

EL6/2015  
HENTY ROAD, TASMANIA

THIRD ANNUAL REPORT  
FOR THE YEAR ENDED  
25 AUGUST 2018

LICENSEE:  
KINGFISHER EXPLORATION PTY LTD  
A.C.N 169 842 728

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August 2018

**KINGFISHER**  
EXPLORATION PTY LTD

## EXECUTIVE SUMMARY

EL06/2015 is located approximately 10 kilometres southwest of Zeehan on the West Coast of Tasmania. It was granted by Mineral Resources Tasmania to Kingfisher Exploration Pty Ltd (Kingfisher) on 24<sup>th</sup> August 2015. The EL covers 67 square kilometres of ground that is considered prospective for base metal, primarily Zn-(Pb-Ag), deposits of Mississippi Valley Type (MVT), Irish-type, and SEDEX style.

This report documents Kingfisher Exploration's third year exploration activities, for the year ending 25<sup>th</sup> August, 2017.

Exploration activity undertaken during the year included:

- Diamond drilling at Grieves Siding – 5 drill holes for a total of 594.6 m;
- Reconnaissance field visits to the Myrtle and Rose Valley prospect areas.

The drilling confirmed the strike-continuity of the Basal Siderite Zone mineralization and has provided suitable material for planned metallurgical tests. Possible issues with grade-depleting leaching in shallow mineralization (<50m below surface) requires further investigation. Preliminary review of the recent drill hole stratigraphy has led to the interpretation of a previously unidentified syn-sedimentary, basin-related fault structure causing significant facies variation relating to probable ore forming processes at Grieves Siding.

Recommendations for ongoing exploration work in the fourth year of tenure include:

- Detailed gravity (ground or airborne) surveys to cover the Rose Valley and Firewood Siding prospects in the west and the area east of the Professor Range fault;
- Detailed geological mapping over the Rose Valley, Firewood Siding and King Billy prospects area. Combine mapping data with all historical and new geochemical, geophysical and drilling data to generate drilling targets;
- Complete the planned metallurgical tests on Grieves Siding Basal Siderite Zone material derived from the recent 2018 drill program;
- Resource Modelling: update the Grieves Siding JORC Exploration Target to at least Inferred Resources;
- Further drilling at Grieves Siding as warranted based on results of the metallurgical test results;
- Scout drilling at Myrtle prospect and at least one other prospect area.

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# 1 INTRODUCTION

This report is the third Annual Report for EL6/2015 located approximately 10 km south of Zeehan on the Henty Road, in Western Tasmania, granted to Kingfisher Exploration Pty Ltd (Kingfisher) on 24<sup>th</sup> August 2015. EL6/2015 covers 67 square kilometres of ground that is considered prospective for base metal, primarily Zn-(Pb-Ag), deposits of Mississippi Valley Type (MVT), Irish-type, and to a lesser extent SEDEX styles. This report documents exploration activities carried out between the dates 25 August 2017 and 25 August 2018 (the Reporting Period). The work consisted of diamond drilling at Grieves Siding and minor field reconnaissance of other prospect areas.

Exploration activities within EL6/2015 are currently funded through the Tasmetals Farm-in and Joint Venture between Kingfisher Exploration Pty Ltd (KFE) and Pacific Trends Resources Pty Ltd (PTR). PTR are funding the exploration programs while KFE are the operators.

All maps and location coordinates contained within this report are presented in GDA94 datum format unless otherwise noted.

## 1.1 EXPLORATION RATIONALE

The main exploration target model for the licensed area is for medium to large tonnage Irish-style carbonate-hosted Zn-Pb-Ag deposits within the Ordovician Gordon Limestone. The area is also considered prospective for SEDEX and Devonian Zeehan style carbonate-hosted Zn-Pb-Ag vein and replacement deposits.

The Gordon Limestone was deposited over a large area at the close of a major period of tectonic and volcanic activity that produced the metal-rich Cambrian Mount Read Volcanics. During and immediately before carbonate deposition the tectonic regime was still unstable as evidenced by rapid changes in stratigraphic thickness of Late Cambrian and Ordovician strata. It is considered that cooling Middle Cambrian volcanic-hydrothermal systems (the Mt Read Volcanics) may have continued to emit metals into the system, and these could have been focussed by basement irregularities and syn-sedimentary basin-forming faults. Lead isotope studies indicate a Cambrian source for the Ordovician carbonate-hosted deposits at Oceana and Grieves Siding lending support to this theory which adds significant new prospectivity to the Ordovician limestone sequence.

Although there remains strong evidence to continue a concerted exploration focus for primary base metal sulphide mineralization within the tenement there has been an increase in attention and research into the prospectivity and treatment options of Zn-carbonate or “Zn-oxide” mineralogy dominated deposit types. A significant amount of mineralogy at the Grieves Siding Deposit is reportedly of Zn-carbonate mineralogy and this has commonly discouraged previous explorers from further developing the Grieves resource. Kingfisher is currently considering a range of new developing technologies for the treatment of Zn-carbonate ores. Besides this, there is evidence that the higher-grade parts of the system may become sulphide dominant with depth / proximal to source feeder structures.

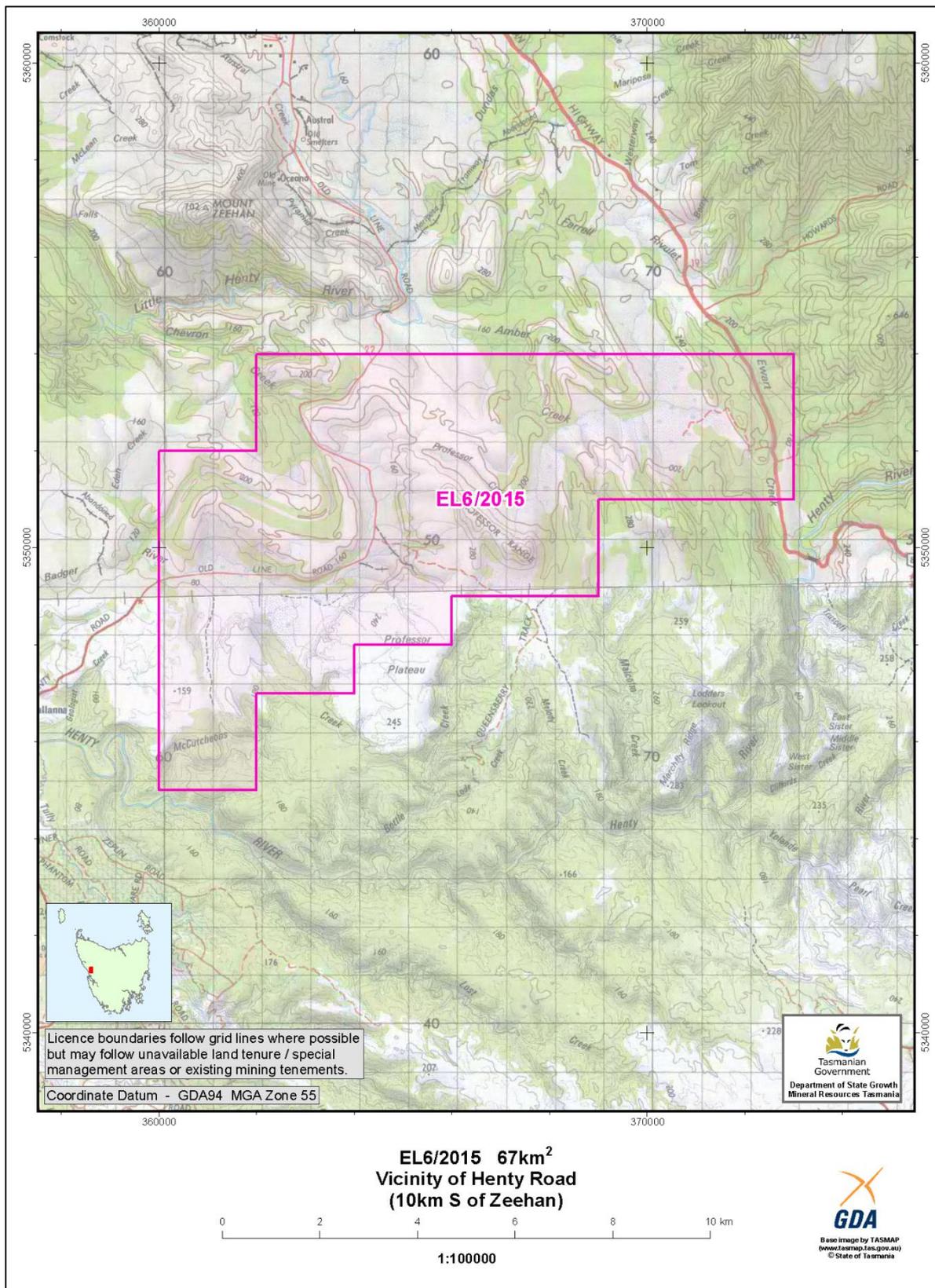


Figure 1. Location plan showing the EL6/2015 tenement area. Datum used is Map Grid of Australia 1994 (MGA94), Zone 55, GDA94.

## **1.2 GEOLOGY**

The regional and local scale geology of EL6/2015 is presented in detail in the 2017 Annual Report (Westbrook and Wighton, 2017). The local scale geology is summarised below.

The local scale geology of the EL6/2015 area represents a sequence of the Wurawina Supergroup rocks comprising Dundas Group and Denison Group (Mt. Zeehan Conglomerate and Moina Sandstone) siliciclastic rocks in the south, stratigraphically younging northwards through the Owen Group carbonates (Owen Limestone) and overlying Eldon Group siliciclastics. The sequence is folded and north-plunging along northwest trending fold axes and also faulted by regional to district and local scale structures along the same trend; including the prominent Professor Range the Firewood Siding Faults. The general younging-northwards trend in stratigraphy is terminated north of the project area by the east-west trending Little Henty Fault which juxtaposes the upper Eldon Group rocks (south of the fault) against older Denison and Dundas Group rocks (north of the fault) suggesting south directed thrusting.

The Ordovician stratigraphic nomenclature of Burrett (1995) for the Zeehan area has been adopted for use in describing the stratigraphy of the project area and is in part combined with CRA terminology that has been largely adopted by previous explorers. Figure 2 shows a stratigraphic column for the main units of interest within the project area. Figure 3 shows the geology of the project area based on combined stratigraphic nomenclature of Burrett (1995) and that developed by previous explorers (namely CRAE). Major rock units are described below.

### **1.2.1 MT ZEEHAN / PROFESSOR RANGE CONGLOMERATE**

A siliciclastic sandstone-siltstone-conglomerate sequence of Late Cambrian age is present underlying the Ordovician carbonates throughout the Professor Range-Henty River area in EL6/2015. The lower part of the sequence is flysch-like in character, with abundant green to grey siltstone. Overlying this, disconformably in places, is a unit of pebble-cobble conglomerate and sandstone, up to 300 m thick, showing some cross-bedding and indications of shallow-water deposition. This is overlain by the thick (up to 1000 m+) upper sequence of Moina Sandstone (described below).

### **1.2.2 MOINA SANDSTONE**

The Early to Middle Ordovician siliciclastic Moina Formation (Moina Sandstone), being a correlate of the Pioneer Sandstone, is the uppermost unit of the Denison Group, conformably overlying the Mount Zeehan / Professor Range Conglomerate. It is characterised by well-sorted siliceous sandstone with localized conglomerate beds, cross-bedding, ripple marking and intensely bioturbated beds. It is generally strongly silicified to quartzite, often becoming a pink silicic quartzite.

### **1.2.3 SILTY TRANSITION UNIT**

The boundary of the Moina Sandstone and the Gordon Group carbonates is marked by a siltstone-mudstone transitional zone (the "Silty Transition Unit") that may vary in thickness from 1 m up to 40 m thick. This unit is regarded by Burrett (1995) and here as the topmost part of the Moina Formation siliciclastics and the base of the Gordon Group is defined as the start of clearly discernible carbonates (Ugbrook Formation). However, it should be noted

that this boundary is often arbitrary due to common interdigitation of the Silty Transition Unit with the carbonates and/or alteration and replacement of limestones by siderite and mineralization.

#### **1.2.4 GORDON LIMESTONE**

The average thickness of the Gordon Limestone in the project area is in the order of 500m to 700 m. Generally, the limestone is a mixture of clean calcsiltite/calculutite with argillaceous calcsiltite/calcarenite, all deposited in a shallow marine environment.

Past workers (Burrett and Ellis) have identified distinct lithotypes for stratigraphic logging and basin interpreting purposes. This involved recognising depositional environments and depth of water during deposition. Carbonate deposition occurred on a mini-platform with 4 main depositional environments recognised: (i) intertidal-supratidal flats, (ii) lagoonal and restricted lagoonal, (iii) intertidal-subtidal bars and shoals, (iv) shallow to medium subtidal open shelves and platforms. Distinctive laminated units periodically occur and these represent shallowing intratidal sequences. Carbonate sedimentation occurred in a tropical environment with an Ordovician seawater temperature between 23 and 25° C (Rao, 1990).

#### **1.2.5 ELDON GROUP**

The Silurian Crotty Quartzite forms the base of the Siluro-Devonian Eldon Group and consists of a series (max. 490 m) of massive to thinly bedded, white, medium to coarse grained friable sandstones interspersed with finer grained white to light grey siltstones. It has a disconformable basal contact with the underlying carbonates and a gradational conformable upper contact with the Amber Slate.

The overlying sequence to the Crotty Quartzite comprises the Amber Slate (240m), Keel Quartzite (120m), Austral Creek Siltstone, Florence Quartzite (490m) and the Bell Shale (420m). This is a series of fining upward siliciclastics (due to basin deepening) that ultimately terminated with the deep basinal mudstones of the Bell Shale.

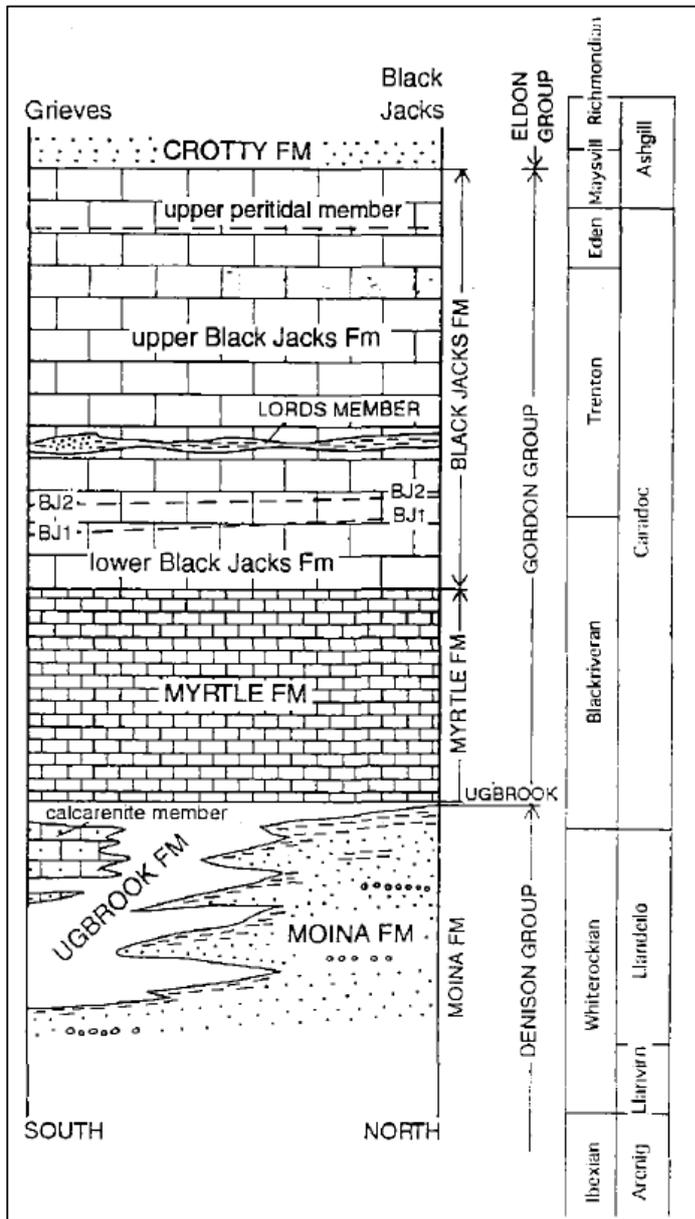


Figure 2. Summary of Late Cambrian to Ordovician lithostratigraphy in the Zeehan region (Burrett, 1995).

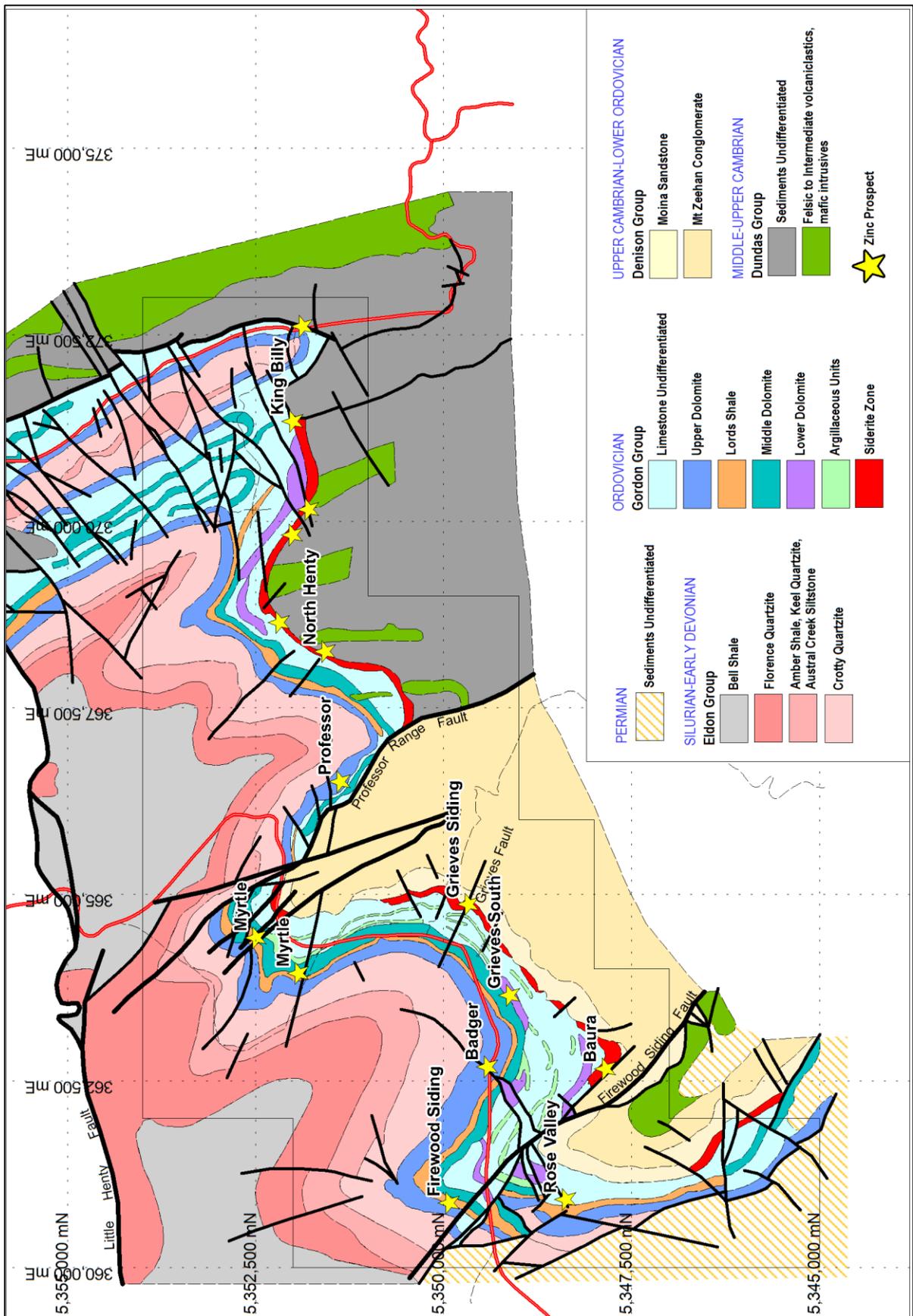


Figure 3. Geology map of the EL6/2015 area with locations of key prospects shown.

## 1.3 MINERALIZATION

Numerous mineralization styles are recognised within the Gordon Limestone within the Henty Zinc Project, EL06/2015. Primary stratiform zinc-lead mineralization occurs at five main stratigraphic levels (Figure 5) within the Gordon Limestone in the project area:

### 1.3.1 Basal Siderite Zone (BSZ)

Basal Siderite Zone mineralization occurs at the base of the Gordon Limestone, above the Silty Transition Unit, and is characterised by mixed zinc sulphide-“oxide” (Carbonate) mineralization hosted within a zone of intense siderite alteration up to 30 m thick. The siderite alteration grades outwards (away from mineralization) into ankerite-siderite and transitions to an outer hydrothermal ferroan dolomite alteration.

Mineralization of this style has an alteration halo that is both visually and geochemically distinct. This halo, characterized by vuggy, broken or massive recrystallised Fe-Mn-Zn-carbonates (siderite) and Fe-rich clays, may extend laterally several hundreds of meters beyond the main zinc mineralization, and thus presents a considerable vector for exploration targeting of the higher grade mineralized zones. Lateral alteration geochemistry is reflected by elevated to anomalous Fe-Mn-As-Zn, while vertically (stratigraphically) above the mineralized core, alteration may be identified as halo of elevated Zn <± As values.

At the Grieves Siding deposit, mineralogy of the BSZ mineralization is complex with a mixture of zincian siderite, smithsonite, hemimorphite and sphalerite-galena in the siderite zone, and a Zn anomalous clay with sphalerite-galena in the clay zone. Comb and cockade textures are common throughout the LSM with colloform growth-banded sphalerite spherules also common (Glover, 1996). These textures are indicative of open-space filling and minor carbonate replacement.

Zn-Carbonate or “Zn-oxide” mineralization commonly forms a significant component of the BSZ. It is grey to light brown, massive and comprised of fine grain intergrowths of calcite, siderite, dolomite, smithsonite, rhodochrosite, and magnesite. Dolomitisation and siderite alteration overprints typically obscures original carbonate textures and in many intersections the Zn-carbonate mineralized zone is partly decomposed to a distinctive grey-brown clay, which retains high zinc grades up to 37.4 % Zn.

Paragenetic studies on the Grieves Siding deposit by Glover (1996) suggest early diagenetic dolomitisation with overprinting by hydrothermal dolomitisation associated with mineralization. Dolomitisation was followed by siderite deposition and pyrite/marcasite infilling with sphalerite and galena precipitated almost contemporaneously, followed by repeated sphalerite dissolution and precipitation producing botryoidal colloform sphalerite spherules. Minor barite, chalcopyrite, covellite and a late phase calcite occurred throughout the BSZ. Late sulphide oxidation and remobilization of HCO<sub>3</sub><sup>-</sup> resulted in the precipitation of smithsonite, rhodochrosite and magnesite. Hemimorphite was precipitated last, cross-cutting and replacing all other minerals.

The Grieves mineralization is both stratiform and controlled by structure, with the thickest and/or richest ore located proximal to the Grieves Fault. There is some evidence to suggest that the sulphide (sphalerite) content increases with proximity to the fault and this is consistent with SEDEX and Irish type stratiform Zn-(Pb-Ag) mineralization deposit type modeling. Given that the stratigraphy is now folded and plunging to the northwest, the high-grade ore zones against the faults should also be plunging along and down the faults. Previous exploration efforts generally failed recognize and target these plunging high-grade zones but instead followed mineralization laterally away from the faults (distally away from the feeder structures).

Tear (1997) suggested that the preferred stratigraphic horizon for zinc mineralization at Grieves Siding is the dolomitised Oolite Unit. However, there is insufficient detail in historical drilling logs to confirm this.

The mineralization at Grieves is very different from the Devonian vein style of the Zeehan Field to the north. It has a lead isotope signature plotting towards the edge of the Cambrian field, and well outside that attributed to Devonian Mineralization. This suggests a Late Cambrian source for the lead and that the mineralizing fluids were derived from the underlying Cambrian volcano-sedimentary units of the Dundas Trough. The fluids may have been warmed by the still cooling Dundas Trough and related igneous activity. The mineralization appears to be syn-depositional and it has been hypothesized that the Grieves Fault was a controlling feature in channeling fluids.

Fluid inclusion studies by Glover (1996) suggest a low salinity (3.5 wt %), low temperature (150°C) fluid was responsible for mineralization. The temperature of homogenization is consistent with MVT and Irish type deposits, however, the low salinity fluids at Grieves differs from these deposits types and may possibly be explained by a lack of evaporites.

The stratiform character, replacement style of alteration/mineralization, intense Fe-Mn alteration, and reasonably predictable geometry has been suggested as similar to the Navan (Ireland) and Reocin (Spain) large Zn-Pb deposits. Siderite is a common alteration mineral associated with mineralization at the SEDEX style Century zinc deposit.

Preliminary metallurgical testing of the primary Basal Siderite Zone mineralization at Grieves Siding by CRAE indicates that the mixed sulphide-oxide ore mineralogy may be amenable to pre-concentration by gravity method. The preliminary test results showed that 87% of zinc minerals were recoverable for a pre-concentrate grade of 22% Zn. Higher grades may be expected with improved liberation. From such a pre-concentrate there may be opportunity to produce separate sulphide- and oxide-concentrates using modern flotation techniques. Extensive siderite alteration is associated with sulphide zinc mineralization at the world-class Century mine in northern Queensland and flotation processes were successfully able to separate out a zinc-sulphide concentrate there.

### **1.3.2 Silty Transition Zone (STZ) Mineralization**

STZ mineralization occurs directly below the BSZ mineralization in the Grieves Siding area. It was previously included within the BSZ but is now classified as a separate zone due to observations made during the reporting period that suggests it has a distinct stratigraphic, mineralogical and litho-geochemical characteristic compared to the overlying BSZ mineralization.

A review of drillhole lithology logs showed that the STZ mineralization is hosted within carbonaceous siltstone, shales and lesser sandstones of the Silty Transition Zone unit, directly overlying the Moina Sandstone and underlying the Gordon Limestone hosted BSZ. Drillhole logs document that it is hosted within black pyritic carbonaceous shales (typically altered to clay (CRAE Black Clay Unit) and ferruginous/gossanous clays (CRAE Ferruginous Clay Unit). The ferruginous clays are likely to be an oxidised version of the black clays (pyritic shale) due to enhanced weathering/oxidation/ferruginisation occurring along the contact with the permeable Moina Sandstone.

The STZ mineralization hosts Zn as well as significant Pb and Ag grades, particularly at its base, directly overlying the Moina Sandstone, which distinguishes it from the overlying BSZ mineralization (dominated by Zn-only grades). It appears to occur in locations adjacent to the Grieves Fault and underlies the thickest and highest-grade parts of the BSZ mineralization. This zonation with Pb-Ag-rich mineralization of the STZ occurring adjacent to the Grieves Fault and underlying the thickest/highest-grade BSZ supports a model for the Grieves Fault acting as a feeder fault to mineralization. This is typical for Irish style and SEDEX deposits where Pb-rich ore is located adjacent to normal syn-sedimentary faults

which acted as fluid conduits (Large et. al., 2002). Recognition of this metal zonation provides a key vector towards economic mineralization and is likely to play an important role in ongoing exploration targeting at the Henty Zinc Project.

An example drillhole is ZG107, which intersected high-grade BSZ and STZ mineralization proximal to the Grieves Fault zone and returned intercepts of:

- **BSZ:** 7.15m @ 14.1 % Zn, 0% Pb from 123.95m;
- **STZ:** 33.8m @ 7.7% Zn+Pb from 131.1m, including:
  - 8m @ 6.7% Zn from 131.1m
  - 8.35m @ 13.9% Zn, 8.5% Pb (22.35% Zn+Pb) and 22g/t Ag from 154.55m.

At Grieves Siding the STZ Ag mineralization also shows elevated Cu and low Mn when compared to the overlying BSZ mineralization. Lithogeochemical differences that support the STZ mineralization being non-carbonate hosted include decreased Ca and Mg content (typically <0.1ppm Ca), and increased Al, K and Ba. **Error! Reference source not found.** shows various downhole lithogeochemical data for drillhole ZG107 illustrating the various differences between the STZ and BSZ mineralization.

It is noteworthy that numerous historical Pb-Ag-rich workings (United Silver Lead, East Amber, North Henty and Silver Lead Reward prospects) are located to the east of the Professor Range, hosted in Cambrian Denison Group siliciclastics that directly underlay Gordon Group carbonates with widespread anomalous zinc and siderite alteration.

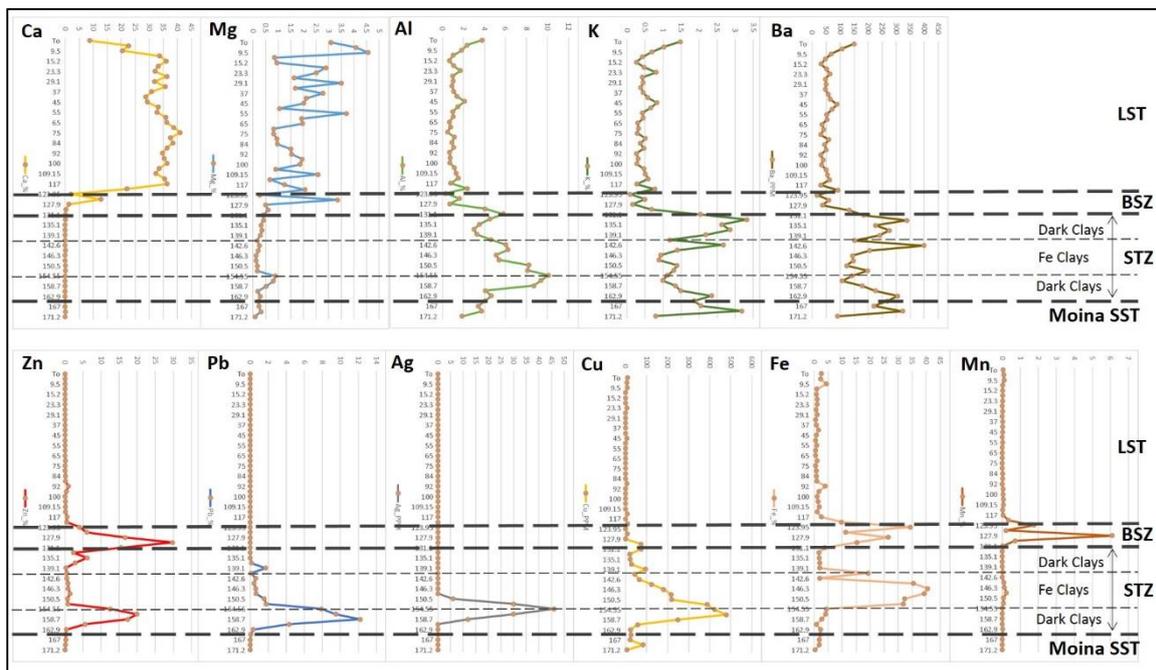


Figure 4. Plots showing an example of various lithogeochemical data used to discriminate between STZ and BSZ mineralization, from drillhole ZG107.

### 1.3.3 Lower Dolomite Zone (LDZ) Mineralization

Mineralization of the Lower Dolomite Zone occurs in dolomitised limestone of the upper Myrtle Formation, below the contact with the Lower Black Jacks Formation. It occurs at the South Grieves Prospect within EL06/2015 and is also speculated to occur at a similar stratigraphic level to the Oceana deposit near Zeehan (2.6 Mt @ 7.7% Pb, 2.5% Zn).

The mineralization at South Grieves is described as breccia-hosted sphalerite-galena mineralization, locally forming massive sulphide and has a possible stratiform linear aspect. Siderite alteration is associated with the LDZ sulphide mineralization suggesting similar ore forming fluids/processes to the BSZ mineralization.

At Oceana, lead-zinc mineralization occurs as two parallel lodes in steeply east dipping calc-siltites, calcarenites and syn-sedimentary breccias. Mineralization comprises stratabound semi-massive galena and sphalerite, locally with semi-massive pyrite, associated with an intense, pervasive hydrothermal siderite alteration. The mineralised body is split into two sections by the obliquely dipping cross-cutting Oceana Mine Fault with the northern limit truncated by the Oceana Fault.

### **1.3.4 Middle Dolomite Zone (MDZ) Mineralization**

Middle Dolomite Zone mineralization at the Henty Zinc Project occurs near the Lords Siltstone member (generally below the siltstone). It is stratabound and often occurs within a brecciated (possibly syn-sedimentary), dolomitized and/or siderite altered limestone. Examples of this style of mineralization occurs at the Grieves and Myrtle prospects.

Mineralogy includes pyrite in calcite veins, isolated massive marcasite, and galena, sphalerite and pyrite with pervasive dolomitisation of the Lower Black Jacks Formation. At Grieves there is very little indication of proximity to mineralization as there is virtually no alteration outside the breccia zone itself.

Massive marcasite located proximal to black matrix breccias have been noted in trenches below the contact of the Lords Siltstone in the northern and north-western Grieves Siding area. The breccias apparently become more silicified to the west and south towards the Badger, Firewood Siding and Rose Valley prospect areas.

### **1.3.5 Upper Dolomite Zone (UDZ) Mineralization**

The upper stratabound mineralization (UDZ) occurs near the contact between the Upper Black Jacks Formation (CRAE Upper Dolomite Unit) and the overlying Crotty Quartzite. Mineralization is not closely bound to the upper quartzite contact, but may "wander" up to 100m stratigraphically below the contact. Low-grade but widely anomalous zones from the Firewood Siding, Grieves, Badger and Professor Range prospects are examples of this mineralization type. The West Lode at the Mariposa deposit (0.4 Mt grading 5.51% Pb, 1.25% Zn, 59.3 g/t Ag) also occurs in this stratigraphic position.

UDZ mineralization in the Henty Zinc Project area is characterized by widespread but low-level Zn in the 0.1% to 2% Zn range. To date, none of the prospects tested have revealed a higher-grade core, although given that only limited drilling has targeted this stratigraphic level, it is entirely possible high-grade cores may exist. Limited mineralogy studies suggest all Zn to be as sphalerite.

Air-core drilling shows the near-surface mineralized zones to be comprised of clays and decomposed carbonate. Rare fresher material is usually a granular recrystallised dolomite and ferroan-dolomite. Intense siderite alteration characteristic of the lower Grieves-style mineralization, is apparently absent in the upper mineralization. Alteration associated with the upper stratabound mineralization has not been studied in any detail.

At Mariposa, the West Lode occurs as a strata-parallel vein or replacement zone with disseminated galena and sphalerite hosted within limestone. The mineralization occurs some 50 m below the contact with the overlying Crotty Quartzite, potentially at the base of the dolomitised Upper Black Jacks Formation. It measures 340 m long and extends down-dip for 100 to 200 m with a true width ranging between 1 and 6 m (Tear, 2006).

The upper dolomite zone style may be occurring within karstic structures formed by Ordovician weathering before deposition of the Crotty Quartzite. This setting could be considered as possibly analogous to the Bleiberg or Cracow-Silesia style deposits.

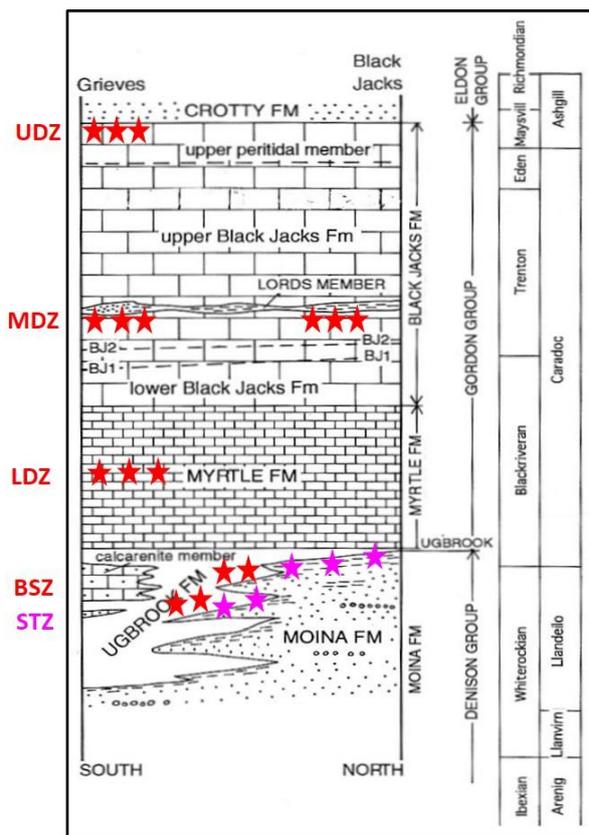


Figure 5. Local stratigraphic column showing the position of primary carbonate hosted zinc mineralization. BSZ – Basal Siderite Zone, STZ – Silty Transition Zone, LDZ – Lower Dolomite Zone, MDZ – Middle Dolomite Zone, UDZ – Upper Dolomite Zone.

### 1.3.6 OTHER MINERALIZATION TYPES

#### 1.3.6.1 Surficial Clay Hosted Mineralization

The surficial clay hosted mineralization occurs as accumulation of predominantly ultra-fine sphalerite disseminated in decomposed carbonate that typically occupies the trace of underlying primary stratabound mineralization. Depth of the Zn-rich clays and decomposed carbonates averages 10 to 20 m but have been reported up to 100 m at Oceana.

While a thin layer of decomposed carbonate is typically widely developed within large areas of the Gordon Limestone, this layer only thickens and becomes substantially Zn-rich as the zone of primary mineralization is approached. Clay thickness and Zn grade may therefore be useful vectors towards primary mineralization zones. At Grieves Siding the surficial Zn-clay is geochemically distinct from the underlying primary mineralization with generally higher but variable sulphur values and significantly less Fe and Mn.

Geochemically barren peat and gravels up to 5 m thick typically overly the clays over all of the project area.

#### Late-Stage Structurally Controlled Mineralization (Zeehan Style)

Structurally controlled mineralization may occur at any stratigraphic level. It appears to be late-stage filling of brittle fractures. Alteration of wall-rocks is absent, and the gangue to mineralization may be pure calcite. Mineralization within the structures is patchily distributed. Ore minerals are coarse-grained sulphides. Devonian deformation is the likely cause of the

fracturing and mineralization. Potential deposit size potential is considered small, although the presence of discordant mineralization may indicate a nearby stratabound source.

## 1.4 ALTERATION

Moody (1994) theorised a zoned hydrothermal alteration system associated with the carbonate-hosted base metal mineralization in the Zeehan sub-basin based on aircore/diamond core logging, petrographic and mineralogical studies and observations from the Grieves Siding, Firewood Siding, Myrtle, Mariposa, Sunny Corner, Bannockburn and Pyramid prospects. The Oceana deposit in the same district is noted to have similar alteration characteristics. The alteration and lithogeochemical zonation in the Zeehan Sub-basin show many close similarities to other stratiform Zn-Pb-Ag deposits in Australia (**Error! Reference source not found.** 6) and provide a useful vector in assisting exploration efforts in locating high-grade Zn-(Pb-Ag) mineralization in the district. It should be noted that the character of the alteration may vary according to primary lithology, porosity and limestone facies distribution.

Alteration characteristics defined by Moody (1994) include:

- Zonation from unaltered or "calcite-dominated" limestones to altered "dolomitised" limestones which include an outer dolomite zone (weak alteration), ankerite-dolomite zone (moderate alteration) and siderite-ankerite zone (intense alteration) associated with increasing Zn-Pb-Ag mineralization.
- Disseminated or pervasive carbonate mineral species become more Zn, Mg, Fe and Mn rich as alteration intensifies.
- Hydrothermal maturation of organic material to pyrobitumen and/or mobilization of hydrocarbon material is associated with alteration and mineralization.
- High grade zinc-lead mineralization is spatially associated with intense hydrothermal zincian-manganosan-magnesian siderite, ankerite and local illite-sericite alteration, and volume decrease, creating pore space.
- Disseminated, vein and replacement style zinc, lead, silver, iron and rare copper sulphides and barite mineralization increase with increasing alteration.

Areas of silicification have also been identified, although it is currently not understood if these are related to or provide an indicator of proximity to zinc mineralization. Black matrix breccias and silicified dolomite breccias have also been observed, generally with increasing proximity to the Firewood Siding Fault.

The pattern of increasing alteration and Zn-(Pb-Ag) mineralization includes (Moody 1994):

**Un-mineralized:** limestones typically display weak dolomitisation and diagenetic silica alteration. Organic matter is less thermally mature than in altered limestones associated with zinc mineralization.

**Dolomite zone:** Involves subtle fine grained pervasive dolomitisation and recrystallisation characterized by weak/slow reactivity to dilute HCl. This process may have involved some introduction of carbonate into some less carbonatic facies, minor vein/fracture-hosted Zn-Pb mineralization and possibly an increase in bituminous stylolites (? due to calcite dissolution).

**Ankerite-Dolomite zone:** This includes increased and coarser recrystallised dolomite alteration and introduction of fine-medium grained sparry ferroan dolomite and ankerite. Dolomite and ankerite veining and brecciation increase approaching high grade base metal mineralization. This zone is associated occasionally with development of saddle dolomite

lined voids, destruction of primary textures or fabrics and minor disseminated and vein-hosted pyrite±galena±sphalerite±chalcopyrite±marcasite assemblages.

In the ankerite-dolomite and dolomite zones, field discrimination between ankerite and dolomite is not precise. Visual indicators for this pervasive dolomite ankerite mineralization include bone or cream coloured veins and/or oxidation of exposed limestones or cut surfaces to a cream colour. In fresh samples the altered limestones in this zone become inert or very weakly reactive to dilute HCl. An increase in specific gravity and veining/fracturing may be noticeable. Blocky rhombs of bone/opaque ankerite or dolomite can be observed under 10x and 25x magnification.

**Siderite-Ankerite zone:** Characterized by intense, pervasive iron-carbonate (siderite and ankerite±dolomite) alteration and replacement (completely obliterating primary textures), local intense solution and fracture-controlled brecciation, colloform banded carbonate replacement, sparry colourless calcite, rare barite veining, pervasive and vein/open-space sphalerite-galena-(pyrite) mineralization. Limestones in this zone may also decompose to a poorly consolidated puggy carbonaceous material (yellow or brownish when zinc mineralized). This alteration is most obvious in the silty-sandy clastic and oolitic limestone facies. In black lutites or black matrix breccias the alteration and very fine grained high-grade zinc carbonate & sulphide mineralization may be very difficult to separate with the naked eye. Higher grade mineralization is indicated by inertness to dilute HCl, breccia texture in some samples, and oxidation of core or chips to a chocolate brown colour on exposed surfaces.

Organic material/bituminous material in fractures and brown organic staining is more common immediately peripheral to the iron-carbonate alteration zones. Thermal alteration of organic material to pyrobitumen is intimately associated with zinc carbonate and sulphide mineralization. At least two generations of stylolite development are present with an early set developed along bedding and later "post" stylolite steeply cross cutting the- earlier set. The post stylolites contain- pyrobitumen and locally traces of pyrite- and sphalerite suggesting later deformation linked timing of some of the sphalerite mineralization. The association of hydrothermal maturation of organic matter to pyrobitumen observed both in core and thin section, demonstrate alteration and zinc-lead-silver mineralization are associated with a thermal anomalism.

Strongest alteration zones are commonly located immediately above the Moina Sandstone and immediately beneath the Crotty Quartzite, but may occur at several levels in the stratigraphy. The alteration is apparently asymmetric and may correspond to an alteration-mineralizing front/migration pathway. Boundaries between the alteration zones may also be sharp.

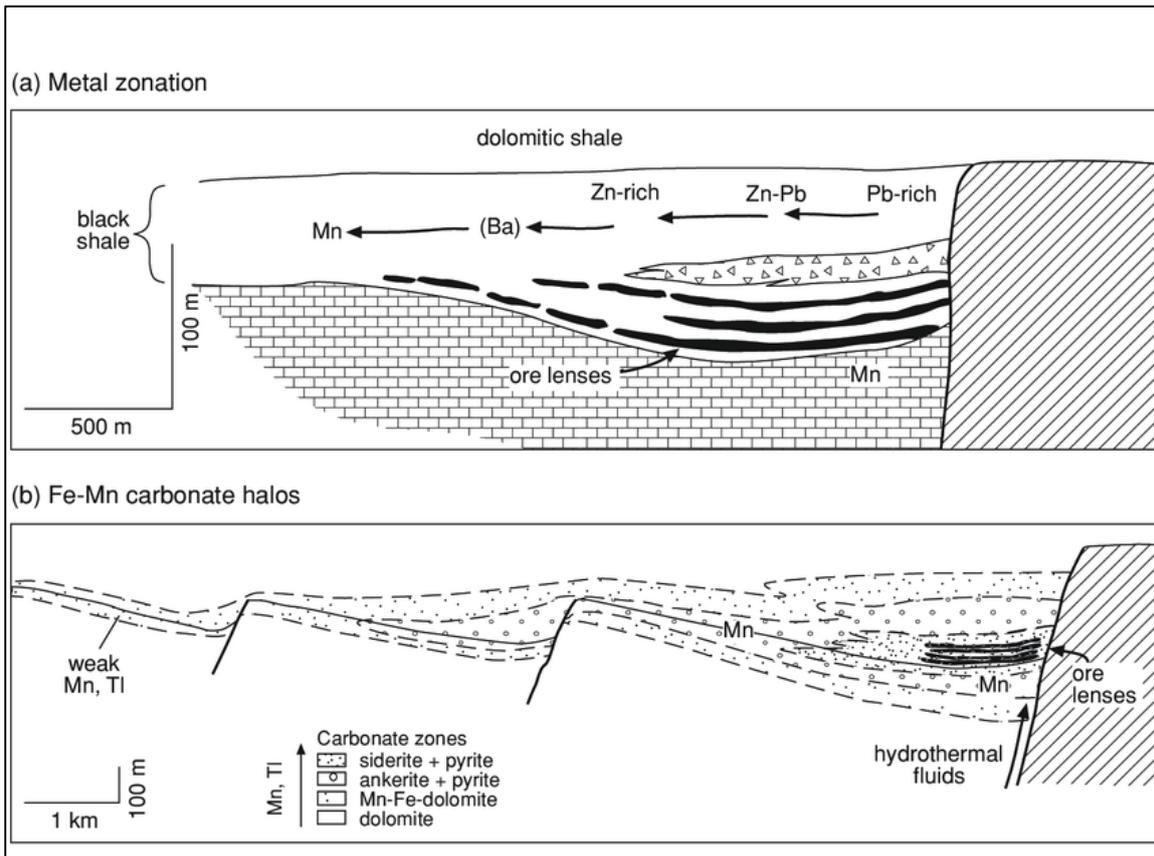


Figure 6. (a) typical metal zonation in stratiform Zn-Pb-Ag deposits; (b) schematic identifying the pattern of carbonate lithogeochemical halos related to some Australian deposits. From Large et al. (2002).

## 2 REVIEW OF PREVIOUS WORK

Exploration activities by previous explorers is summarised in the EL6/2015 2017 Annual Report (Westbrook & Wighton, 2017).

Exploration activity undertaken by Kingfisher Exploration during the first and second years of tenure of EL6/2015 included:

- Collation, digitisation and review of pre-existing data, mineralization and alteration styles and genetic models;
- 3D modelling of stratigraphy, mineralization, alteration and geochemistry for the Grieves Siding deposit;
- Independent Geologist Report completed on the project area with a JORC Exploration Target estimate for the Grieves Siding deposit;
- Field reconnaissance visits, validation of historical drill hole collars at Grieves Siding (where possible), assessment of access, logistical and possible environmental issues;
- Planning and approvals for a metallurgical and resource drilling program at Grieves Siding deposit;
- Preliminary assessment of metallurgical/processing methods for Grieves Siding sulphide-carbonate zinc ore;
- Development of a conceptual genetic and exploration model, exploration targeting.

Considerable exploration work has been carried out in the project area by several previous explorers since the 1980's. Activities undertaken include geological mapping, surface geochemistry sampling, costeaning and pitting, geophysical surveys (including airborne magnetics, gravity, electromagnetics and IP), drilling (13,500+ meters of aircore drilling and around 11,000 m of diamond core drilling), metallurgy, mineralogy, petrography, resource assessment and scoping studies. This has resulted in a vast amount of data contained in historical exploration reports and Kingfisher's first- and second-year exploration efforts largely involved collating, digitising and modelling this data. The review work resulted in identifying a number of high-priority exploration target areas that were the focus of field exploration activities including a MRT-approved drilling program at the Grieves Siding prospect.

A revised (non-JORC) resource estimate was calculated for shallow (<200m) mineralization at the Grieves Siding prospect and indicated a current total near-surface resource potential of around 2.2 Mt grading 8.2% Zn, which includes 1.9 Mt grading 8.7% Zn comprised of primary (bedrock) mineralization. 3D geological modelling of the mineralization resulted in an improved understanding of combined stratigraphic and structural controls to mineralization.

An Independent Geologist's Report (IGR), completed by Westoria Capital Pty Ltd (Westoria) in 2016 established a JORC-compliant Exploration Target for the Grieves Siding deposit of **1.45 to 2.34 Mt** at a grade range between **4.6 and 10.5% Zn** (Appendix II, Westbrook & Wighton, 2017).

A resource infill and extension drilling program was designed for the bedrock mineralization at Grieves Siding based on the 3D modelling results. A total of 58 drillholes for 6,720m were

planned on a nominal 50x50m drillhole spacing over the Grieves Central and North mineralization domains. These holes were then reduced to a 37-hole Phase 1 program for a total of 3,635 m, designed to test the main modelled mineralized zones around 250 m either side of the Grieves Fault zone with drillholes mainly targeting shallow (<200m depth) Basal Siderite Zone (BSZ) and Silty Transition Zone (STZ) mineralization.

Following a change to the initial drilling budget, the proposed Phase 1 drillholes were further prioritized down to around 12 drillholes to focus on initially confirming historic drilling intersections, expanding the mineralization footprint and providing material for first round metallurgical test work. Drilling targeted zones around the highest-grades and where existing access tracks could be utilized so to have minimal environmental disturbance. The 12-hole drilling program was approved by MRT on 12<sup>th</sup> April 2017.

### 3 EXPLORATION COMPLETED DURING REPORTING PERIOD

Exploration activity undertaken during the third year of tenure of EL6/2015 included:

- Diamond drilling at Grieves Siding – 5 drill holes for a total of 594.6 m;
- Reconnaissance field visits to the Myrtle and Rose Valley prospect areas.

#### 3.1 GRIEVES SIDING DIAMOND DRILLING

Five diamond drillholes (DD18HG001 to DD18HG005), totalling 594.6 m, were completed at Grieves Siding during the reporting period. Drilling commenced on 10<sup>th</sup> April 2018 and ended on 26<sup>th</sup> June 2018. All of the holes were drilled by Edrill drilling contractors using a track-mounted Sandvik DE710 rig.

Drill core was transported by vehicle to Zeehan where it was logged for core recovery, RQD, geotechnical features, geology, alteration and mineralization. The core was photographed prior to cutting for sampling. Half core sampling was carried out over the entire hole, with sampled intervals generally based on drill run intervals (average 1.5 m sample intervals) due to poor core recovery issues. The half core samples were submitted to SGS Australia for multi-element and gold analysis.

Table 1 shows the Grieves Siding drillhole collar details. Figure 7 shows a plan of the drillhole locations. Drill sections are presented in Figures 9 to 12. Drillhole geological logs, down hole surveys, core photos and other relevant data are provided as metadata digital files with this report.

Final assays results have only just been received at the time of reporting and a geological review is currently in progress.

Hole ID	Easting	Northing	RL	Dip	Azi	Total Depth (m)	Date Drilled
DD18HG001	364647	5349471	155	-60	143.5	72.5	13/04/2018
DD18HG002	364698	5349666	142	-55	144	153.5	23/04/2018
DD18HG003	364666	5349598	144	-60	142	142.2	8/05/2018
DD18HG004	364757	5349570	147	-60	148	56.3	31/05/2018
DD18HG005	364758	5349571	147	-53.5	29	170.1	8/06/2018

Table 1. Grieves Siding drillhole collar details, 2018.

##### 3.1.1 DD18HG001

Drillhole DD18HG001 was designed to test for possible up-dip extension of mineralization intersected in drillholes ZG359 and ZG360 (previously drilled by CRAE) and to provide material for metallurgical testing of shallow-zone mineralization. A summary geological log of the hole is shown in Table 2.

DD18HG001 intersected a wide zone of strongly decomposed black carbonaceous clay breccias after limey mudstone (Gordon Limestone), with occasional siderite altered clasts. The nature of the breccia is currently unclear, however, possible faulting and/or karsting is suspected. Basal Siderite Zone mineralization was not intersected in the expected position

below the Oolitic Unit, instead disturbed (possibly faulted?) clays of the Silty Transition Zone were intersected immediately below the Oolitic Unit.

From	To	Description
0.0	5.0	Surface gravels.
5.0	11.4	Peaty clays, no recovery 9.9-11.4m.
11.4	12.9	Gravels - karst in-fill?
12.9	43.5	Decomposed Gordon Limestone. Carbonaceous clayey limely mudstone and common breccia.
43.5	51.0	Dolomite altered grainy oolitic grainstone. Competent but strongly brittle fractured, locally brecciated with Mn-FeOx clay matrix. Oolitic Unit.
51.0	52.6	Fault zone(?) - soft brown-grey clays after clayey breccia? Disturbed and with shear texture.
52.6	64.9	Carbonaceous gritty clayey mudstone and siltstone. 0.5-1% dissem pyrite. STU.
64.9	72.5	Moina sandstone - pale green-grey quartzite.

Table 2. Drillhole DD18HG001 summary geology log.

DD18HG001 failed to intercept economic grades of mineralization, however, broad zones of low-grade mineralization are indicated from assay results. Significant intersections, calculated on the basis of Zn content, were:

- 49.6 m @ 0.6% Zn from 5.0 m (no Zn cut-off); including:
  - 3 m @ 1.5% Zn from 23.4 m; and
  - 3 m @ 1.6 % Zn from 49.9 m.

Core recovery from DD18HG001 was generally poor, resulting from the strongly decomposed nature of the Gordon Limestone and alteration/mineralization zones in the shallow stratigraphy. The effect of the poor recovery on the disappointing assay results is currently unclear.

### 3.1.2 DD18HG002

DD18HG002 was designed with three main objectives:

1. To confirm economic zinc grades intercepted in historical drillholes;
2. To provide suitable mineralised material for metallurgical tests; and
3. Provide information on the stratigraphy, alteration and mineralization style associated with high-grade mineralization.

A summary geological log of the hole is shown in Table 3.

Results from DD18HG002 were generally consistent with zinc intercepts in nearby historical drill holes and should provide suitable material for planned metallurgical tests. The main mineralized interval (9.3 @ 6.9% Zn) occurs in strongly siderite altered dolomitic limestone and laminated black mudstone clays corresponding to the Basal Siderite Zone (see Figure 2). The lower interval (9.0 m @ 2.2% Zn) occurs directly below a zone of gossanous, oxidized clays in gritty siltstones of the Silty Transition Unit (STU). The lower interval contained elevated Pb and Ag levels, consistent with results from previous drilling.

From	To	Description
0.0	3.5	Surface gravels.
3.5	82.4	Gordon Limestone - alternating units of limey mudstones, micrite, and biomicrites. Variably fossiliferous, commonly bioturbated and nodular.
82.4	104.8	Dolomite-ankerite altered Gordon Limestone.
104.8	107.2	Pervasively siderite-ferruginous dolomite altered zone (BSZ)
107.2	126.2	Carbonaceous clays, breccia, mudstone-siltstone (STU).
126.2	133.9	Ferruginous altered clays, breccia, mudstone-siltstone (STU).
133.9	135.3	Breccia - siderite altered siltstone clasts in black sandy clay matrix (STU)
135.3	152.8	Silty clay with gritty, sandy clay interbeds, localised zones of siderite alteration (STZ).
152.8	153.5	Moina Sandstone - coarse grained bedded quartzite.

Table 3. Drillhole DD18HG002 summary geology log.

Significant zinc intercepts in DD18HG002 included:

Basal Siderite Zone:

- 21 m @ 3.8% Zn from 98.0 m, including:
  - **9.3m @ 6.9% Zn, 0.8% Pb and 4.4 g/t Ag from 103.7 m.**

The highest-grade single intercept in the DD18HG002 Basal Siderite Zone was 3.2 m @ 9.6% Zn from 105.3 m.

Silty Transition Zone:

- 9 m @ 2.2% Zn, 1.8 % Pb and 9.3 g/t Ag from 134 m, including:
  - 3 m @ 3.2 % Zn, 3.2% Pb and 17.8 g/t Ag from 140m.

### 3.1.3 DD18HG003

DD18HG003 was designed to test the continuity of mineralization along strike from DD18HG002 approximately 65m to the southwest. A summary geological log of the hole is shown in Table 4.

From	To	Description
0.0	2.0	Surface gravels.
2.0	96.9	Gordon Limestone - alternating units of limey mudstones, micrite, and biomicrites. Variably fossiliferous, commonly bioturbated and nodular.
96.9	110.0	Ankerite-dolomite altered coarse grain, poorly to moderately sorted bioclastic (fossil frags), grain stone - biomicrite.
110.0	111.5	Pervasively siderite-ferruginous dolomite altered rock.
111.5	124.1	Dolomite-ankerite altered, strongly brittle fractured massive oolitic grainstone (Oolitic Unit).
124.1	126.9	Pervasively siderite-ferruginous dolomite altered rock (BSZ).
126.9	137.5	Laminated to massive dark grey plastic clays and altered siltstone (STU). Pyrite locally up to 25%.
137.5	142.2	Moina Sandstone - fine grained and laminated to 140.1m then becoming coarser grained and poorly sorted to EOH.

Table 4. Drillhole DD18HG003 summary geology log.

Significant zinc intercepts in DD18HG003 included:

- **5.1 m @ 15.6% Zn and 1.1% Pb from 124 m** (Basal Siderite Zone).
- 1.5 m @ 3.7% Zn from 110 m;
- 2.6 m @ 3.8% Zn, 1.0% Pb from 134.9 m (Silty Transition Zone).

DD18HG003 was generally successful in confirming the along-strike continuity of the Basal Siderite Zone mineralization. However, the stratigraphy varied from DD18HG002 with the presence of the Oolitic Unit (not observed in DD18HG002) and a significantly reduced thickness of the Silty Transition Unit.

### 3.1.4 DD18HG004

DD18HG004 was designed to test the continuity of mineralization up-dip from DD18HG002 and to provide material for metallurgical testing of shallow-zone mineralization. A summary geological log of the hole is shown in Table 5. Downhole zinc assays are plotted in

From	To	Description
0.0	4.8	Surface gravels.
4.8	21.8	Gordon Limestone - alternating units of limey mudstones, micrite, and biomicrites. Variably fossiliferous, commonly bioturbated and nodular.
21.8	37.5	Weak to strongly ferruginous dolomite - siderite altered black-brown rock, variably leached and decomposed to gritty carbonaceous clays, hard and competent in parts, vuggy-honey comb texture in parts. Generally poor recovery.
37.5	56.3	Dolomite-ankerite altered, intensely brittle fractured massive oolitic grainstone (Oolitic Unit).

Table 5. Drillhole DD18HG004 summary geology log.

Unfortunately, DD18HG004 had to be terminated early due to poor ground conditions and a collapsing hole. The intersected stratigraphy is generally consistent with that reported from historical drillholes along the section, including a siderite altered zone overlying the Oolitic Unit. The intersected siderite zone did not return any significant economic intercepts although wide zones of elevated zinc are indicated. Poor core recovery and potential leaching of zinc-carbonate minerals is suspected to be at least partly responsible for the low zinc assays in this zone.

Zinc intercepts in DD18HG004 included:

- 49.5 m @ 0.44% Zn from 6.8 m, including:
  - 4.5 m @ 2.5 % Zn from 30.8 m.

### 3.1.5 DD18HG005

DD18HG005 was designed to test for continuity of mineralization along strike to the northeast of DD18HG002 and up-dip of historical drillhole ZG406 as well as to provide mineralised material for metallurgical tests. Due to access issues in boggy ground and a desire to minimise environmental disturbance, DD18HG005 was drilled from the same drill pad as DD18HG004 and was thus drilling oblique/down-plunge of stratigraphy and mineralization. A summary geological log of DD18HG005 is shown in Table 6. Figure 10 and Figure 11 show the downhole zinc assay plots.

From	To	Description
0.0	5.0	Surface gravels.
5.0	15.7	Variably decomposed Gordon Limestone - nodular to wispy banded limey mudstone.
15.7	25.7	Decomposed Gordon Limestone. Clayey, manganiferous-carbonaceous-sideritic clays after altered limey mudstone. Poor core recovery.
25.7	65.7	Intensely altered, hard, dark black-grey-brown siderite-ferruginous dolomite rock after limey mudstone. Commonly vuggy after leaching of carbonates and variably decomposed to gritty clays. Typically poor core recovery due to broken core after leaching and high vugh intensity. BSZ.
65.7	84.9	Dark grey-black altered, brecciated limey mudstone with bands of hard siderite alteration. 75.7-80.50m: zone of intensely altered, vuggy, hard rock but poor recovery.
84.9	94.0	Intensely altered, hard, dark black-grey-brown siderite-ferruginous dolomite rock after limey mudstone. Highly vuggy after weathering of carbonates. Poor core recovery.
94.0	99.0	Dark grey carbonaceous, pyritic clays after decomposing altered dolomite (Gordon Limestone). Zones of fresher, variably vuggy, hard black dolomite with yellow-brown siderite breccia clasts. Pyrite locally to to 10-20%.
99.0	117.7	Intensely siderite-ferruginous dolomite altered rock. variably vuggy and decomposed to back pyritic clays. Generally, less leached/vuggy than higher in the hole. Common blebs to discontinuous bands of yellow-brown siderite within darker black-grey ferruginous dolomite matrix. Pyrite locally up to 5-10% in clay zones. BSZ.
117.7	127.5	Dark grey gritty to clays, common breccia texture with lighter grey-yellow siderite altered siltstone clasts. STU.
127.5	146.0	Ferruginous clays, gossanous in parts. Intense hard goethite 141.5-143.8m. STU.
146.0	158.0	Variably weathered/oxidised black-grey quartzose gritty mudstone, locally ferruginised to pale grey-orange clays. STU.
158.0	170.1	Moina Sandstone - quartz-rich, fine grain to very coarse sandstone and pebble conglomerate.

Table 6. Drillhole DD18HG005 summary geology log.

The stratigraphy, alteration and mineralization intersected in DD18HG005 was generally as anticipated. The absence of the Oolitic Unit and a thick Silty Transition Zone with breccias is noted as being similar to drillhole DD18HG002, although caution is required in interpretations due to the oblique nature of this hole. Wide zones of siderite alteration were intersected, however, above 94 m the siderite zone is typically affected by strong weathering, being highly vuggy with poor core recovery and low-level zinc assays. In contrast, relatively non-leached, massive competent core recovered from the siderite alteration below 94 m returned economic zinc grades. These observations suggest a possible issue with the leaching of zinc-carbonate minerals in the upper, shallower levels of the would-be ore zone.

Significant zinc intercepts in DD18HG005 included:

- 148.6 m @ 2.1% Zn, 0.4 % Pb from 5.1m, including:
  - **23.9 m @ 5.6 % Zn, 0.6% Pb from 93.8m (Basal Siderite Zone);**

- **3.0 m @ 3.2 % Zn, 7.2 % Pb, 19.9 g/t Ag from 146.2 m** (Silty Transition Zone).
- 1.6 m @ 7.5% Zn from 5.1 m;
- 1.5 m @ 5.2% Zn from 71.2 m;
- 2.9 m @ 3.1% Zn from 81.7 m;

## **3.2 RECONNAISSANCE FIELD VISITS**

Reconnaissance field visits were carried out to a number of prospect areas within EL6/2015, including the Myrtle and Rose Valley prospect areas.

The Myrtle prospect area was visited for geological reconnaissance and also to ascertain potential access routes for future exploration activity. The area is generally heavily vegetated with significant gorse weed issues. All old vehicle tracks are now heavily gorse infested, prevented any vehicle access. Outcrop is sparse in the area due to vegetation cover and a deep weathering profile. The location of historical CRAE trench was surveyed and confirmed by the remnants of trench spoil material. The presence of galena and gossanous material in the spoil supports the presence of sulphide mineralization at myrtle as previously reported.

The Rose Valley area was visited in order to confirm reports of outcropping silicified carbonate breccia in the area. Such breccia outcrop was confirmed and further work to investigate these is planned.

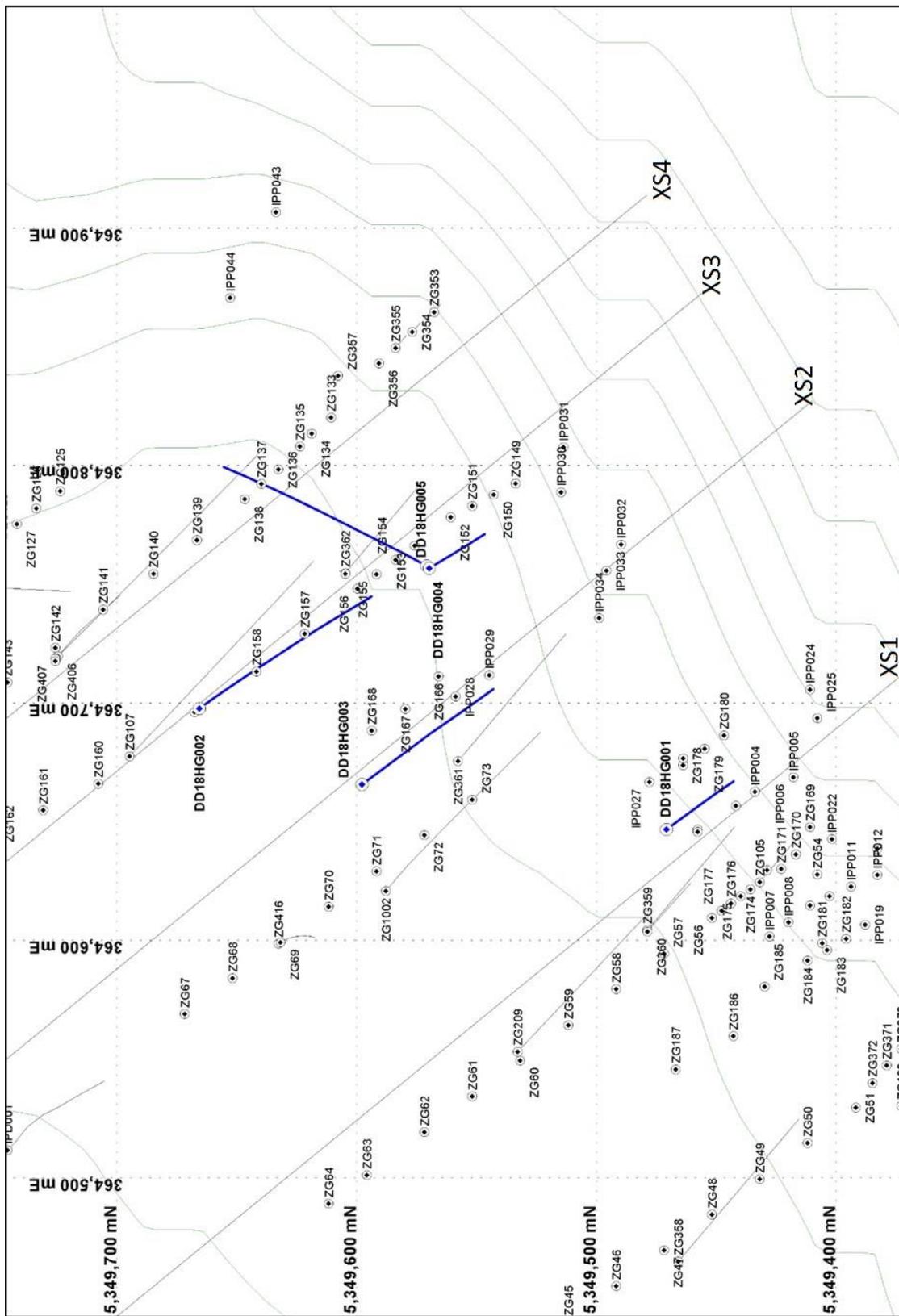


Figure 7. Plan showing drillhole collar locations and traces at Grieves Siding. Recent drillholes are shown in blue. XS = Cross Section (refer to Figures 9 to 12).



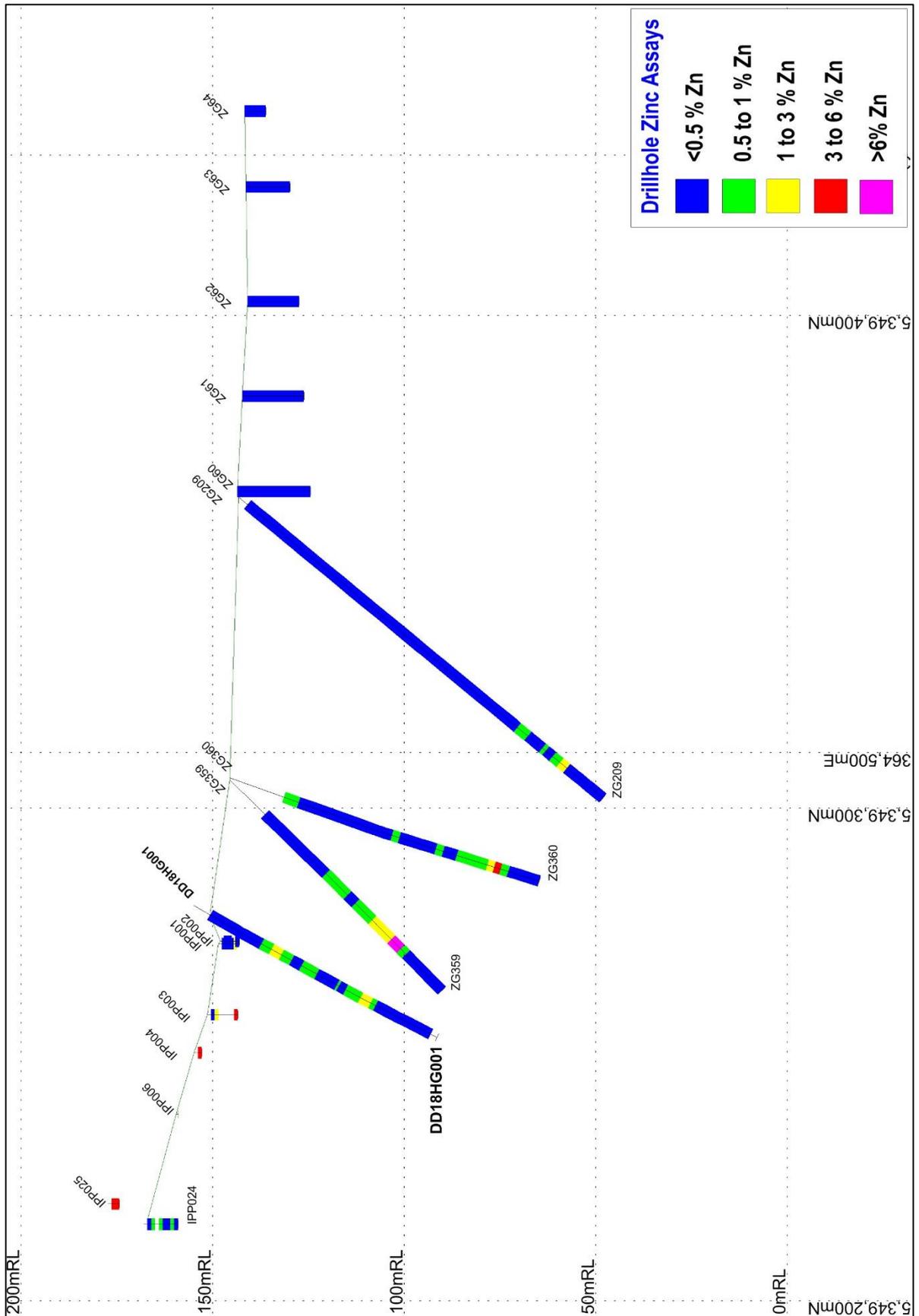


Figure 9. Section XS1 looking southwest showing down-hole zinc assay results from DD18HG001 and nearby historical drillholes. Drillholes within a 25m zone of the section line area shown.



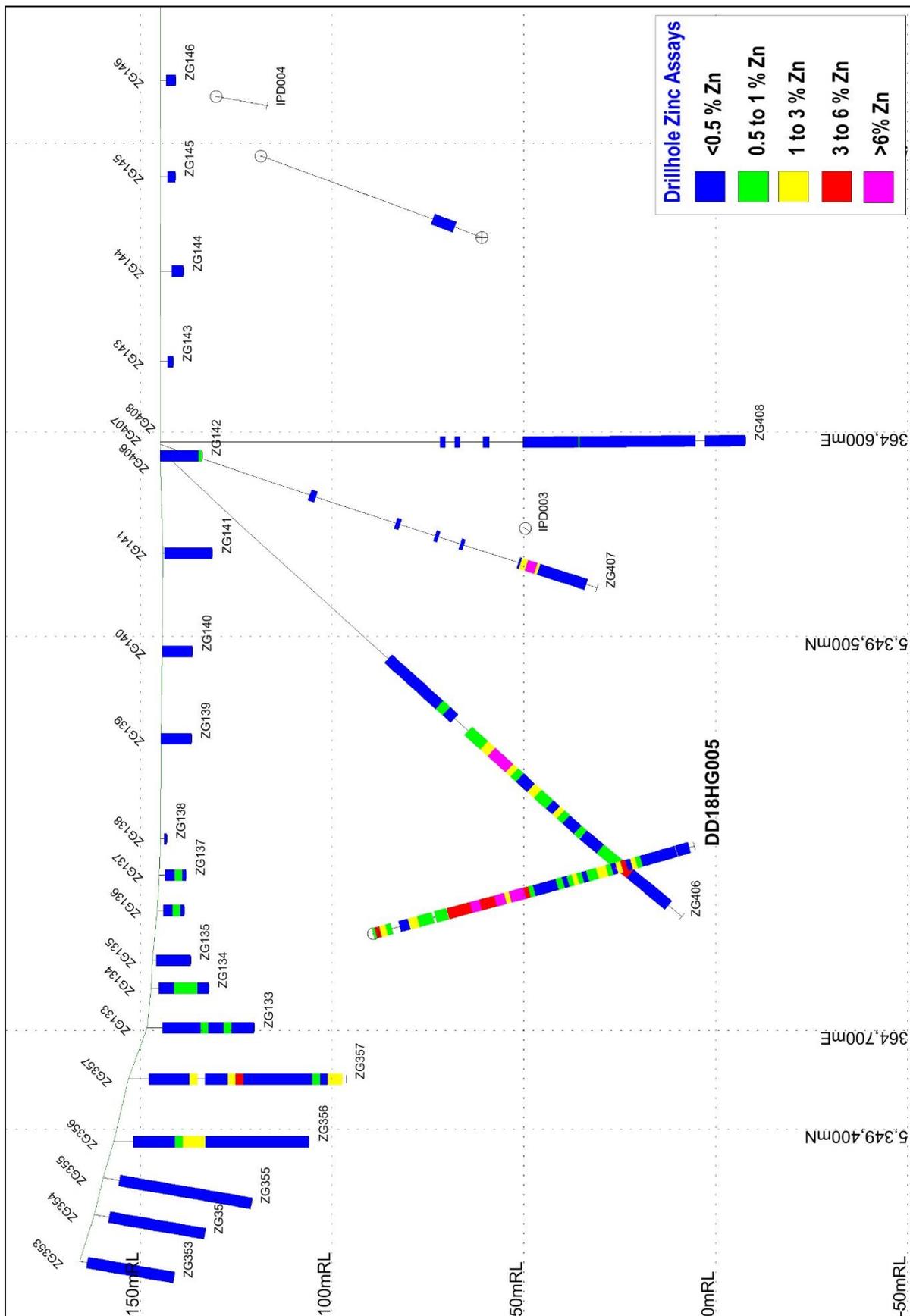


Figure 11. Section XS4 looking southwest showing down-hole zinc assay results from DD18HG005 and nearby historical drillholes. Drillhole traces within a 25m zone of the section line area shown.

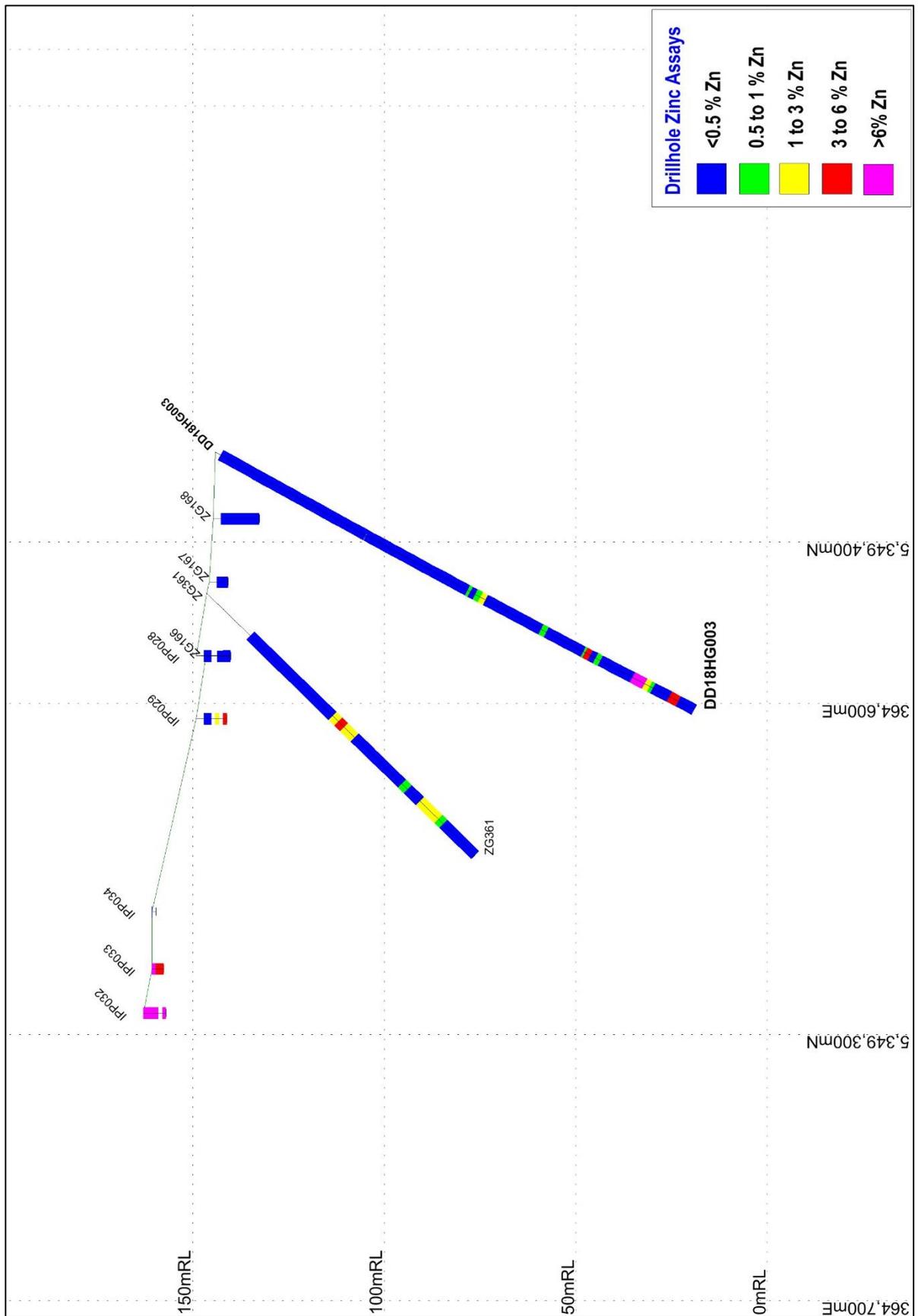


Figure 12. Section XS2 looking southwest showing down-hole zinc assay results from DD18HG003, DD18HG005 and nearby historical drillholes. Drillhole traces within a 25m zone of the section line area shown.

## 4 DISCUSSION OF RESULTS

The results of the completed diamond drilling program at Grieves Siding are considered as mixed but overall encouraging. The strike-continuity of the deeper Basal Siderite Zone mineralization was confirmed, however, there are possible issues with the up-dip continuity of economic zinc grades due to suspected leaching of the zinc-carbonate ore minerals (zincian siderite) at shallow depths. Sufficient mineralised Basal Siderite Zone material was obtained for the planned metallurgical tests.

Geological review and interpretation based on the recent drilling is ongoing at the time of reporting, however, preliminary review indicates the mineralization at Grieves Siding may be related to (previously unidentified) syn-sedimentary fault structures. This interpreted faulting is evidenced by significant facies variation as illustrated in Figure 13 and marked by:

- The presence or absence of the Oolitic Unit across the interpreted fault structure position;
- Significant thickening of the Silty Transition Zone in the absence of the Oolitic Unit on the down-plunge side of the interpreted structure position;
- Common breccia within the thickened Silty Transition Unit (as observed in drillholes DD18HG002 and DD18HG005);
- Generally thicker, more intense siderite alteration and/or higher-grade mineralization on the down-plunge side of the interpreted structure position.

The orientation of the interpreted fault structure is currently unknown and will require further, detailed assessment of the stratigraphy and updating of the 3D geological model. Understanding the orientation and trace of the interpreted structure is likely to be critical to future exploration drillhole targeting.

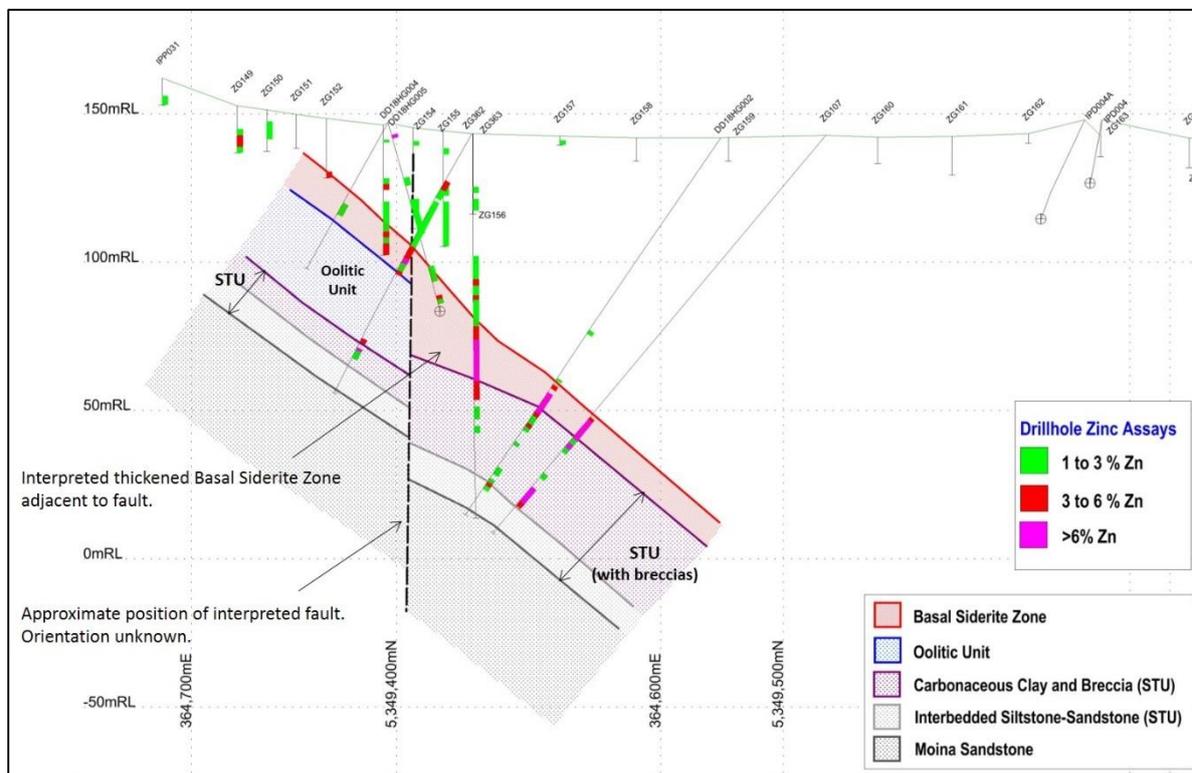


Figure 13. Section XS3 looking southwest showing the preliminary geological interpretation with approximate location of the interpreted fault and facies variation either side of the fault.

## 5 CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE WORK

Kingfisher Exploration is overall encouraged by the results of the drilling program completed at Grieves Siding during the third year of tenure of EL6/2015. The drilling confirmed the strike-continuity of the Basal Siderite Zone mineralization and has provided suitable material for planned metallurgical tests. Possible issues with grade-depleting leaching in the shallow, near-surface level requires further investigating. Preliminary review of the recent drillhole stratigraphy has led to the interpretation of a previously unidentified syn-sedimentary, basin-related fault structure resulting in observed significant facies variation relating to probable ore forming processes at Grieves Siding.

Follow-up drilling at Grieves Siding will largely depend on the results of metallurgical tests which are anticipated to take 4-6 months to completed. The planned metallurgical work involves heavy media separation tests, mineral liberation analysis and XRD, bulk grind and flotation tests, and alkali-leach tests.

EL6/2015 contains several highly prospective but under-explored areas for Zn-Pb-Ag mineralization. Kingfisher intends to carry out exploration work to advance these targets while the results of the Grieves Siding drilling and metallurgy are being further assessed. Work should focus on the prospects that show potential for sulphide-dominant base metal mineralization. Recommendations for ongoing exploration work in the fourth year of tenure include:

- Detailed gravity (ground or airborne) surveys to cover the Rose Valley and Firewood Siding prospects in the west and the area east of the Professor Range fault;
- Detailed geological mapping over the Rose Valley, Firewood Siding and King Billy prospects area. Combine mapping data will all historical and new geochemical, geophysical and drilling data to generate drilling targets;
- Complete the planned metallurgical tests on Grieves Siding Basal Siderite Zone material;
- Resource Modelling: update the Grieves Siding JORC Exploration Target to at least Inferred Resources;
- Further drilling at Grieves Siding as warranted based on results of the metallurgical test results;
- Scout drilling at Myrtle prospect and at least one other prospect area.

## 6 ENVIRONMENT

Environmental disturbance from exploration activity during the reporting period is restricted to the area of drilling activities at Grieves Siding. Due to the drilling being completed during winter and the wet, boggy condition of the peaty button grass plain, it was agreed with the MRT Environmental Officer that rehabilitation of the drill pads and other disturbed areas should be carried out during the dryer summer months in order to avoid further, unnecessary disturbance. A rehabilitation report will be provided following completion. It is noted that all drilled pads as well as other pads originally prepared but not drilled on are to be rehabilitated.

## 7 EXPENDITURE

Exploration expenditure over the reporting period for EL18/2016 is summarized in Table 7.

	ITEM	EXPENDITURE (AUD)
1.	GEOSCIENTIFIC COSTS	
	Geology	\$ 118,034
	Geochemistry	\$ 14,012
	Geophysics	\$ 0
	Remote Sensing	\$ 0
2.	DRILLING AND GRIDDING COSTS	
	Gridding	\$ 0
	Drilling	\$ 152,355
3.	LAND ACCESS COSTS	\$ 0
4.	REHABILITATION COSTS	\$ 0
5.	FEASIBILITY STUDY COSTS	\$ 0
6.	OTHER COSTS	
	Rental Fees	\$ 3,850
	Core Shed and Facilities Rental	\$8000
7.	ADMINISTRATION COSTS	
	Legal	\$ 0
	Administration	\$ 1,097
	Total Expenditure	\$ 297,348

Table 7. Exploration expenditure on EL18/2016 during the reporting period.

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