SHERLOCK

AUSTRALIA 1 : 100 000 GEOLOGICAL SERIES | GEOLOGICAL SURVEY OF WESTERN AUSTRALIA | SHEET 2456

117°30' 40' 50' 118°00' 20°30' 21°00'

INDIAN OCEAN

SHERLOCK BAY | FORESTIER ISLANDS | FORESTIER BAY | CAROLINE | DEVIATION | ANCHOR HILL | SABLE I | SANDY I | WEST MOORE I | EAST MOORE I | RONSARD I | Bala Bala Harbour | Roebourne 45 km | Wittenoom 175 km | Wittenoom 180 km

WEST PILBARA MINERAL FIELD | MT FRASER | PEAWAH HILL | TABLETOP HILL | THURTWYNA HILL | WARRAMBIE HILL | CAINES WELL | MT BROWN

Sherlock | Pilbunderina

A B C D

PHANEROZOIC

CAINOZOIC — QUATERNARY

Qhmm Mobile mud and silt; intertidal with mangroves
Qhms Shelly sand in coastal dunes and old beach deposits; contains *Anadara granosa*
Qhmu Silt and mud in supratidal to intertidal flats and lagoons
Qbmb Coastal limestone; lime-cemented shelly sand, dune sand, and beach conglomerate
Qao Alluvium—sand and gravel in rivers and creeks; clay, silt, and sand in channels on floodplains
Qac Claypan deposits on floodplains
Qao Alluvial sand, silt, and clay in floodplains
Qab Alluvial sand, silt, and clay in floodplains, with gilgai surface in areas of expansive clay
Qwb Sheetwash sand, silt, and clay in distal outwash fans, with gilgai surface in areas of expansive clay
Qc Colluvium—sand, silt, and gravel in outwash fans and scree
Qs Eolian sand—red-yellow, wind blown sand; local ridges

Czsk Calcrete—massive, nodular and cavernous limestone, variably silicified; alluvial origin
Czrf Ferricrete—includes ferruginous and pisolitic ironstone on lateritic surfaces
Czrk Calcrete—massive, nodular and cavernous limestone, variably silicified; residual origin
Czro Massive and nodular opaline silica; residual origin

Qv Quartz vein

Mount Bruce Supergroup — Fortescue Group — HAMERSLEY BASIN

AFdc **COOYA POOYA DOLERITE:** fine- to medium-grained dolerite
AFh **HARDEY FORMATION:** orthoclase sandstone, pebbly sandstone, and tuffaceous grit
AFr **MOUNT ROE BASALT:** undifferentiated mafic volcanics, volcaniclastics, and tuffaceous sedimentary rocks
AFry Vesicular basalt
AFrg Glomeroporphyritic basalt
AFrb Basaltic breccia
AFrc Polymictic conglomerate; poorly sorted and matrix supported
AFrs Well laminated shale, siltstone, and poorly sorted tuffaceous sandstone; well developed graded beds, ripple cross-bedding, and mudcracks

c 2785 Ma — Agl Leucogranite; medium-grained; biotite(-tourmaline)-bearing; unfoliated
Aod Dolerite and gabbro
c 2925 Ma — AgBg **BOOKINGARRA GRANITE:** medium- to coarse-grained biotite monzogranite to syenogranite; locally strongly foliated; metamorphosed

Pilbara Supergroup

Axm Mylonite and mylonitic gneiss; in Sholl Shear Zone (Section only)
Aoldo **Millindinna Intrusion:** gabbro; metamorphosed
c 2925 Ma — AoSo AoSd AoSdy
Sherlock Intrusion
AoSo Gabbro; metamorphosed
AoSd Leucogabbro; metamorphosed
AoSdy Granophyric gabbro; metamorphosed

AoO AoOb AoOo AoOd AoOv
AoO **Opaline Well Intrusion:** fine- to coarse-grained mafic intrusive rock; minor extrusive mafic rock; metamorphosed
AoOb Mesotrachyte, vesicular; local ocicular pyroxene
AoOo Metagabbro; ocicular texture
AoOd Metamorphosed dolerite or microgabbro; seriate to ocicular textures
AoOv Metamorphosed olivine gabbro; includes minor dunite, and pyroxenite; local metre-scale igneous banding from ocicular-textured gabbro to olivine gabbro

Ar Arv Ary
MOUNT NEGRI VOLCANICS: metamorphosed vonsilitic and vesicular basalt, undivided (Section only)
Arv Vonsilitic basalt; metamorphosed
Ary Vesicular basalt; metamorphosed

Aa Aaq Aaq Aes Aec Aei Aey Aeb Aed Aet Aem Aeh Aeo
LOUDEN VOLCANICS: undifferentiated metamorphosed basalt and high-Mg basalt; metamorphosed interbedded clastic units and chert
Aeq Polymictic conglomerate; poorly sorted and matrix supported; metamorphosed
Aeq Quartzite; medium- to coarse-grained; block chert clasts; locally graded and trough cross-bedded; metamorphosed
Aes Sandstone; fine- to medium-grained; poorly sorted; ericaic; includes shale beds and polymictic conglomerate; metamorphosed
Aec Chert; banded red-grey; metamorphosed
Aei Pillowed basalt; locally pyroxene spinifex textured; metamorphosed
Aey Vesicular basalt; local abundant aphyric basalt and high-Mg basalt; metamorphosed
Aeb Aphyric basalt; metamorphosed
Aed Basalt; fine- to medium-grained; includes sills; metamorphosed
Aet Serpentine-chlorite schist; sheared high-Mg basalt; metamorphosed
Aem High-Mg basalt; pyroxene spinifex texure; local abundant komatiite, characterized by olivine spinifex texture; metamorphosed
Aeh High-Mg basalt; ocicular textures; minor komatiite, characterized by olivine spinifex texture; metamorphosed
Aeo Peridotite; olivine cumulate texture; metamorphosed

c 2950 Ma — Agpe
Agpe **PEAWAH GRANODIORITE:** metamorphosed medium-grained tonalite to granodiorite; plagioclase phenocrysts, weakly foliated to massive
Apto **TOWERANNA PORPHYRY:** metamorphosed porphyritic granodiorite; possibly equivalent to PEAWAH GRANODIORITE

< 3000 Ma — ADm ADmf
ADm **MALLINA FORMATION:** metamorphosed interbedded laminated shale, siltstone, and poorly sorted ericaic sandstone; minor layers of metachert and metamorphosed felsic tuff
ADmf Shale, siltstone and sandstone, includes layers of feldspar(-hornblende) porphyry; metamorphosed

De Grey Group

ADcq ADcs
CONSTANTINE SANDSTONE
ADcq Quartzite; medium- to coarse-grained; minor fuchsitic metachert clasts; minor graded beds
ADcs Interbedded poorly sorted sandstone and shale; minor graded beds; metamorphosed

Pilbara Supergroup — Whim Creek Group

ADr ADrc
RUSHALL SLATE: metamorphosed well laminated shale and siltstone; minor sandstone; graded beds; maybe equivalent to lower part of **MALLINA FORMATION**
Comstock Member: vesicular basalt; metamorphosed

c 3010 Ma — ADc ADcb ADcf ADcfa
CISTERN FORMATION: metamorphosed tuffaceous felsic volcanic rock and fine- to coarse-grained felsic volcaniclastic rock; andesite to dacite; includes thin metabasaltic flows and sills
Andesite to dacite vitric tuff; locally rich in lithic and crystal fragments; metamorphosed
Poorly sorted tuffaceous sandstone, siltstone and mudstone; felsic volcaniclastic and epiclastic origin; minor clastic rocks, including oligomictic conglomerate layers; graded beds; metamorphosed
Oligomictic conglomerate; felsic volcanic clasts; minor basaltic clasts; generally matrix supported; metamorphosed

ADt ADh ADf ADfp
MONS CUPRI VOLCANICS: metamorphosed felsic volcanic and volcaniclastic rocks; rhyolite, dacite and minor andesite
Felsic volcanic and volcaniclastic rocks, tuffaceous; rhyolite, dacite and minor andesite; metamorphosed
Mount Brown Rhyolite Member: porphyritic rhyolite and dacite; lavas and pyroclastics, minor tuff with feldspar and quartz phenocrysts; light-grey to white; locally flow banded; metamorphosed
Rhyolite to dacite porphyry, with quartz phenocrysts; dark grey; metamorphosed

ACw ACwx ACwy
WARRAMBIE BASALT: metamorphosed basalt and minor coarse-grained sedimentary rock, interfingers with basal portions of **MONS CUPRI VOLCANICS**
ACwx Fragmental basalt; mafic breccia, and polymictic mafic conglomerate; locally abundant rhyolite boulders; metamorphosed
ACwy Basalt, commonly vesicular; locally plagioclase-phyric to glomeroporphyritic; metamorphosed

Aaq Aam Aas
Aaq Quartzite; medium- to coarse-grained; subangular clasts and pebbles of metamorphosed black chert; locally graded beds and trough cross-beds
Aam High-Mg basalt; cotlandite, chlorite, and sericite alteration; locally interbedded with shale and ericaic sandstone; minor tuffaceous volcaniclastic rocks; metamorphosed
Aas Basalt, commonly vesicular; metamorphosed

Agpc Agm
Agpc **PORTREE GRANITE:** medium- to coarse-grained biotite monzogranite; weakly foliated; metamorphosed
Agm Monzogranite; medium-grained; biotite-bearing; weakly to strongly foliated; metamorphosed

c 3015 Ma — Amg Monzogranite, strongly foliated and locally gneissic; medium-grained; biotite-bearing; locally migmatitic and pegmatitic; metamorphosed to amphibolite facies
c 3095 Ma — AgMg **CAINES WELL GRANITOID COMPLEX:** granitoid gneiss and foliated granitoid rock; includes younger **BOOKINGARRA GRANITE** and xenoliths of metamorphosed mafic and ultramafic rocks
AgMm Monzogranite, strongly foliated and locally gneissic; biotite-bearing; locally migmatitic; metamorphosed to amphibolite facies

Pilbara Supergroup

> 3010 Ma — Abo Aus Aus
Abo Amphibolite; medium-grained; strongly foliated
Aus Serpentinized ultramafic rock; retrogressed amphibolite-grade metamorphic rock
Aus Pyroxenite; locally ferruginized; weakly metamorphosed

Geological boundary

exposed
concealed

Fault

exposed
concealed
concealed, interpreted from aeromagnetic data
relative horizontal displacement — 20m
strongly foliated rock

Fold

anticline; exposed, concealed
syncline; exposed, concealed
overturned anticline; exposed, concealed
overturned syncline; exposed, concealed
Minor fold, showing plunge and nature of vergence (S, Z, or M)

Bedding, showing strike and dip

inclined
vertical
overturned
trend (section only)

Igneous layering, showing strike and dip

inclined

Way-up indicator

pillow structure
sedimentary structure

Metamorphic foliation, showing strike and dip

inclined
vertical

Cleavage, showing strike and dip

inclined
vertical
crenulation; inclined, vertical

Anphato treament

prominent trend, unspecified

Isotopic age determination site with identification number — c 1664

Highway with national route marker, bridge — 95
Formed road
Track
Fence, generally with track
Homestead — Sherlock
Locality — Pilbunderina
Building
Yard
Microwave repeater station
Horizontal control, minor
Powerline
Contour line, 20 metre interval — 20

Watercourse, ephemeral; pool
Bore, well
Windpump
Dam, tank
Waterhole, spring
Prominent submerged reef
Rock, exposed
Abandoned — (BM)
Position doubtful — (PO)

Mine (gold, unless otherwise indicated) — Sherlock
Quarry or pit
Prospect
Mineral occurrance
Antimony — Sb
Asbestos (chrysotile) — Ac
Copper — Cu
Gravel — Gr
Lead — Pb
Nickel — Ni
Rock, crushed aggregate — Rc
Titanium — Ti
Vanadium — V
Zinc — Zn

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				MARBLE BAR	
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1:100 000 maps shown in black
1:250 000 maps shown in brown

TN GN MN — GRID / MAGNETIC ANGLE 1.6°
GRID CONVERGENCE 0.3°

True north, grid north and magnetic north are shown diagrammatically for the centre of the map. Magnetic north is correct for 1996 and moves easterly by about 0.2° in 5 years

DIAGRAMMATIC SECTIONS

A — Sholl Shear Zone — BALLA BALLA RIVER — Louden Fault — NORTH WEST COASTAL HIGHWAY — B
C — Sholl Shear Zone — Kanitha Creek — NORTH WEST COASTAL HIGHWAY — MT BROWN — Louden Fault — BALLA BALLA RIVER — Coporn Creek — Mallina Shear Zone — D
SEA LEVEL — 2 km — 4 km
Trend of foliation

SIMPLIFIED GEOLOGY

Fortescue Group
Agl Leucogranite
Aod Dolerite
AgBg Bookingarra Granite
Aomm Sheared and mylonitic rock
Aol Millindinna Intrusion
AoS Sherlock Intrusion
AoO Opaline Well Intrusion
Aa Mount Negri and Louden Volcanics
Agpe Peawah Granodiorite
ADm De Grey Group
Mallina Formation
ADc Constantine Sandstone
AC Whim Creek Group
ACwx Warrambie Basalt
Agpc Agm Portree Granite
Agm Monzogranite, weakly to strongly foliated
Amg Granitoid gneiss and foliated granitoid
AgMg Caines Well Granitoid Complex
AgMm Granitoid gneiss and foliated granitoid
Abo Aus Amphibolite
Aus Metamorphosed ultramafic rock

HAMERSLEY BASIN — PILBARA CRATON
SCALE 1: 500 000
Kilometres

GOVERNMENT OF WESTERN AUSTRALIA
HON. NORMAN MOORE, M.L.C.
MINISTER FOR MINES

DEPARTMENT OF MINERALS AND ENERGY
K.R. PERRY, DIRECTOR GENERAL

NGMA
PRODUCT OF THE NATIONAL GEOSCIENCE MAPPING ACCORD

GEOLOGICAL SURVEY OF WESTERN AUSTRALIA
PETRO GILL, DIRECTOR

SCALE 1:100000
1000 0 1 2 3 4 5 6 7 8 9 10
Metres — Kilometres
TRANSVERSE MERCATOR PROJECTION
Grid lines indicate 1000 metre interval of the Australian Map Grid Zone 50

Geology by R.H. Smithies 1995
Edited by S. Willis, C. Strong, G. Loan and C. Brien
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Bathymetric data supplied by the Department of Transport, and is not to be used for navigation purposes

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