MINERAL RESOURCES
TASMANIA

Tasmania

NGMA TASGO PROJECT : Sub-project 1 - Geological Synthesis

TIME - SPACE DIAGRAM FOR TASMANIA

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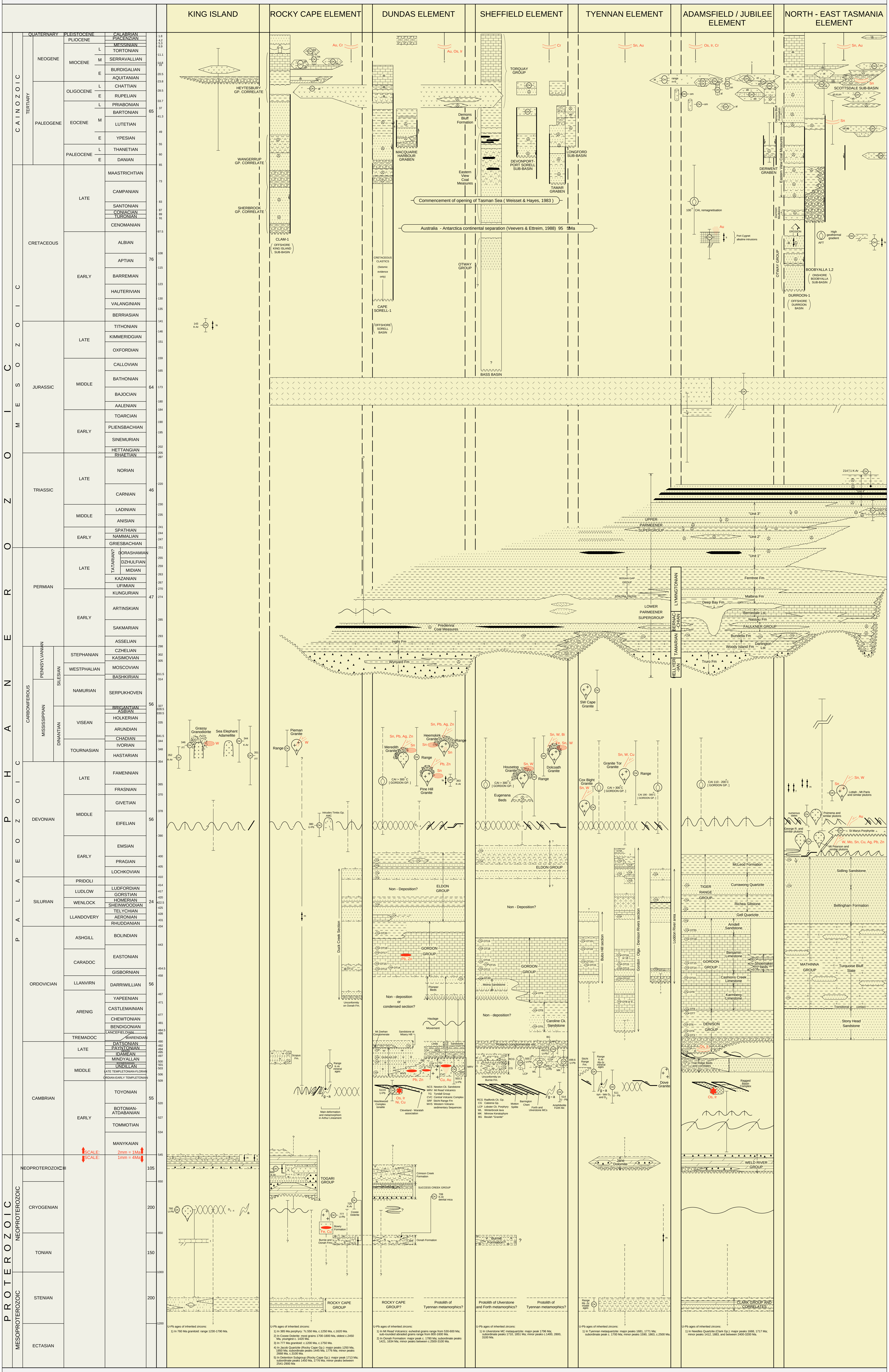
VERSION 2 (31-03-1998)

AGSO
AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION



U-Pb ages of inherited zircons:
1) In 760 Ma granitoid: range 1230-1790 Ma.

U-Pb ages of inherited zircons:
1) In 385 Ma porphyry: ?c.550 Ma, c.1250 Ma, c.1620 Ma.
2) In Cooee Dolerite: most grains 1700-1800 Ma, oldest c.2450 Ma, youngest c. 1420 Ma.
3) In 777 Ma granitoid: c.1200 Ma, c.1750 Ma.
4) In Jacob Quartzite (Rocky Cape Gp.): major peaks 1250 Ma, 1850 Ma; subordinate peaks 1445 Ma, 1776 Ma; minor peaks 2668 Ma, c.3100 Ma.
5) In Detention Subgroup (Rocky Cape Gp.): major peak 1713 Ma; subordinate peaks 1450 Ma, 1776 Ma; minor peaks between 2541-2900 Ma

U-Pb ages of inherited zircons:
1) In Mt Read Volcanics: euhedral grains range from 530-600 Ma; sub-rounded abraded grains range from 800-1600 Ma.
2) In Oonah Formation: major peak c. 1780 Ma; subordinate peaks 1421, 1634 Ma; minor peaks between c.2500-3100 Ma.

U-Pb ages of inherited zircons:
1) In Ulverstone MC metaquartzite: major peak 1796 Ma; subordinate peaks 1710, 1851 Ma; minor peaks c.1400, 2800, 3100 Ma.

U-Pb ages of inherited zircons:
1) In Tyennan metaquartzite: major peaks 1681, 1771 Ma; subordinate peak c. 1700 Ma; minor peaks 1590, 1863, c.2500 Ma.

U-Pb ages of inherited zircons:
1) In Needles Quartzite (Clark Gp.): major peaks 1668, 1717 Ma; minor peaks 1412, 1883, and between 2400-3200 Ma.

DEPOSITIONAL EVENTS

Boundary Types

▬	Fault
〰	Unconformity
⌄	Disconformity or low-angle unconformity
—	Conformable contact
—d—	"Disjunction" (defined as a boundary along which there is a mismatch of stratigraphy and/or structure, but along which no displacement can be proven.)
- —?— —?—	Nature of boundary unknown

Lithological Symbols

▨	Conglomerate
△	Breccia
▲	Diamictite (t = tillite)
⋯	Quartz sandstone
⋮	Lithic and/or feldspathic sandstone
w	Quartz ± lithic wacke, with conglomerate horizons (◦◦◦◦)
—c—	Mudstone (c = carbonaceous)
▦	Dominantly limestone
▤	Dominantly dolomite
^	Felsic to intermediate volcanic rocks
^	Felsic to intermediate volcaniclastic rocks
v	Mafic volcanic rocks (t = tholeiitic; a = alkaline; p = picritic; qt = quartz tholeiite; ot = olivine tholeiite; ob = olivine basalt; ab = alkaline basalt; ba = basanite; al = alkaline lava; on = olivine nephelinite; om = olivine melilitite)
v	Mafic volcaniclastic rocks
▥	Chert
▬	Coal

IGNEOUS INTRUSIVES

Intrusive Structures

∩	Stock
◊	Batholith or pluton
═	Sill or sheet
┆	Dyke (f = felsic; m = mafic; la = lamprophyre; s = syenite)

Lithological Symbols

+	Granite
+	Adamellite
×	Granodiorite; diorite
⁄	Quartz-feldspar porphyry
⁄	Dolerite
▦	Syenite
▩	Ultramafic rocks

TECTONO - METAMORPHIC EVENTS AND THERMAL HISTORY

Metamorphism

◊	Contact
a	Regional (with letter symbol denoting facies as below) g = greenschist a = amphibolite g→a = gradational (greenschist to amphibolite facies in this example)
▥	Lithological symbol for metamorphic rocks

Folding

∼	Gentle warping
∿	Open upright or inclined, with axial plane foliation shown if present (dashed line)
∩∩	Tight upright or inclined, with axial plane foliation
⊃	Recumbent tight to isoclinal, with axial plane foliation
D_{1-2}	Undifferentiated polyphase deformation; number of regional deformation phases indicated
⫽	Regional kinking
∽	Chaotic soft-sediment slump folding and brecciation

Thermal Events

◊	Thermal event (without known significant metamorphism or structural development)
AFT	Thermal event with temperature data, showing age of rock sequence affected, maximum temperature and temperature indicator as follows CAI = conodont alteration index VR = vitrinite reflectance AFT = apatite fission track RE = Rock-Eval

Faulting

⫽	Faulting (arrow pointing upward denotes thrust or reverse movement, downward-pointing arrow indicates normal faulting)
⌐	Low-angle thrust faulting (+/– ramping)
⫽	Thrust faulting synchronous with folding
d	Wrench faulting (s = sinistral, d = dextral)
—d—	Disjunction

Uplift

⇧	Uplift

GEOCHRONOLOGY AND BIOSTRATIGRAPHY

Geochronology

520 K-Ar	Radiometric date with age, error bars, and method used in dating
>155	> (age) indicates minimum age (e.g., K-ar date)
<3100	< (age) indicates maximum age (e.g., zircon U-Pb)

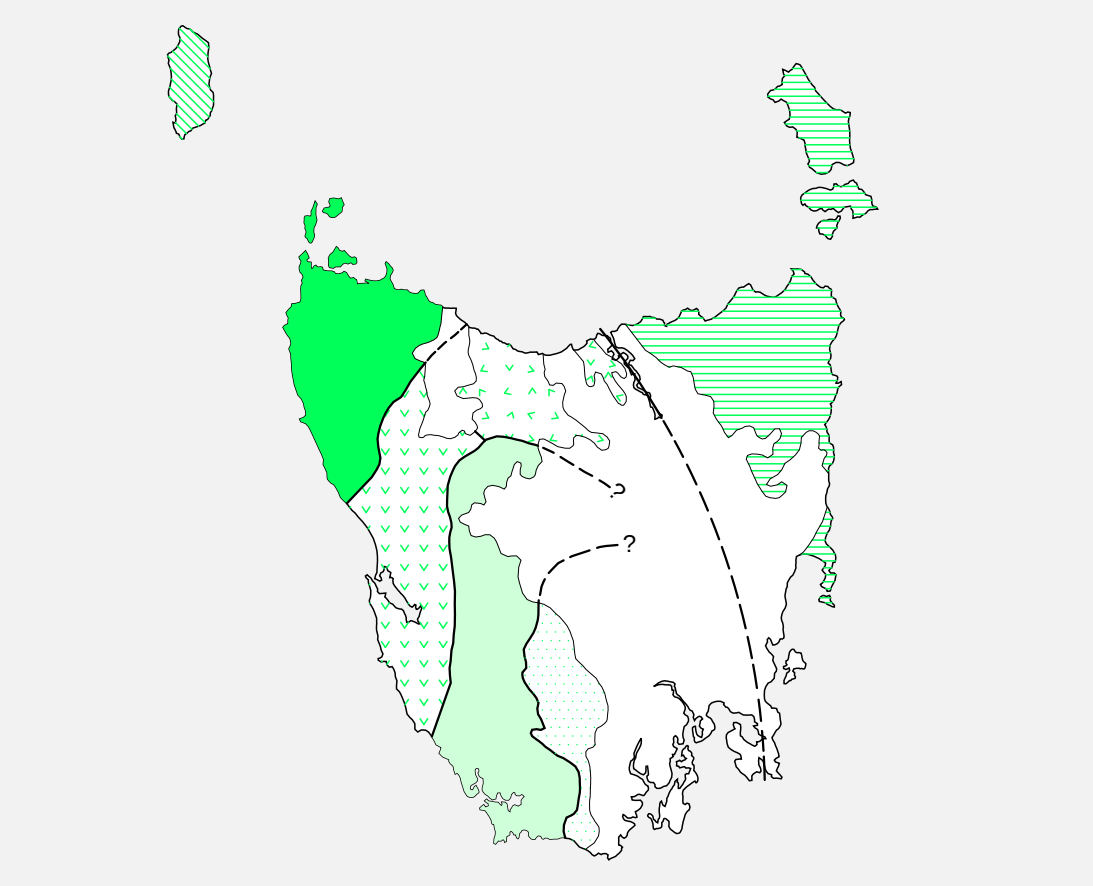
Biostratigraphy

◎	Age based on invertebrate macrofossil
⁂	Age based on microfossil
◊	Age based on plant fossil
☮	Age based on spore/pollen assemblage

METALLIC MINERAL DEPOSITS

◡	Placer deposits
⋎	Stockwork, vein, and shear-zone deposits
●	Skarns, replacement deposits
●	Massive, exhalative stratiform sulphide-oxide deposits
●	Disseminated deposits
✶	Magmatic deposits

GUIDE MAP TO ELEMENTS



▨	King Island	☐	Adamsfield - Jubilee Element
🟩	Rocky Cape Element	▤	Northeast Tasmania Element
v	Dundas Element	☐	Tasmania Basin and younger cover sequences (Main areas only shown)
^	Sheffield Element	- - -	Concealed Element boundary
🟩	Tyennan Element		