

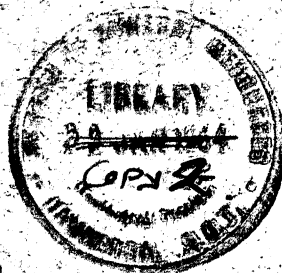
003918

COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS.

BULLETIN No. 51.



BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)

THE PRECAMBRIAN MINERAL BELT OF NORTH-WESTERN QUEENSLAND

BY

E. K. CARTER, J. H. BROOKS and K. R. WALKER.

VOLUME II — MAPS.

*Issued under the Authority of Senator the Hon. W. H. Spooner, M.M.
Minister for National Development.*

1961.

Since the first of the map sheets in this Atlas went to press in 1956, additional field work has resulted in some re-interpretation of the geology. The most important of these changes (already incorporated in Volume 1 of this Bulletin) are:

Cliffdale Volcanics & Nicholson Granite (Pls. 1 & 2) are considered to be most probably Lower Proterozoic.

Mount Isa Shale (Pls. 1 & 5) is regarded as contemporaneous with the Gunpowder Creek Formation and some or all of the Paradise Creek Formation. It lies unconformably above the Myally Beds, with, therefore, a possible time break.

Mingera Beds (Pls. 1 & 5) lie conformably between the Judenan Beds and Paradise Creek Formation and are therefore equivalent to the Gunpowder Creek Formation. An unconformity separates them from the overlying Pilpah Sandstone.

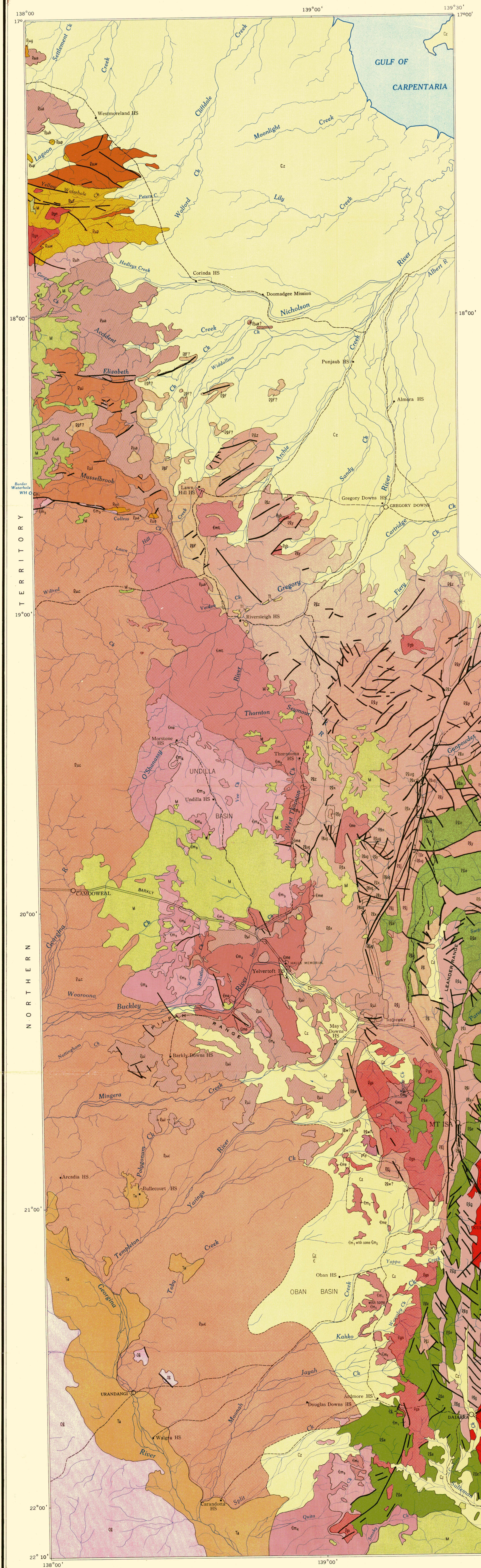
Probable Granite Emplacement, shown as older than Myally and Judenan Beds (Pl. 5), Judenan Beds (Pl. 6), and Myally Beds and Deighton Quartzite (Pl. 8), is now thought to be younger than the Myally and Judenan Beds (which are considered to be contemporaneous with the Corella Formation), but older than the Deighton Quartzite.

Unconformity at base of Judenan Beds (Pl. 6) is of local significance only, and is probably due to the continued rise of the tectonic welt.

Leichhardt Metamorphics (Pls. 1, 7, 8 & 9) are considered to be Lower Proterozoic, not Archaean.

Ewen Granite (Pl. 7) intrudes the Argylla Formation and underlies the Eastern Creek Volcanics. Granite intrusion may also have preceded the extrusion of the lavas of the Argylla Formation (Pls. 7, 8 & 9).

The large body of **granite** south of Duchess and east of Wills Creek (Pls. 1 & 9) is petrologically similar to the Wonga Granite rather than the main mass of Kalkadoon Granite.



CAINOZOIC

Cz Alluvium, heavy soil cover

TERTIARY

Ta Austral Downs Limestone

Tl Limestone

MESOZOIC

M Pollard Waterhole Shale (LOWER CRETACEOUS); plant-bearing sandstone (UPPER JURASSIC); undifferentiated sediments (Tambora Formation), etc.

PALAEZOIC

LOWER ORDOVICIAN

Ol Swift Beds, Nimmaroo Formation

CAMBRIAN

UPPER

CU Chatsworth Limestone, O'Hara Shale, Pomergate Limestone

MIDDLE

CU₁ Selwyn Range Limestone, Devoncourt Limestone, Roaring Siltstone, Split Rock Sandstone, Steamboat Sandstone

CU₂ Mail Change Limestone, V-Creek Limestone, Currant Bush Limestone, Quila Formation, Blazon Shale

CU₃ Inca Formation

CU₄ Beetle Creek Formation (lower), Thornton Limestone (lower), Border Waterhole Formation

LOWER

CU₅ Mount Birnie Beds, Riverside Formation

PALAEZOIC OR PROTEROZOIC

LOWER CAMBRIAN OR UPPER PROTEROZOIC

CU₆ Camooweal Dolomite

CU₇ Colless Volcanics

PALAEZOIC OR UPPER PROTEROZOIC

CU₈ Quamby Conglomerate

CU₉ Mekkat Sandstone

PROTEROZOIC

UPPER

CU₁₀ Undifferentiated

CU₁₁ Gold Creek Volcanics

CU₁₂ Mullera Formation

CU₁₃ Constance Sandstone

CU₁₄ Wollongong Formation

CU₁₅ Peters Creek Volcanics

CU₁₆ Westmoreland Conglomerate

Granite emplacement

CU₁₇ Cliffdale Volcanics

CU₁₈ Pilpah Sandstone

Granite emplacement

CU₁₉ Mingera Beds

CU₂₀ Undifferentiated

CU₂₁ Lawn Hill Formation

CU₂₂ Mount Isa Shale

CU₂₃ Chumvale Breccia

CU₂₄ Deighton Quartzite

CU₂₅ Ploughed Mountain Beds

CU₂₆ Surprise Creek Beds

CU₂₇ Paradise Creek Formation

CU₂₈ Gunpowder Creek Formation

Probable granite emplacement

CU₂₉ Knapsdale Quartzite

CU₃₀ Roxmere Quartzite

CU₃₁ Judenan Beds

CU₃₂ Myall Beds

CU₃₃ Charley Creek Formation

CU₃₄ Corella Formation

CU₃₅ Mount Philip Agglomerate

CU₃₆ Marimo Slate

ARCHAEO

Probable granite emplacement

CU₃₇ Yaringa Metamorphics

CU₃₈ Leichhardt Metamorphics

Granites

CU₃₉ Nicholson Granite

CU₄₀ Weberra Granite

CU₄₁ Ewen Granite

CU₄₂ Wonga Granite

CU₄₃ Naraku Granite

CU₄₄ Wimberu Granite

CU₄₅ Williams Granite

CU₄₆ Sybella Granite

CU₄₇ Kalkadoon Granite

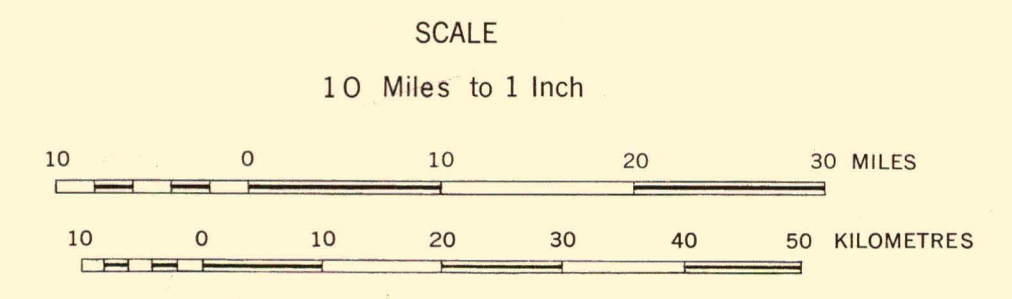
Most of the granites include intrusives of more than one age. The Kalkadoon & Sybella Granites may be partly Archaean.

GEOLOGICAL MAP OF NORTH WESTERN QUEENSLAND

Geology by officers of the Bureau of Mineral Resources, and the Geological Survey of Queensland.

Compiled by E. K. Carter and A. A. Opik.

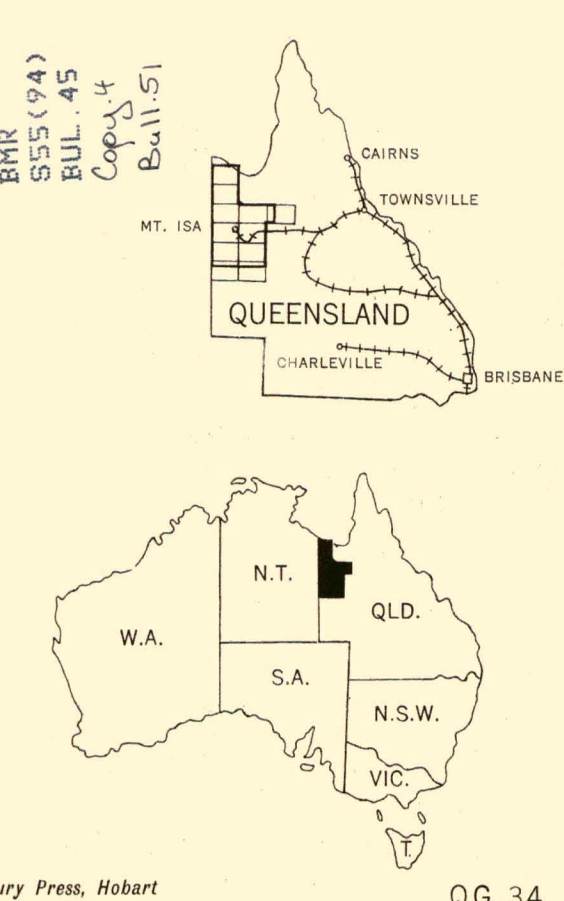
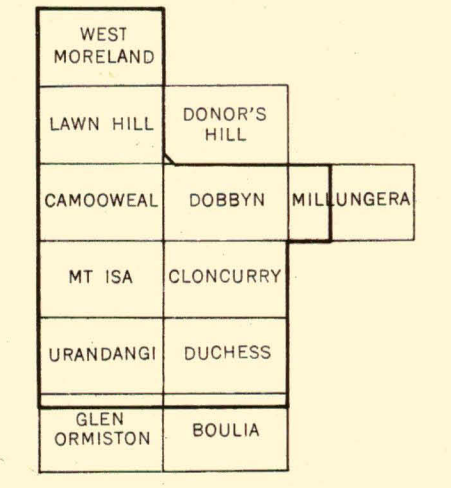
Drawn by H. F. Douth, & R. J. Molloy, Bureau of Mineral Resources, Geology and Geophysics, May 1959



- Geological boundary, position accurate
- Indefinite geological boundary
- Fault, definite or probable, position accurate
- Sealed road
- Unsealed road or track
- Railway with siding
- Township
- Homestead

LOCALITY MAPS

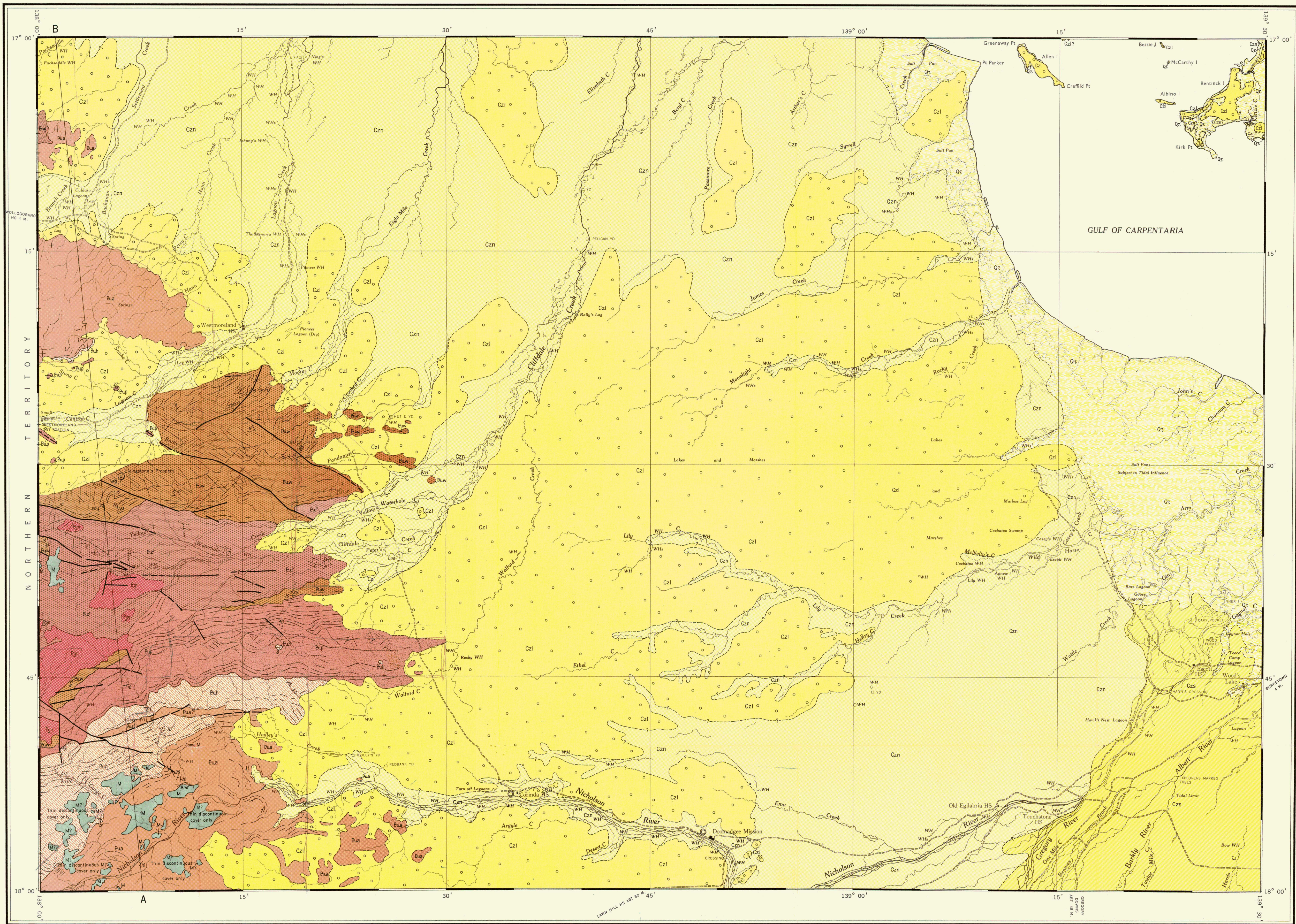
INDEX TO 4 MILE SHEETS



AUSTRALIA 1 : 253,440

WESTMORELAND
QUEENSLAND

4 MILE GEOLOGICAL SERIES SHEET E 54 - 5



Reference

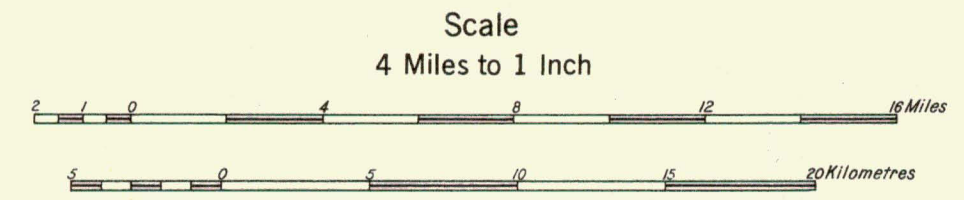
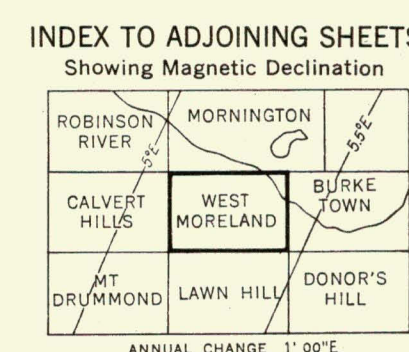
- RECENT
- RECENT-TERTIARY
- MEZOZOIC
- LOWER CRETACEOUS-JURASSIC ?
- PRECAMBRIAN
- UPPER PROTEROZOIC
- Qc Coastal and riverine deposits
 - Czn Non-calcareous alluvium and soil
 - Czs Calcareous alluvium and soil
 - Czl Laterite and sandy soils
 - M "Percellanite", conglomerate, sandstone, siltstone
 - Unconformity
 - Gold Creek Volcanics Acid to intermediate lavas and tuff with interbedded sediments
 - Constance Sandstone Coarse to medium-grained sandstone; conglomerate
 - ? Disconformity
 - Wollgorang Formation Dolomite, siltstone, sandstone, chert breccia
 - Peters Creek Volcanics Interbedded acid to intermediate lavas, tuffs, sediments
 - Westmoreland Conglomerate Conglomerate, pebble beds, and coarse impure sandstone or quartz greywacke
 - Unconformity
 - Nicholson Granite Coarse porphyritic granite, biotite-rich in part
 - Cliffdale Volcanics Acid to intermediate lavas, agglomerate, and tuff

- Geological boundaries
- Established boundary, position accurate
 - Established boundary, position approximate
 - Established boundary, concealed
 - Probable, indefinite, or gradational boundary
 - Strike and dip of strata
 - Inclined
 - Horizontal
 - Trend lines and dip from air-photo interpretation
 - Faults and joints
 - Established fault, position accurate
 - Established fault, concealed
 - Probable fault, position accurate
 - Joints from air-photo interpretation
 - Mineral deposits
 - Uranium

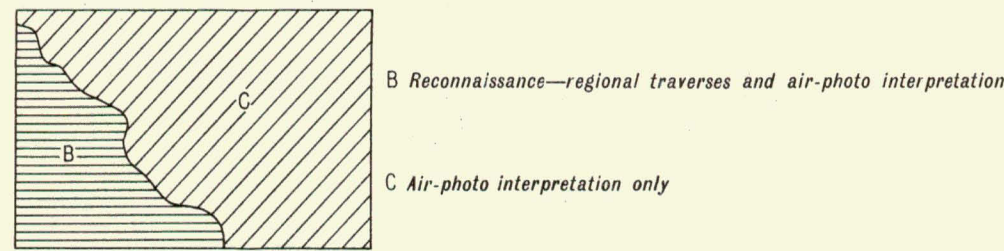
- State boundary
- Vehicle track
- Water hole
- Mangroves
- Lagoon
- Tidal limits
- Homestead or hut
- Yard
- Airfield
- Asbestos

BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)

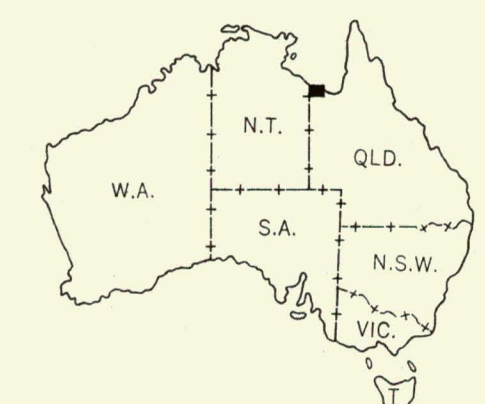
Compiled and published by the Bureau of Mineral Resources, Geology and Geophysics, Department of National Development, in conjunction with the Geological Survey of Queensland. Topographic base compiled and drawn by the Division of National Mapping, Department of National Development. Aerial photography by the Royal Australian Air Force: complete vertical coverage at 1:50,000 scale. Transverse Mercator Projection.



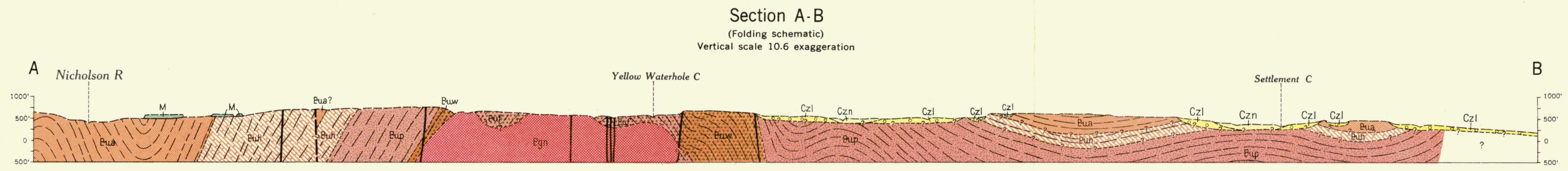
GEOLOGICAL RELIABILITY DIAGRAM



Geology and compilation November 1957, by:
E. K. Carter, J. H. Brooks, R. B. Fraser.
Drawn by: K. Matveev, H. F. Joehel.



Printed by Mercury Press, Hobart

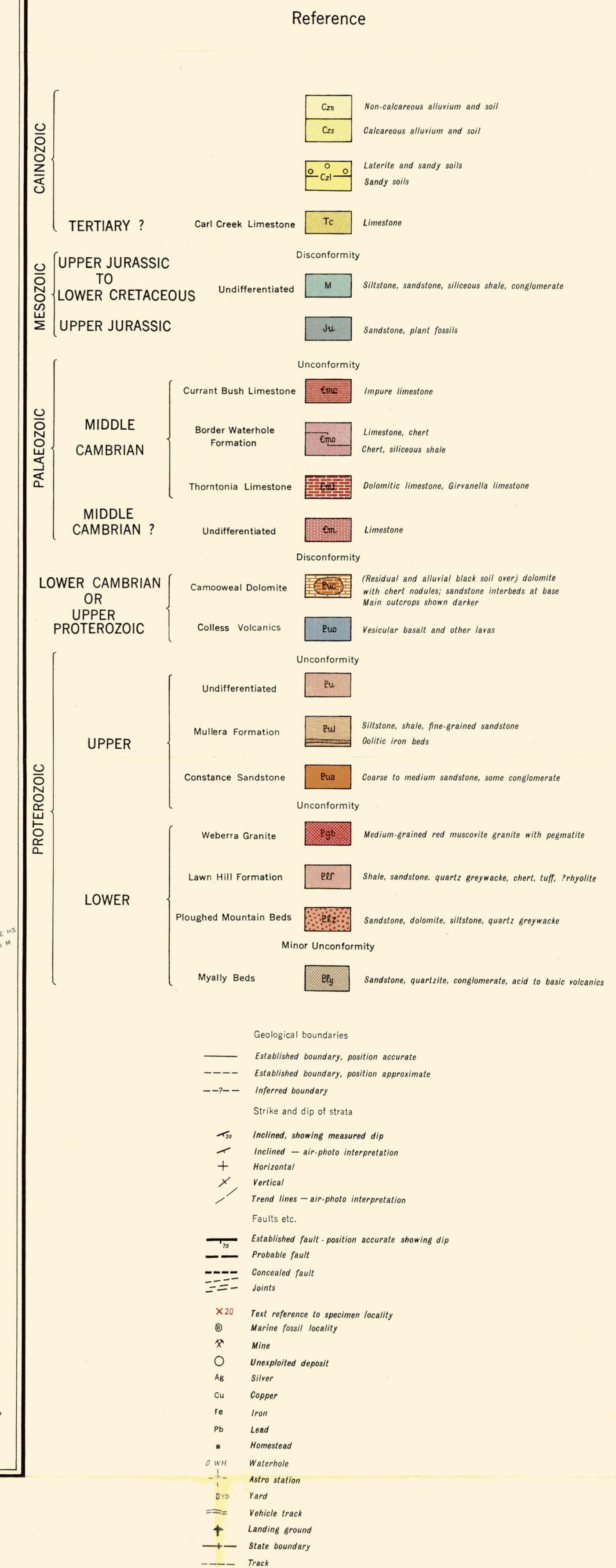
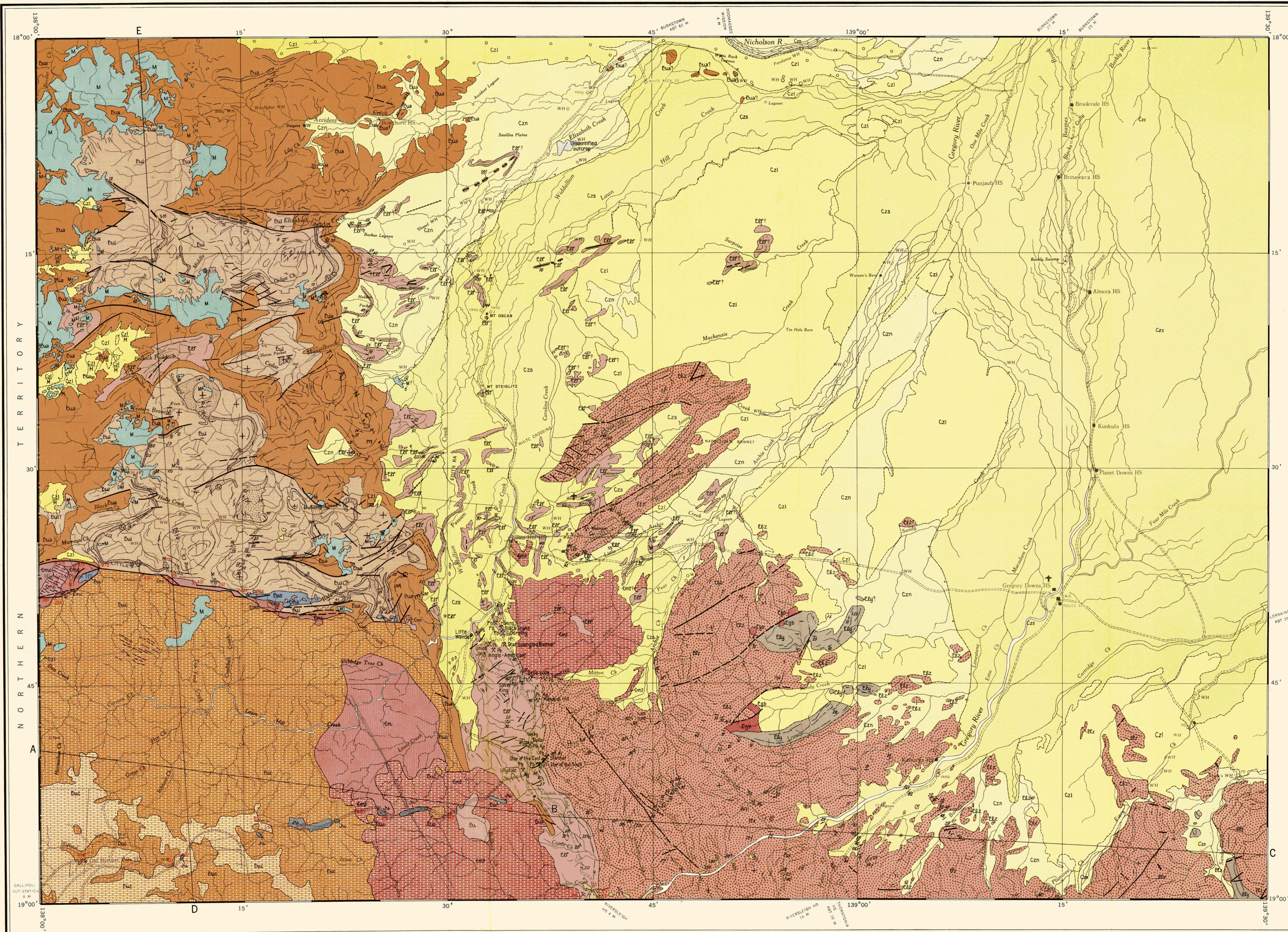


WESTMORELAND
Sheet E 54 - 5

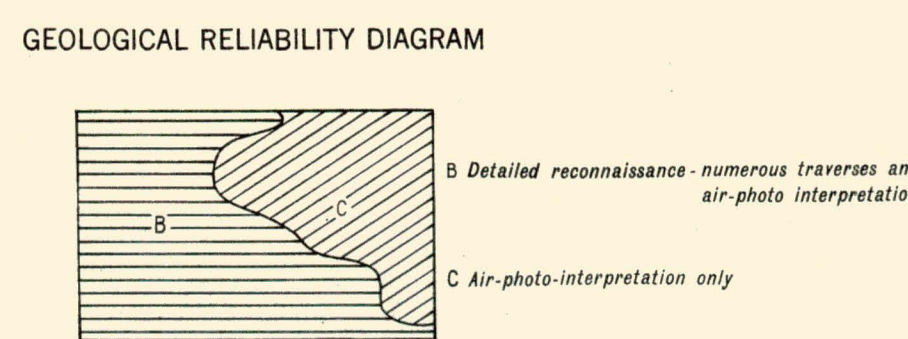
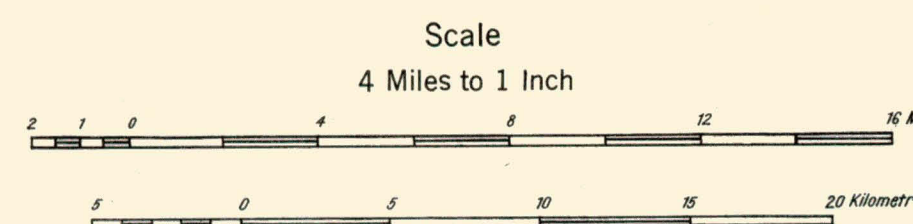
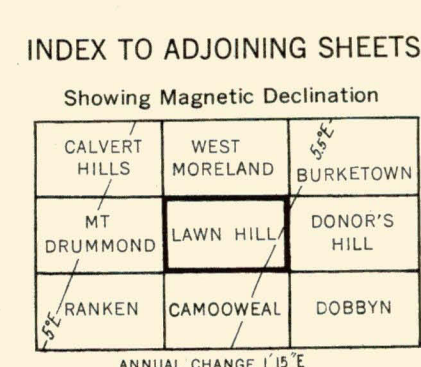
BMR
555 (74)
BUL. 45
Copy 4
Bull. 51

PLATE 2

Copies of this map may be obtained from the Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T., or the Geological Survey of Queensland, Brisbane, Queensland.

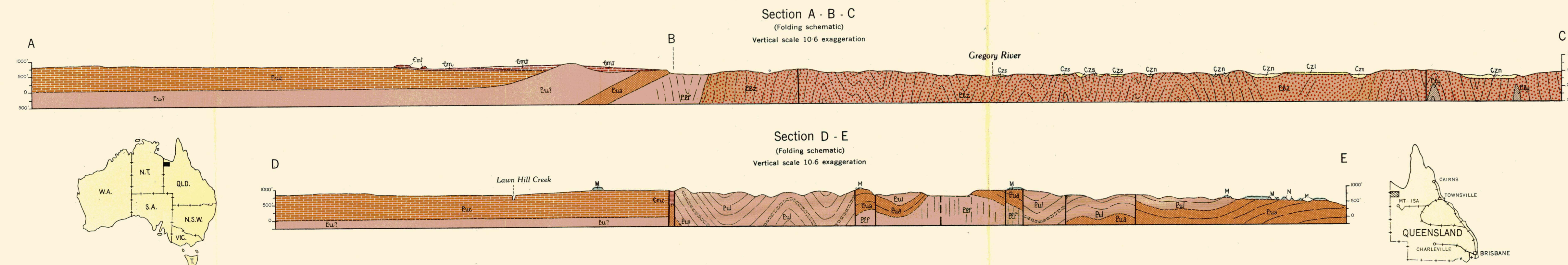


Compiled and published by the Bureau of Mineral Resources, Geology and Geophysics, Department of National Development, in conjunction with the Geological Survey of Queensland. Topographic base compiled and drawn by the Division of National Mapping, Department of National Development. Aerial photography by the Royal Australian Air Force; complete vertical coverage at 1:50,000 scale. Transverse Mercator Projection.



Geology by: K. A. Townley, E. K. Carter, A. A. Spik, W. C. Smith, P. Healy, J. H. Brooks, R. B. Fraser, E. M. Bennett, D. J. Gates, J. N. Casey, M. A. Randal

Compiled, August 1959, by: E. K. Carter, A. A. Spik



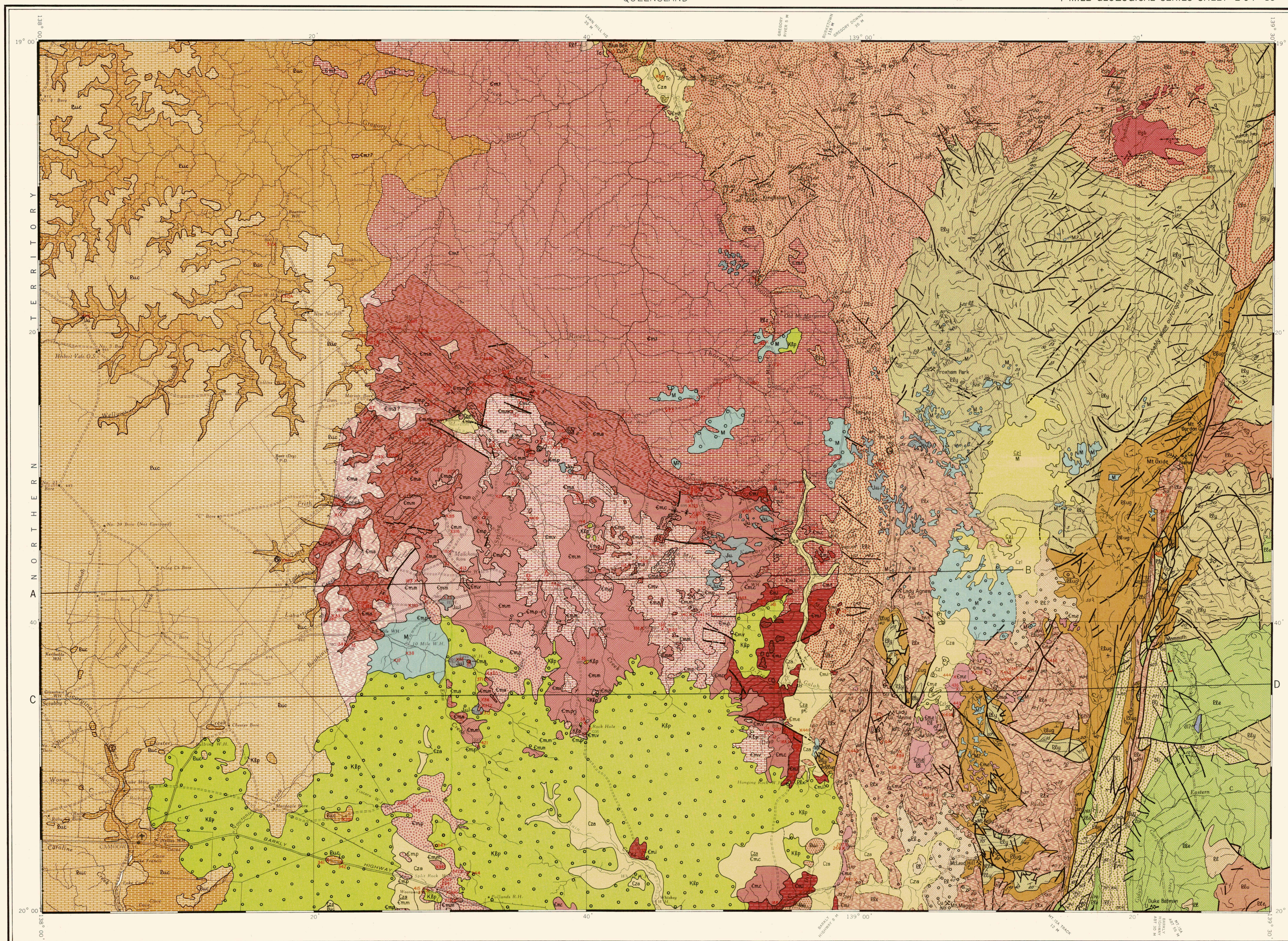
BMR PUBLICATIONS COMPACTUS (LENDING SECTION)

BMR 555 (94)
BUL 45
COPY 4
Bull 51

LAWN HILL
SHEET E 54 - 9

PLATE 3

Copies of this map may be obtained from the Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T., or the Geological Survey of Queensland, Brisbane, Queensland



Reference

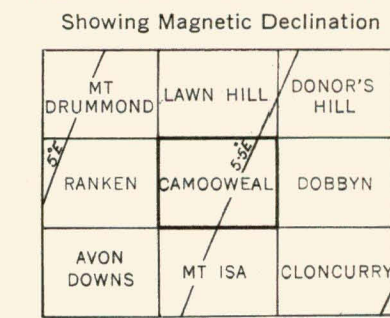
- Geological boundaries
 — Established boundary, position accurate
 - - - Established boundary, position approximate
 - - - Probable boundary
 — Strike and dip of strata
 70° \ Inclined, showing measured dip
 \ Inclined (air-photo interpretation)
 + Horizontal bedding
 Vertical bedding
 Slumped strata
 Trend line (air-photo interpretation)
 Folds
 Anticlinal fold axis
 Synclinal fold axis
 Faults and joints
 — Established fault, position accurate
 - - - Established fault, concealed
 - - - Probable fault, position accurate
 Joints
 Miscellaneous
 Quartz vein
 Mine
 O Unexploited deposit
 Cu Copper
 O Opal
 Pb Lead
 U Uranium
 XE Reference number to localities
- State boundary
 Highway
 Road
 Vehicle track
 Fence
 Telephone line
 Homestead
 Airfield
 Bore or well
 Waterhole
 S Spring
 Rockhole
 Spot height in feet (datum: mean sea-level)
 P.D. Position doubtful

Reference

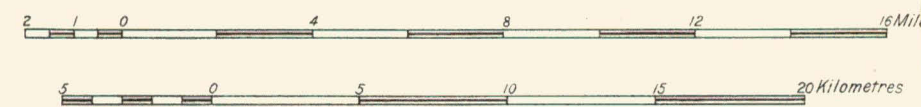
- CENOZOIC**
 TERTIARY
 Carl Creek Limestone
 Undifferentiated
 Lower Cretaceous
 Pollard Waterhole Shale
 Upper Jurassic?
 Lees Sandstone
- MESOZOIC**
 JURASSIC-LOWER CRETACEOUS
 Pollard Waterhole Shale
 Upper Jurassic?
 Lees Sandstone
- PALEOZOIC**
 MIDDLE CAMBRIAN
 Split Rock Sandstone
 Mail Change Limestone
 V-Creek Limestone
 Age Creek Formation
 Currant Bush Limestone
 Inca Formation
 Beetle Creek Formation
 Thornton Limestone
 LOWER CAMBRIAN OR UPPER PROTEROZOIC
 Camooweal Dolomite
 UPPER PROTEROZOIC
 Pipah Sandstone
 Weebera Granite
 Undifferentiated
 Lawn Hill Formation
 Ploughed Mountain Beds
 Surprise Creek Beds
 Paradise Creek Formation
 Gunpowder Creek Formation
 LOWER PROTEROZOIC
 Paradise Creek Formation
 Gunpowder Creek Formation
 Undifferentiated
- PRECAMBRIAN**
 Lower Proterozoic
 Paradise Creek Formation
 Gunpowder Creek Formation
 Undifferentiated

Compiled and published by the Bureau of Mineral Resources, Geology and Geophysics, Department of National Development, in conjunction with the Geological Survey of Queensland. Topographic base compiled and drawn by the Division of National Mapping, Department of National Development. Aerial photography by the Royal Australian Air Force; complete vertical coverage at 1:50,000 scale. Transverse Mercator Projection.

INDEX TO ADJOINING SHEETS

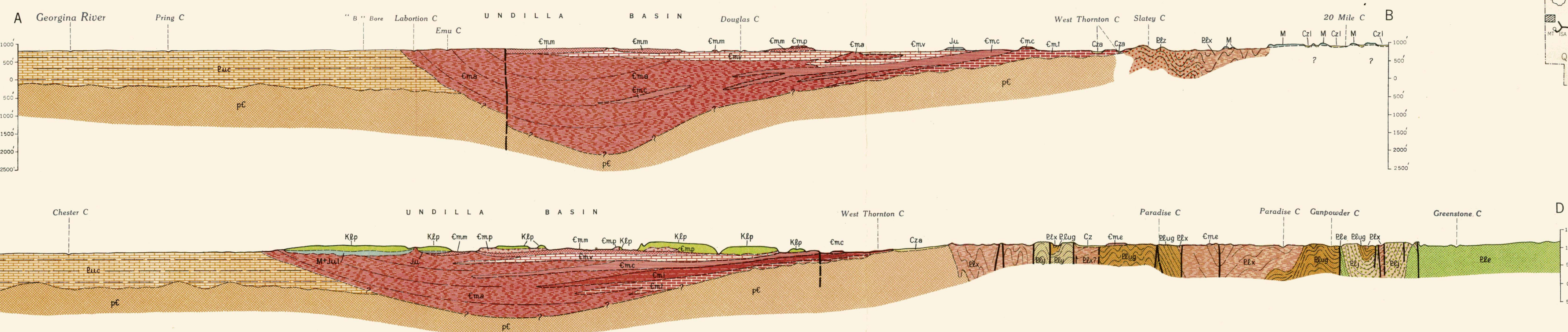


Scale
 4 Miles to 1 Inch

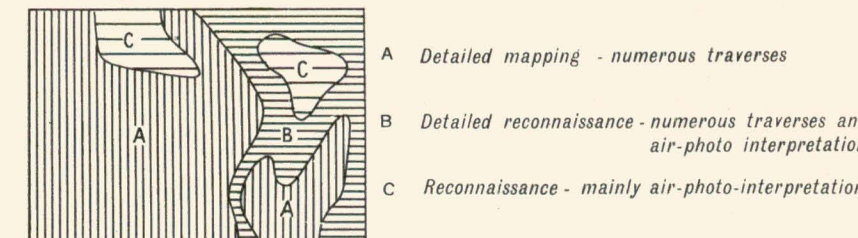


Sections
 (folding diagrammatic)

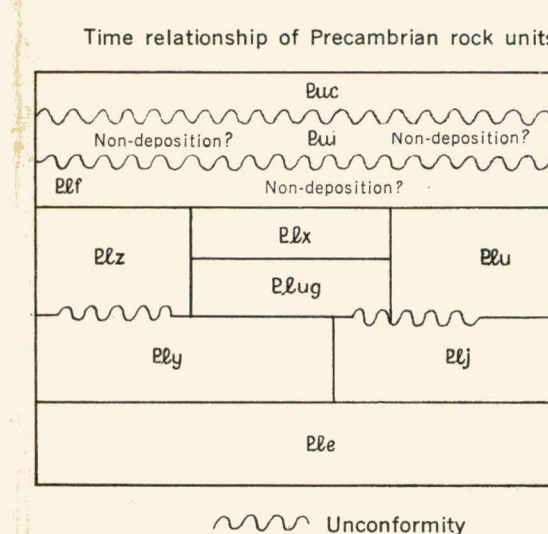
SCALE 1" = 10'



GEOLOGICAL RELIABILITY DIAGRAM



Geology by: A. A. Opik, E. K. Carter, K. A. Townley, F. de Keyser, E. M. Bennett, D. J. Gates, P. Healy, J. N. Casey, M. A. Randall, J. H. Brooks, R. B. Fraser, D. O. Zimmerman, W. A. Robertson, K. Wolff
 Compiled, June 1959, by: A. A. Opik, E. K. Carter, F. de Keyser, G. M. Burton
 Drawn by: R. J. Molloy



BMR PUBLICATIONS CONTACTS
 (Lending Section)

BMR
 S55 (94)
 BUL. 45
 Copy 4
 Bull. 51

CAMOOWEAL
 SHEET E 54 - 13

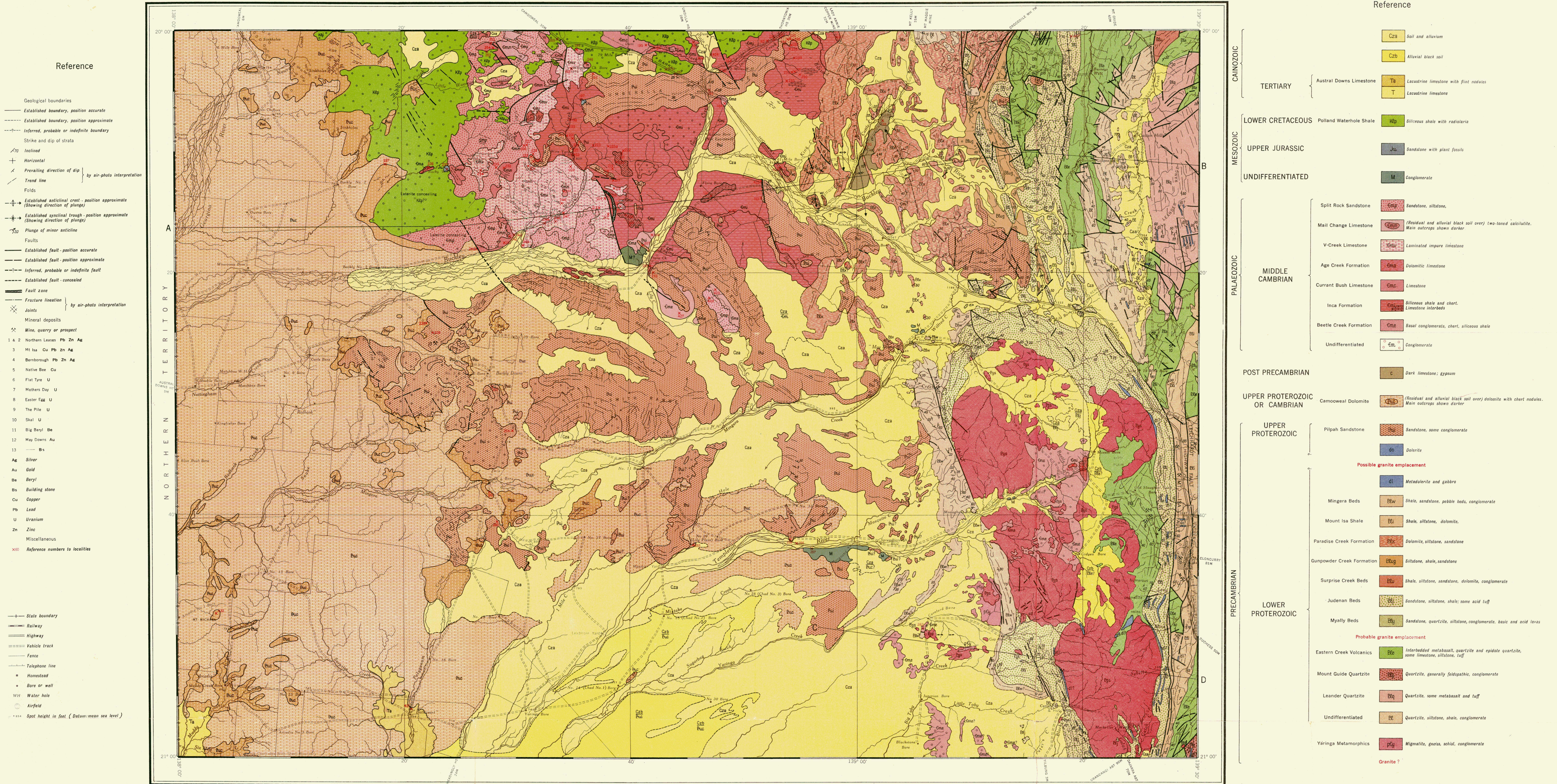
PLATE 4

Copies of this map may be obtained from the Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T., or the Geological Survey of Queensland, Brisbane, Queensland.

AUSTRALIA 1:253,440

MT ISA
QUEENSLAND

4 MILE GEOLOGICAL SERIES SHEET F 54-1

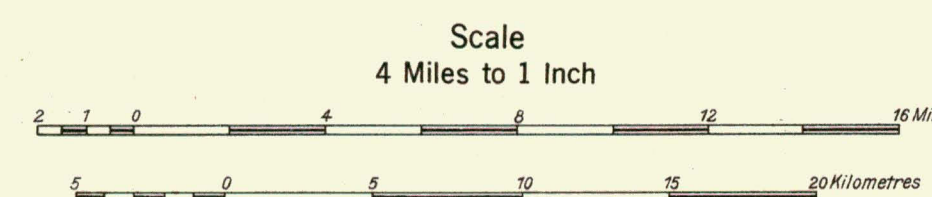


Compiled and published by the Bureau of Mineral Resources, Geology and Geophysics, Department of National Development, in conjunction with the Geological Survey of Queensland. Topographic base compiled and drawn by the Division of National Mapping, Department of National Development. Aerial photography by the Royal Australian Air Force, complete vertical coverage at 1:100,000 scale. Transverse Mercator Projection.

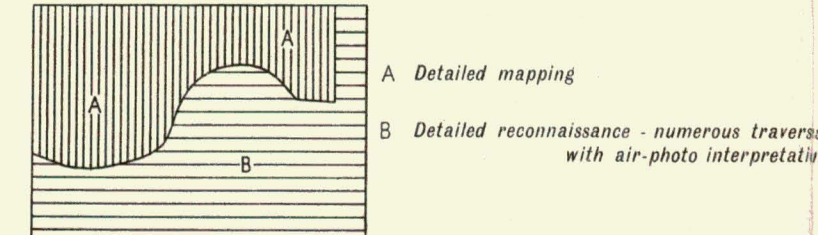
INDEX TO ADJOINING SHEETS

RANKEN	CAMOWEAL	DOBRYN
AVON DOWNS	MT ISA	CLONCURRY
SANDOVER RIVER	GRANDD	DUCHESSE

ANNUAL CHANGE 12 E

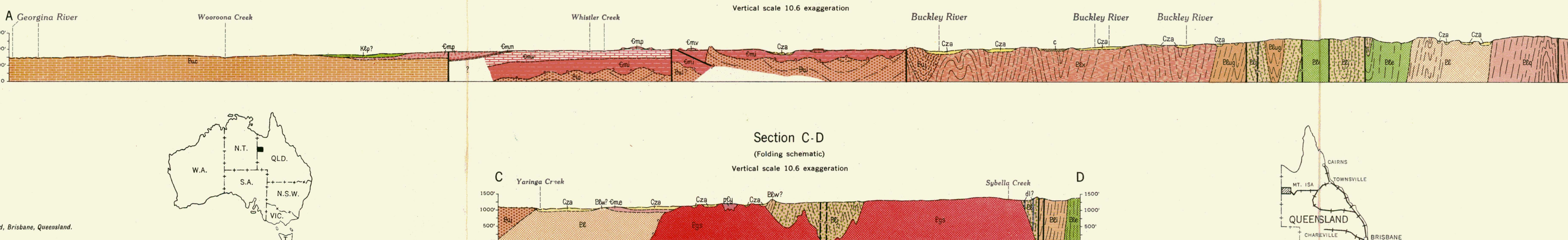


GEOLOGICAL RELIABILITY DIAGRAM

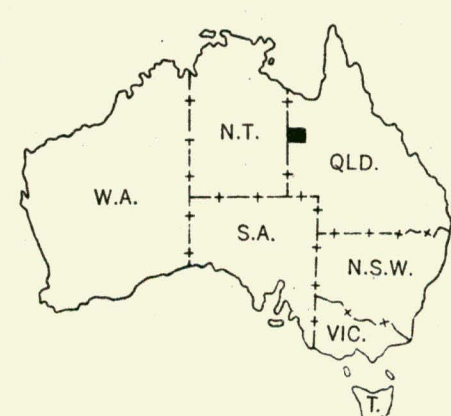


Geology by: A. A. Öpik, K. A. Townley, E. K. Carter, J. N. Casey, W. M. Roberts, B. W. Hawkins, M. A. Randa, F. de Keyser
Compiled Jan. 1958 by: A. A. Öpik, E. K. Carter, G. M. Burton
Drawn by: H. F. Joehel

BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)



Copies of this map may be obtained from the Bureau of Mineral Resources, Geology and Geophysics, Canberra, A.C.T., or the Geological Survey of Queensland, Brisbane, Queensland.
Printed by Mercury Press, Hobart



Reference

CENOZOIC			
TERTIARY	Austral Downs Limestone	Ta	Lacustrine limestone with flint nodules
		T	Lacustrine limestone
MESOZOIC			
UPPER JURASSIC			
UNDIFFERENTIATED			
PALAEOZOIC			
POST PRECAMBRIAN			
UPPER PROTEROZOIC OR CAMBRIAN			
UPPER PROTEROZOIC			
PRECAMBRIAN			

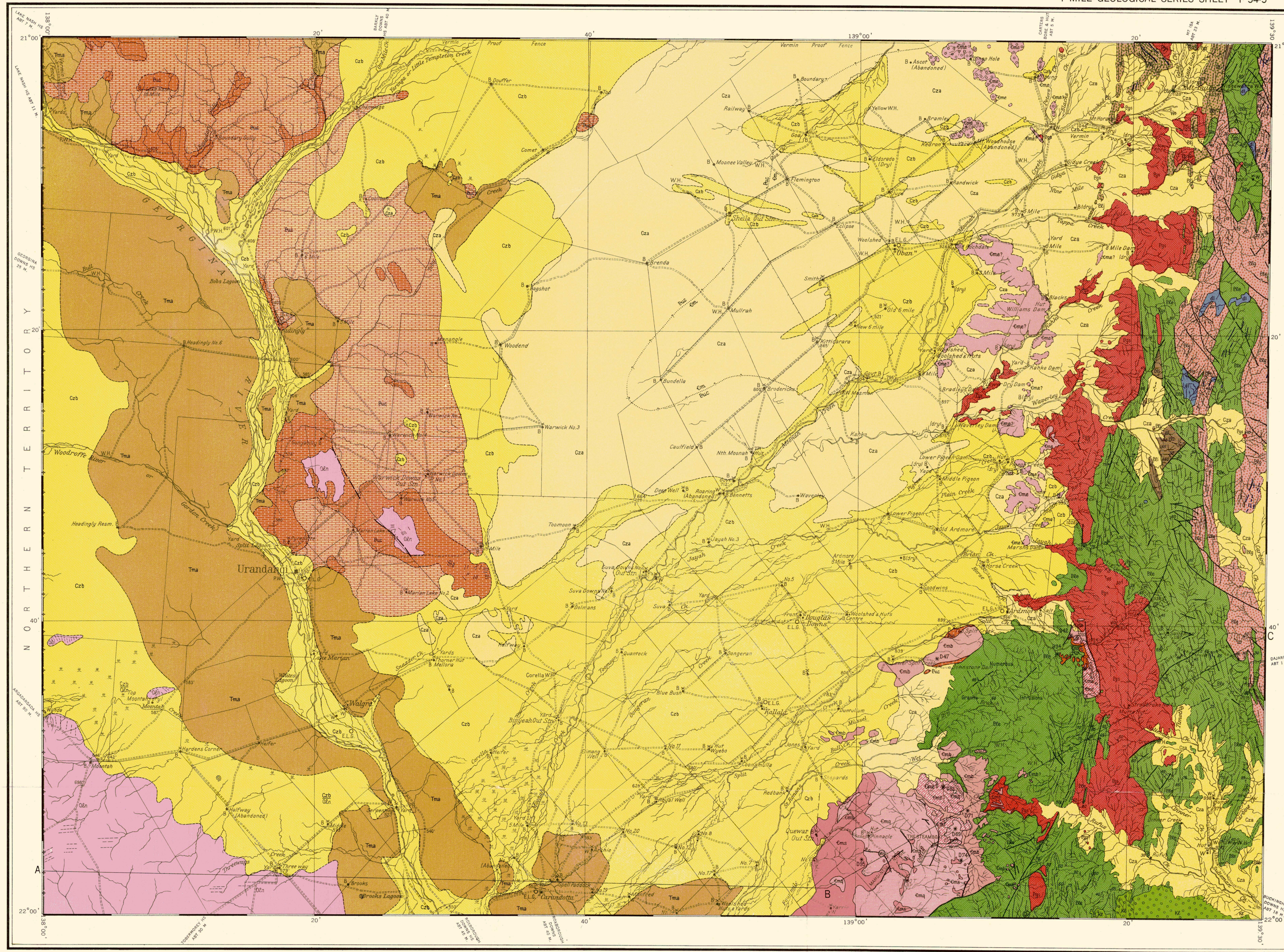
Inferred time relationships of Precambrian rock units

Camoweeal Dolomite	
Pilpah Sandstone	
Mingera Beds	(Relationship not clear)
Paradise Creek Formation	
Surprise Creek Beds	
Judenan Beds	
Myall Beds	
Eastern Creek Volcanics	
Leander Quartzite	
Yarringa Metamorphics	

Unconformity

MT ISA
SHEET F54-1

PLATE 5



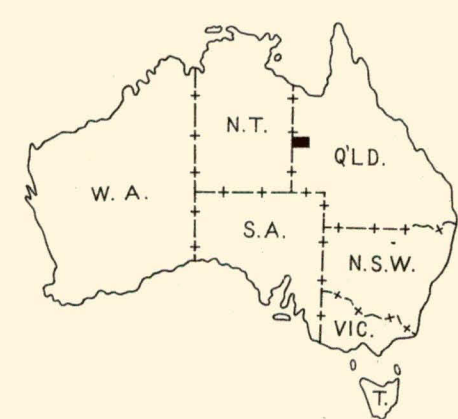
Reference

- CENOZOIC**
- TERTIARY (MIOCENE)**
- Austral Downs Limestone
- MESZOZOIC**
- LOWER CRETACEOUS**
- Sandstone and shale
- Unconformity
- LOWER ORDOVICIAN**
- Nimaroo Formation
- Limestone, dolomite, marl, sandstone, shale
- Disconformity
- MIDDLE CAMBRIAN**
- Steamboat Sandstone
- Calcareous sandstone, calcitic in parts
- Quita Formation
- Bituminous, siliceous limestone, calcareous chert
- Blazan Shale
- Siliceous shale with conglomerate and sandstone at base
- Disconformity
- Beetle Creek Formation
- Siliceous shale interbedded with limestone
- Thornton Limestone
- Limestone and dolomite limestone
- Disconformity
- UPPER PROTEROZOIC**
- Riversdale Formation
- Red conglomerate, sandstone, and dolomite
- Camooweal Dolomite
- (Residual black soil over) dolomite with chert nodules
- Unconformity
- PRECAMBRIAN**
- LOWER PROTEROZOIC**
- Granite emplacement
- Feldspar porphyry
- Gabbro, micro-gabbro, dolerite
- Mount Isa Shale
- Clay, dolomitic and carbonaceous shale ("slate"), siliceous and quartzite
- Judenan Beds
- Quartzite, slate, schist and conglomerate
- Probable granite emplacement
- Altered thinly interbedded basalt and arenaceous sediments with slate and recrystallized limestone, some schist and gneiss
- Eastern Creek Volcanics
- Dolerite dykes and sills
- Mount Guide Quartzite
- Quartzite, feldspathic in parts conglomerate, some basalt
- ? ARCHAEOAN**
- Probable granite emplacement
- Granite
- Sybella ("Templeton") Granite
- Coarse porphyritic foliated granite with some gneisses; also medium to fine-grained granite

- Geological boundaries
- Established boundary, position accurate
- Established boundary, position approximate
- Probable or gradational boundary, concealed
- Strike and dip of strata
- Inclined
- Trend lines (photo interpretation)
- Faults and Joints
- Established fault - position accurate
- Established fault - position accurate, showing dip
- Established fault - position approximate
- Inferred or probable fault
- Inferred or probable fault, concealed
- Joint patterns from photo interpretation
- Text reference - sheet explanatory notes
- Marine fossil locality
- Mineral deposits
- Mine
- Copper
- Manganese

BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)

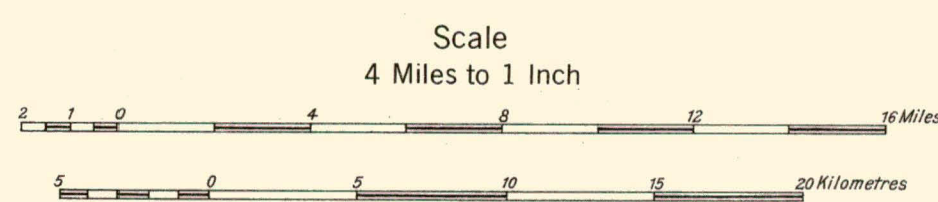
Compiled and published by the Bureau of Mineral Resources, Geology and Geophysics, Department of National Development, in conjunction with the Geological Survey of Queensland and the Northern Australia Regional Survey, Commonwealth Scientific and Industrial Research Organization. Topographic base compiled by National Mapping Section, Department of the Interior. Aerial photography by the Royal Australian Air Force; complete coverage at 1:50,000 scale. Transverse Mercator Projection.



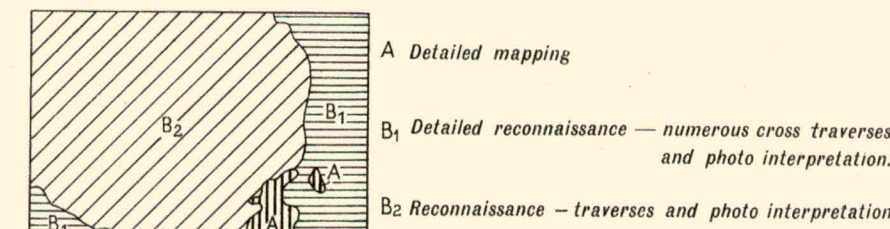
INDEX TO ADJOINING SHEETS
Showing Magnetic Declination

AVON DOWNS	MT ISA	CLOONCURRY
SANDOVER RIVER	URANDANGI	DUCCHES
TOBERMORY	OLEN ORRISON	BOULIA

ANNUAL CHANGE 1957



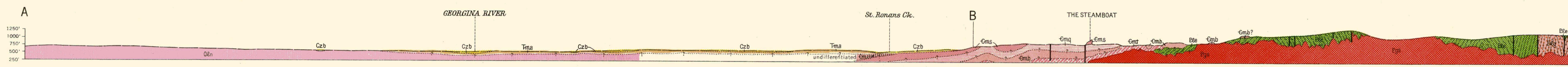
GEOLOGICAL RELIABILITY DIAGRAM



Geology by: E.K. Carter, A.A. Oph, D.M. Traves,
L.C. Noakes, K.A. Townley, J.P. Ivanac, W.M. Roberts,
B.W. Hawkins.
Compiled September 1957 by: E.K. Carter, L.C. Noakes.
Drawn by: H.F. Joehel.



Section A-B-C
(Folding schematic)
Vertical scale 10x exaggeration



URANDANGI
SHEET F 54-5

PLATE 6

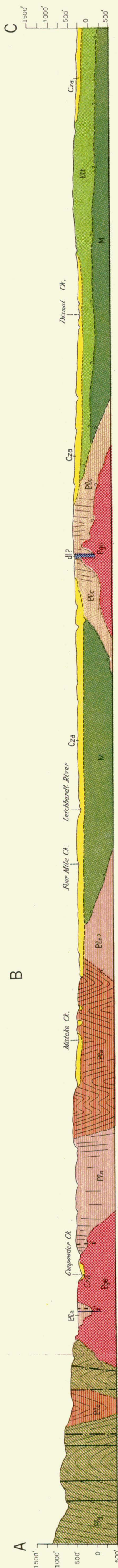
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DOBBYN
QUEENSLAND

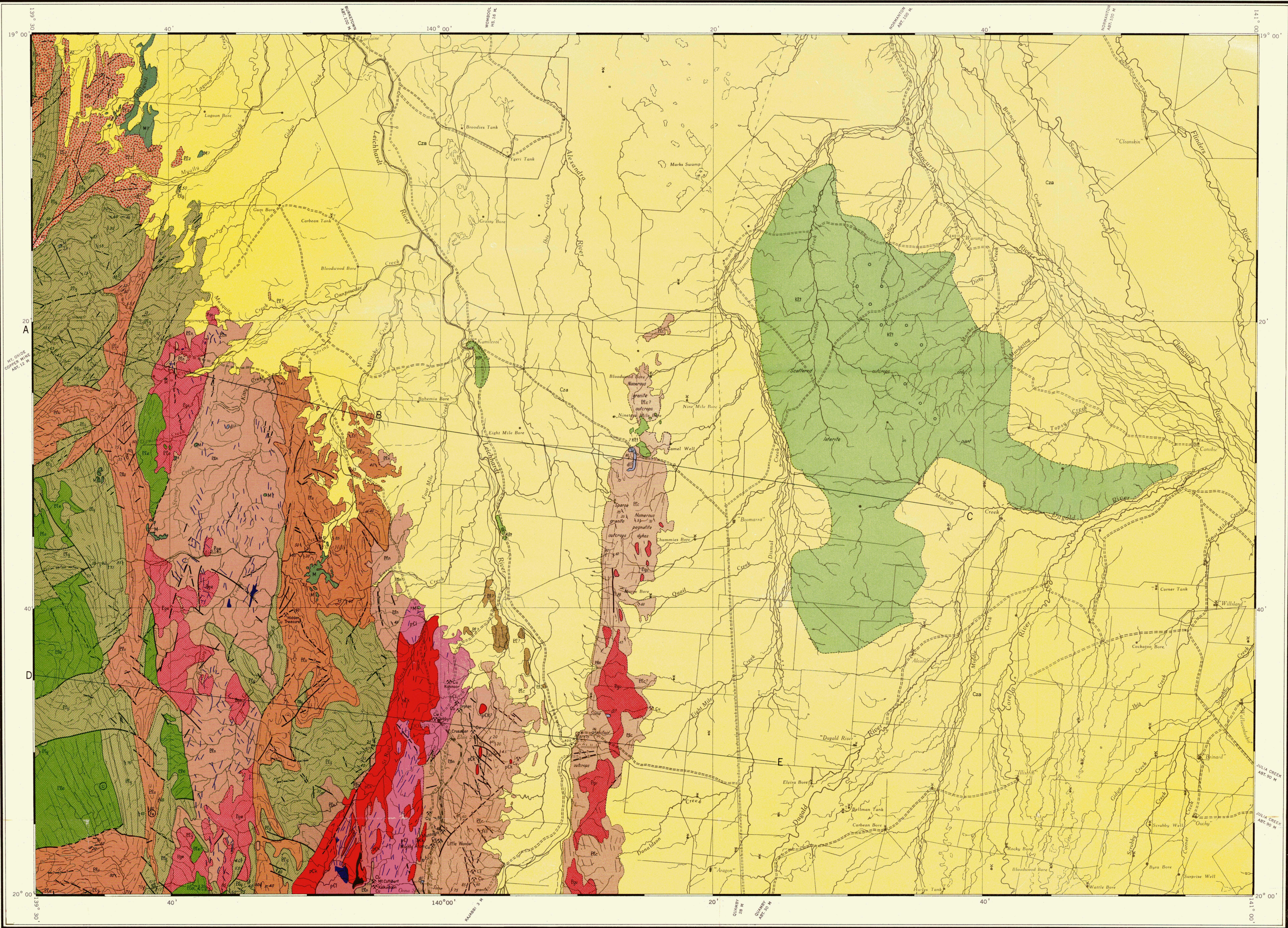
AUSTRALIA 1:253,440

4 MILE GEOLOGICAL SERIES SHEET E 54-14

Section A-B-C
(Folding schematic)
Vertical scale 10.6 exaggeration



- Reference
- Geological boundaries
— Established boundary, position accurate
- - - Established boundary, position approximate
- - - Indefinite boundary
- Strike and dip of strata
/ Inclin
\ Trend of bedding
/ Inclin strata showing direction of dip
- Faults
— Established fault, position accurate
- - - Probable fault, position accurate
- Fossil locality
● Marine
● Mineral deposits
● Mine or quarry
● Copper
● Iron
● Limestone
● Uranium
- Railway
— Road or vehicle track
● Airfield
441 Spot height in feet (datum: mean sea level)
— Fence
□ Yard
— Telephone line
● Homestead
● Bore or well
● Tank
● Windmill
□ Swamp



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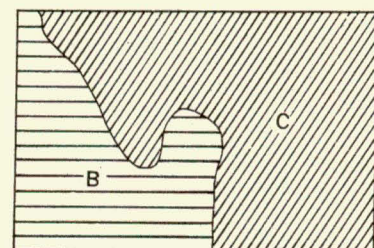
INDEX TO ADJOINING SHEETS
Showing Magnetic Destination

LAWN HILL	DONDER'S HILL	CROYDON
CANDOWEAL	DOBBYN	MILLUNGERRA
MT ISA	CLONCURRY	JULIA CREEK

ANNUAL CHANGE 30° E



GEOLOGICAL RELIABILITY DIAGRAM

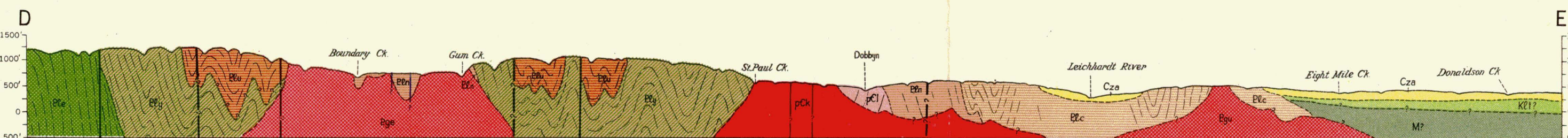


- B Detailed reconnaissance and air-photo interpretation
C Widely spaced traverses with air-photo interpretation

Geology by: J. F. Ivanac, E. M. Bennett, D. J. Gates, J. H. Brooks, R. A. Seel, E. K. Carter, C. E. Prichard. Compiled July 1957 by E. K. Carter and E. M. Bennett. Drawn by: P. R. Brown.



Section D-E
(Folding schematic)
Vertical scale 10.6 exaggeration



Reference

- CAINOZOIC
Cza Soil and alluvium
Lo Laterite

CAINOZOIC

MESOZOIC

LOWER CRETACEOUS

- Tambo Formation
Xt Limestone, siltstone, sandstone
M Conglomerate, coarse sandstone, siltstone, (ferruginous sediments)

Unconformity

Granite emplacement

- d1 Metadolerite and gabbroic intrusives
Bc Lithology and stratigraphic position unknown

LOWER PROTEROZOIC

Ploughed Mountain Beds

- Bt Sandstone, quartzite, siltstone and conglomerate

Surprise Creek Beds

- Bt Siltstone, slate, sandstone, quartzite, dolomite

Unconformity

Probable granite emplacement

- Myaly Beds
Bt Sandstone, quartzite, siltstone, conglomerate, some volcanics

Corella Formation

- Bt Thin-bedded calc-silicate rocks, quartzite, schist and hornfels

Unconformity

- Eastern Creek Volcanics
Bt Interbedded metabasalt, tuff, quartzite, slate and hornfels

- Metadolerite dykes and sills

Argylla Formation

- Bt Acid and basic lavas, with quartzite, recrystallized limestone, agglomerate, arkose and schist

? Unconformity

Probable granite emplacement

? ARCHAIC

- Leichhardt Metamorphics
p1 Recrystallized dacite, with some basalt, schist, gneiss and migmatite

Granites

- Naraku Granite
Bp Mainly medium-grained red granite with some coarse-grained granite

- Ewen Granite
Bp Red porphyritic and massive granites

- Kalkadood Granite
p1 Complex of coarse and fine grained, porphyritic, foliated and massive granites

These are composite bodies, each probably of two ages in the Proterozoic. The Kalkadood Granite may also include Archaean intrusives.

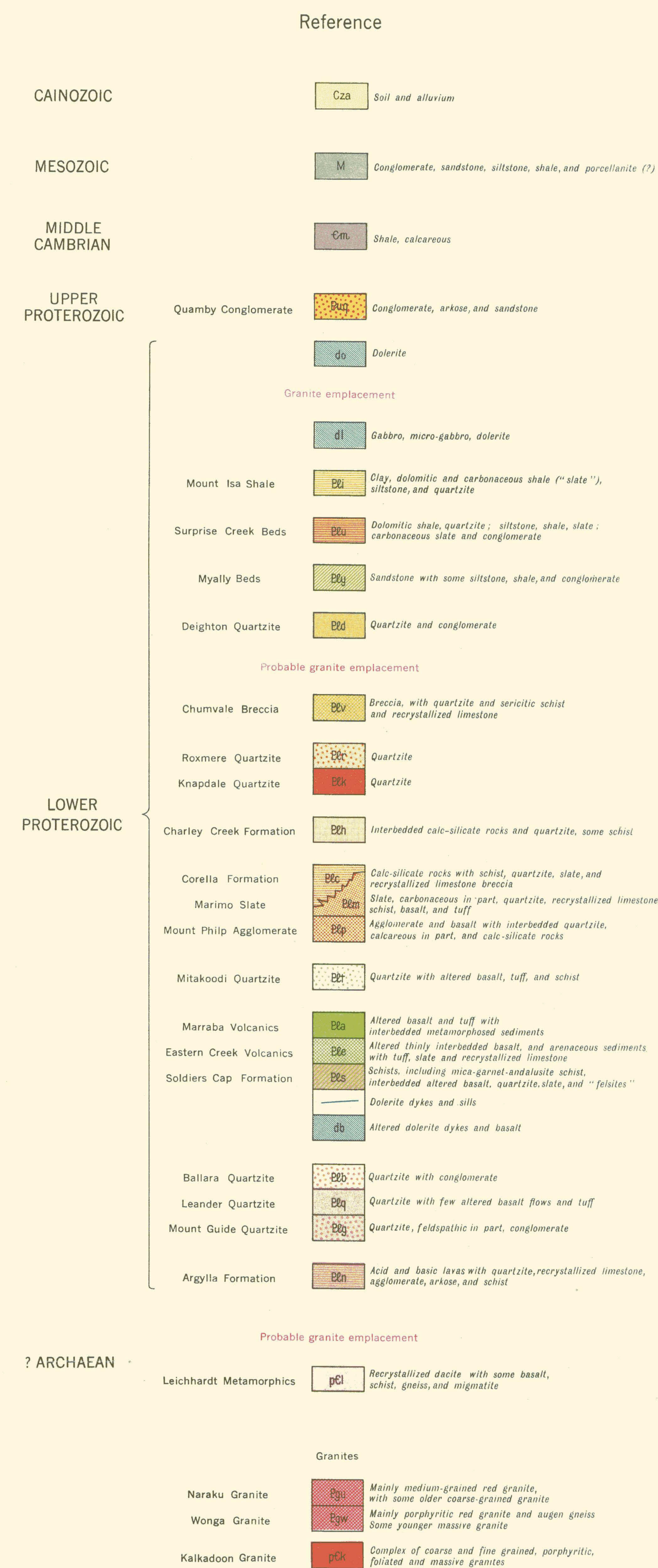
BMR PUBLICATIONS COMPACTUS
(LENDING SECTION)

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DOBBYN
SHEET E 54-14

PLATE 7

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PLATE 8

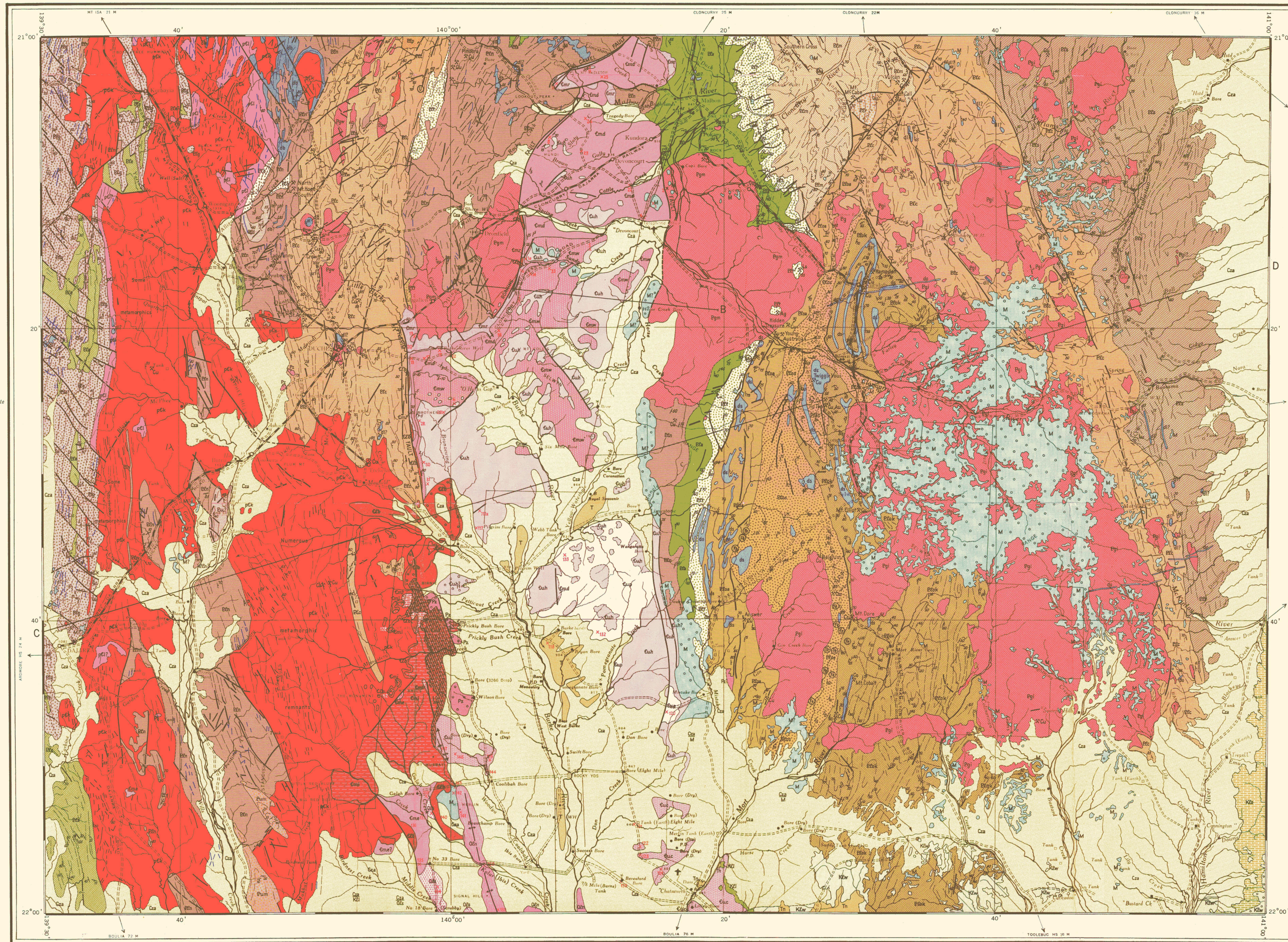
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DUCHESS
QUEENSLAND

4 MILE GEOLOGICAL SERIES SHEET F 54-6



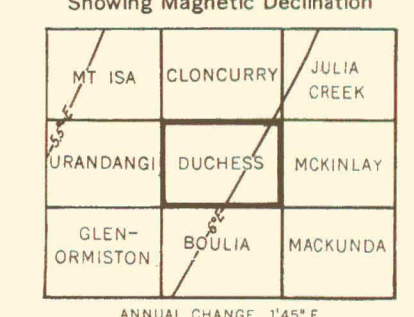
Reference

- Geological boundaries
Established boundary, position accurate
Established boundary, position approximate
Strike and dip of strata
Measured dip
Prevailing direction of dip
Strike of vertical strata
Trend lines by air-photo interpretation
Folds
Established anticlinal crest, (showing plunge), position accurate
Established synclinal trough, position accurate
Fold with plunge indicated
Faults
Established fault, position accurate
Established fault, showing dip, position accurate
Probable fault, position accurate
Established fault, concealed
Probable fault, concealed
Shear Zone
Mineral deposits
Mine or quarry
Unexploited deposit
Ag Silver
Au Gold
Cu Cobalt
Ca Copper
Fe Iron
Ls Limestone
Mn Manganese
U Uranium
KM Text reference to specimen locality
"Prepell" Homestead
Vehicle track
Railway
Wind pump
Bore
Well
Earth tank or dam
Waterhole
Fence
Spot height in feet (datum : mean sea level)
Position doubtful
Landing ground

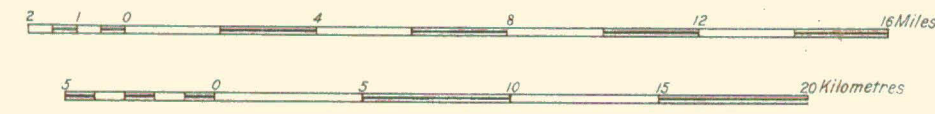
Reference

- CENOZOIC**
TERTIARY
Noranside Limestone
Lateralite
LOWER CRETACEOUS
Wilgunya Formation
Toolebuc Member
Lonsight Sandstone
Undifferentiated
Undifferentiated
LOWER ORDOVICIAN
Swift Beds
Nimmaroo Limestone
UPPER CAMBRIAN
Chatsworth Limestone
O'Hara Shale
Pomegranate Limestone
MIDDLE CAMBRIAN
Selwyn Range Limestone
Devoncourt Limestone
Roaring Silstone
Roaring Silstone and Inca Formation
Inca Formation
Beetle Creek Formation
Thornton Limestone
LOWER CAMBRIAN
Mount Birnie Beds
UPPER ? PROTEROZOIC
Makbat Sandstone
Undifferentiated
PRECAMBRIAN
LOWER PROTEROZOIC
Dolerite
Probable granite emplacement
Metadiorite and gabbro
Deighton Quartzite
Probable granite emplacement
Metadiorite sills
Roxmere Quartzite
Corella Formation
Mount Philip Agglomerate
Marimo Slate
Kurdala Formation
Staveley Formation
Answer Slate
Mitakoodi Quartzite
Maraba Volcanics
Eastern Creek Volcanics
Soldiers Cap Formation
Metadiorite dykes and sills
Ballara Quartzite
Mount Guide Quartzite
Argillite Formation
Probable granite emplacement
Leichhardt Metamorphics
ARCHAEN ?
Granites
Undifferentiated granites
Williams Granite
Wimberu Granite
Wonga Granite
Kalkadood Granite
These are composite bodies, each probably of two ages in the Proterozoic. The Kalkadood Granite may also include ? Archaean intrusives
Time relationship of Precambrian rock units
Unconformity

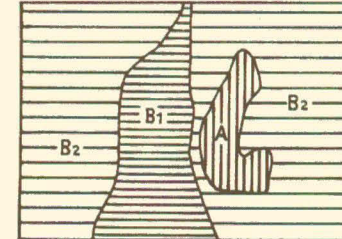
INDEX TO ADJOINING SHEETS



Scale
4 Miles to 1 Inch



GEOLOGICAL RELIABILITY DIAGRAM

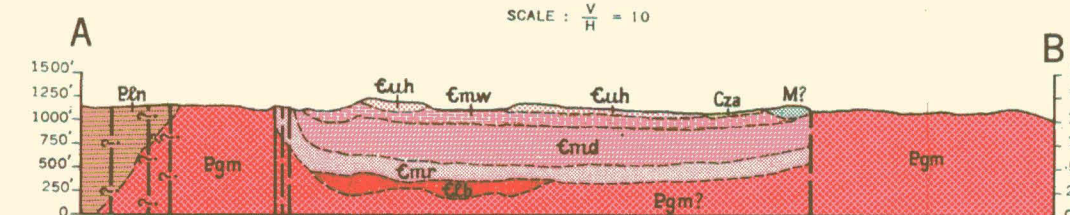


Geology by : A. A. Opik, E. K. Carter, R. A. Seel, E. M. Bennett, W. C. White, K. R. Walker, J. H. Brooks, B. W. Hawkins, R. B. Fraser, F. de Keyser, D. O. Zimmerman, J. Neale, J. N. Casey
Compiled, July 1958, by : E. K. Carter, A. A. Opik, K. R. Walker, G. M. Burton.
Drawn by : W. G. Krause.

Section A-B

(Folding diagrammatic)

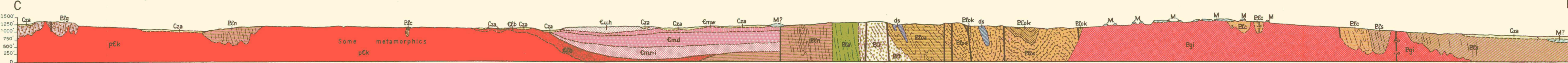
SCALE : 1" = 10'



Section C-D

(Folding diagrammatic)

SCALE : 1" = 10'



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BUL. 45
Copy 4
Bull. 51

DUCHESS
SHEET F 54-6

PLATE 9

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