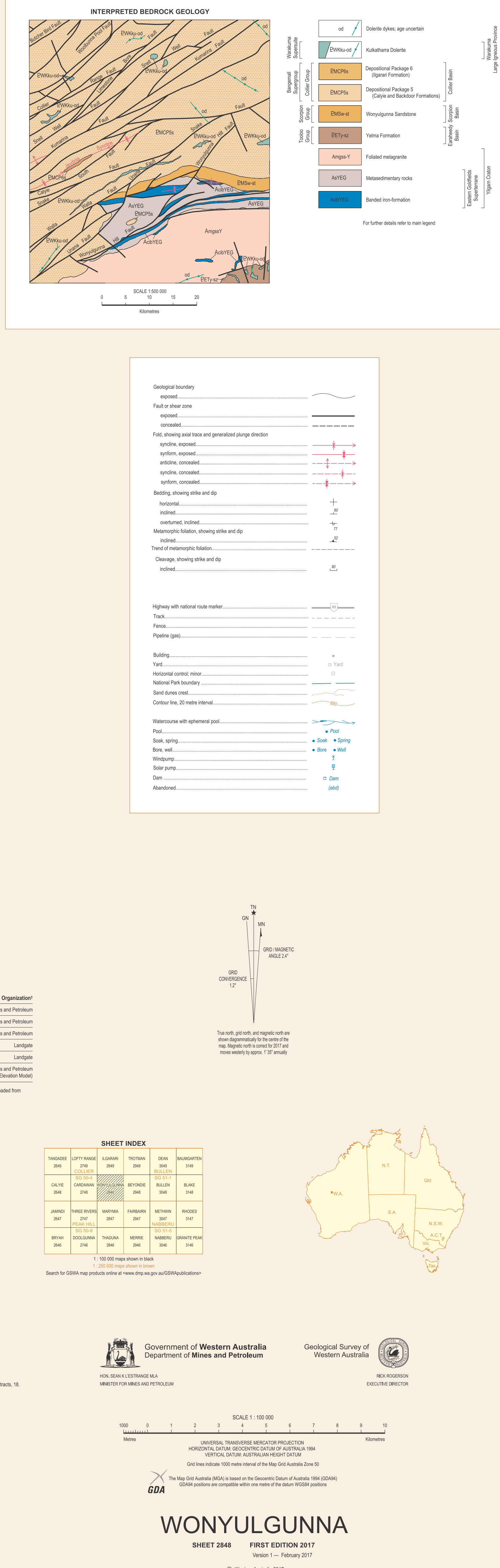
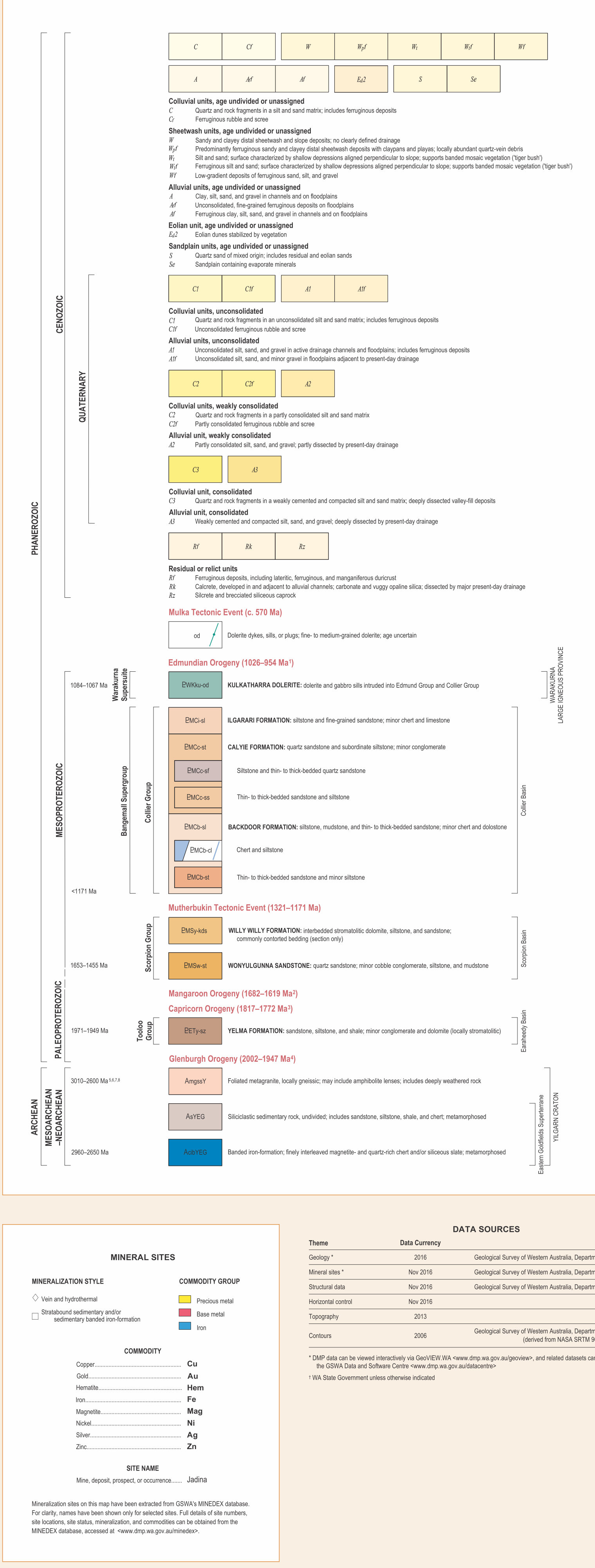
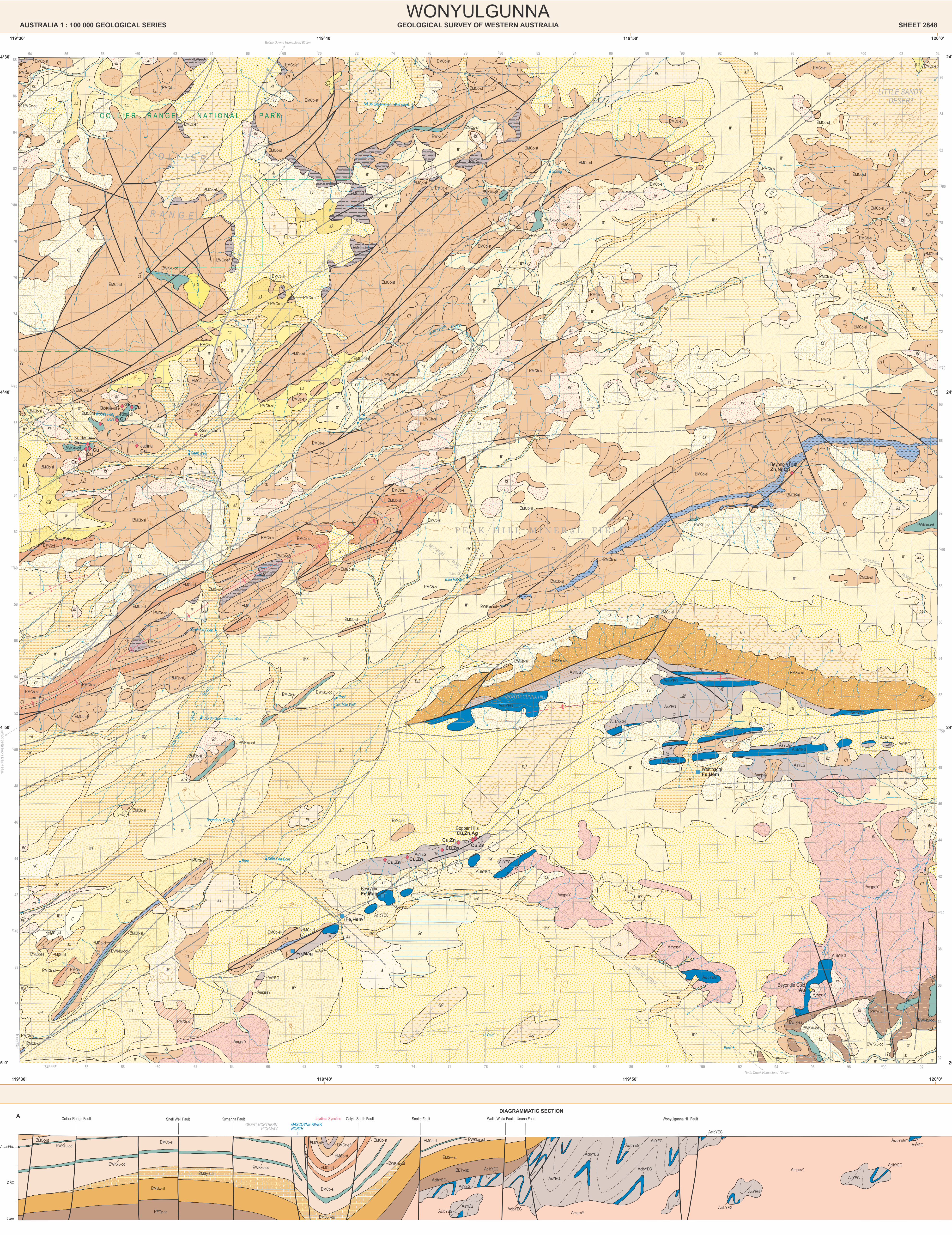


# WONYULGUNNA

## 1:100 000 MAPPING



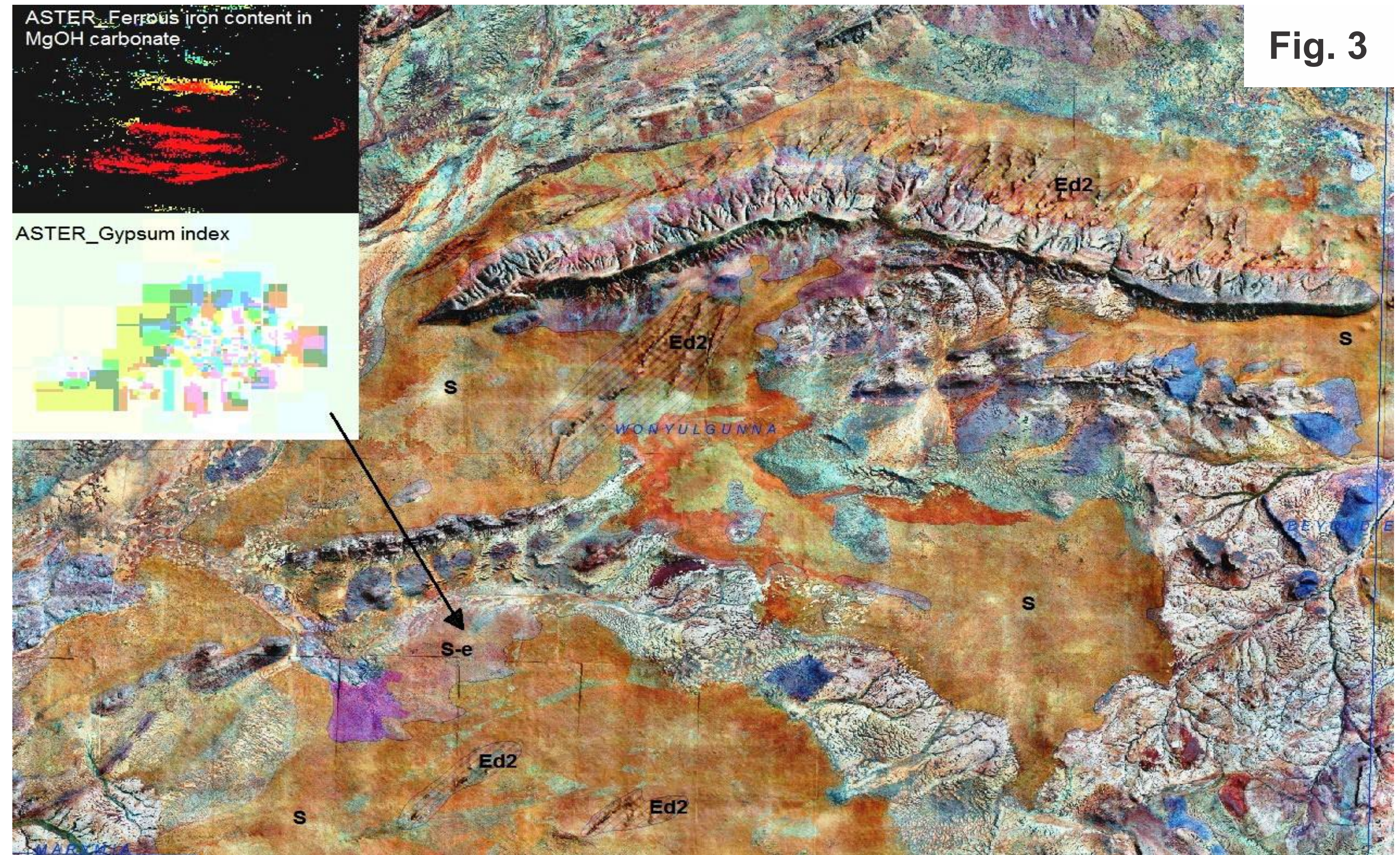
### BEDROCK GEOLOGY

The WONYULGUNNA 1:100 000 map sheet is located in the eastern part of the Capricorn Orogen and contains a wide range of bedrock lithologies including granite–greenstones of the Archean Marymia Inlier, the Paleoproterozoic low-grade metasedimentary rocks of the Earaheedy and the Scorpion Basins; however, the region is dominated by low-grade siliciclastic sedimentary rocks of the Mesoproterozoic Collier Basin.

The oldest rocks are Archean granite-greenstones that are currently believed to be a part of the Kalgoorlie Terrane of the Eastern Goldfields Superterrane. The rocks are exposed within the south-eastern part of the map sheet.

Greenstones are composed mainly of quartz-sericite (muscovite), quartz-chlorite-sericite schists, and banded iron-formation (BIF), with minor phyllite, quartzite, and chert. Mesoscale isoclinal folding is common including chevron type folding. Schists are typically weathered, sometimes silicified and ferruginous; locally a secondary massive ironstone capping occurs. BIF is commonly well bedded and laminated locally containing small-scale contorted folding whereas magnetite-hematite layers are generally thicker and in greater proportion than the alternating quartz-rich bands. Thin, irregular quartz veining common in some outcrops can be attributed to metamorphic remobilization of silica; however some quartz veins are up to 3 m wide occurring along the cleavage. Locally, greenstones are present as roof pendants and rafts in granite whereas the granite-BIF contact can be undulose with the granite truncating (previously folded) layering in the BIF (Fig. 1); at some localities BIF appears to form elongate structurally coherent lenses within the granite. The greenstones are defined by intense positive magnetic anomalies in aeromagnetic images (Fig. 2).

The granitic rocks are typically weathered, strongly sheared, and kaolinized; generally fine- to medium-grained, massive or foliated, and vary from leucocratic monzogranite to biotite granite. Foliation is only locally strongly developed where it is defined by alignment of elongate minerals. Rarely the rocks carry a gneissic texture defined by alternating quartz-feldspar and biotite-rich bands. Locally quartz veining or rare quartz-feldspar aplite veins and pods are present.



### REGOLITH

Large areas of Wonyulganna, particularly in the southeastern part of the sheet, are covered by extensive sand plains (S) and dune fields (E2d). The dune fields are composed of vegetated dunes which are oriented predominantly north-east (Fig. 3).

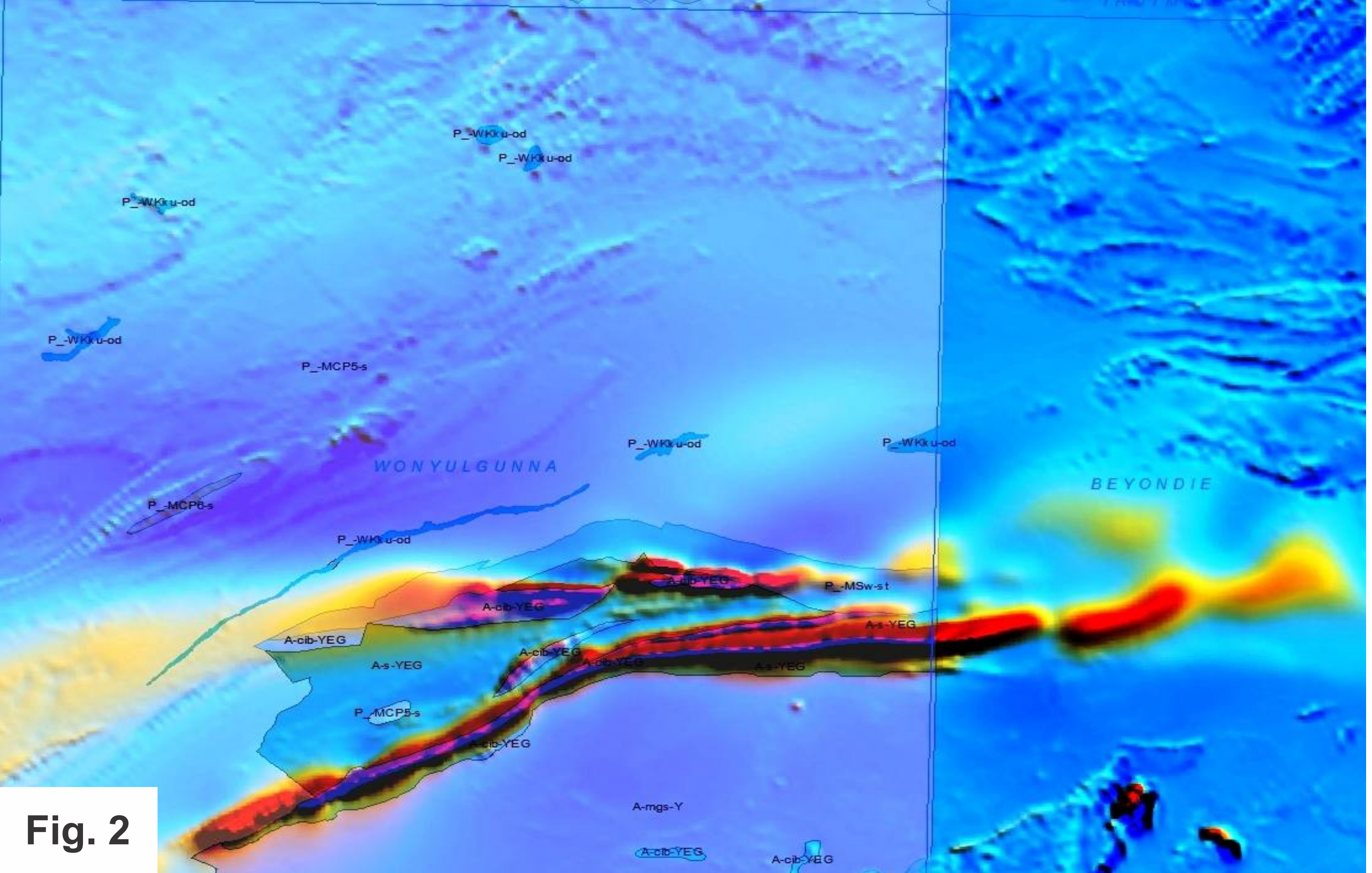
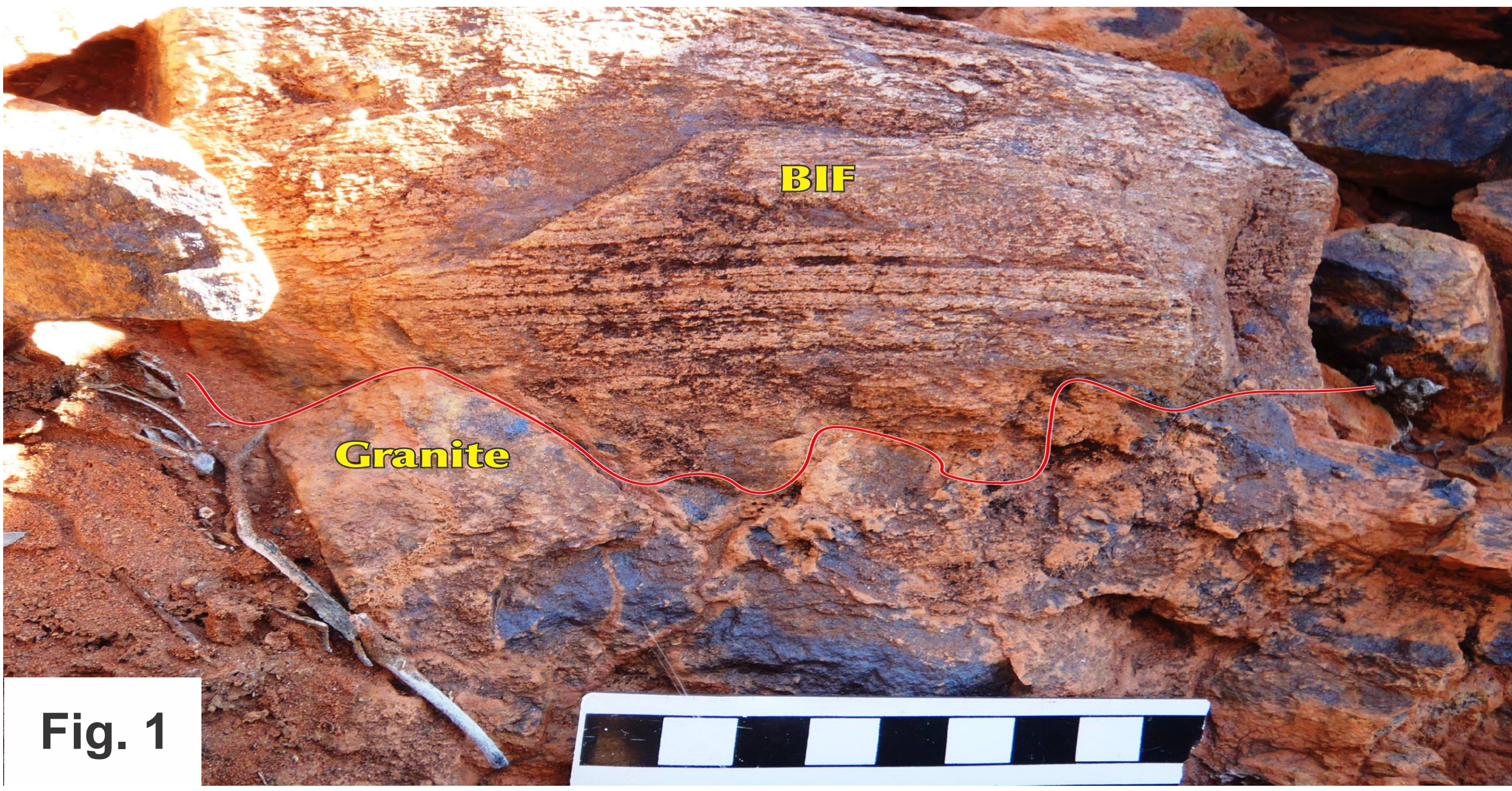
The ASTER imagery (Fig. 3) highlights extremely intense anomaly 5 x 3 km in size within a poorly exposed area immediately south of the most southern greenstones and is interpreted as a sandplain containing evaporate minerals (S-e).

### MINERALIZATION

Copper and iron ore are the main commodities within the map sheet; there are also minor occurrences of Zn, Pb, Ni, Ag and Au.

Copper mineralization is mainly hosted by sedimentary siliciclastic rocks of the Collier Group in the western part of the sheet and to a lesser extent within the greenstones to the south. The Kumarina mining area is the major source of Cu ore; here occurrences are all supergene enrichments of sulfide-quartz veins along faults and shear zones, usually in, or near, dolerite sills that intrude siltstones of the Backdoor Formation. The common minerals are chrysocolla, malachite, azurite, and chalcocite. Cu mineralisation in Archean basement rocks of Copper Hills occurs in small quartz veins along the schistosity, and as purple-weathered zones, less than 0.5 m wide, within quartz-muscovite and quartz-chlorite schist of the Marymia Inlier. It is predominantly a gossan type whereas chrysocolla, malachite, azurite, chalcocite, cuprite, hematite, and limonite occur at the surface, and chalcopyrite is associated with pyrite at depth.

Iron ore (Beyondie Iron project) occurs in Archean basement and hosted within banded iron formation (taconite) and supergene enriched granite-greenstones. Fe mineralization is associated with magnetite and lesser detrital hematite.



The Wonyulganna Sandstone is exposed as a prominent east-trending ridge just north of the greenstone belt. It is the basal unit of the Scorpion Group, which appears to be equivalent to sedimentary rocks of the lower Edmund Group. The Wonyulganna Sandstone is composed predominantly of whitish, coarse-grained, moderately sorted, commonly cross-bedded quartz sandstone with minor feldspar and rare, up to cobble size conglomerate with clasts of vein quartz, quartzite, and silicified iron formation; however, there is typically no basal conglomerate on the unconformity. It is interpreted to unconformably overlie metasedimentary rocks of the Yelma Formation and have an irregular, angular unconformity with the Archean greenstone basement.

The south-eastern corner of the map sheet exposes the basal unit of the Earaheedy Basin, the Yelma Formation. Here, it is composed predominantly of weathered silty shale with siltstone interbeds which locally grade into fine-grained quartz sandstone; some siltstones are silicified to chert or in places are tightly folded with a wavelength up to 7 m. Where exposed, the unit is in faulted contact with granitic rocks of the Marymia Inlier otherwise it being interpreted to have unconformable contact with the underlying granites. The metasedimentary rocks are intruded by mafic sills of the Kulkatharra Dolerite.

The sedimentary rocks of the Collier Group dominate the map sheet. They comprise ferruginous and locally strongly silicified sandstone-siltstone successions of the Caylie and Backdoor Formations and minor siltstone-mudstones of the Ilgarra Formation. The Backdoor Formation overlies the Wonyulganna Sandstone at Wonyulganna Hill; however, farther to the southwest it appears to lie directly on Archean basement. To the northwest, in close proximity to the tight fold of the Jaydina Syncline, it has been interpreted to unconformably overlie the Willy Willy Formation of the Scorpion Group, itself seems to be truncated by the prominent Collier Range Fault farther to the northwest. Numerous dolerite sills of the Kulkatharra Dolerite intrude the siliciclastic sedimentary rocks of the Collier Group.