



**TECHNICAL REPORT TO**

***AusNiCo Limited and Lions Gate Metals Inc.***

**On The**

***Queensland Ni Co Projects***

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**Report No:** IMC0

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**ALISTAIR HEATLEY BARTON, AUTHOR**

I, Alistair Heatley Barton, FAusIMM, CP Geo., do hereby certify that:

1. I am Principal Geologist at:  
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Level 40, Riverside Centre,  
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Brisbane, Queensland, AUSTRALIA.
2. I graduated with an Associate Diploma and Fellowship Diploma in Geology from the Royal Melbourne Institute of Technology in 1973 and 1974 respectively.
3. I am a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM) and I am an accredited Chartered Professional (Geology).
4. I have worked as a geologist for a total of 36 years since graduation and have experience in gold, base metals, coal and industrial minerals industries including exploration, project development, mining operations, contract mining and engineering services, consulting, capital fund raising and public company management. Commodity experience includes copper, lead, zinc, gold, silver, tin, tungsten, molybdenum, nickel, cobalt, tantalite, uranium, indium, heavy mineral sands, coal, iron ore, blue metal quarry products, some clays, silicon, silica sand, semi-precious gem stones (aquamarine, topaz), limestone and dolomite. I have operated throughout Australia and also have overseas experience in Canada, China, Mongolia, Mozambique, Mexico, Fiji, the Philippines, Solomon Islands and New Zealand. I have also attended many technical and commercial conferences and seminars and have completed a number of training courses.
5. I have read the definition of Qualified Person set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of NI 43-101.
6. I am responsible for the preparation of the Technical Report titled "Technical Report to AusNiCo Limited and Lions Gate Metals Inc. on the Queensland Ni Co Projects" and dated 28<sup>th</sup> January, 2010 relating to the Project areas. I visited the main Project areas for a total of one day in September 2009.
7. I have had an involvement in the Project areas since September 2009. The nature of this involvement includes the technical report write up and reviews of the proposed exploration programme and budgets.
8. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
9. I am independent of the issuer applying all of the tests in Section 1.4 of NI 43-101.
10. I have read National Instrument 43-101 and Form 43-101 F1, and the Technical Report has been prepared in compliance with that instrument and form.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including

electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated 28 January 2010

A handwritten signature in black ink, appearing to read "AHB" followed by "Barton" in a cursive script.

*Signature of Qualified Person*

Alistair Heatley Barton

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## **1 EXECUTIVE SUMMARY**

### **1.1 Introduction**

IMC Mining Solutions Pty Ltd (“IMC”) was appointed by AusNiCo Limited (“AusNiCo”) and Lions Gate Metals Inc. to conduct a review of its Ni Co Project in South East Queensland and write an independent expert’s report on their mineral projects.

IMC understands that the directors of AusNiCo wish to merge AusNiCo into Lions Gate Metals Inc. (which is a listed company on the TSX Venture Exchange) during late 2009.

AusNiCo was formed to manage and control tenements owned and identified by D’Aguilar Gold Limited (D’Aguilar) as having mainly potential for sulphide nickel, copper and cobalt deposits of the Aguablanca and Avebury style of mineralization and oxide nickel deposits as well as secondary targets of gold and copper deposits.

### **1.2 Sale Agreement**

The author has been advised that Lions Gate Metals Inc (Lions Gate) has reached agreement with all shareholders of AusNiCo Ltd (Ausnico) to acquire all of the issued share capital and options to subscribe for shares on issue in AusNiCo in exchange for the issue to those shareholders of 10,000,000 Lions Gate common shares each to be issued at \$Cdn 1.10 and 3,000,000 five year warrants to subscribe for shares in Lions Gate each exerciseable at \$Cdn 1.10.

The agreement is subject to all regulatory approvals both in Australia and Canada being obtained, including approval of TSX-V in Canada and shareholders of Lions Gate.

The agreement is also subject to Lions Gate undertaking a raising of not less than \$Cdn 4,000,000 .00 at not less than \$Cdn 1.10 per share with a half warrant attaching to with a two year term and exerciseable at \$Cdn 1.50.

The agreement is further subject to completion by the parties of reciprocal due diligence.

### **1.3 Property Description and Location**

AusNiCo have a total of 15 Exploration Permit for Minerals (EPMs) and Exploration Permit for Mineral Applications (EPMA), 11 of which have been granted and four which are still under application. The current boundaries of the EPMs are highlighted in Figure 1-1 below.

### **1.4 Accessibility, Climate, Local resources, Infrastructure and Physiography**

The project area tenements are all located within mostly well developed rural and pastoral areas of south eastern and central Queensland. The areas are covered by major tar sealed highways and are criss-crossed by numerous tar sealed and gravel roads which provide access to local farmers and graziers. The access to the project areas is considered to be excellent in comparison to most Australian mining and exploration areas. The areas are also well serviced by major regional cities such as

Gympie, Maryborough, Bundaberg, Gladstone and Rockhampton. Major Ports which currently export mineral products are well established at Brisbane and Gladstone.

## **1.5 History of Mining and Exploration**

Most of the areas covered have been prospected at some stage with mostly old mining producing minor short term pits and shafts on base and precious metals. Many of the reported mines lie within the AusNiCo tenements.

### **1.5.1 Kilkivan Tenement Areas – Mining History**

#### **Gold**

Gold was first discovered in 1852 at Black Snake and was followed by an alluvial gold discovery south east of Kilkivan in 1867. The most important discovery period was between 1867 and 1874 when the main gold, copper, mercury and cobalt deposits were found (J H Brooks et al, 1974). Gold mining also occurred at the Shamrock Mine, the Manumbar Mine and the gold mines in the area include the Rise and Shine, Long Tunnel Mountain, Yorkey's Surprise and the Gold Top.

Brookes et al record a total of 20,534 ozs Au and 17,102 ozs Ag production from the Kilkivan and surrounding areas up to 1972.

At the Shamrock Mine, between 1990 and 1993, United Reefs NL (“United Reefs”), extracted another 9408 ounces gold. At Manumbar Gold Mine approximately 49,000 ounces gold were recovered at a grade of 5.2 g/t gold.

#### **Copper**

Copper mining commenced seven to eight miles south east of Kilkivan at the Mount Coora, Mount Clara and Peak Copper Mines during 1872 but closed a few years later. Other copper mines in the region include the Mudlo, Lug-e-nor and Knight of Gwyn mines. Most mines closed due to the complexities of the ore and unsustainable costs but some were re-opened and mined sporadically in later years.

Brookes (1974) records a total of 819.4 tons Cu to 1972.

#### **Mercury**

Following the discovery of mercury in 1872, some 35 deposits were located in a belt extending south south-east from the Coast Range, northwest of Kilkivan to the western margins of the Black Snake plateau. Mining was mostly sporadic from 1886 and the last reported mining was in 1945. Approximately 33,600 lbs of Hg was produced from the area (Brooks et al, 1974).

#### **Cobalt**

The Mount Cobalt Lode was discovered in the early 1870s and is located 8 miles south south-east of Kilkivan.

#### **Other Minerals**

Minor tonnages of manganese ore, talc and magnesite have also been recorded from the Kilkivan area as have construction stone, gravel and sands.



**Figure 1-1 - Displays the locations of the EPM and the main infrastructure throughout central and south eastern Queensland**

### **1.5.2 The Mundubbera – Monto – Theodore Tenements – Mining History**

The only metal which is known to have been mined historically within these areas is chromium at the Mimosa Chromite deposit which is located two kms east of the Mimosa homestead.

Coal from the Bowen Basin is a major export commodity and is produced at a large number of world class coal mines in the region.

### **1.5.3 The Marlborough Tenements – Mining History**

Coal mining is carried out in the Styx Basin 30 kms north west of Marlborough.

Large scale magnesite mining is carried out 20 kms south east of Marlborough at the QMag operations. Minor magnesite mining (Frazer's Workings) also occurred 6kms to the south east of Marlborough.

Small deposits of chromite have been mined at several places in the serpentinite. About 600 tons have been produced in the mid 1960s.

### **1.5.4 Kilkivan Tenement Areas – Exploration History**

Since the 1960s, both large and small exploration companies have held ground over the tenement areas searching for a number of commodities.

The following trends in exploration have occurred and a summary of the exploration trends is as follows:

- Nickel Exploration (late 1960s – Early 70s);
- Porphyry Copper Exploration (1970s and 1980s );
- Epithermal Gold exploration (1980s – 1990s), and
- Exploration for high grade gold in quartz veins by companies such as United Reefs NL and Waraluck Pty Ltd.

### **1.5.5 The Mundubbera – Monto – Theodore Tenements – Exploration History**

There has been little previous exploration for nickel-cobalt-PGE within the belt, which tends to be poorly outcropping as it is partly concealed by Tertiary deposits which include laterites.

Several companies have searched for gold and copper mineralisation using the available regional airborne magnetic surveys and geological mapping, but mainly stream-sediment sampling surveys.

### **1.5.6 The Marlborough Tenements – Exploration History**

The main exploration conducted around and over the ultrabasics and serpentinites in the area has been for laterite nickel and cobalt.

No known exploration for sulphide Ni-Co- PGM, nor for other oxide forms of nickel has been carried out in the area.

Exploration for coal has been ongoing over decades but has no relevance to AusNiCo's work. Magnesite is being mined south east of Marlborough and considerable exploration has been carried out in the past for magnesite during the eighties and nineties.

### **1.5.7 D'Aguilar Gold Limited's investigations at Black Snake Plateau and Kilkivan Districts, 2003 to 2008.**

D'Aguilar intended to explore for both "intrusive-related gold dominant mineralisation" rather than traditional base- and precious-metal porphyry style mineralisation.

In 2003 and 2004, D'Aguilar commenced a review of regional geochemical and aeromagnetic data in order to define and bring to drill maturity the bulk mineable disseminated prospects. Within the 3000 km<sup>2</sup> project area at that time, D'Aguilar identified 18 project areas and six key prospects for follow up.

Additional, drilling was conducted at the Shamrock, Mount Clara and Tablelands prospects for a total of 3038 m without exploration success.

In 2006, a number of defined gold targets were drilled. Gold was found over wide intervals in many of the boreholes, but unfortunately, not in economic quantities. During 2006 D'Aguilar carried out 3233 m of drilling with some encouraging results at Sawpit Creek and Peenam prospects but although the program confirmed the porphyry copper gold model in the D'Aguilar Block, the mineralisation encountered was not ore grade.

#### **Nickel-Cobalt-PGE Exploration**

In 2005 D'Aguilar assessed a 30 km long belt of nickel bearing ultrabasic rocks between Mount Mia on the Black Snake plateau and Mount Mudlo area north of Kilkivan. A new mineral emplacement model for nickel and cobalt was proposed.

In 2006, specks of nickel sulphide minerals, millerite, violarite and pentlandite (plus the iron sulphide, pyrrhotite) were found in outcrops of serpentinite trending from the edge of the Shamrock mine towards the dam spillway to the south. This evidence supported the hypothesis that these serpentinite rocks of this region were potential hosts of nickel sulphide orebodies. Surface chip sampling in the area returned values often exceeding 0.5% nickel.

In 2007, D'Aguilar formed the subsidiary AusNiCo Pty Ltd to focus on the development of the nickel-cobalt exploration assets. Following very encouraging assay results from a drilling program at Black Snake and Mount Cobalt early in the year, applications for further exploration permits over geologically similar ground were lodged throughout south east and central Queensland. The combined tenement holding is now seen as a 500 km-long nickel province in south east and central Queensland that is under unexplored. Subsequently, the nickel - cobalt exploration areas were transferred to AusNiCo Pty Ltd and \$2 million in seed capital raised for 10% of AusNiCo Pty Ltd.

## **1.6 Geological Setting**

### **1.6.1 Regional Geological Setting**

The AusNiCo tenements lie within the Tasman Fold Belt System, a composite orogen of Palaeozoic age forming most of eastern Australia. Two fold belts, the Lachlan Fold Belt and the New England Fold Belt of northern New South Wales and eastern Queensland, form the eastern portion of the Tasman Fold Belt system.

The New England Fold Belt in southern and central Queensland comprises a number of fault bound blocks with distinct tectonostratigraphic sequences – the Gympie, Wandilla and Yarrol terranes. The Marlborough serpentinites and ultrabasics span the boundary between the Yarrol and Wandilla terranes formed by the Yarrol Fault Zone, a continental scale suture marked by major alpine-type ultramafic and ophiolite belts. The evolution of the area commenced with deposition of early Palaeozoic shelf facies, now forming the Yarrol terrane, and oceanic sediments to the east, now included in the Wandilla and Gympie terranes. The Gympie Terrane consists of a number of blocks - the Gympie Block, the Yarraman Block and the South and North D’Aguilar Blocks. (Figure 7-1 highlights these blocks.)

Extensive ultramafic intrusives have been mapped around Rockhampton and Marlborough and are shown to intrude rocks of Lower Devonian to Permian age. Their contacts are frequently fault bounded or block-faulted and in some areas they may be intruded or stoped out by Upper Permian granodiorite and adamellite and, less commonly, by gabbroic plugs of a similar age.

Further to the south in the North D’Aguilar Block the deformed basement of Paleozoic sedimentary rocks contains several serpentinite bodies intruded by Permo-Triassic granitoid plutons.

This terrane forms part of the ground in AusNiCo’s tenements and is also prospective for copper gold porphyries.

### **1.6.2 North D’Aguilar Block - Southern Tenements**

Twenty-two named intrusions have been mapped in the North D’Aguilar Block and the Queensland Geological Survey and various explorers have mapped numerous unnamed plutons, all ranging from Carboniferous to Triassic in age. Where they intrude the ultramafics, they are considered by AusNiCo to be a source of sulphur required to scavenge Nickel and cobalt from ultramafic crystal mineral lattices. Older Carboniferous granites are foliated but younger Permo-Triassic bodies are undeformed. The granites spatially associated with mineralisation at Kilkivan and Black Snake areas are: the Boonara Granodiorite (early-middle Triassic) to the north and east, the Station Creek Adamellite (Quartz Monzonite), (early-middle Triassic) to the south-east and the Claddagh Granodiorite (Carboniferous) to the west and south of Kilkivan.

Gold and base metal mineralisation of the D’Aguilar Block features dominantly polymetallic mesothermal veins in a variety of simple to composite systems, breccia zones and alteration zones. There are some epithermal vein characteristics. Within the ultrabasic rocks at Kilkivan, Black Snake and Widgee there is evidence for anomalous nickel and cobalt mineralisation in both primary and secondary deposits. Platinum has been recorded at Kandanga Creek. Mercury deposits have been mined at Cinnabar west of Kilkivan.

### **1.7 The Mundubbera-Monto-Theodore Area Geology**

In the northern tenements covering parts of the Monto – Mundubbera belt, north-north-west shear systems, such as the Perry Fault and Yarrol Fault and north-east trending cross-cutting faults, dominate the structural framework. Overprinting this regional fabric are north trending faults, which exhibit a strong spatial relationship

with Permian to Triassic mineralisation. A north-trending belt of basic and ultrabasic rocks is centred over the Poperima Creek EPM 15457 (see Figure 7-2). Major north-east cross-cutting faulting – the Darling Lineament - may have displaced this belt from the Kilkivan area. The Darling Lineament is one of three marked transverse structures in Queensland that is spatially associated with mineralization (Horton, D. 1982). The Monto – Mundubbera belt appears to be the same age as the Kilkivan belt, containing Permian to Triassic olivine- and pyroxene-rich intrusives with associated ultrabasic skarns. Also, petrological studies of olivines and pyroxenes from the gold mineralised Yarrol intrusives on the western boundary of the Poperima Creek EPM confirm similarity of the two belts.

There is evidence for anomalous nickel and cobalt mineralization in the northern tenements.

Several late Permian to Cretaceous age mineralised porphyries occur in relatively narrow zones roughly parallel to the Perry Fault. Host intrusives range from quartz diorite, granodiorite to granite/rhyolite composition. Mineralisation varies from copper, copper/gold to gold. Alteration is typically quartz-pyrite-sericite assemblages, which grade outward to chlorite-clay zones. Potassic (biotite) cores are present sometimes.

The major Yarrol Fault occurs along the eastern margin of the Yarrol Basin and it is considered to be a thrust along which serpentinites have been emplaced. Large silica-pyrite bodies also lie along this fault. AusNiCo believes these bodies to be prospective for nickel, cobalt and gold.

## **1.8 The Marlborough Area Geology**

The Marlborough nickel-cobalt deposits are associated with one of the larger ultramafic complexes along the northern section of the Yarrol Fault Zone. The complex has been mapped over an area of 50 km by 20 km. It is fault bounded by moderate to steeply dipping sediments, most of which are schistose metamorphic derivatives of quartz-rich clastic and calcareous varieties.

The area is significant for its laterite-hosted nickel deposits which are believed to be the remnants of a once much more extensive weathering blanket. The deposits cover only a relatively small percentage of the ultramafic bodies and are arrayed principally on a north west trend along the western margin of the western ultramafic body.

## **1.9 Deposit Types**

### **1.9.1 General Discussion**

AusNiCo's main focus is primarily on the discovery of nickel-cobalt-(plus platinum group element) deposits in younger geological terranes in Eastern Australia. The discovery of the Avebury deposit near Zeehan in western Tasmania provides a similar aged deposit to the mineralization encountered on the AusNiCo tenements in similar geological settings.

In June 2008, AusNiCo announced that drillhole PEM 2 at Pembroke intersected a copper-gold zone of 20m averaging 0.48% copper, 1.5 g/t gold at 8 m down-hole. At 32m down-hole, a large 50m-wide zone of low-grade nickel sulphide mineralisation

was intersected, within which 4.2m of fresh primary nickel sulphides grading 1.1% nickel and 525 ppm (0.05%) cobalt was intersected from 58m down hole.

The results of Ni-Co mineralization associated with hydrothermally altered (oxidized) zones as discovered at their Mt. Cobalt prospect provided the impetus to concentrate on exploration for Ni sulphide targets and hydrothermally altered targets. As part of the process, AusNiCo have been basing their exploration on the geological models representing the Avebury Ni mine and the Aguablanca Ni-Cu mine in Spain as well as exploring for the Ni-Co rich hydrothermally altered serpentinites as has been discovered at Mt Cobalt.

There is no known mine equivalent deposit associated with the Ni and Co mineralized hydrothermally altered serpentinites.

## 1.9.2 Aquablanca Deposit

The Aguablanca Ni-(Cu) sulphide deposit is hosted by a breccia pipe within a gabbro-diorite pluton. The deposit probably formed due to the disruption of a partially crystallised layered mafic complex at about 12-19 kms depth and the subsequent emplacement of melts and breccias at shallow levels (<2km). The ore hosting breccias are interpreted as fragments of an ultramafic cumulate, which were transported to the near surface along with a molten sulphide melt. (Tornos et al 2006). Age dating indicates an age between 350 - 330 Ma.

Ore deposition resulted from the combination of two critical factors, the emplacement of a layered mafic complex deep in the continental crust and the development of small dilatational structures along transcrustal strike-slip faults that triggered the forceful intrusion of magmas to shallow levels.

The Aguablanca orebody is located in the northeastern zone of the Santa Ollala Plutonic Complex, within the southern most part of the Ossa Morena Zone of the Variscan Belt of Iberia.

Four types of ore have been distinguished: ore breccia, massive sulphides, disseminated ore and patchy ore.

Ore breccias and massive sulphides comprise 15-20% of the total orebody volume. Copper grades are equivalent to those of disseminated and patchy ore but there is up to a fivefold enrichment in Ni, which is usually higher than 1% (Tornos et al, 2006). The ore breccia and the massive sulphides form the bulk of the ore grade material at the mine. The magmatic sulphide mineralisation consists of pyrrhotite, pentlandite and chalcopyrite with variable, magnetite and pyrite. The sulphide assemblage is dominated by coarse grained chalcopyrite and pyrite with only random inclusions of pyrrhotite and sphalerite. Bravrite and mackinawite are present as small grains, the latter replacing pentlandite. There is a characteristic late stage assemblage of magnetite –pyrite –graphite in the hydrothermal alteration stage. (Tornos et al, 2006).

Spain's Aguablanca nickel mine was reported in July, 2004 as having mining reserves of 15.7Mt grading 0.66%Ni, 0.46%Cu, 0.017%Co, and 0.47g/t PGM. Production was expected to commence in August 2004 with an expected mine life of 10 years treating 1.5Mt/a ore (Mining Engineering July1, 2004).

### **1.9.3 Averbury Deposit**

The Avebury Ni deposit is located in western Tasmania, within the Dundas Trough. The hosting ultramafic body is located in an overturned, consistently south facing sequence of tholeiite derived volcaniclastic turbidites transgressing to a complex volcanosedimentary sequence of polymictic conglomerates and breccias, carbonates, calc-alkaline volcanic and volcaniclastic sediments.

Importantly, the Avebury ultramafic body is located within the metamorphic and hydrothermal aureole of the Late Devonian Heemskirk Granite which also has associated Sn and Pb-Zn deposits. Intense metasomatism and skarnification of the ultramafic body and its host sequence is evident with tourmaline, axinite, datolite and low grade scheelite development a feature.

Mineralisation is frequently located along the ultramafic-host sequence contact but lenses of mineralisation are also present within the the ultramafic body. The mineralisation is associated with two distinct gangue mineralogies, which consist of either serpentinised ultramafics or an intensely, metasomatised skarn-type mineralogy, consisting of tremolite, diopside and magnetite. The mineralisation consists of veins and coarse grained disseminations throughout both gangue types, and is dominantly pentlandite with minor pyrrhotite, and rare millerite, mackinawite, niccolite gersdorffite and maucherite. An important feature of the mineralisation is that it is magnetite –rich, containing up to 18% magnetite.

The magnetite mineralisation is also a feature of the skarn development at Mt Cobalt and Pembroke on the AusNiCo ground.

The resource estimate as quoted by Oz Minerals Limited (2008) from their public presentation totals 18.2Mtonnes grading 0.95%Ni.

### **1.9.4 AusNiCo Conceptual Model and its Application to the AusNiCo Queensland Tenements**

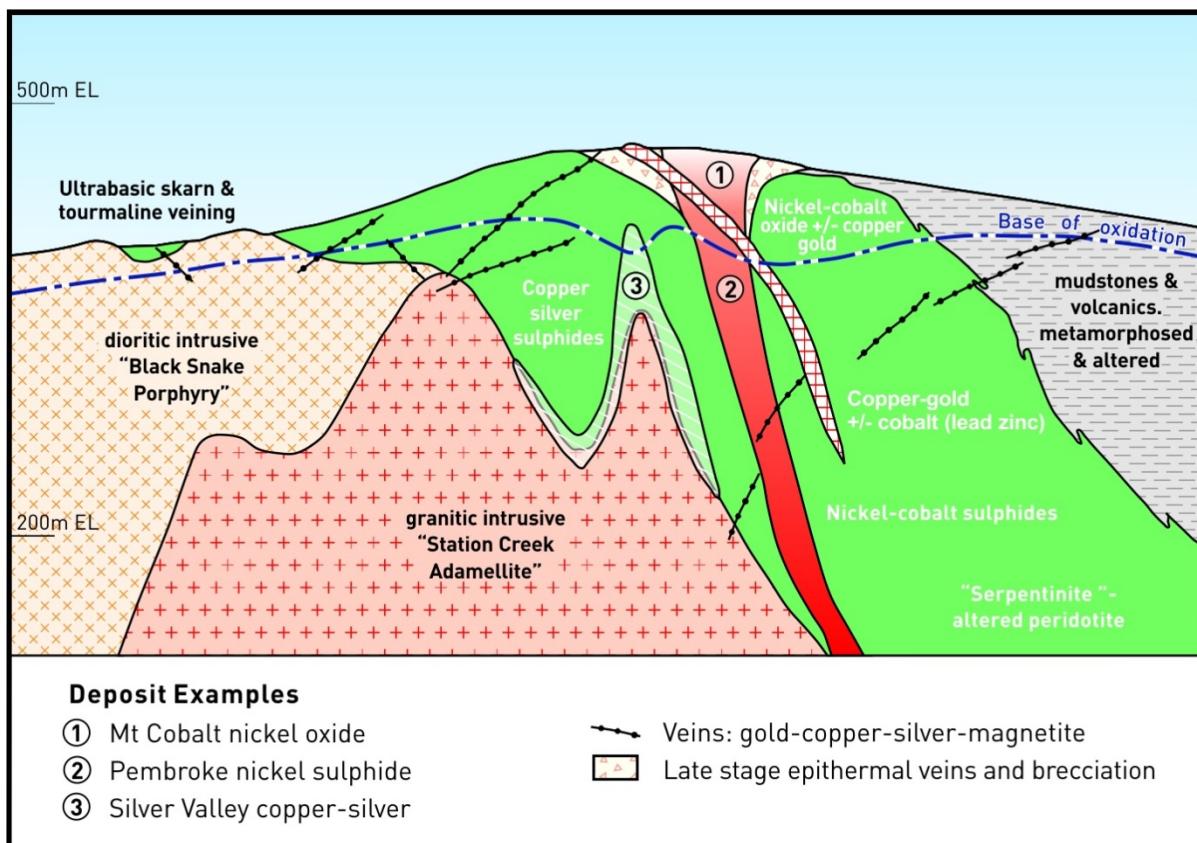
In the Black Snake district there can be observed a nickel-cobalt association and a gold-copper-silver association. AusNiCo considers the Ni-Co association at Pembroke is possibly associated with the more ultramafic rocks and is probably magnesian rich. The Kandanga area has more potential for Aguablanca style deposits than the Black Snake area which is more likely to produce an Avebury style deposit. (pers. comm. I. Levy, Oct 2009). However, it is noted that considerable Cu mineralization exists at Pembroke above the Ni-Co results. The association between the Ni-Co mineralization and the Cu/Au mineralization is unknown at this point in time even though they are closely spatially associated.

The nearby granitoid batholith (Station Creek adamellite) is interpreted to provide mineralising fluids rich in silver, gold and boron, creating a polymetallic mineral system within the adamellite, the serpentinite and surrounding metasediments. AusNiCo's strong tenure position in the Black Snake district is a favourable situation for the discovery and mining of nickel sulphide deposits and oxide nickel and cobalt deposits. Gold, copper and silver bearing deposits also have the potential to be economic but remain a secondary target.

Figure 1-2 below highlights the conceptual model and displays the location of the associated two main types of alteration and the secondary Cu-Ag deposit type in relation to the conceptual model being considered by AusNiCo:

- Mt. Cobalt nickel hydrothermally altered (oxide) deposit;
- The Pembroke Ni-Co sulphide deposit, and
- The Silver Valley Cu-Ag deposit.

This model is applicable to all the AusNiCo tenement areas.



**Figure 1-2– Conceptual Model Geology and the Location of the AusNiCo prospects**

## 1.10 Mineralisation

AusNiCo is exploring for sulphide Ni, Co and PGE minerals. Historical exploration has discovered a variety of mineralising styles including minor laterite Ni-Co mineralisation, and Cu, Au, Ag mineralisation in shears but the main target mineralisation types are the sulphide Ni and hydrothermally altered Ni mineralised zones as indicated above.

The prospects in the Kilkivan area are the most advanced in the AusNiCo portfolio and there are several prospects where drilling is planned for the Pembroke and Mt. Cobalt prospects where the principal targets are sulphide Ni mineralization and hydrothermally altered Ni mineralized zones.

Gold and base metal mineralisation of the D’Aguilar Block features polymetallic mesothermal veins in a variety of simple to composite systems, breccia zones and alteration zones. There are some epithermal vein characteristics. Within the ultrabasic rocks at Kilkivan-Black Snake and Widgee there is evidence for anomalous nickel and cobalt mineralisation in both primary and secondary deposits. Platinum has been recorded at Kandanga Creek. Mercury deposits have been mined at Cinnabar west of Kilkivan; these are spatially associated with the Darling Lineament, which is interpreted as a probable deep penetrating structure.

In the Mundubbera-Monto-Theodore area, known mineralisation within the EPM 15457 area includes Au and possibly for Cu, but there is no reported or known Ni, Co and PGM mineralisation in the tenement areas. EPMA 17817 covers a small gabbro intrusive which has recorded nickel mineralisation. Forbes (1968), records that nickel staining has been noted on the gabbro.

In the Marlborough area past exploration has defined large strong Ni-Zn anomalies. All future exploration will be dedicated to sulphide Ni, Co, Cu and PGM deposits. The well known Marlborough laterite Ni-Co deposits in the region indicate the potential of the natural high background Ni values associated with ultrabasics and serpentinites in the region.

## 1.11 Exploration

### 1.11.1 The D’Aguilar Gold Limited Investigations at the Kilkivan Area 2003 to 2008

Prior to the development of the potential for sulphide Ni, Co and Co of the Averbury style, D’Aguilar intended to explore for “intrusive-related gold dominant mineralisation” rather than traditional base- and precious-metal porphyry style mineralisation. D’Aguilar inferred the gold and base metal sulphide veins in the D’Aguilar Block to be a direct guide to concealed targets of disseminated mineralisation, capable of yielding economically attractive bulk-minable deposits. The veins themselves are secondary targets and thought to be part of intrusive-related alteration/mineralisation systems.

In 2003 and 2004, D’Aguilar commenced a review of regional geochemical and aeromagnetic data in order to define and bring to drill maturity the bulk mineable disseminated prospects. Within the 3000 km<sup>2</sup> project area at that time, D’Aguilar identified 18 project areas and six key prospects for follow up.

Additional, drilling was conducted at the Shamrock, Mount Clara and Tablelands prospects for a total of 3038m without exploration success.

Kenex Knowledge Systems Ltd (“Kenex”) was contracted in July 2006 to undertake a study on the prospectivity of all D’Aguilar controlled tenements (Partington Dr G, 2006). A spatial related database incorporating geological, geochemical, geophysical, topographic and cadastral information (“GIS”) has been compiled from all relevant historical exploration data.

In 2006, a number of defined gold targets were drilled. Gold was found over wide intervals in many of the boreholes, but unfortunately, not in economic quantities. As a consequence, the EPM holding was reduced, retaining the considered favourable prospects for epithermal and porphyry mineralisation, particularly associated with rhyolite rocks.

### Nickel-Cobalt-PGE Exploration

In 2005 D'Aguilar assessed a 30 km long belt of nickel bearing ultrabasic rocks between Mount Mia on the Black Snake plateau and Mount Mudlo area north of Kilkivan. A new mineral emplacement model for nickel and cobalt was proposed. Nickel and cobalt mineralisation had not been previously considered prospective due to the absence of proved metallurgical treatment of the altered serpentinite host.

In 2006, specks of nickel sulphide minerals, millerite, violarite and pentlandite (plus the iron sulphide, pyrrhotite) were found in outcrops of serpentinite trending from the edge of the Shamrock mine towards the dam spillway to the south. This confirmed the hypothesis that these serpentinite rocks of this region were potential hosts of nickel sulphide orebodies. Surface chip sampling in the area returned values often exceeding 0.5% nickel. Laboratory leach testing of material from Mount Cobalt was carried out (see section 16 below).

In 2007, D'Aguilar formed the subsidiary AusNiCo Pty Ltd for focusing on the development of the nickel-cobalt exploration assets. Following very encouraging assay results from a drilling program at Black Snake and Mount Cobalt early in the year, applications for further exploration permits over geologically similar ground at Poperima, west of Bundaberg, were lodged (part of the Monto- Mundubbera area). Also tenements over available ultrabasic/serpentinite ground south west of Theodore and areas south and south east of Marlborough were also applied for under EPMs.

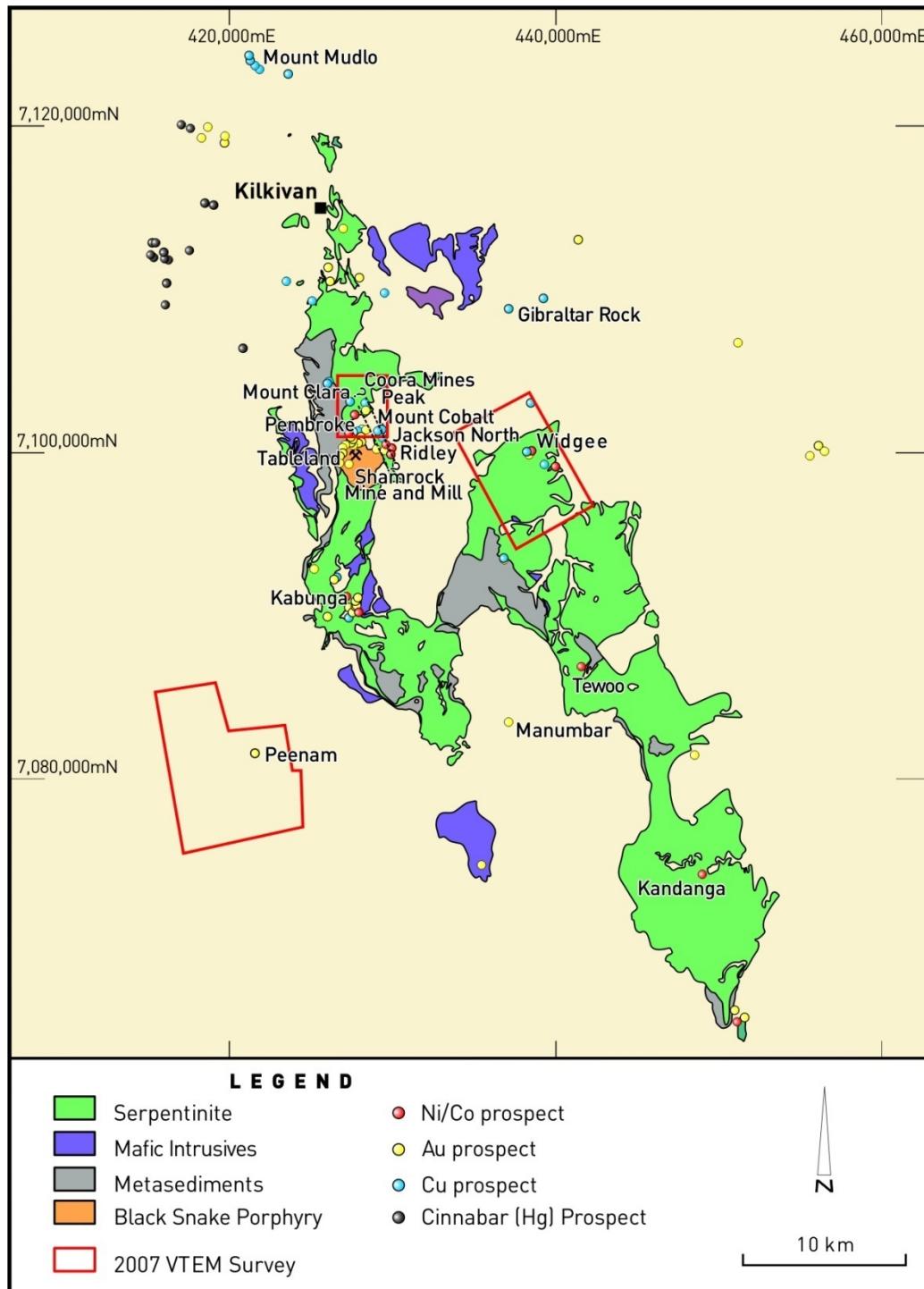
In April 2007 a helicopter borne geophysical survey (VTEM) electromagnetic and magnetic survey was flown over the Mount Cobalt and Mount Widgee project areas.

Extensive rock, soil and stream sediment sampling east-north-east and south of Mount Cobalt in the Mount Terrible area revealed previously unknown mineralised porphyry intrusions with nickel anomalism at the porphyry serpentinite contacts.

#### **1.11.2 The Kilkivan- Black Snake- Widgee – Kandanga- Mooroorerai Belt**

The prospects in this area are the most advanced in the AusNiCo portfolio and there are several prospects where immediate drilling is planned at Pembroke and at Mt Cobalt. Although the main target is sulphide mineralisation and principally nickel and cobalt, there is an opportunity to exploit hydrothermally altered and oxidised deposits. Gold-copper-silver mineralisation remains a valid but secondary target.

A large area of continuous outcrop of Palaeozoic rocks is located from Kilkivan to about 60 km south-east of Kilkivan. Rocks in this area include phyllites, schist, greenstone, amphibolite, serpentinite, minor limestone and marble, slate, mudstone, chert, and jasper. Palaeozoic rocks have been folded along north to north-west axes and dips are mainly to the west. Ultrabasic rocks are the most extensive rocks in the main areas of interest with outcrop extending over approximately 400 km<sup>2</sup> (see Figure 1-3 below)



**Figure 1-3 - Serpentinite distribution and prospects in the Kilkivan – Black Snake – Widgee – Kandanga belt**

Surface sampling and drilling has established extensive zones of elevated base- and precious metals within the serpentinites of the Black Snake Plateau (see Figure 1-4).

Primary mineralisation occurs within the serpentinite below a variable oxidation profile.

Mineralisation within and adjacent to the serpentinite areas is best defined by soil anomalous nickel and cobalt (copper, chrome and PGM) with nickel being the most

definitive. Soil sample assays containing greater than 3000 ppm nickel pin point the deposits of Mount Cobalt, Pembroke, and Jackson North and Ridley lateritic prospects. The 2000 ppm nickel contour identifies Mount Mia, Mount Coora, Silver Valley and Peak Mine (see Figure 1-4). Gold and silver (lead and zinc) anomalous zones overlap the nickel and cobalt anomalies.

### **1.11.3 Mount Cobalt Prospect**

Mapping and sampling on the historic Mount Cobalt mine confirmed a zone of cobalt enrichment within a small shear zone described in old reports with values of up to 6% cobalt and generally over 1% cobalt in an oxidised and weathered serpentine host. The Mount Cobalt prospect is highlighted in Figure 1-4 below which highlights the significant soil anomalies lying to the south of a magnetic anomaly.

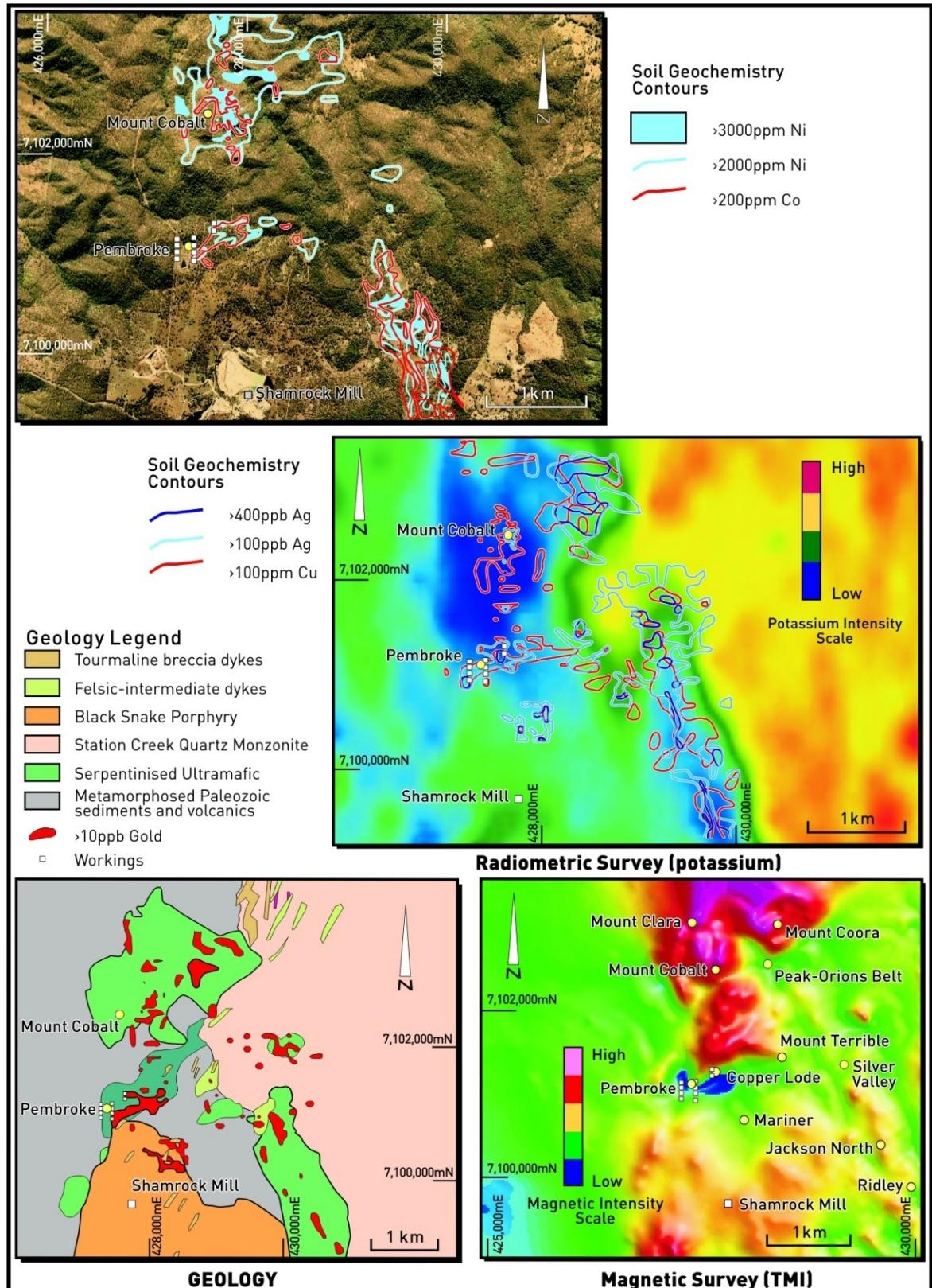
Surface mapping, petrological studies, soil sampling and rock chip sampling together with magnetic and radiometric surveys over the project area highlighted the potential of the area. AusNiCo considers the alteration style displayed on the prospect to be a high level clay/silica alteration style mineralized in Ni and Co. AusNiCo followed up the surface exploration with various phases of drilling.

Potential for sulphide Ni-Co deposits exists below the clay altered zones.

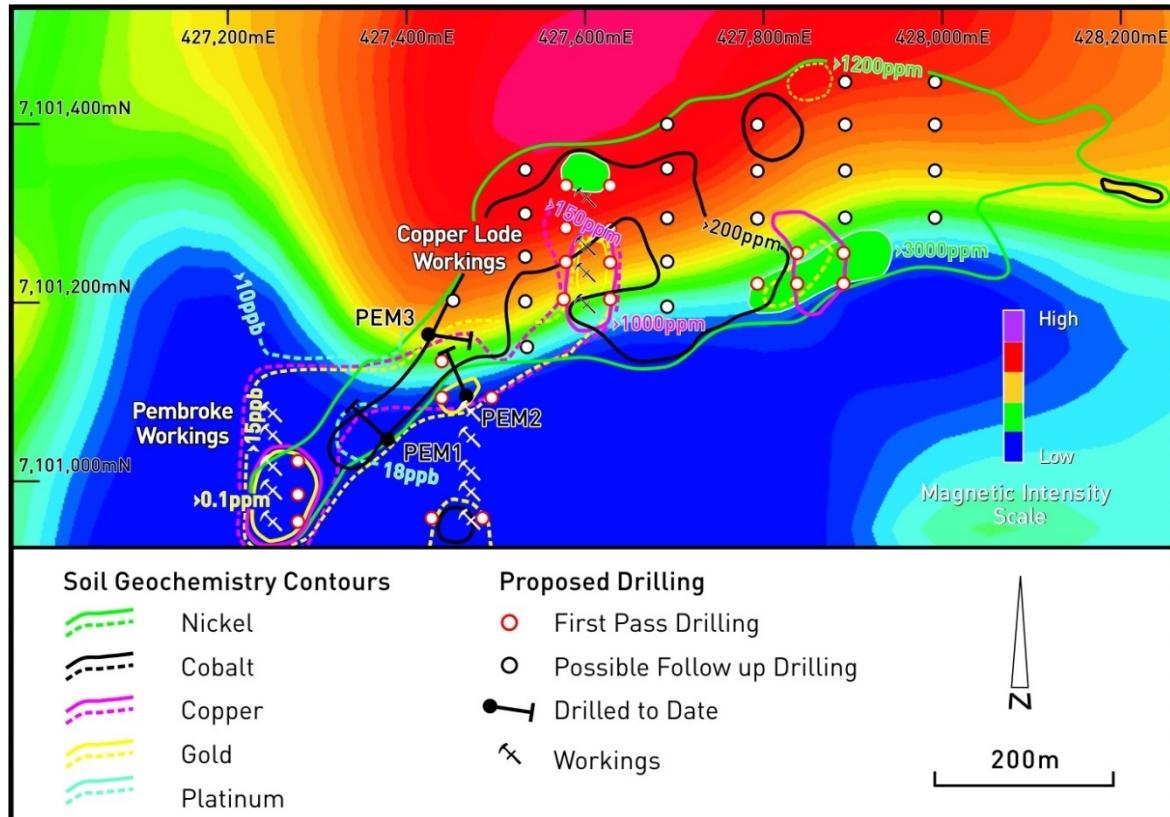
### **1.11.4 Pembroke Prospect**

The historic Pembroke mine workings occur at the northern contact of the Black Snake Porphyry and serpentinite and metasediments and are associated with an intense magnetic low. A pebbly fragmental serpentinite zone containing narrow but widespread gold- and copper-bearing quartz veins crops out. Rock chip sampling returned assays up to 13.8 ppm gold and 1.68 % copper and a composite grab sample collected in 2004 assayed 29 ppm gold.

Subsequent soil and rock chip sampling results outlined an arcuate north-east trending copper-gold anomaly coincident with elevated nickel and cobalt soil sample assays and isolated elevated PGE values within serpentinite (see Figure 1-5 and Figure 1-4).



**Figure 1-4 - Black Snake prospects – soil anomalies and mineralisation trends overlying aerial photograph of the area, geology, radiometrics and magnetic survey results**



**Figure 1-5 - Pembroke Prospect – Soil geochemical (gold-copper-nickel-cobalt-PGE) contours on magnetic imagery**

### 1.11.5 Silver Valley Prospect.

A sheared serpentinite outcrop contains a quartz-veined gossanous zone striking 130-145° and dipping to east. It extends for approximately 100m and varies from 2m to 5m in width. Small workings, possibly a collapsed shaft, occur at the south-east end of the gossan outcrop. Several smaller gossanous outcrops occur within serpentinite to the south of Silver Gully along the same ridge and appear to form an en-echelon structure with the other mineralized shear zones (pers. comm., N Wilkins, 2009). Rock chip samples from the gossan assayed up to 5.71 ppm gold, 261 ppm silver and 1.44% lead. Gossans are traceable over 250m. The Silver Valley Prospect is highlighted in Figure 1-4.

### 1.11.6 The Peak, Orions Belt and Mount Terrible Prospects

Mount Terrible mineralisation occurs in the form of sulphides, chalcopyrite, native silver, silver oxides and covellite (gold-silver-copper-lead) and is associated with amineralised feldspar porphyry intrusive along the western contact of the Station Creek Quartz Monzonite and metamorphics. Rock chip samples assayed up to 10.25 ppm gold, 242 ppm silver, 1.5% lead and 1.35% copper. A soil sampling grid over the greater Mount Terrible area initially revealed several areas anomalous in gold, silver and base metals, including a nickel zone. RC percussion drill testing has been limited to the copper-gold and silver zones.

At Orions Belt and The Peak, the development of mineralised shears, stockworks, complex vein systems and disseminated mineralisation extends over a 100m times

800m zone. AusNiCo is searching for a bulk target, with copper gold and silver the main metals of interest. The location of these prospects is displayed in Figure 1-4.

### **1.11.7 Oxide and lateritic nickel-cobalt deposits – Ridley and Jackson North Deposits**

In the 1960s and 1970s, the Queensland Geological Survey investigated a laterite nickel deposit which was given the name Ridley Prospect. Nickel values ranging from 1% to 2.9% were encountered in the drill samples. Cobalt content of the parent serpentinite is 160 ppm and of the adamellite 38 ppm. Serpentinite rocks range from 900 ppm to 16,000 ppm (average ~2,900 ppm) nickel and 75 ppm to 400 ppm (average ~130 ppm) cobalt.

Another deposit named Jackson North, occurs 300m north-west of Ridley and possibly the two are connected. The nickel and cobalt distribution in the profile is somewhat similar but higher cobalt values were obtained where black manganiferous concretions were observed.

### **1.11.8 Widgee Prospect**

A few small historic copper, silver, nickel (minor gold) mines are clustered close together on Widgee Mountain; these include Green Rock (silver, lead, zinc, copper and minor gold), Pooleys/McCarthys Mine (copper, nickel and minor gold), and Millaleys copper prospect (copper).

AusNiCo is investigating large zones of magnetite – chromite – pentlandite disseminations, epithermal breccias, and porphyry related copper – nickel skarns such as at the McCarthy's mine.

AusNiCo exploration activities have included a 100 m spaced helicopter supported EM survey (VTEM) over the Widgee mountain area and its environs, followed by detailed stream sediment and soil geochemical surveys over the EM conductors. Soils grids produced nickel, cobalt and platinum anomalous zones over the EM conductors. The > 2000 ppm nickel zones have combined strike lengths of in excess of 3km and widths of up to 200m.

One of the weaker northern anomalies has been tested by drilling and was found to be caused by a very large volume of weakly mineralised serpentinite assaying about 1800 ppm nickel overall.

### **1.11.9 Tewoo**

In the south of the Widgee EPM, previous exploration, mainly by CSR and CRAE, outlined a series of gold and nickel anomalous streams in an area of approximately 20 km<sup>2</sup> at the headwaters of Barambah and Widgee Creeks. The serpentinite has been intruded by a number of diorite stocks.

AusNiCo sees nickel potential within an area of north-west trending magnetic features that are shedding anomalous nickel with stream sediment values up to 1800 ppm nickel.

### **1.11.10 Kandanga Creek**

In 2007, AusNiCo stream sediment sampling verified the existence of platinum (maximum 25 ppb) and palladium (maximum 18 ppb) anomalies and has detected

other metals: nickel, chrome, arsenic, bismuth, gold and tellurium; draining a 16km belt.

Follow-up work has defined open ended zones of soil nickel anomalism (>1800 ppm and 3 times background) related to an altered ultrabasic that has been intruded by small bodies of diorite and granite. The nickel zone is accompanied by a magnetic anomaly, in a setting similar to Mount Cobalt and Pembroke. Reconnaissance soil and rock sampling by AusNiCo has recorded nickel values up to 0.35%.

AusNiCo believes there is potential for platinum and nickel mineralisation at Kandanga Creek.

#### **1.11.11 Moorooreerai**

The Mooroorerai EPM area lies adjacent to and east of the Kandanga and Widgee nickel prospects and contains a large circular magnetic complex about five km in diameter caused by a strongly magnetic gabbro/dolerite zoned intrusive AusNiCo plan to more fully evaluate the nickel, gold and platinum potential of the gabbro by means of an initial program of mapping and sampling.

#### **1.11.12 The Mundubbera-Monto-Theodore Area Exploration**

The acquisition of EPM 15457 area was firstly to examine the nickel potential of the unmapped ultrabasic rocks that had been seen in the area, and also to examine the possibility that the Yarrol gold deposits extended into the EPM.

The geology of the EPM is similar to the Kilkivan – Black Snake belt, reinforcing the view that the Yarrol thrust is an offset continuation of the Mt Clara fault. This geology is also seen as prospective for gold.

Since AusNiCo have taken up the EPM, rock chip sampling, stream sampling and soil sampling have been carried out. Rock chip and stream samples have been carried out for Au, Ag, As, Bi, Co, Cu, Pb, Zn, Mo and Ni. Soil samples have also been analysed for Te.

EPM 16077 is located south of Mundubbera and now consists of two non-contiguous blocks following relinquishment. The EPM lies along a narrow belt of intermittently outcropping basic and ultrabasic rocks. Work to date includes reconnaissance stream sediment sampling over the length of the EPM and rock chip and soil sampling and reconnaissance mapping of anomalous drainage areas. The northern area is anomalous in gold and platinum, while the southern area is anomalous in chromium, nickel, platinum and copper.

EPMA 17818 follows the same line of geology to the south. No work has been completed on this EPM Application.

No work has been conducted by AusNiCo on EPMA 17817 and none will be carried out until the EPM is granted.

#### **1.11.13 The Marlborough Area Exploration**

No work has been completed on EPM's 17721 and 17722 and on EPM Application 17768. Work will only commence on 17768 once the tenement is granted.

## **1.12 Drilling**

### **1.12.1 Mount Cobalt Drilling Results**

AusNiCo has used surface sampling followed by air core drilling, diamond drilling and percussion drilling to assess the Mount Cobalt Prospect.

In 2006, aircore holes COB 1 to COB 4 were drilled to only 40m depth along the southern margin of the anomalous zone. Initial air core holes COB 1 (30m grading 0.55% nickel and 0.02% cobalt) and COB2 (21m grading 0.42% nickel and 0.02% cobalt) showed that the serpentinite was oxidised to these depths with uniform metal grades.

The next six drill holes COB 5 to COB 10 were reverse circulation drill holes and tested a 400 m square area which had returned rock chip samples above 0.4% nickel. The initial drill results discovered nickel mineralisation at more than 0.5% nickel (plus cobalt) to depths up to at least 115m. The extent of the mineralization is unknown and the true width of the mineralization is unknown.

In 2007, COB 10D was drilled at an angle of 60 degrees beneath wide intercepts of 0.5% nickel which were encountered in the 2006 drilling campaign. Minor sulphides including pyrrhotite, chalcopyrite and pentlandite were visible below 240m, as far as the end of the hole at 600m.

COB 11D was drilled vertically to a depth of 188.4m. Weathered/ altered ultramafic was encountered from the surface down to approx 140m and included clay rich intersections with epithermal quartz veining and chalcedony rich sections.

### **1.12.2 Pembroke Prospect Drilling Results**

In June 2008, AusNiCo announced that drillhole PEM 2 at Pembroke intersected a copper-gold zone of 20m averaging 0.48% copper, 1.5 g/t gold at 8m down-hole. At 32m down-hole, a large 50m-wide zone of low-grade nickel sulphide mineralisation was transected, within which 4.2m of fresh primary nickel sulphides grading 1.1% nickel and 525 ppm (0.05%) cobalt was intersected from 58m down hole.

Angled drill holes PEM 1 and PEM 3 were sited ~100m west and ~50m north of PEM 2. PEM 1 was drilled to 96m and intersected serpentinitic rocks which analysed between 1000 ppm and 2000 ppm throughout. The top 8m of the hole contained anomalous cobalt and copper. PEM 3, drilled to 79m, was geologically similar and intersected anomalous copper (to 546 ppm), cobalt (to 180 ppm) and nickel (to 5480 ppm) in the bottom 24m of the hole.

The true width is unknown at this point in time and drilling will assist in defining the extent of the mineralized zone.

### **1.12.3 Silver Valley Prospect Drilling Results**

In May 2008, the first drill hole at Silver Valley Prospect intersected 14m at a grade of 1.2% copper and 87 g/t (2.8 ounces per tonne) silver. This included 8m grading 1.5% copper and 107 g/t silver. SG1 is an RC drill hole.

#### **1.12.4 Ridley and Jackson North Drilling**

The drilling associated with the resources used an auger process. A total of 47 drill holes were drilled for a total of 434.3m with an average drill depth of 9.2m and the deepest hole is 33.5m. 1066 samples were taken (Levy, 2004).

The 2006 drill programme was completed using RC drilling. A total of five holes were drilled for a total of 337m with an average hole depth of 67m. 166 drill samples were taken and analysed for Au, Ag, Cu, Pb, Zn, Ni, Co, Cr, Bi, As, Sb, and S. The best results included BLA-2 where an intercept of 14m from 6m depth recorded 1.87%Ni and 0.08%Co and hole BLA-3b where an intercept of 14m from surface recorded 1.15% Ni and 0.07% Co.

The air core drilling programme totalled 1053m from 71 drill holes (average 14.8m). The highest grade result was from BSN-A3 where a 14m interval from surface averaged 1.12% Ni and 0.1% Co. Most of the holes failed to record reasonable grades of mineralization.

### **1.13 Sampling Method and Approach**

#### **1.13.1 Surveying**

Depending on the quality of survey required, AusNiCo has either used GPS, differential GPS units or chain and compass surveys. Early work used a theodolite off known grid or survey stations.

#### **1.13.2 Sampling - General**

All sampling is completed using ticket books with the end tag going into the bag and the sample number is written in indelible marker on the bag. The ticket book also has the written GPS co-ordinates of that sample, as a back-up to the GPS's.

All the samples taken by AusNiCo are taken for the purposes of exploration. Most soil and stream exploration samples are taken to discover anomalies and therefore the importance of the analytical results are for comparative purposes rather than actual values use. The sampling techniques and approaches are suitable for the purposes they are designed for.

All drill sampling is supervised by a geologist. Soils and stream sediments were mostly collected by field technicians.

#### **Stream Samples**

Stream samples have always been sieved through a 6mm sieve; quantity minimum 500g. The samples are mostly collected by field technicians under the guide of field geologists. Normal spacing of samples are 1 per sq km., located to provide coverage of proximal bedrock material rather than alluvium derived from distant locations.

#### **Soil Samples**

All soil samples from 1995 to the end of 2004 were taken by hand auger. The aim is to sample the B-horizon and to take the sample from about six inches depth. The samples are not sieved and about 50-100g of sample was placed directly from the auger into small brown paper packets. Since December 2004, AusNiCo changed this to surface soil sampling, and approximately 500g of soil is put through a 6mm sieve.

A pick and trowel is now used to take the samples. The two methods of sample collection are easily defined in the database by separating on a date basis.

### **Rock Chip Samples**

Rock chip samples are taken as and when required. Sample size varies and size is dependent on what the sampler requires. Samples are generally placed in calico bags.

#### **1.13.3 Drilling Samples**

Drilling on site has been by either diamond drilling or RC drilling.

##### **RC Sampling**

RC samples have been and are being taken at two metre intervals.

From 1995 to the end of 2003 all RC drilling samples were put through splitter boxes. This sampling process was changed in 2003 and the samples are now taken by spearing the polyweave bags with poly pipe with two stabs from top to the bottom of the drill sample bag. Again, 500g minimum is collected for assay or analysis.

Chip trays for RC drilling were not used by the company until early 2003. These are all stored at the Shamrock mine in the storage shed.

##### **Diamond Core Sampling**

Diamond drill is measured up and samples are marked at two metre intervals or sometimes by geological sampling. The core is split in half using a diamond saw at the Shamrock Gold Mine workshops.

Drill core is stored in trays under roof cover only at the mine.

##### **Ridleys Auger Drilling Samples**

A hollow cylindrical auger, 0.92m long and 0.08m diameter was used to sample the soil. The auger penetrated from about 0.15m in sandy textured soils to 0.61m in clay soils at each pass, after which a composite sample was obtained. Some 952 samples were collected and analysed for total nickel, cobalt, and copper by atomic absorption spectrophotometry. All samples were analysed Ni, Co, and Cu at the Queensland Government Chemical Laboratory.

#### **1.14 Sample Preparation, Analyses and Security**

##### **Sample Transportation and Security**

All samples are bagged and are secured in sealed sacks, the sacks covered in a plastic seal bound onto a pallet for trucking and a Sample Submission Form would accompany the boxes to the Laboratory. The packaging and numbering system reflects the sampling media but offers no clues as to the origin of the material, the D'Aguilar subsidiary involved, or the minerals sought.

Since early 2003, pulps from drilling assays have been returned and stored on the Shamrock mine-site in the storage shed. Prior to 2003, pulps were not returned and were destroyed.

##### **Stream Samples**

Most stream samples collected from the AusNiCo tenements since 1995 were analysed by ALS, Brisbane. The rest, between July 2005 and May 2006, went to

SGS Townsville for Cyanide Leach Bottle Roll for gold but some were also assayed for Ni and Co by ICP at Townsville. These samples are easily defined as the results went into different columns on AusNiCo's database. The samples were commonly analysed for Au, Ag, As, Bi, Co, Cu, Pb, Zn, Ni, Mo and Sb.

### **Soil Samples**

Soil samples collected from the AusNiCo tenements since 1995 have been analysed at ALS laboratories in Brisbane and Perth. The samples were commonly analysed for Au, Ag, As, Bi, Co, Cu, Pb, Zn, Ni, Mo and Sb.

### **Rock Chip Samples**

All rock-chip samples from the AusNiCo tenements in our database were analysed by ALS Brisbane. Between 1998 and 1999, some rocks were analysed in house by aqua-regia in the company's laboratory (D'Aguilar Gold's laboratory) on the Shamrock mine site. These are easy to locate in the database as they are the only samples analysed for gold only.

### **Drilling Samples**

All drilling assays have been analysed by ALS, Brisbane and Perth.

All drill samples have been collected using a spear tube splitter, numbered then dispatched to the laboratory, where they are dried then crushed, then the sample is split and a sub split was pulverized to 85% passing 75 $\mu$  (ALS standard PUL-32) and a 25g split is digested in 3 acids for analysis by mass spectrometer (ALS standards ME-MS43 and ME-ICP43). Gold is also assayed by taking a further 25g split then using aqua regia digest (ALS standard AR Au).

PGMs are assayed by sending a 30g split from ALS Brisbane to ALS Perth for Au, Pt and Pd analyses by fire assay with a mass spectrometry reading.

## **1.15 Data Verification**

### **Data Entry – History**

The current database was established in early 2003 by experienced D'Aguilar Gold Limited geologists. Considerable work was carried out entering historical data where it was required and current data. This was carried out under the supervision of the exploration manager. Back-ups of the databases are completed daily since the original system was introduced.

### **Assay Results - Treatment**

Assay results are sent electronically by e-mail from ALS. PDF certificates are printed out and kept in folders as a hard copy and these date back to 1999. They are kept at D'Aguilar Gold Limited's Gympie office. Prior to this, old ALS results were photocopied and put in appendices in the annual report hard copies. These are also stored at Gympie.

Sample ticket books are kept in the office at Gympie and date back to 2004.

The data verification and storage process is suitable for the work being carried out by AusNiCo.

### 1.16 Adjacent Properties

The AusNiCo tenements lie in areas which are generally tightly held by other companies and groups exploring for a range of commodities. Only the Marlborough tenements contain adjacent prospects or projects relevant to the work being carried out by AusNiCo where there is significant laterite nickel resources held under adjacent mining leases owned by Marlborough Nickel Ltd.

### 1.17 Mineral Processing and Metallurgical Testing

AusNiCo have carried out very limited testwork on four samples from drill core at Mt. Cobalt at the HRLtesting Pty Ltd Laboratory (“HRL”) in Brisbane in order to test the leaching characteristics of the altered, nickel mineralized zone. Petrological studies and a series of metallurgical tests have been carried out on nickel-cobalt bearing oxide samples from the Mount Cobalt and Black Snake (Ridley and Jackson North) deposits. Head grades of the samples are typically 0.5% to 0.75% nickel and 0.05% cobalt.

Conventional sulphuric acid-leaching tests were performed with a view to determining potential heap-leachability and acid consumption. In addition some leach tests were carried out using steps in an as yet unproven, proprietary\*, moderate temperature, atmospheric hydrometallurgical process on both near-surface and deeper material from Mount Cobalt.

The conventional HRL work on an early Mount Cobalt grid soil sample and subsequent drill core typically yield nickel and cobalt extractions in the 75-80% range in both agitated leach and bottle-roll tests with sulphuric acid and with acid consumptions of around 300-400 kg/tonne. Similar tests on the Black Snake sample (from the Ridley Prospect) gave higher nickel recovery (89%), but lower cobalt recovery (55%), and with a higher acid consumption of 550 kg/tonne.

An alternative ammonium sulphate leach was tried in an attempt to selectively leach nickel over magnesium but very low (approx 10%) nickel and cobalt recoveries were achieved.

A final set of tests on Mount Cobalt and Black Snake samples using a hydrochloric acid leach achieved some variable nickel extractions (70-90% range) but more consistent cobalt extractions (80-90%), and again with acid consumptions of 300-400 kg/tonne.

The proprietary atmospheric hydrometallurgical work consisted of an initial water leach to remove any soluble chloride salts, treatment with a reagent followed by a pH adjustment to precipitate iron as a readily filterable haematite.

Nickel and cobalt leach recoveries of 85-90% were obtained and the subsequent iron hydrolysis achieved in excess of 95% iron and chrome removal (plus 50% aluminium rejection) with minimal (1%) nickel and cobalt losses, leaving a filtrate of nickel and cobalt in solution together with substantial amounts of magnesium.

AusNiCo intends to investigate a number of acid recovery processes and the generation in a process pulp of acid from finely ground pyrite and nickel and copper sulphide mineral species. The acid consumption figures are not considered to be prohibitive in this project from the oxide recovery aspect.

### **1.17.1 Conclusions**

From the HRL work, one can conclude that the oxide samples tested are potentially heap-leachable at acceptable recoveries with sulphuric acid but at a relatively high acid consumption. Further work on column testing is recommended to confirm heap leach variables such as kinetics, agglomeration requirements and heap permeability.

### **1.18 Mineral Resource and Mineral Reserve Estimates**

The only resource estimates within the project area is on a small laterite nickel resource which has been completed on the Ridley's laterite nickel prospect and the North Jackson deposit. Three separate resource estimations have been carried out by Levy (2004), Marinelli (2004) and Davis/AusNiCo (2008).

It is considered that the resource is a typical laterite Ni resource and as such, the resource estimates would not pass the CIM Definitions Standard requirements of "reasonable prospects for economic extraction".

Therefore no more details will be provided on the former resource estimates because they do not qualify as resource estimates and they are not material to the project's potential which is mainly for sulphide nickel–cobalt resources and hydrothermally altered Ni-Co mineralized zones.

Potential for disseminated sulphide Ni mineralized zones and hydrothermally altered Ni mineralization still exists below the laterite mineralization and in the ultrabasics in the Ridley's and Jackson North areas.

### **1.19 Other Relevant Data and Information**

#### **1.19.1 Company Management and Technical Expertise**

D'Aguilar Gold Limited and its subsidiary AusNiCo have developed a team of professionals who display extensive experience, technical skills, management skills and commercial skills. AusNiCo shares the costs of storage and office facilities and personnel with D'Aguilar Gold Limited.

#### **1.19.2 Company Strategies and Plans**

A review of the AusNiCo principal objectives, strategies and plans indicates the following will be applied in exploring and developing their projects:

- The business plan is to add value through discovery of mineral deposits within its tenements that are rich in nickel, cobalt, copper, silver, gold and/or platinum metals;
- To target 10 plus million tonne sulphide Ni-Co deposits and hydrothermally clay altered Ni deposits on its tenements. If other minerals present themselves within the company's tenements, these will be assessed also (eg chromitite and gold);
- Securing additional quality properties which compliment the nickel cobalt search;
- Relinquishing tenements or sections of tenements as the exploration sterilizes ground;

- Apply high environmental and operating standards to all the company's projects;
- Establish and develop sound relations with landowners, other stakeholders and the community in general in the areas and countries where projects are acquired, and
- Establish sound logistics and local administration services for all stages of project development;

The basic principles, strategies and exploration plans regarding the exploration and development of projects are sound and provide a solid basis on which to develop the projects and the company.

## **1.20 Interpretation and Conclusions**

### **1.20.1 Summary of the Exploration Programme**

The AusNiCo exploration programmes have identified the potential of their established and explored areas in the Kilkivan area and especially the Black Snake area, for disseminated nickel-cobalt-(copper) sulphides of the Avebury-style and Aguablanca style and also for the associated hydrothermally altered (oxidised) Ni-Co mineralised zones as displayed at Mt Cobalt.

AusNiCo have acquired new areas in the Kilkivan, Monto-Mundubbera-Theodore and Marlborough areas with similar serpentinite/ultrabasic terranes, thereby increasing their potential to discover new nickel-cobalt deposits.

The proposed programmes are oriented to the Ni-Co exploration targets together with secondary Cu and PGM minerals. Other mineral targets will be assessed through the exploration programme. AusNiCo is the first company to apply a dedicated exploration programme to this style of nickel mineralisation in Queensland and therefore have the potential to be at the forefront of new discoveries in the eastern seaboard of Australia.

## **1.21 Adequacy of the Data Presented and Exploration Techniques**

The exploration data presented is considered to be suitable for the purposes of the AusNiCo exploration effort.

The exploration concepts and models used based on the Aguablanca and Avebury Ni deposits are suitable for the exploration of Ni sulphide deposits. The models provide the potential for the discovery and exploitation of economic Ni-Co and Ni-Cu-PGM deposits with potential size ranges of 10 million to 20 million tonnes grading above 1.0% Ni and 0.1% Co.

The associated hydrothermally altered (oxidised) Ni-Co mineralisation style is unique and the concept for exploring for this style is considered to be appropriate. AusNiCo considers the potential size deposits to be in the order of 10 plus million tonnes but the author considers the potential will need to be much greater in order to get the scale of project necessary to treat any ore found.

**1.22 Recommendations****1.23 AusNiCo Proposed Exploration Programme**

The exploration team will focus on the identification and evaluation of nickel mineralisation with similarities to Mount Cobalt and Pembroke prospects throughout the company's tenements in south-east and central Queensland.

**1.23.1 Proposed program****Drilling Pembroke**

An initial program will consist of two core holes each of about 200m, located as shown in Figure 20-1. In addition a staged program of percussion drilling has been planned as below. Initially the drilling will define the trends and depths of the mineralization, so that the later drilling will be optimally located.

**Drilling – Mt Clara – Mt Cobalt**

Two vertical coreholes are proposed to be drilled at Mt Clara and Mt Cobalt. Site A (427460E 7102900N) has a programmed depth of 200m and is sited where the >3000 ppm nickel body passes below surface 200m east south east of the Mt Clara copper mine. It is the peak of the magnetic anomaly.

Site B (427480E 7103170N) has been programmed to 250m and is sited 250m north east of the Mt Clara mine and is topographically above a zone of >3000 ppm nickel that lies lower down in the main creek. It is also on the peak magnetic anomaly.

**Drilling elsewhere**

Other drilling programs have been planned, notably at Widgee and Kandanga, but the exact locations are dependent upon the results of a minor amount of geological work and any targeting features that come to light from the drilling at Pembroke and Mt Cobalt.

**1.24 AusNiCo Proposed Exploration Budget**

The main objective is to restrict the spending on direct Exploration Costs to approximately A\$1.5 million over the first 18 months, during which time, most, if not all of the important known prospects will be tested and other interesting areas will have first-pass exploration completed on them.

The program will more than satisfy the Queensland Department of Minerals and Energy minimum expenditure requirements for granted tenements in the next few years.

Exploration results can be entirely unpredictable and as such only the next phase of work can be planned and costed in detail. The budgets display detail for the next year but only estimated totals for each tenement area beyond this first year.

## **2 INTRODUCTION**

IMC Mining Solutions Pty Ltd (“IMC”) was appointed by AusNiCo Limited (“AusNiCo”) and Lions Gate Metals Inc. to conduct a review of the AusNiCo Ni-Co Project in Queensland and write an independent expert’s report on their mineral project.

IMC understands that the directors of AusNiCo wish to merge AusNiCo into Lions Gate Metals Inc. (which is a listed company on the TSX Venture Exchange) during late 2009. This report has been prepared for use by AusNiCo and Lions Gate in connection with the proposed merger and will be filed by Lions Gate Metals Inc. with the TSX Venture Exchange and Canadian Securities regulatory authorities.

AusNiCo was formed to manage and control tenements owned and identified by D’Aguilar Gold Limited (D’Aguilar) as having mainly potential for sulphide nickel, copper and cobalt deposits of the Aguablanca and Averbury style of mineralization and oxide nickel–cobalt deposits as well as secondary gold and copper deposits. The tenements represent work completed by D’Aguilar Gold Limited (and its associated companies) and AusNiCo. A reference to AusNiCo is a reference to both D’Aguilar and AusNiCo in this report unless the report indicates otherwise. D’Aguilar Gold Limited is the major shareholder in AusNiCo.

### **2.1 Sale Agreement**

IMC have been advised that Lions Gate Metals Inc (Lions Gate) has reached agreement with all shareholders of AusNiCo Ltd (AusNiCo) to acquire all of the issued share capital and options to subscribe for shares on issue in AusNiCo in exchange for the issue to those shareholders of 10,000,000 Lions Gate common shares each to be issued at \$Cdn 1.10 and 3,000,000 5 year warrants to subscribe for shares in Lions Gate each exerciseable at \$Cdn 1.10.

The agreement is subject to all regulatory approvals both in Australia and Canada being obtained, including approval of TSX-V in Canada and shareholders of Lions Gate.

The agreement is also subject to Lions Gate undertaking a raising of not less than \$Cdn 4,000,000 .00 at not less than \$Cdn 1.10 per share with a half warrant attaching to with a 2 year term and exerciseable at \$Cdn 1.50.

The agreement is further subject to completion by the parties of reciprocal due diligence.

The remainder of this introduction section details the requirements for reporting to AusNiCo.

### **2.2 Sources of Information**

The AusNiCo Nickel projects consist of a number of granted Exploration Permits for Minerals (EPM). These are detailed in section 4 below. The author has visited the main Project areas of interest at Kilkivan over a one day period during late September 2009 and spent time at the D’Aguilar Gold Limited’s office in Gympie reviewing reports and other information. Site visits were not made to the tenements in the Monto- Mundubbera area or the Marlborough-Rockhampton area because

these have only been recently granted or are still under application. Little or no work have been carried out on these tenements and therefore there is little to review.

AusNiCo have provided copies of all the relevant reports and other relevant maps, photographs and documents relating to the project areas, reports on AusNiCo's strategies and plans for exploration, and exploration and development budget.

The author and IMC have also relied on their own libraries, other libraries, public information documents and web sites for general publications on geology of the project area, financial and commercial details regarding commodities; all which have an impact on the reporting process. References to the various reports and records are presented throughout the report and are listed in the references section.

AusNiCo had prepared an Independent Experts Report on the project areas and prospects by Mr Les Davis of Veronica Webster Pty Limited during 2008. Mr Davis was not available to be considered for the production of this report. In order to save time and costs, the Davis report has been presented to IMC and use will be made of sections of this report with Mr Davis's approval. The author has carried out detailed checks to ensure that the matters presented in the report are correct.

The author has not carried out any check sampling to confirm analyses or assays in known mineralised zones at the various prospects on the AusNiCo's Project areas but has satisfied himself that the information provided is of the necessary standards.

## **2.3 Scope of the Report**

This report details the findings of the due diligence study on the Ni-Co projects. This independent expert's report is based on reviews of the following:

- The geology and mineralisation styles displayed on the tenements;
- The geological model styles that relate to the project areas;
- The historical exploration carried out on the project areas and the results from this exploration including identification of future exploration target areas;
- The work carried out by AusNiCo to date;
- The proposed exploration work to be carried out by AusNiCo, and
- A review of the company management and technical capabilities and those strategies and plans relating to the exploration projects.

The study has not included due diligence on the following:

- Tenements – both AusNiCo's or other persons or group's tenements including mining leases and mineral development licences;
- National Parks, nature reserves, and other reserves that may or may not cover tenements, and
- Native Title issues and clearances if they exist at all.

The author has been informed by AusNiCo that such due diligence studies have been undertaken by the Company's lawyers, Hopgood Ganim.

### **3 RELIANCE ON OTHER EXPERTS**

This Independent Experts Report has been prepared specifically for AusNiCo and Lion Gate Metals Inc. by Mr Alistair Barton, a Principal Geologist with IMC Mining Solutions Pty Ltd. This report is intended to be used by AusNiCo and Lions Gate Metals Inc., subject to the terms and conditions of its contract with IMC. IMC have not studied or provided advice on the validity or legality of the tenement status as indicated in section 4 of this report, political issues, financial issues or other issues outside the scope of the contract. That contract permits AusNiCo and Lions Gate Metals Inc. to use this report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including written disclosure and electronic publication in the public company files on their websites accessible by the public. Any other use of this report by any third party is at that party's sole risk.

The quality of information and conclusions contained herein, are consistent with the level of effort involved in Mr Alistair Barton's services, based on:

- information available at the time of preparation;
- data supplied by outside sources; and
- the assumptions, conditions and qualifications set forth in this report.

To the extent permitted by law, Alistair Barton and IMC disclaims all liability for loss or damage (whether foreseeable or not and whether indirect or not) suffered by any person acting on the report. The Independent Experts Report is to be read as a whole, and sections or parts thereof should therefore not be read or relied upon out of context.

This disclaimer must accompany every copy of the Independent Experts Report, which is an integral document and must be read in its entirety.

#### **4 PROPERTY DESCRIPTION AND LOCATION**

AusNiCo has a total of 15 Exploration Permit for Minerals (EPMs) and Exploration Permit for Mineral Applications (EPMAs), 11 of which have been granted and 4 which are still under application. The current boundaries of the EPM's are highlighted in Figure 1-1 in the executive summary section above. The tenement details are recorded in Table 4-1 (which displays the lodgement date, granted date and expiry date) and Table 4-2 which displays the minimum expenditure levels as required by the Queensland Department of Mines and Energy.

One of the applications (EPMA 17768) has a competing application and therefore a 50% chance that it will not be granted to AusNiCo. EPM 17818 is actually in the process of being granted.

AusNiCo has applied for Exploration Permit Nos 17768, 17817 and 18107 under the Mineral Resources Act 1989 (Qld).

In respect of EPMA 17768, a competing application has been lodged by White Cliff Nickel Limited being EPMA 17759. Under the Mineral Resources Act, determination of which of competing application for exploration permits will be granted, is made by the Minister under the relevant legislation in his discretion.

In the case of both EMPA's 17817 and 18107, the grant of the exploration permits is awaited.

Although the applications are considered to have no value, a brief review of the tenements geology will be provided. No work has been completed on these four tenements.

The EPM's are applied for on a minimum area of one sub-block which is a graticule in size (which is one minute of latitude by one minute of longitude). Each sub-block is approximately 3 square kilometres in area. The area of each EPM is detailed in Table 4-1 below. The total area granted is currently 612 kms<sup>2</sup> with another 366 kms<sup>2</sup> under application.

The tenements can be divided into three distinct areas:

- The Marlborough Tenements – EPMs 17721 and 17722 and EPMA 17768;
- The Mundubbera – Monto – Theodore Tenements - EPMs 15457 and 16077 and EPMA 17817 and 17818, and
- The Kilkivan Tenements – EPMs 13359, 13360, 14372, 14560, 16985, 17042, and 17611 and EPMA 18107.

The author and IMC have not carried out any due diligence on:

- The tenements;
- Native title issues, and
- Coverage or conditions applying to any National Parks, Reserves and other titles or restrictions applying over AusNiCo's tenements.

A few existing MLs that do not belong to AusNiCo are located in the AusNiCo tenements. These are located at:

- A very small lease occurs in the southern area of EPM 17722;

- A minor intrusion of a mining lease occurs in the southern section of EPMA 17768. This lease is part of a large block of leases held by Gladstone Pacific Limited, and
- The Shamrock mine leases are located in EPM 14372.

The author and IMC have not conducted a tenement search for mining leases, mining claims or mineral development licences in the AusNiCo tenements and they have depended on the AusNiCo tenement data base to provide this information.

#### **4.1 Environmental Liabilities**

AusNiCo is the holder of a number of granted exploration permits issued under the Mineral Resources Act as well as the holder of various environmental authorities (EA) issued under the Environmental Protection Act. (EP Act). The holder of a tenement is under an obligation to rehabilitate a tenement to the condition stated in the EA or pursuant to the EP Act irrespective of who undertook the work on that tenement.

The author has been informed by AusNiCo that apart from the usual statutory rehabilitation obligations, it is not aware of any other rehabilitation or environmental liabilities affecting any of the explorations permits held by AusNiCo.

This does not preclude further disturbance in the future as a result of further exploration or mining activities.



*Technical Report on Queensland Ni Co Projects*

**Table 4-1 – AusNiCo Tenements Status – September 2009**

		AusNiCo Limited - Current Exploration Tenements - September 2009						
EPM	NAME	STATUS	LODGED	GRANTED	EXPIRY	PRINCIPAL HOLDER	SUB-BLOCKS	NOTES
13359	NORTH KILKIVAN	GRANTED	20-Apr-01	4-Jan-02	3-Jan-09	AUSNICO LIMITED	17	Renewal Application Lodged
13360	EAST KILKIVAN	GRANTED	20-Apr-01	6-Feb-02	5-Feb-09	AUSNICO LIMITED	6	Renewal Application Lodged
14372	TABLELAND	GRANTED	12-Nov-03	25-Jan-05	24-Jan-10	AUSNICO LIMITED	15	Renewal Application Lodged - 8 sub blocks
14560	MOUNT KANDANGA	GRANTED	12-Mar-04	14-Sep-05	13-Sep-10	AUSNICO LIMITED	20	Reducing by 10 sub blocks
15457	POPPERIMA CREEK	GRANTED	1-Mar-06	13-Jul-06	12-Jul-11	AUSNICO LIMITED	10	
16077	BOYNE RIVER	GRANTED	4-Jan-07	12-Mar-08	11-Mar-13	AUSNICO LIMITED	46	
16985	WIDGEE SOUTH	GRANTED	1-Nov-07	13-Mar-09	12-Mar-11	AUSNICO LIMITED	45	
17042	STATION CREEK	GRANTED	21-Nov-07	11-Mar-08	10-Mar-10	AUSNICO LIMITED	2	
17611	GREEN ROCK	GRANTED	14-May-08	8-Jan-09	7-Jan-14	AUSNICO LIMITED	18	
17721	MARLBOROUGH NORTH	GRANTED	10-Jul-08	7-Apr-09	6-Apr-11	AUSNICO LIMITED	10	
17722	PRINCHESTER	GRANTED	10-Jul-08	8-Apr-09	7-Apr-11	AUSNICO LIMITED	15	
17768	MARLBOROUGH SOUTH	APPLN	1-Aug-08			AUSNICO LIMITED	50	Competing Applicationn
17817	Mt SLOPEA	APPLN	8-Sep-08			AUSNICO LIMITED	23	
17818	MESSMATE MTN	APPLN	8-Sep-08			AUSNICO LIMITED	42	Grant pending - paid bond and rent
18107	KANDANGA GAP	APPLN	1-Jun-09			AUSNICO LIMITED	7	Grant pending - paid bond and rent
							326	Total Sub-Blocks

**Table 4-2 – AusNiCo Tenement lists and Minimum Expenditure Commitments**

			AusNiCo Limited - EPM Expenditure Commitments September 2009								
Granted tenements			Granted	FY10	FY11	FY12	FY13	FY14	No. Sub-blocks	Area (kms2)	Notes
				FY10	FY11	FY12	FY13	FY14			
1	EPM	13359	4-Jan-02						17	51	Renewal Appn lodged
2	EPM	13360	6-Feb-02						6	18	Renewal Appn lodged
3	EPM	14372	5-Jan-05	\$100,000					15	45	Renewal Appn lodged
4	EPM	14560	14-Sep-05	\$90,000					20	60	Reducing to 10 sub blocks
5	EPM	15457	13-Jul-06	\$80,000	\$90,000				10	30	
6	EPM	16077	12-Mar-08	\$50,000	\$50,000	\$75,000	\$75,000		46	138	
7	EPM	16985	13-Mar-09	\$70,000	\$70,000				45	135	Tenure - 2 yrs only
8	EPM	17042	11-Mar-08	\$20,000					2	6	
9	EPM	17611	8-Jan-09	\$80,000	\$110,000	\$147,000	\$175,000	\$100,000	18	54	
10	EPM	17721	7-Apr-09	\$20,000	\$30,000				10	30	Tenure - 2 yrs only
11	EPM	17722	8-Apr-09	\$20,000	\$30,000				15	45	Tenure - 2 yrs only
				\$530,000	\$380,000	\$222,000	\$250,000	\$100,000	204	612	
Applications								No. Sub-blocks		Notes	
			FY10	FY11	FY12	FY13	FY14				
1	EPM	17768						50	150	Competing Appn	
2	EPM	17817						23	69		
3	EPM	17818						42	126		
4	EPM	18107						7	21		
			\$0	\$0	\$0	\$0	\$0	122	366		

## **5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

The project area tenements are all located within mostly well developed rural and pastoral areas (with some areas of eucalyptus bush in higher terrain areas) of south eastern and central Queensland. The areas are covered by major tar sealed highways and are criss-crossed by numerous tar sealed and gravel roads which provide access to local farmers and graziers. The access to the project areas is considered to be excellent in comparison to most Australian mining and exploration areas.

The areas are also well serviced by major regional cities such as Gympie, Maryborough, Bundaberg, Gladstone and Rockhampton. These cities are well serviced by rail and air links to Brisbane, the capital of Queensland. Inland towns include Monto, Mundubbera, Marlborough and Kilkivan.

Major Ports which currently export mineral products are well established at Brisbane and Gladstone.

Figure 1-1 displays the regional infrastructure surrounding the tenements.

The climate is considered to be sub-tropical to Savannah grasslands in type with some areas covered by open eucalypt forest. The terrain varies from undulating, plateau topography to low mountainous inland topography. The areas vary from about 30m above sea level to 600m of relief.

Rainfall varies between 30 to 40 inches per annum (760mm to 1000mm) with most of the rainfall occurring during the summer tropical wet period (December to March). Water is generally abundant for Australian standards and the local rivers and creeks have the potential to be dammed for long term reliable water supplies.

## **6 HISTORY**

### **6.1 General Review**

Most of the areas covered have been prospected at some stage with mostly old mining producing minor short term pits and shafts on base and precious metals. Many of the reported mines lie both within and outside the AusNiCo tenements.

### **6.2 History of Mining**

#### **6.2.1 Kilkivan Tenement Areas**

##### **Gold**

Gold was first discovered in 1852 at Black Snake and was followed by an alluvial gold discovery at West Coast Creek, south east of Kilkivan in 1867. The most important discovery period was between 1867 and 1874 when the main gold, copper, mercury and cobalt deposits were found (J H Brooks et al, 1974), on the Black snake Plateau, only 3km south of the Mt Cobalt Prospect.

With the decline in alluvial gold mining, prospecting then mining moved to the Black Snake and Kilkivan areas during the 1860s and 1870s. The most important gold mine was the Shamrock on the Black Snake Plateau, which commenced operations in the mid 1860s and continued sporadically to 1907 and was reopened between 1943 to 1948.

Other gold mines in the area include the Rise and Shine, Long Tunnel Mountain, Yorkey's Surprise and the Gold Top.

Brookes et al record a total of 20,534 ozs Au and 17,102 ozs Ag production from the Kilkivan and surrounding areas up to 1972.

At the Shamrock Mine, between 1990 and 1993, United Reefs NL (“United Reefs”), extracted another 9408 ounces gold in three open pit campaigns: approximately 97,000 tonnes at a grade of 3.0 g/t gold. The Tableland Gold Mine, just north of Shamrock was a small open pit which between early 1999 and April 2000 produced 5016 ounces gold at a grade of 4.2 g/t gold.

At the Manumbar Gold Mine (which is 32 kms south of the Shamrock mine), between 1994 and 1999, 293,400 tonnes of ore were mined from three pits and trucked to the Shamrock treatment plant. Approximately 49,000 ounces of gold were recovered at a grade of 5.2 g/t gold. The previous miner reported that an indicated resource of 39 400 tonnes grading 7 g/t gold remains immediately below the floor of the East Pit. (Davis, L, 2008).

##### **Copper**

Copper mining commenced seven to eight miles south east of Kilkivan at the Mount Coora, Mount Clara and Peak Copper Mines during 1872 but closed a few years later. Other copper mines in the region include the Mudlo, Lug-e-nor and Knight of Gwyn mines. Most mines closed due to the complexities of the ore and unsustainable costs but some were re-opened and mined sporadically in later years.

Brookes (1974) records a total of 819.4 tons Cu to 1972.

## **Mercury**

Following the discovery of mercury in 1872, some 35 deposits were located in a belt extending south south-east from the Coast Range, northwest of Kilkivan to the western margins of the Black Snake plateau. Mining was mostly sporadic from 1886 and the last reported mining was in 1945. Approximately 33,600 lbs of Hg was produced from the area (Brooks et al, 1974).

## **Cobalt**

The Mount Cobalt Lode was discovered in the early 1870's and is located eight miles south south-east of Kilkivan. Production is thought to have commenced in 1886 and further production recorded during 1903 although the size of the mine development indicates a much greater tonnage than the four tons at 4% Co recorded (Brookes et al, 1972).

## **Other Minerals**

Minor tonnages of manganese ore, talc and magnesite have also been recorded from the Kilkivan area as have construction stone, gravel and sands.

### **6.2.2 The Mundubbera – Monto – Theodore Tenements**

The tenements held by AusNiCo lie just to the south east of Mundubbera (part of EPM 16077) and also an area 35 kms to the south of Mundubbera (EPM 16077 and 17088). The only metal which is known to have been mined historically within these areas is chromium at the Mimosa Chromite deposit which is located two kms east of the Mimosa homestead. The deposit occurs as small lenses in serpentinite with associated basic rocks and gabbro. The chromite occurs in black, sub-metallic, rather platy granular masses of chromitite together with some chalcedony and magnesite (Whitaker et al, 1974).

These tenements are surrounded by a number of gold fields including the Coonambula Goldfield (30 kms to the south west of Mundubbera) and the Eidsvold Gold Field (25 kms to the north west of Mundubbera). Minor Cu and Ag, Pb and Zn are also recorded from the area.

Minor gold diggings are recorded around the boundaries of EPM 15457.

EPM 17817 has no recorded workings from within the tenement boundaries.

Coal from the Bowen Basin is a major export commodity and is produced at a large number of world class coal mines in the region.

### **6.2.3 The Marlborough Tenements**

Coal mining is carried out in the Styx Basin 30 kms north west of Marlborough.

Large scale magnesite mining is carried out 20 kms south east of Marlborough at the QMag Limited operations. Minor magnesite mining (Frazer's Workings) also occur 6kms to the south east of Marlborough.

Small deposits of chromite have been mined at several places in the serpentinite. About 600 tonnes have been produced in the mid 1960's.

Chrysoprase occurs as veins in the siliceous zone of a laterite profile developed on serpentinite. Gem quality material has been mined from 1964 to 1967. Mining has

also recently been carried out during the late 1990's and early 2000's within the area of Gladstone Pacific mining leases west and south west of Marlborough.

## **6.3 History of Exploration**

### **6.3.1 Kilkivan Tenement Areas**

Since the 1960's, both large and small exploration companies have held ground over the tenement areas searching for a number of commodities.

There have been a large number of tenements covering the region and exploration programs have historically targeted a number of commodities at once. The tenement by tenement exploration details are too complex to cover in this report and general trends and significant prospects will be discussed. Details of exploration reports are listed by company number in section 21 (References) of this report. The large number of reports and full reference listings are not required. Company reports are numbered and can easily be referenced at the Queensland Department of Mines Library in Brisbane or on QDEX, a web site used to retrieve and review company mines department reports.

The exploration by AusNiCos parent, D'Aguilar Gold Limited and its former associated companies will only be included for gold. The nickel exploration will be discussed under AusNiCo exploration in sections 9 to 14 of this report.

The following trends in exploration have occurred and a summary of the exploration is as follows:

#### **Nickel Exploration (late 1960s – Early 70s)**

Nickel, cobalt and copper exploration was carried out by Planet Metals. Planet were exploring mainly for laterite nickel-cobalt prospects. Planet used magnetics surveys to define ultrabasic rocks and serpentinite zones, stream and soil geochemistry surveys, and gridding. Over a period of years a number of anomalies were followed up but the Company concluded that there was little potential for laterite nickel deposits.

Nickel Mines also carried out laterite nickel and sulphide nickel exploration in the Kandanga area. The sulphide nickel exploration was based on Western Australian nickel mine types. AusNiCo does not consider this model to be relevant to the nickel and cobalt mineralisation evident at the Mt Cobalt, Pembroke and Ridley's deposits on the Black Snake Plateau. The Nickel Mines exploration program resulted in the relinquishment of the ground because of perceived lack of commercial interest.

#### **Porphyry Copper Exploration (1970s and 1980s)**

A phase of exploration for porphyry copper deposits was carried out by Amoco Minerals, RGC Exploration and CSR- Pacminex during the 1970s and 1980s. The best prospect discovered was the Gibraltar Rock prospect which was too low grade for economic interest. Exploration work was based on stream sediment sampling, soil sampling on advanced anomalies and rock chip sampling. Drilling was carried out on anomalous soil and geophysical anomalies.

### **Epithermal Gold exploration (1980s – 1990s)**

Widespread epithermal gold deposit exploration was carried out by a large number of companies including Peko Wallsend Limited, CRA Exploration Pty Ltd (CRAE), Pacminex Limited, Otter Exploration Limited, D’Aguilar Gold Limited (while it was a subsidiary of Waraluck Pty Limited) and Valdora Ltd. Valdora also claimed that they were exploring for gold in addition to PGMs. Companies were attracted to the region by the signs of mineralization usually associated with epithermal and Carlin and McLaughlin style bulk tonnage gold deposits – namely the presence of antimony as stibnite, mercury, (as cinnabar) together with Au and Ag mineralization.

Areas covered included the Black Snake area, the Kandanga area and other ultrabasic/ serpentinite areas.

Much of the exploration work was carried out using bulk leach extractable gold sampling and assaying (using bottle rolls testwork) stream sediment sampling programmes which was an advancement on previous geochemistry surveys which concentrated more on base metal minus 80 mesh base metals analyses. Airborne geophysical surveys using magnetic and radiometrics were also commonly used.

Anomalies were followed up using a combination of gridding, soil sampling, surface geophysics and then drilling.

The end result over many years and a number of prospects identified was no exploration success for this style of mineralisation.

In 1991, CRAE re-defined the Elginvale Prospect as a north-trending zone some 2.5 km long and 400m wide that was strongly anomalous in copper and gold. This prospect is located 40 kms south west of Kilkivan but is a well known alluvial/eluvial gold field mined from the 1860s. Elginvale was subsequently closely explored by D’Aguilar and found to be an intrusive related gold deposit of low grade.

Companies such as United Reefs NL and Waraluck Pty Ltd persisted with old gold mines and had success in delineating new reserves, particularly near the Shamrock Mine. These were mined as indicated in the historical mining section above. There was also exploration success in delineating new gold ore reserves.

#### **6.3.2 The Mundubbera – Monto – Theodore Tenements**

Within the EPM areas there is no mining history or production apart from diggings for gold and possibly copper. AusNiCo is only focusing on the nickel-cobalt-PGE exploration prospectivity on the northern tenements.

There has been little previous exploration for nickel-cobalt-PGE within the belt, which tends to be poorly outcropping as it is partly concealed by Tertiary laterite and gravel development and Quaternary gravel sheets.

Several companies have searched for gold and copper mineralisation using the available regional airborne magnetic surveys and geological mapping, but mainly stream-sediment sampling surveys. These include BHP Minerals Pty Limited, CRAE, Australasian Exploration Company Limited, Amoco Minerals Australia Pty Limited (Cyprus Gold Australia Corporation), Astrick Resources NL, Amoco Minerals Corporation, Strike Mining Limited, Noble Minerals NL (“Noble”) and Costain Australia Limited (“Costain”). In the Mundubbera area, previous work by

CRAE was limited to stream sediment surveys and did not include any nickel or platinum geochemistry. The CRAE work recognised that the streams draining the ultrabasics were generally anomalous in gold and zinc. Additionally in one locality, gold and copper were identified, but not drilled (L. Davis, 2008).

### **6.3.3 The Marlborough Tenements**

The main exploration conducted around and over the ultrabasics and serpentinites in the area has been for laterite nickel and cobalt.

International Nickel Australia Limited identified a coincident Ni-Zn anomaly associated with ultrabasics during their laterite Ni exploration programme during the 1960s.

Malone, E.J. (1970) indicates that Broken Hill Pty Co. Ltd (BHP) started exploration for nickel and laterite along a northwest-southeast trending belt centred approximately 70 km northwest of Rockhampton. BHP drilled many holes and have outlined some potentially economic nickel deposits (Malone, 1970).

Preston Resources later gained control over most of the Ni-Co laterites during the early nineties and conducted further drilling campaigns. Gladstone Pacific Nickel Ltd gained control of the project areas in the early nineties and proceeded to expand and upgrade the resource base through further drilling campaigns and acquisition of other laterite nickel tenements. A current JORC-compliant resource of 70.9 million dry tones at 0.91% Ni and 0.06% Co (cut-off of 0.70% Ni) have been estimated (GPNL Annual Report, 2008).

No known exploration for sulphide Ni-Co- PGM has been carried out in the area.

Exploration for coal has been ongoing over decades but has no significance with AusNiCo's work. Magnesite (as indicated above) is being mined south east of Marlborough and considerable exploration has been carried out in the past for magnesite during the eighties and nineties.

### **6.4 D'Aguilar Gold Limited investigations at Black Snake plateau and Kilkivan Districts 2003 to 2008.**

This section has been mostly extracted from the draft report by L Davis (2008).

D'Aguilar intended to explore for "intrusive-related gold dominant mineralisation" rather than traditional base- and precious-metal porphyry style mineralisation. This broadens the area of search but exploration techniques remain similar to previous workers. Many intrusion-related gold system deposits contain greater than three million ounces of gold and the author believes that intrusion-related style mineralisation is a valid economic target in the D'Aguilar Block.

D'Aguilar inferred the gold and base metal sulphide veins in the D'Aguilar Block to be a direct guide to concealed targets of disseminated mineralisation, capable of yielding economically attractive bulk-minable deposits. The veins themselves are secondary targets and thought to be part of intrusive-related alteration/ mineralisation systems.

In 2003 and 2004, D'Aguilar commenced a review of regional geochemical and aeromagnetic data in order to define and bring to drill maturity the bulk mineable

disseminated prospects. Within the 3000 km<sup>2</sup> project area at that time, D'Aguilar identified 18 project areas and six key prospects for follow up. These included - Gibraltar Rock, Long Tunnel / One Mile, Mount Mudlo, Cinnabar, Mount Clara, Sawpit Creek, Peenam, German Gully, Elginvale, Manumbar and King Creek. In 2004, intense exploration program was conducted on D'Aguilar's tenements south of Kilkivan at the Manumbar epithermal gold and Elginvale bulk tonnage gold prospects.

Technical success was achieved at Manumbar and Elginvale prospects. At Elginvale, during 2004 D'Aguilar drilling outlined a zone of gold mineralisation associated with a diagnostic potassic alteration zone at least 80 m wide. A broad correlation between enhanced gold grades and potassic alteration styles was interpreted as evidence for a porphyry body at depth.

Results included narrow zones up to 18 grams g/t gold in potassic altered quartz and sulphide veins showing free gold within wide, low grade zones. Broad low grade gold zones up to 68m grading 0.21 g/t gold were intersected at Elginvale in 2006. D'Aguilar concluded that the geological environment was established but grades were clearly insufficient.

Additional drilling was conducted at the Shamrock, Mount Clara and Tablelands prospects for a total of 3038 m without exploration success.

Kenex Knowledge Systems Ltd ("Kenex") was contracted in July 2006 to undertake a study on prospectivity of all D'Aguilar controlled tenements (Partington Dr G, 2006). A spatial related database incorporating geological, geochemical, geophysical, topographic and cadastral information ("GIS") has been compiled from all relevant historical exploration data.

Kenex defined the accepted exploration models for epithermal gold mineralisation, porphyry gold-copper mineralisation and mesothermal gold mineralisation in order to constrain the prospectivity models. The modelling and exploration review has not assessed the prospectivity for ultrabasic skarn base-metal or lateritic nickel mineralisation. Kenex concluded that only 50% of the prospective areas from each of the prospectivity models have been soil sampled. Fifteen of the gold soil anomalies and sixteen of the copper soil anomalies appear to have not been drill tested and provide immediate drill targets.

In 2006, a number of defined gold targets were drilled. Gold was found over wide intervals in many of the boreholes, but unfortunately, not in economic quantities. As a consequence, the EPM holding was reduced, retaining the considered favourable prospects for epithermal and porphyry mineralisation, particularly associated with rhyolite rocks. During 2006 D'Aguilar carried out 3233 m of drilling with some encouraging results at Sawpit Creek and Peenam prospects but although the program confirmed the porphyry copper gold model in the D'Aguilar Block, the mineralisation encountered was not ore grade.

### **Nickel-Cobalt-PGE Exploration**

In 2005 D'Aguilar assessed a 30-km long belt of nickel bearing ultrabasic rocks between Mount Mia on the Black Snake plateau and Mount Mudlo area north of Kilkivan. A new mineral emplacement model for nickel and cobalt was proposed.

D'Aguilar observed that in addition to the classically iron rich surficial lateritic occurrences for nickel mineralization, exemplified by the deposit at Ridleys, and the garnieritic saprolite profile underneath the laterite, the nickel mineralization also occurs in a hydrothermally altered zone underneath the laterite. Drilling later confirmed this zone to be some 115m thick at the key Mt Cobalt prospect and unclosed on any of the three spatial axes. The trace occurrences of gold and PGMs and low copper grades drew D'Aguilar to the conclusion that the silica veining, brecciation and general texture of the rock was a result of a hydrothermal event, and that this had been superimposed on a serpentinite progenitor host which hosted low grade disseminations of nickel sulphides. D'Aguilar also concluded that the nickel sulphide precipitation in the serpentinite "skarn" (which had developed marginal to the intrusions introducing sulphur along with Cu, Au and Ag) predated the regional lateritisation which commenced in this area in the late Tertiary period.

This new mineralization model and the exploration strategy adopted to recognize it is based on the premise that the serpentinites, which commonly lateritise, may be hosts to nickel sulphide mineralization underneath the laterite, rather than simply assuming that the laterites are derived from sulphide free laterites.

Nickel and cobalt mineralisation had not been previously considered prospective due to the absence of proved metallurgical treatment of the altered serpentinite host. Laboratory testing (see section 16) offered encouragement for viable low-temperature leaching, at atmospheric pressure.

Following the exploration assessment and construction of a mine on the 160,000t Ni Avebury Deposit in Tasmania by Allegiance Mining, in 2004 to 2007, prior to its takeover by Oz Mining for \$800m, D'Aguilar further developed the mineralization model to invoke the nearby Permo-Triassic intrusive bodies of the Station Creek Adamellite, Black Snake Porphyry and Claddagh granodiorite as a source of sulphur to scavenge nickel from the crystal lattices of the component minerals, prior to precipitating it as sulphide minerals in the serpentinite.

In 2006, specks of nickel sulphide minerals, millerite, violarite and pentlandite (plus the iron sulphide, pyrrhotite) were found in outcrops of serpentinite trending from the edge of the Shamrock mine towards the dam spillway to the south. This confirmed the hypothesis that these serpentinite rocks of this region were potential hosts of nickel sulphide orebodies. Surface chip sampling in the area returned values often exceeding 0.5% nickel. Laboratory leach testing of material from Mount Cobalt was carried out and up to 75% nickel was returned in leach tests.

In 2007, D'Aguilar formed the subsidiary AusNiCo Pty Ltd to focus on the development of the nickel-cobalt exploration assets. Following very encouraging assay results from a drilling program at Black Snake and Mount Cobalt early in the year and the transportability of the model to other areas, applications for further exploration permits over geologically similar ground at Poperima, west of Bundaberg and areas around Marlborough, were lodged. The combined tenement holding is now seen as a 500 km-long nickel province in south east and eastern Queensland that is under explored. Subsequently, the nickel - cobalt exploration areas were transferred to AusNiCo Pty Ltd and \$2 million in seed capital raised for 10% of AusNiCo Pty Ltd.

Work continued on laboratory leach testing of material from Mount Cobalt at the HRL Testing Laboratories in Brisbane, examining chloride leach techniques (section 16). Other existing leaching technologies that may be applicable to the AusNiCo mineralisation at Kilkivan were briefly investigated.

In April 2007 a helicopter borne geophysical survey (VTEM) electromagnetic and magnetic survey was flown over the Mount Cobalt and Mount Widgee project areas by Geotech Airborne Ltd. Table 6-1 highlights the line spacing and area covered.

**Table 6-1 – VTEM Survey Details**

Prospect	Line spacing (m)	Area (Km2)
Mount Cobalt	200	11.47
Widgee	200	41.28
Elginvale	200	57.49

The nominal EM sensor terrain clearance was 28m (EM transmitter and receiver height above ground, i.e. helicopter is maintained 80m above ground). This is a highly detailed survey producing superior magnetic data to previous surveys and new EM results.

Extensive rock, soil and stream sediment sampling east-north-east and south of Mount Cobalt in the Mount Terrible area revealed previously unknown mineralised porphyry intrusions with nickel anomalism at the porphyry serpentinite contacts.

A 200m vertical diamond core hole COB 11 was drilled at Mount Cobalt to provide material for metallurgical testing, with the top 96m assaying 0.58% nickel. These results were followed with the intersection of 4m @ 1.1% nickel within a broad zone at the Pembroke Prospect, south of Mt Cobalt, in 2008.

The presence of Nickel sulphides and recoverable nickel oxides in several prospects with considerable tonnage potential has encouraged a systematic search for disseminated nickel sulphide orebodies and oxide capping systems created by hydrothermal alteration rather than just weathering processes.

## 7 GEOLOGICAL SETTING

### 7.1 Regional Geological Setting

The AusNiCo tenements lie within the Tasman Fold Belt System, a composite orogen of Palaeozoic age forming most of eastern Australia, which during its development formed the eastern margin of Gondwanaland. Two fold belts, the Lachlan Fold Belt running through Tasmania, Victoria and southern New South Wales, and the New England Fold Belt of northern New South Wales and eastern Queensland form the eastern portion of the Tasman Fold Belt system. These two fold belts are separated by the Middle to Late Palaeozoic Sydney-Bowen Basin.

The New England Fold Belt in southern and central Queensland comprises a number of fault bound blocks with distinct tectonostratigraphic sequences – the Gympie, Wandilla and Yarrol terranes. The Marlborough serpentinites and ultrabasics span the boundary between the Yarrol and Wandilla terranes formed by the Yarrol Fault Zone, a continental scale suture marked by major alpine-type ultramafic and ophiolite belts, considered to be colinear with the Peel Fault which extends southward into southeast Queensland and northern New South Wales. These rocks and the structures in them are prospective for Ni, Co, Cu, and Au/Ag.

The evolution of the area commenced with deposition of early Palaeozoic shelf facies, now forming the Yarrol terrane, and oceanic sediments to the east, now included in the Wandilla and Gympie terranes. The Gympie Terrane consists of a number of blocks - the Gympie Block, the Yarraman Block and the South and North D'Aguilar Blocks. (Figure 7-1 highlights these blocks.)

Slices of early Palaeozoic fore-arc and accretionary prism complexes have been mapped along the Yarrol Fault Zone, in association with ultramafic rocks (Leitch and Cawood, 1980). Intense orogenic deformation commenced during the Middle Devonian and continued through to the Late Carboniferous or Early Permian, with the focus of deformation, metamorphism and associated igneous activity migrating eastward during this period.

Extensive ultramafic intrusives have been mapped around Rockhampton and Marlborough and are shown to intrude rocks of Lower Devonian to Permian age. Their contacts are frequently fault bounded or block-faulted and in some areas they may be intruded or stoped out by Upper Permian granodiorite and adamellite and, less commonly, by gabbroic plugs of a similar age.

Major north-east cross-cutting faulting – the Darling Lineament - may have displaced this belt from the Kilkivan area to the south (Figure 7-2). Note the grey scale first vertical derivative magnetic providing the background to the structures.

Further to the south in the North D'Aguilar Block the deformed basement of Paleozoic sedimentary rocks contains several serpentinite bodies intruded by Permo-Triassic granitoid plutons.

This terrane forms part of the ground in AusNiCos tenements and is also prospective for copper gold porphyries.

Early Permian marine fault-bounded basins containing rift-fill sediments and volcanics unconformably overlie the Paleozoic to the west but outliers of the Nera Volcanics occur south of Kilkivan.

Ultramafic rocks associated with the Yarrol Fault Zone locally give rise to deposits of nickel, cobalt minerals. Elevated concentrations of these elements are common in ultramafic rocks, and weathering has caused enrichment of the Ni and Co elements and so formed the Ni-laterite deposits.

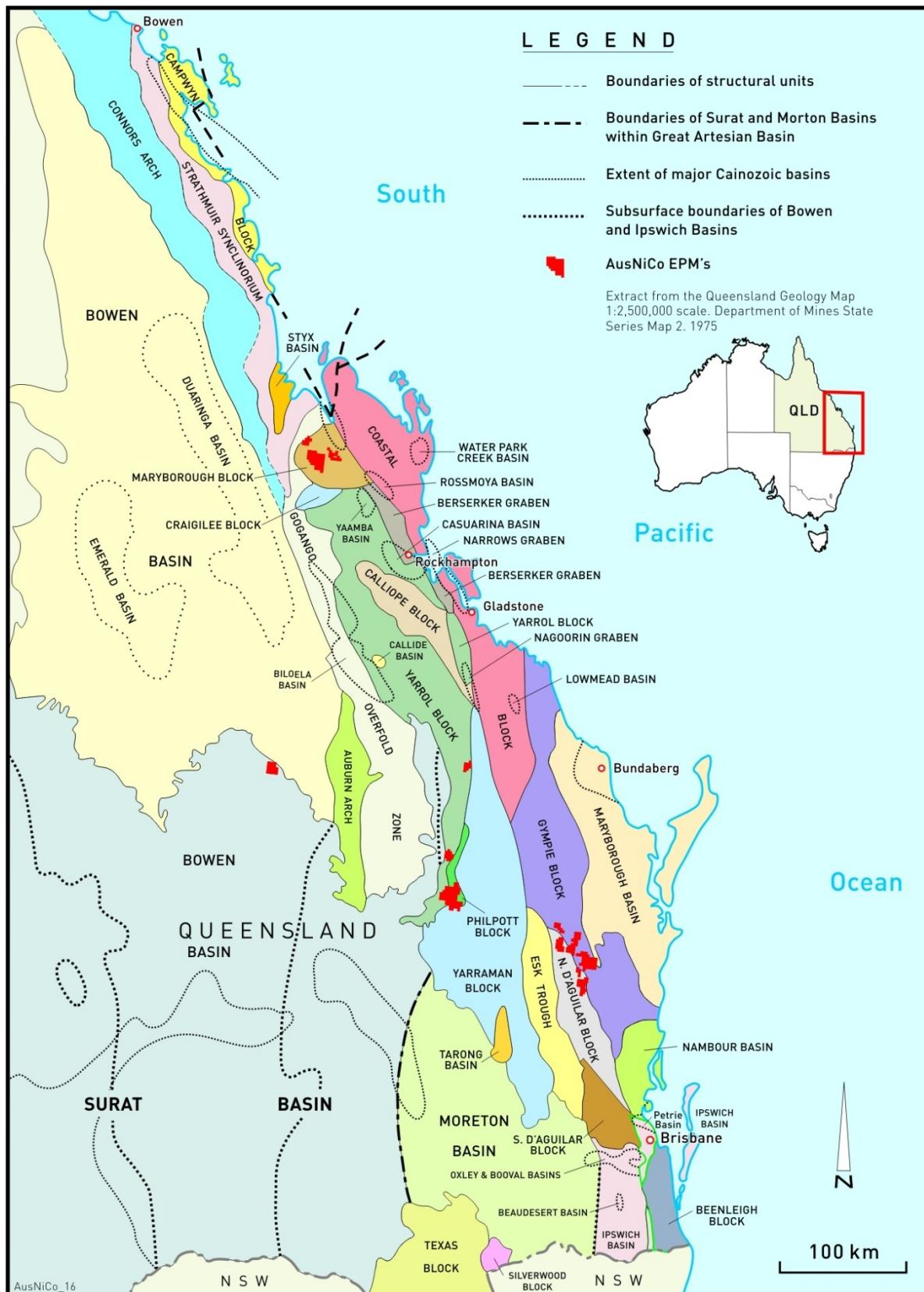
The groups of tenements fall within the New England Fold Belt, which consists mostly of a complex volcanic arc - continental margin succession, related to a Carboniferous subduction complex. The subduction complex underwent extension with a period of compressive easterly-directed thrusting in the Late Permian. Granitoid emplacement accompanied the extensional events as well as extensive Triassic volcanism.

## 7.2 North D'Aguilar Block - Southern Tenements

Twenty-two named intrusions have been mapped in the North D'Aguilar Block and the Queensland Geological Survey and various explorers have mapped numerous unnamed plutons, all ranging from Carboniferous to Triassic in age. Where they intrude the ultramafics, they are considered by AusNiCo to be a source of sulphur required to scavenge Nickel and cobalt from ultramafic crystal mineral lattices. Older Carboniferous granites are foliated but younger Permo-Triassic bodies are undeformed. The granites spatially associated with mineralisation at Kilkivan and Black Snake areas are: the Boonara Granodiorite (early-middle Triassic) to the north and east, the Station Creek Adamellite (Quartz Monzonite), (early-middle Triassic) to the south-east and the Claddagh Granodiorite (Carboniferous) to the west and south of Kilkivan.

Crustal faulting in a north to north-west direction has been the primary weakness along which younger faulting has been transmitted. Dilatant north-east trending fractures and lineaments are seen in the geology and geophysical imagery. Both sets of fractures are interpreted to partly control the location of late intrusions and mineralisation of Triassic age.

Gold and base metal mineralisation of the D'Aguilar Block features dominantly polymetallic mesothermal veins in a variety of simple to composite systems, breccia zones and alteration zones. There are some epithermal vein characteristics. Within the ultrabasic rocks at Kilkivan, Black Snake and Widgee there is evidence for anomalous nickel and cobalt mineralisation in both primary and secondary deposits. Platinum has been recorded at Kandanga Creek. Mercury deposits have been mined at Cinnabar west of Kilkivan; these are spatially associated with the Darling Lineament, which is interpreted as a probable deep penetrating structure and is a possible cause of the introduction of mineralizing fluids.



**Figure 7-1– Geology of the Central Coast and South East Queensland Geology**



**Figure 7-2 - Map displaying the known ultrabasic rocks and the displacement caused by the Darling River Structure**

### 7.3 The Mundubbera-Monto-Theodore Area Geology

In the northern tenements covering parts of the Monto – Mundubbera belt, north-north-west shear systems, such as the Perry Fault and Yarrol Fault and north-east trending cross-cutting faults, dominate the structural framework. Overprinting this regional fabric are north trending faults, which exhibit a strong spatial relationship with Permian to Triassic mineralisation. A north-trending belt of basic and ultrabasic rocks is centred over the Poperima Creek EPM 15457 (see Figure 7-2). Major north-

east cross-cutting faulting – the Darling Lineament - may have displaced this belt from the Kilkivan area. The Darling Lineament is one of three marked transverse structures in Queensland that is spatially associated with mineralization (Horton, D. 1982). The Monto – Mundubbera belt appears to be the same age as the Kilkivan belt, containing Permian to Triassic olivine- and pyroxene-rich intrusives with associated ultrabasic skarns. Also, petrological studies of olivines and pyroxenes from the gold mineralised Yarrol intrusives on the western boundary of the Poperima Creek EPM confirm similarity of the two belts.

There is evidence for anomalous nickel and cobalt mineralization in the northern tenements. The Queensland Department of Mines drilled magnetite seams in the Hawkwood Gabbro which is located 40 km south-west of Mundubbera in the 1960s. In one of three holes 3.12m grading 508 ppm nickel and 450 ppm copper was intersected. The magnetites contained ~25% iron and ~2% titanium oxide (Brooks, 1968).

Several late Permian to Cretaceous age mineralised porphyries occur in relatively narrow zones roughly parallel to the Perry Fault. Host intrusives range from quartz diorite, granodiorite to granite/rhyolite composition. Mineralisation varies from copper, copper/gold to gold. Alteration is typically quartz-pyrite-sericite assemblages, which grade outward to chlorite-clay zones. Potassic (biotite) cores are present sometimes. The largest copper porphyry in the region is Coalstoun (85 million tonnes grading 0.3% copper). Mount Rawdon, a large breccia pipe, (2006 Proved and Probable reserves of 38.4 million tonnes grading 1.0 g/t gold and 2.9 g/t silver) is currently being mined. Other near economic resources occur at Yarrol and at the Mount Cannindah porphyry/skarn/breccia system (Davis, 2008).

The major Yarrol Fault occurs along the eastern margin of the Yarrol Basin and it is considered to be a thrust along which serpentinites have been emplaced. Large silica-pyrite bodies also lie along this fault. AusNiCo believes these bodies to be prospective for nickel, cobalt and gold.

EPM 17817 Application covers a small Tertiary gabbro intrusive into the Lower Jurassic Evergreen Formation and the Lower to Middle Jurassic Hutton Sandstone. Nickel mineralization has been recorded in this intrusive. This occurrence lies on the east margin of the Surat Basin.

## 7.4 The Marlborough Area Geology

The Marlborough nickel-cobalt deposits are associated with one of the larger ultramafic complexes along the northern section of the Yarrol Fault Zone. The complex has been mapped over an area of 50 km by 20 km. It is fault bounded by moderate to steeply dipping sediments, most of which are schistose metamorphic derivatives of quartz-rich clastic and calcareous varieties. These constitute the oldest known rocks in the region (Malone, 1970).

The main constituent of the ultramafic is harzburgite. The smaller lenses and the margins of the larger lenses of the harzburgite are usually serpentinised. The morphology of the ultramafic has been moulded by a combination of structural events involving block and strike-slip faulting, intrusion of granitic domes and basin-scale flexing. Two predominantly northwest striking bodies occur, with the western

intrusive being the larger of the two. It is separated from the eastern body by a fault-bounded corridor of metasediments several km wide. The southern boundary of the ultramafic is extensively stoped by granite and block-faulted, with east trending structures down-throwing younger acid intrusives against older clastic metasediments. The general body of evidence suggests that the southern limit of the Marlborough ultramafic lies along a broad east trending zone of structural and igneous activity.

The laterite-hosted nickel deposits mainly occur as positive topographic features. They are believed to be the remnants of a once much more extensive weathering blanket. The deposits cover only a relatively small percentage of the ultramafic bodies and are arrayed principally on a north west trend along the western margin of the western ultramafic body.

## 8 DEPOSIT TYPES

### 8.1 General Discussion

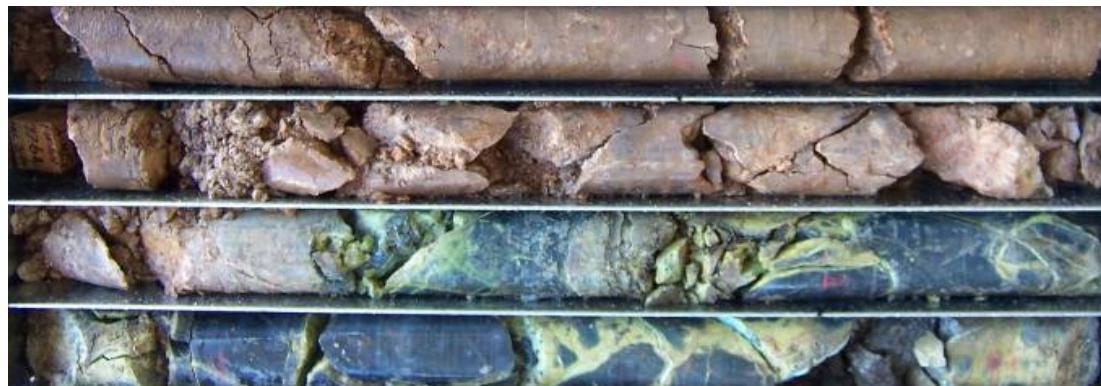
AusNiCo's main focus is primarily on the discovery of nickel-cobalt (plus platinum group element) deposits in younger geological terranes in Eastern Australia. The discovery of the Avebury deposit near Zeehan in western Tasmania provides a similar aged deposit to the mineralization encountered on the AusNiCo tenements in similar geological settings.

Avebury and other deposits such as Aguablanca in Spain, are mineralogically unlike the other primary nickel mineralisation currently mined in Australia, which is the Western Australian, Kambalda-style massive sulphide mineralisation. Past exploration in Australia has been dominated by Western Australian nickel experience and hence the potential for different geological models has probably been overlooked.

In June 2008, AusNiCo announced that drillhole PEM 2 at Pembroke intersected a copper-gold zone of 20m averaging 0.48% copper, 1.5 g/t gold at 8m down-hole. At 32 m down-hole, a large 50 m-wide zone of low-grade nickel sulphide mineralisation was intersected, within which 4.2m of fresh primary nickel sulphides grading 1.1% nickel and 525 ppm (0.05%) cobalt was intersected from 58m down hole. The true thickness of mineralization is unknown and further drilling is required to assess the dimensions of the mineralized bodies.

The results of Ni-Co mineralization associated with hydrothermally altered (oxidized) zones as discovered at their Mt. Cobalt prospect provided the impetus to concentrate on exploration for Ni sulphide targets and related hydrothermally altered targets. As part of the process, AusNiCo have been basing their exploration on the geological models representing the Avebury Ni mine and the Aguablanca Ni-Cu mine in Spain as well as exploring for the associated Ni-Co rich hydrothermally altered serpentinites as has been discovered at Mt Cobalt. Figure 8-1 displays typical oxidized (hydrothermally altered) zone material (brown coloured core) overlying unaltered, fresh serpentinites (green coloured core).

There is no known mine equivalent deposit associated with the Ni and Co mineralized hydrothermally altered serpentinites.



**Figure 8-1- Mt. Cobalt drill core displaying oxidised serpentinites (hydrothermally altered) overlying fresh serpentinite**

The following section 8 describes the geology of the Aguablanca mine and the Avebury mine and the geological models associated with these deposits.

## 8.2 Aguablanca Deposit

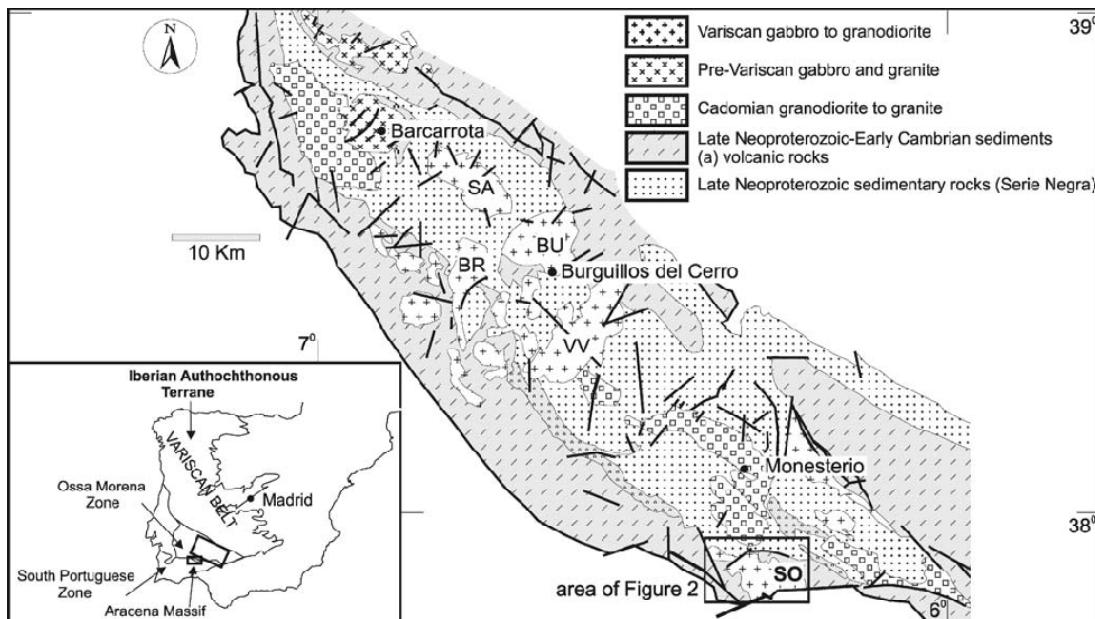
### 8.2.1 Aguablanca Geology and Mineralisation

The Aguablanca Ni-(Cu) sulphide deposit is hosted by a breccia pipe within a gabbro-diorite pluton. The deposit probably formed due to the disruption of a partially crystallised layered mafic complex at about 12-19kms depth and the subsequent emplacement of melts and breccias at shallow levels (<2km). The ore hosting breccias are interpreted as fragments of an ultramafic cumulate, which were transported to the near surface along with a molten sulphide melt. (Tornos et al 2006). Age dating indicates an age between 350 - 330 Ma.

Ore deposition resulted from the combination of two critical factors, the emplacement of a layered mafic complex deep in the continental crust and the development of small dilatational structures along transcrustal strike-slip faults that triggered the forceful intrusion of magmas to shallow levels. The emplacement of basaltic magmas in the lower middle crust was accompanied by major interaction with the host rocks , immiscibility of a sulphide melt, and the formation of a magma chamber with ultramafic cumulates and sulphide melt at the bottom and a vertically zoned mafic to intermediate magmas above. Reactivation of Variscan structures that merged at the depth of the mafic complex led to sequential extraction of melts, cumulates , and sulphide magma. Lithogeochemistry and Sr and Nd isotope data of the Aguablanca Stock reflect the mixing from two distinct reservoirs, i.e. an evolved siliciclastic middle–upper continental crust and a primitive tholeiitic melt (Tornos et al, 2006).

Comparison of the geochemical and geological features of igneous rocks in the Aguablanca deposit and the Cortegana Igneous Complex indicates that, although probably part of the same magmatic system, they are rather different and the rocks of the Cortegana Igneous Complex were not the direct source of the Aguablanca deposit. Crust-magma interaction was a complex process and the generation of orebodies was controlled by local but highly variable factors. The model for the formation of the Aguablanca deposit presented in this study by Tornos et al, 2006, implies that dense sulphide melts can effectively travel long distances through the continental crust and that dilatational zones within compressional belts can effectively focus such melt transport into shallow environments.

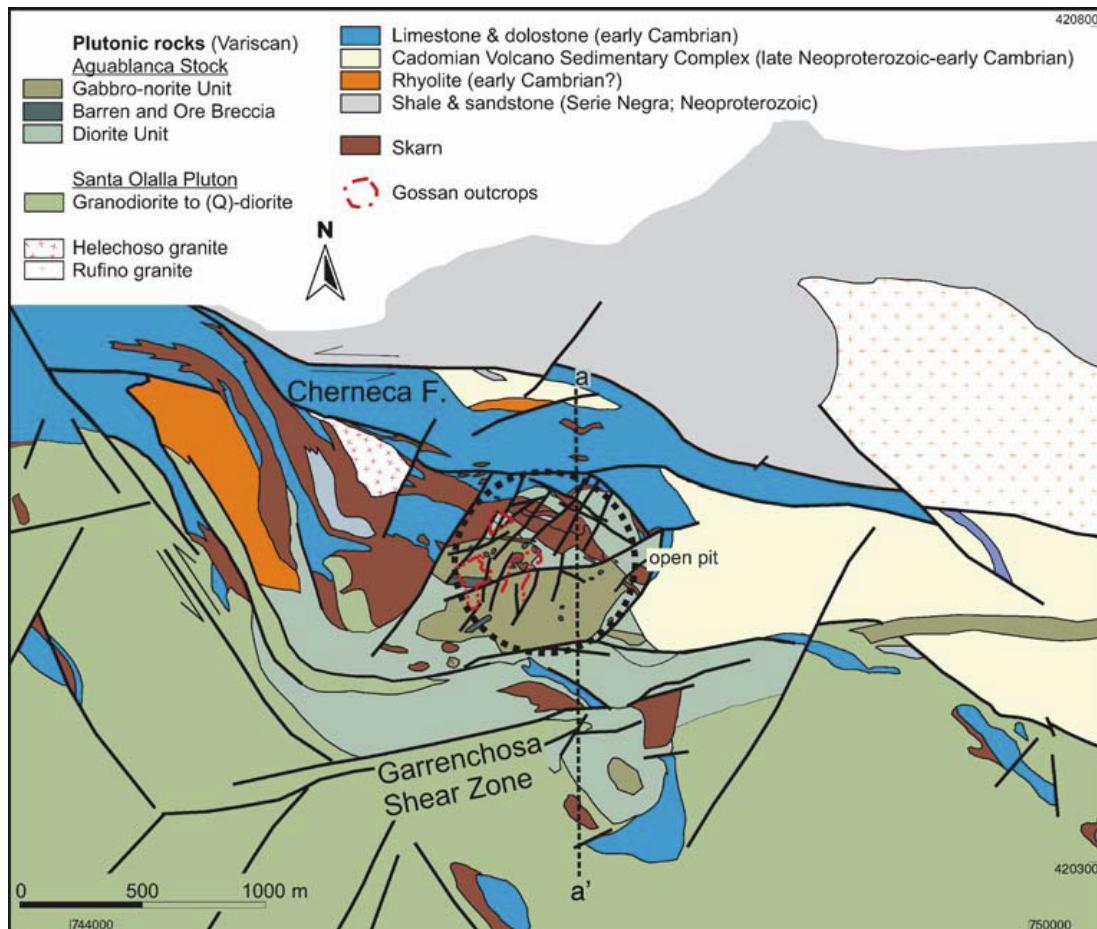
The Aguablanca orebody is located in the northeastern zone of the Santa Ollala Plutonic Complex, within the southern most part of the Ossa Morena Zone of the Variscan Belt of Iberia. The geology of the region is presented in Figure 8-2 and displays the major Variscan intrusives and the location of the mine region in relation to the Ossa Morena Zone. The figure is from the paper by Tornos et al, 2006.



**Figure 8-2 – Regional Geology and location of the Aguablanca Mine (within “area of Figure 2”)**

The geology of the mine site is represented in Figure 8-3 which is also from Tornos et al, 2006. The Ni-(Cu) Aguablanca deposit consists of two E-W steeply northward dipping ellipsoidal orebodies hosted by the Gabbronorite Unit. Four types of ore have been distinguished: ore breccia, massive sulphides, disseminated ore and patchy ore. Most of the ore (50-60%) occurs as disseminations in rocks belonging to the Gabbronorite Unit. Sulphides (5-20% of the rock volume; 0.1-10mm in size) are interstitial to plagioclase and pyroxene and intergrown with phlogopite and amphibole. The grades are up to 1% Ni + Cu and the Ni/(Ni + Cu) ratio is close to 0.3-0.5. Patchy ore is similar to disseminated ore. Patchy ore makes up 20-35% of the total ore volume (Tornos et al, 2006).

Ore breccias and massive sulphides comprise 15-20% of the total orebody volume. Copper grades are equivalent to those of disseminated and patchy ore but there is up to a five fold enrichment in Ni, which is usually higher than 1% (Tornos et al, 2006). The ore breccia and the massive sulphides form the bulk of the ore grade material at the mine. A cross section of the mine (Figure 8-4) displays the distribution of the mineralization (from Tornos et al, 2006).

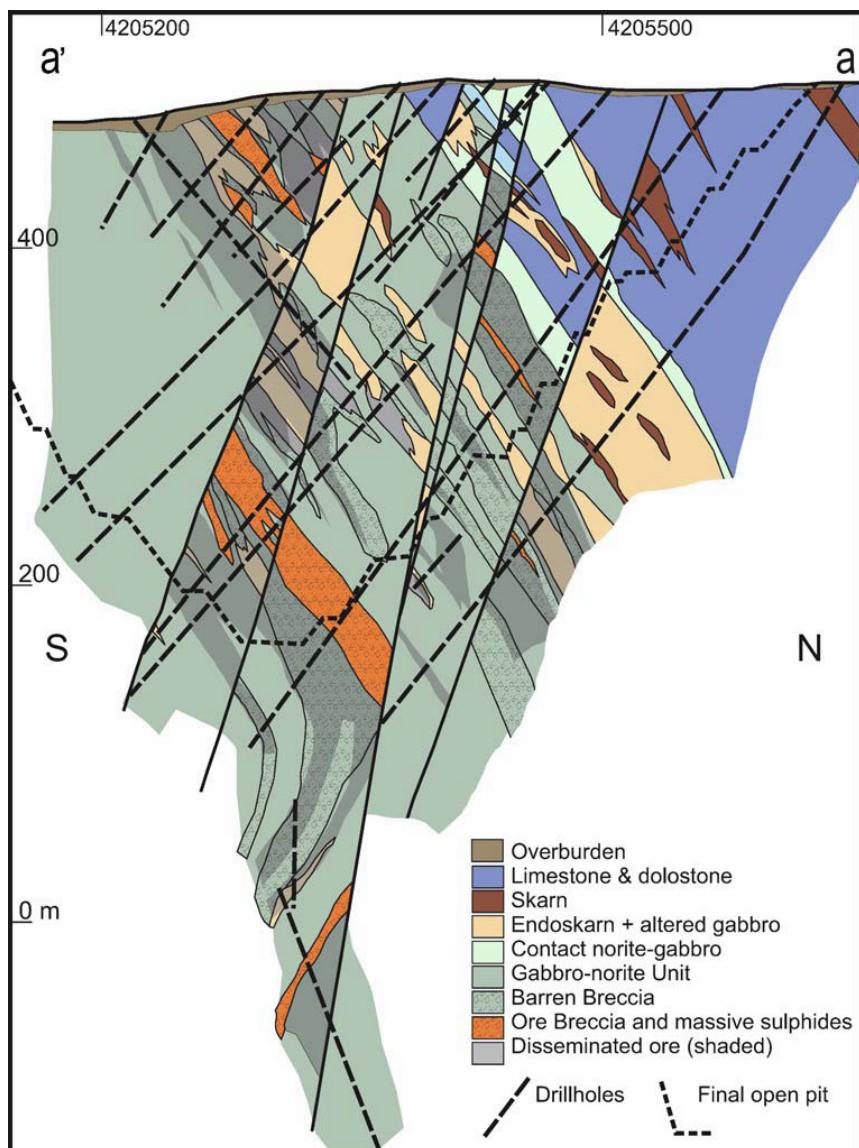


**Figure 8-3– Geology of the Aguablanca Mine area (Tornos et al, 2006)**

The magmatic sulphide mineralisation consists of pyrrhotite, pentlandite and chalcopyrite with variable, magnetite and pyrite. The scarcity of Co bearing minerals suggests that most of the Co is in the pentlandite lattice.

The Aguablanca Stock underwent a pervasive polyphase, hydrothermal alteration event whereby there is an irregular replacement of primary mafic minerals by phlogopite and plagioclase by sericite calcite and chlorite. The proportion of hydrothermal sulphides is quite variable, ranging from semi-massive to disseminations or veinlets in altered gabbro norite. The sulphide assemblage is dominated by coarse grained chalcopyrite and pyrite with only random inclusions of pyrrhotite and sphalerite. Bravrite and mackinawite are present as small grains, the latter replacing pentlandite. There is a characteristic late stage assemblage of magnetite –pyrite –graphite in the hydrothermal alteration stage. (Tornos et al, 2006).

Studies by others on the PGE content at Aguablanca indicate that they occur as Pd and Pt-bearing tellurides and are usually associated with Ag and Bi tellurides and native gold. The location of these minerals in fractures or on grain edges of pyrrhotite and pyrite suggests that they are of hydrothermal origin and are probably related to the retrograde alteration of the magmatic sulphides by which PGE contained as solid solution became liberated (Tornos et al, 2006).



**Figure 8-4 – Cross section of the Aguablanca Mine displaying the mineralisation styles (after Tornos et al, 2006)**

## 8.2.2 Aguablanca Resources

Spain's Aguablanca nickel mine was reported in July, 2004 as having mining reserves of 15.7 million tonnes grading 0.66% Ni, 0.46% Cu, 0.017% Co, and 0.47 g/t PGM. Production was expected to commence in August 2004 with an expected mine life of 10 years treating 1.5 Mt/a ore (Mining Engineering July1, 2004).

Lundin Mining Corporation recently released a NI 43-101 report (March, 2009 by Golder and Associates) on the mine. Current stated resources are a combined Measured and Indicated resource at a 0.2% Ni cut-off of 16,535,000 tonnes grading 0.52% Ni, 0.44% Cu, 0.014% Co, 0.24 g/t Pt, 0.22 g/t Pd, and 0.12 g/t Au.

There is still a remaining proven and probable ore reserve as of December 31, 2008 of 9,038,000 tonnes grading 0.63% Ni, 0.47% Cu, 0.017% Co, 0.22 g/t Pt, 0.20 g/t Pd and 0.11 g/t au at a cut-off grade of 0.25% Ni (Golder, and Associates, 2009, NI 43-101 report).

These resources and reserves are used to highlight the potential size of deposit that can be discovered using these examples as models. AusNiCo and Lions Gate Metals Inc. have no association or interest in the Aquablanca mine.

### **8.3 Averbury Deposit**

#### **8.3.1 Averbury Geology**

The geology of the Avebury deposit has been adequately described by Keays et al, 2009 and the following description is taken from their paper.

The Avebury Ni deposit is located in western Tasmania, within the Dundas Trough. The hosting ultramafic body is located in an overturned, consistently south facing sequence of tholeiite derived volcaniclastic turbidites transgressing to a complex volcanosedimentary sequence of polymictic conglomerates and breccias, carbonates, calc-alkaline volcanic and volcaniclastic sediments. The ultramafic body strikes east-west for approximately 2 km and dips steeply to the north. The body shows complex geometry with the host sequence and thickens considerably with depth to a width in excess of 500m.

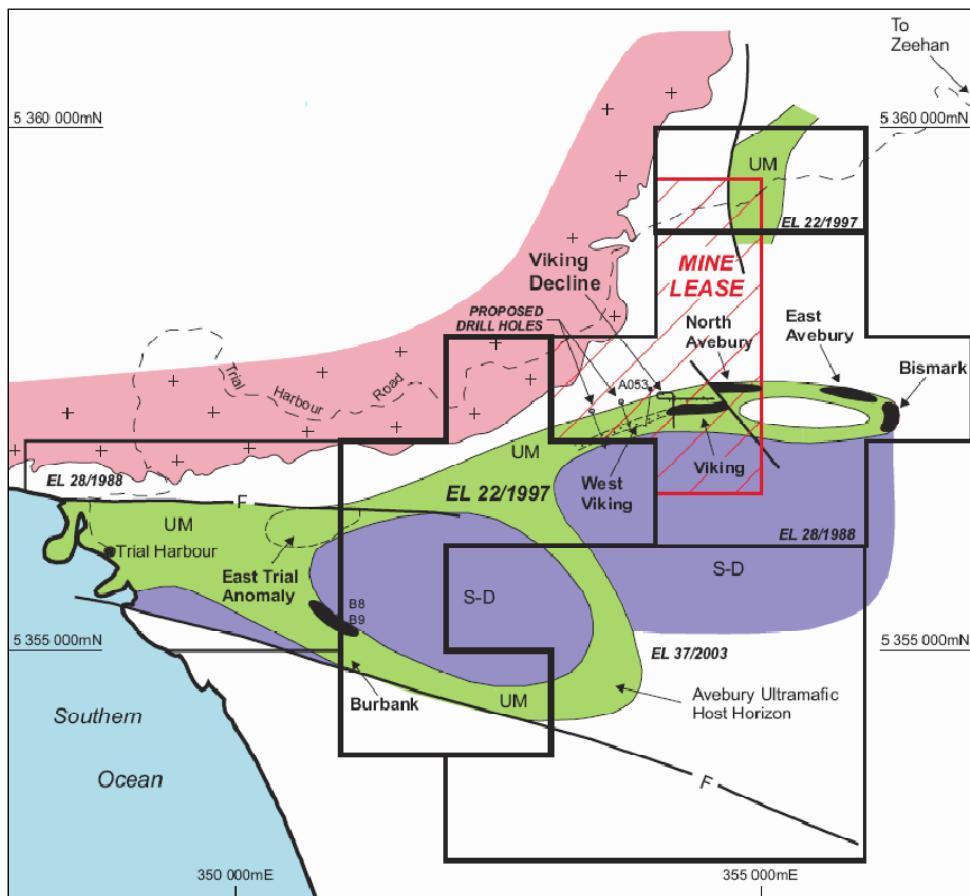
Importantly, the Avebury ultramafic body is located within the metamorphic and hydrothermal aureole of the Late Devonian Heemskirk Granite which also has associated Sn and Pb-Zn deposits. Intense metasomatism and skarnification of the ultramafic body and its host sequence is evident with tourmaline, axinite, datolite and low grade scheelite development a feature.

Mineralisation is frequently located along the ultramafic-host sequence contact but lenses of mineralisation are also present within the the ultramafic body. The mineralisation is associated with two distinct gangue mineralogies, which consist of either serpentinised ultramafics or an intensely, metasomatised skarn-type mineralogy, consisting of tremolite, diopside and magnetite. The mineralisation consists of veins and coarse grained disseminations throughout both gangue types, and is dominantly pentlandite with minor pyrrhotite, and rare millerite, mackinawite, niccolite gersdorffite and maucherite. An important feature of the mineralisation is that it is magnetite –rich, containing up to 18% magnetite.

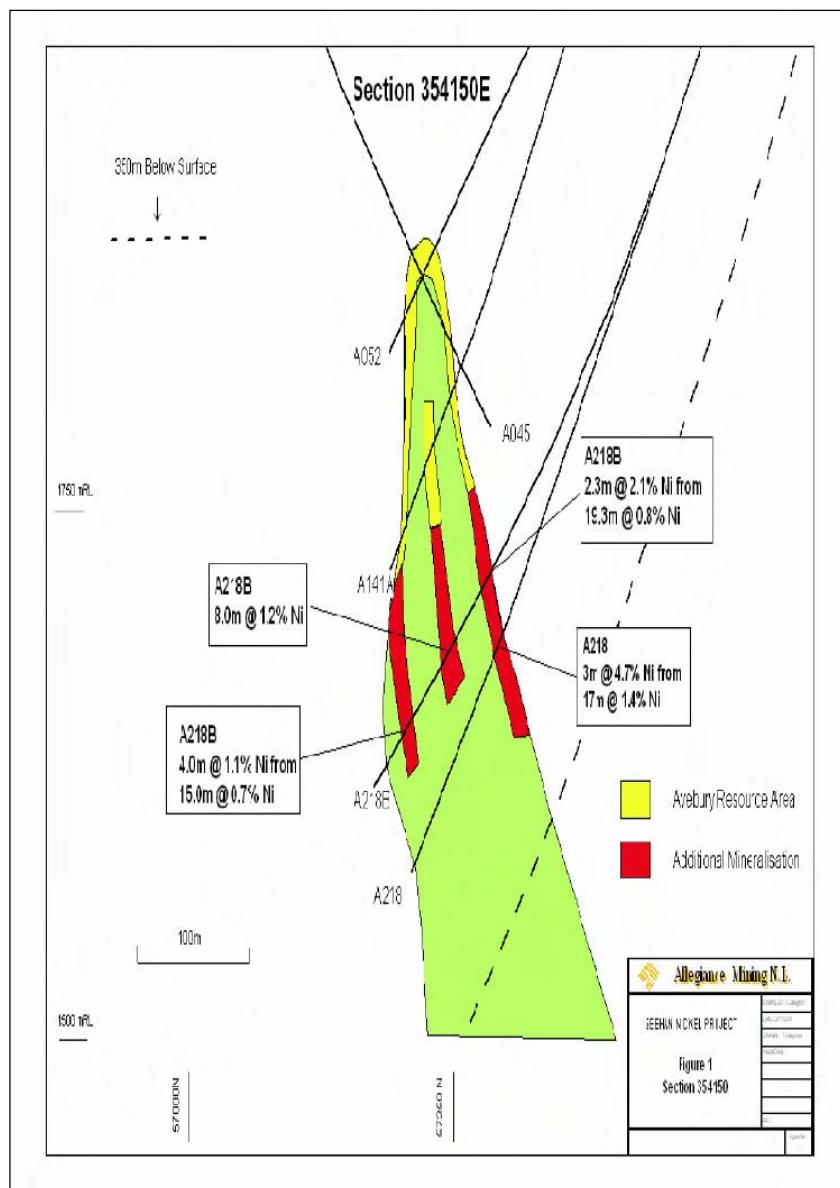
The magnetite mineralisation is also a feature of the skarn development at Mt Cobalt and Pembroke on the AusNiCo ground.

The Avebury ultramafic body is considered to be a member of the mafic/ultramafic sequence that formed in a Cambrian island arc setting.

Figure 8-5 displays the basic geological outline. This figure is taken from an Allegiance Mining presentation. Figure 8-6 displays a typical section through the Avebury Mine. This figure is taken from the Oz Minerals Ltd presentation.



**Figure 8-5 – Avebury Geology from Allegiance presentations**

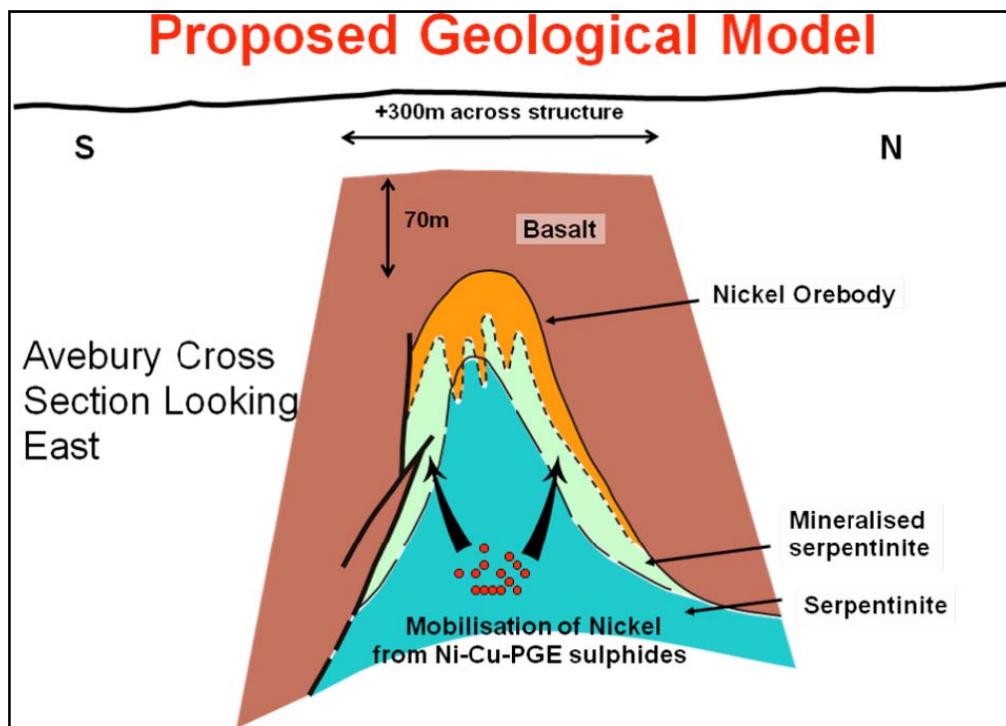


**Figure 8-6 – Cross section through a section of the Avebury Mine (from an Oz Minerals Ltd presentation, 2008)**

### 8.3.2 Genetic Model of the Avebury Deposit

Keays et al, 2009, conclude that the Avebury Ni deposit is a hydrothermal Ni deposit in which the Ni was sourced from the ultramafic or mafic rocks at depth below the deposit. However, rather than being liberated from the mafic minerals (for example olivine and orthopyroxene), base and precious metals were instead mobilized from magmatic sulphides by fluids associated with the intrusion of the Heemskirk Granite. (Figure 8-7 below displays the proposed model for the genesis of the Avebury Ni deposit. These rocks would have had very low PGE contents due to the formation of magmatic sulphides, similar to those of the HRC as well as the boninitic and low -Ti tholeiites that overlie the HRC. Mineralisation within the Avebury deposit represents a very strongly metasomatised magmatic Ni-Cu-PGE sulphide deposit. The metasomatic fluids may have removed Cu, Au, Pd, Pt and perhaps Rh from the

original magmatic sulphides but not Ir. The Avebury Ni deposit is a hydrothermal Ni deposit for which the Ni was sourced from magmatic Ni-Cu-PGE sulphides in ultramafic or mafic rocks at depth below the Avebury Ni deposit. Such hydrothermal Ni mineralization would be variably enriched in Pd but not Ir (Keays et al, 2009).



**Figure 8-7 – The Preferred Geological model from Keays et al (2009) based on an idealised cross section**

### 8.3.3 Avebury Resources, Reserves and Mining

The resource estimate as quoted by Oz Minerals Limited (2008) from their public presentation ([www.ozminerals.com.au](http://www.ozminerals.com.au)) is as follows:

#### Avebury Resources at a 0.4% Ni Cutoff

Inferred 9.76Mt @ 0.88 % Ni

Indicated 6.05Mt @ 1.01 % Ni

Measured 2.37Mt @ 1.03% Ni

**Total 18.18Mt @ 0.95% Ni.**

The mining reserves as quoted by Oz Minerals Limited (2008) from their public presentation are as follows:

#### Avebury Reserves at a 0.7% Ni Cutoff

Probable 4.00Mt @ 0.98% Ni

Proved 1.84Mt @ 0.92% Ni

**Total 5.84Mt @ 0.96% Ni.**

Note that the resources and reserves are only used to provide an indication of the size and grade which these type deposits can achieve. AusNiCo and Lions Gate Metals Inc. have no interest in the Avebury deposit.

The mining operation at Avebury consists of an underground mechanised mine producing 900,000 tpa. The ore is fed to a conventional crushing grinding and sulphide floatation plant which can treat ore at a rate of 110 tph with a 93.4% availability. The plant produces greater than 38,000 tpa of concentrate at a concentrate grade of >20% Ni. The mine concentrate grade sets the project aside from Western Australian sulphide nickel producers who generally produce concentrate grades of considerably less than 20% Ni.

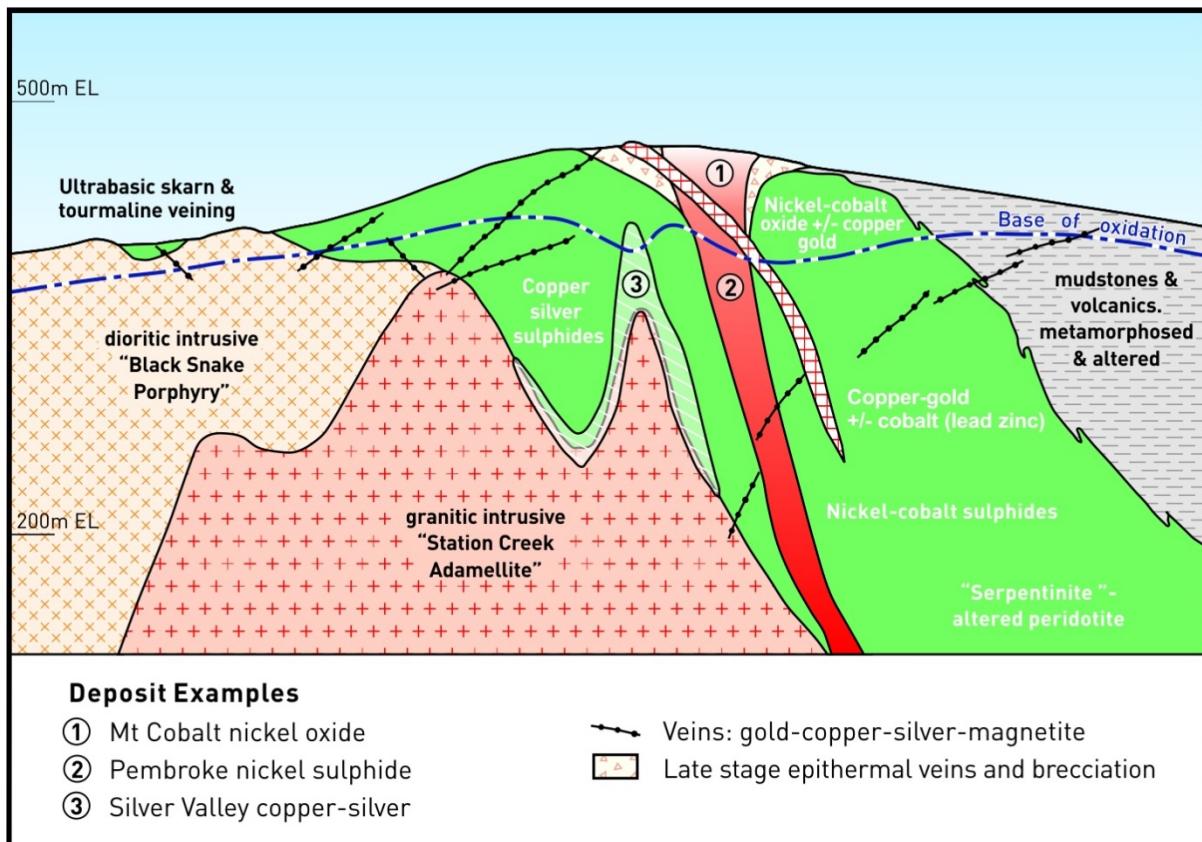
#### **8.4 AusNiCo Conceptual Model and its application to the AusNiCo Queensland Tenements**

In the Black Snake district there can be observed a nickel-cobalt association and a gold-copper-silver association. AusNiCo considers the Ni-Co association at Pembroke is possibly associated with the more ultramafic rocks and is probably magnesian rich, (a second remelt of a depleted mantle area that has already been depleted by massive tholeiitic melting). Tholeiites are the source of copper and PGMs so the Kandanga area will be polymetallic in the nickel ore zone whilst Pembroke may well be lower in Cu & PGMs (with the possible exception of palladium which occurs in magnesian melts). The Kandanga area has more potential for Aguablanca style deposits than the Black Snake area which is more likely to produce an Avebury style deposit. (pers. comm. I. Levy, Oct 2009). However, it is noted that considerable Cu mineralization exists at Pembroke above the Ni-Co results. The association between the Ni-Co mineralization and the Cu/Au mineralization is unknown at this point in time even though they are closely spatially associated.

The nearby granitoid batholith (Station Creek adamellite) is interpreted to provide mineralising fluids rich in silver, gold and boron, creating a polymetallic mineral system within the adamellite, the serpentinite and surrounding metasediments. AusNiCo's tenure position in the Black Snake district is a favourable situation for the discovery and mining of nickel sulphide deposits and associated higher level oxide nickel and cobalt deposits.

Figure 8-8 below highlights the conceptual model and displays the location of the associated two main types of alteration and the secondary Cu-Ag deposit type in relation to the conceptual model being considered by AusNiCo:

- Mt. Cobalt nickel hydrothermally altered (oxide) deposit.
- The Pembroke Ni-Co sulphide deposit, and
- The Silver Valley Cu-Ag deposit type.



**Figure 8-8 – Conceptual Model Geology and the location of the AusNiCo prospects**

The alteration zoning (clay altered higher level versus sulphide zones) produces two styles, which if proven to be economic, will require two separate metallurgical recovery processes. Any potential sulphide deposit discovered has the advantage of well developed flotation processes whereby the hydrothermally altered oxide deposits will require the development of leaching techniques which are generally much more expensive and require considerably more capital than flotation recovery techniques.

In order to cover the cost of an economic process to treat any hydrothermal oxide clay alteration, a larger deposit will be required compared to a sulphide deposit.

## 9 MINERALIZATION

### 9.1 Overview

AusNiCo is exploring for sulphide Ni, Co and PGE minerals. Although historical exploration has discovered a variety of mineralising styles including minor laterite Ni-Co mineralisation, and Cu, Au, Ag mineralisation in shears. This section will concentrate on the main target mineralisation types which are relevant to future exploration.

### 9.2 The Kilkivan Area Mineralisation

The prospects in this area are the most advanced in the AusNiCo portfolio and there are several prospects where drilling is planned for the Pembroke and Mt. Cobalt prospects where the principal targets are sulphide Ni mineralization and hydrothermally altered Ni mineralized zones. A large area of continuous outcrop of Palaeozoic rocks is located from Kilkivan to about 60 km south-east of Kilkivan. Rocks in this area include phyllites, schist, greenstone, amphibolite, serpentinite, minor limestone and marble, slate, mudstone, chert, and jasper. Palaeozoic rocks have been folded along north to north-west axes and dips are mainly to the west.

Ultrabasic rocks are the most extensive rocks in the area with outcrop extending over approximately 400 km<sup>2</sup> (see Figure 10-1). They are mostly comprised of variably serpentинised peridotite, probably hartzburgite. The most common lithology is melange, consisting of a variably foliated framework of pebble to cobble sized, subangular to subrounded fragments of serpentinite and lesser mafic greenschist, in a fine-grained serpentinite matrix. Official mapping shows these ultrabasics as being emplaced along a thrust fault, however the outcrop patterns and associated skarns suggest that they are intrusives of Permian to early Triassic age, and are coeval with layered gabbros and olivine-rich volcanics mapped elsewhere in southern Queensland.

The peridotites intrude a weakly calcareous mudstone - volcanic sequence, and have garnet-pyroxene skarns and jasperoid alteration zones about their contacts.

Gold and base metal mineralisation of the D'Aguilar Block features dominantly polymetallic mesothermal veins in a variety of simple to composite systems, breccia zones and alteration zones. There are some epithermal vein characteristics. Within the ultrabasic rocks at Kilkivan-Black Snake and Widgee there is evidence for anomalous nickel and cobalt mineralisation in both primary and secondary deposits. Platinum has been recorded at Kandanga Creek. Mercury deposits have been mined at Cinnabar west of Kilkivan; these are spatially associated with the Darling Lineament, which is interpreted as a probable deep penetrating structure.

AusNiCo considers the clay silica hydrothermal alteration is part of the same system which produced the earlier, higher temperature alteration zones but is probably later and only well developed higher up in the system. Clay/silica alteration is noted in the nearby gold mines in the Black Snake plateau area and could be related. The clay silica hydrothermal alteration is considered to be the last stage of retrograde alteration (pers. comm. N. Wilkins, Nov 09).

### **9.3 The Mundubbera-Monto-Theodore Area Mineralisation**

#### **EPM 15457**

Although there are minor diggings for Au and possibly for Cu, there is no reported or known Ni, Co and PGM mineralisation in the tenement areas. There has been exploration in the area, mainly for gold.

#### **EPM 17817**

Application for the EPM 17817 was made to cover a small gabbro intrusive which has recorded nickel mineralisation. Forbes (1968), records that nickel staining has been noted on the gabbro. The staining was most common in weathered gabbro exposed in a spring-fed gully on the northern side of the mountain. The highest nickel content of the gabbro was found to be 0.025 per cent.

### **9.4 The Marlborough Area Geology**

Previous exploration defined large strong Ni-Zn anomalies. Previous exploration for nickel laterites by International Nickel Australia Limited during the 1960s and 70s identified a 100 sq km area of greater than 3000 ppm nickel in stream sediments (Qld Exploration Geochemistry Database, 2008). A strong northeasterly trend of zinc anomalism was superimposed over this nickel anomalism, suggesting the presence of multi element hydrothermal sulphide mineralisation in the unweathered bedrock. The Zn – Ni trend is parallel to the trends of Cretaceous age intrusives that have affected the ultrabasics.

All future exploration will be dedicated to sulphide Ni, Co, Cu and PGM deposits.

The well known Marlborough laterite Ni – Co deposits in the region indicate the potential of the natural high background Ni values associated with ultrabasics and serpentinites in the region. Therefore the applicability of the AusNiCo model to the area in the vicinity of PermoTriassic and Cretaceous granitic and intermediate intrusions which are present in the area is high.

## 10 EXPLORATION

### 10.1 The D'Aguilar Gold Limited investigations at the Kilkivan Area 2003 to 2008

This section has been mostly extracted from the draft report by L Davis (2008).

Prior to the development of the potential for sulphide Ni, Co and Co of the Averbury style, D'Aguilar intended to explore for “intrusive-related gold dominant mineralisation” rather than traditional base- and precious-metal porphyry style mineralisation. This broadens the area of search but exploration techniques remain similar to previous workers. Many intrusion-related gold system deposits contain greater than three million ounces of gold and the author believes that intrusion-related style mineralisation is a valid economic target in the D'Aguilar Block.

D'Aguilar inferred the gold and base metal sulphide veins in the D'Aguilar Block to be a direct guide to concealed targets of disseminated mineralisation, capable of yielding economically attractive bulk-minable deposits. The veins themselves are secondary targets and thought to be part of intrusive-related alteration/mineralisation systems.

In 2003 and 2004, D'Aguilar commenced a review of regional geochemical and aeromagnetic data in order to define and bring to drill maturity the bulk mineable disseminated prospects. Within the 3000 km<sup>2</sup> project area at that time, D'Aguilar identified 18 project areas and six key prospects for follow up. These included - Gibraltar Rock, Long Tunnel / One Mile, Mount Mudlo, Cinnabar, Mount Clara, Sawpit Creek, Peenam, German Gully, Elginvale, Manumbar and King Creek. In 2004, intense exploration program was conducted on D'Aguilar's tenements south of Kilkivan at the Manumbar epithermal gold and Elginvale bulk tonnage gold prospects.

Technical success was achieved at Manumbar and Elginvale prospects. At Elginvale, during 2004, D'Aguilar drilling outlined a zone of gold mineralisation associated with a diagnostic potassic alteration zone at least 80m wide. A broad correlation between enhanced gold grades and potassic alteration styles was interpreted as evidence for a porphyry body at depth.

Results included narrow zones up to 18 grams g/t gold in potassic altered quartz and sulphide veins showing free gold within wide, low grade zones. Broad low grade gold zones up to 68m grading 0.21 g/t gold were intersected at Elginvale in 2006. D'Aguilar concluded that the geological environment was established but grades were clearly insufficient.

Additional, drilling was conducted at the Shamrock, Mount Clara and Tablelands prospects for a total of 3038m without exploration success.

Kenex Knowledge Systems Ltd (“Kenex”) was contracted in July 2006 to undertake a study on the prospectivity of all D'Aguilar controlled tenements (Partington Dr G, 2006). A spatial related database incorporating geological, geochemical, geophysical, topographic and cadastral information (“GIS”) has been compiled from all relevant historical exploration data.

Kenex defined the accepted exploration models for epithermal gold mineralisation, porphyry gold-copper mineralisation and mesothermal gold mineralisation in order to constrain the prospectivity models. The modelling and exploration review has not

assessed the prospectivity for ultrabasic skarn base-metal or lateritic nickel mineralisation. Kenex concluded that only 50% of the prospective areas from each of the prospectivity models have been soil sampled. Fifteen of the gold soil anomalies and sixteen of the copper soil anomalies appear to have not been drill tested and provide immediate drill targets.

In 2006, a number of defined gold targets were drilled. Gold was found over wide intervals in many of the boreholes, but unfortunately, not in economic quantities. As a consequence, the EPM holding was reduced, retaining the considered favourable prospects for epithermal and porphyry mineralisation, particularly associated with rhyolite rocks. During 2006 D'Aguilar carried out 3233m of drilling with some encouraging results at Sawpit Creek and Peenam prospects but although the program confirmed the porphyry copper gold model in the D'Aguilar Block, the mineralisation encountered was not ore grade.

### **Nickel-Cobalt-PGE Exploration**

In 2005 D'Aguilar assessed a 30-km long belt of nickel bearing ultrabasic rocks between Mount Mia on the Black Snake plateau and Mount Mudlo area north of Kilkivan. A new mineral emplacement model for nickel and cobalt was proposed. Nickel and cobalt mineralisation had not been previously considered prospective due to the absence of proved metallurgical treatment of the altered serpentinite host. Laboratory testing offered encouragement for inexpensive viable low-temperature leaching, at atmospheric pressure.

In 2006, specks of nickel sulphide minerals, millerite, violarite and pentlandite (plus the iron sulphide, pyrrhotite) were found in outcrops of serpentinite trending from the edge of the Shamrock mine towards the dam spillway to the south. This confirmed the hypothesis that these serpentinite rocks of this region were potential hosts of nickel sulphide orebodies. Surface chip sampling in the area returned values often exceeding 0.5% nickel. Laboratory leach testing of material from Mount Cobalt was carried out (see section 16 below).

In 2007, D'Aguilar formed the subsidiary AusNiCo Pty Ltd for focusing on the development of the nickel-cobalt exploration assets. Following very encouraging assay results from a drilling program at Black Snake and Mount Cobalt early in the year, applications for further exploration permits over geologically similar ground at Poperima, west of Bundaberg, were lodged (part of the Monto- Mundubbera area). Also tenements over available ultrabasic/serpentinite ground south west of Theodore and areas south and south east of Marlborough were also applied for under EPMs. The combined tenement holding is now seen as a 500 km-long nickel province in south east Queensland that is under explored. Subsequently, the nickel-cobalt exploration areas were transferred to AusNiCo Pty Ltd and \$2 million in seed capital was raised for 10% of AusNiCo Pty Ltd.

Work continued on laboratory leach testing of material from Mount Cobalt at the HRLTesting Laboratories in Brisbane, examining chloride leach techniques and other existing leaching technologies that may be applicable to the AusNiCo mineralisation at Kilkivan were briefly investigated.

In April 2007 a helicopter borne geophysical survey (VTEM) electromagnetic and magnetic survey was flown over the Mount Cobalt and Mount Widgee project areas by Geotech Airborne Ltd. Table 10-1 highlights the line spacing and area covered.

**Table 10-1– VTEM Survey Details**

Prospect	Line spacing (m)	Area (Km2)
Mount Cobalt	200	11.47
Widgee	200	41.28
Elginvale	200	57.49

The nominal EM sensor terrain clearance was 28m (EM transmitter and receiver height above ground, i.e. helicopter is maintained 80m above ground). This is a highly detailed survey producing superior magnetic data to previous surveys and new EM results.

Extensive rock, soil and stream sediment sampling east-north-east and south of Mount Cobalt in the Mount Terrible area revealed previously unknown mineralised porphyry intrusions with nickel anomalism at the porphyry serpentinite contacts.

A 200m vertical diamond core hole COB 11D was drilled at Mount Cobalt to provide material for metallurgical testing, with the top 96m assaying 0.58% nickel. The thickness of the deposit is unknown and further drilling is required to assess the dimensions of the mineralized zone.

## 10.2 The Kilkivan- Black Snake- Widgee – Kandanga- Mooroorerai Belt

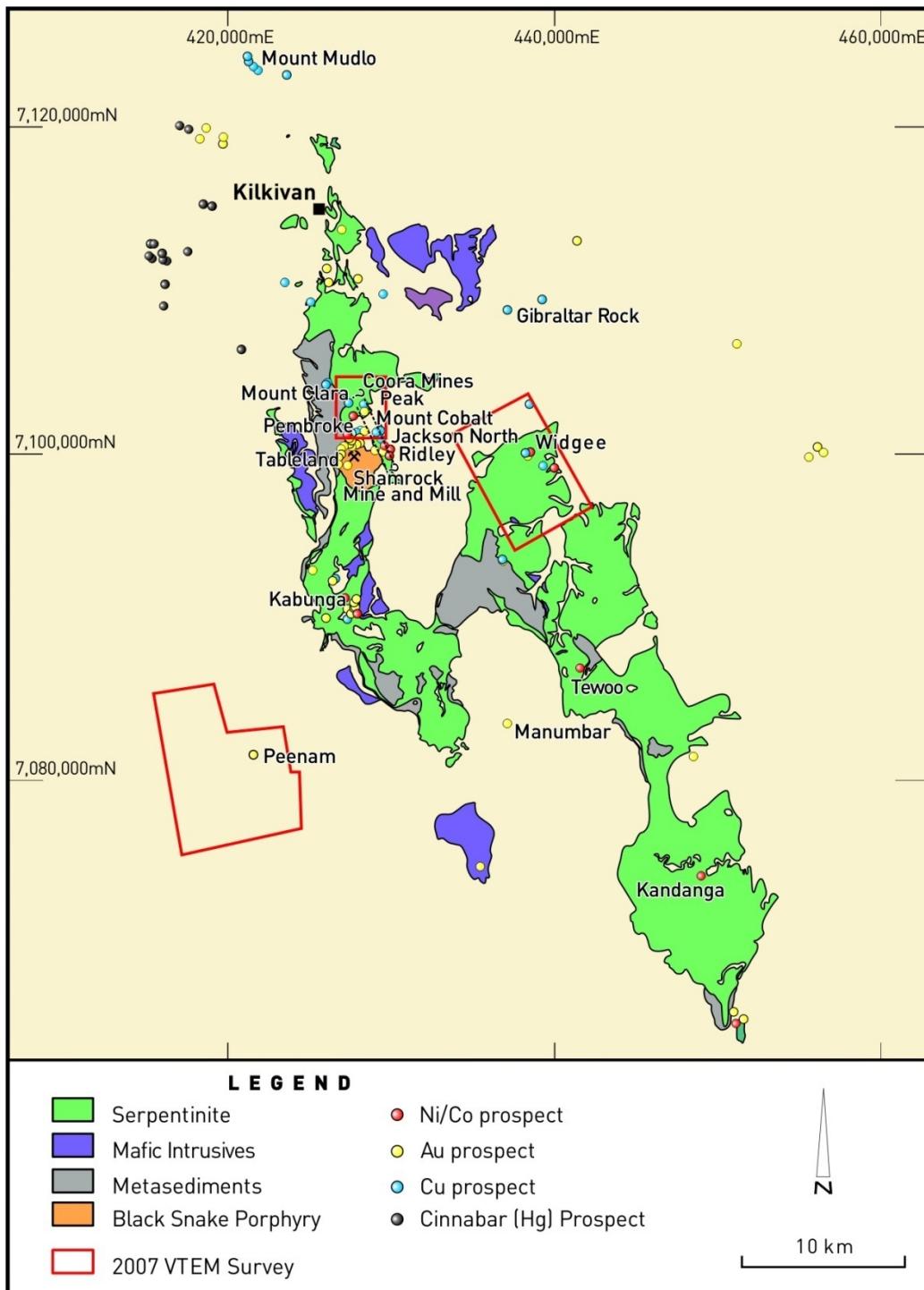
The prospects in this area are the most advanced in the AusNiCo portfolio and there are several prospects where immediate drilling is planned at Pembroke and at Mt Cobalt. Although the main target is sulphide mineralisation and principally nickel and cobalt, there is an opportunity to exploit hydrothermally altered and oxidised deposits. Gold-copper-silver mineralisation remains a valid but secondary target.

A large area of continuous outcrop of Palaeozoic rocks is located from Kilkivan to about 60 km south-east of Kilkivan. Rocks in this area include phyllites, schist, greenstone, amphibolite, serpentinite, minor limestone and marble, slate, mudstone, chert, and jasper. Palaeozoic rocks have been folded along north to north-west axes and dips are mainly to the west.

Ultrabasic rocks are the most extensive rocks in the main areas of interest with outcrop extending over approximately 400 km<sup>2</sup> (see Figure 10-1). They are mostly comprised of variably serpentised peridotite, probably hartzburgite. Surrounding the ultrabasics common is melange, consisting of a variably foliated framework of pebble to cobble sized, subangular to subrounded fragments of serpentinite and lesser mafic greenschist, in a fine-grained serpentinite matrix. Official mapping shows these ultrabasics as being emplaced along a thrust fault, however the outcrop patterns

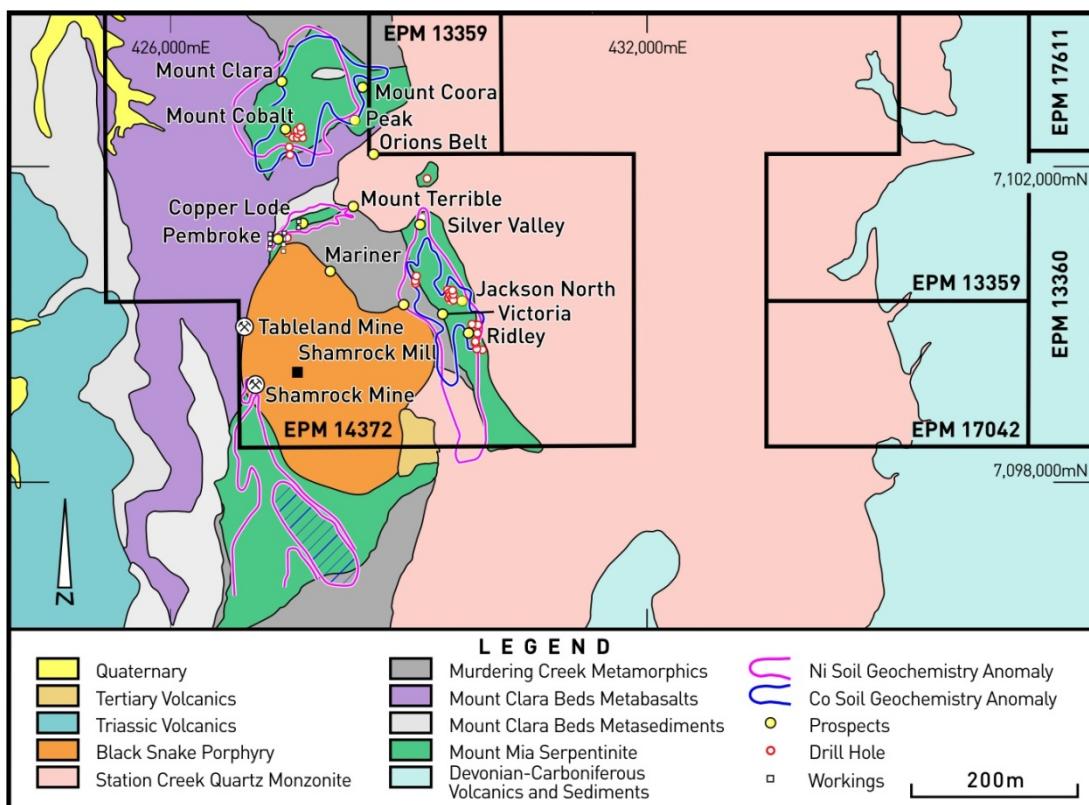
and associated skarns suggest that they are intrusives of Permian to early Triassic age, and are coeval with layered gabbros and olivine-rich volcanics mapped elsewhere in southern Queensland.

The peridotites intrude or are structurally juxtaposed on a weakly calcareous mudstone - volcanic sequence, and have garnet-pyroxene skarns and jasperoid alteration zones about their contacts.



**Figure 10-1 - Serpentinite distribution and prospects in the Kilkivan – Black Snake – Widgee – Kandanga belt**

The Black Snake Porphyry is an intermediate feldspar porphyry stock spatially associated with the base- and precious-metal mineralisation in the Black Snake Mining Field. Numerous high grade copper-silver-gold mines were worked around the beginning of the last century and include Shamrock, Mount Coora, Mount Clara, Peak, Mariners, Copper Lode and Pembroke (see Figure 10-2). Many other porphyritic intrusive bodies crop out in the mining fields of the district. It is probable that many more intrusives of similar composition and mineralised association lie concealed, especially beneath areas that show some form of surface mineralisation. This is supported by the magnetic signatures in the area.



**Figure 10-2 - Black Snake prospects – Mineralisation associated with the Black Snake Porphyry**

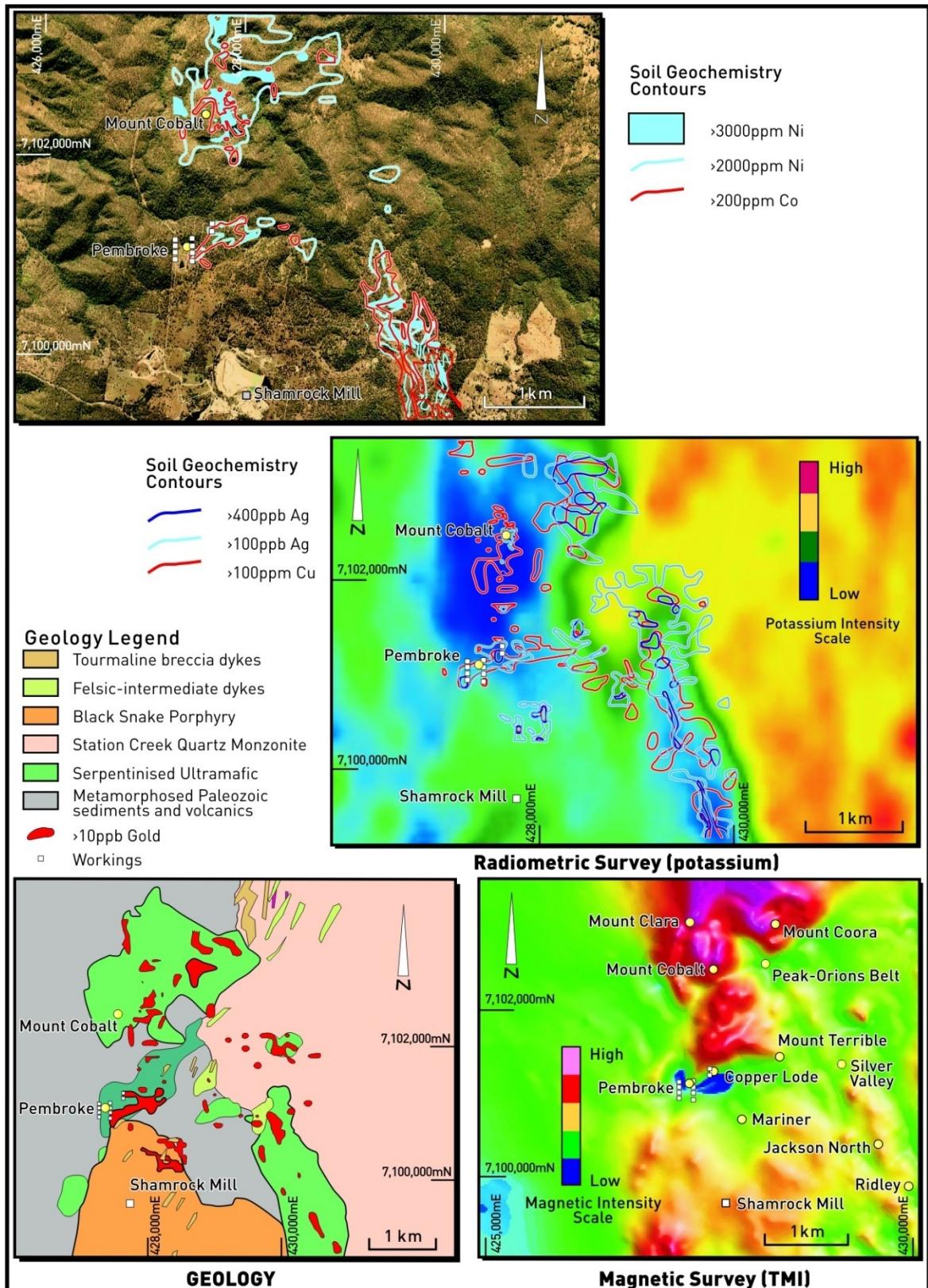
Surface sampling and drilling has established extensive zones of elevated base- and precious metals within the serpentinites of the Black Snake Plateau (see Figure 10-3).

Primary mineralisation occurs within the serpentinite below a variable oxidation profile. This has been well established at the Tablelands Mine and in excavations south of the Shamrock Mine where cobalt minerals are found.

Mineralisation within and adjacent to the serpentinite areas is best defined by soil anomalous nickel and cobalt (copper, chrome and PGM) with nickel being the most definitive. Soil sample assays containing greater than 3000 ppm nickel pin point the deposits of Mount Cobalt, Pembroke, and Jackson North and Ridley lateritic prospects. The 2000 ppm nickel contour identifies Mount Mia, Mount Coora, Silver Valley and Peak Mine (see Figure 10-3). Gold and silver (lead and zinc) anomalous zones overlap the nickel and cobalt anomalies.

Intruding Triassic porphyries, of which the Black Snake Porphyry is the most prominent, are interpreted to have remobilised metals and generated zoned nickel–copper–cobalt / gold–lead–zinc–silver mineralisation within and around the ultrabasics. The ultrabasics are probably the source for the nickel–copper–cobalt mineralisation and the gold–lead–zinc–silver mineralisation probably has a granitic source. The mineralisation includes epithermal, mesothermal styles and disseminated and ultrabasic skarn styles. Nickel and cobalt might also be derived from the weathering of gently dipping sulphides offset from the oxide laterite areas which indicates a similarity to the Mount Cobalt Project (pers. comm., N. Wilkins, Exploration Manager, AusNiCo). Historic mining for gold and copper, but which locally contain rich grades of nickel, cobalt or silver and in one locality, molybdenum, shows the close association of the two hydrothermal associations.

The strongest geochemical trend is in a north-north-west direction but on a more local scale the trend east-north-east ( $\sim 045^\circ$ ) is also very important, see Pembroke Prospect for example. Local northerly trends ( $\sim 010^\circ$ ) are seen at prospects. These trends are also partly observed in topography and magnetic surveys (see Figure 10-3).



**Figure 10-3 - Black Snake Prospects – Soil anomalies and mineralisation trends overlying aerial photograph of the area, geology, radiometrics and magnetic survey results**

### 10.2.1 Mount Cobalt Prospect

A view (Figure 10-4) looking north over the Mount Cobalt prospect area displays the drill tracks and drill pads.



**Figure 10-4 – View looking north over Mt Cobalt**

Mapping and sampling on the historic Mount Cobalt mine confirmed a zone of cobalt enrichment within a small shear zone described in old reports with values of up to 6% cobalt and generally over 1% cobalt in an oxidised and weathered serpentine host. Open spaced chalcedonic epithermal style veining is present. Elevated nickel results are widespread in the serpentinite.

Petrological interpretation of the serpentinite in the Mount Cobalt area suggests a two stage process which has produced a complex mineralogical suite: after the ultrabasic rock was initially serpentinised, it was then metamorphosed (probably by contact metamorphism) to generate antigorite, plus minor tremolitic amphibole. Further deformation produced brecciation, foliation and veining. Late veins contain lizardite and minor chrysotile. The ultramafic precursor rock was probably a harzburgite which is a peridotite composed chiefly of olivine and orthopyroxene. Weathering of the ultrabasic results in the dissolution of almost all carbonate, infill by chalcedonic and crystalline quartz and local deposition, coating and staining by goethite and a little manganese oxide. AusNiCo considers that some of the chalcedonic quartz is the result of hydrothermal activity.

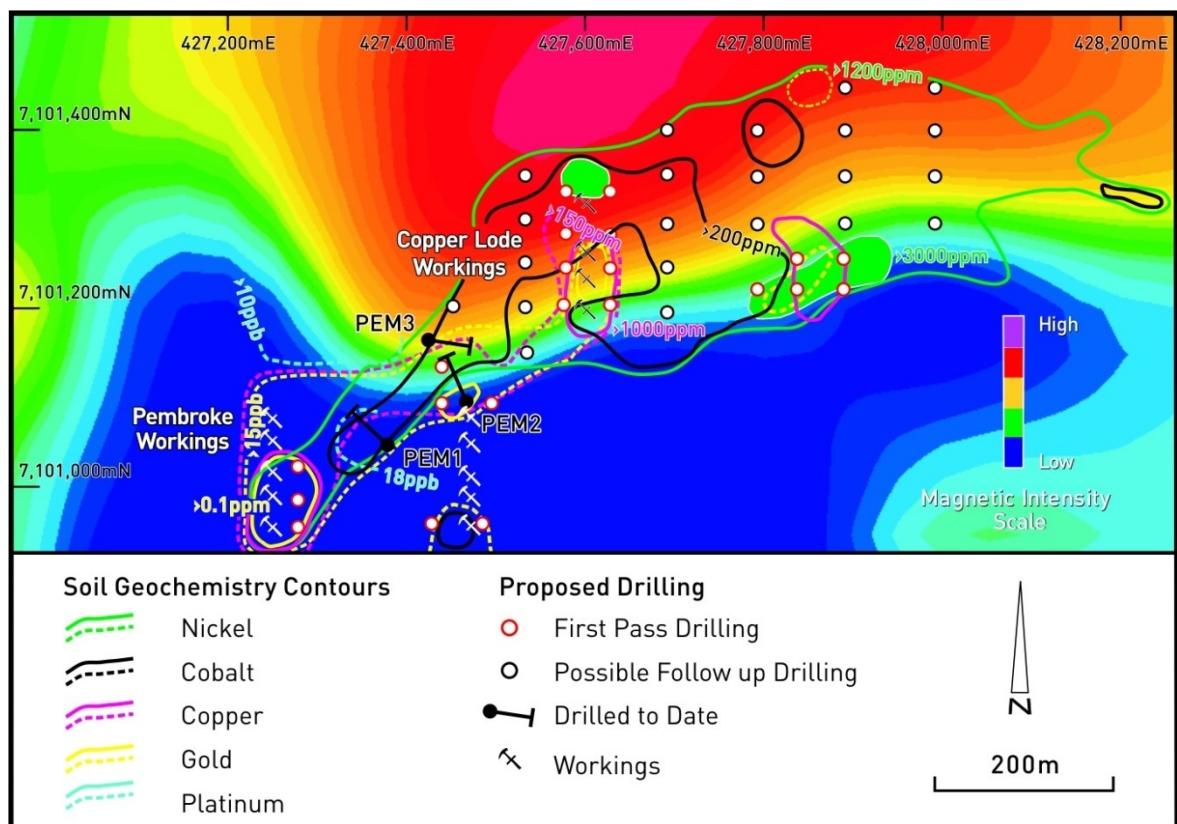
The Mount Cobalt prospect has been drilled and details are recorded in section 11 of the report.

### 10.2.2 Pembroke Prospect

The historic Pembroke mine workings occur at the northern contact of the Black Snake Porphyry and serpentinite and metasediments and are associated with an intense magnetic low. A pebbly fragmental serpentinite zone containing narrow but widespread gold- and copper-bearing quartz veins crops out. Rock chip sampling returned assays up to 13.8 ppm gold and 1.68 % copper and a composite grab sample collected in 2004 assayed 29 ppm gold.

The serpentine at Pembroke prospect is a carbonate-rich, matrix-supported breccia containing amphibole, carbonate, chlorite-sericite-talc and tourmaline-talc-quartz material. It is considered to be an intensely metasomatically altered tectonic breccia, perhaps with some ultramafic components. Minor disseminated sulphides (probably copper-bearing sulphides) have been replaced by goethite in weathering processes. Impregnating masses of malachite and azurite are also a consequence of the weathering of copper-bearing sulphides. This tectonic breccia is considered to be a favourable structure to host mineralisation.

Subsequent soil and rock chip sampling results outlined an arcuate north-east trending copper-gold anomaly coincident with elevated nickel and cobalt soil sample assays and isolated elevated PGE values within serpentinite (see Figure 10-5).



**Figure 10-5 - Pembroke Prospect – Soil geochemical (gold-copper-nickel-cobalt-PGE) contours on magnetic imagery**

AusNiCo commenced drilling in 2008. Drill results are recorded in section 11 of this report.

### 10.2.3 Silver Valley Prospect.

A sheared serpentinite outcrop contains a quartz-veined gossanous zone striking 130-145° and dipping to east. It extends for approximately 100 m and varies from 2 to 5m in width. Small workings, possibly a collapsed shaft, occur at the south-east end of the gossan outcrop. Several smaller gossanous outcrops occur within serpentinite to the south of Silver Gully along the same ridge and appear to form an en-echelon structure with the other mineralized shear zones (pers. comm., N Wilkins, sep., 09). Rock chip samples from the gossan assayed up to 5.71 ppm gold, 261 ppm silver and 1.44% lead. Gossans are traceable over 250 m. A typical outcrop of gossan is displayed in Figure 10-6.

Drilling Results are discussed in section 11.



**Figure 10-6 – Picture of outcropping gossan on the track to drill hole SG1**

### 10.2.4 The Peak, Orions Belt and Mount Terrible Prospects

Mount Terrible workings are briefly described in the GSQ Mineral Occurrences data sheets as consisting of underground workings, shafts and adits, pits and trenches. Production figures are unknown. Mineralisation occurs in the form of sulphides, chalcopyrite, native silver, silver oxides and covellite (gold-silver-copper-lead) and is associated with a mineralised feldspar porphyry intrusive along the western contact of the Station Creek Quartz Monzonite and metamorphics. Minor disseminated sulphides occur in the adjacent monzonite, metasediments and hornfels

The main trend of mineralisation appears to strike 010° to 045°, possibly dipping to the west. This is sympathetic with the strike of surrounding gossanous quartz-tourmaline-pyrite veins.

A large aplite dyke immediately east of the Mount Terrible Creek forms a ridge roughly parallel to the contact that continues east-south-east for approximately 500m and is coincident with a north-north-west striking magnetic lineament. The top of the ridge contains epithermal quartz veining and brecciation.

Rock chip samples assayed up to 10.25 ppm gold, 242 ppm silver, 1.5% lead and 1.35% copper. A soil sampling grid over the greater Mount Terrible area initially revealed several areas anomalous in gold, silver and base metals, including a nickel zone. RC percussion drill testing has been limited to the copper-gold and silver zones.

At Orions Belt and The Peak, the development of mineralised shears, stockworks, complex vein systems and disseminated mineralisation extends over a 100m times 800m zone. AusNiCo is searching for a bulk target, with copper gold and silver the main metals of interest. Geologically this area is similar to the Silver Valley area where the serpentinite is in contact with the Station Creek Quartz Monzonite.

Mineralisation of this style is also a valid target over the top of unexposed granitic and porphyritic intrusions in the area such as may be present under Mt Cobalt – Mt Clara.

#### **10.2.5 Lateritic nickel-cobalt deposits – Ridley and Jackson North Deposits**

In the 1960s and 1970s, the Queensland Geological Survey investigated a surficial deposit which was given the name Ridley Prospect. A nickeliferous “red earth residual” (laterite) occupying an area of some 81,022m<sup>2</sup> and having a maximum depth of 32.94m was drilled on a grid with a proline bucket type auger. The red earth was interpreted to be derived from serpentinite intruded by apophyses of adamellite - rocks which by differential weathering are considered to have controlled the sites of nickel enrichment. Nickel values ranging from 1% to 2.9% were encountered in 99.43m of a total 443.47m. Mount Cobalt lies approximately 3.6 km north-west of Ridley Prospect. Cobalt content of the parent serpentinite is 160 ppm and of the adamellite 38 ppm. Serpentinite rocks range from 900 ppm to 16,000 ppm (average ~2,900 ppm) nickel and 75 ppm to 400 ppm (average ~130 ppm) cobalt (Davis, 2008).

Another deposit named Jackson North occurs 300m north-west of Ridley and possibly the two are connected (see Figure 10-7 below).

The surface horizons at Ridley Prospect vary from red to brown, clay and sandy loams where the parent rock was either serpentinite or adamellite. Two distinct textural and colour groups occur in the profile. One is predominantly of clay, mottled coarsely with brown and green; the other is of sandy clay, mottled coarsely with yellow, orange, and red. The clays extend laterally and vertically into serpentinite, and the sandy clays into saprolitic adamellite.

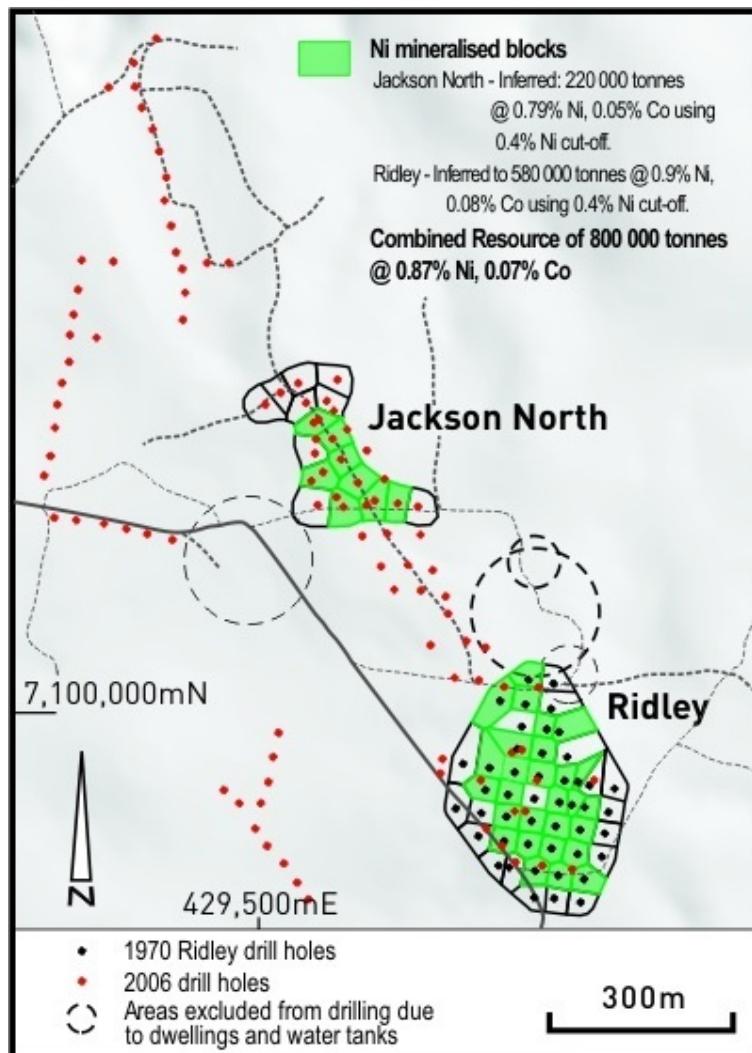
The mineralogy of the red earth was investigated by X-ray diffractometry and the geochemistry of the profile for major and minor elements is described from one hole. Silicate minerals (chlorite, talc, montmorillonite and other clays) are derived from

serpentinite; (quartz and kaolinite) are abundant in the soil derived from adamellite. Secondary silica is rare). The elements nickel, cobalt, copper and zinc were significantly associated and mainly concentrated in the lower profile where the reaction is acid.

The nickel and cobalt distribution in the profile is somewhat similar but higher cobalt values were obtained where black manganiferous concretions were observed.

An inspection by the author of RC drill hole BLA 2 drilled at Ridley's indicates the weathered Ni-Co mineralized weathered material is probably a standard laterite nickel profile rather than a Mount Cobalt style altered zone. The author did not inspect the Jackson North deposit but assumes the deposit material is also a standard nickel laterite. AusNiCo consider that there may be a hydrothermal altered (oxidized) zone which is weathered as part of these deposits. Although the drilled sections of the Jackson North and Ridley prospects are laterites and possibly weathered hydrothermally altered material, the underlying serpentinites have potential for disseminated sulphide nickel-cobalt mineralization and hydrothermal clay/ silica alteration Ni styles of mineralisation.

Comments on the auger drilling technique and other drilling used at Ridleys and Jackson North are found in section 12 of this report and section 17 discusses the resource estimation issues.



**Figure 10-7 - Laterite and oxide resources at Ridley and Jackson North prospects**

### 10.2.6 Widgee Prospect

A few small historic copper, silver, nickel (minor gold) mines are clustered close together in the far northern portion of the EPM on Widgee Mountain; these include Green Rock (silver, lead, zinc, copper and minor gold), Pooleys/McCarthys Mine (copper, nickel and minor gold), and Millaleys copper prospect (copper).

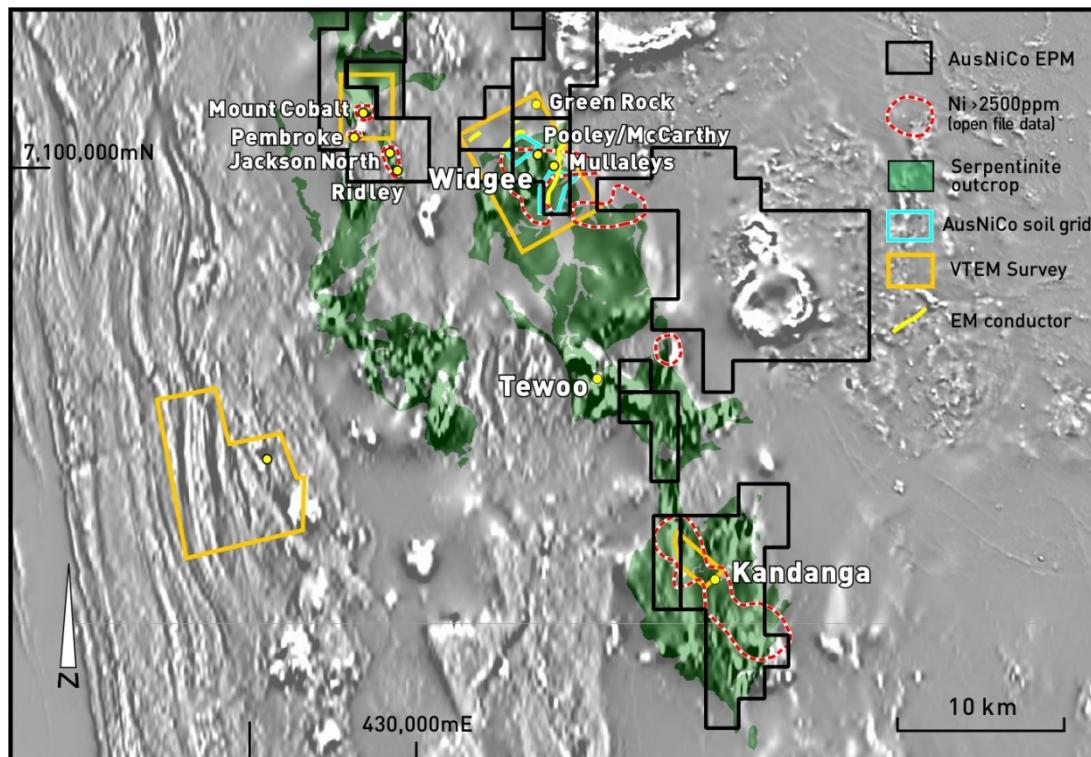
AusNiCo is investigating large zones of magnetite–chromite–pentlandite disseminations, epithermal breccias, and porphyry related copper – nickel skarns such as at the McCarthy's mine.

Previous explorers have included Planet Metals Ltd, Nickel Mines Ltd (“Nickel Mines”), Otter Exploration Limited/Allstate Exploration Limited, Valdora Minerals Ltd, RGC Exploration, David Mitchell-Melcan Pty Limited, CSR Limited and CRAE.

AusNiCo exploration activities have included a 100 m spaced helicopter supported EM survey (VTEM) over the Widgee mountain area and its environs, followed by detailed stream sediment and soil geochemical surveys over the EM conductors.

Soils grids produced nickel, cobalt and platinum anomalous zones over the EM conductors (see Figure 10-8 below). The > 2000 ppm nickel zones have combined strike lengths of in excess of 3 km and widths of up to 200m.

One of the weaker northern anomalies has been tested by drilling and was found to be caused by a very large volume of weakly mineralised serpentinite assaying about 1800 ppm nickel overall.



**Figure 10-8 - Anomalous zones at Widgee, Teewoo and Kandanga Creek plotted on 1VD magnetic survey imagery**

#### 10.2.7 Tewoo

In the south of the Widgee EPM, previous exploration, mainly by CSR and CRAE, outlined a series of gold and nickel anomalous streams in an area of approximately 20 km<sup>2</sup> at the headwaters of Barambah and Widgee Creeks. The prospect is located in Mount Mia Serpentinite and bounded to the west and south by Triassic Neara Volcanics and North Arm Volcanics. The serpentinite has been intruded by a number of diorite stocks. CSR and CRAE demonstrated that the strong gold and nickel anomalous in stream sediment and detailed soil and rock chip sampling was associated with strongly altered lithology.

AusNiCo sees nickel potential within an area of north-west trending magnetic features that are shedding anomalous nickel with stream sediment values up to 1800 ppm nickel.

#### 10.2.8 Kandanga Creek

During 1971, this area was explored by Nickel Mines for nickel and platinum with widely spaced reconnaissance sampling. Around Kandanga Creek, Nickel Mines recorded platinum values up to 4 g/t. Recently in 2007, AusNiCo stream sediment

sampling has verified the existence of platinum (maximum 25 ppb) and palladium (maximum 18 ppb) anomalies and has detected other metals: nickel, chrome, arsenic, bismuth, gold and tellurium; draining a 16km belt.

Follow-up work has defined open ended zones of soil nickel anomalism (>1800 ppm and 3 times background) related to an altered ultrabasic that has been intruded by small bodies of diorite and granite. The nickel zone is accompanied by a magnetic anomaly, in a setting similar to Mount Cobalt and Pembroke. Reconnaissance soil and rock sampling by AusNiCo has recorded nickel values up to 0.35%.

AusNiCo believes there is potential for platinum and nickel mineralisation at Kandanga Creek.

A work program of further geochemistry has been planned at Kandanga Creek. The results will be used as a guide to a first pass drilling campaign.

#### **10.2.9 Mooroorerai**

The Mooroorerai EPM area lies adjacent to and east of the Kandanga and Widgee nickel prospects and contains a large circular magnetic complex about 5 km in diameter caused by a strongly magnetic gabbro/dolerite zoned intrusive (see Figure 10-8). Previous explorers (CRAE) have detected widespread gold anomalism in pan concentrate stream sediment samples and BCL samples (maximum 12 ppb) from streams draining the gabbro. Much sparser sampling well downstream has detected platinum anomalism (up to 85 ppb in pan concentrates) as well.

AusNiCo plans to more fully evaluate the nickel, gold and platinum potential of the gabbro by means of an initial programme of mapping and sampling.

### **10.3 The Mundubbera-Monto-Theodore Area Exploration**

#### **10.3.1 EPM15457**

The acquisition of this area was firstly to examine the nickel potential of the unmapped ultrabasic rocks that had been seen in the area, and also to examine the possibility that the Yarrol gold deposits extended into the EPM.

The ultrabasic rocks have proven to be quite extensive, and relate well to the magnetic high trending along the west side of the Yarrol thrust. The ultrabasics do not extend into the laterite profile which is developed in southern parts of the EPM. There appear to be hydrothermal alteration zones developed as jasperoid and skarn which could host contact nickel deposits similar to those at Kilkivan and Avebury, Tasmania.

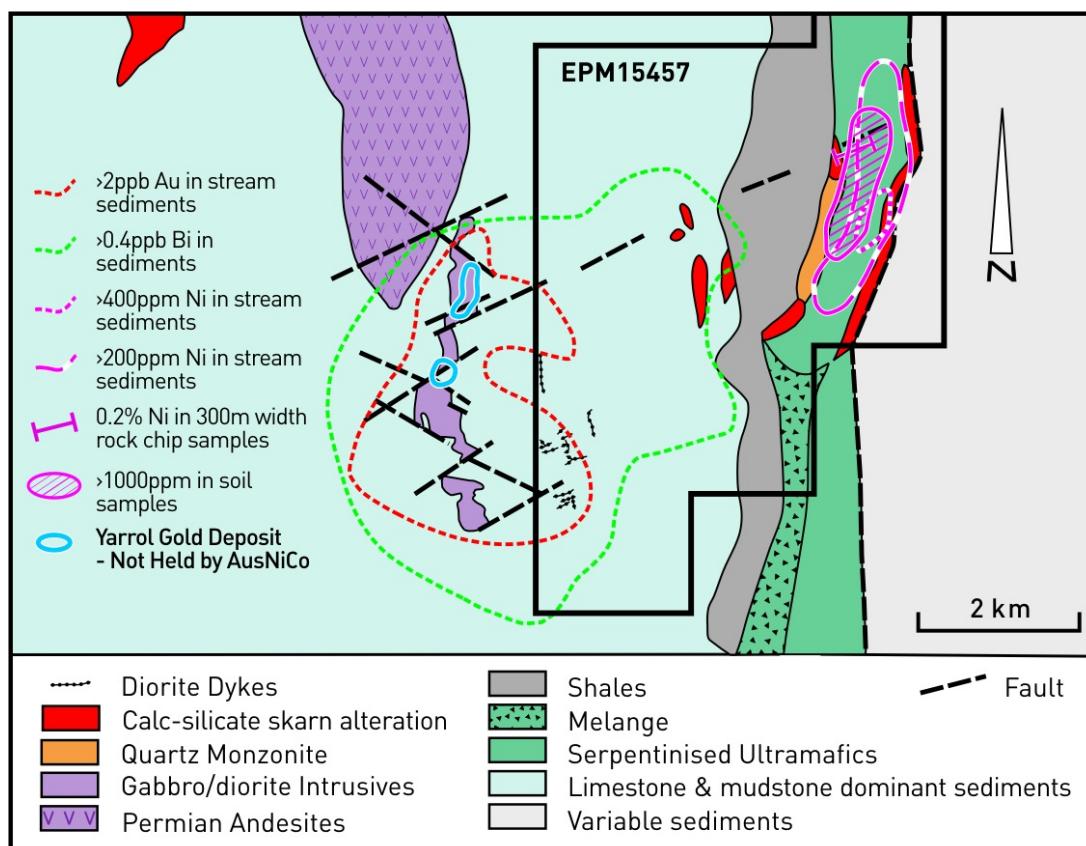
The geology of the EPM is similar to the Kilkivan – Black Snake belt, reinforcing the view that the Yarrol thrust is an offset continuation of the Mt Clara fault. This geology is also seen as prospective for gold. Quartz monzonite/granite dykes intrude the western contact of the ultrabasic rocks with calcareous sediments, creating skarn breccias, serpentinite and jasperoid. Additionally, there are quartz carbonate vein systems, and pyritic diorites. The more granitic intrusives have a close association with gold in this area, particularly along a minor transfer structure that trends through the Yarrol deposits (Grayson, R., 2009). Figure 10-9 displays the geology.

At Yarrol the gold mineralisation is fairly subtle in appearance, occurring in low outcrops with little sulphides, but often intense bleaching due to albitisation. A blind zone of breccia with sodic calcic skarn and quartz monzonite clasts lies very close to the EPM boundary. This was never closed off, and returned about 28m @ 0.7 g/t Au.

The new porphyry and breccias to the north east of Yarrol, have only minor bleaching, but exhibit strong brecciation and calc silicate alteration. The granite body lying to the south east near Ah Gooey Waterhole is of uncertain origin as it is highly fractured and more equigranular, and therefore could be a possible tectonically emplaced unit (Grayson, 2008).

Previous company work had outlined gold anomalism extending into this area. Since AusNiCo have taken up the EPM, rock chip sampling, stream sampling and soil sampling have been carried out. Rock chip and stream samples have been carried out for Au, Ag, As, Bi, Co, Cu, Pb, Zn, Mo and Ni. Soil samples have also been analysed for Te. Figure 10-9 summarises the anomalies from the survey results.

Drilling is planned to test the anomalous areas.



**Figure 10-9 – Nickel soil sampling anomalies at EPM 15457**

### 10.3.2 EPM 16077 and 17818

EPM 16077 is located south of Mundubbera and now consists of two non-contiguous blocks following relinquishment. The EPM lies along a narrow belt of intermittently outcropping basic and ultrabasic rocks extending from south of the Boyne River north to Cannindah Creek. The southern part of the EPM contains basic and ultrabasic intrusives known to be prospective for nickel, chromium and platinum.

Magnetic anomalies associated with these ultrabasics continue north beneath cover sequences and lateritic terrain and small outcrops of ultrabasics occur in the northern part of the EPM.

### Previous Work Summary

The EPM area was covered by part of a Noble Resources ATP (4364) who was exploring layered gabbro complexes including the Wateranga, Goondicum and Hawkwood and Mimosa Gabbros, for PGE in south east Qld. Disappointing results from their work on the Wateranga and Goondicum Complexes led Noble Resources to relinquish these EPMs without ever thoroughly investigating the Mimosa area. A reconnaissance sample collected from the Mimosa Chromite occurrence by Noble Resources assayed 36% Cr and 27% FeO, indicating a low Cr:Fe ratio, while a bulked sample returned 13.09% Cr.

There is no record of previous systematic exploration within the EPM area.

### AusNiCo Exploration

An initial reconnaissance stream sediment sampling program was conducted to identify drainages anomalous in gold, platinum, palladium, chrome, nickel and copper. Several anomalous drainages in the northernmost and southernmost parts of the EPM were revealed and were followed up with more detailed stream sampling. Two main areas of interest (Boyne North and Boyne South), were identified and further investigated. This is shown in Figure 10-10.

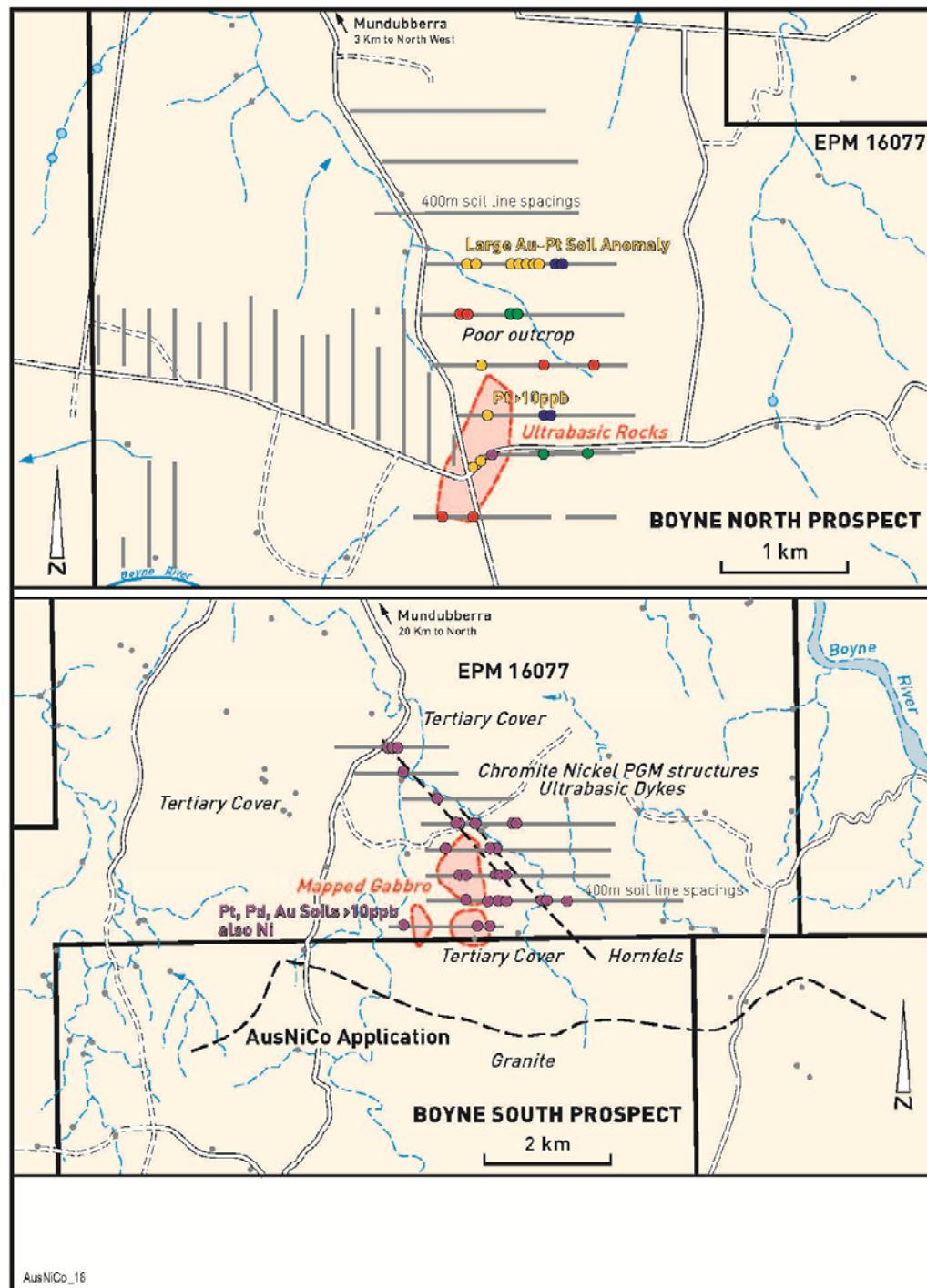
At Boyne North the EPM, stream sediment sampling identified an area anomalous in gold, copper, nickel, chromium and platinum. Wide spaced soil sampling was subsequently conducted over a small area of poorly outcropping serpentised ultrabasic rocks which disappears under cover to the north but is interpreted to continue below the cover sequence based on magnetic images.

A gold-platinum and nickel soil anomaly was identified in an area of very poorly outcropping limestone, gabbro and ultrabasic rocks. Maximum soil Au values were 119 ppb, while maximum Pt values were >19 ppb and Cu values reached 482 ppm. Maximum Ni and Cr soil values were 1680 and 1300 ppm respectively.

In the Boyne South area several small outcrops of Devonian peridotite, gabbro, diorite, tonalite and granodiorite intrude Devonian metasediments and volcanics at the Mimosa Chromite occurrence. The Devonian basement rocks occur within a fault wedge between the Mimosa Fault to the east and Mundubbera Fault to the west. Permian to Triassic felsic to mafic intrusives also outcrop in the area along a NE trending axis.

Reconnaissance stream sediment sampling located several anomalous drainage areas in this area which were also subsequently followed up with wide spaced soil sampling, rock chip sampling and mapping which identified a chrome, nickel and platinum anomaly with an approximate strike of 4 km. Rock chip samples taken of the chromitite returned a maximum of 7120 ppm Cr which is significantly less than results from previous work. This may be a reflection of the assay method used. The maximum nickel rock chip value was 2550 ppm. Pt and Pd values were slightly elevated in rock chip samples with maximum values of 19.6 and 23 ppb Pt and Pd respectively.

Mineralisation is poorly outcropping but is marked at the southern extent by an area of massive chromitite boulders and rubble (Figure 10-11), over an area of approximately 400m x 200m containing several shallow pits surrounded by poorly exposed serpentинised peridotite, gabbro and granodiorite.



**Figure 10-10 Stream Sediment Sampling at the Boyne Prospect**



**Figure 10-11 – Chromitite rubble at surface at the Boyne South area**

Further closer spaced soil sampling is being conducted in the northern and southern areas of interest to further define the soil anomalies and imply the structural trend of the mineralisation. More detailed mapping is required at both prospects to determine the nature of the basic and ultrabasic intrusives.

### **10.3.3 EPMA 17818**

EPM 17818 follows the same line of geology to the south. No work has been completed on this EPM Application and with the grant of EPM pending, AusNiCo should be able to commence during the coming months.

### **10.3.4 EPMA 17817**

No work has been conducted by AusNiCo on this exploration permit and none will be carried out until the EPM is granted.

## **10.4 The Marlborough Area Exploration**

No work has been completed on EPM's 17721 and 17722 and on EPM Application 17768. Work will only commence on 17768 once the tenement is granted.

## 11 DRILLING

### 11.1 Mount Cobalt Drilling Results

AusNiCo has used surface sampling followed by air core drilling, diamond drilling and percussion drilling to assess the Mount Cobalt Prospect. Drill hole locations are provided in the map view within Figure 11-1.

In 2006, aircore holes COB 1 to COB 4 were drilled to only 40m depth along the southern margin of the anomalous zone. Initial air core holes COB 1 (30m grading 0.46% nickel and 0.02% cobalt) and COB2 (21m grading 0.42% nickel and 0.02% cobalt) showed that the serpentinite was oxidised to these depths with uniform metal grades. Interestingly these holes were also anomalous in copper (approximately 0.11% copper and up to 0.4g/t gold). This area lies less than 1km north of the Pembroke prospect and is considered by AusNiCo to have both a genetic and geometric relationship.

The next 6 drill holes COB 5 to COB 10 were reverse circulation drill holes and tested a 400m square area which had returned rock chip samples above 0.4% nickel. The initial drill results discovered nickel mineralisation at more than 0.5% nickel (plus cobalt) to depths up to at least 115m. The extent of the mineralization is unknown and the true width of the mineralization is unknown. The mineralization is open in all directions and drilling is required to assess the dimensions of the zone. Phases of diamond (COB 10D and COB 11D) and percussion drilling followed and more are planned.

In 2007, COB 10D was drilled at an angle of 60 degrees beneath wide intercepts of 0.5% nickel which were encountered in the 2006 drilling campaign. Minor sulphides including pyrrhotite, chalcopyrite and pentlandite were visible below 240m, as far as the end of the hole at 600m. AusNiCo geologists have interpreted the style of mineralisation in the hole to change with depth – from epithermal breccias to quartz carbonate sulphide, and then to skarn style. This suggest an igneous intrusive is being approached. This alteration style is consistent with the historical reports of mineralized granodiorite being present in basal workings at the Mt Clara copper workings to the north.

COB 11D was drilled vertically to a depth of 188.4m. Weathered/ altered ultramafic was encountered from the surface down to approx 140 m and included clay rich intersections with epithermal quartz veining and chalcedony rich sections. COB11D intersected 96m grading 0.59% Ni and 0.03% Co from surface.

Conclusions from the deeper drilling are that epithermal alteration and sulphidation have produced a thick oxidised zone beneath which sulphide mineralisation is expected. This is deepening to the north (see Figure 11-1 longitudinal view). Future drilling will systematically follow the trends observed in previous holes and test the magnetic feature to the north which might be caused by magnetite alteration associated with sulphide mineralization similar to the Avebury style of mineralisation.

Mount Cobalt project comprises over 100m vertical thickness of nickel oxide mineralisation extending from the surface. It is generally low-iron and exceeds 0.4% nickel and approximately 0.02% cobalt. However, the extent of the nickel

mineralization is unknown and the true width of the mineralization is unknown. Drilling is required to assess the dimensions of the zone.

It is also noted that there are higher values of Cu up to and greater than 1% Cu which tend to surround or occur at the margins of the higher grade Ni zones. There is very little Ag recorded at Mt Cobalt. Further studies are required to assess if there is association between Cu and Ni. Table 11-1 highlights the better analytical results of COB 1 to COB 16 drill holes.

**Table 11-1 – Mount Cobalt Drill Intersections above 0.4% cut-off**

Hole ID	Easting	Northing	Elevation	Azimuth M	Angle (degree s)	Depth (m)	From (m)	To (m)	Width (m)	Ni (%)	Co (%)	Cu (ppm)	Au (ppm)
COB 1	427510	7102199	537	vertical	90	30	0	30	30	0.46	0.02	121	
COB 2	427514	7102157	527	vertical	90	21	0	21	21	0.42	0.02	540	
COB 4	427617	7102461	516	270	60	115	0	78	78	0.55	0.017	102	
COB 5	427646	7102406	511	200	60	115	0	28	28	0.5	0.019	61	
COB 7	427477	7102424	487	76	60	115	4	8	4	0.43		170	
COB 8	427547	7102362	511	vertical	90	85	0	24	24	0.34	0.02	15	
COB 9	427497	7102247	532	189	60	115	84	90	6	0.44		65	
COB 10 D	427475	7102423	487	75	60	600	172	188	16	0.43		N a	
COB11 D	427612	7102422	506	vertical	90	189	0	96	96	0.59	0.03		
COB 12	427660	7102393	496	vertical	90	95	0	18	18	0.5	0.37	750	0.25
COB 13	427666	7102366	483	vertical	90	100	0	6	6	0.49		900	
COB 14	427603	7102359	504	vertical	90	100	24	38	16	0.48		60	
COB 15	427639	7102500	492	vertical	90	100	0	98	98	0.55		73	
COB 16	427652	7102438	500	vertical	90	71	0	66	66	0.42		106	

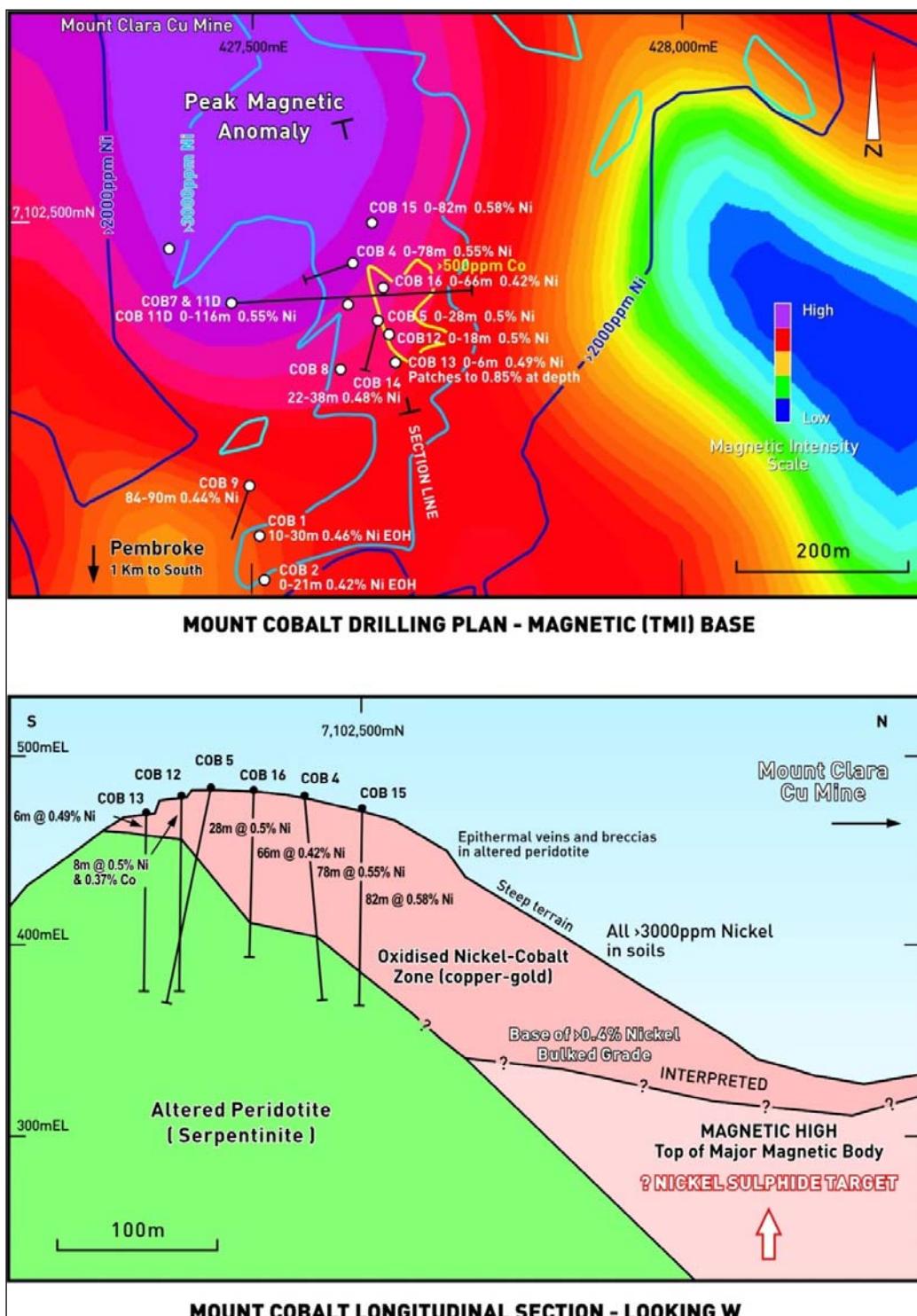


Figure 11-1 – Mount Cobalt Drill Plan and Idealised Longitudinal Section

## 11.2 Pembroke Prospect Drilling Results

In June 2008, AusNiCo announced that drillhole PEM 2 at Pembroke intersected a copper-gold zone of 20m averaging 0.48% copper, 1.5 g/t gold at 8m down-hole. At

32m down-hole, a 50m-wide zone of low-grade nickel sulphide mineralisation was transected, within which 4.2m of fresh primary nickel sulphides grading 1.1% nickel and 525 ppm (0.05%) cobalt was intersected from 58m down hole.

**Table 11-2 - Drill Results from Pembroke Prospect**

Drillhole	Bearing	Dip	From -To	Length*	Cu %	Au ppm	Ni %	Co %
PEM2	340	60	8 - 28 32 - 82 58 - 62.2	20 50 4.2	0.48%	1.5 0.1	0.34 1.1	0.05

Angled drill holes PEM 1 and PEM 3 were sited ~100m west and ~50m north of PEM 2 (see Figure 10-5). PEM 1 was drilled to 96m and intersected serpentinitic rocks which analysed between 1000 ppm and 2000 ppm throughout. The top 8m of the hole contained anomalous cobalt and copper. PEM 3, drilled to 79m, was geologically similar and intersected anomalous copper (to 546 ppm), cobalt (to 180 ppm) and nickel (to 5480 ppm) in the bottom 24m of the hole.

Follow up drilling is planned immediately. The true width is unknown at this point in time and drilling will assist in defining the extent of the mineralized zone.

### 11.3 Silver Valley Prospect Drilling Results

In May 2008, the first drill hole at Silver Valley Prospect (SG1) intersected 14m at a grade of 1.2% copper and 87 g/t (2.8 ounces per tonne) silver. This included 8m grading 1.5% copper and 107 g/t silver. SG1 is an RC drill hole. The true width is unknown.

This intersection is in primary sulphide mineralisation without signs of supergene enrichment (see Figure 11-2).

New prospects identified nearby are Mount Terrible, 500m west of Silver Valley and Humble Pie, 700m to the north of Silver Valley.



**Figure 11-2 – Washed chip sample from the richer copper intersection in SG1 at Silver Valley (the larger chips are up 2 cm across)**

#### **11.4 Ridley and Jackson North Drilling**

The drilling associated with the resources (Queensland Government) used an auger process. A total of 47 drill holes were drilled for a total of 434.3m with an average drill depth of 9.2m and the deepest hole is 33.5m. 1066 samples were taken (Levy, 2004).

The 2006 drill programme was completed using RC drilling and air core drilling. A total of five holes were drilled by RC (six if a repeat precollar hole is included) for a total of 337m with an average hole depth of 67m with all drill holes drilled at 60 degree dips. 166 drill samples were taken and analysed for Au, Ag, Cu, Pb, Zn, Ni, Co, Cr, Bi, As, Sb, and S. The best results included BLA-2 where an intercept of 14m from 6m depth recorded 1.87%Ni and 0.08%Co and hole BLA-3b where an intercept of 14m from surface recorded 1.15% Ni and 0.07% Co. Drill hole collars are highlighted in Figure 10-7 but drill hole numbers are not recorded in the figure. The mineralization intersected is part of a laterite Ni profile and therefore the true widths will be approximately 15 % less than the recorded intercepts.

The air core drilling programme totalled 1053m from 71 drill holes (average 14.8m). The drill hole locations (without drill hole numbers) are highlighted in Figure 10-7. The drill holes included:

- BSNA1 to BSNA17;
- BSNB1 to BSNB9;

- BSNC1 to BSNC4;
- BSND1 to BSND16;
- BSNE1 to BSNE14, and
- BSNF1 to BSNF11.

The highest grade result was from BSN-A3 where a 14m interval from surface averaged 1.12% Ni and 0.1% Co. Most of the holes failed to record reasonable grades of mineralization. The mineralization intersected is part of a laterite Ni profile and therefore the vertical hole drill hole intercepts will represent true widths in most instances.

A discussion on the Ridley and Jackson North area resource estimates is included in Section 17.

## **12 SAMPLING METHOD AND APPROACH**

### **12.1 Surveying**

From early 1997 AusNiCo began using Magellan GPS units. These were accurate to within about 100m. The Magellans were used in conjunction with topographic maps for rock-chip and stream sediment sampling. Flagging tape was used to mark locations so that the spot could be located again.

Soil grids were constructed from a known point. There was often an old survey peg, fence corner or feature on a map etc, as well as the Magellan GPS. Local soil sampling grids were then constructed using hip chain and compass from a base line using wooden grid pegs. These were quite accurate and slope was compensated for using clinometers and calculations. Many of these soil grids were digitised at a later date.

In early 2003 AusNiCo bought 3 x Thales GPS units which were accurate, to within three metres, with checks against a local Trig station. All sampling and drilling survey work was then run with these GPS units. Since 2005, AusNiCo purchased Garmin equipment to carry out the survey work.

All early work carried out within easy distance of granted mining leases (Shamrock, Tableland and Manumbar leases), was surveyed using a theodolite and the data was entered into the computer and modelled with Surpac software.

### **12.2 Sampling - General**

All sampling is completed using ticket books with the end tag going into the bag and the sample number is written in indelible marker on the bag. The ticket book also has the written GPS co-ordinates of that sample, as a back-up to the GPS readings as they can be lost or operationally fail. Sample ticket books have been in place and have been used since the start of D'Aguilar and associated companies commenced work.

Each type of sampling – soil, rock, stream etc, has their own sample numbers and separate sample number booklets.

All the samples taken by AusNiCo are taken for the purposes of exploration. Most soil and stream exploration samples are taken to discover anomalies and therefore the importance of the analytical results are for comparative purposes rather than actual values use. The sampling techniques and approaches are suitable for the purposes they are designed for.

All drill sampling is supervised by a geologist. Soils and stream sediments were mostly collected by field technicians.

#### **Stream Samples**

Stream samples have always been sieved through a 6mm sieve; quantity minimum 500g. The samples are mostly collected by field technicians under the guide of field geologists. Normal spacing of samples are 1 per sq km, located to provide coverage of proximal bedrock material rather than alluvium derived from distant locations.

### **Soil Samples**

All soil samples from 1995 to the end of 2004 were taken by hand auger. The aim was to sample the B-horizon and to take the sample from about 6 inches depth. The samples were not sieved and about 50-100g of sample was placed directly from the auger into small brown paper packets. Since December 2004, AusNiCo changed this to surface soil sampling and approximately 500g of soil is put through a 6mm sieve. A pick and trowel is now used to take the samples. The two methods of sample collection are easily defined in the database by separating on a date basis.

### **Rock Chip Samples**

Rock chip samples are taken as and when required. Sample size varies and size is dependent on what the sampler requires. Samples are generally placed in calico bags.

## **12.3 Drilling Samples**

Drilling on site has been by either diamond drilling or RC drilling.

### **RC Sampling**

RC samples have been and are being taken at 2m intervals.

From 1995 to the end of 2003 all RC drilling samples were put through splitter boxes, sometimes twice if there was too much material. This sampling process was changed in January 2003, with a change in geological management. The samples are now taken by spearing the polyweave bags with poly pipe with two stabs from top to the bottom of the drill sample bag. This method is still being used. Again, 500g minimum is collected for assay or analysis.

Chip trays for RC drilling were not used by the company until early 2003. These are all stored at the Shamrock mine in the storage shed.

### **Diamond Core Sampling**

Diamond drill is measured up and samples are marked at 2m intervals or sometimes by geological sampling (i.e. the samples are cut to the length of geological units or alteration types). The core is split in half using a diamond saw at the Shamrock Gold Mine workshops.

Drill core is stored in trays under roof cover only at the mine.

### **Ridleys Auger Drilling Samples**

A hollow cylindrical auger, 0.92m long and 0.08m diameter was used to sample the soil. The auger penetrated from about 0.15m in sandy textured soils to 0.61m in clay soils at each pass, after which a composite sample was obtained. Some 952 samples were collected and analysed for total nickel, cobalt, and copper by atomic absorption spectrophotometry. All samples were analysed Ni, Co, and Cu at the Queensland Government Chemical Laboratory.

The auger drilling technique is not suitable as a sampling technique in resource estimations.

## 13 SAMPLE PREPARATION, ANALYSES AND SECURITY

### 13.1 Sample Transportation and Security

Most samples for analysis were transported by courier either out of Kilkivan or out of Gympie. Sometimes company geologists would travel past the ALS laboratory and would deliver the samples.

The bagged samples were secured in sealed sacks, the sacks covered in a plastic seal bound onto a pallet for trucking and a Sample Submission Form would accompany the boxes to the Laboratory. The packaging and numbering system reflects the sampling media but offers no clues as to the origin of the material, the D'Aguilar subsidiary involved, or the minerals sought.

Since early 2003, pulps from drilling assays have been returned and stored on the Shamrock mine-site in the storage shed. Prior to 2003, pulps were not returned and were destroyed. However, spare samples were collected in calico bags at the same time as the assay samples were taken. These ‘spares’ were stored at Shamrock but the bags have since rotted away and this material has been dumped.

### 13.2 Laboratories

AusNiCo has used three laboratories during the previous years. These are:

- **ALS Laboratory Group.** Also known as ALS-Chemex. This group operates around the world and is a leading industry group. The group is a “public testing service” company – Accreditation Number 825. The group complies with the requirements of ISO/IEC 17025:2005. (Scope of Accreditation Report 17/9/2008).
- **SGS Australia Pty Ltd.** A subsidiary of SGS, a world wide company specializing in verification, inspection, testing and certification. SGS are ISO and IEC compliant (ISO9001.2000/ EG08 / 03157QA compliant).
- **Shamrock Mine Laboratory** – No accreditation as this is D'Aguilar Gold Limited's mine laboratory.

### 13.3 Stream Samples

Most stream samples collected from the AusNiCo tenements since 1995 were analysed by ALS, Brisbane. The rest, between July 2005 and May 2006, went to SGS Townsville for Cyanide Leach Bottle Roll for gold but some were also assayed for Ni and Co by ICP at Townsville. These samples are easily defined as the results went into different columns on AusNiCo's database.

The samples were commonly analysed for Au, Ag, As, Bi, Co, Cu, Pb, Zn, Ni, Mo and Sb. Sometimes elements such as Te and PGMs were added to the list. Techniques used are the same for all types of samples – soil, stream, rock and drill samples.

Soil samples were dried then pulverized. A split was selected and analysed by MS ICP aqua regia digest.

### **13.4 Soil Samples**

Soil samples collected from the AusNiCo tenements since 1995 have been analysed at ALS-Chemex laboratories in Brisbane and Perth. The samples were commonly analysed for Au, Ag, As, Bi, Co, Cu, Pb, Zn, Ni, Mo and Sb. Sometimes elements such as Te were added to the list.

Soil samples were dried then pulverized. A split was selected and analysed by MS ICP aqua regia digest.

Samples are from areas that generally do not have well developed soil horizons, with shallow to exposed bedrock. They are collected from a few centimeters depth, below the surficial organic material, dispatched to ALS, dried and sieved to minus 6mm to provide about a 1 kg sample. The 1 kg is pulverized to allow 85% to pass < 75 µm (ALS standard PUL-32) and a 25g split is digested in 3 acids for analysis by mass spectrometer (ALS standards ME-MS43 and ME-ICP43). Gold is also assayed (a further 25g split) after an aqua regia digest (ALS standard AR Au).

PGMs are assayed by sending a 30g split from ALS Brisbane to ALS Perth for Au, Pt and Pd analyses by fire assay with a mass spectrometry reading.

### **13.5 Rock Chip Samples**

All rock-chip samples from the AusNiCo tenements in our database were analysed by ALS Brisbane. Between 1998 and 1999, some rocks were analysed in house by aqua-regia in the company's laboratory (D'Aguilar Gold's laboratory) on the Shamrock mine site. These are easy to locate in the database as they are the only samples analysed for gold only.

All rock chip samples were dispatched to ALS, Brisbane, dried and sieved to minus 6mm to provide about 1 kg. The 1 kg is pulverized to allow 85% to pass < 75 µm (ALS standard PUL-32) and a 25g split is digested in 3 acids for analysis by mass spectrometer (ALS standards ME-MS43 and ME-ICP43). Gold is also assayed by taking a further 25g split after an aqua regia digest (ALS standard AR Au).

High grades were verified by re-splitting and re-analysis (ALS standard techniques OG 46 and OG 43).

PGMs are analysed by sending a 30g split from ALS Brisbane to ALS Perth for Au, Pt and Pd analyses by fire assay with a mass spectrometry reading.

### **13.6 Drilling Samples**

All drilling assays have been analysed by ALS, Brisbane and Perth.

All drill samples have been collected using a spear tube splitter, numbered then dispatched to the laboratory, where they are dried then crushed, then the sample is split and a sub split was pulverized to 85% passing 75µ (ALS standard PUL-32) and a 25g split is digested in 3 acids for analysis by mass spectrometer (ALS standards ME-MS43 and ME-ICP43). Gold is also assayed by taking a further 25g split then using aqua regia digest (ALS standard AR Au).

High grades were verified by re splitting and re analysis (ALS standard techniques OG 46 and OG 43).

PGMs are assayed by sending a 30g split from ALS Brisbane to ALS Perth for Au, Pt and Pd analyses by fire assay with a mass spectrometry reading.

### **13.7 Drilling Samples**

Few check assays at other labs were ever carried out due to cost. However, ALS and SGS in Townsville carry out significant internal check procedures. Given that the samples are all within exploration stages of activity, detailed check procedures are not required to the same extent as resource estimate drilling. The results are usually on a comparative basis.. Higher value assays are checked by re splitting and reassaying, but this is not systematically applied until the resource drilling phase.

## **14 DATA VERIFICATION**

### **14.1 Data Entry - History**

The current database was established in early 2003 by experienced D'Aguilar Gold Limited geologists. Considerable work was carried out entering historical data where it was required and current data. This was carried out under the supervision of the exploration manager.

A new Exploration Manager in 2004 introduced Access software to manage the data, rather than the Excel spreadsheet format. However, changes in personnel saw a return to the Excel format in August 2007.

Back-ups of the databases are completed daily since the original system was introduced. The data has been backed up on various discs and hard-drives over the years. There have been very few problems and the system works well for the company.

### **14.2 Assay Results - Treatment**

Assay results are sent electronically by e-mail from ALS. PDF certificates are printed out and kept in folders as a hard copy and these date back to 1999. They are kept at D'Aguilar Gold Limited's Gympie office. Prior to this, old ALS results were photocopied and put in appendices in the annual report hard copies. These are also stored at Gympie.

The PDF copies are also kept on a file on the computer. Quality control certificates are filed on the computer only, and are not printed. CSV data format certificates are used as the format to transfer data by cut and paste into the database. The first entry into the database for any sample is the information from the ticket books. Coordinates are checked at this point with what is in the ticket book compared to the downloaded data from the GPS. Assay results are cut and pasted next to this information when it comes in. Errors are rare, but if data is dropped into the wrong column, for example, it soon becomes apparent when the data is required for modelling or compliance reports. As the CSV certificate is also stored in the computer, it is easy to cross-check and correct any errors.

Sample ticket books are kept in the office at Gympie and date back to 2004.

The data verification and storage process is suitable for the work being carried out by AusNiCo.

## **15 ADJACENT PROPERTIES**

The AusNiCo tenements lie in areas which are generally tightly held by other companies and groups exploring for a range of commodities. There are no tenements which contain adjacent prospects or projects relevant to the work being carried out by AusNiCo.

The exception is in the Marlborough area, where there is significant laterite nickel resources held under adjacent mining leases owned by Marlborough Nickel Ltd. These are currently being developed by Gladstone Pacific Nickel Limited for treatment at Gladstone. However, Gladstone Pacific Nickel Limited has not indicated that they will be exploring for sulphide Ni deposits.

## 16 MINERAL PROCESSING AND METALLURGICAL TESTING

### 16.1 General Comments and Disclaimer

AusNiCo have carried out very limited testwork on four samples from drill core at Mt Cobalt at the HRLtesting Pty Ltd laboratory (“HRL”) in Brisbane in order to test the leaching characteristics of the altered, nickel mineralized zone. HRL is not a quality accredited organization but are listed as a research agency for the purposes of government finding/research grants. HRL are a wholly owned subsidiary of Core Resources Pty Ltd.

At this stage of the Mount Cobalt exploration programme, there have been no resources delineated. As such, the testwork represents initial findings which may or may not be useful if any resources are finally delineated.

Alistair Barton and IMC are not qualified persons with regards to metallurgical testwork. The comments below (sections 16.2, 16.3 and 16.4) are from Mr Alan Riles report. Mr Riles is a professional metallurgical engineer, with over 30 years international management experience in the resources industry. Has held key operating management and project development positions in gold and base metal operations including nickel projects: Rio Narcea's gold-copper and nickel operations in Spain, and most recently as Chief Operating Officer for International Nickel Company's Goro Nickel project in New Caledonia. As Director and Principal Consultant of Riles Integrated Resource Management Proprietary Ltd, he has performed extensive work on feasibility studies, project evaluation and due diligence to complement his strong operating and project development background.

### 16.2 Oxide Nickel Mineralisation and Metallurgy

At Mount Cobalt nickel mineralisation is contained in green and brown nontronite clays. This material is best developed in the clay phase of a well developed trend zone comprising epithermal breccias overlying successive zones of quartz carbonate, sulphides and skarns.

Petrological studies and a series of metallurgical tests have been carried out on nickel-cobalt bearing oxide samples from the Mount Cobalt and Black Snake deposits. Head grades of the samples are typically 0.5% to 0.75% nickel and 0.05% cobalt.

Conventional sulphuric acid-leaching tests were performed at HRL in Brisbane with a view to determining potential heap-leachability and acid consumption. In addition some leach tests were carried out using steps in an as yet unproven, proprietary\*, moderate temperature, atmospheric hydrometallurgical process on both near-surface and deeper material from Mount Cobalt.

The results of the test work were reviewed by Mr Alan Riles of Riles Integrated Resource Management Proprietary Ltd.

### 16.3 Results of Petrological Studies and Metallurgical Tests

The key outcome from the petrology studies was that these samples have been subject to hydrothermal alteration and serpentinisation of the host ultramafic rock,

followed by varying degrees of weathering, as opposed to the conventional lateritic profile due to weathering alone. Limited information was gleaned on the nickel and cobalt associations.

The conventional HRL work on an early Mount Cobalt grid soil sample and subsequent drill core representing the weathering profile typically yield nickel and cobalt extractions in the 75-80% range in both agitated leach and bottle-roll tests with sulphuric acid and with acid consumptions of around 300-400 kg/tonne. The high acid consumption is largely a function of the significant magnesium dissolution that occurs during leaching. Similar tests on the Black Snake sample (from the Ridley Prospect) gave higher nickel recovery (89%), but lower cobalt recovery (55%), and with a higher acid consumption of 550 kg/tonne.

An alternative ammonium sulphate leach was tried in an attempt to selectively leach nickel over magnesium but very low (approx 10%) nickel and cobalt recoveries were achieved.

A final set of tests on Mount Cobalt and Black Snake samples using a hydrochloric acid leach achieved some variable nickel extractions (70-90% range) but more consistent cobalt extractions (80-90%), and again with acid consumptions of 300-400 kg/tonne.

The proprietary\* atmospheric hydrometallurgical work consisted of an initial water leach to remove any soluble chloride salts, treatment with a reagent followed by a pH adjustment to precipitate iron as a readily filterable haematite.

Nickel and cobalt leach recoveries of 85-90% were obtained and the subsequent iron hydrolysis achieved in excess of 95% iron and chrome removal (plus 50% aluminium rejection) with minimal (1%) nickel and cobalt losses, leaving a filtrate of nickel and cobalt in solution together with substantial amounts of magnesium.

AusNiCo intends to investigate a number of acid recovery processes and the generation in a process pulp of acid from finely ground pyrite and nickel and copper sulphide mineral species. The acid consumption figures are not considered to be prohibitive in this project from the oxide recovery aspect.

#### **16.4 Conclusions**

From the HRL work, one can conclude that the oxide samples tested are potentially heap-leachable at acceptable recoveries with sulphuric acid but at a relatively high acid consumption. Further work on column testing is recommended to confirm heap leach variables such as kinetics, agglomeration requirements and heap permeability.

The proprietary\* hydrometallurgical test work has reported even higher nickel and cobalt extractions than the HRL work.

\* Note that this proprietary process does not belong to AusNiCo Limited.

## 17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The only resource estimates within the project area is on a small laterite nickel resource which has been completed on the Ridley's laterite nickel prospect and the North Jackson deposit (see Figure 10-7). Many of the 47 government drillholes were still in mineralisation at the end of the hole and the drill coverage did not reach the full east-west width of the nickel belt.

Levy (2004) initially estimated a resource of 129,000 tonnes grading 0.95% Ni and 0.08% Co using the drilling data from Ridley's.

Marinelli (2004) also estimated an Indicated and Inferred Resource over the Ridley's Prospect and arrived at a 129,732 t deposit grading 0.95% Ni, and 0.082% Co.

At a later date AusNiCo and Davis (2008) using the 2006 AusNiCo drill results, estimated an Inferred tonnage of 580,000 tonnes grading 0.9% Ni and 0.08% Co at Ridleys and an Inferred 220,000 tonnes grading 0.8% Ni and 0.05% Co at Jacksons North using a 0.4% Ni cut-off.

It is considered that the resource is a typical laterite Ni resource and as such, the resource estimates would not pass the CIM Definition Standards (2005) requirements of "reasonable prospects for economic extraction" because:

- The resources are small when compared with economic laterite Ni projects;
- Exploration in the region has failed to discover major outcropping areas of laterite Ni resources and because the deposits are visually obvious, there is little potential to discover the necessary resources;
- Although there are other minor laterite Ni occurrences in the region, they are very small and widely scattered, making it impossible to get the required tonnage and logistics dynamics required to make a viable deposit; and
- The lack of known survey control, the auger drilling technique and the lack of detail on the sample preparation and analytical techniques used do not meet resource estimate standards.

Therefore no more details will be provided on the former resource estimates because they do not qualify as resource estimates and they are not material to the project's potential which is mainly for sulphide nickel–cobalt resources and hydrothermally altered Ni-Co mineralized zones.

Potential for disseminated sulphide Ni mineralized zones and hydrothermally altered Ni mineralization still exists below the laterite mineralization and in the ultrabasics in the Ridley's and Jackson North area.

## **18 OTHER RELEVANT DATA AND INFORMATION**

### **18.1 Company Management and Technical Expertise**

D'Aguilar Gold Limited has developed a team of professionals who display extensive experience, technical skills, management skills and commercial skills. D'Aguilar also has considerable undercover storage, office space and accommodation quarters at the Shamrock mine. They also have considerable field equipment including vehicles and general exploration equipment. At Gympie, D'Aguilar have a well appointed and equipped office together with storage space.

AusNiCo shares the costs of storage and office facilities and personnel with D'Aguilar Gold Limited.

### **18.2 Company Strategies and Plans**

A review of the AusNiCo principal objectives, strategies and plans indicates the following will be applied in exploring and developing their projects:

- The business plan is to add value through discovery of mineral deposits within its tenements that are rich in nickel, cobalt, copper, silver, gold and/or platinum metals;
- To target 10 plus million tonne sulphide Ni-Co deposits and hydrothermally clay altered Ni deposits on its tenements. If other minerals present themselves within the company's tenements, these will be assessed also (eg chromitite, gold);
- Securing additional quality properties which compliment the nickel cobalt search;
- Relinquishing tenements or sections of tenements as the exploration sterilizes ground;
- Apply high environmental and operating standards to all the company's projects;
- Establish and develop sound relations with landowners, other stakeholders and the community in general in the areas and countries where projects are acquired, and
- Establish sound logistics and local administration services for all stages of project development;

The basic principles, strategies and exploration plans regarding the exploration and development of projects are sound and provide a solid basis on which to develop the projects and the company.

## **19 INTERPRETATION AND CONCLUSIONS**

### **19.1 Summary of the Exploration Programme**

The AusNiCo exploration programmes have identified the potential of their established and explored areas in the Kilkivan area and especially the Black Snake area, for disseminated nickel-cobalt-(copper) sulphides in altered skarns and breccias and serpentinites of the Avebury-style and Aguablanca style and also hydrothermally altered (oxidised) Ni-Co mineralised zones as displayed at Mt Cobalt.

AusNiCo have acquired new areas in the Kilkivan, Monto-Mundubbera-Theodore and Marlborough areas with similar serpentinite/ultrabasic terranes, thereby increasing their potential to discover new nickel-cobalt deposits.

The proposed programmes are oriented to the Ni-Co exploration targets together with secondary Cu and PGM minerals. Other mineral targets will be assessed through the exploration programme. AusNiCo is the first company to apply a dedicated exploration programme to this style of nickel mineralisation in Queensland and therefore has the potential to be at the forefront of new discoveries in the eastern seaboard of Australia.

### **19.2 Adequacy of the Data Presented and Exploration Techniques**

The exploration data presented is considered to be suitable for the purposes of the AusNiCo exploration effort.

However, the spearing technique to gather RC chip samples has some disadvantages when resource estimates are being considered, especially in relation to PGMs and Au. AusNiCo will be reviewing their sampling procedures, which are suitable for exploration purposes.

### **19.3 Conclusions on the Validity of the Exploration Concepts Proposed**

The exploration concepts and models used based on the Aguablanca and Avebury Ni deposits are suitable for the exploration of Ni sulphide deposits. The models provide the potential for the discovery and exploitation of economic Ni-Co and Ni- Cu – PGM deposits with potential size ranges of 10 million to 20 million tonnes grading above 1.0% Ni and 0.1% Co.

The hydrothermally altered (oxidised) Ni-Co mineralisation style is unique and the concept for exploring for this style is considered to be appropriate. AusNiCo considers the potential size deposits to be in the order of 10 plus million tonnes but the author considers the potential will need to be much greater in order to get the scale of project necessary to treat any ore found.

## 20 RECOMMENDATIONS

### 20.1 AusNiCo Proposed Exploration Programme

The exploration team will focus on the identification and evaluation of nickel mineralisation with similarities to Mount Cobalt and Pembroke prospects throughout the company's tenements in south-east and central Queensland.

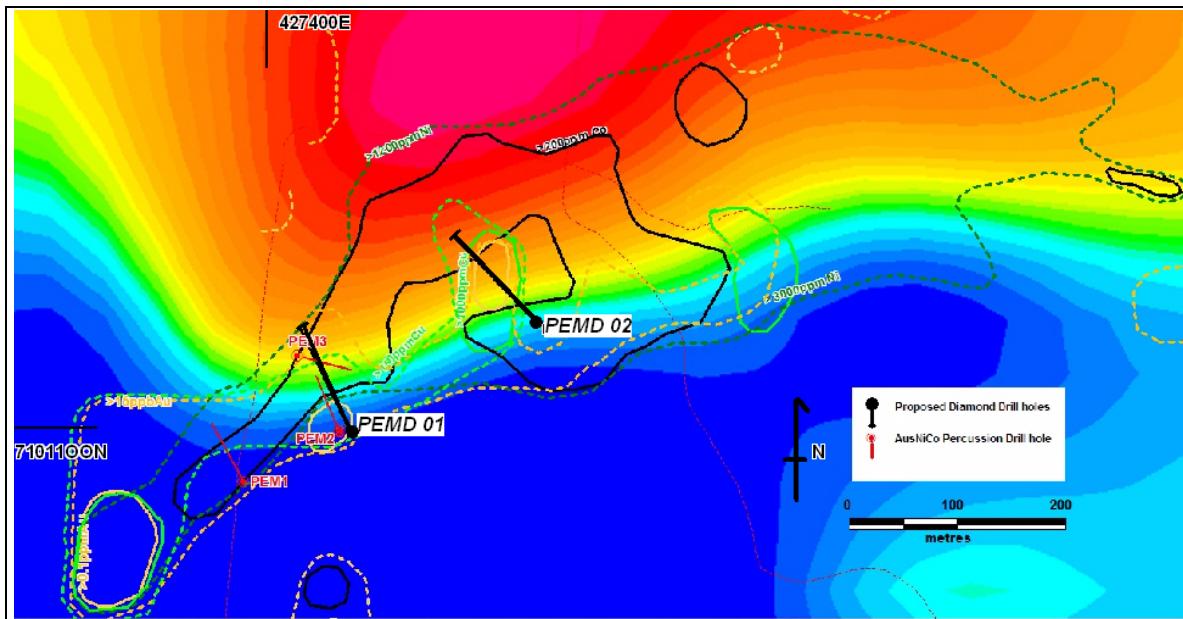
AusNiCo's relationship with D'Aguilar Gold Limited means that they have access to well appointed offices, storage sheds, workshops and exploration equipment and staff. Budgets take these issues into consideration.

#### 20.1.1 Drilling programme

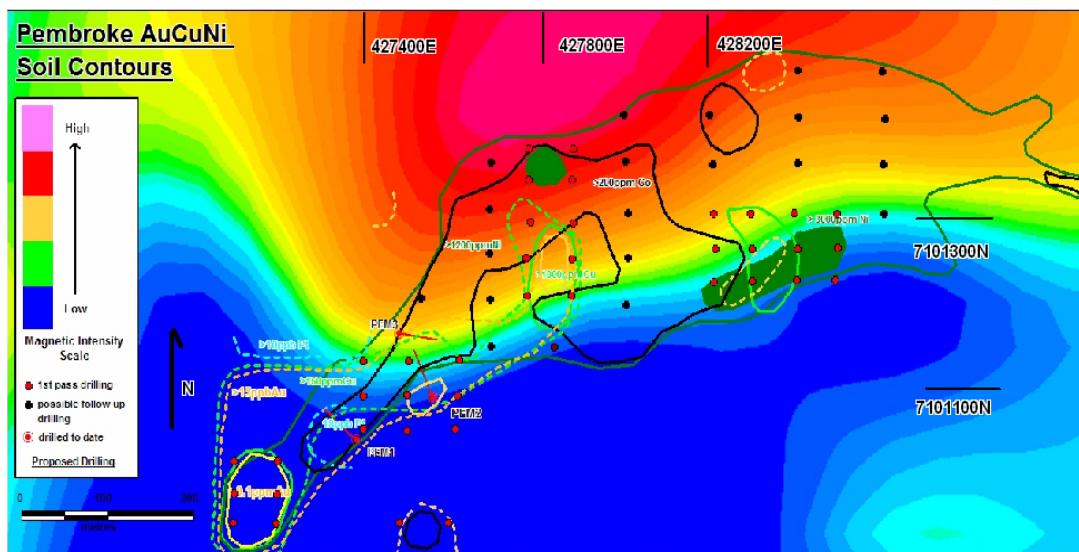
##### Drilling Pembroke

An initial programme will consist of two core holes each of about 200m, located as shown in Figure 20-1 below. In addition a staged program of percussion drilling has been planned as below. Initially the drilling will define the trends and depths of the mineralization, so that the later drilling will be optimally located.

It should be noted that there are cultural and safety related features including old mine workings and cattle grazing facilities. The drilling sites will need to be adjusted in the field.



**Figure 20-1 - Pembroke core drilling plan**



**Figure 20-2 - Pembroke RCP drilling plan – Holes to be drilled at 60 degrees to true north**

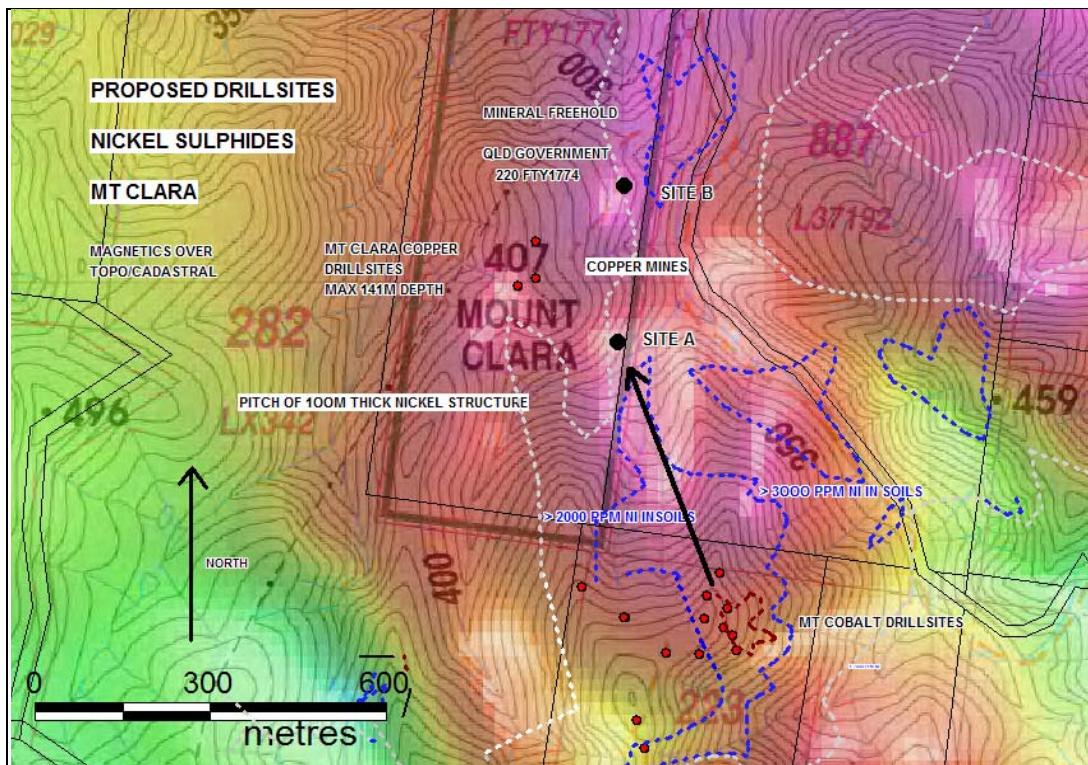
### Drilling – Mt Clara – Mt Cobalt

Two vertical coreholes are proposed to be drilled at Mt Clara and Mt Cobalt (see Figure 20-3 which is a map of the area, and Figure 20-4, which displays a section through the zones to be drilled). Vertical holes are favoured because angled holes have been very problematical, where a change to vertical drilling has not impacted upon the success of the program but has meant vastly reduced costs and provided better recoveries.

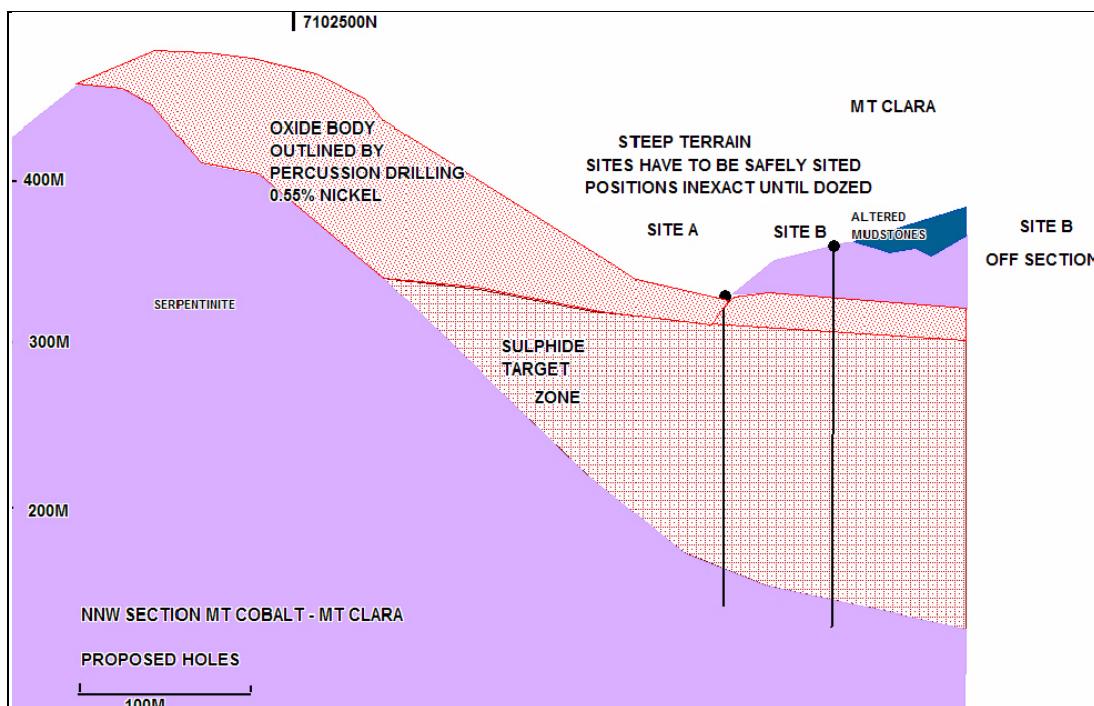
Site A (427460E 7102900N) has a programmed depth of 200m and is sited where the >3000 ppm nickel body passes below surface 200m ESE of the Mt Clara copper mine. It is the peak of the magnetic anomaly.

Site B (427480E 7103170N) has been programmed to 250m and is sited 250m NE of the Mt Clara mine and is topographically above a zone of >3000 ppm nickel that lies lower down in the main creek. It is also on the peak magnetic anomaly.

The area to be drilled is steep country and exact coordinates of the collars will depend upon access negotiations as well as safety and environmental factors.



**Figure 20-3 - Plan of Proposed Drilling at Mt Cobalt and Mt Clara – Magnetics Overlay on Topographic and Cadastral Map**



**Figure 20-4 - Sections of Proposed Holes through expanded Target Envelope**

## Drilling elsewhere

Other drilling programs have been planned, notably at Widgee and Kandanga, but the exact locations are dependent upon the results of a minor amount of geological work and any targeting features that come to light from the drilling at Pembroke and Mt Cobalt.

### 20.2 AusNiCo Proposed Exploration Budget

The main objective is to restrict the spending on direct exploration costs to approximately A\$1.5 million over the first 18 months, during which time, most, if not all of the important known prospects will be tested and other interesting areas will have first-pass exploration completed on them.

The program will more than satisfy the Queensland Department of Minerals and Energy minimum expenditure requirements for granted tenements in the next few years.

Exploration results can be entirely unpredictable and as such only the next phase of work can be planned and costed in detail. The budgets display detail for the next year but only estimated totals for each tenement area beyond this first year.

Activity	Pre IPO	Y1 after Merger				Y2 after Merger				Total	
	2009	2010				2011					
	31-Dec	31-Mar	30-Jun	30-Sep	31-Dec	31-Mar	30-Jun	30-Sep	31-Dec		
Tenement management										\$80	
Target definition										\$280	
Exploration Drilling										\$1,180	
Resource Drilling										\$270	
Drill access & land acquisition										\$280	
Initial metallurgical tests										\$50	
Commercial assessments										\$150	
Metres of Drilling	0	800	1,200	1,700	1,500	1,200	1,400	1,900	1,700	11,400	
Field Budget (\$000)	\$90	\$150	\$230	\$330	\$290	\$228	\$272	\$372	\$328	\$2,290	
Annualised (\$000)	\$90				\$1,000				\$1,200	\$2,290	

**Figure 20-5 - Tasks – Work Schedule by Quarter for Initial Two Years**

It will be noted that costs for this work Schedule for the 18 months to 30 June 2011 total A\$1.5 million.

Figure 20-5 displays the exploration schedule and Table 20-1 displays the costs allocated across all the Exploration Permits. This table includes some expenditure on the four EPMs not yet granted, but which can be expected to be granted sometime during the initial 18 month period. The priorities applied are as perceived at October 2009. Changes are to be expected as prospectivity of each EPM is re-evaluated as fresh information is provided by ongoing exploration activities.

**Table 20-1 Summary Budgets – Exploration Tenements – A\$ millions**

Granted tenements	EPM	Rank	Area (km2)	BUDGETS (Min case)		Totals 18 Mths to 30 June 2011	Notes
				H2 FY10	FY11		
NORTH KILKIVAN	13359	3	51	\$0.013	\$0.039	<b>\$0.052</b>	Renewal Appn lodged
EAST KILKIVAN	13360	4	18	\$0.013	\$0.039	<b>\$0.052</b>	Renewal Appn lodged
TABLELAND	14372	1	45	\$0.016	\$0.534	<b>\$0.550</b>	Renewal Appn lodged
MOUNT KANDANGA	14560	6	60	\$0.020	\$0.008	<b>\$0.028</b>	Reducing to 10 sub blocks
POPPERIMA CREEK	15457	10	30	\$0.040	\$0.090	<b>\$0.130</b>	
BOYNE RIVER	16077	5	138	\$0.050	\$0.050	<b>\$0.100</b>	
WIDGEE SOUTH	16985	9	135	\$0.070	\$0.070	<b>\$0.140</b>	Tenure - 2 yrs only
STATION CREEK	17042	9	6	\$0.020	\$0.008	<b>\$0.028</b>	
GREEN ROCK	17611	9	54	\$0.080	\$0.110	<b>\$0.190</b>	
MARLBOROUGH NORTH	17721	8	30	\$0.020	\$0.030	<b>\$0.050</b>	Tenure - 2 yrs only
PRINCHESTER	17722	11	45	\$0.020	\$0.030	<b>\$0.050</b>	Tenure - 2 yrs only
<b>SUBTOTAL</b>			<b>612</b>	<b>\$0.361</b>	<b>\$1.008</b>	<b>\$1.369</b>	
<b>Applications</b>				<b>FY10</b>	<b>FY11</b>		<b>Notes</b>
MARLBOROUGH SOUTH	17768	7	150		\$0.034	<b>\$0.034</b>	Assuming grants
Mt SLOPEA	17817	12	69		\$0.011	<b>\$0.011</b>	
MESSMATE MTN	17818	13	126		\$0.011	<b>\$0.011</b>	
KANDANGA GAP	18107	2	21	\$0.019	\$0.056	<b>\$0.075</b>	High priority - expedite
<b>SUBTOTAL</b>			<b>366</b>	<b>\$0.019</b>	<b>\$0.112</b>	<b>\$0.131</b>	

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The website for D'Aguilar Gold Limited contains all the relevant Annual Reports and Quarterly reports to shareholders, including the AusNiCo Limited details.

**Avebury Nickel Project Summary.** A compilation of presentations, media releases and reports to shareholders by Allegiance Mining Limited. 2005-2008 including:

- Annual General Meeting of Allegiance Mining NL, May 2006.
- Tasmanian Explorer's Conference, St Helens, Tas September 2006
- Australian Nickel Conference, Sheraton Hotel, Perth Nov 2005 & 2006.
- CD Handouts at various Australian Mining Conferences 2006-2007.

The following lists the Company reports (“CR”) which are held electronically in the Queensland Department of Mines Library. Access can be gained through the QDEX report retrieval system through the DME’s web site [www.dme.qld.gov.au](http://www.dme.qld.gov.au). D’Aguilar Gold Limited also has copies of most of the reports listed below at their Gympie office.

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## 21.1 Units of Measurement

The following units of measurement have been used in this report.

**Figure 21-1 Units of Measurement**

Abbreviation	Definition
<b>g</b>	Grams
<b>g/t</b>	Grams per tonne
<b>kg</b>	Kilograms
<b>km</b>	Kilometres
<b>lb</b>	Pound
<b>m</b>	Metres
<b>mm</b>	Millimetre
<b>No.</b>	Number
<b>ozs</b>	Ounces
<b>ppb</b>	Parts per billion, 1000 ppb = 1 ppm = 1g/t
<b>ppm</b>	Parts per million. 10,000 ppm = 1.00%
<b>%</b>	Percentage
<b>µm</b>	Micron. 1000 microns = 1mm
<b>t</b>	Tonnes
<b>tph</b>	Tonnes per hour

## **22 DATE AND SIGNATURE PAGE**

This report entitled “Technical Report to AusNiCo Limited and Lions Gate Metals Inc. on the South East Queensland Ni Co Projects” and dated 28<sup>th</sup> January 2010, was prepared and signed by:

Alistair Heatley Barton, FDip. Geol, FAusIMM, CP Geo

Author



Signed

Dated at Brisbane, Queensland, Australia

28<sup>th</sup> January 2010