7 Geological Setting and Mineralization

7.1 Regional Geology

The bedrock geology of Northern Ireland is a complex assemblage of units deposited from the Mesoproterozoic to the Paleogene (British Geological Survey, 2016). It can be divided into four quadrants (Figure 7.1):

- Northwest - composed predominantly of the Proterozoic Dalradian Supergroup and the early Ordovician Tyrone Igneous Complex;
- Southeast - composed mainly of rocks of the Southern Uplands-Down-Longford terrane, an allochthonous prism composed of an Ordovician and Silurian turbidite sequence;
- Southwest - underlain mainly by Upper Palaeozoic sedimentary rock deposited in continental to marine environments; and
- Northeast - underlain by the early Palaeogene (60 – 55 Ma), subaerial Antrim Lava Group and minor underlying Paleozoic units.

The local geology of the project area comprises three main rock groups:

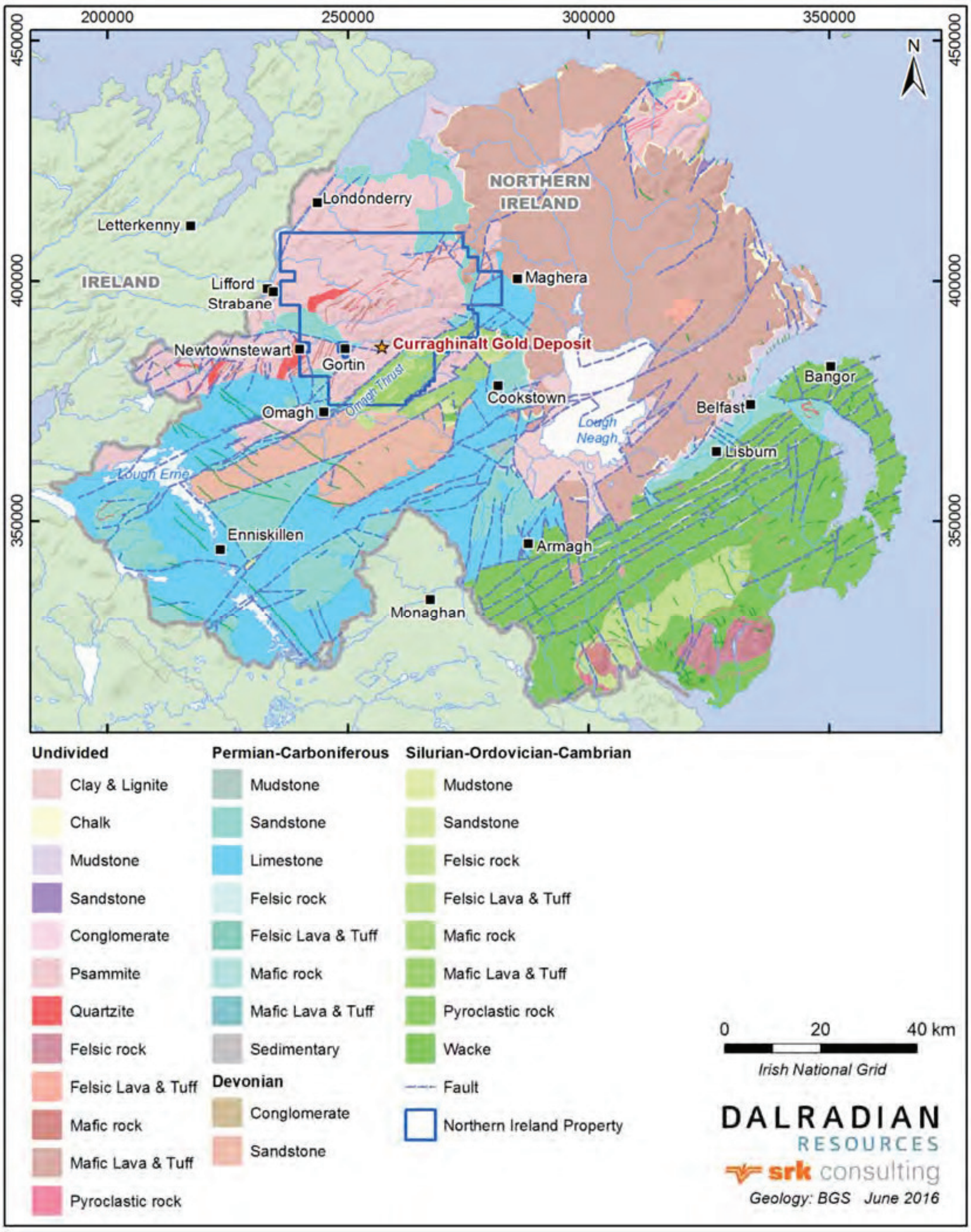
- Dalradian metasediments in the Grampian terrane to the north of the Omagh Thrust;
- The Tyrone Igneous Complex in the Midland Valley terrane south of the Omagh Thrust; and
- Upper Palaeozoic sedimentary rocks which are widely distributed throughout these terranes.

Mitchell (2004) described the tectonic evolution of Northern Ireland from which the following is summarized. The Caledonian orogenic belt of the British and Irish Caledonides resulted from the progressive closure of the Iapetus Ocean and Tornquist Sea during the early Palaeozoic. Assembly and docking of the terranes that form the basement in Northern Ireland commenced in mid-Ordovician time and continued for 80 Ma through the Silurian and finished in the Early Devonian. Final closure was accommodated by sinistral strike-slip movement on terrane bounding faults. Northern Ireland covers three of the seven suspect terranes that together constitute the Caledonian Orogen in Ireland. From north to south, these are referred to as the Central Highlands (Grampian) Terrane, Midland Valley Terrane, and the Southern Uplands-Down-Longford Terrane.

Dalradian's Northern Ireland property straddles two of these terranes: the Central Highlands to the north (DG1, DG3, DG4, DG5, and DG6) and the Midland Valley to the south (DG2). The Central Highland Terrane consists of Moinian (Mesoproterozoic) and Dalradian (Neoproterozoic-Cambrian) rocks and Caledonian igneous intrusions. The Dalradian Supergroup that hosts the Curraghinalt gold deposits comprises Neoproterozoic metasediment and mafic meta-igneous rocks which were deposited on the Laurentia passive continental margin between ca. 800 – 500 Ma (Strachan et al., 2002; Cooper and Johnston, 2004).

Dalradian sedimentation was terminated by an arc-continent collision during the Ordovician Grampian event of the Caledonian Orogeny (Hollis et al., 2012), followed by polyphase deformation and regional metamorphism at ca. 475 – 465 Ma (Friedrich et al., 1999).

Figure 7.1: Regional Geology of Northern Ireland



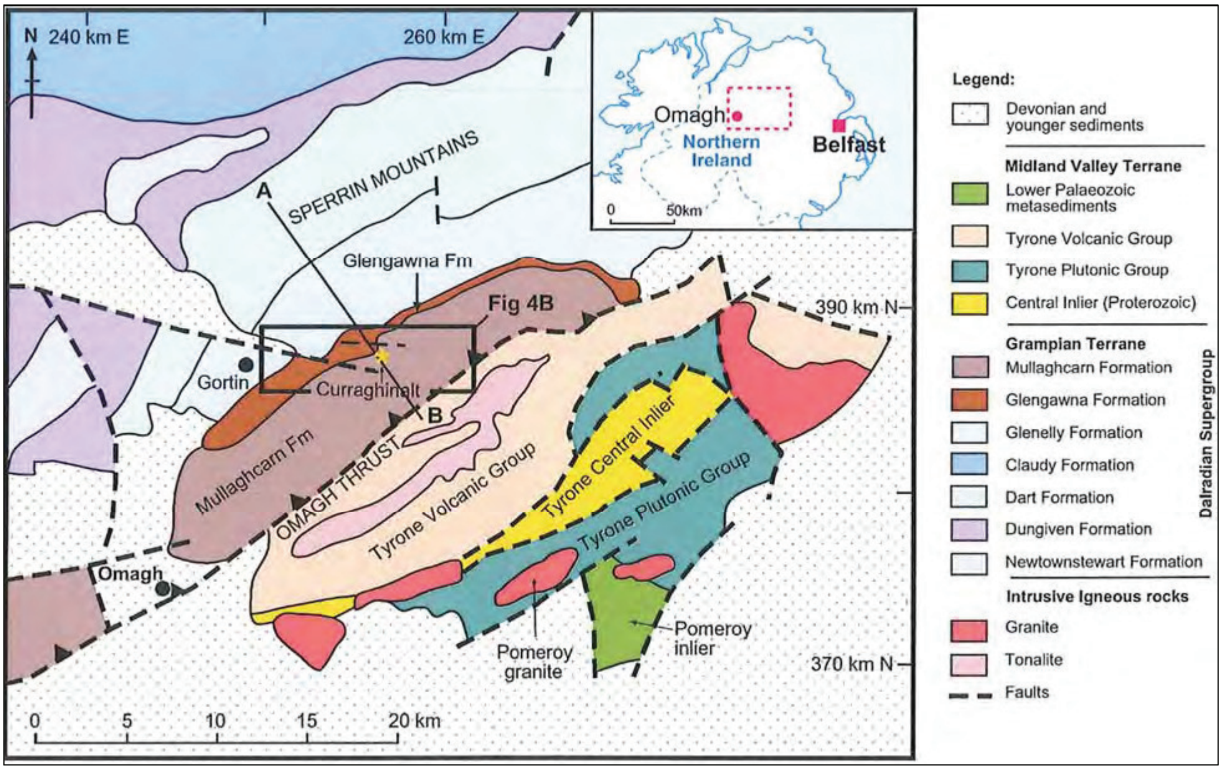
Source: British Geological Survey DiGMapGB (1:625K).

The southern margin of the terrane is marked by the concealed Fair Head-Clew Bay Line, which is interpreted as the southwesterly extension or major splay of the Highland Boundary Fault in Scotland. This forms a major terrane bounding structure. The associated regional magnetic lineament that extends southwestwards to Clew Bay in County Galway is located 10 km north of the Variscan (Carboniferous) northwest dipping Omagh Thrust Fault. The Omagh Thrust Fault is part of the Fair Head – Clew Bay Line, and separates Dalradian rocks to the north from the underlying Ordovician Tyrone Igneous Complex to the south (Cooper and Mitchell, 2004) (Figure 7.2).

The Midland Valley Terrane in Northern Ireland comprises Upper Paleozoic, Mesozoic and Paleogene rocks. However, in County Tyrone, a late Ordovician to early Silurian succession is exposed with part of an early Ordovician ophiolite and island arc volcanic complex (Tyrone Igneous Complex) at its base. The Tyrone Igneous Complex is comprised of the Tyrone Plutonic Group and the Tyrone Volcanic Group (Cooper and Mitchell, 2004). The Tyrone Plutonic Group forms the upper part of a ca. 484 – 480 Ma suprasubduction zone ophiolite. It was accreted with the ca. 475 – 469 Ma Tyrone Volcanic Group island arc onto an outboard micro-continental block prior to the ca. 470 Ma Grampian event of the Caledonian Orogeny (Cooper et al., 2008, 2011; Hollis et al., 2012, 2014).

At the core of the Tyrone Igneous Complex is the fault bounded Central Inlier. This consists of psammitic and semipelitic paragneiss known as the Corvanaghan Formation (Cooper and Johnston, 2004) of Moinian affinity. This formation originally formed part of the Central Highlands Terrane, and was metamorphosed and deformed prior to ca. 468 Ma (Chew et al., 2008). It represents part of an outboard segment of Laurentia, possibly detached as a microcontinent prior to arc continental collision (Chew et al., 2008).

Figure 7.2: Regional Geology of the Southern Sperrin Mountains

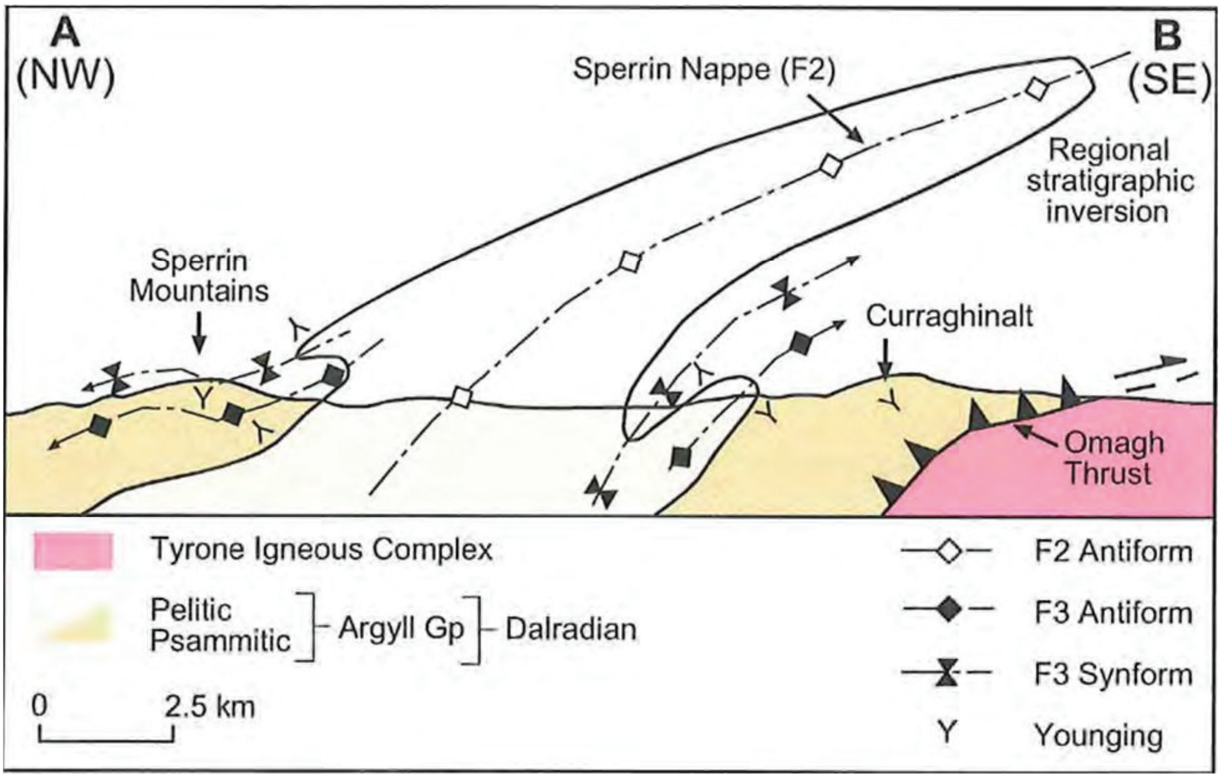


Source: From Rice et al. (2016).

The Grampian orogeny resulted in crustal thickening (folding - D1), nappe structures (recumbent southeast-facing folds - D2), and peak metamorphism (development of crenulation cleavage - D3) (Cooper and Johnston, 2004). Orogenic collapse was followed by exhumation, extension and partial melting at ca. 470 – 450 Ma (Alsop and Hutton, 1993; Flowerdew et al., 2000; Clift et al., 2004). The mid-Silurian Scandian event of the Caledonian Orogeny saw the final closure of the Iapetus Ocean. This was recorded in Northern Ireland with magmatism and further deformation (Kirkland et al., 2013).

Peak metamorphism of the Grampian orogeny coincided with the southeast-directed emplacement of the Dalradian Supergroup over the Tyrone Igneous Complex along the Omagh Thrust Fault (Figure 7.2 and Figure 7.3). This event overlapped with the intrusion of arc-related plutons into the Tyrone Volcanic Group at ca. 470 – 464 Ma (Cooper et al., 2008 and 2011; Hollis et al., 2012 and 2014). Orogenic collapse was coeval with the development of regional scale extensional shearing and accompanied by northeast trending quartz veins (Alsop and Hutton, 1993), that coincide with the earliest phase of gold mineralization at Curraghinalt.

Figure 7.3: Section across the Sperrin Nappe and Omagh Thrust Fault



Source: From Rice et al. (2016)

7.2 Property Geology

7.2.1 Dalradian Supergroup – Licences DG1, DG2, DG3, DG4, DG5 and DG6

Licences DG1, DG3, DG4, DG5, and DG6 are underlain by Neoproterozoic aged rocks of the Dalradian Supergroup that form the Sperrin Mountains (Figure 7.4). The Dalradian Supergroup is divided into the Argyll Group and Southern Highland Group, both comprised of predominantly clastic marine sedimentary rocks deposited in a rift basin. The oldest rocks on the property belong to the Newtownstewart Formation (Argyll Group), which is exposed in the core of the recumbent Sperrin Fold and is flanked by Dungiven Limestone Formation (Table 7.1) in DG3 and DG4. The Southern Highland Group is interpreted to flank the Argyll Group on both limbs of the Sperrin Fold although the stratigraphy differs markedly between the north and south limbs. Mitchell (2004) notes that “an absence of distinctive marker horizons allied to lateral facies changes makes correlation difficult between formations and results in the different nomenclature north and south of the fold axis.”

The Southern Highland Group comprises a thick sequence of turbiditic arenite and pelitic metasedimentary rocks with rare volcaniclastic (green bed) and calcareous schist units (Figure 7.4). Progressing southeastward onto DG1, the Southern Highland Group is exposed and is divided from northwest to southeast into the Dart, Glenelly, Glengawna and Mullaghcarn formations.

The mineralized quartz-carbonate veins of the Curraghinalt deposit are hosted by the Mullaghcarn Formation.

Table 7.1: Stratigraphy of the Dalradian Supergroup

Group	Formation	Lithology
Southern Highland	Mullaghcarn	Semi-pelite, psammite, pelite
	Glengawna	Black graphitic pelites, psammite, semi-pelite
	Glenelly	Volcaniclastic semi-pelite, semi-pelite, psammite
	Dart	Schistose amphibolite, feldspathic and calcareous semi-pelite
Argyll	Dungiven	Limestone, pelite, semi-pelite, psammite, quartzite, basaltic pillow lavas, volcaniclastic sediments
	Newtownstewart	Quartzose psammite and thin pelite interbeds

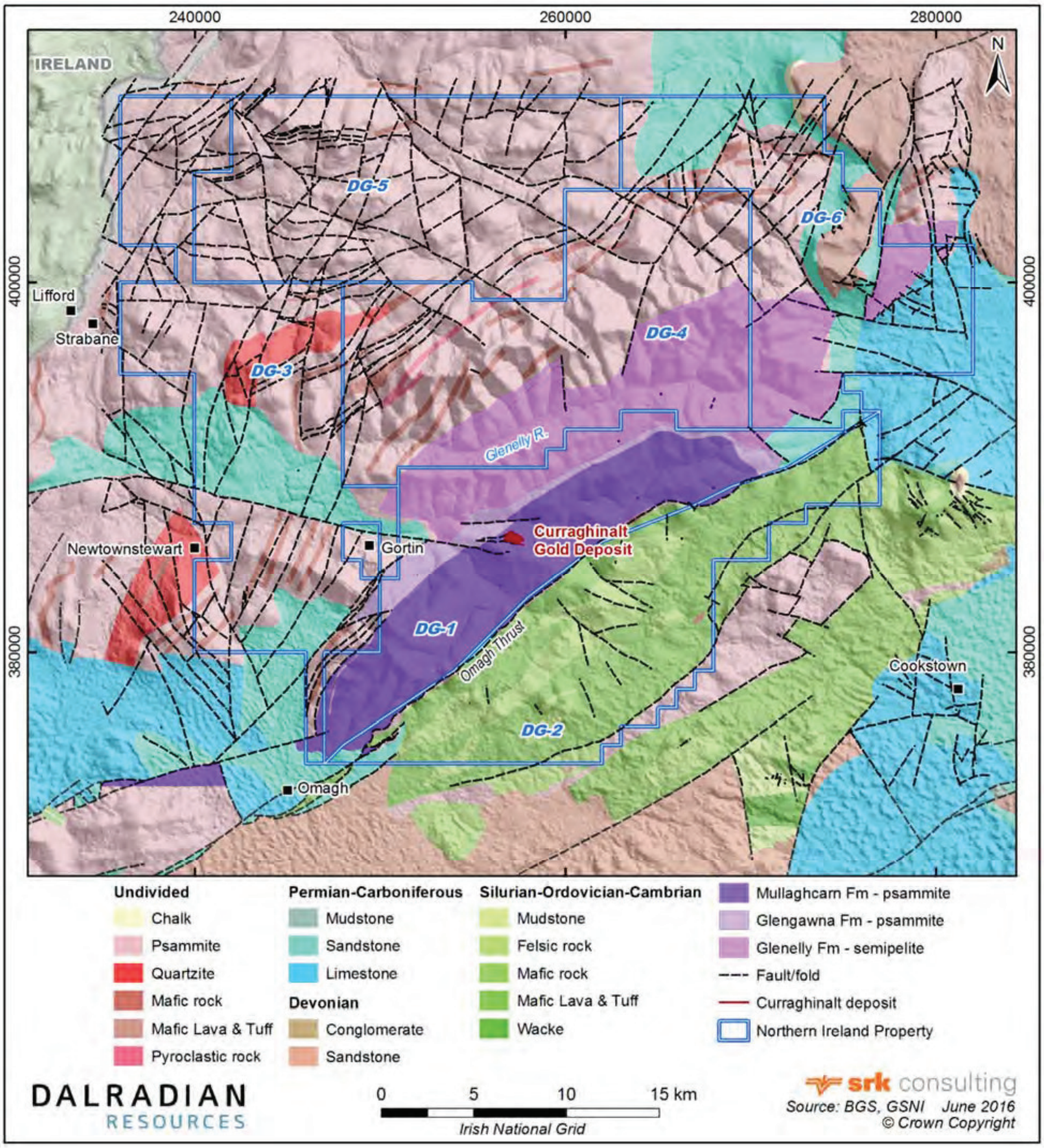
7.2.1.1 Dart Formation

At the base of the Dart Formation, in contact with the underlying Dungiven Limestone Formation is the Glenga Amphibolite Member, which is interpreted as a resedimented volcaniclastic siltstone and sandstone. The remainder of the formation consists of conglomerate, psammite, schistose semi-pelite, and a volcaniclastic member.

7.2.1.2 Glenelly Formation

The Glenelly Formation comprises silvery to greenish-grey schistose pelite and semi-pelite with minor psammite and limestone. Plagioclase porphyroblasts are ubiquitous in the rocks of this formation with more localized occurrences of small euhedral garnet and randomly distributed needles of tourmaline. Also present is a volcaniclastic member, and a limestone and calcareous semi-pelite member.

Figure 7.4: Property Geology



Source: Modified from British Geological Survey DiGMapGB (1:625K) and Geological Survey of Northern Ireland (1:10K)

7.2.1.3 Mullaghcarn Formation

The Mullaghcarn Formation is host to the Curraghinalt gold deposits and the Alwories prospect, and consists predominantly of semi-pelites and psammites with subordinate pelite horizons and chloritic semi-pelites. Although not subdivided on the GSNI maps because of lack of outcrop (Figure 7.4), a variation in magnetic intensity is apparent in the regional Tellus geophysical data suggesting internal variations are present.

The southern boundary of the Dalradian Supergroup is marked by the Omagh Thrust Fault (Figure 7.4), a moderately northwest dipping thrust fault active as late as the Carboniferous.

7.2.1.4 Deformation and Metamorphism of the Dalradian Supergroup

The following is summarized from Mitchell (2004). At least four phases of deformation are recognized in Dalradian rocks on the property:

- D1 - Weakly preserved as barely discernible folds and cleavage;
- D2 - Dominant deformation of the Grampian Orogeny associated with the formation of major regional southeast-facing recumbent anticlines including the Sperrin Fold;
- D3 - Southeast-directed deformation in the south Sperrin mountains resulted in minor southeasterly-verging folds and low angle, north northwest dipping thrust faults such as the Omagh Thrust Fault which transposed Dalradian rocks to the south southeast over the early Ordovician Tyrone Igneous Complex; and
- Post-D3 - Late deformation associated with localized sets of kink bands and late stage brittle fractures.

The Dalradian Supergroup in Northern Ireland preserves a thermal and pressure gradient increasing from lower greenschist facies in the north to lower amphibolite facies in the south, close to the Omagh Thrust Fault.

7.2.2 Tyrone Igneous Complex – Licence DG2

The following is taken from Hollis (2012).

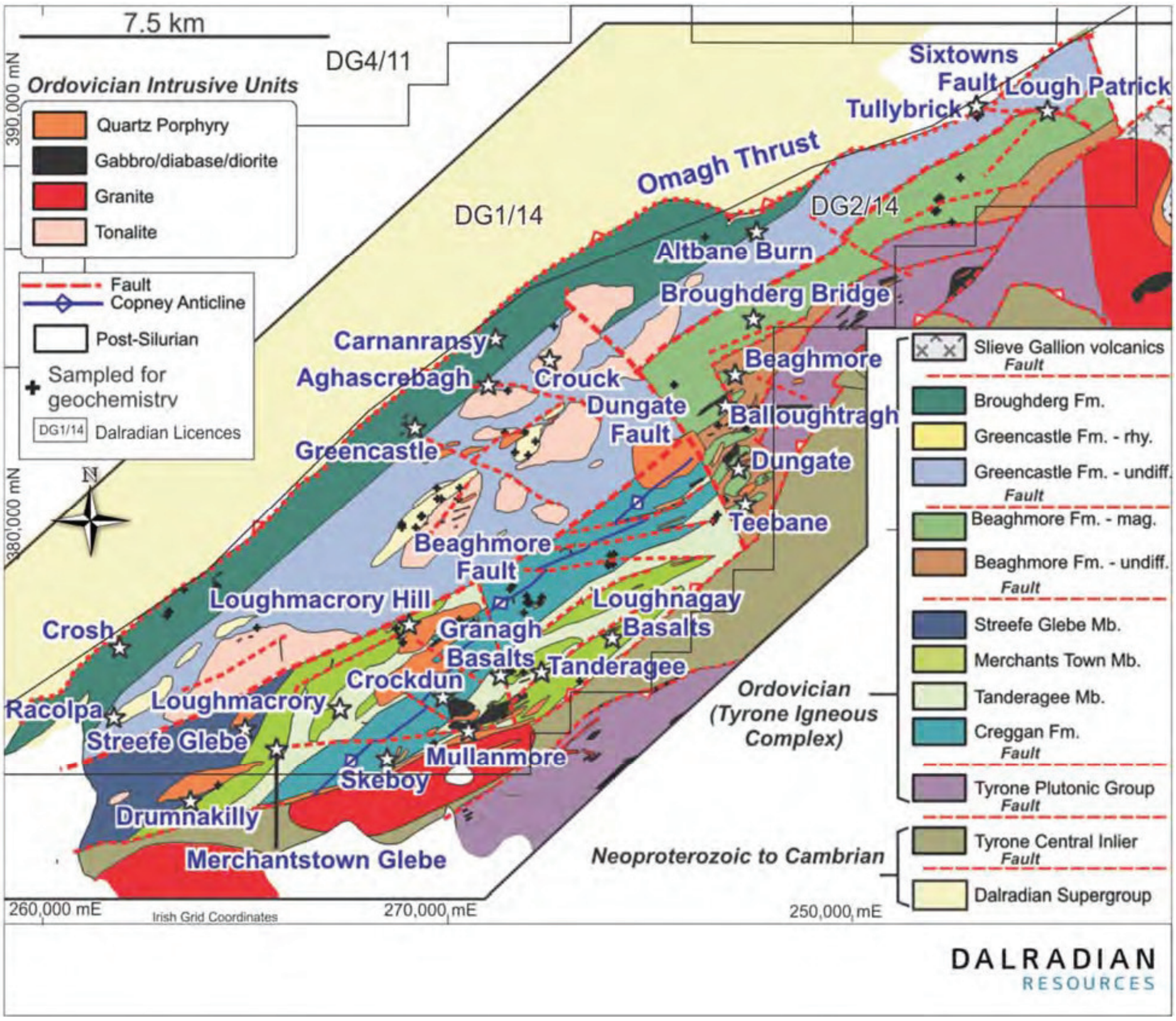
“Licence DG2 is largely covered by the Tyrone Igneous Complex, which is exposed over approximately 350 square kilometres, within the Midland Valley Terrane and is one of the largest areas of ophiolitic and arc-related rocks exposed along the northern margin of Iapetus within the British and Irish Caledonides. It is broadly divisible into the ophiolitic Tyrone Plutonic Group and the younger arc-related Tyrone Volcanic Group. The northwestern edge of the Tyrone Igneous Complex is bounded by the Omagh Thrust Fault, which has emplaced Neoproterozoic Dalradian Supergroup metasedimentary rocks above the Tyrone Volcanic Group. Within the central regions of the complex (to the southeast of DG2), the structurally underlying metamorphic basement (Tyrone Central Inlier) is exposed. A suite of granitic to tonalitic plutons (ca 470 to 464 Ma) intrudes the Tyrone Igneous Complex and Tyrone Central Inlier (Cooper et al., 2011).”

"The Tyrone Plutonic Group is interpreted to represent the uppermost portion of a dismembered suprasubduction zone ophiolite and is characterized by layered, isotropic and pegmatitic gabbros, sheeted diabase dikes and the occurrence of rare pillow lavas (Cooper et al., 2011 and references therein). Layered olivine gabbro has provided a uranium-lead zircon age of 479.6 ± 1.1 Ma (Cooper et al., 2011). Accretion to the Tyrone Central Inlier must have occurred prior to the intrusion of a 470.3 Ma ± 1.9 Ma tonalite, which contains inherited Proterozoic zircons and roof pendants of ophiolitic material (Cooper et al., 2011)."

"The Tyrone Volcanic Group forms the upper part of the Tyrone Igneous Complex and comprises mafic to intermediate pillowed and sheeted lavas, tuffs, rhyolite, banded chert, ferruginous jasperoid (ironstone) and argillaceous sedimentary rocks (Mitchell, 2004). The Tyrone Volcanic Group (473 Ma ± 0.8 Ma, Cooper et al., 2008) is interpreted to have formed within a peri-Laurentian island arc/back-arc, which was accreted to the Tyrone Central Inlier following emplacement of the Tyrone Plutonic Group (Draut et al., 2009; Cooper et al., 2011)."

Hollis et al., (2012) have revised the stratigraphy of the Tyrone Volcanic Group based on mapping and geophysics (Figure 7.5) and the following is summarized from that work. The lower part of the Tyrone Volcanic Group is restricted to south of the Beaghmore Fault (southwestern and eastern blocks) and is dominated by basaltic to andesitic lavas and volcaniclastic rocks, with subsidiary agglomerate, layered chert, ferruginous jasperoid (ironstone), finely laminated argillaceous sedimentary rocks, and rare rhyolite breccia, deformed into the northeast trending upright Copney anticline. All units in the lower Tyrone Volcanic Group have been subjected to varying degrees of hydrothermal alteration and are characterized by regional sub-greenschist- to greenschist facies metamorphic assemblages. Abundant sills of undeformed quartz ± feldspar porphyritic dacite cut all stratigraphic levels of the Tyrone Volcanic Group.

Figure 7.5: Tyrone Igneous Complex Geology



Source: After Hollis et al., 2012

North of the Beaghmore Fault, the Greencastle and Broughderg formations of the upper Tyrone Volcanic Group are exposed as a conformable sequence dipping between 35 and 60° to the northwest. Dalradian metasedimentary rocks overlie the succession along its western edge, separated by the low angle Omagh Thrust Fault, which dips around 30° to the northwest (Alsop and Hutton, 1993). The crosscutting nature of the Omagh Thrust Fault provides a relatively complete section through the upper part of the Tyrone Volcanic Group, which has been metamorphosed to chlorite-grade greenschist facies. Further south, sub-greenschist facies metamorphic assemblages are preserved around Formil. Hydrothermal alteration and associated zinc-lead-copper (gold) mineralization are widespread within the Greencastle and Broughderg formations. Mineralization is characterized by pyrite-sphalerite–galena and chalcopyrite in locally silicified, sericitic and/or chloritic tuff/rhyolite (Clifford et al., 1992). Between Racolpa and Broughderg, bodies of tonalite and sills of quartz ± feldspar porphyry intrude both formations. The Greencastle Formation is a relatively thick succession dominated by chloritic, locally sericitized and siliceous quartzo-feldspathic crystal tuff, flow-banded and brecciated rhyolite, rhyolitic lapilli tuff, lesser diorite, rare arkosic sandstone, and localized occurrences of hornblende-phyric tuff. The overlying Broughderg Formation is a diverse succession of intermediate to felsic crystal and lesser lapilli tuff/schist, rhyolite (e.g., around Crosh), vesicular basalt, argillaceous sedimentary rocks, layered chert, and black ironstone (silica-magnetite) with bedded pyrite.

A late suite of I-type, calc-alkalic, tonalitic to granitic plutons intrude the Tyrone Igneous Complex and Tyrone Central Inlier (Draut et al., 2004). Recent uranium-lead zircon geochronology indicates these were intruded between c. 470 and 464 Ma (Cooper et al., 2011).

A gently northwest dipping cleavage intensifies northwards in the volcanics towards the Omagh Thrust Fault, and is correlated with the S3 fabric in the Dalradian Supergroup. The Laght Hill Tonalite has variable relationships with the fabric in the volcanics—early stage tonalite porphyry bodies are deformed by it, but the main body itself cuts the fabric and contains xenoliths that contain the fabric. This suggests that magmatic activity outlasted the overthrusting of the volcanics by the Dalradian (Hollis, 2012).

Hollis et al., (2014) suggest the Tyrone Igneous Complex of Northern Ireland represents a possible broad correlative of the Buchans-Robert's Arm Belt of Newfoundland, host to some of the most metal rich volcanogenic massive sulphide deposits globally. Stratigraphic horizons prospective for volcanogenic massive sulphide mineralization in the Tyrone Igneous Complex are associated with rift-related magmatism, hydrothermal alteration, synvolcanic faults, and high level subvolcanic intrusions (gabbro, diorite, and/or tonalite). Locally intense hydrothermal alteration is characterized by sodium-depletion, elevated silica, magnesium oxide, barium/strontium, bismuth, antimony, chlorite-carbonate-pyrite alteration index (CCPI). On the property, stratigraphic horizons favourable for volcanogenic massive sulphide mineralization occur in the Greencastle Formation and in the Broughderg Formation, all of which contain occurrences of base and precious metal mineralization (Hollis et al., 2014).

7.2.3 Carboniferous

Two Carboniferous basins are present within the licence area: the Omagh Basin comprises the Omagh Sandstone Group to south and the Newtownstewart Outlier comprises the Owenkillew Sandstone Group to the north (Figure 7.4). There are also two Carboniferous groups, the Roe Valley Group and the Tyrone Group, that lie in the north, within the boundary of DG6.

7.2.3.1 Omagh Sandstone Group

The Omagh Sandstone Group rests unconformably on Dalradian rocks. The basal unit is up to 100 metres thick and is composed of non-fossiliferous red sandstone with calcrete nodules, and quartz pebble conglomerates (Mitchell, 2004). Much of the remaining sequence is dominated by channel sandstone and siltstone that contain Courceyan to early Chadian miospores. However, thin algal limestones with evaporite replacement textures occur locally. Some of the limestones contain rare brachiopods. The exact thickness of this group is difficult to estimate based on the amount of uplift, folding, and erosion that has taken place (Mitchell, 2004).

7.2.3.2 Owenkillew Sandstone Group

The Owenkillew Sandstone Group also rests unconformably on the Dalradian rocks and comprises approximately 1,500 m of predominantly non-marine strata present within a half graben. Rock types include greenish-grey and purplish-red sandstone and siltstone, with thin beds of algal laminated limestone (Mitchell, 2004). Mudstones containing miospores have indicated an early Chadian age. The group is thought to have formed in an inter-cratonic basin with current indicators suggesting the sediment source is to the north (Mitchell, 2004).

7.2.3.3 Roe Valley Group

The Roe Valley Group consists of two formations, the Spincha Burn and Barony Glen Formations, which lies unconformably over the Dalradian metasediments. The Spincha Burn Formation comprises a 25 m to 100 m thick succession of conglomerate beds with clasts consisting solely of vein quartz and green psammites. Interbedded sandstone beds are very coarse and unfossiliferous. The Barony Glen Formation is 150 m to 200 m thick. Its lower sections are dominated by calcrete, mudstones and siltstones with some palaeosols. This lower section has been interpreted as pedogenic and lacustrine deposits. In its upper sections thin limestones and grey mudstones become dominant, marking a transition to a marginal marine environment. Miospores, Schopfites claviger and Auroraspora macra place this formation within the Courceyan. (Mitchell, 2004).

7.2.3.4 Tyrone Group

The Tyrone Group is comprised of two formations, the Iniscarn Formation which is overlain by the Altagoan Formations. After a disconformity, the Iniscarn Formation has a 400 m thick succession of purplish to brown conglomerates and breccias. The lower half of the Iniscarn Formation is a conglomerate with large rounded clasts up to 2 m long in a coarse matrix, while the upper half transitions into poorly sorted, angular feldspathic breccias. The Altagoan Formation is comprised of the Drumard and Mormeal members. The lower Drumard member is a 300 m thick package of unfossiliferous, fining upwards series of purple brown sandstones, siltstones and mudstones. The overlying 250 m thick Mormeal member consists of mudstone and channelized sandstones. It also includes five narrow evaporite beds that contain calcite pseudomorphs of halite and gypsum (Mitchell, 2004).

7.3 Mineralization

7.3.1 The Curraghinalt Gold Deposit

High grade gold mineralization occurs as a series of west-northwest trending, moderately to steeply dipping, subparallel stacked veins and arrays of narrow extension veinlets. These veins are hosted by the Neoproterozoic Dalradian rocks in the central section of the Sperrin Mountains, and represent the largest known gold deposit in the United Kingdom.

The Mineral Resource model discussed herein focusses on a set of 16 prominent gold-bearing quartz veins that occur mainly within psammites, semi-pelites, and pelites of the Dalradian Argyll Group, within the Mullaghcarn Formation. Auriferous quartz veins exist between the main modelled veins, but their continuity is difficult to demonstrate at the current drill spacing. The quartz vein system was investigated by core drilling and is partly exposed in underground workings. Surface exposures of the vein system are limited to the Curraghinalt and Attagh Burns (creeks), as well as a variety of surface trenching excavations completed in 2003 and in the late 1980's. The veins range from a few centimetres to over 3 m wide. The modelled veins extend 1,300 m along strike, but the vein system is traceable along strike for at least 1,950 m with similar strike aligned veins occurring over approximately 4 km from Alworries in the east to Scotchtown in the west. The veins have been traced from surface to a depth of approximately 1,200 m. The vein system remains open along strike and at depth. On average, the quartz veins dip between 55° and 75° to the north. The modelled veins are listed in Table 7.2 and shown in Figure 7.6.

In 2007, Dave Coller, PGeo, EurGeol, prepared an initial review of the geological setting of the Curraghinalt vein system. Coller (2007) recognized that the west-northwest trending vein system comprises multiple veins and vein branches (Table 7.3).

Table 7.2: List of Modelled Quartz Veins

Domain Number*	Vein Name
Domain 1	No.1
Domain 2	106-16
Domain 3	V75
Domain 4	Bend
Domain 5	Crow
Domain 6	T17
Domain 7	Mullan
Domain 8	Sheep Dip
Domain 9	Road
Domain 11	Slap Shot (East, West)
Domain 12	V55
Domain 13	Sperrin (East, West)
Domain 14	Causeway
Domain 15	Grizzly (East, West and Mid)
Domain 16	Slap Shot Splay
Domain 17	Bend Splay

* Domain 10 is not used, as such there are 16 modelled veins

Figure 7.6: Modelled Quartz Veins

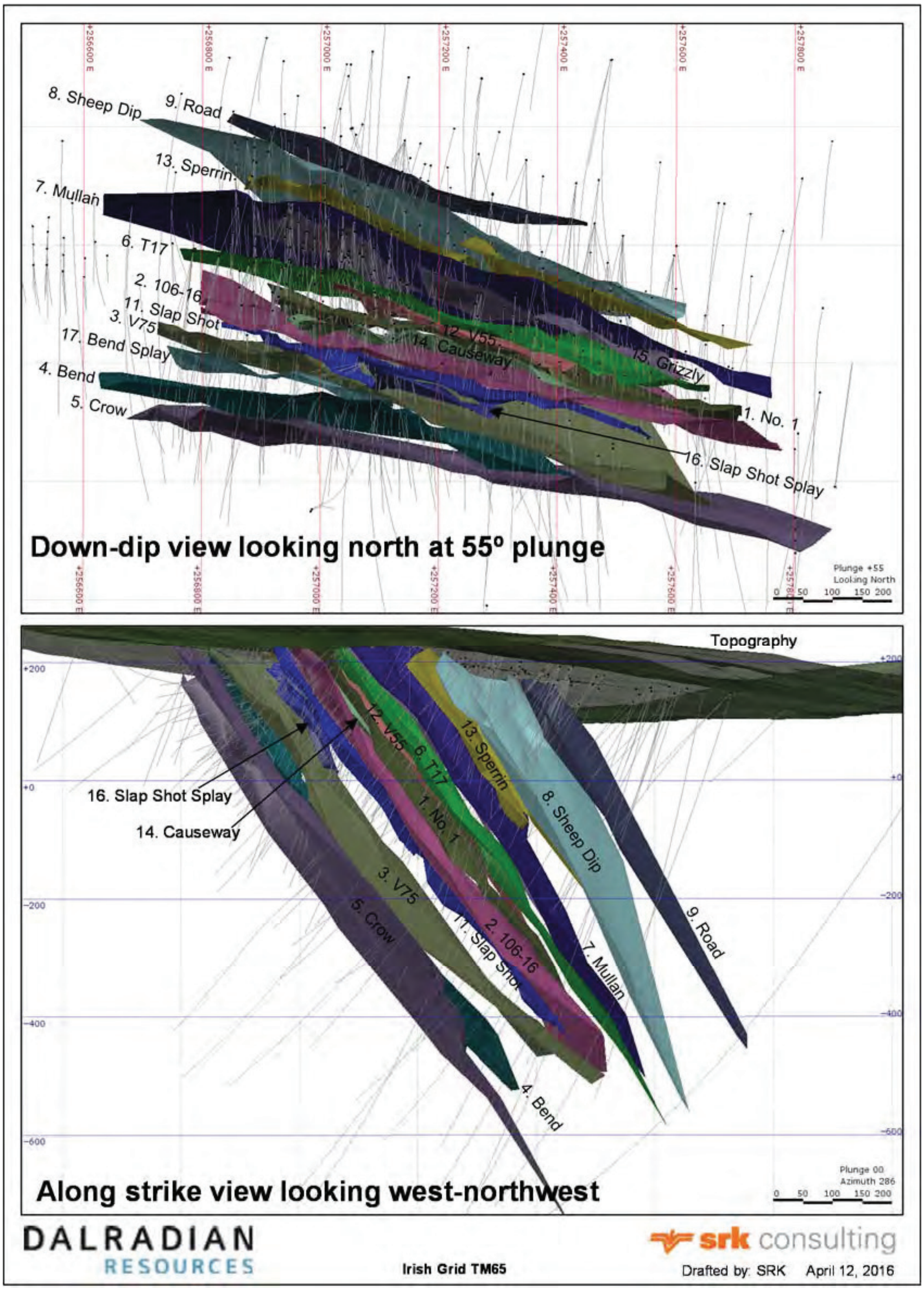


Table 7.3: Definitions for Geometry of the Vein System

Type	Characteristic	Representation	Comments
Vein complex	Series of veins which probably all link in 3D, with one main vein or several en-echelon high grade veins and many branches	Envelope encompassing all the vein branches	Previously defined as single veins, several vein zones and linked branches are potentially economic
Vein zone	Large single or closely spaced branching veins regarded as a single vein	Width of zone containing veins defined as one vein with average grade as on drill sections	In detail, internal vein segments and associated veinlets have separate Au assays but would be mined as a single vein
Vein branch	Veins branch connections between veins zones within a vein complex [sic]	Separate veins in drill sections	Larger branches often high grade and may be mined by linkage to main vein zone
Other veins	Major veins that may link or occur between vein complexes	Separate significant vein zones not named	Could be defined as separate vein complexes with more drilling

In 2012, Miron Berezowski, recognized two main vein sets:

- Shear (D) veins - west-northwest trending, steeply dipping
- Extensional (C) veinlets - arrays of narrow extension veinlets

Single or multiple D veins form vein zones while vein complexes are anchored by a vein zone and are flanked by C-vein arrays.

The D or shear veins are thought to be hosted in west-northwest trending shear zones dipping moderately to steeply to the northeast and with good strike continuity. D veins are often laminated and include slivers of wall rock, evidence of incremental development. Additionally, D veins are commonly brecciated.

The C veinlets are southeast trending, steeply dipping extension veins which are oriented obliquely to the D veins. They show evidence of open space filling, are never brecciated, and do not have sheared margins.

The vein system is cut by two east-west, steeply north-dipping, 4 to 7 m wide ductile shear zones: the Crowsfoot shear and the Kiln Shear. The Kiln Shear also shows evidence of brittle reactivation as indicated by the presence of gouge zones along the contact between the highly strained ductile rocks within the shear zone and the Dalradian metasedimentary wallrocks. The Kiln Shear clearly disrupts and displaces the vein zones (D veins) with observed oblique dextral-normal kinematics.

Vein zones are entrained within the Kiln Shear and previous workers (Boland, 1997) have suggested that the shears have controlled vein emplacement or at least served to produce wider mineralized segments.

The vein swarm has been traced along strike for approximately 1,950 m, across strike for approximately 800 m and down dip for over 1,000 m by prospecting, trenching, and drilling. Sixteen modelled veins are included in the current resource estimate.

Of these veins, some are less continuous and form eastern and western portions. These include Slap Shot (East and West), Sperrin (East and West) and Grizzly (East, West and Mid). Vein splays have also been identified, including Slap Shot Splay and Bend Splay.

Petrographic work by Clarke (2004) has documented that the gold mineralization at Curraghinalt occurs in quartz-pyrite-carbonate veins and is associated with variable abundances of carbonate, chalcopyrite, and tennantite-tetrahedrite. Gold is commonly in the form of native gold and more rarely as electrum (>20 weight percent silver), and occurs primarily along fractures in pyrite, as inclusions in pyrite, and at pyrite grain contacts with carbonate and quartz. Most native gold grains are associated paragenetically with carbonate, chalcopyrite, tennantite-tetrahedrite, and telluride minerals infilling fractures in pyrite. The seven veins studied at the time have similar mineralogy. Native gold was observed in samples from all veins and grains range in size from 2 µm to 150 µm.

7.3.2 Tyrone Volcanic Group

The Tyrone Volcanic Group hosts a number of other gold and gold-plus base metal prospects. Hollis et al., (2014) have identified stratigraphic horizons associated with rift-related magmatism, hydrothermal alteration, synvolcanic faults, and high level subvolcanic intrusions, which are prospective for volcanogenic massive sulphide mineralization. Hollis et al., (2014) suggest that the Tyrone Volcanic Group is broadly correlative with the Buchans-Robert's Arm Belt of Newfoundland, which is host to numerous volcanogenic massive sulphide deposits.