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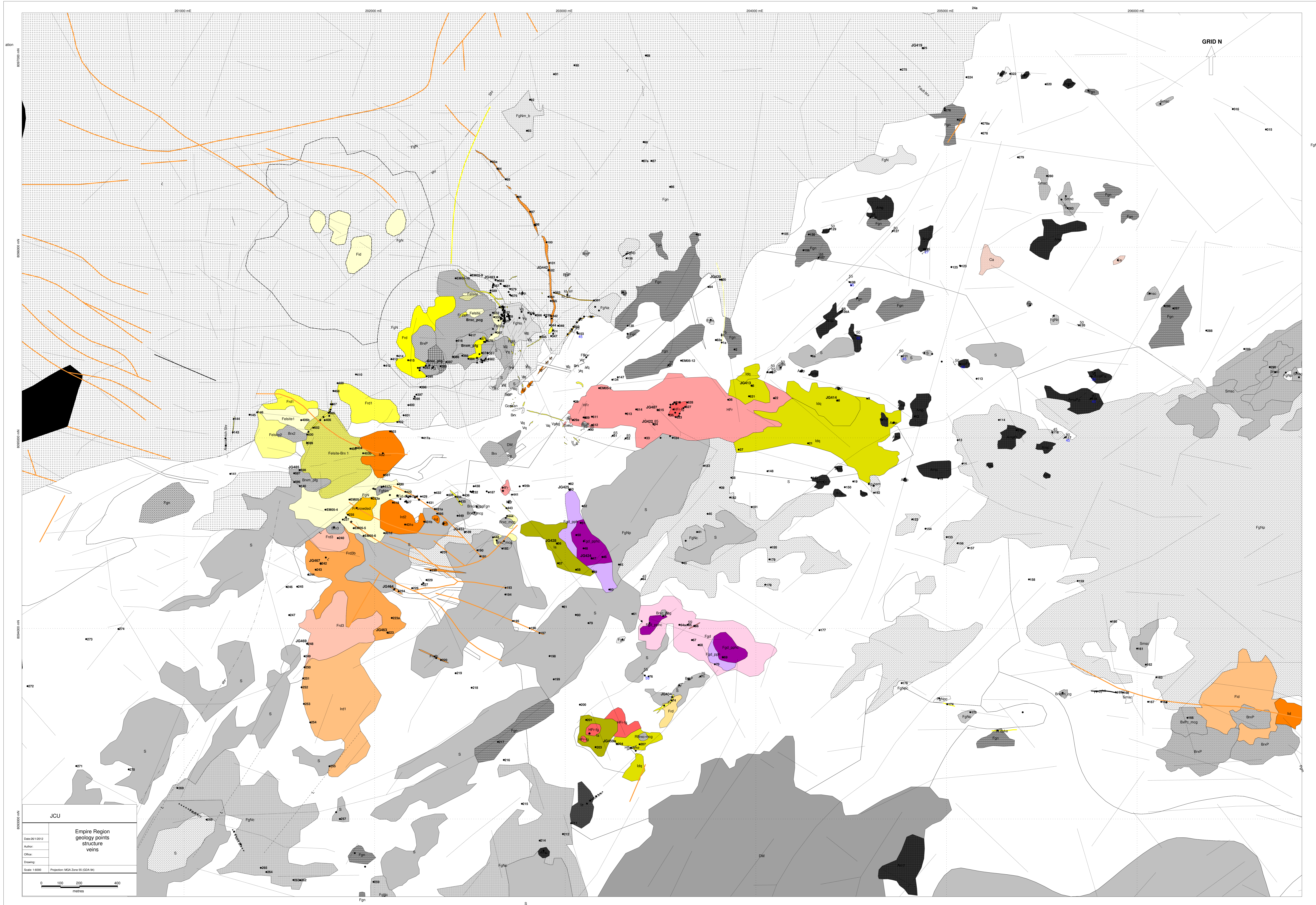
Graham-Ruzicka, Julie Louise (2014) *Gold-bismuth occurrences in the Kennedy igneous province, North Queensland: constraints on tectonic, magmatic and hydrothermal processes in intrusion-related gold deposits.* PhD thesis, James Cook University.

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Empire Region
geology points
structure
veins





Date: 26/1/2012
 Author:
 Office:
 Drawing:

Scale: 1:6000 Projection: MGA Zone 55 (GDA 94)

0 100 200 400
meters









GEOLOGY LEGEND

Linear Features





-  Fault/shear
-  Lineament
-  Fault breccia
-  Intrusion alteration mineral boundary

Carboniferous-Permian Intrusions










Empire Breccia Pipe Complex

-  Rhyolite dyke (Fr)
-  Alkali rhyolite dyke (Afr)
-  Rhyolite-Rhyodacite dyke (Fr-Frd)
-  Breccia pipe undefined (BrxP) and/or later Fr-pph and Fr-Brx
-  Brxm_pfg and/or later Rhyodacite (Frd)
-  Brxc_pfg and/or later Brxc_pcg 2 and Felsite (F3)
-  Dacite dyke (Id)
-  Brxc_pcg and/or later Felsite (F3)

Darkies Knob Breccia Pipe Complex

-  Dacite dyke (Frd)
-  Breccia (Brx)
-  Rhyodacite porphyry (Frd)
-  Dacite porphyry (Id)

Pinnacles Breccia Pipe

-  Rhyolite dyke (Fr)
-  Rhyodacite dyke (Frd)
-  Dacite-Rhyodacite (Ird2) and Breccia (Brx3)
-  Breccia (Brx2) and Felsite (F2)
-  Rhyodacite porphyry (Frd3 and Frd3b)
-  Rhyolite-Rhyodacite porphyry (Frd1)
-  Crowded rhyolite porphyry (Frc)
-  Felsite dominate breccia (F-Brx) and Felsite (F1)
-  Dacite-Rhyodacite porphyry (Ird-1)

Sample or geological point




Wholerock
Sample number ● point number

Vein assay number
Auppm







dip
S₂ foliation

dip intersection lineation





C-S complex

-  Rhyolite dyke (Fr)
-  Breccia (Brx)
-  Rhyodacite porphyry (Frd)




Dome and Summit Complexes

-  Summit Breccia (Brx)
-  Summit Hematite rhyodacite dyke (Hfrd)
-  Fine grained granodiorite porphyry (Fgd_pph)
-  Crowded granodiorite porphyry (Fgd_pphc)
-  Granodiorite porphyry Undifferentiated (Fgd)
-  Dome Andesite porphyry (Ia)



Crest Complex

-  Hematite rhyodacite dyke (Hfrd)
-  Andesite porphyry (Ia)
-  Fine grained Hematite Rhyodacite (Hfrd-fg) and Breccia (Brx)
-  Quartz-diorite porphyry (Idq)



Hilltop Complex

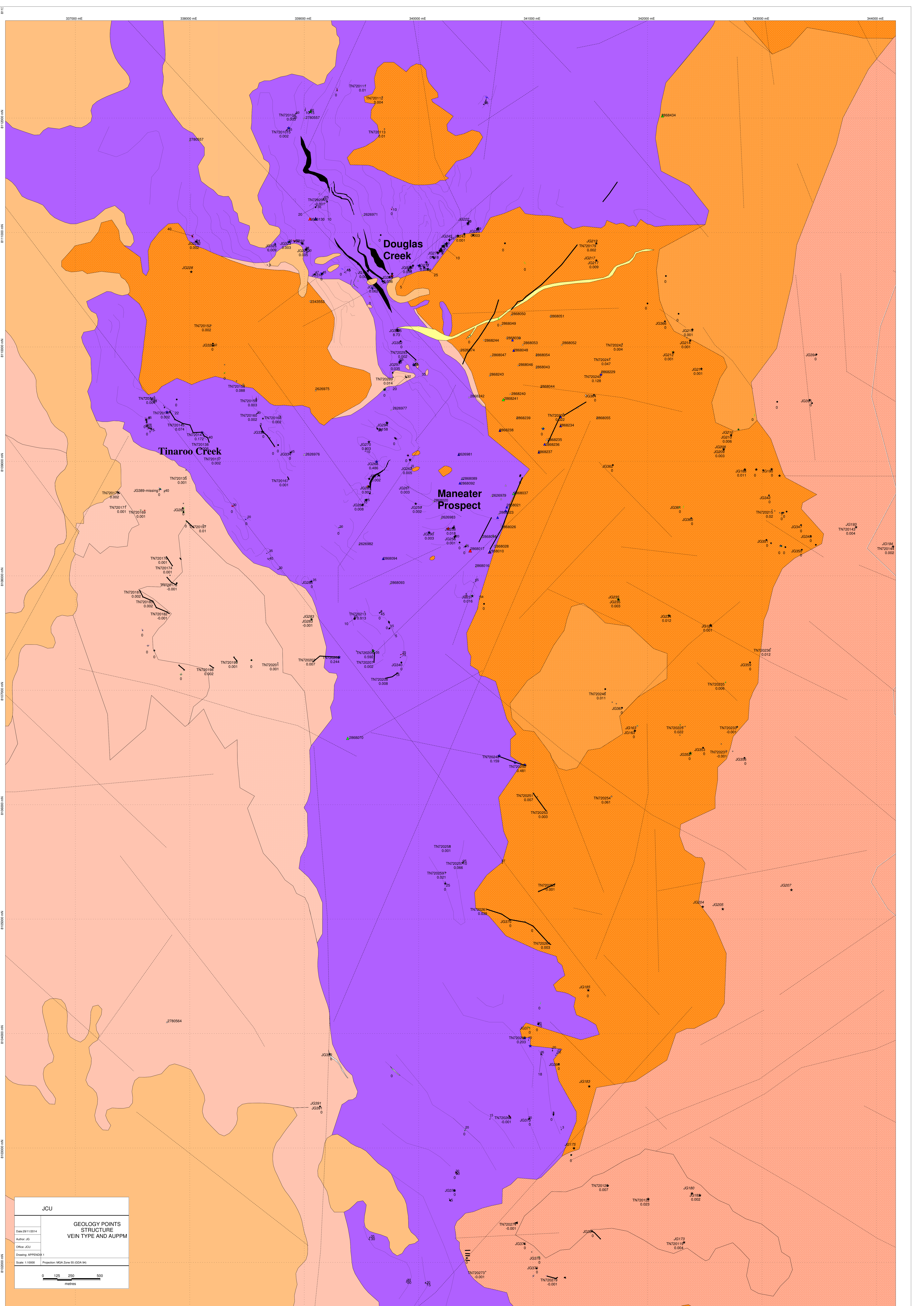
-  Breccia (Brx)
-  Fine grained Hematite Rhyodacite (Hfrd-fg)
-  Quartz-diorite porphyry (Idq) and Hematite Rhyodacite (Hfrd)

Silurian Blackman Gap Supersuite

-  Granodiorite
-  Nundah Granodiorite

Proterozoic

-  Amphibolite
-  Dargalong Metamorphics



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GEOLOGY POINTS STRUCTURE VEIN TYPE AND AUPPM	
Date: 28/11/2014	
Author: JG	
Office: JCU	
Drawing: APPENDIX 1	
Scale: 1:10000	Projection: MGA Zone 55 (GDA 94)





Geology Legend

Whole rock
sample number





● point number

Sample number
Vein assay Auppm

Structure and Veining

-  Major Veins or vein stockworks
-  S₂ formlines
-  Aeromagnetic interpreted lineations
-  L₃ Lineation

Vein Orientations







-  Stage 1 Veins
-  Stage 2 Veins
-  Stage 3 veins
-  Stage 4 veins

Rock Chips (Au ppm)

Teck Comminco Samples

-  5 to 8.85
-  1 to 5
-  0.5 to 1
-  0.1 to 0.5
-  0.05 to 0.1
-  -0.01 to 0.05



Historical Samples

-  5 to 8.85
-  1 to 5
-  0.5 to 1
-  0.1 to 0.5
-  0.05 to 0.1
-  -0.01 to 0.05



Tertiary-Quaternary

-  Atherton Basalt (Tqa)





Early Permian

-  Dacite Dykes
-  Tinaroo Granite (Pgt)

Late Carboniferous

-  Potassic Alteration
Douglas South Granodiorite (Cdk)
-  Douglas South Granodiorite (Cds)

Early Carboniferous

-  Emerald Creek Microgranite
Tungsten Skarn
-  Hodgkinson Formation and
Aphoyses of Emerald Creek Microgranite
-  Potassic Alteration
Emerald Creek Microgranite (Cek)
-  Emerald Creek Microgranite (Ce)

Devonian

-  Hodgkinson Formation-metamorphic aureole
Emerald Creek Microgranite (Dh's)