



Roswell and San Antonio gold deposits

Alex Cherry, David Meates,
Lachlan Burrows, Ian Chalmers

May 2022

© 2022 Alkane Resources



Find.

Enhance.

Deliver.

ASX:ALK

Disclaimer



This presentation contains certain forward-looking statements and forecasts, including possible or assumed reserves and resources, production levels and rates, costs, prices, future performance or potential growth of Alkane Resources Ltd, industry growth or other trend projections. Such statements are not a guarantee of future performance and involve unknown risks and uncertainties, as well as other factors which are beyond the control of Alkane Resources Ltd. Actual results and developments may differ materially from those expressed or implied by these forward-looking statements depending on a variety of factors. Nothing in this presentation should be construed as either an offer to sell or a solicitation of an offer to buy or sell securities.

Alkane Resources Ltd cannot and does not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this presentation will occur and investors are cautioned not to place any reliance on these forward-looking statements. Alkane Resources Ltd does not undertake to update or revise forward-looking statements, or to publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained in this presentation, except where required by applicable law and stock exchange listing requirements.

This document has been prepared in accordance with the requirements of Australian securities laws, which may differ from the requirements of United States and other countries' securities laws. Unless otherwise indicated, all ore reserve and mineral resource estimates included or incorporated by reference in this document have been, and will be, prepared in accordance with the JORC classification system of the Australasian Institute of Mining, and Metallurgy and Australian Institute of Geosciences.

Previously reported information

The information in this report that relates to the combined mineral resources and ore reserves is drawn from the Company's ASX announcement dated 7 September 2021. The Tomingley Life Of Mine Plan is extracted from the Company's ASX announcement dated 3 June 2021. Exploration results are extracted from the Company's ASX announcements noted in the text of the document and are available to view on the Company's website. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcement(s); in the case of estimates of mineral resources or ore reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed; and that the form and context in which the Competent Person's findings are presented have not been materially altered.

Competent person

Unless otherwise advised above or in the Announcements referenced, the information in this presentation that relates to exploration results, mineral resources and ore reserves is based on information compiled by Mr D I Chalmers, FAusIMM, FAIG, (director of the Company) who has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Chalmers consents to the inclusion in this presentation of the matters based on his information in the form and context in which it appears.

Overview

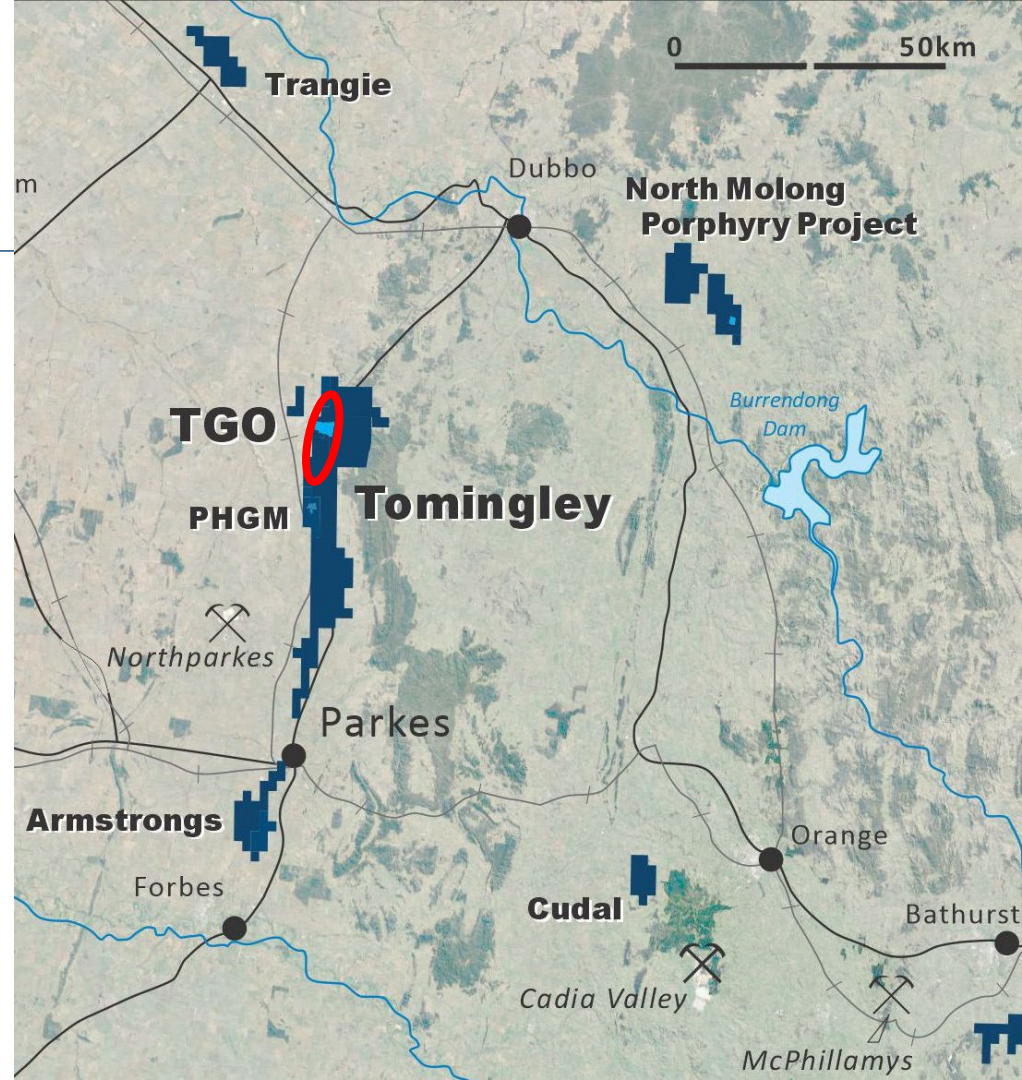
- Background of the Tomingley Gold Project
- Regional geological setting
- Roswell and San Antonio geology, structure, alteration and mineralisation
- Satellite prospects – El Paso, McLeans, Plains
- Implications and next steps



Background

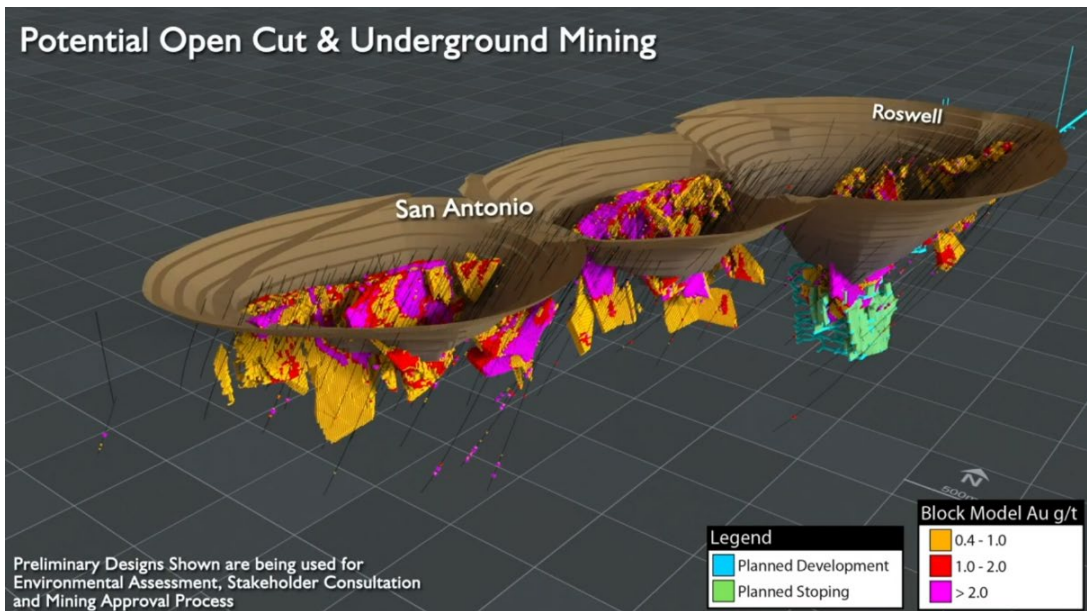
Tomingley Gold Project

- Tenement package from Tomingley nearly to Parkes
 - Focus so far on northern portion
- Mining for 8 years at TGO so far
- The TGEP (Roswell and San Antonio) projecting at least 10 more years of mine life
 - Initial Roswell underground
 - Open cut when highway is moved



Background

Tomingley Gold Extension Project



Roswell

14.1 Mt @ 2.00 g/t Au
(904,000 oz)

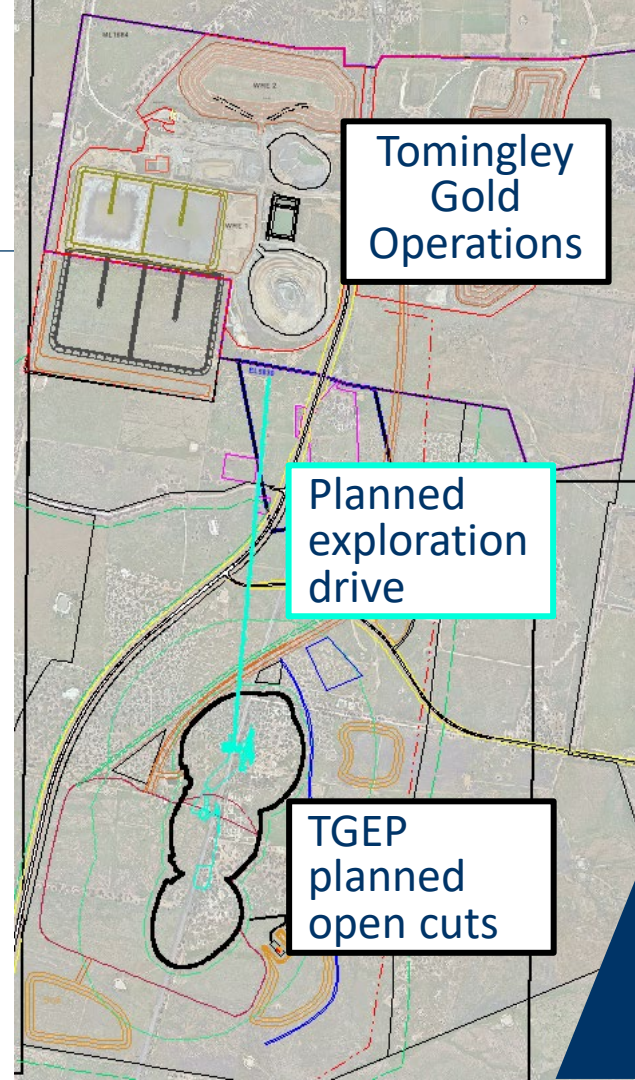
ASX Release 2 May 2022



San Antonio

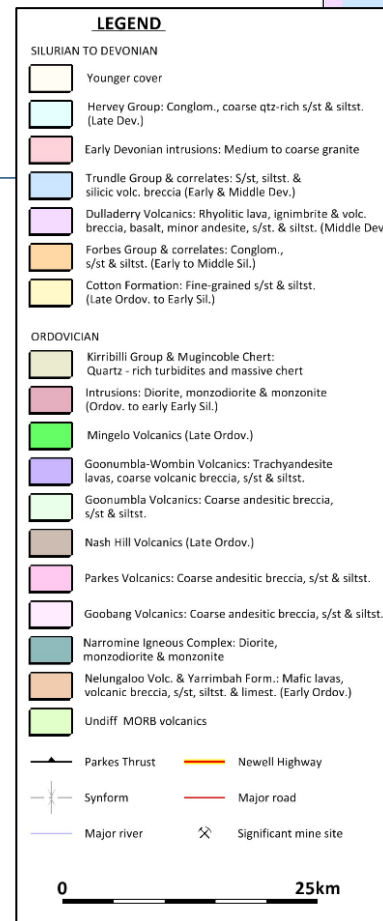
7.32 Mt @ 1.72 g/t Au
(406,000 oz)

ASX Release 7 September 2021



Geological Setting Tomingley Gold Project

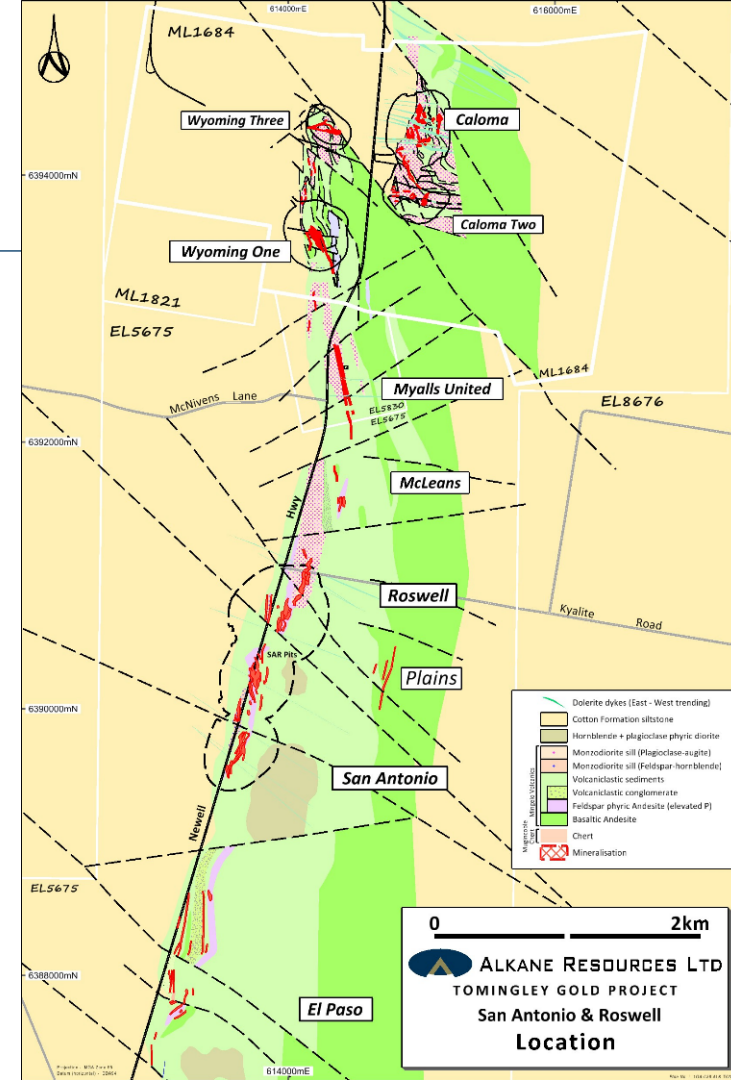
- Centred on the Ordovician Mingelo Volcanics
 - Faulted slice of Junee-Narromine Volcanic Belt (Macquarie Arc)
- Hosts orogenic and epithermal gold deposits
 - Tomingley camp
 - Peak Hill
- Surrounded by barren Ordo-Silurian Cotton Formation/Forbes Group



Geological Setting

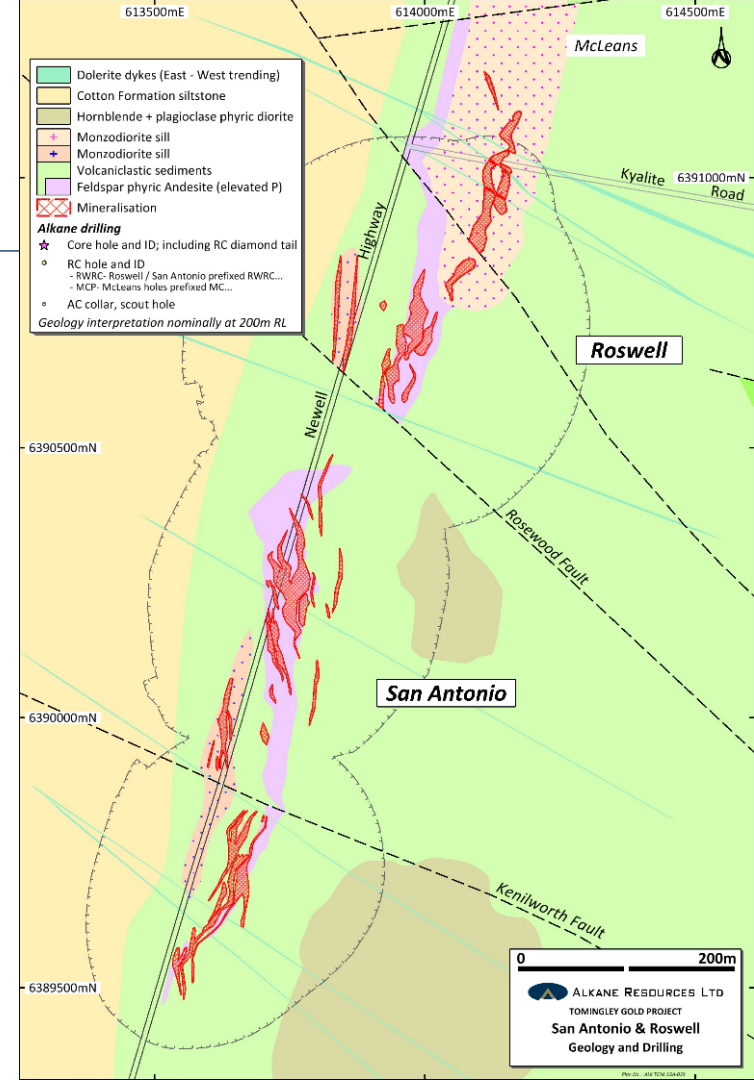
Tomingley Gold Project

- Nearly zero outcrop around Tomingley
- Cover is usually 5-60m thick
- Main exploration/mapping techniques
- Drilling
- Geophysics
- Much of the Mingelo Volcanics is un/under-drilled



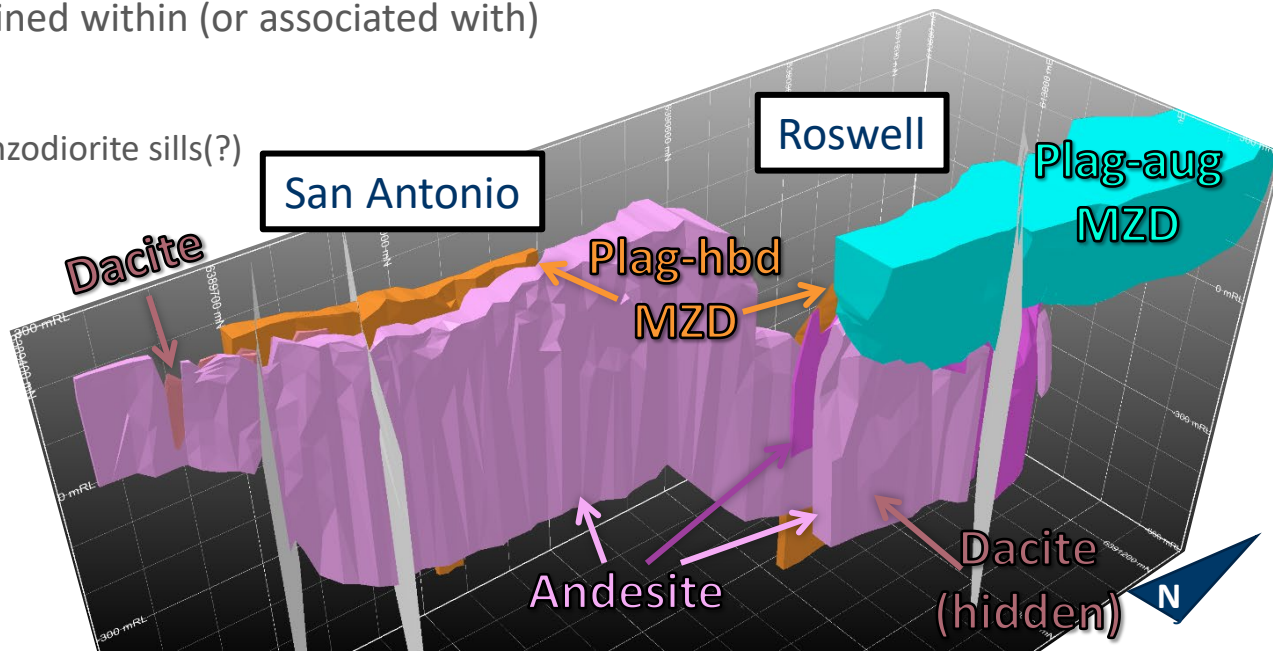
Roswell and San Antonio Geology

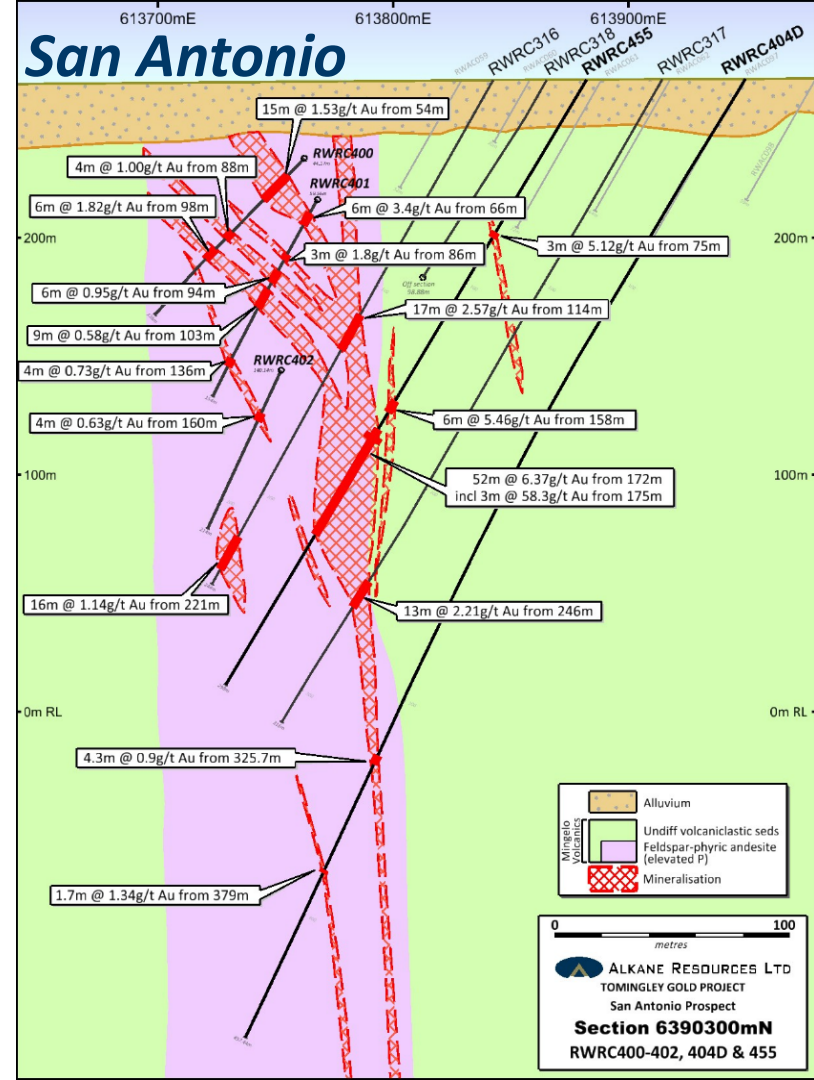
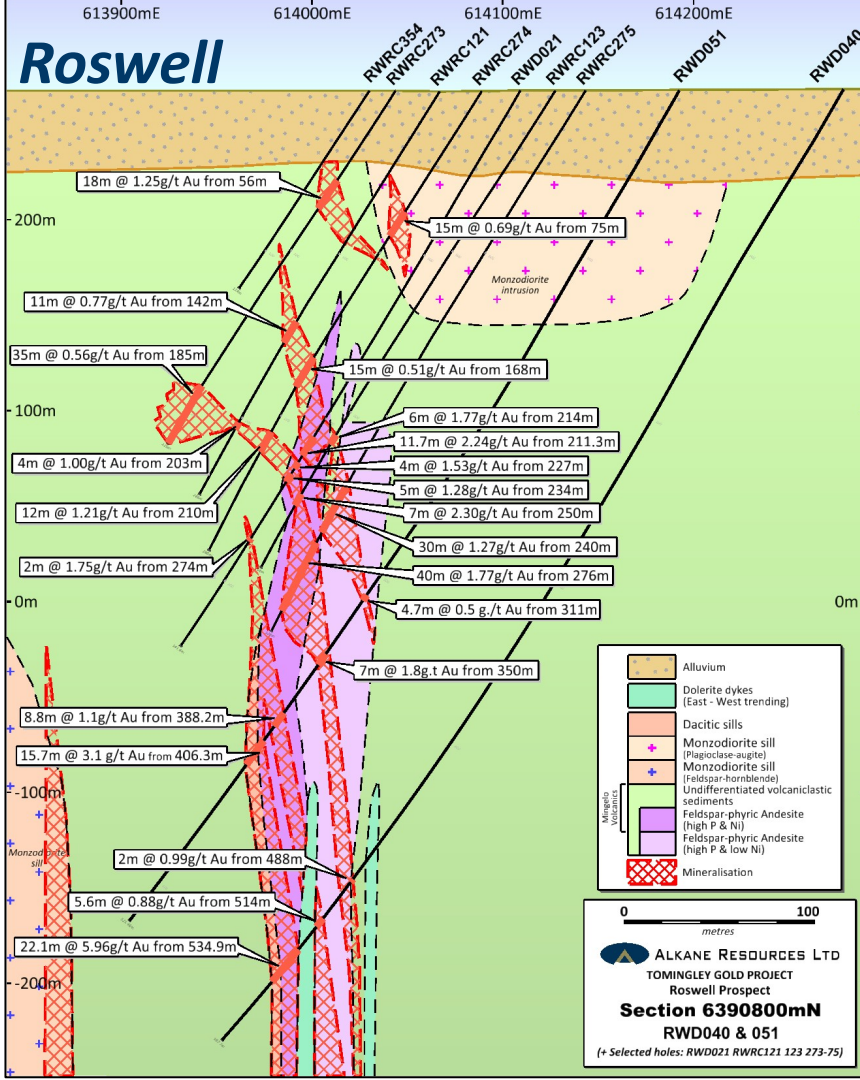
- Deposits associated with narrow lavas and intrusives
- Surrounded by undifferentiated volcanics
- Striking NNE, sub-parallel to unconformity with Cotton Formation
- Cut by several thin post-mineral WNW-striking dolerite dykes



Roswell and San Antonio Geology

- Lithology has a really strong control on mineralisation
- Vast majority of Au is contained within (or associated with) three igneous units
 - Andesite lavas
 - Plagioclase-hornblende monzodiorite sills(?)
 - Dacite sills(?)





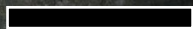
Roswell and San Antonio Geology - andesite

- Major mineralisation host
- Two geochemical types
 - Visually identical - best differentiated by Ni content
- Single lava (up to 80 m thick) dominates in San Antonio
- Multiple layered lavas in Roswell
 - Contributor to development of better mineralisation?



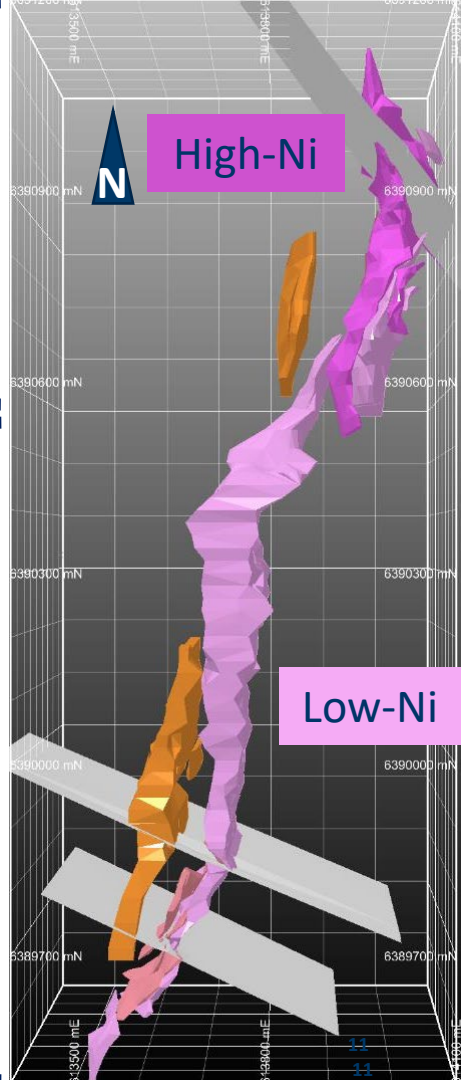
Andesite
RWD061 969m

2cm



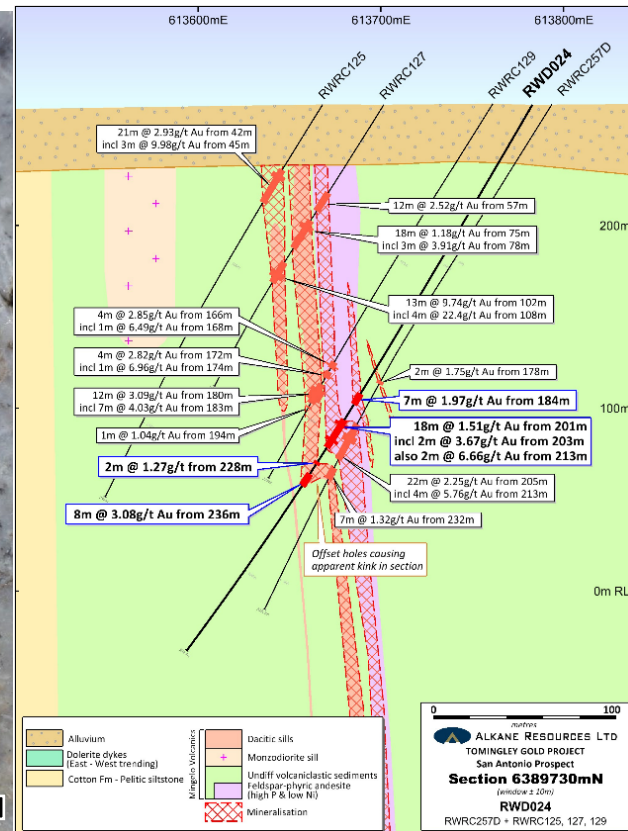
Roswell

San Antonio



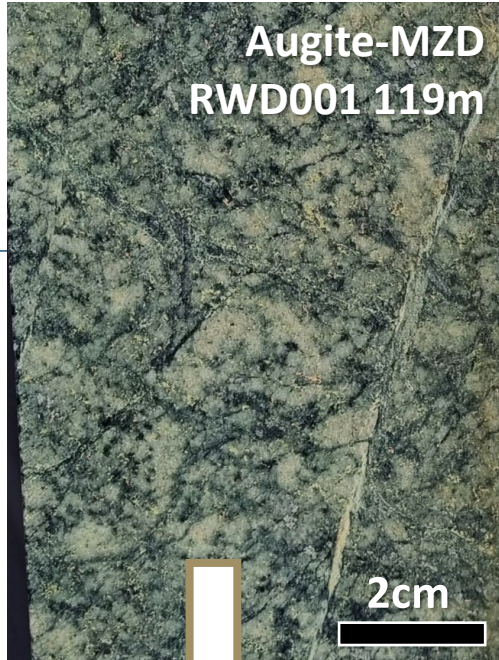
Roswell and San Antonio Geology - dacite

- Narrow (1-20 m) sills immediately west of andesite
- Present only in southern San Antonio and at depth in Roswell
- Usually intensely altered (ser-sil) to the point of near obliteration of textures
 - But geochemically distinct
- Can be associated with high grades



Roswell and San Antonio Geology – monzodiorites

- Plagioclase-augite monzodiorite
 - Medium- to coarse-grained holocrystalline intrusion
 - East of andesite in Roswell
 - Variably altered and sheared
 - Only minor mineralisation
- Plagioclase-hornblende monzodiorite
 - 25-50m thick lava or subvolcanic sill?
 - Between andesite and Cotton Formation
 - Significant host to mineralisation



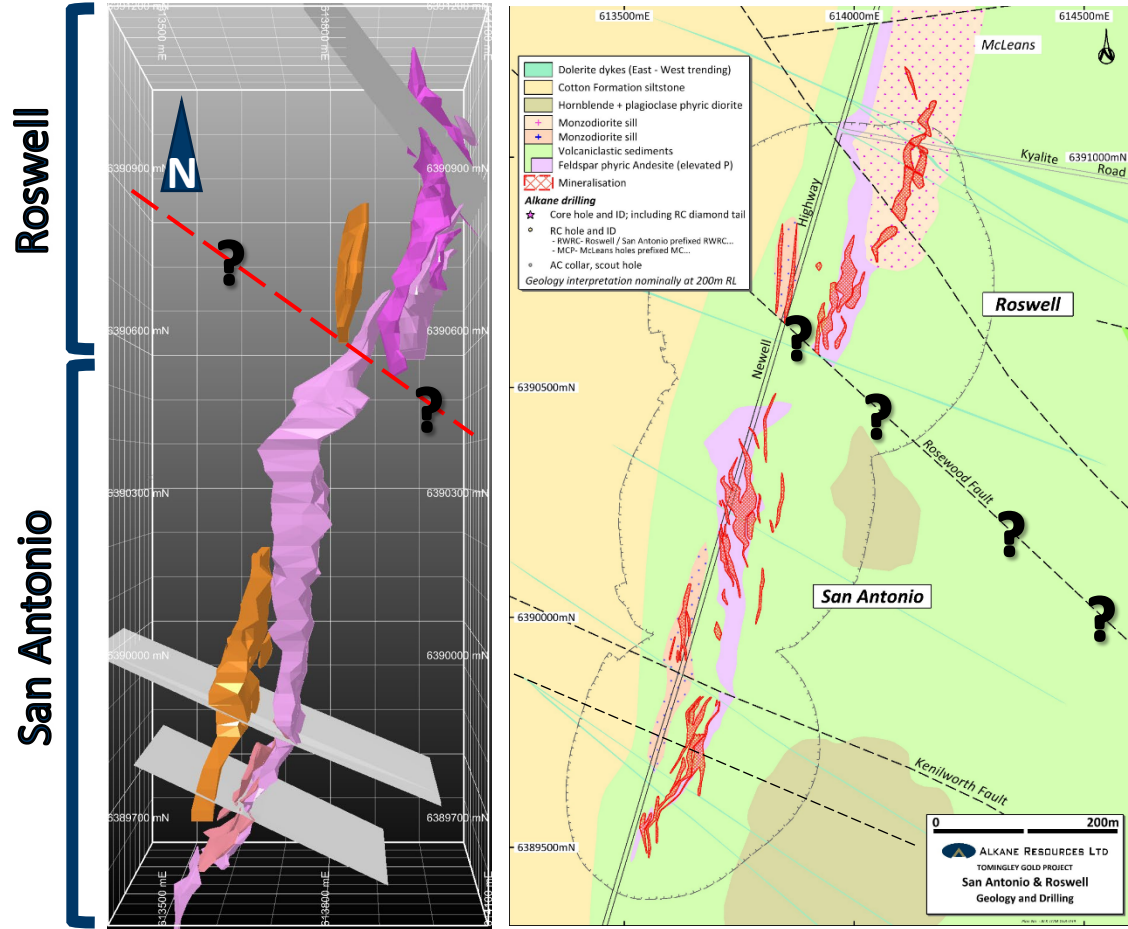
Roswell and San Antonio Geology – Cotton Fm and dykes

- Cotton Formation
 - Pelitic silts, sandstones and debris flow conglomerates
 - Abundant detrital quartz is diagnostic (cratonic source)
 - Barren
- Dolerite dykes
 - Post mineral
 - Striking WNW
 - Typically <5m thick at Roswell/San Antonio



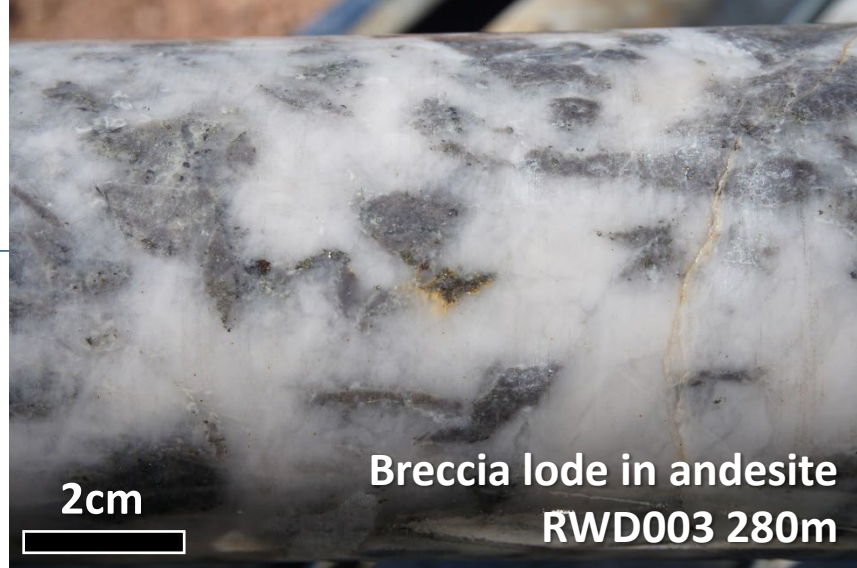
Roswell and San Antonio Structure

- Stratigraphy and regional metamorphic foliation subparallel
 - Generally strikes North to NNE
- Cotton Formation contact with the Mingelo Volcanics is an angular unconformity (often faulted)
- Minor offsetting of stratigraphy and mineralisation by NW- to WNW-striking faults



Roswell and San Antonio Mineralisation

- Lodes strike N-S, dip moderately-steeply E to vertical
- Sheeted veins develop to stockworks or breccias in thicker lodes
- Quartz + carbonate + albite + sericite + pyrite \pm arsenopyrite \pm VG
- Petrographic textures suggest Au was upgraded in a later event that fractured earlier sulphides.



Dacite-sediment
contact
RWD054 603m



Multistage vein in
andesite
RWD040 542m



Sediment wedge
RWD054 605m



Stockwork in
hornblende-MZD
KWD003 530m



Roswell and San Antonio Alteration

- Alteration in mineralised lodes matches vein assemblage
 - Sericite + silica + carbonate + albite + pyrite
± arsenopyrite
- Chlorite-dominant alteration more distal to mineralisation
- Regional metamorphic alteration dominated by epidote + chlorite

Sericite-pyrite selvage
& distal chlorite
basaltic andesite
RWD059 60m



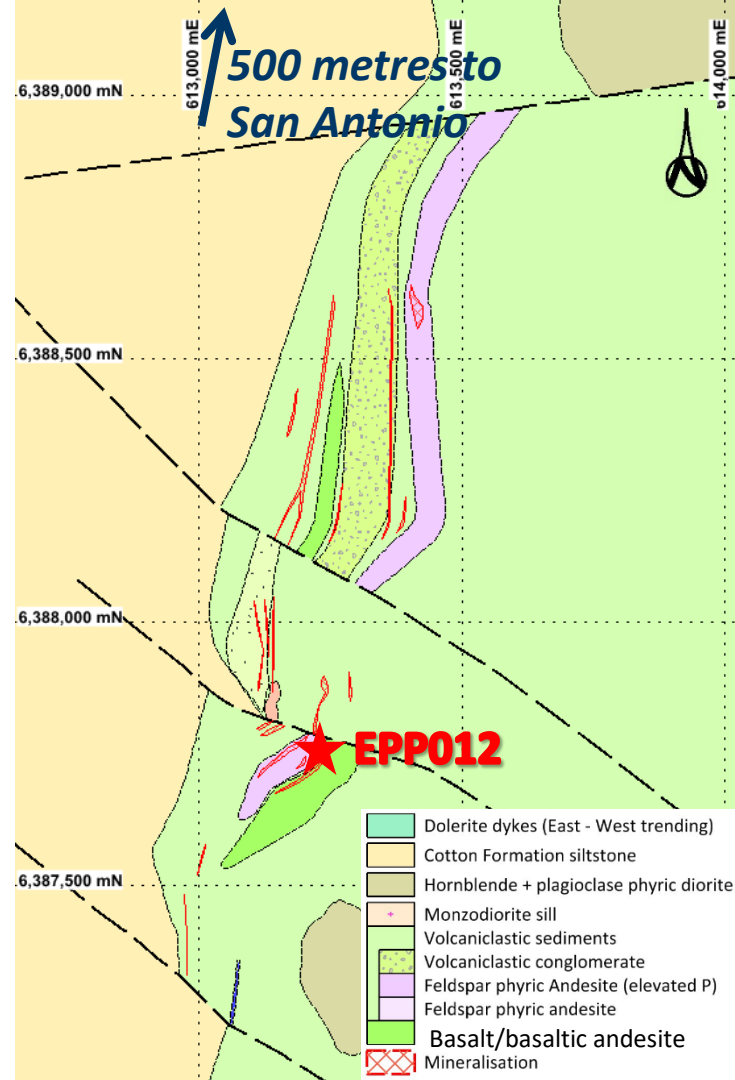
Epidote-chlorite
volcaniclastics
RWD061 640m



Satellite prospects El Paso

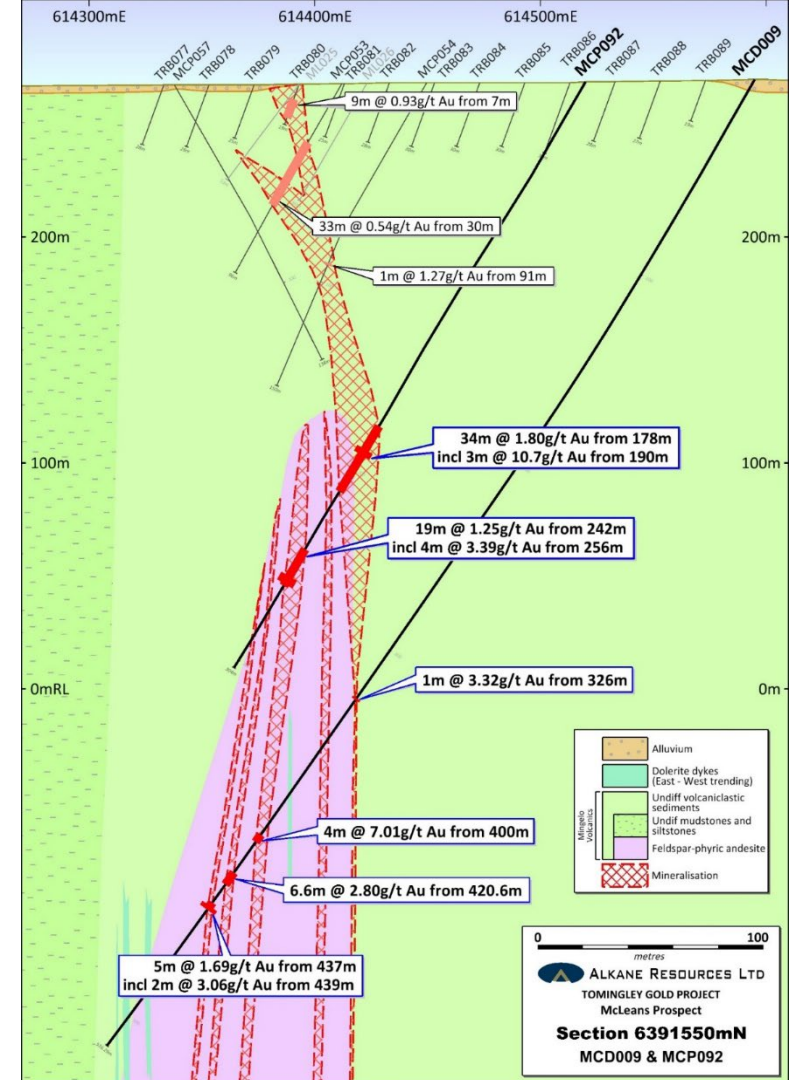
- ~500 metres south of San Antonio
- Same andesite and dacite present as Roswell/San Antonio
- Rotated stratigraphy in places
- Discontinuous lodes and narrow high grade shoots:
e.g. **EPP012** 12 m @ 4.99 g/t from 108 m
and 21 m @ 2.38 g/t from 141 m
and 6 m @ 10.65 g/t from 168 m[#]

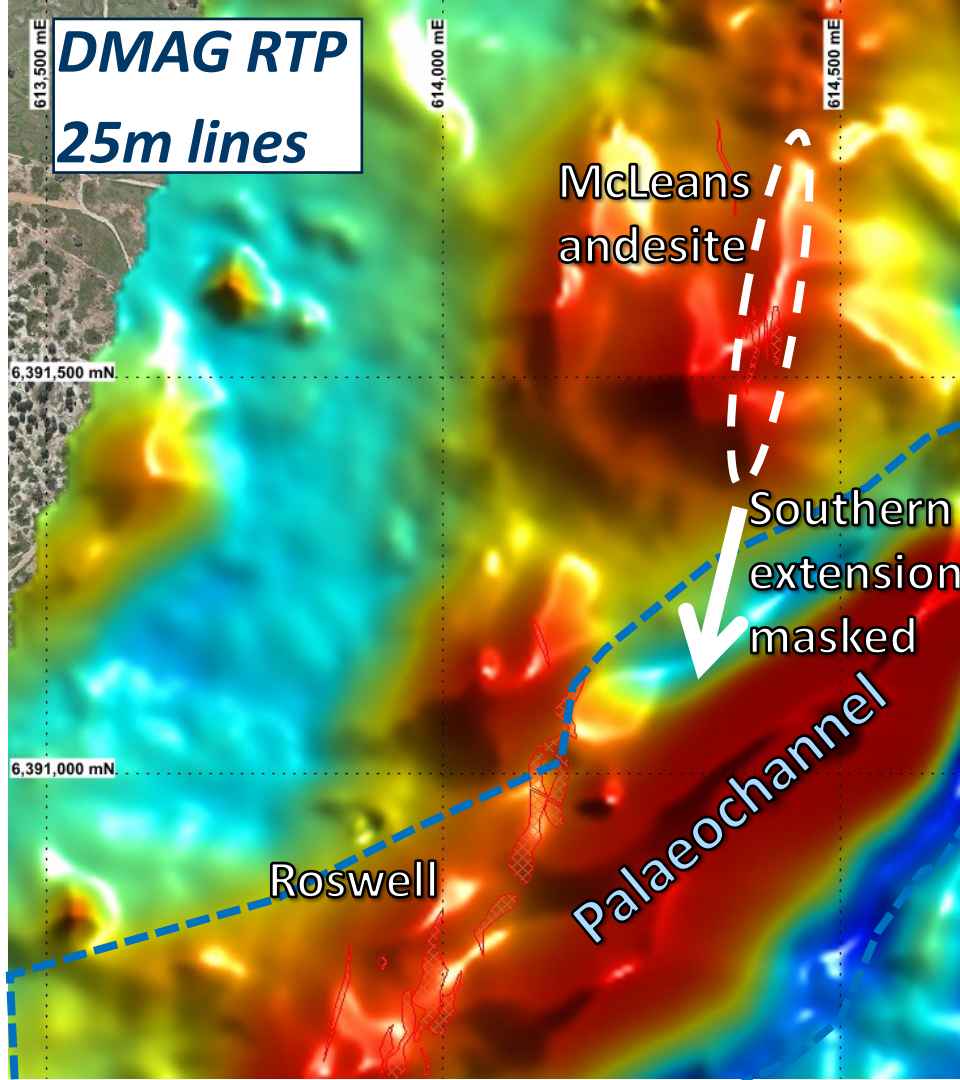
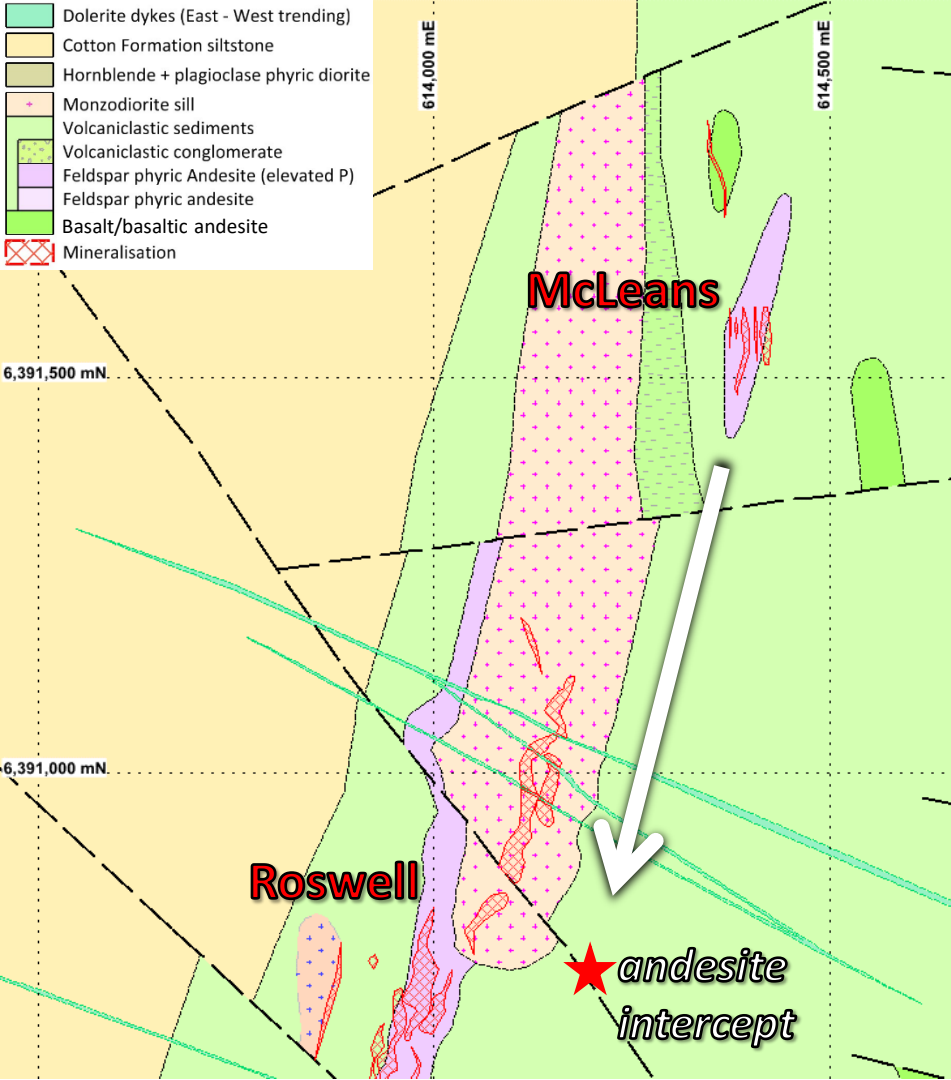
[#]ASX Release 16 May 2019



Satellite prospects McLeans

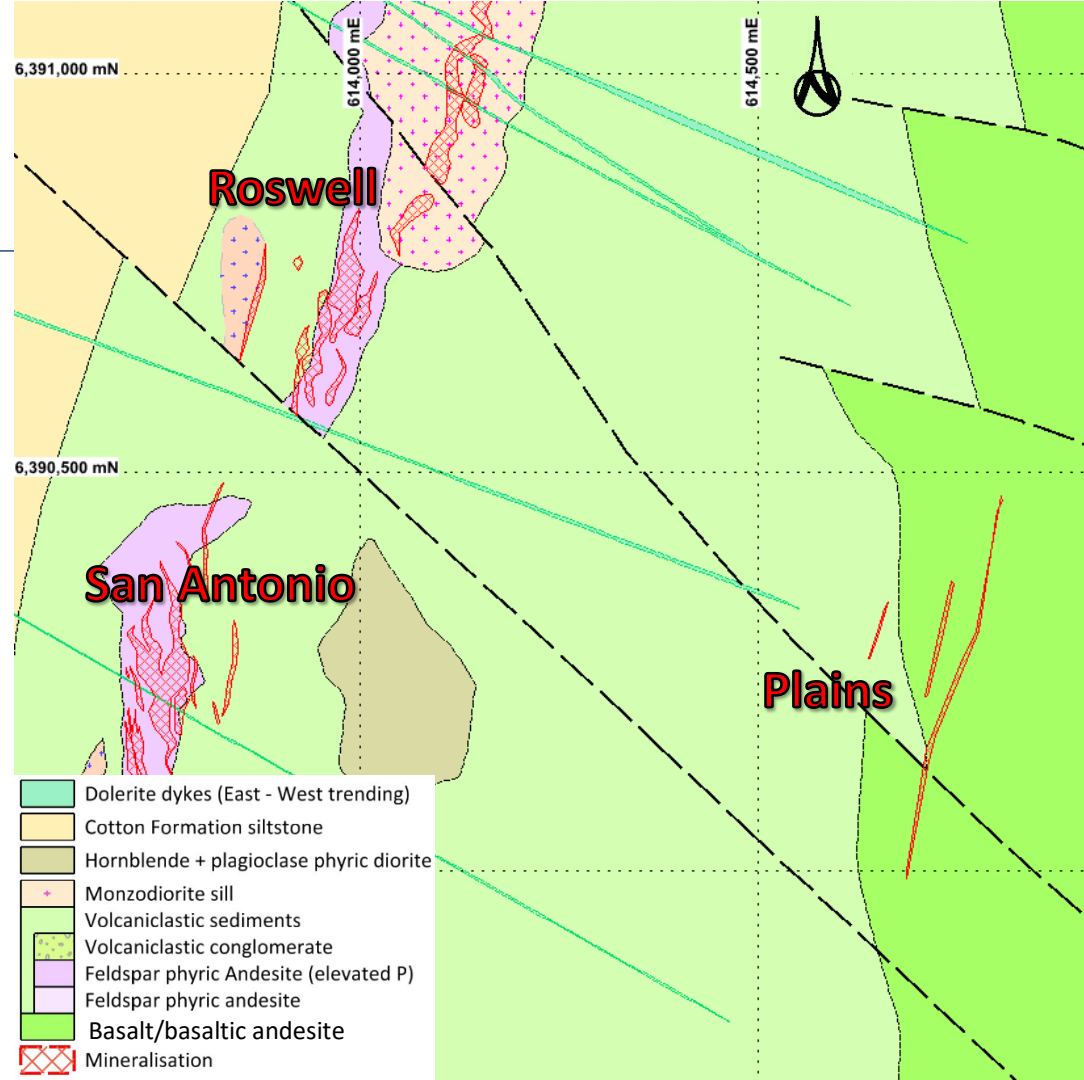
- ~400m NE of Roswell
- Last drilled mid-2000s
 - Shallow drilling testing soil anomalism
 - Low, discontinuous grades in sediments
- Deeper drilling last year intersected better mineralisation associated with a new andesite
 - Chemically same as in Roswell/San Antonio
- Step out drilling already confirmed presence of andesite/mineralisation over ~300 metres





Satellite prospects Plains

- ~800 metres E of San Antonio
- Detected during sterilisation drilling around San Antonio/Roswell Location relative to SAR
- Sheeted veins surrounded by disseminated pyrite \pm arsenopyrite
- 400+ m strike
- Hosted mainly within (sub-)volcanic basaltic andesite
 - Visually very similar to TGO host rocks
 - Possible peperitic textures near margin

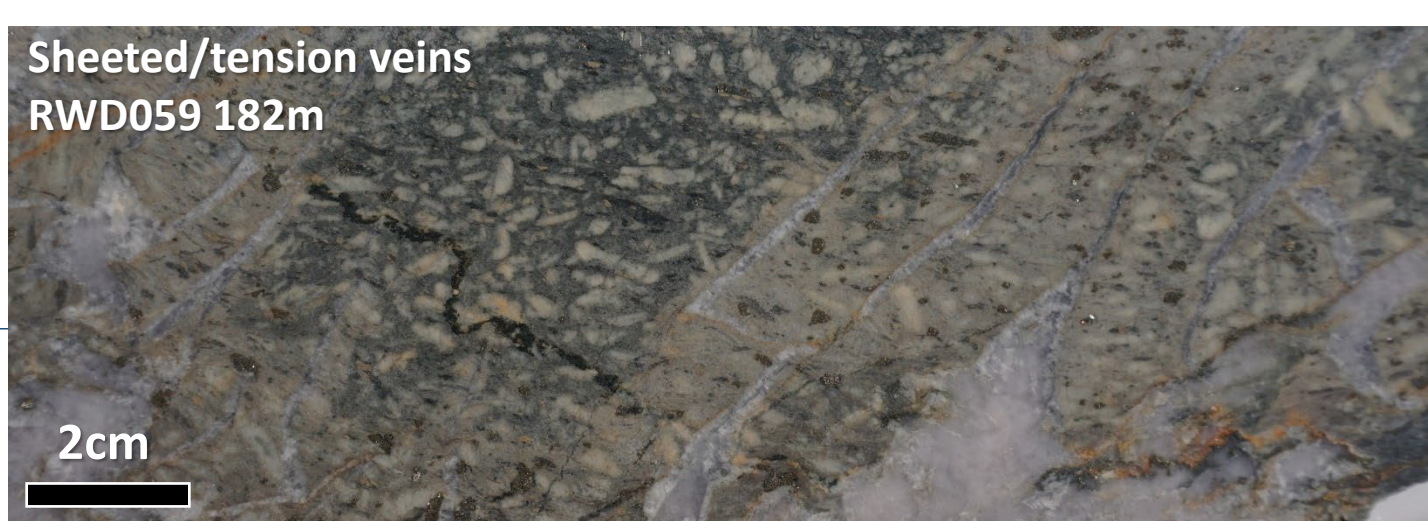


**Least-altered
basaltic andesite
RWD059 294m**



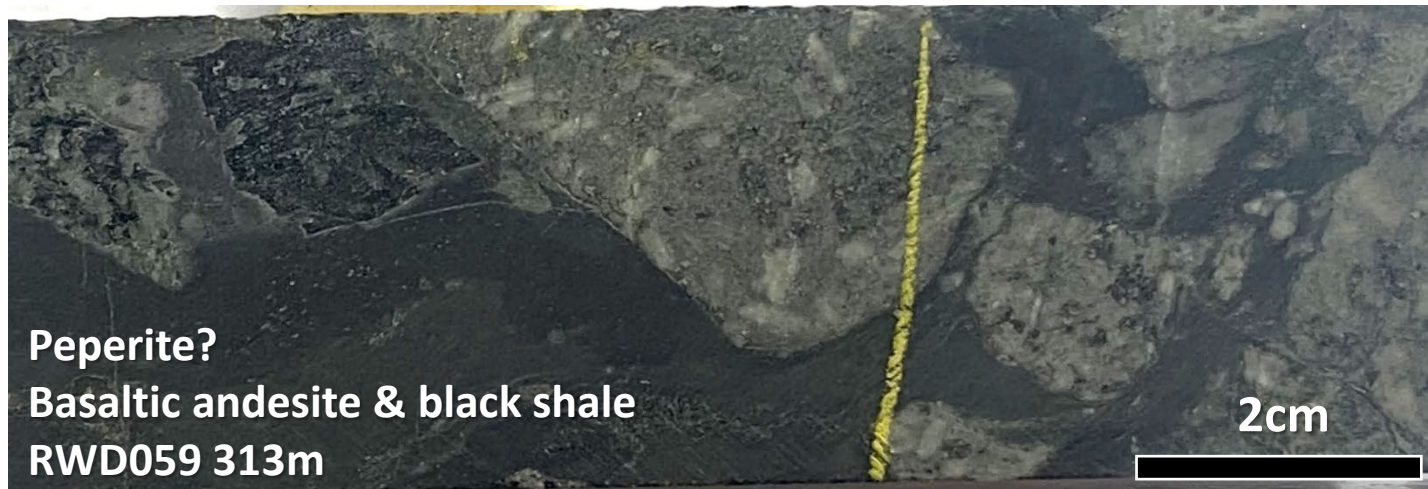
2cm

**Sheeted/tension veins
RWD059 182m**



2cm

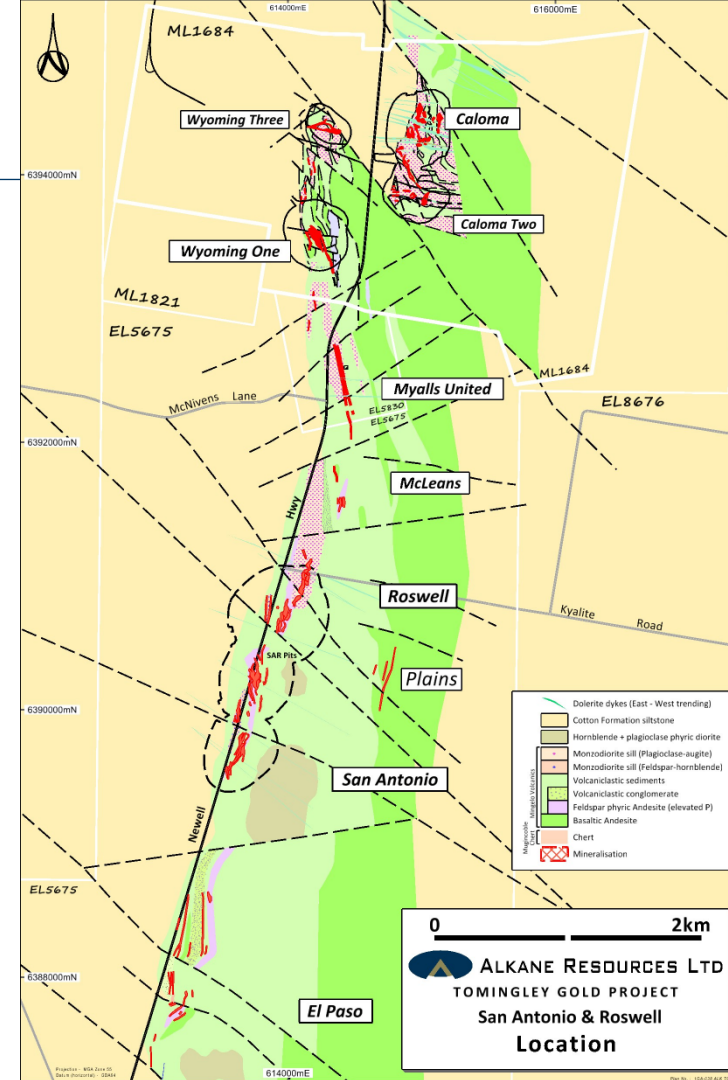
**Peperite?
Basaltic andesite & black shale
RWD059 313m**



2cm

Implications for exploration

- There is potential away from the western contact with the Cotton Formation
- Minor (near)surface anomalism in sediments could indicate something better at depth.
 - Buried andesite at McLeans and Roswell
- Next steps
 - More drilling
 - More geophysics (DMAG, ANT, 2D seismic)
 - Honours project on geochemical prospectivity of host rocks



Planned honours project

Thermodynamic modelling of prospectivity

- Honours project – thermodynamic/geochemical prospectivity of host rocks
 - Couple of old prospects have alteration, veining, sulphides but no Au – is it something about the chemistry of the host rock?

- See GSA talk by Chris Voisey - **Chris Voisey**
'Geochemical Modelling for Orogenic Gold:
Centrefold for Ore Genesis & Prospectivity'
- <https://youtu.be/4rJh2tYizo0>

- Planned to be run through UNSW
- Looking for a student for the project



UNSW
SYDNEY

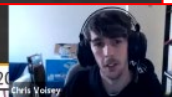
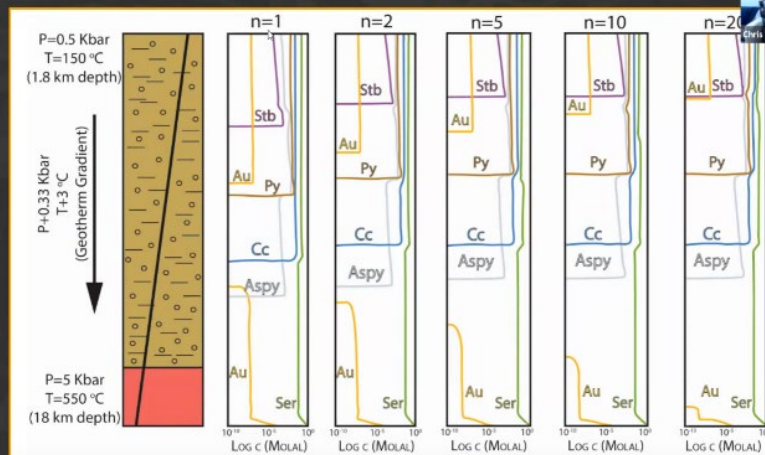
Geochemical Modelling for Orogenic Gold: The Centrefold for Ore Genesis and Prospectivity

Partial summary of research conducted by the author at Monash University & sponsored by the bodies below.

Additional supporting information from numerous authors cited per slide.

Authors: Dr. Chris R. Voisey

Geochemical Modelling





Acknowledgements:

- Tony Crawford
(petrography and lithogeochemistry)
- Alkane staff (past/present)

www.alkane.com.au

 @alkaneresources
 alkane-resources-ltd



Find.

Enhance.

Deliver.

ASX:ALK