

**Independent Geological Report on the  
Tantalum and Lithium Mineralization  
within EPL 5047, Warmbad District,  
NAMIBIA**

**Orange River Pegmatite (Pty) Ltd**

**Dr Johan Hattingh**

**March 2021**



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Prepared by:

**Dr Johan Hattingh**

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## 1. Executive Summary

Orange River Pegmatite (Pty) Ltd (ORP) is a Namibian registered company and owner of an Exclusive Prospecting Licence (EPL 5047) located in the Karas Region in the southern part of Namibia, some 15 km north of the Orange River. EPL 5047 is situated in a mountainous desert setting with reasonable road access and is characterised by a complex geological and structural setting with good mineralisation potential amplified in the presence of large shear zones (Tantalite Valley Shear Zone) and a neighbouring intrusive mafic-ultramafic body with appreciable Cu and Ni mineralisation. A large number of well-mineralized pegmatites are also present on the property and the potential of these occurrences is highlighted by extensive, small-scale mining activities where tantalum, beryl and spodumene were extracted from these pegmatites. The name Tantalite Valley is also indicative of the extent of mineralization. An active tantalite mining operation owned by Kazera Global PLC (AIM Listed) is present at the Mining Licence 77 within the boundaries of EPL 5047.

Based on a large number of data sources, field visits, historic reports and reconnaissance work by ORP, an area of some 3.5 km x 1.5 km was selected for detailed mapping, sampling and drilling work. It was found that this area comprises a large number of well-mineralized and shallow dipping pegmatites. During the early 1980's, these pegmatites were sampled extensively by Placer Development (a Canadian exploration company) by means of channel samples and bulk material testing and although no quality control principles were applied during the programme, the work was of industry standard at the time. Lithium was in low demand then and, as a result, no work was done on the spodumene content and potential in the selected area. From old mining sites and reconnaissance work by ORP, it is, however, indicative that substantial spodumene potential exists within these pegmatite bodies.

During July 2019, ORP implemented a detailed mapping and sampling programme (total of 283 samples consisting of 204 channel and 79 chip samples), testing a number of pegmatites of- which fifteen well-mineralised bodies were labelled as A1, A2, B1, C2, C3, D0, D1, D2, E2, E3, E4, E5, E6, E7 and F1. This programme produced very encouraging results indicating the presence of extensive tantalum mineralization with minor lithium occurrences. Phase 1 of drilling comprising of 23 drill holes and a total of 349.85 m has been completed on pegmatite D1, D2 and F1 and results compare well with predicted grades. The Project does not contain any Ore Reserves or Mineral Resources, as defined by the JORC Code. Under the definition provided by the ASX and in the VALMIN Code, the Swanson Tantalum Project is classified as an 'exploration project', which is inherently speculative in nature. ORP's Project is considered to be sufficiently prospective, subject to varying degrees of risk, to warrant further exploration and development of their economic potential, consistent with the programs proposed by Creo.

## 2. Introduction and General Property Description

### 2.1. Introduction

This report has been prepared as a technical review document recording the current status of exploration work at EPL 5047, and it therefore reflects exploration results to date.

The report was prepared at the request of ORP and in the execution of the mandate, a technical assessment has been prepared for ORP in compliance with and to the extent required by the JORC Code issued by the Australasian Institute for Mining and Metallurgy (AusIMM), under whose technical jurisdiction these mineral resources fall. The guidelines as set out in the JORC Code are considered by ORP to be a concise recognition of the best practice reporting methods for this type of mineral development, and accord with the principles of open and transparent disclosure that are embodied in internationally accepted Codes for Corporate Governance.

This report describes the exploration results at EPL 5047 and has been based upon exploration data provided by the geologists of ORP, which has been thoroughly verified by the author.

### 2.2. Competent Person, Site Visit and Data Validation

Johan Hattingh employed by Creo as a geologist with 30 years of experience, is the author responsible for the preparation of this Resource Statement. Johan Hattingh is a Competent Person (CP), as defined by the JORC Code. The Competent Person considers the JORC Code to be the most appropriate standard for the Public Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code sets out minimum standards, recommendations, and guidelines for Public Reporting.

Johan Hattingh has been intimately involved with the pegmatite deposits in Namaqualand and southern Namibia since 1997, where he conducted numerous feasibility studies on the exploitation of pegmatite hosted minerals which included large-scale bulk sampling between the years 2001 and 2006. Johan visited the Swanson Pegmatite Swarm area on EPL 5047 during late August 2019. The technical information used in this Report was provided by ORP and was used in good faith by Creo. Where possible, Creo has satisfied itself that such information is both appropriate and valid to ensure JORC compliance in terms of the level of disclosure.

Johan Hattingh is independent from ORP with no current or historical involvement directly or indirectly with the company other than arm's length resource verification on an ad hoc basis. The author also does not have any shareholding in ORP, or in a subsidiary company or any other company that is currently contracted to ORP.



Compensation for the technical report is exclusively based on a market related remuneration fee.

### 2.3. Location

ORP, owns an Exclusive Prospecting Licence (EPL 5047) (Figure 1) in Namibia. This property is located in the Karas Region, southern Namibia, near the South African border, and approximately 15 km to the north of the Orange River. The 19.4 km<sup>2</sup> EPL is situated 100 km south of Karasburg and 250 km southeast of Lüderitz, where Lüderitz is the nearest port. Although the B1 main national road from Noordoewer to Windhoek is some distance away, the area is serviced by well-maintained, secondary dirt roads which make the area accessible all year round. It is only on the property itself where access is poor in difficult terrain and is mainly restricted to farm and mountain tracks that require a 4x4 vehicle.

### 2.4. Company Details

ORP is a Namibian registered company with registration number 2018/0020. The company has its offices in Windhoek, Namibia, as well as an exploration office and general infrastructure on site within the Tantalite Valley project area. EPL 5047 is not the only mineral asset held by ORP.

### 2.5. Mineral Tenure

EPL 5047 (Table 1) has originally been issued to Mr Lisias Pius, a Namibian national. ORP undertook an assessment of the EPL during 2017. The company concluded that the EPL has good potential for a number of mineral commodities and an agreement was subsequently signed with Mr Lisias on the 11th of October 2017. The EPL was then transferred into ORP during August 2018.

The EPL has since been renewed by the Minister and Mines and Energy on the 8<sup>th</sup> of May 2019 for a period of 2 years and is therefore valid until 9 May 2021. A renewal application was lodge with the Ministry of Mines and Energy on the 29 January 2021. ORP also obtained an Environmental Clearance Certificate on 4 April 2019 from the Ministry of Environmental and Tourism which is valid for a period of three years, allowing the company to undertake exploration activities on the EPL.

ORP has since secured the necessary resources and personnel to further advance and unlock the potential of this EPL.

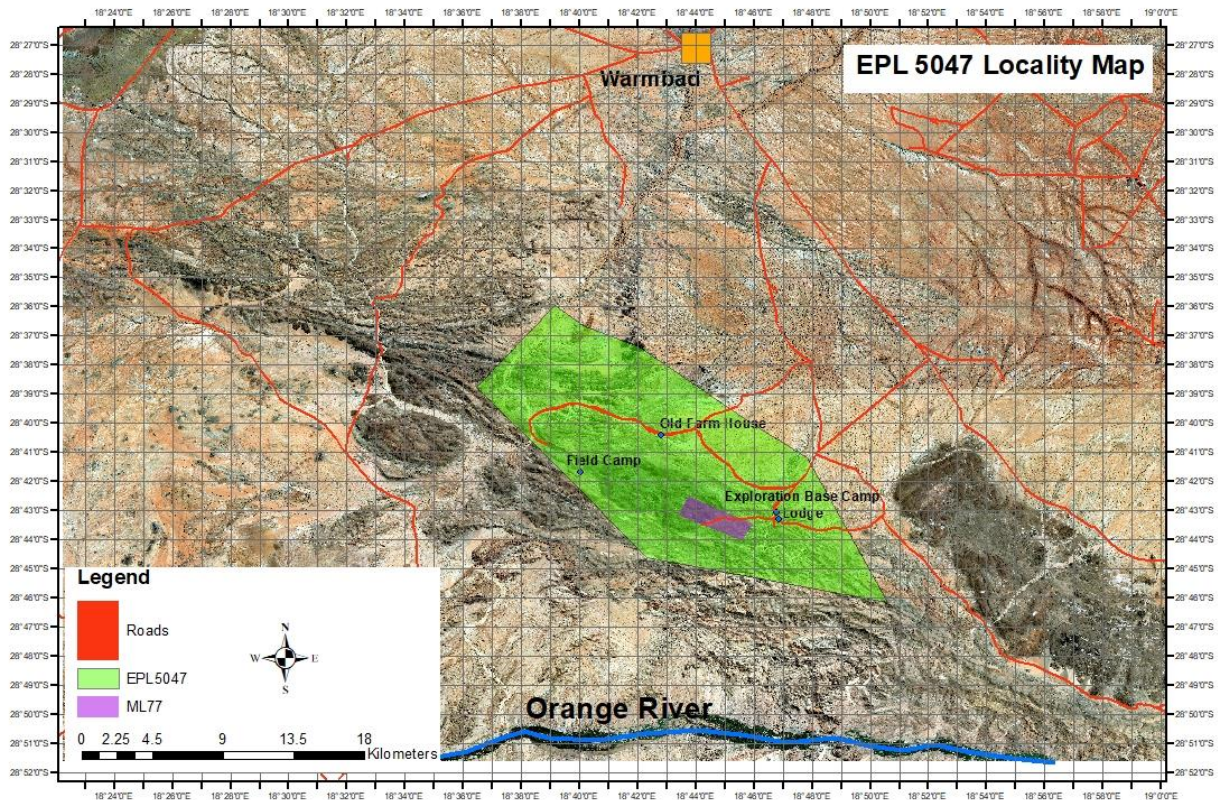


Figure 1. Locality Map

Table 1: EPL 5047 Information

<b>Licence:</b>	Exclusive Prospecting Licence
<b>Licence Number:</b>	EPL 5047
<b>Holder:</b>	Orange River Pegmatite (Pty) Ltd. The Licence was previously held by Lisias Pius and was transferred to ORP in August 2018.
<b>Size:</b>	19,493 hectares
<b>Commodities:</b>	Base Metals, Industrial Minerals (Lithium & Tantalum) & Precious Metals
<b>Farms:</b>	Kinderzit 132, Umeis 110 and Norechab 130

## 2.6. Land Use Agreement

A land-use agreement, including access to the property for exploration has been signed with the owners of the farms Norechab 130, Kinderzit 132 and Umeis 110, which falls under EPL 5047 (see figure 7).

### 3. Accessibility, Climate, Infrastructure and Physiography

#### 3.1. Topography and Elevation

On a national scale, three distinct regional features dominate the Namibian topography. The west of the country is characterized by a narrow coastal plain that extends inland for approximately 120 km, also known as the Namib Desert. An eroded escarpment, which forms part of southern Africa's great escarpment lies at the eastern edge of this coastal plain, stretching in a north-south direction from the Kunene River on the Angolan border, southwards and terminating against the Huab River. This plateau continuous southwards towards the Orange River, on the border with the Republic of South Africa.

More locally the licence is located, at the nearest point, approximately 11 km to the north of the Orange River, with the elevations varying from 300 m on the river to 850 masl within the higher topography of the area. The area to the north and east of EPL 5047 is relatively flat and in the south the relief gradually slopes towards the Orange River. Uneven and high relief is present within the boundaries of EPL 5047, primarily as a result of the weather resistant, mafic and ultramafic rocks of the Tantalite Valley Complex that outcrops within the boundaries of the EPL.

Drainage systems here form part of the head water streams of southward-draining tributaries of the Orange River. All streams are perennial.

#### 3.2. Vegetation and Wildlife

Vegetation is sparse, typically xerophytic and consists mainly of occasional karoo-type shrubs and succulents in the rocky parts. This semi-desert environment also supports sparse grass cover, as well as camelthorn, ebony and sheppard trees in a shallow sandy soil. The camelthorn and ebony trees are normally more prevalent along the dry watercourses where underground water supports them. These trees are however common in the region.

The area includes numerous faunal species such as gemsbok, kudu, zebra and some small game, but none of these species are exclusive to the study area.

#### 3.3. Climate

Namibia's climate is one of the driest in Africa, with sunny, warm days and cool nights, especially during the winter months. Nationally, the country has a semi-desert climate, with extreme heat in the months between December and March.



There are two rainy seasons, one during December and a second with rain between January and April. The average annual rainfall varies from 250 mm in the southern region and the western highlands, to 700 mm in the extreme north-east.

The prospect area itself is present within an arid to semi-arid climatic condition with an average rainfall that ranges between 50 to 100 mm per annum. It can be described as semi-desert with occasional thunderstorm experienced during the summer rainfall months of December to April. The average sunshine hours per day ranges between 9 – 10 hours, resulting in an annual average temperature of 18 - 19°C. Summer temperatures can however exceed 50°C.

### 3.4. Infrastructure

The project area is located 100 km to the south of Karasburg in southern Namibia. All the roads leading to the property are well maintained gravel roads and are passable all year round. It is only on the property itself where a 4x4 vehicle is required.

The Karasburg – Lüderitz railway line is located 90 km to the north of the project area. Labour is available from the nearby Karasburg and Warmbad towns, with Karasburg and Keetmanshoop being able to supply most exploration and mining requirements that is necessary to implement an exploration and mining programme. Major items can be sourced from Windhoek and what is not available there can be obtained in South Africa. Windhoek is serviced by daily commercial flights from South Africa.

## 4. Geological Setting

### 4.1. Regional Geology

The Namaqua Natal Metamorphic Province (NNMP) in Namibia and South Africa forms the western sector of the 100-400 km wide Namaqua-Natal metamorphic belt (Figure 2) that spans southward across the subcontinent. It forms a small, but significant segment of the global network of Grenville-aged orogenic belts that were created during the assembly of the supercontinent Rodinia in the late (ca. 1350-1050 Ma) Mesoproterozoic (Lambert, 2013).

The NNMP records the accretion of juvenile Mesoproterozoic (1600-1200 Ma) supracrustal and plutonic rocks and the reworking of existing Kheisian age (ca. 2000 Ma) continental crust along the SW edge of the Archaean (>2500 Ma) Kaapvaal Craton. The amalgamation has traditionally been interpreted to be the result of continent – continent and/or arc-continent-continent collisional tectonics that culminated between ca. 1200 and 1100 Ma (Lambert, 2013). The final convergent/collisional stages are referred to as the Namaqua Orogeny and

are thought to be dominated by early north-verging folding and thrusting followed by oblique trans-current shearing as a consequence of SW-directed indenter tectonics. Subsequent deformation during the Neoproterozoic Pan African orogenic event is believed to have only affected the West Coast Belt (Figure 2).

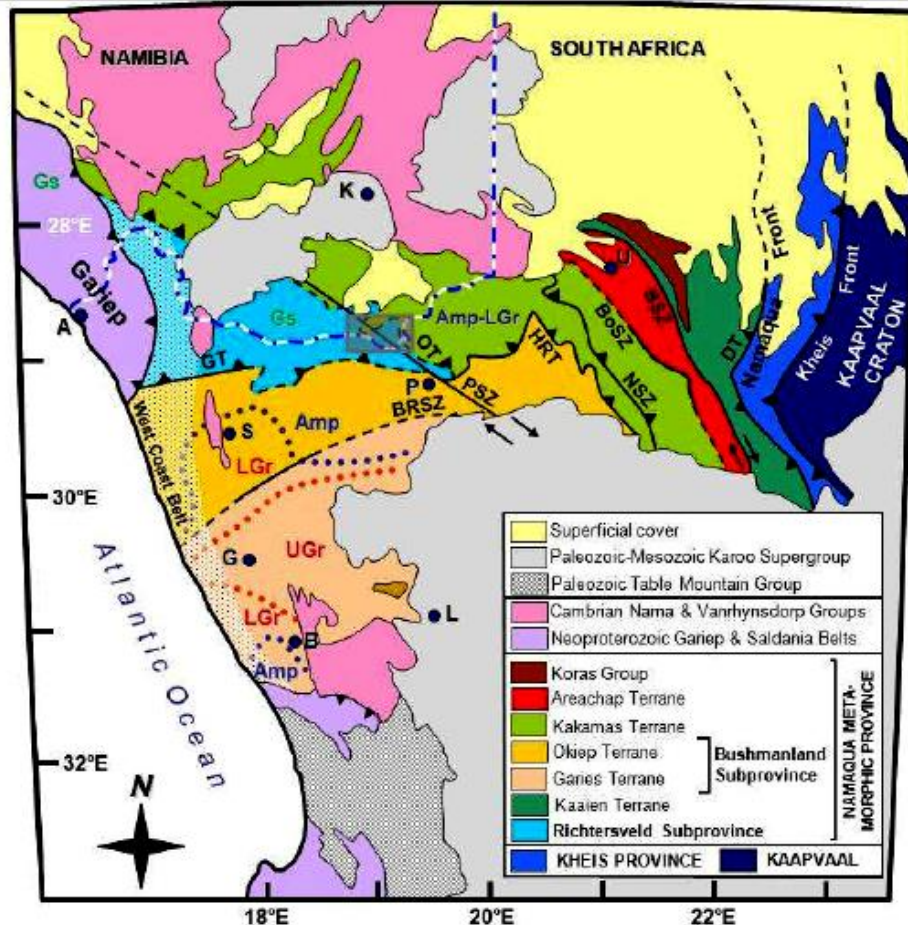


Figure 2: Tectonostratigraphic and metamorphic subdivision of the NNMP as well as the major crustal features and terrane. Boundaries. OT = Onseepkans Thrust; PSZ = Pofadder Shear zone (Lambert, 2013).

Recent geochronological studies have highlighted a more complex and polyphase evolution of the Namaqua Orogeny in which at least two distinct tectono-metamorphic episodes at ca. 1200 and 1030 Ma can be distinguished. The regional significance of these tectonic phases is not well understood and controversially discussed, but both events are associated with voluminous granite plutonism and high-grade metamorphism (amphibolite-facies and higher), particularly in the central-western parts of the orogen. The second, high temperature metamorphic event is considered as the peak metamorphic event and commonly considered

to be the result of the mafic underplating of the Namaquan crust that also finds its expression in the intrusion of mafic bodies such as those of the Koperberg Suite between 1060-1020 Ma and the mafic complexes in southern Namibia between (Lambert, 2013).

## **NNMP**

Based on variations in depositional environments and metamorphic grade, the NNMP has been subdivided into various terranes and sub-provinces (Figure 2), separated by major structural breaks. The ages of structures of the purported terranes are, however, similar and both the presence and the significance of supposedly terrane-bounding faults remain controversial. The presently accepted subdivision of the NNMP includes, from west to east, the Richtersveld Sub-province, Bushmanland Sub-province, Kakamas, Areachap and Kaaien Terranes (Lambert, 2013). EPL 5047 falls exclusively in the Richtersveld Sub-province (Figure 2).

### **Richtersveld Sub-province**

The Richtersveld Sub-province represents a Palaeoproterozoic (1700-2000 Ma) block within the NNMP that largely escaped Mesoproterozoic reworking, experiencing only low- to medium-grade (greenschist-facies) metamorphism in its centre. Metamorphic grades and the extent of the Namaquan overprint increase eastwards (Figure 3) to reach amphibolite-facies grades that were attained at ca. 1200 Ma. The Richtersveld Sub-province is made up of ca. 2000 Ma volcano-sedimentary successions that were intruded by voluminous granite and granodiorite between 1730 Ma – 1900 Ma interpreted to represent the relics of a Palaeoproterozoic island arc. The stratigraphic subdivision of the Richtersveld Sub-province is highly contended with models largely based on age correlations of units across shears and the contentious existence of bounding shear-zones separating the Richtersveld Sub-province from the other terranes. The structural ambiguity has led to further subdivision of the Richtersveld Sub-province into smaller lithostratigraphic terranes and/or incorporation of the Richtersveld Sub-province into the Bushmanland Sub-province (Lambert, 2013).

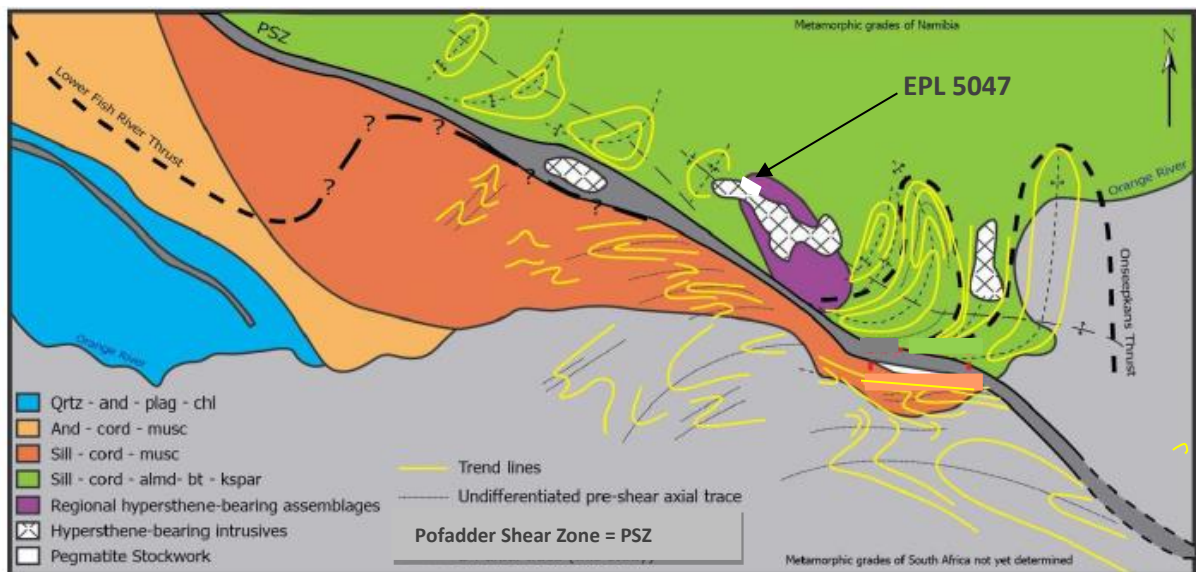


Figure 3: Structural and metamorphic map of the eastern parts of the Richtersveld Subprovince in the vicinity of the PSZ, illustrating the progressive increase in regional metamorphic grade from west to east (from Lambert, 2013).

Figure 3 illustrates how the Pofadder Shear Zone (PSZ) parallel metamorphic isograds separating two distinctly different metamorphic domains of upper-amphibolite to lower-granulite facies rocks in the north from mid- to lower amphibolite-facies rocks in the south. This division extends northwards and form the continuation of the Lower Fish River Thrust, synonymous with the Tantalite Valley Line, where the actual contacts are obscured by the later Pofadder Shear-zone (Figure 3).

### Gordonia Sub-province

Recent work, specifically in Namibia, has incorporated the Kakamas and Areachap Terranes into the Gordonia Sub-province. The Gordonia Sub-province is separated from the Kaaien Terrane by the Brakbos Shear. The Boven Rugzeer Shear is proposed to separate the Kakamas from the Areachap Terrane. The Kakamas Terrane is generally considered to be composed of high-grade supracrustal gneisses, charnokites and granites with the late stage NNW- trending Neusberg Shear-zone separating an arenite and calc-arenite supracrustal succession in the east from high-grade metapelite and biotite-garnet paragneisses in the west. The Areachap Terrane represents a narrow, NNW-trending terrane comprised of 1300 Ma amphibolite-grade metabasic and intermediate supracrustal gneisses. The Areachap Terrane contains juvenile Mesoproterozoic crust, showing clear subduction-related signatures that are interpreted to indicate a series of volcanic arcs (Lambert, 2013).

### Late stage evolution of the NNMP

Following the burial and late-stage high-T metamorphism, un-roofing of the Namaqua orogen led to the cooling of the NNMP rocks to temperatures below ca. 350°C by 950-980 Ma. During

the exhumation and cooling, deformation was characterised by the development and/or reactivation of a series of ductile, dextral NWSE trending shears (Figure 4). Shearing is interpreted to have occurred due to lateral escape tectonics in response to the sustained southward indentation of the rigid Kaapvaal Craton into the newly accreted NNMP. The PSZ also referred to as the Pofadder-Marshall Rocks Lineament or the Tantalite Valley mylonite belt, is the largest and best exposed example of these late-tectonic shear-zones. The PSZ, along with the other late-stage dextral shears throughout the NNMP, exhibits retrograde deformation fabrics and mineral assemblages that indicate formation under broadly greenschist-facies conditions. Shear-zone kinematics are commonly dominated by wrench faulting with localised dip-slip components in response to northerly directed principal stresses at the later stages of indentation tectonics (Lambert, 2013).

Work on shears from this late-stage cluster has largely been economically motivated and centred around the copper district of the Areachap Terrane with little focus on the PSZ and, significantly, its relationship to the pegmatites of the regional pegmatite belt (Lambert, 2013).

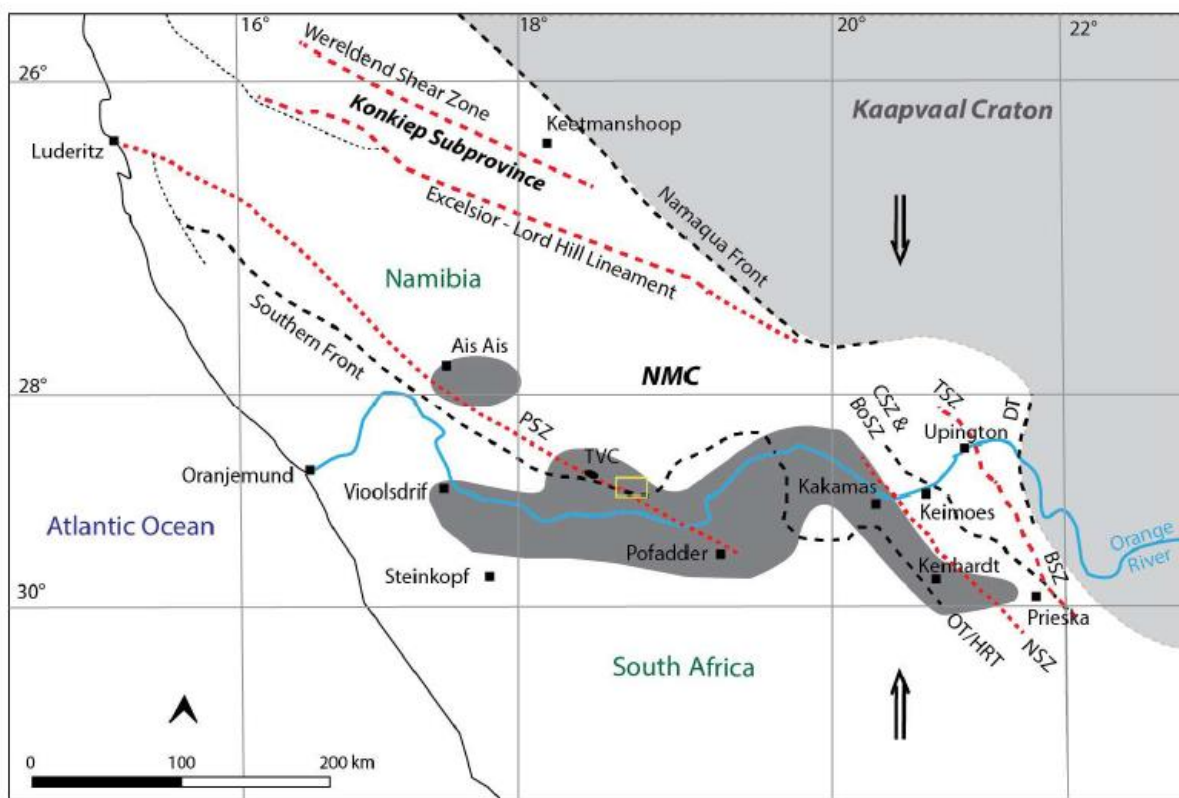


Figure 4: Diagram illustrating the position of NW-SE trending structural features within the NNMP. Abbreviated structures; OT = Onseepkans Thrust; PSZ = Pofadder Shear-zone; HRT = Hartbees River Thrust; CSZ = Cnydas Shear-zone; BoSZ = Boven Rugzeer Shear-zone; NSZ = Neusberg Shear-zone; TSZ = Trooilapspan Shear-zone; BSZ = Brakbos Shear-zone; DT= Dabeep Thrust.

The PSZ also includes early syn-tectonic mafic and ultramafic, orthopyroxene-bearing intrusions which is represented by the Tantalite Valley Complex on EPL 5047. These were emplaced along the boundary between the above-mentioned sub-provinces.

In Figure 4, the structures that formed due to a prolonged period of indentor tectonics of the Kaapvaal Craton and the NNMP are indicated. Not all shears developed as late-stage dextral shears but some, particularly those around Upington, are interpreted to have been reactivated during the cooling of the NNMP between 1080-965 Ma. Shears highlighted in red are those described to have recorded late-stage dextral movement. The dark-grey colour represents the outline of the Northern Cape pegmatite belt. The yellow box indicates the study area.

### **Pegmatite belt**

The mainly transcurrent late-stage shearing and un-roofing of the NNMP is accompanied by the emplacement of late-stage granites and the development of regionally widespread pegmatites throughout the NNMP and across terrane boundaries. A very close association of the PSZ exists with the pegmatite belt. The north-westerly trending PSZ intersects the broadly undulating, easterly trending belt in its southern portion.

In the Northern Cape Province of South Africa and the southern Karas Region of Namibia, the pegmatites form an extensive 16 km wide, ca. 450 km long, continuous W-E trending belt extending from Vioolsdrif to Kenhardt in South Africa (Figure 4). The extent of the belt in Namibia is not well documented, but is proposed to extend as far as Ais-Ais. The pegmatites mainly occur as several 100 m long and up to 20 m wide, lenticular to sheet-like bodies with the majority occurring concordant to the regional fabric and a few as smaller discordant bodies. The pegmatites vary in composition and internal structure, ranging from simple, homogeneous and un-zoned quartz-feldspar-muscovite-bearing assemblages to complexly zoned, heterogeneous bodies containing more exotic minerals such as beryl, lepidolite, columbite-tantalum, sillimanite, together with U and REE-bearing minerals, which were sporadically mined. The structural setting of the belt is not yet well constrained and the belt has previously been correlated with tectonostratigraphic boundaries such as the Groothoek thrust and the Southern Front. The emplacement of the pegmatite belt is considered to have occurred between ca. 1025 Ma and 945 Ma.

Older generations of pegmatites have, however, been dated at 1104 Ma in the Prieska region but are related to earlier metamorphic phases. Detailed studies on pegmatites within the belt have been focused on their economic potential in the past. The SPS has only been documented on regional maps, but the controls of pegmatite emplacement have not been described or discussed in any detail.



## **Structural geology and correlation of regional deformation episodes**

Regional fabrics surrounding the PSZ have been well documented in numerous studies that distinguishes six (D1 – D6) different phases of deformation. The D5 and D6 episodes relate to deformation along the PSZ. Differences in the nomenclature between the terminologies relate to the recognition of the progressive nature of deformation events, particularly shearing associated with the PSZ. Deformation stages D1 – D3 are associated with regional deformation events in the Bushmanland and Gordonia Sub-provinces, whereas the D4 deformation is related to deformation along the PSZ and exclusively to the structures associated with the PSZ.

A brief synopsis of the structural nomenclature adapted in this report below.

**D1:** This early deformation phase is characterised by rootless, isoclinal folds within older (ca. 1800 Ma) supracrustal rocks occurring in other parts of the NNMP.

**D2:** This deformation phase is considered the principal deformation phase of the Namaqua orogeny with associated amphibolite-grade metamorphism in the southern parts of the Bushmanland Sub-province. D2 fabrics are characterised by large-scale, east-west trending, isoclinal folds (F2) and an associated, regionally consistent, E-W trending penetrative, sub-horizontal foliation (S2), with an E- or NE- plunging L2 mineral stretching lineation. The stretching lineation is thought to be parallel to the regional top-to-the SW kinematics and transport direction during the Namaqua orogeny. S2 is largely defined by the alignment of biotite, muscovite and sillimanite in metapelites and quartzo-feldspathic rocks, whereas hornblende aggregates define the foliation in mafic schists and gneisses.

Gneisses are mainly banded hornblende-biotite gneisses or quartzo-feldspathic gneisses. The S2 foliation is further defined by the alignment of porphyroclasts and the formation of quartzo-feldspathic augen gneisses and hornblende-biotite augen gneisses where quartz and biotite and/or hornblende mineral aggregates anastomose around large (1 cm – 5 cm) K-feldspar augen respectively.

This phase of deformation (D2) ended between ca. 1120 Ma, bracketed by the age of the youngest deformed gneisses of the Little Namaqualand Suite from rocks of the weakly deformed Spektakel Suite.

**D3:** The D3 deformation event is characterised by kilometre-scale, originally E-W-trending, upright- to inclined, shallow-plunging, open F3 folds. These large-scale F3 folds rotate existing F2 folds and earlier (D1-D2) fabrics (Figure 3). The formation of these folds is closely linked to the formation of steep structures containing syn-deformation intrusions and melt breccias. Rocks of the 1060-1030 Ma Koperberg Suite in the Okiep Copper District, intruded during the D3 event, thereby constraining the late-Namaquan timing of F3 folding. This timing is coeval

with the peak of high-T metamorphism in the NNMP and granulite-facies conditions in the highest-grade parts of the Bushmanland Sub-province.

**D4:** This deformation phase relates to the deformation within and adjacent to the PSZ. Due to the superimposition and transposition of earlier fabrics into D4 shear-zones, a clear distinction of fabrics in the regional-scale shear-zones is often difficult, particularly in the high-strain core of the PSZ. Fabrics associated with the PSZ (D4) are defined by both amphibolite- and greenschist-facies mineral assemblages and show a range from pervasive ductile (continuous) via brittle-ductile fabrics to essentially brittle (discontinuous) fabrics.

There are clear overprinting relationships from earlier amphibolite-grade and ductile to greenschist-facies and more brittle fabrics, indicating that deformation occurred under progressively lower-grade conditions during a prolonged period of exhumation. Hence, D4 fabrics and structures are treated in this study to describe a polyphase deformation history related to progressive shearing along the PSZ. The largely co-axial nature of high- and lower-grade planar and linear fabrics indicates the progressive nature of the deformation. Based on overprinting relationships, mineral assemblages and deformation textures of the D4 event have been subdivided in this study into separate stages (D4a-b), representing the progressive evolution of the shear-zone and related fabrics.

#### 4.2. Local Geology

The area of EPL 5047 is underlain by rocks of the NNMP with the lithology of the EPL comprising units from the Gordonia sub-province, which is separated from the Richterveld sub-province by the north westerly trending PSZ. Although the most prominent feature of EPL 5047 is the northwest trending PSZ, numerous other structural zones can be noted with predominantly NE and E-W trends. The main lithologies comprise volcanic rocks, chlorite schist and phyllites (Figure 5).

Numerous concordant (younger) and discordant pegmatites were intruded into these lithologies. They are aligned within the pegmatites that are associated with the Pofadder Shear Zone and are invariably discordant with the regional schistosity of the country rock within which they are emplaced. Pinch and swells structures are associated with the pegmatites.

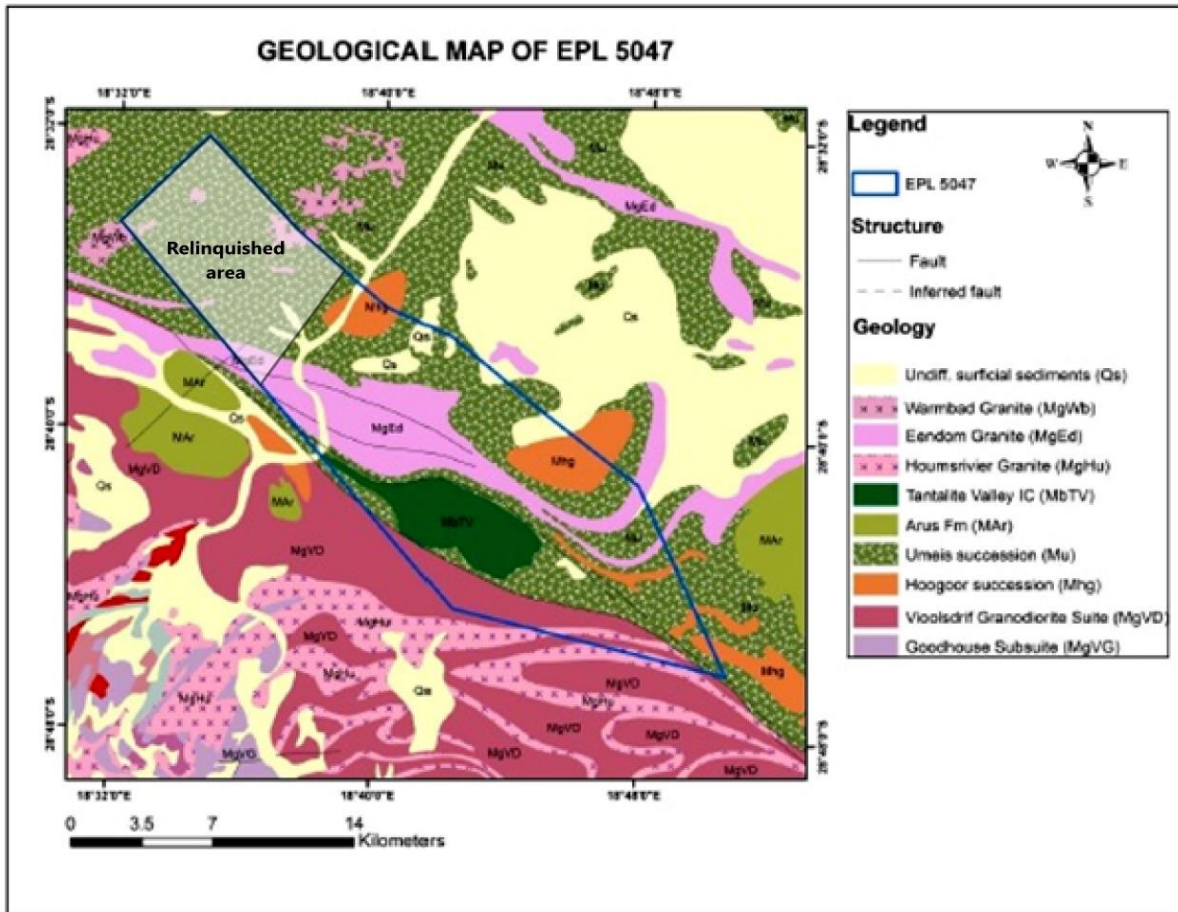


Figure 5: Geology of the EPL 5047 area.

### 4.3. Pegmatite Details

In the Tantalite Valley area, the rocks into which the pegmatites intruded consist of basic amygdaloidal lavas, volcanic rocks, chlorite schist and phyllites, some interbedded acid volcano-sedimentary rocks (felsite, sandstone), and intrusive acid dykes, diorite to quartz diorite and metagabbro. The general attitude of these lithologies is about 120/75-degrees NE. Towards the east it shows some variation, probably due to its proximity to the large intrusive metagabbro complex.

Pegmatites are very coarse grained (> 20 mm) igneous rocks commonly composed of granitic minerals (quartz + feldspar) muscovite} biotite), usually forming massive vein like bodies. Although intermediate and mafic pegmatites occur, they are less common. Traditionally, the term 'pegmatitic' is used purely for the textural classification of any rocks with abnormally large grain sizes. Pegmatite classification is complex and not without controversy.

Pegmatites can generally be classified based on their geological setting and/or the identification of enriched trace elements, specifically of the REE elements. Accurate classification of pegmatites therefore requires detailed geochemical analysis. Field

descriptions of pegmatites are broadly based on their shape (e.g. lenticular, tabular, irregular, bulbous, etc.), the complexity of their mineralogy and the internal distribution of the mineral aggregates and/or structures (homogeneous or heterogeneous, zones, etc). The internal composition of granitic pegmatites varies and can consist of concentric zones, usually crystallizing from the walls inwards from multiphase mineral assemblages at the onset of crystallization to singly saturated units in the centre.

At present, there are two main models for the origin of granitic pegmatites. One school of thought relates pegmatite formation to late-stage fractional crystallization processes of granitic plutons, largely based on their proximal spatial associations and close trace element resemblance to the granitic plutons. The process for pegmatites forming through late-stage fractional crystallization was first described and was generally accepted.

The recent reviews highlight the importance and role of fluxing agents such as B, H<sub>2</sub>O, F, P, and Li in the melts in lowering melt viscosity, the crystallization of the volatile-melt-crystal mixtures away from the equilibrium liquidus boundary with or without the presence of aqueous fluid phases, the effects of undercooling and quick cooling rates and the low nucleation rates, which give rise to the characteristically large crystals. Pegmatites derived through fractional crystallization are largely grouped into the Muscovite-REE, Rare-element and Mirolitic classes, which occur under granulite to lower-pressure amphibolite facies conditions and are also found intruded in greenschist facies conditions respectively.

A second school of thought relates the formation of pegmatites to the partial melting of high-grade rocks. This is largely due to the common similarity between pegmatites and host-rock major element geochemistry, the isolation of pegmatite dykes from any known sources, the identification of leucosomes with pegmatitic textures in metamorphic terrains and the difficulty in relating highly evolved magma compositions to the comparatively primitive chemistry of likely sources. Pegmatites formed through anatexis are commonly interpreted to belong to the Abyssal and Muscovite classes occurring in low- to high pressure (4-9 kbar; 700 - 800 °C) and high pressure (5-8 kbar; 580 - 650 °C) metamorphic environments respectively. These pegmatites are expected to be mineralogically simple and usually devoid of substantial zonation, commonly composed of quartz + sodic plagioclase + K-feldspar} muscovite} garnet} biotite} apatite} beryl} tourmaline. The formation of pegmatites as products of partial melting has been studied in less detail but has been supported by various studies that documented this in areas of deformation such as shear-zones.

In both genetic models, pegmatites represent felsic hydrous granitic liquids that largely mimic the behaviour of viscous felsic magmas. The magmas are therefore similarly transported from their sources through one or a combination of transport mechanisms. Emplacement geometries may be highly complex and controlled by the interplay of (a) pegmatite fluid

pressures, (b) rheological states of the host rocks, (c) regional and local stresses, (d) pore-water pressures, (e) presence of anisotropies, and (f) creation of dilatational sites. These factors are largely controlled by the relative depth and deformation of the system at a specific time during shear-zone formation and/or exhumation. Therefore, understanding pegmatite geometries and their relative modes of transport/emplacement, both inside and outside the PSZ, aids in the generic understanding of this interplay of magmas and shear-zones.

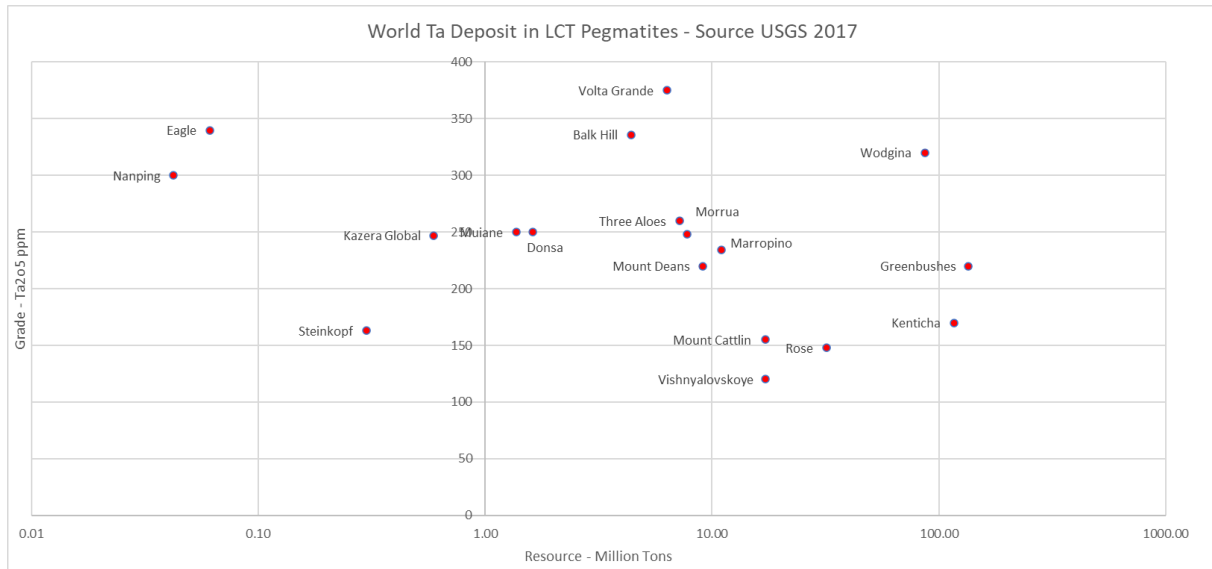


Figure 6: Ta deposits in LCT pegmatites throughout the world.

Economic tantalite deposits occur in LCT pegmatites throughout the world. Figure 6 indicate the resources and grades of Ta deposits in LCT pegmatites occurring throughout Africa, Canada, China, Russia, Brazil and Australia and how they compare with each other (USGS, 2017).

## 5. Mineralization

### 5.1. Prospect Geometry

Regionally, the pegmatites are present in the Tantalite Valley Shear (TVS) belt, having intruded granitic gneisses, metasediments and gabbroic-troctolitic rocks of the Tantalite Valley Complex. In all probability, they occupy tension fractures developed adjacent to the shear zone. The overall average strike of the pegmatites is approximately northeast – southwest and the dip is 15° to 20° to the southeast and varying from almost flat to 35° maximum. The thicknesses range from a few cm to about 10 m (Pegmatite no. B). Most pegmatites exhibit a partial layering, possibly due to internal flows and the minor segregation of quartz is common. They normally have a ribbon-like or banded appearance which may have been caused by segregation during lateral flow. This layering consists of quartz bands which pinch and swell



locally along the length of the pegmatite dyke or of ribbons alternately rich in one or two of the quartz, albite or spodumene.

## 5.2. Structure

Faulting does not greatly affect the disposition of the pegmatites. Some minor dislocations are present by a fault striking 160° dipping 90° which passes just west of old workings on pegmatite D. There do seem to be two different ages of pegmatites:

- The older pegmatites which are commonly schistose, un-zoned and have intruded the gneisses. They are generally uneconomic and are, in turn, intruded by younger pegmatites and quartz veins. Quartz, feldspar, muscovite and tourmaline are the main constituents. In some outcrops they have an extensive sheared nature suggesting that they existed prior to the development of the mobile belt.
- The younger pegmatites are coarser grained, garnet bearing and contain economic minerals. These pegmatites pinch and swell but are generally about 2 m thick with a strike length of outcrops varying from 10 m to 500 m. Generally, they dip at low angles, from horizontal to 40°. They also tend to be strongly zoned and consist mainly of quartz, microcline-perthite, feldspar, lithium and muscovite.

## 5.3. Tantalum, Niobium and Lithium Mineralization

According to Klaus *et. al.* (2017) primary niobium and tantalum mineral deposits are found in three main types of igneous intrusive rocks:

- Carbonatites and associated alkaline rocks (Nb dominant),
- Alkaline to peralkaline granites and syenites (Nb dominant)
- Rare-metal granites and pegmatites of the lithium-cesium-tantalum (LCT) family (Ta dominant)

All economically important tantalum mineralization is related to rare-metal granites (also called rare-element granites) and lithium-cesium-tantalum (LCT)-type pegmatites. The rare-metal granites are generally peraluminous (have molecular  $Al_2O_3 > [CaO+Na_2O+K_2O]$ ), muscovite- and albite-rich granites that display high degrees of chemical fractionation and represent the last stages of felsic magma evolution in upwardly differentiated granitic intrusions. The parental magmas are formed by partial melting of pre-existing crustal rocks, particularly aluminous sediments, and are generally emplaced at shallow levels of the crust (in the upper few kilometres) during the late stages of or after major tectonic deformation and regional metamorphism in orogenic belts. They may show pervasive hydrothermal alteration and host disseminated tantalum and niobium. Mineralization, as well as tin and tungsten, in complex vein systems (stockworks) that developed from circulation of late-stage

hydrothermal fluids. Typical mineralization consists of microlite, columbite-tantalum, tantalum-rich cassiterite (tin oxide), and lepidolite (lithium-rich mica).

LCT-type pegmatites are generally small (meters rather than kilometres in length and width) granitic intrusions characterized by extremely coarse but variable grain-size and enrichments in lithium, rubidium, caesium, beryllium, tantalum, and niobium ( $Ta > Nb$ ). They are the products of highly fractionated and volatile-rich granitic magmas generally derived from rare-metal granites.

LCT-type pegmatites are also mined for albite, muscovite, potassium feldspar, and ultrapure quartz. Like their parental rare-metal granites, LCT-type pegmatites are widely distributed globally, and range in age from Archean to Mesozoic, but they are found to be concentrated particularly during times of continental collision and supercontinent assembly.

### **EPL 5047 mineralisation**

A number of minerals of interest can be found in the pegmatites on EPL 5047, however, the primary mineral commodities targeted by ORP has been tantalum ( $Ta_2O_5$ ) and spodumene  $LiAl(SiO_3O)_2$  and, in particular, at the Swanson Pegmatite Swarm. Tantalum is the mineral which is usually concentrated in the quartz rich parts of the pegmatite or near the transition from the quartz rich core to the feldspar zones. It has also been established that the highest-grade tantalum deposits occur in pegmatites with relative high concentrations of spodumene and cassiterite.

In general, two episodes of Tantalum mineralization seems to be present; (i) as medium to coarse grained crystals, associated spatially with spodumene, lepidolite, quartz and perthitic feldspar, and (ii) as very fine grained, acicular crystals associated with albite rich parts of the pegmatite. Lithium mineralization in the form of spodumene crystals is not persistently present and is mostly confined to a spodumene rich layer present within the “D” cluster of pegmatites, where it is present as a high percentage of the mineral assemblage (16% - 20%). Crystals are small 5 mm – 10 mm, inter-grown and predominantly white in colour. Crystal size does not vary significantly and the mineralization is confined to a specific “band” at the top of the pegmatite.

## **6. History**

### **6.1. Mining History**

A tantalite mine with a long productive history is located within the southern central part of EPL 5047 on the mining licence ML 77 (see figure 7), which is surrounded by ORP’s much larger EPL 5047. The mining licence contains a number of well known, economic pegmatites which are being mined for tantalum and is currently owned by the AIM listed owner Kazera Global

PLC. Mining is done by means of conventional drilling and blasting processes. ML 77 is not part of EPL 5047 and does not belong to ORP.

In addition to the mining operation on ML 77, there is abundant evidence of historical mining that took place in the area covered by EPL 5047. Evidence of the extraction of economic minerals from pegmatites is widespread and although no production figures relating to these activities could be found, it is clear that the scale of mining was extensive. The remains of permanent structures such as personnel accommodation and processing plant are still evident. These buildings and plant were most likely constructed by Swanson Enterprises a few decades ago.

Literature and previous exploration activities also refer to historic tungsten/scheelite mining that took place within EPL 5047.

## 6.2. Previous Exploration

Swanson Enterprises held various claims on the farms Kinderzit and Umeis on EPL 5047 and mined tantalite, beryl, spodumene and tungsten on these claims in the 1970's to early 1990's. The primary mining was for tantalum that took place on several shallow dipping pegmatites in the north-western strain shadow of the Tantalite Valley Complex (coinciding with the area identified by ORP).

A Canadian company, Placer Development also conducted detailed exploration in this area between 1980 and 1982, with the programme identifying at least 18 mineralized LCT pegmatites (discussed in section 6.3).

## 6.3. Placer Development Ltd Exploration Programme

The prospecting right over the area was held by the company Swanson Enterprises and during March 1981 it signed an agreement with Placer Development whereby Placer obtained the rights to implement a mapping and sampling programme on the Swanson Enterprises property. The area that was primarily selected for testing included the "A" to "G" pegmatites, also currently targeted by ORP. This programme commenced during July 1981 and extensive work was undertaken with results that made a substantial contribution to the ORP effort. Unfortunately, this programme concentrated on tantalite only and excluded the evaluation of the lithium potential.

A total of 91 channel samples were taken with an average sample size of 14.22 kg. The samples were spaced on a 100 m grid. ORP managed to purchase the relevant reports and maps from the Geological Survey in Windhoek with the result that the individual sampling points could be plotted with relative accuracy. Markings of the original programme were also still present and visible in the field.

Bulk samples were also taken over four selected chip sample points with 3 to 5 tons of material obtained by drilling and blasting. From this material a representative sample was obtained (every tenth shovel).

The programme concluded that the bulk of tantalum mineralization is disseminated and occurs as small crystals, averaging < 1.0 mm. The larger crystals 1 cm – 3 cm are rare and only occur locally, with the Ta<sub>2</sub>O<sub>5</sub> grade and the Ta<sub>2</sub>O<sub>5</sub>: Nb<sub>2</sub>O<sub>5</sub> ratio increasing from west to east.

Placer equate a non-compliant resource in August 1981 of “Overall possible mineral reserve in dykes of >1m in thickness is postulated at 2.5 million tonnes grading 299 ppm Ta<sub>2</sub>O<sub>5</sub> and 78 ppm Nb<sub>2</sub>O<sub>5</sub>, Possible mineral reserve of material 300 ppm Ta<sub>2</sub>O<sub>5</sub> and above is postulated at 900,000 tonnes grading 466 ppm Ta<sub>2</sub>O<sub>5</sub> and 78 ppm Nb<sub>2</sub>O<sub>5</sub>”.

#### 6.4. Geological Survey of Namibia Investigation

Although substantial historical reports are available for the area, the only additional work, during more recent times, were done by the Geological Survey of Namibia in collaboration with the Council of Geoscience of South Africa. This was done as a five year (2012 – 2017), detailed, mapping programme (1: 50 000 scale) conducted over large parts of Southern Namibia (Figure 7). The mapping included EPL 5047, thereby providing detailed information of all the pegmatites that are present on EPL 5047.

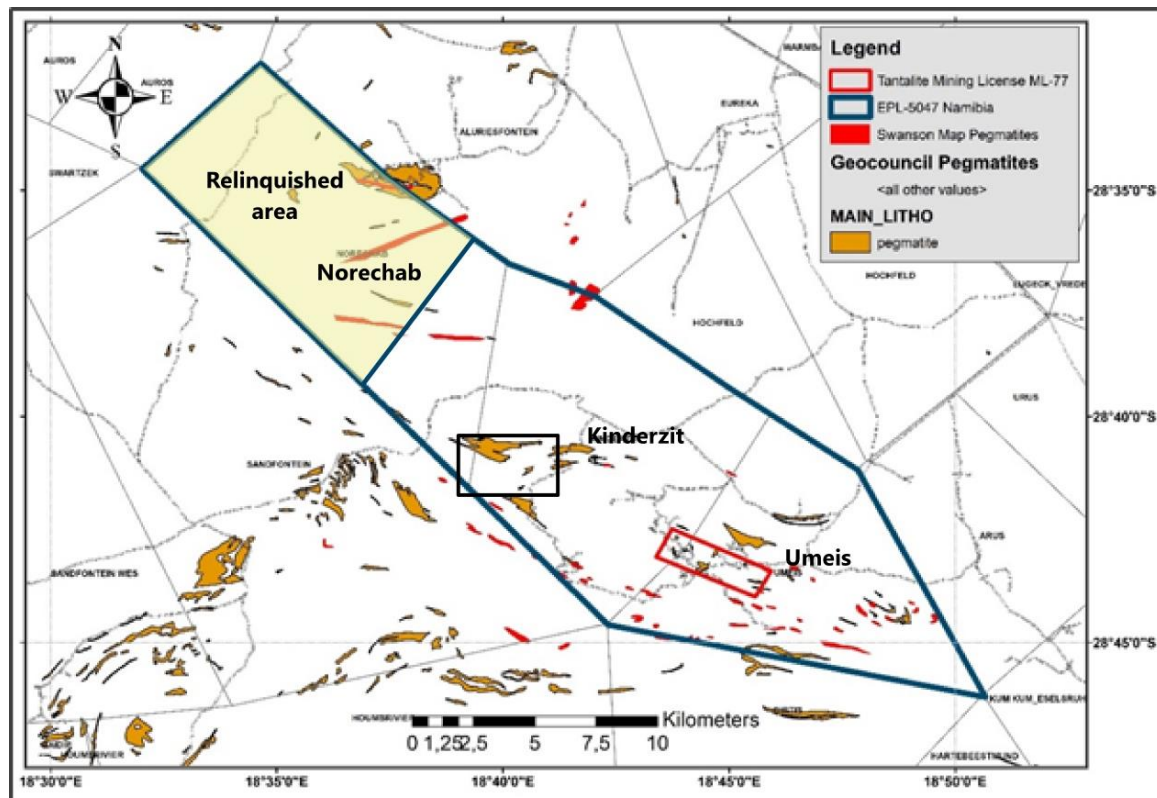


Figure 7. Pegmatite bodies mapped on EPL 5047 by the Namibian Geological Survey programme.

The geological database (ArcMap™ shape files) was purchased by ORP from the Geological Survey of Namibia and was subsequently re-interpreted by the company principal geologist Philip le Roux. The following conclusions could be made from this investigation:

*Note: ORP has subsequently relinquished 25% of the surface area of EPL 5047 with first the renewal of the licence, as prescribed by Namibian mineral legislation. The north-western portion that was released is perceived to be of lower potential. This should however be kept in mind when Figures 7 & 8 are considered. ORP has requested not to relinquish a portion of the EPL during the second renewal and is currently waiting for an answer from the Ministry of Mines and Energy.*

It was decided that exploration efforts will be focussed at two high priority areas that were identified from the Geological Survey of Namibia data.

- North-western strain shadow of the mafic to ultramafic Tantalite Valley Complex. (Refer to as “very high potential” area in figure 8, also referred to as the Swanson prospect.
- The Tantalite Valley Complex (Refer to as “high potential” in the previous map), also referred to as the Complex prospect.

The exploration work by ORP focuses exclusively on the north-westerly strain shadow of the Tantalite Valley Complex. This area is referred to as the Swanson Pegmatite Swarm (Figure 8). Additional exploration work is still outstanding on the other target areas.

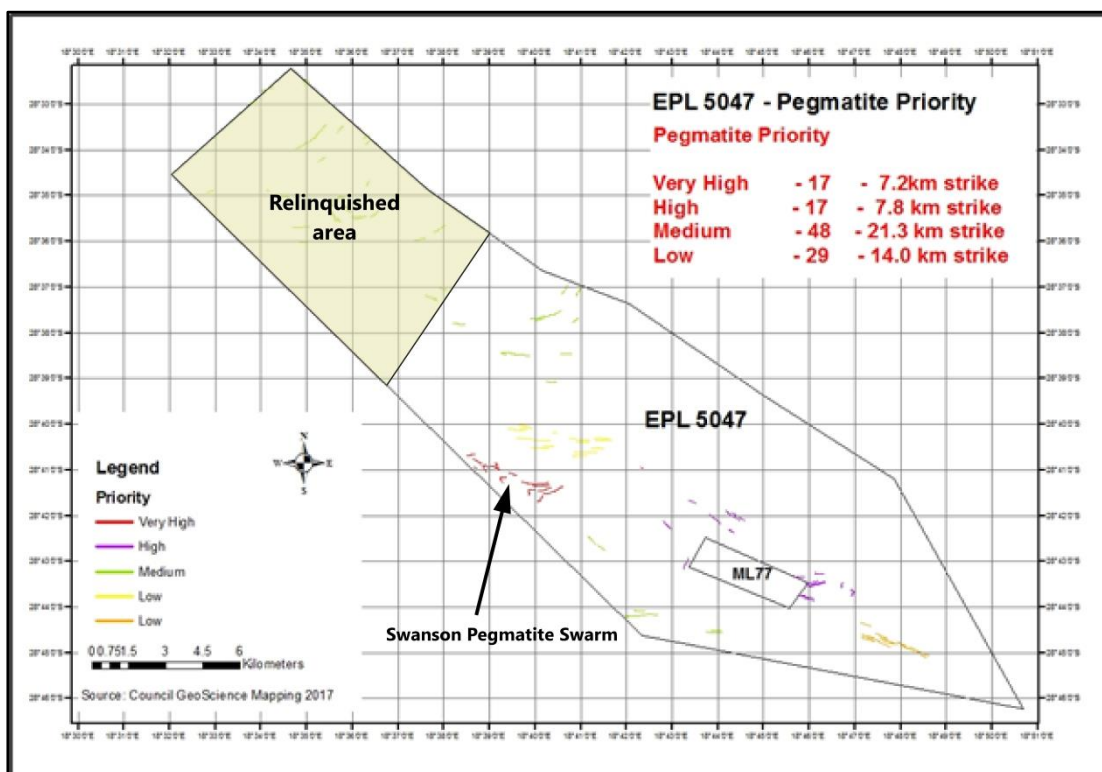


Figure 8. Prospectivity of pegmatites on EPL 5047. Priority is based on mineralization potential.



## 7. Exploration conducted by ORP

### 7.1. Reconnaissance sampling prior to September 2018

Since the acquisition of EPL 5047 by ORP, and up to September 2018, the company undertook comprehensive desktop studies, reviewed old reports and then did additional assessment by means of additional geological reconnaissance work. This was primarily aimed at assessing previous activities on the property, evaluating the known and recorded mineral occurrences and the testing for possible extensions of any such mineralization. This work has concentrated on the areas identified by the Geological Survey of Namibia mapping, the Swanson activities, and the area covered by the Placer Development exploration programme at the Swanson Pegmatite Swarm. As the lithium potential was not formally assessed previously, a special effort was made by ORP to assess this aspect. Several geological reconnaissance survey programmes were completed by ORP and a summary of the activities, sample batches collected, and general findings during each visit are presented in Table 2. Figure 9 and 10 indicates the area covered and samples collected to date.

*Table 2: Summary of the geological reconnaissance work conducted by ORP on EPL 5047 at the Swanson Pegmatite Swarm to date.*

Survey date	Primary activities	Secondary activities	Sample batches collected	General findings
9 – 11 September 2018	Initial geological reconnaissance with company directors and experienced Namibian geologist. Locating of historically noted “Swanson” area.	Chip sampling of spodumene stockpiles encountered during brief field excursion.	RV01	Confirmation of the existence of multiple Li mineralized pegmatites and widespread artisanal diggings for tantalite and beryl in the Swanson area.
4 – 10 October 2018	UAV ortho-photogrammetric of Swanson area and correlation with available 1:50k council geological and geophysical datasets.	Chip sampling of spodumene stockpiles and in situ spodumene crystals and pegmatite mineralization. Locating of Placer bulk samples in the field.	RV02	Confirmation of general strike, dip and geometry of the mineralized pegmatites in the Swanson area. Acquisition of high-res orthophoto and DTM over Swanson area.
21 – 29 November 2018	Proof of sampling concepts to be used in future geological activities.	Proof of pegmatite mapping concepts and further in situ chip sampling of spodumene and mineralized pegmatite.	RV03	Confirmation of chosen channel sampling methodology, mapping methodology and mineralization along strike. Identification of logistical requirements for field exploration work to be conducted in future.

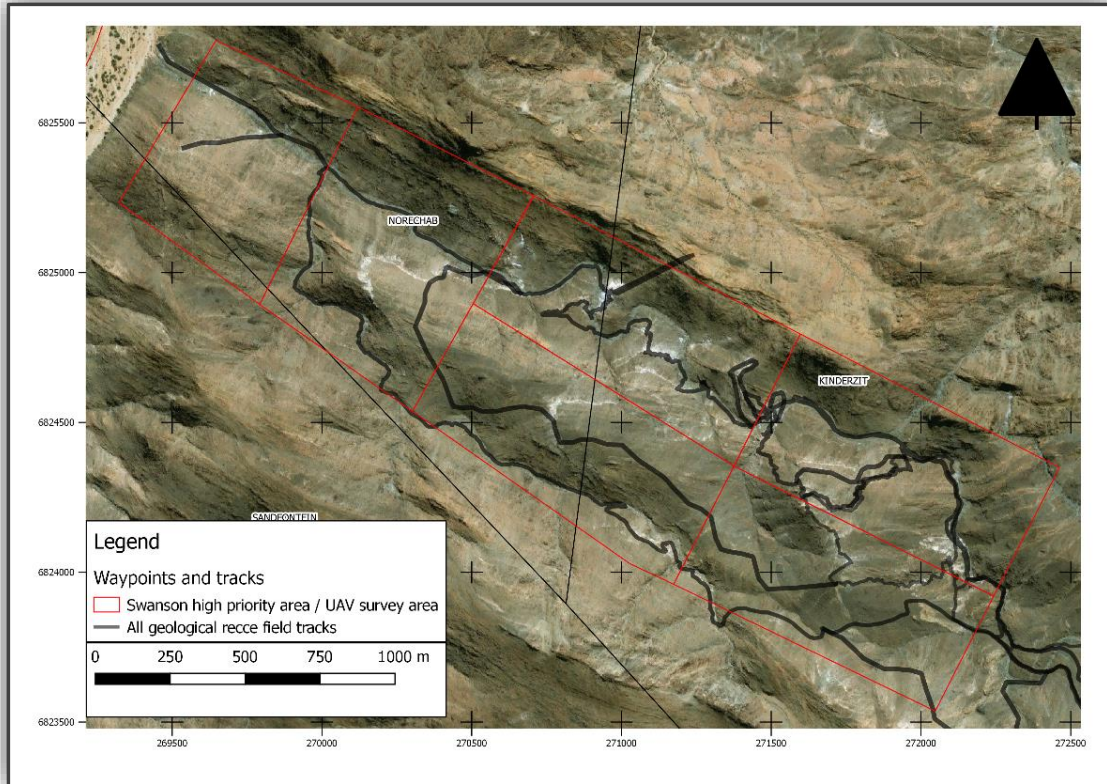


Figure 9: GPS tracks for all the reconnaissance field trips at the Swanson Pegmatite Swarm.

## 7.2. Reconnaissance Chip Samples

During the geological reconnaissance field excursions, several batches (RV01 – RV03) of chip samples consisting of spodumene and mineralized pegmatite were collected (Figure 10). Due to the lack of access for road vehicles the number of samples collected was kept to a minimum.

RV01 consisted of 5 samples, RV02 consisted of 20 samples of which 4 were for QAQC and RV03 consisted of 17 samples of which 3 were for QAQC. The weight of these chip samples collected typically ranged from approximately 200 g (individual spodumene crystals) – 6 kg (mineralized spodumene pegmatite). The aim of the chip sampling was to prove the existence of adequate quality spodumene and spodumene-tantalite bearing mineralized pegmatite on EPL 5047.







*Figure 11: Marking of a channel sample in the field*

The following characteristics were identified and applied during the systematic mapping of the pegmatite bodies:

- Coordinate location (X;Y) in UTM 34 S WGS 84
- Estimated true thickness of pegmatite.
- Estimated whole-pegmatite spodumene modal %: 0; 0 – 5%; 5 – 10%; 10 – 20%; >20%
- Estimated degree of shearing: Low; Moderate; High
- Identify tantalite mineralization
- Continuity of spodumene mineralization: 0 – 1 m; 1 – 5 m; 5 – 10 m (Figure 13)
- Other lithium minerals present: Lepidolite; Lithium-mica (Zinnwaldite); Spodumene



*Figure 12: Cutting of a vertical channel sample*



*Figure 13: An example of a mineralized pegmatite face that was mapped in the field clearly showing the spodumene crystals.*



The above characteristics were noted systematically along strike at intervals of approximately 30 m apart (Figure 14). The generation of waypoints with the above-mentioned attributes for a GIS database for individual pegmatites was taken to aid in identifying priority target areas for future detailed geological mapping and sampling programmes.

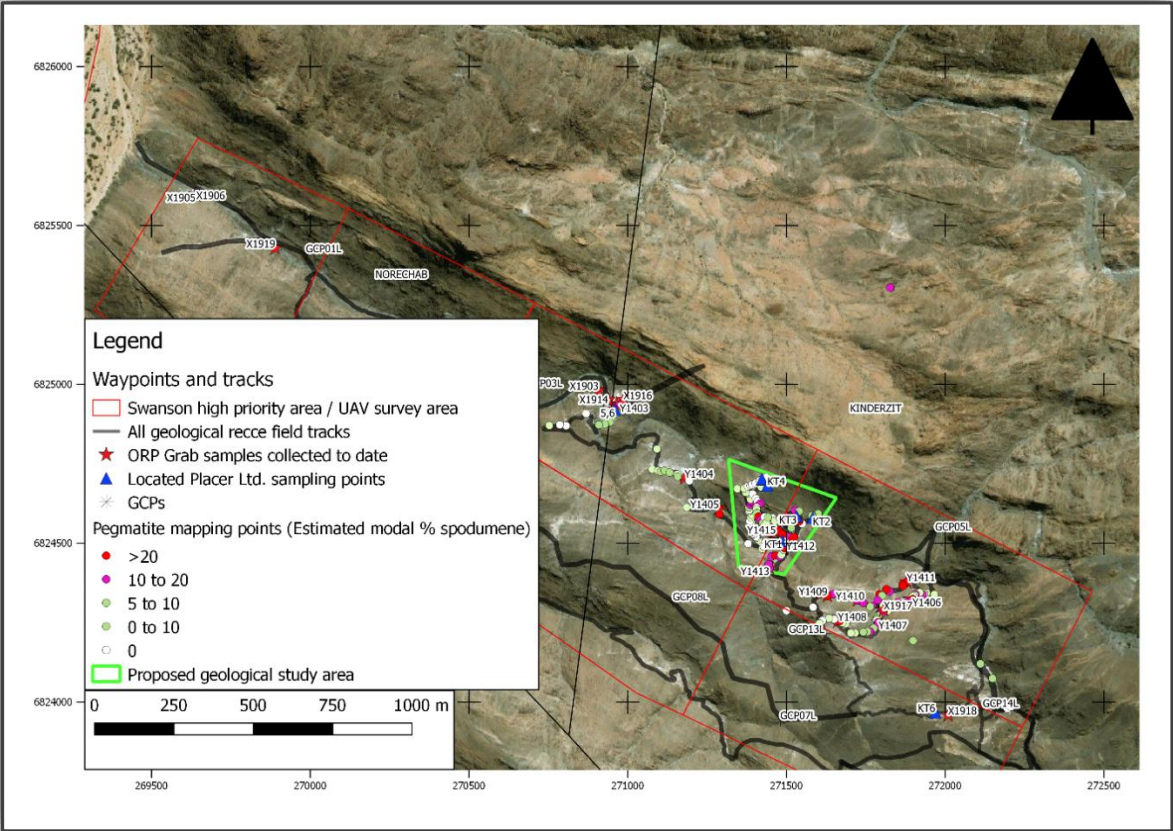


Figure 14: Map of estimated modal spodumene percentages at 30 m intervals along strike during the reconnaissance programme, indicating high priority areas within the Swanson Pegmatite Swarm area.

Most of the work conducted during the ORP geological reconnaissance was done within the original Swanson area now called the Swanson Pegmatite Swarm area, but eventually targeted the vicinity of the historical Placer Development Ltd K.T.1 – K.T.2 bulk sample locations. Subsequently, a proposed geological study area was identified where it is believed that the mineralization style and geological controls on mineralization are best exposed.

7.5. The September 2018 Sampling Programme

During September 2018, the ORP exploration team once again visited the Swanson Pegmatite Swarm area for the implementation of some follow-up reconnaissance work. Based on previous information and some additional work the existence of several (more than 15) shallow dipping pegmatites with significant in situ tantalite and lithium (spodumene) were identified, within the area previously investigated by Placer Development (Figures 15 & 16).





*Figure 15: Photo showing mineralization present in one of the shallow dipping pegmatites*

Within this area several artisanal scale workings, mainly for Tantalum (Ta), beryl (Be), and gem quality tourmaline, were observed, as well as a number of spodumene stockpiles adjacent to the artisanal workings.



*Figure 16: Photo of one of the spodumene stockpiles that is present in the area of old mining activities.*



Five chip samples of spodumene crystals (SP01 – SP05) were collected from various stockpiles and submitted for analysis to Scientific Services Laboratories in Cape Town. The results listed below indicate that the spodumene crystals have a high Li<sub>2</sub>O content of around 7.2%.

Table 3. Results of spodumene crystal samples (stockpile samples) analysed for Li content.

	<b>SP01</b>	<b>SP02</b>	<b>SP03</b>	<b>SP04</b>	<b>SP05</b>	<b>Average</b>
Li (%)	2.86	3.19	3.41	3.26	2.73	3.09
Li <sub>2</sub> O (%)	6.67	7.42	7.94	7.59	6.35	7.19

### 7.6. Drone Surveys

ORP appointed Asset Mapping Solutions (Pty) Ltd (AMS), a Cape Town based company, to conduct a detail drone survey of the Swanson prospect area. The survey was undertaken in October 2018.

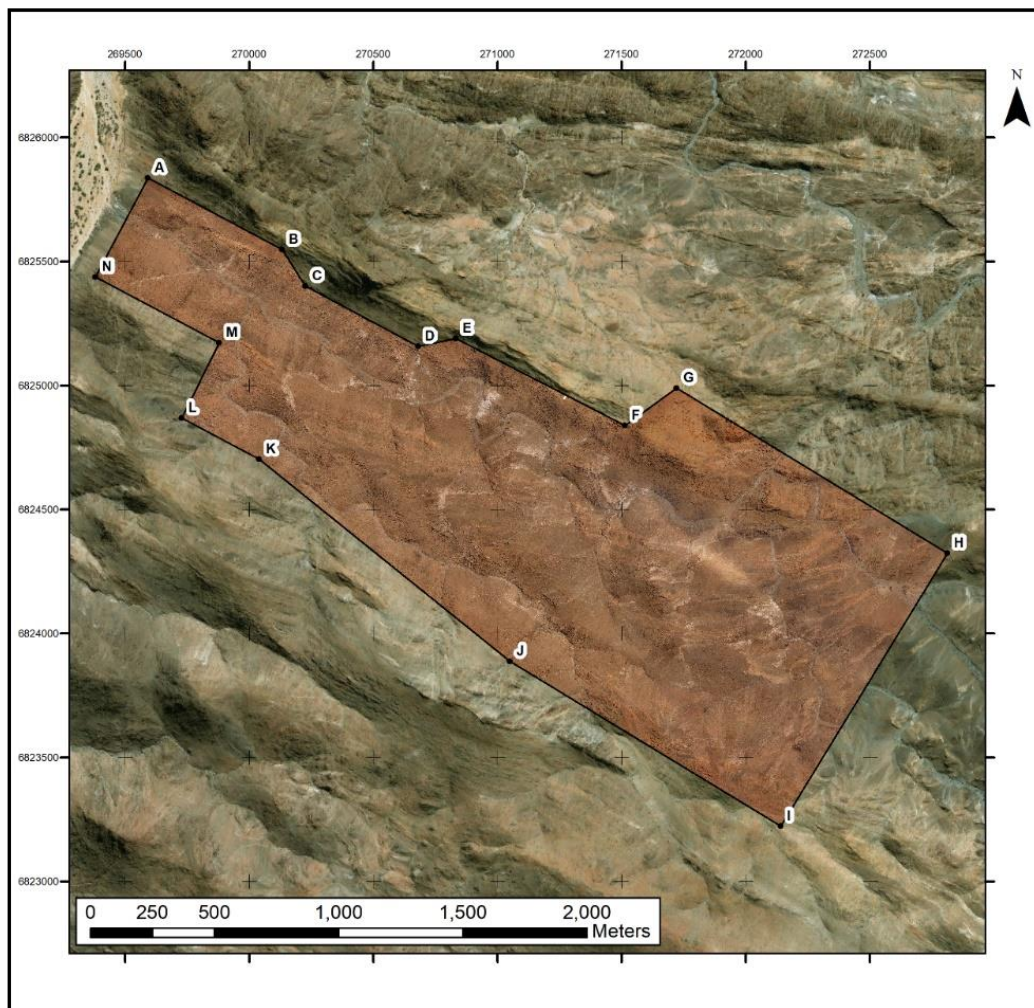


Figure 17: Area surveyed for high resolution images and relief contours. The coordinates of the area is given in table 4.

### 7.6.1. Area Surveyed

The project areas surveyed are indicated in Figure 17 and table 4 below and cover both the Swanson Pegmatite Swarm area of interest as well as the area explored by Placer Development.

Table 4: Drone survey coordinates

Corner point	X	Y
A	269592.222000	6825837.151130
B	270133.038931	6825549.573870
C	270226.434598	6825401.154120
D	270681.781723	6825159.025090
E	270832.429008	6825190.376250
F	271513.122480	6824839.707870
G	271722.122093	6824990.482770
H	272812.678866	6824324.783100
I	272140.164596	6823223.062570
J	271049.607822	6823888.762230
K	270040.172236	6824703.632970
L	269728.650560	6824869.283390
M	269879.630138	6825173.552550
N	269380.489908	6825438.968390

### 7.6.2. Results

The output file of the drone survey includes a very detail orthophotos-mosaic (10 cm pixels size) and accurate elevation survey (10 cm) contours (Figure 18). This information is of such a high accuracy that it allowed for use in 3D geological mapping of the various pegmatites in the area.

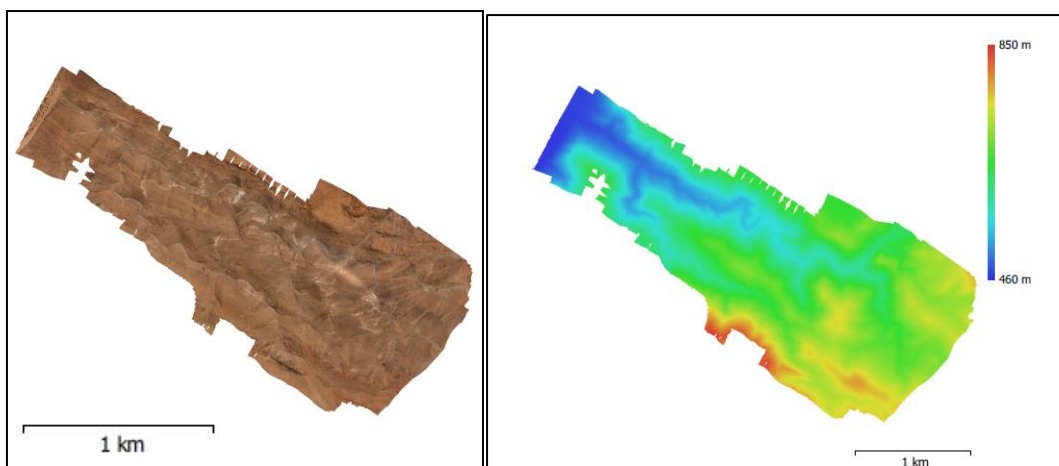


Figure 18: Orthophoto mosaic and the digital surface model of the surveyed area covering the Swanson Pegmatite Swarm.

All the previous work, drone surveys and results from the reconnaissance work were combined into a GIS Model, and from this a target generation exercise was undertaken. Exploration targets and priorities were generated by ORP and the programme was subsequently implemented during July 2019.

#### 7.7. Programme establishment, July 2019 ORP Programme

Following the assessment of historical information, drone surveys and the reconnaissance programme, completed during 2018, it was decided to implement a full-scale exploration programme during 2019. The programme was aimed at the following objectives:

- Confirmation of the results of the Placer Development exploration programme, mainly the Tantalum content of the targeted pegmatites.
- Confirmation of the Placer Development resource figures.
- Test for the lithium content of the same pegmatites, which has not been tested previously.

A dedicated exploration team comprising a geologist, an administrator and five samplers as well as two general assistant/drivers were appointed. The sampling personnel employed were all based in Warmbad with temporary accommodation being provided on site. Some of the personnel were previously employed by the nearby tantalite mine and they were therefore all trained and skilled in sampling procedures and were experienced in hard rock, chip and channel sampling.

The required infrastructure was put in place, consisting of staff accommodation and site office. An operational tented camp was also established within the prospecting area. This was mainly done for sample management and custody as well as reducing transport time for the workers to the working area. Although there was some basic road access to the exploration site (from historical operations), the road condition was generally poor, with the last 4 kilometres to the exploration area that had to be re-constructed.

#### 7.8. Target Generation Programme

Prior to the initiation of the programme during July 2019, the company re-assessed all the available data, historical as well as from the reconnaissance work that was undertaken. From this work the Swanson Claim/Placer Development area now called the Swanson Pegmatite Swarm area was identified as the highest priority area with second priority area the remaining pegmatites that are associated with the Tantalite Valley Complex.

This block included a total of more than 25 pegmatites. The selection criterion for the above was to exclude all pegmatites with a thickness of less than 1m, since these pegmatites are unlikely to be mineable. This factor reduced the number of pegmatites to 17.

Three additional criteria were then also applied in order to prioritize these remaining pegmatites:

- The indicated historical grade
- The potential pegmatite volume.
- Mineability of the pegmatite (opencast or underground)

#### 7.8.1. Historical Grades

Table 5 indicates the number of samples and average Ta<sub>2</sub>O<sub>5</sub> grade for each of the 17 pegmatites that were sampled during the Placer Development exploration programme.

*Table 5. Table indicating the number of samples per pegmatite and average grade, taken by the Placer Development sampling programme*

Pegmatite_Nr	Nr_Samples	TA2O5 ppm		
		Min	Max	Avg
A1	7	62	259	143
A2	1	190	190	190
B1	2	360	390	373
B2	3	79	311	194
C1	3	160	550	302
C2	7	69	405	170
C3	6	90	310	180
D1	14	30	640	346
D2	3	300	420	371
E2	3	570	820	662
E3	4	140	420	260
E4	1	730	730	730
E5	3	580	790	670
E6	3	420	500	452
E7	1	730	730	730
F1	3	360	720	488
G1	2	244	510	337

#### 7.8.2. Potential Volumes

A specific procedure was applied to the raw data in order to obtain a reliable estimate of the potential volumes of each of the targeted pegmatites in the Swanson Pegmatite Swarm.

A 3D model was created by using Micromine™ 2018 software, incorporating the following information:

- High resolution drone image of the area
- Topographic elevation survey data – 50 cm contour intervals



- Pegmatite outcropping maps
- Pegmatite thicknesses, obtained from Placer Development mapping and the ORP mapping programmes.

### 7.8.3. Methodology for the calculation of potential volumes

Elevation survey data was used to construct a wireframe by using Micromine™ 2018, thereby, creating a 3D surface of the prospecting area. The pegmatite outcrops were then mapped by tracing outcrops on the high-resolution image. This was compared with historical geological mapping data from Placer Development reports. Each outcrop's extent was carefully mapped and visually illustrated using outcrop strings. These string points all have X, Y and Z attributes which are essential for the trigonometric exercise that was used to accurately determine the average strike, dip and dip angle of each outcropping pegmatite.

#### Theory Background:

Commonly, this exercise is known as the Three-point problem, which is a paper exercise that is used to gather as much data as possible from a target area as a desktop exercise prior to engaging in field work. For this to work the target strata needs at least three outcrop positions, each with different positions and elevations. With these known points it is possible to then determine the outcrop's special characteristic by using trigonometric principals.

#### Example:

The outcrop has been defined by the method that was indicated in the Methodology paragraph before. The points on the outcrop are labelled A (highest elevation), B (intermediate elevation) and C (lowest elevation) as illustrated in Figure 19.

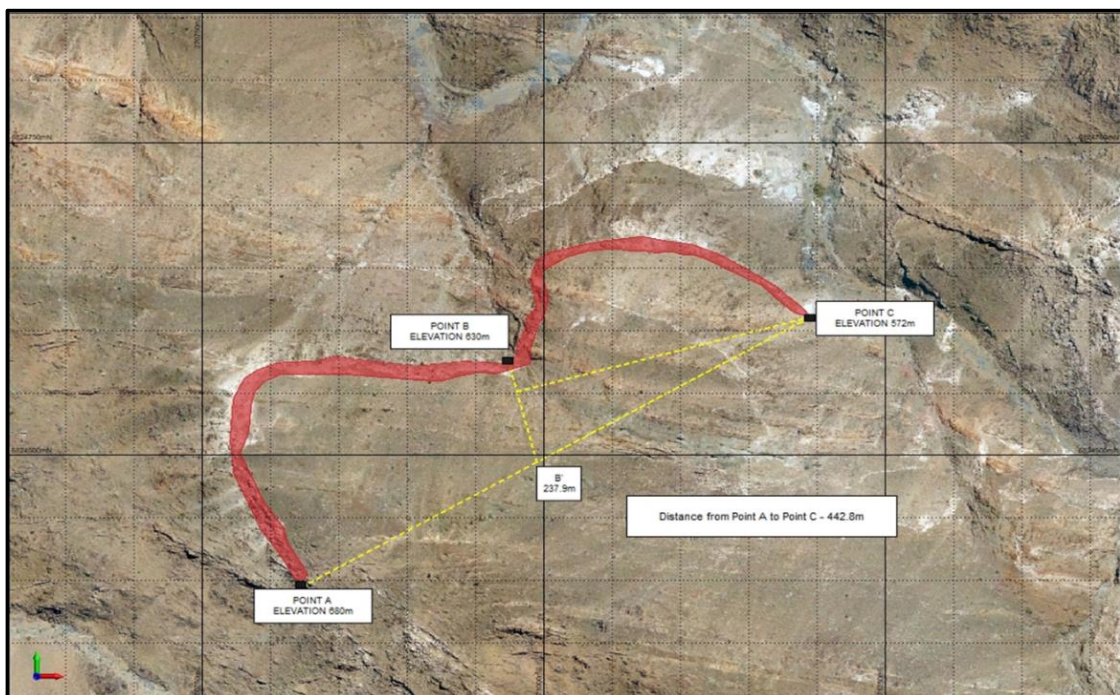


Figure 19: Example of determining outcrop characteristics by using trigonometry principles.

The strike of an outcrop is defined by the line of where two points of the same elevation meet. To determine this intersection, a line is drawn from the highest elevation outcrop point to the lowest elevation outcrop point (point A to point C). The distance is recorded. The objective then is to determine where B' intersects on the A-C line and this is done using trigonometry and a dip and strike could then be calculated for the pegmatite. In the example above (Figure 19), the dip is 13.7 degrees and the strike 165 degrees.

Volume Results:

A total of 15 outcrops were selected and the 3D interpolation was applied in order to determine individual and total potential tonnage for the area (Figure 20 & 21). Some outcrops were subdivided, either according to the locality of the main outcrop, or was sub-divided into smaller outcrops due to deformation within one outcrop. Each outcrop had to be interrogated individually to ascertain if the interpretation makes geological sense. Folding and or fault lines in the regional setting had an impact on the outcrops and were taken into account where applicable.

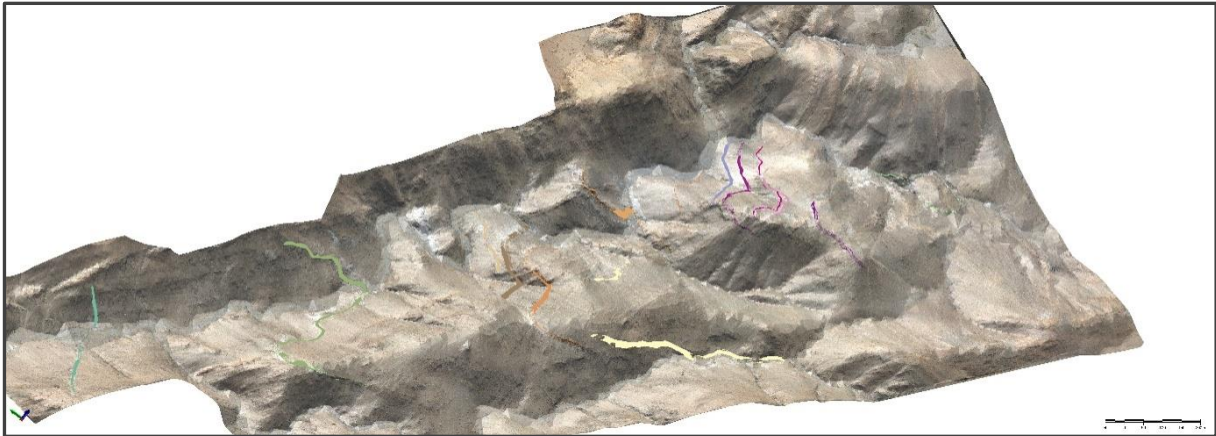


Figure 20: Example of the 3D geological modelling of a pegmatite.

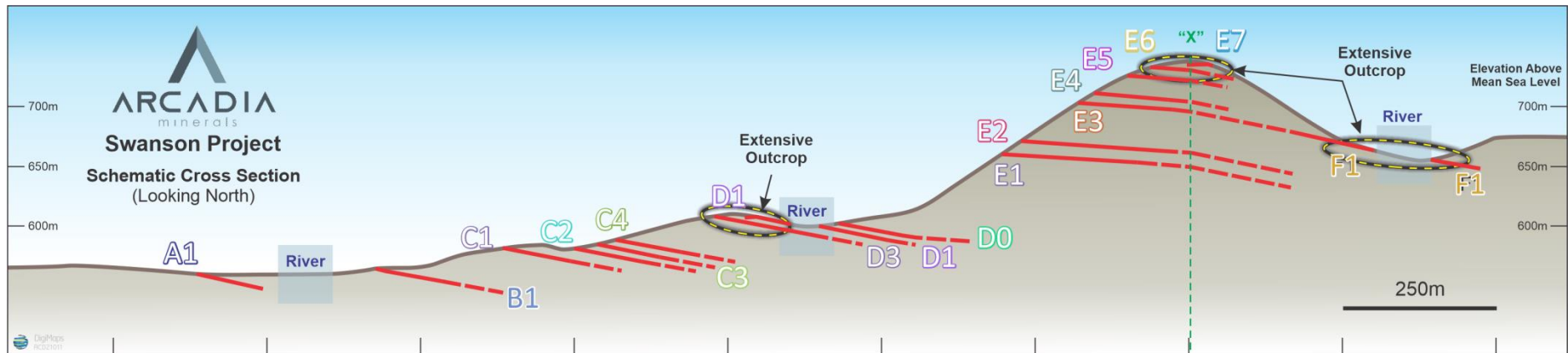


Figure 21: A schematic cross section through the pegmatite belt.

The outcrops varied substantially in length and similarly the dip angles, with the average dip over the 17 pegmatites being 12.33°. The steepest dip angle observed is at 22.05° and the lowest angle is 5.65°. This was confirmed by the preliminary field work results.

The length of each outcrop's projection was done by taking a third of the total length of the outcrop and then projecting it to the strike determined earlier on.

A tonnage report was run on each of the outcrops to identify the contribution of each pegmatite body. The tonnage was calculated using the area determine by the 3D modelling and multiplying this with the average thickness (section 7.9) of the pegmatite and the average density (section 10.2) of each of the pegmatite swarms. The tonnages for each of the pegmatites based on the modelling information are indicated in Table 6.

*Table 6. Modelled pegmatite volumes.*

Area	Pegmatite Nr	Outcrop Length (m)	Area (m <sup>2</sup> )	SG	Avg Thickness	Volumes (Tonnes)
Swansons	A1	589	84,854	2.60	3.56	785,409
Swansons	A2	298	26,983	2.60	2.82	197,839
Swansons	B1	252	22,361	2.59	2.16	125,096
Swansons	C2	228	14,753	2.61	3.74	144,010
Swansons	C3	685	97,664	2.61	2.27	578,630
Swansons	D0	186	11,236	2.58	1.78	51,600
Swansons	D1	605	52,629	2.58	2.36	320,447
Swansons	D2	295	19,835	2.58	2.49	127,424
Swansons	E2	480	58,681	2.60	1.69	257,844
Swansons	E3	448	64,061	2.60	1.64	273,156
Swansons	E4	87	1,858	2.60	1.40	6,763
Swansons	E5	485	66,470	2.60	1.50	259,233
Swansons	E6	203	11,343	2.60	2.16	63,702
Swansons	E7	196	10,602	2.60	1.18	32,527
Swansons	F1	1065	66,703	2.61	1.59	276,811
<b>Total</b>	<b>15</b>	<b>6102</b>	<b>610,033</b>	<b>2.60</b>		<b>3,500,492</b>

#### 7.8.4. Mineability

The next aspect considered was the mineability of each of the 15 pegmatites. Because large areas of the pegmatite outcrops at a low dip angle, pegmatite B1, D1, D2, E7 and F1 can all be mined by means of opencast methods. For this reason, these pegmatites should have a high priority as they can potentially be put in production at low capital and operational costs.

### 7.8.5. Pegmatite Rankings

Based on the above three criteria (7.8.2; 7.8.3 and 7.8.4), the pegmatites were ranked according to priority and based on this ranking the exploration programme was planned in different phases, with the first phase targeting the highest ranked pegmatites (Table 7).

The following ranking weights were used:

Grade +500 ppm – 10, +400 ppm – 7.5, +300ppm – 5, +200ppm -2.5

Mineability: Opencast – 5, underground – 2

Tonnes: + 1 000 000 – 5, +750 000 – 4, +500 000 – 3, +250 000 -2, +50 000 – 1

On this basis, the different pegmatites were ranked as shown in Table 7.

*Table 7: Pegmatite bodies ranked on thickness, grade and volumes.*

Pegmatite_Nr	Grade	Mine Ability	Tonnes	Rating	Exploration Phase
E7	10	5	1	16	1
E2	10	2	3	15	1
E5	10	2	2	14	1
F1	7.5	5	1	13.5	1
E4	10	2	1	13	1
D1	5	5	2	12	1
B1	5	5	1	11	1
D2	5	5	1	11	1
E6	7.5	2	1	10.5	2
E3	2.5	2	4	8.5	2
C1	5	2	1	8	2
A1	0	2	5	7	3
A2	0	2	5	7	3
C2	0	2	5	7	3
C3	0	2	5	7	3

## 7.9. Channel and Chip Sampling Campaign July 2019

### 7.9.1. General Information

As discussed before and specifically in section 7.8, a number of mineralized (tantalum and lithium) pegmatites were identified within the Swanson Pegmatite Swarm at EPL5047. A total of 15 of these pegmatites (+1 m thick), previously sampled, was than targeted for additional, more detailed, mapping and sampling. This area was delineated and a high resolution drone survey was undertaken to assist with the planning and mapping of these pegmatites (Figure 22).



Based on the nomenclature that was used during the Placer Development programme, the pegmatites were grouped according to clusters and general placement of the pegmatites. They were then named pegmatite “A” to “F” in a west to east direction (Figure 23).

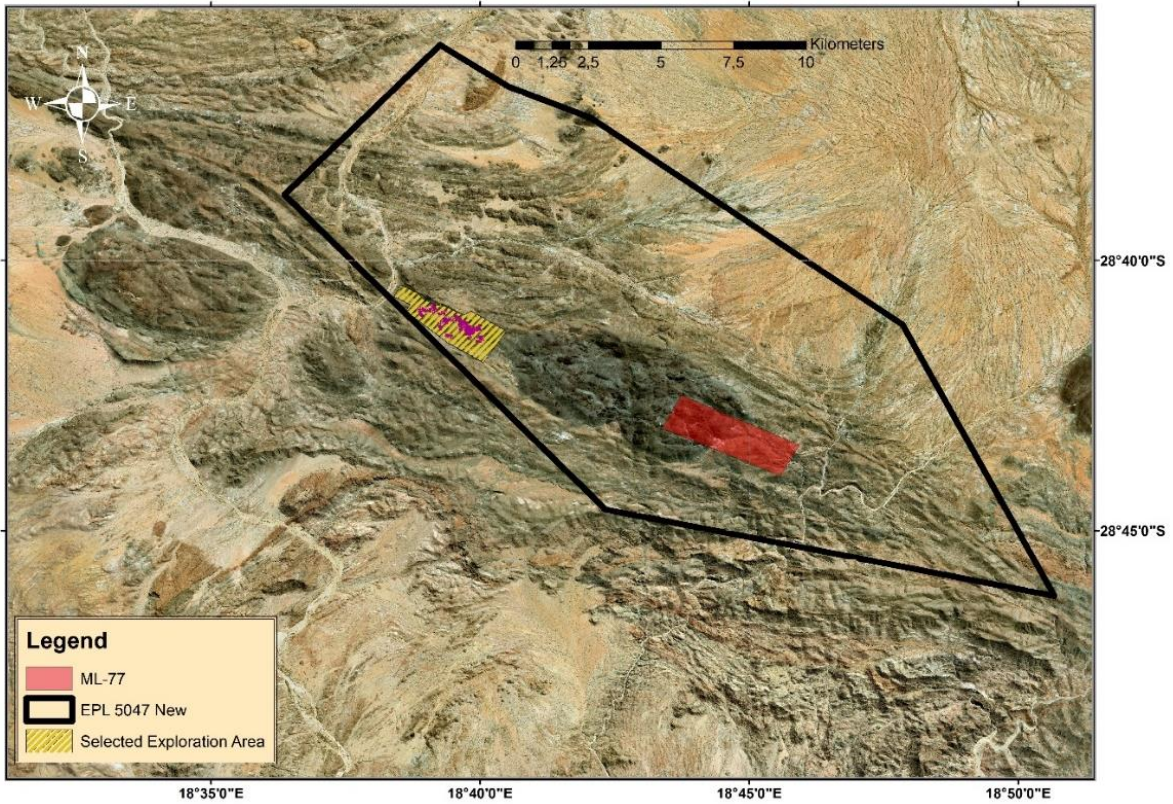


Figure 22: Swanson Pegmatite Swarm area targeted for the exploration campaign.

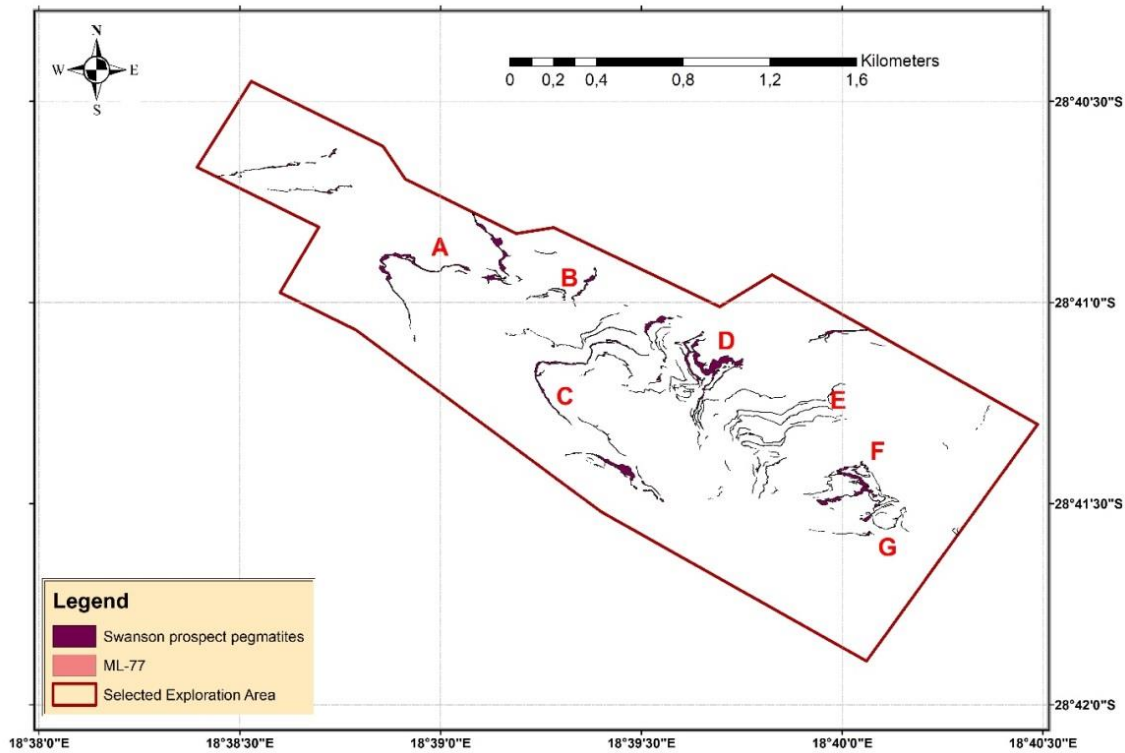


Figure 23: The locality of mineralized pegmatites within the Swanson Pegmatite Swarm.

As such, “D” would not represent a single pegmatite but, rather a swarm of pegmatites i.e., D0, D1 and D2. It is expected that 5 of the pegmatites mapped will most likely be mineable by opencast method. These pegmatites B1, D1, D2, E7 & F1 were therefore targeted as a priority for more detailed work.

The following quantities of samples were subsequently collected from the individual pegmatites and are discussed in more detail below.

A1 Pegmatite: 12 samples (9 channel and 3 chip) with average thickness of 3.56 m.

A2 Pegmatite: 7 samples (6 channel and 1 chip) with average thickness of 2.82 m.

B1 Pegmatite: 12 samples (10 channel and 2 chip) with average thickness of 2.16 m.

C2 Pegmatite: 5 samples (5 channel) with average thickness of 3.74 m.

C3 Pegmatite: 13 samples (13 channel) with average thickness of 2.27 m.

D0 Pegmatite: 6 samples (5 channel and 1 chip) with average thickness of 1.78 m.

D1 Pegmatite: 77 samples (17 channel and 60 chip) average thickness of 2.04 m.

D2 Pegmatite: 11 samples (10 channel and 1 chip) with average thickness of 2.49 m.

E2 Pegmatite: 14 samples (11 channel and 3 chip) with average thickness of 1.84 m.

E3 Pegmatite: 19 samples (19 channel) with average thickness of 1.64 m.

E4 Pegmatite: 4 samples (4 channel) with average thickness of 1.4 m.

E5 Pegmatite: 13 samples (12 channel and 1 chip) with average thickness of 1.63 m.

E6 Pegmatite: 7 samples (7 channel) with average thickness of 2.16 m.

E7 Pegmatite: 7 samples (6 channel and 1 chip) with average thickness of 1.18 m.

F1 Pegmatite: 75 samples (67 channel and 8 chip) with average thickness of 1.59 m.

Total of 283 samples (204 channel and 79 chip).

Additional samples were taken for mineralogy test work (3) and handed in at Sci-Ba Laboratories in Cape Town for test work. The results of this exercise are discussed in Section 12.0.

An additional 15 samples collected from different pegmatite feldspar types were also submitted to determine if there is any relationship between feldspar types and mineralisation. Figures 24 to 30 below show the various pegmatite sample locations together with Tantalite grades (Lithium grades for D pegmatites only) and the details geological mapping that was undertaken.



## 7.9.2 “A” Pegmatite Sampling Results

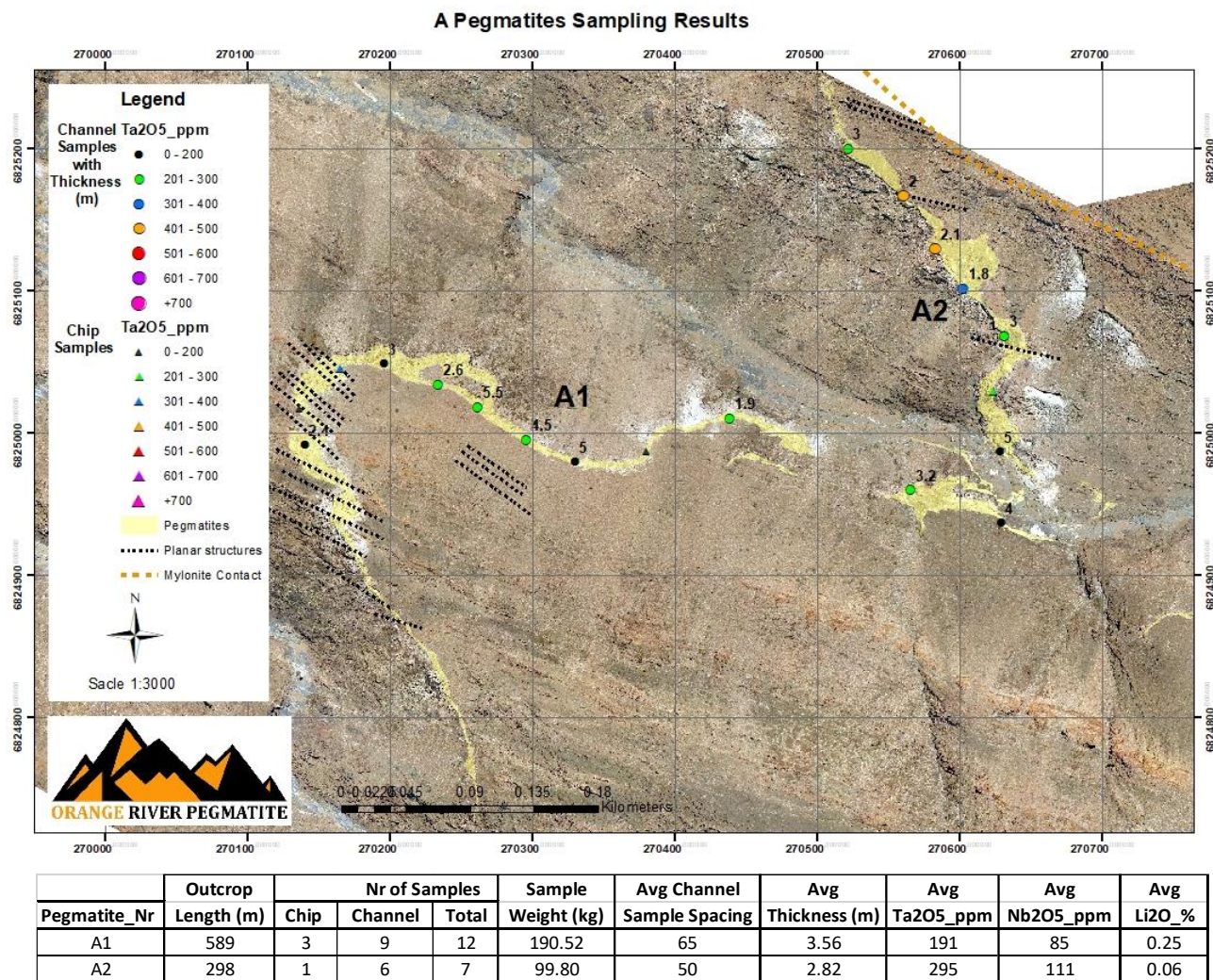
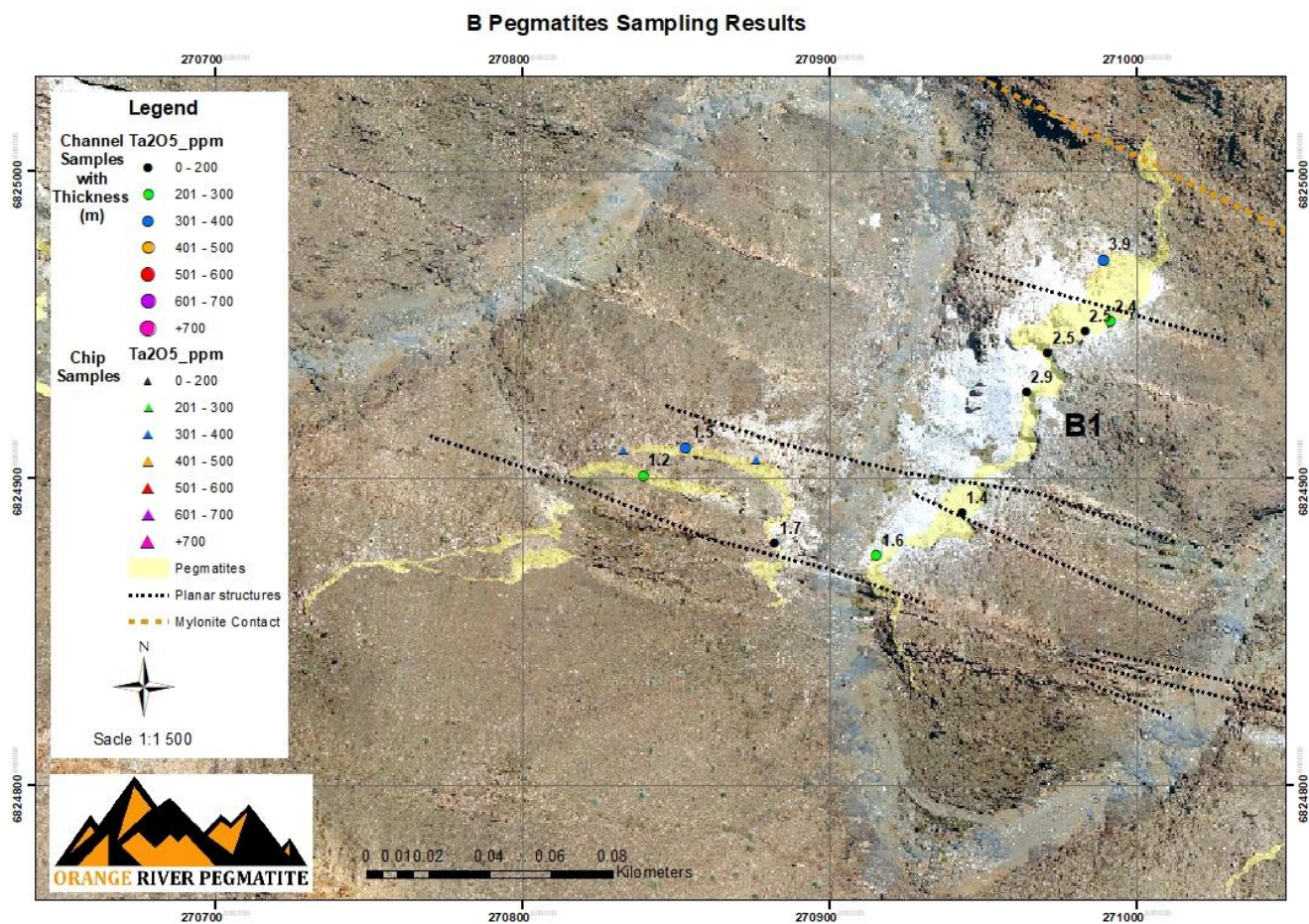


Figure 24: A Pegmatite sample locations, Ta Grades and geological mapping



### 7.9.3 "B" Pegmatite Sampling Results

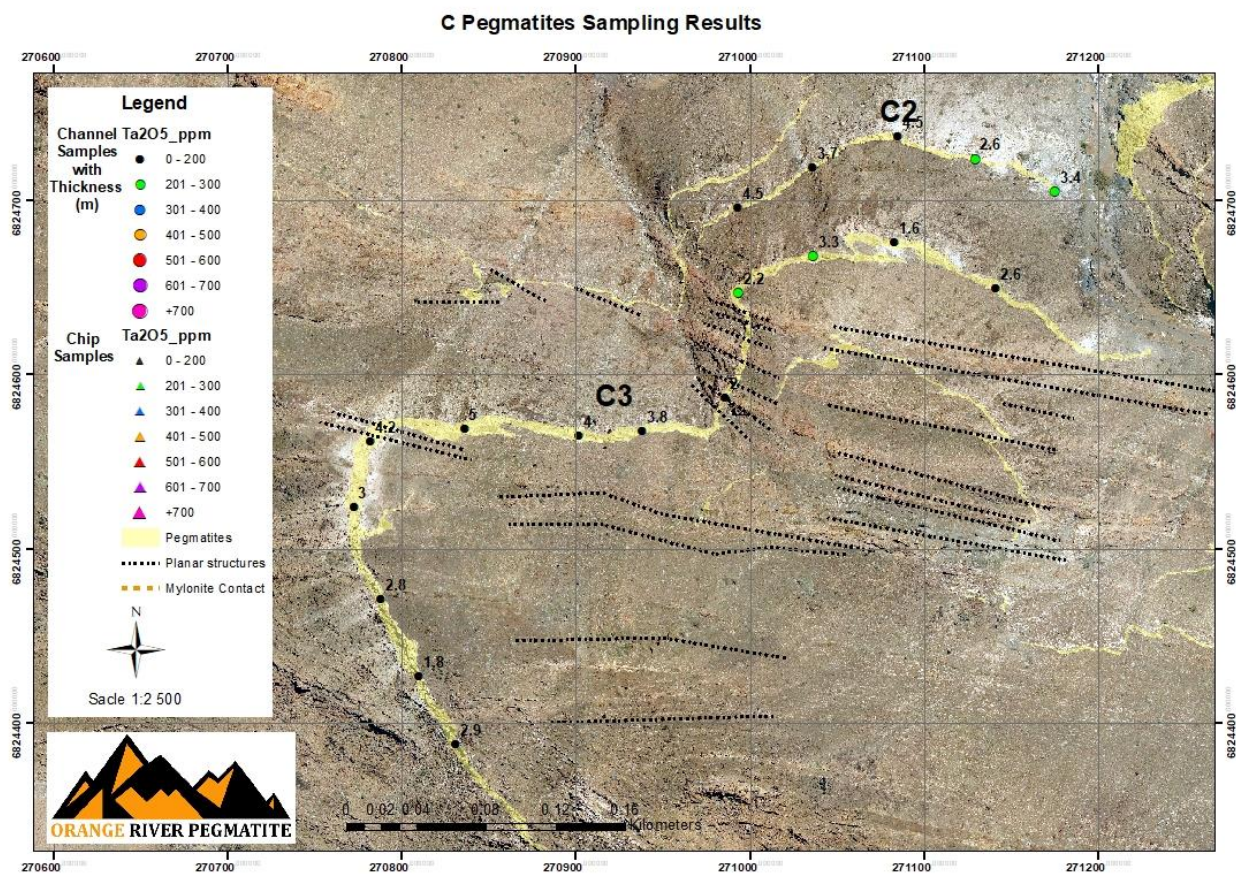


Pegmatite_Nr	Length (m)	Chip	Channel	Total	Weight (kg)	Sample Spacing	Thickness (m)	Ta2O5_ppm	Nb2O5_ppm	Li2O_%
B1	252	2	10	12	157.90	25	2.16	220	51	0.38

Figure 25: B Pegmatite sample locations, Ta Grades and geological mapping



## 7.9.4 "C" Pegmatite Sampling Results



Pegmatite_Nr	Outcrop Length (m)	Nr of Samples			Sample Weight (kg)	Avg Channel Sample Spacing	Avg Thickness (m)	Avg Ta2O5_ppm	Avg Nb2O5_ppm	Avg Li2O_%
		Chip	Channel	Total						
C2	228	0	5	5	48.50	46	3.74	139	50	0.04
C3	685	0	13	13	114.30	53	2.27	162	63	0.17

Figure 26: C Pegmatite sample locations, Ta Grades and geological mapping



7.9.5 "D" Pegmatite Sampling Results

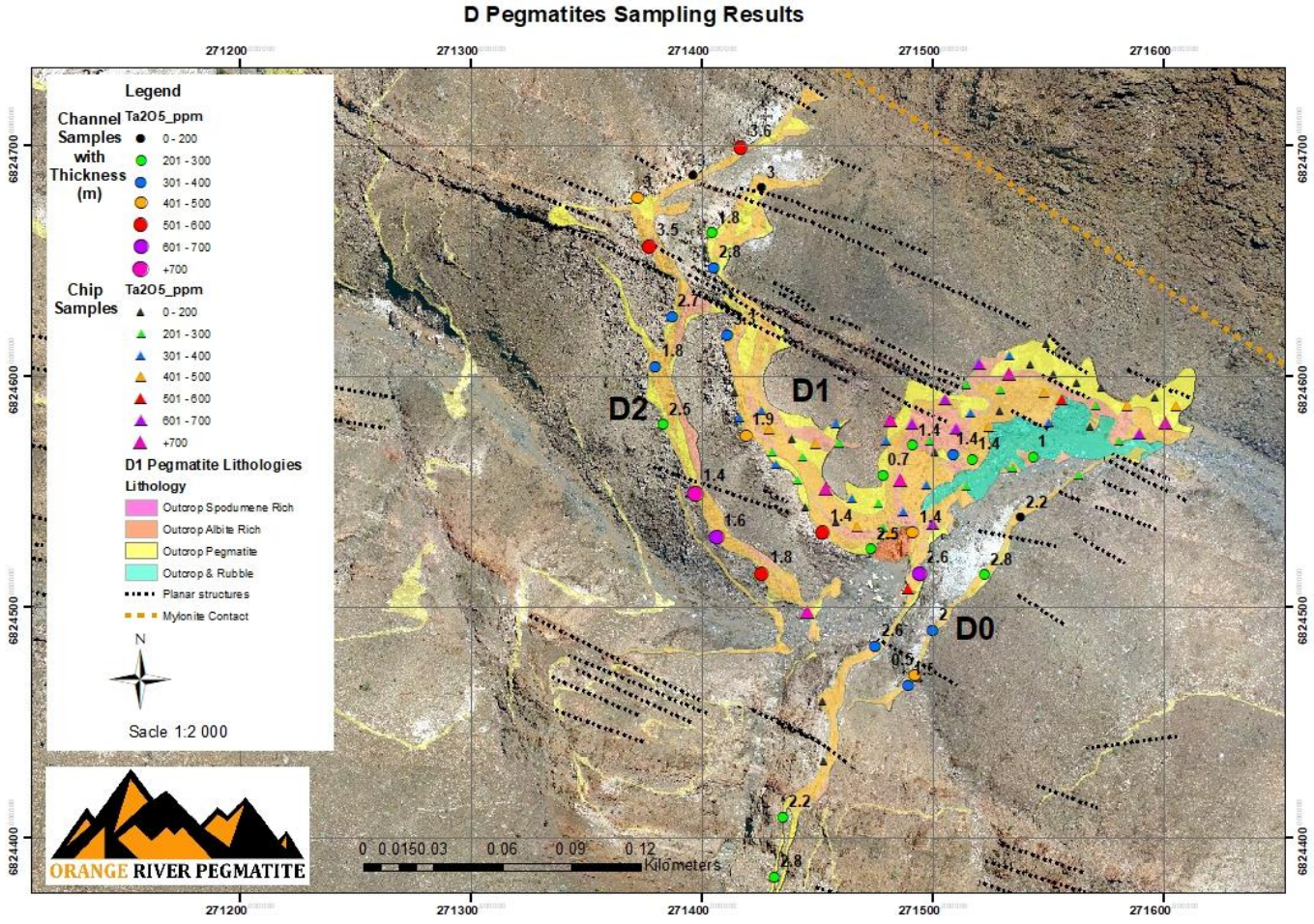
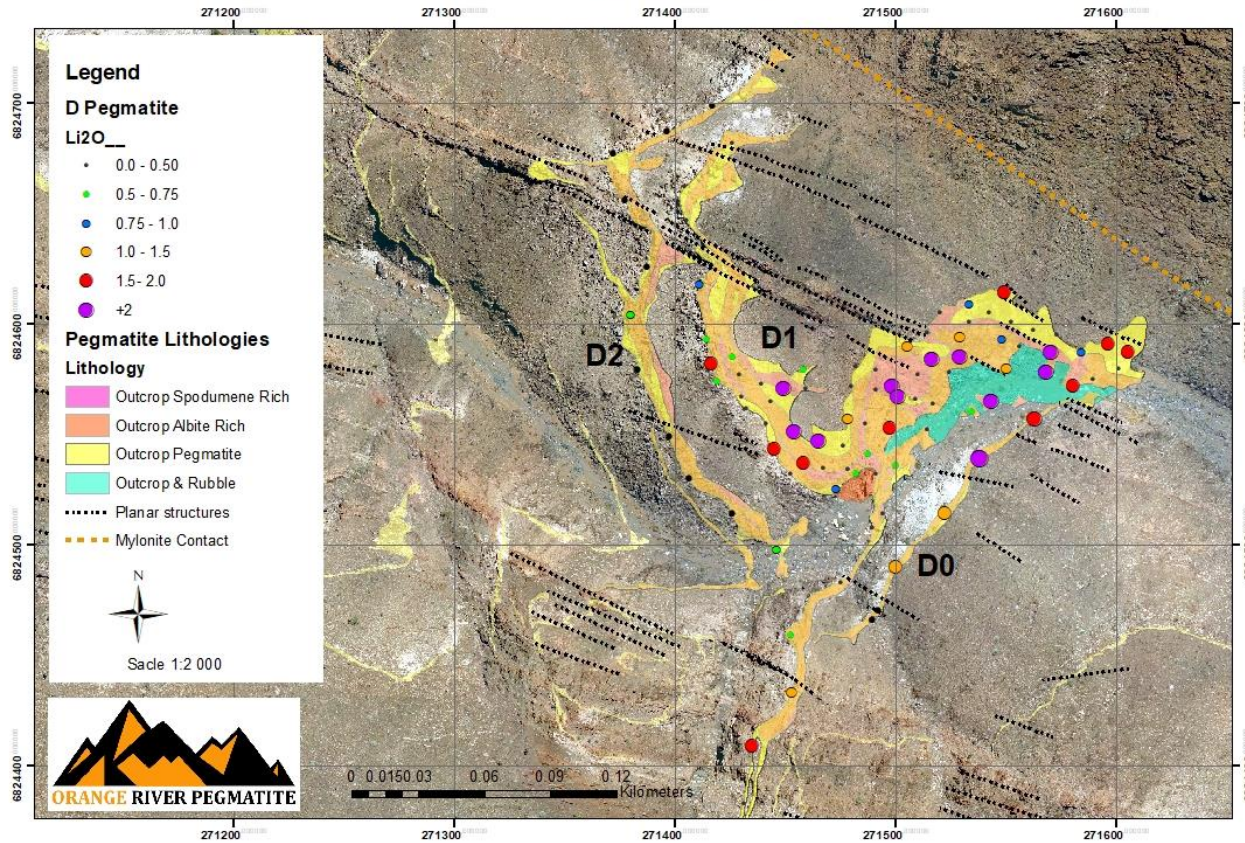


Figure 27: D Pegmatite sample locations, Ta Grade and geological mapping



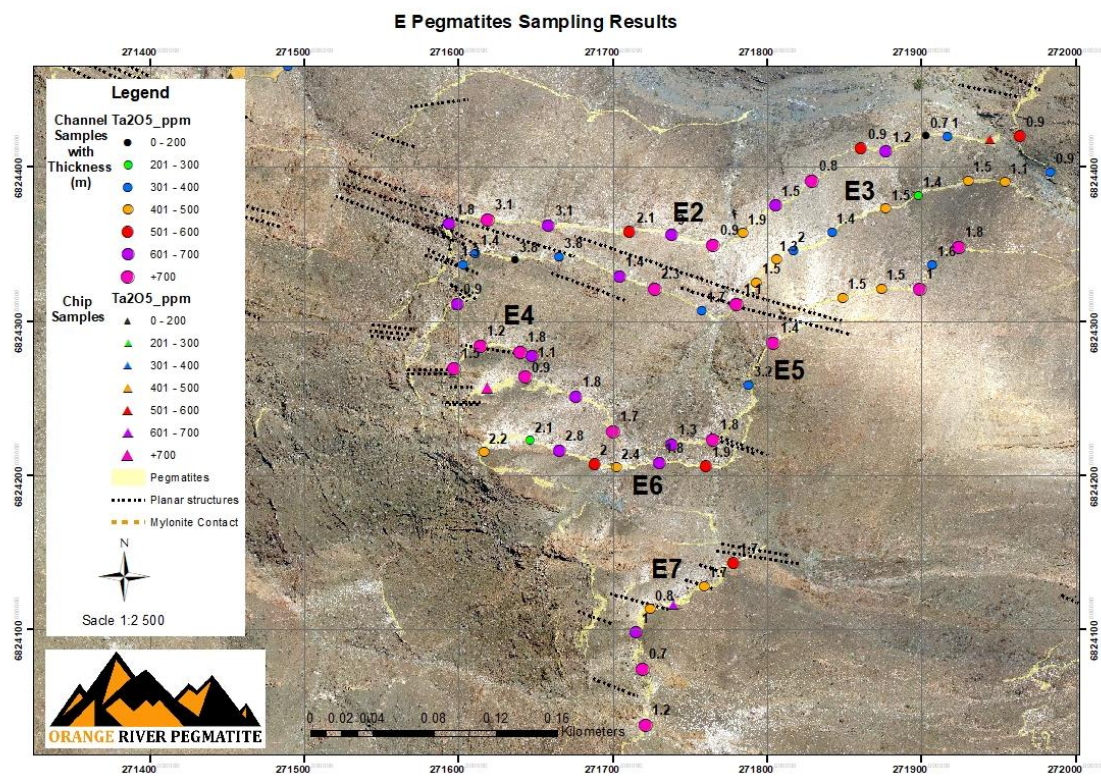
### D Pegmatites Sampling Results



Pegmatite_Nr	Outcrop Length (m)	Nr of Samples			Sample Weight (kg)	Avg Channel Sample Spacing	Avg Thickness (m)	Avg Ta2O5_ppm	Avg Nb2O5_ppm	Avg Li2O_%
		Chip	Channel	Total						
D0	186	1	5	6	41.57	37	1.78	308	54	1.16
D1	605	60	17	77	618.05	36	2.36	368	83	0.79
D2	295	1	10	11	83.74	30	2.49	498	91	0.16

Figure 28: D Pegmatite sample locations, Ta Grade and geological mapping

## 7.9.6 “E” Pegmatite Sampling Results

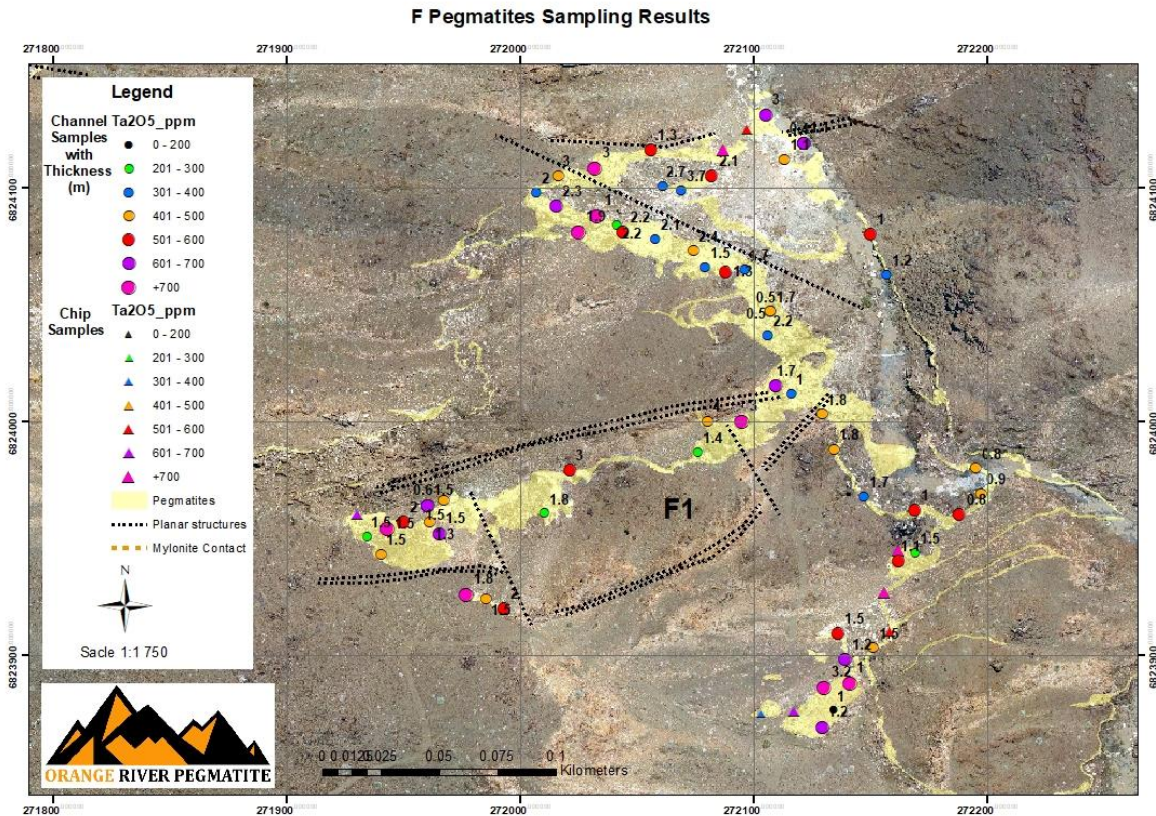


Pegmatite_Nr	Outcrop Length (m)	Nr of Samples			Sample Weight (kg)	Avg Channel Sample Spacing	Avg Thickness (m)	Avg Ta2O5 ppm	Avg Nb2O5 ppm	Avg Li2O %
		Chip	Channel	Total						
E2	480	1	13	14	101.97	37	1.69	592	79	0.02
E3	448	0	19	19	166.66	24	1.64	442	68	0.16
E4	87	0	4	4	27.43	22	1.40	732	50	0.01
E5	485	1	13	14	85.10	37	1.50	761	67	0.01
E6	203	0	7	7	55.96	29	2.16	497	45	0.15
E7	196	1	6	7	47.05	33	1.18	629	54	0.34

Figure 29: E Pegmatite sample locations, Ta Grade and geological mapping



## 7.9.7 “F” Pegmatite Sampling Results



Pegmatite_Nr	Outcrop Length (m)	Nr of Samples			Sample Weight (kg)	Avg Channel Sample Spacing	Avg Thickness (m)	Avg Ta2O5_ppm	Avg Nb2O5_ppm	Avg Li2O_%
		Chip	Channel	Total						
F1	1065	8	67	75	502.95	16	1.59	548	55	0.01

Figure 30: D Pegmatite sample locations, Ta Grade and geological mapping

## 7.10. Drilling campaign

ORP embarked on a first drilling phase during June 2020, which was completed by late August 2020. Drilling was limited to pegmatites D1, D2 and F1. Twenty-three vertical HQ diamond drill holes (63.5 mmØ core) were drilled at the two locations involving three pegmatites with sections spaced 50 m apart with a 50 m strike spacing on drill lines, totalling 349.85 m (Figure 31).

Due to the investigative nature of exploration drilling, the bore hole layout was almost on a perfect grid where most of the holes drilled were spent tracing the rather predictable ore body and closing off lines where the pegmatite bodies have been intersected as part of the delineation process. Most of the 23 boreholes drilled during Phase 1, intersected the target pegmatite bodies with only one hole at F1 that was drilled as a confirmation hole that did not intersect a pegmatite body and another that stopped short of the D2 body due to excessive water loss experienced. The confirmation hole was not assayed.



A total of 112 samples based on lithological logging of the core were taken from the total core length of 349.85 m. The average length of the F1 pegmatite is 2.1 m and the D1 pegmatite is 4.27 m and the D2 pegmatite is 4.50 m. A marked increase in true thickness of some 10% for the F1 pegmatites and 100% for and 86% for the D1 and D2 pegmatite respectively was observed from the drilling results (Table 8). The whole pegmatite intersection was used for thickness and grade calculations. There is no cut-off grade.

*Table 8: Drilling statistics of core drill of the F1, D1 and D2 pegmatites.*

Hole No.	Pegmatite	X	Y	Z	Dip	Azimuth	EOH	From	To	Thickness	Ta2O5
F1_DP_02	F1	272052	6823952	703.0	90°	0°	11.67	6.05	8.14	<b>2.09</b>	<b>343.07</b>
F1_DP_03	F1	272100	6823953	695.0	90°	0°	11.31	9.71	10.78	<b>1.07</b>	<b>506.71</b>
F1_DP_04	F1	272002	6823944	709.0	90°	0°	9.25	Drilled as confirmation			
F1_DP_05	F1	272002	6824004	706.4	90°	0°	4.36	1.06	2.93	<b>1.87</b>	<b>618.41</b>
F1_DP_06	F1	272154	6823954	682.0	90°	0°	7.73	3.75	5.18	<b>1.43</b>	<b>398.75</b>
F1_DP_07	F1	272045	6824008	698.0	90°	0°	12.14	6.24	8.44	<b>2.20</b>	<b>275.17</b>
F1_DP_08	F1	272005	6824036	703.1	90°	0°	11	6.33	8.92	<b>2.59</b>	<b>458.95</b>
F1_DP_09	F1	272051	6823901	713.0	90°	0°	12.39	10.38	11.89	<b>1.51</b>	<b>665.19</b>
F1_DP_10	F1	272054	6823980	693.4	90°	0°	7.33	0.23	2.88	<b>2.65</b>	<b>272.18</b>
F1_DP_11	F1	272105	6823900	698.3	90°	0°	12.2	9.30	11.97	<b>2.67</b>	<b>309.34</b>
F1_DP_12	F1	272053	6824042	689.0	90°	0°	14.13	3.68	6.24	<b>2.56</b>	<b>374.41</b>
F1_DP_13	F1	272100	6824102	660.0	90°	0°	4.97	0.43	2.59	<b>2.16</b>	<b>361.18</b>
F1_DP_14	F1	272003	6823900	720.0	90°	0°	7.89	2.70	4.82	<b>2.12</b>	<b>421.27</b>
F1_DP_16	F1	272077	6824166	656.1	90°	0°	9.7	4.77	7.10	<b>2.33</b>	<b>518.55</b>
D_DP_01	D1	271550	6824560	612.5	90°	0°	20.87	3.63	7.76	<b>4.13</b>	<b>227.81</b>
D_DP_02	D1	271514	6824542	611.6	90°	0°	20.73	2.21	6.08	<b>3.87</b>	<b>339.00</b>
D_DP_03	D1	271450	6824647	656.0	90°	0°	33.19	8.47	15.70	<b>7.23</b>	<b>398.04</b>
D_DP_04	D1	271551	6824649	641.0	90°	0°	27.68	10.75	12.16	<b>1.41</b>	<b>349.61</b>
D_DP_05	D1	271504	6824648	646.3	90°	0°	30.41	4.08	9.33	<b>5.25</b>	<b>458.05</b>
D_DP_06	D1	271504	6824604	632.1	90°	0°	21.31	1.54	9.53	<b>7.99</b>	<b>272.70</b>
D_DP_07	D1	271558	6824610	625.2	90°	0°	21.51	0.00	8.67	<b>8.67</b>	<b>168.79</b>
D_DP_08	D1	271592	6824609	626.5	90°	0°	8.09	1.50	2.73	<b>1.23</b>	<b>412.69</b>
D_DP_09	D1	271617	6824573	614.7	90°	0°	29.99	5.04	5.77	<b>0.73</b>	<b>357.75</b>
D_DP_01	D2	271550	6824560	612.5	90°	0°	20.87	13.05	18.05	<b>5.00</b>	<b>436.81</b>
D_DP_02	D2	271514	6824542	611.6	90°	0°	20.73	11.61	13.16	<b>1.55</b>	<b>426.60</b>
D_DP_03	D2	271450	6824647	656.0	90°	0°	33.19	25.19	29.37	<b>4.18</b>	<b>324.72</b>
D_DP_04	D2	271551	6824649	641.0	90°	0°	27.68	20.90	27.09	<b>6.19</b>	<b>288.44</b>
D_DP_05	D2	271504	6824648	646.3	90°	0°	30.41	25.52	28.92	<b>3.40</b>	<b>395.52</b>
D_DP_06	D2	271504	6824604	632.1	90°	0°	21.31	13.02	16.03	<b>3.01</b>	<b>236.77</b>
D_DP_07	D2	271558	6824610	625.2	90°	0°	21.51	16.21	17.50	<b>1.29</b>	<b>252.74</b>
D_DP_08	D2	271592	6824609	626.5	90°	0°	8.09	7.80	<b>Stop due to</b>	<b>water loss</b>	<b>356.53</b>
D_DP_09	D2	271617	6824573	614.7	90°	0°	29.99	9.58	19.13	<b>9.55</b>	<b>259.84</b>

Core recovery in the mineralized pegmatite was more than 90% due to the competent nature of the pegmatite bodies and even in the fractured country rock minimal core loss was recorded. The reason for the much thicker pegmatite in the drilling results for the D pegmatites compared to the channel samples thickness can only be due to the fact that a large portion of the pegmatite that outcrops has been eroded since being exposed.

These drilling results are part of phase 1 of a larger drilling campaign that is planned for the project and would be completed in 2021.

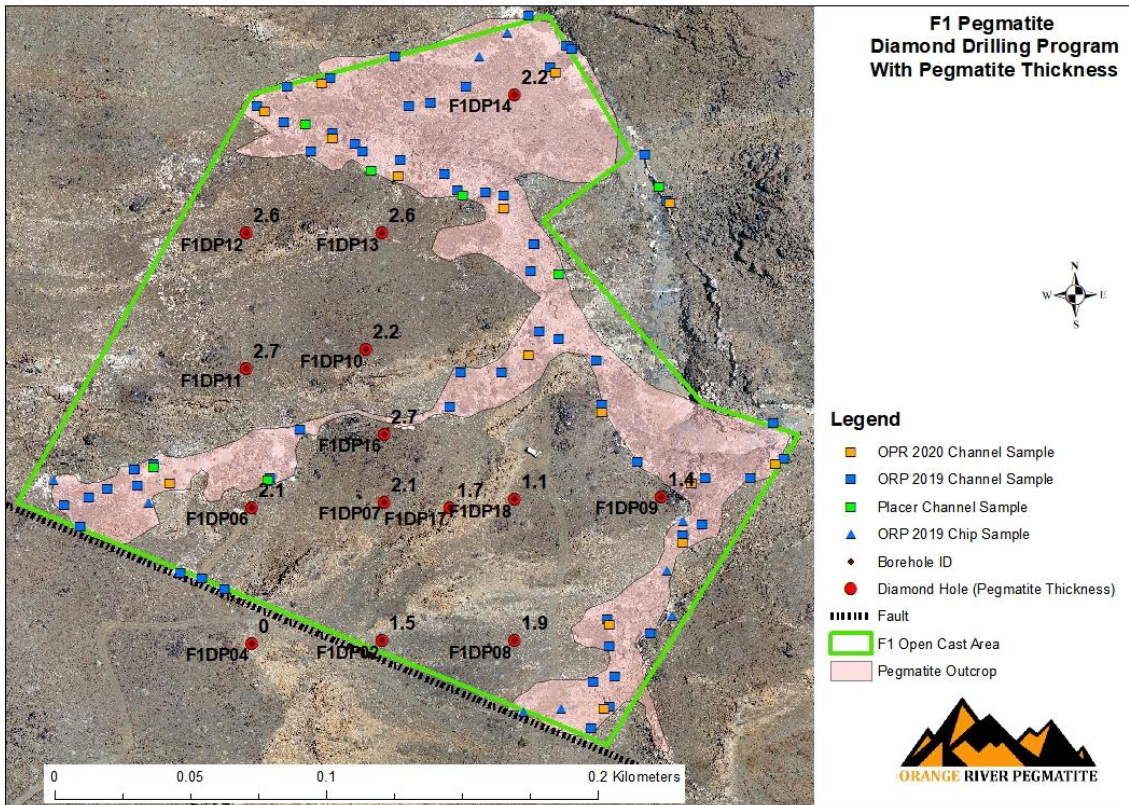


Figure 31: Bore hole locations with pegmatite intersection thicknesses at Pegmatite F1.

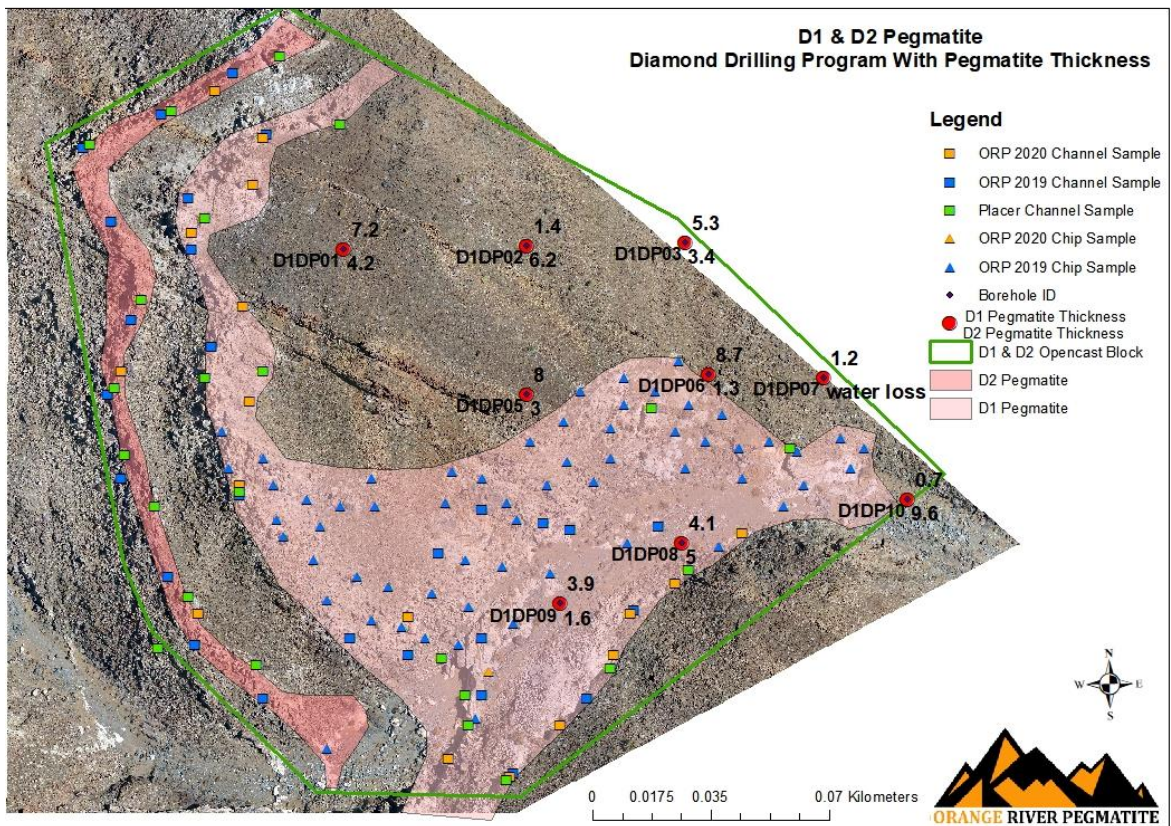


Figure 32: Bore hole locations with pegmatite intersection thicknesses at Pegmatite D1 and D2.



## 8. Sampling Methods and Approach

### 8.1. General

Specific procedures were followed throughout the sampling programme discussed in section 7.0. Pegmatites were sampled within a sequence of priority, with sampling being completed on a selected pegmatite before proceeding to the next target.

Pegmatite bodies were mapped and inspected prior to sample site selection. Each sampling point was then carefully selected according to the physical quality of a sample point, normally on a 15 m, 25 m or 50 m interval, depending on the sample density required. Each sample point was then clearly marked, ensuring that a complete section through the pegmatite is sampled (vertical exposures). The tantalite is very fine and mostly not visible; therefore, no bias could take place when selecting the sample position. A sample number was then recorded and allocated to the point and a description of the physical features of the pegmatite was recorded. The data recorded included the following:

- Coordinates and sample number
- Quality of the sample point
- True thickness of the pegmatite
- Type of pegmatite
- Texture and mineralogy of the pegmatite material sampled
- Description of visible mineralization

The sampling team extracted the samples according to the standard procedures adopted by ORP. Depending on the outcropping features of the pegmatite a sample would be either a full-length channel sample, a combination of channel and chip material, or only chip samples.

Samples collected were bagged by the sampling team, with a sample ticket inserted inside the bag and the bag also clearly numbered on the outside. Sample bags were sealed with cable ties and each sample was weighed individually. Samples had to have a minimum weight of 4 kg, with an actual average weight of 7.5 kg that was recorded. Each day's samples were collected and carried by on foot to the field camp.

Samples were transported in batches by vehicle to the main camp where the responsible geologist would check the sample condition and the sample numbers. Quality control samples consisting of blank and standard samples were inserted by the geologist in charge at random intervals. Laboratory submission forms that had to accompany each sample batch to the laboratory in Cape Town were prepared.

Samples were transported by truck/trailer through the Namibia/RSA border to the Scientific Services in Cape Town for analyses. An export permit was obtained from the Namibian Mining Department to transport the samples across the border.

## 8.2. Channel Sampling

With the low angle dips of the pegmatites, vertical to semi-vertical outcrops were readily available, with the cutting of a channel sample using a diamond blade grinder being the preferred sampling method. The sample position will first be marked on the side-wall, ensuring that the sample includes both the top and bottom contacts and the sampling team then cut a slit in the sidewall from the top to the bottom contacts. Material was then chiselled continuously from top to bottom to complete the sample. Although a continuous channel sample was always the first option, it was, at times, necessary to combine this method with chip samples in places where the nature of the outcrops would require this, i.e. when the pegmatite does not outcrop continuously and material is broken and fractured etc.

### **Pegmatite sampling procedures**

1. Each pegmatite was assigned a unique pegmatite group and ID. Groups A – F (pegmatites A1, A2.... E1, E2, E3... to F for example).
2. Each pegmatite's preferred sample spacing was predetermined, i.e. 50, 25, 20, 15 meters along strike, depending on its unique exploration priority rating.
3. Channel samples were marked by the field geologist on exposed faces with spray paint along strike. The top to bottom channel was marked out with the field ID written next to it (e.g. E3\_19). The marked sample coordinate was recorded in WGS84 UTM 34S coordinates with a handheld Garmin GPS. Faces with exposed true thicknesses of the pegmatites were targeted where possible. Where the true thickness of the pegmatite faces was not well exposed chip sample circles were marked.
4. The four-man sampling team then proceed to the marked sample locality and collect the sample material with a set of electric diamond blade grinders and hammers and chisels, along the spray paint markings. The sampling team was instructed to collect equal weight batches of material from all portions of their marked face so as not to bias the sample with any preferred internal pegmatite horizon. The sampling team was instructed to collect between 6 – 14 kg of material, depending on the relative grain size and width of the pegmatite face being sampled. Finer grained material (such as dominantly sugary albite textured pegmatites) and shorter pegmatite widths would yield smaller sample weights, while courser material (such as dominantly blocky quartz and feldspar textured pegmatite) and longer widths would yield larger sample weights.



The sampling team was instructed to record the following information per collected sample locality:

- a. Marked sample field ID (e.g. E3\_19)
- b. Sample type (e.g. Chip, Channel or Chip and Channel)
- c. Sampled channel width (e.g. 220 cm, top to bottom, N/A for Chip samples)
- d. Sample weight (e.g. 9.5 kg)
- e. Comments (e.g. problems encountered)

A stream of QAQC samples consisting of blanks and CRM's were regularly inserted in the sampling stream at random positions, with the aim of obtaining 10 – 15 % QAQC sample inclusion into the total pegmatite sample population.

### **Field duplicates and channel sample variation**

Three field duplicate samples of previously field channel sample F1\_3, F1\_25 and F1\_37 were collected on the F pegmatite. The field duplicate samples were collected with the aim of testing vertical Ta<sub>2</sub>O<sub>5</sub> grade variability within the original channel sample and to test the repeatability of the channel sampling method at marked sampling sites on the F pegmatite. The field duplicate sample material was collected according to the standard channel sampling procedure employed on site, and only on areas where sample material was previously collected for the original channel sample. The material collected for the field duplicate samples are identical to that of the original sample, however, have subsequently been separated into an Upper, Middle and Lower portion. The Upper portion represents the top 1/3 of the exposed pegmatite face, the Middle portion the central 1/3 and the Lower portion the bottom 1/3. The Upper, Middle and Lower portions were sampled separately at each original channel sample location. All samples have been collected where true pegmatite thickness is vertically exposed. The complete field duplicate sample list is presented in figure 33 and table 9.

From sampling the Upper, Middle and Lower sections, it is clear that the tantalite is distributed throughout the pegmatite and no part of the pegmatite has a preference with regards to tantalite mineralisation.

### **8.3. Chip Sampling**

Chip samples were taken where non-continuous or broken pegmatite outcrops were present. Chip sampling of fresh, in situ, material was selected, ensuring that the individual samples were as continuous as possible, representative and includes all the type and texture of material present at the locality.



## 8.4. Spodumene Crystal Sampling

Spodumene crystal sampling was primarily undertaken during the reconnaissance programme when the collecting of lithium data was necessary to obtain values on the lithium content of spodumene crystals that are present in the pegmatites. Samples were collected by hand at localities where spodumene crystals were present. This was not done on a prescribed grid or sample interval. Samples were represented by clean spodumene material, without any matrix or contaminant minerals.

## 9. Sample Preparation, Analyses and Security

### 9.1. Sample Preparation

ORP maintained strict chain-of-custody procedures during all segments of sample handling, transport and samples prepared for transport to the laboratory are bagged and labelled in a manner which prevents tampering. Samples also remain in ORP's control until they are delivered and released to the laboratory. The samples were exported from Namibia to South Africa and export permits for each batch of samples were obtained from the Ministry of Mines and Energy in Namibia and all customs clearance was obtained for both countries.

At Scientific Services (laboratory based in Cape Town, South Africa) the sample laboratory list is checked against the samples received and Scientific Services then took custody of the samples after all samples were marked on a sample registration list.

At the laboratory the samples were weighed before being crushed in a Boyd Crusher set at 2 mm. A subsample of 100 grams of the crushed material was split off in a riffle splitter and this material was then milled in a carbon milling pot to 90% < 75 micron.

### 9.2. Analytical Method

Of the milled material 0.25 g sample is weighed directly into microwave vessels equipped with a controlled pressure release mechanism. Digestion acids: Nitric acid (HNO<sub>3</sub>) and Hydrofluoric acid (HF) are added before the vessel gets sealed and placed in the microwave system. At the end of the microwave process, the vessels are allowed to cool before removing them from the microwave system. Boric acid for HF neutralisation is added. After digestion transfer and make up to volume for ICP-OES analysis. The instrument is calibrated, and samples measured against standards. The concentrations determined are to be reported on the basis of the actual weight measured. Elements analysed for include Ta, Nb and Li.

Retained samples including duplicate and reject material and pulps are collect by ORP from the laboratory after acceptance of QA/QC and are then securely stored in a storage facility.

## Data Management

The ORP exploration geologist was responsible for the collating, validating recording and distributing information on site. This responsibility included:

- Checking of field data for errors and validity.
- Importing of data into an electronic (excel) database.
- Checking and importing analytical results from the laboratory.
- Filling and distributing of information.
- Processing data
- Backing up of data.

The database was structured in a format suitable for importing into ArcGIS and Micromine 3D modelling software. The data was then sent to the ORP offices where the data was again plotted in ArcGIS to verify the sample locations in relationship to the drone survey results. The laboratory results were also double checked and QA/QC analyses done on the results. Creo is of the opinion that the electronic database supports the field data in almost all aspects and suggests that the database can be used for resource estimation.

## 10. Data Verification

### 10.1. QA/QC

ORP added a total of 19 standards, purchased from AMIS in Johannesburg, and the laboratory added an additional 9 standards to the two batches of samples. This represents 9.9% standards that were added to the 283 field samples. Table 10 below show details of material type, source and accepted grades (medium) and two standard deviations (low, and high) for the various standards.

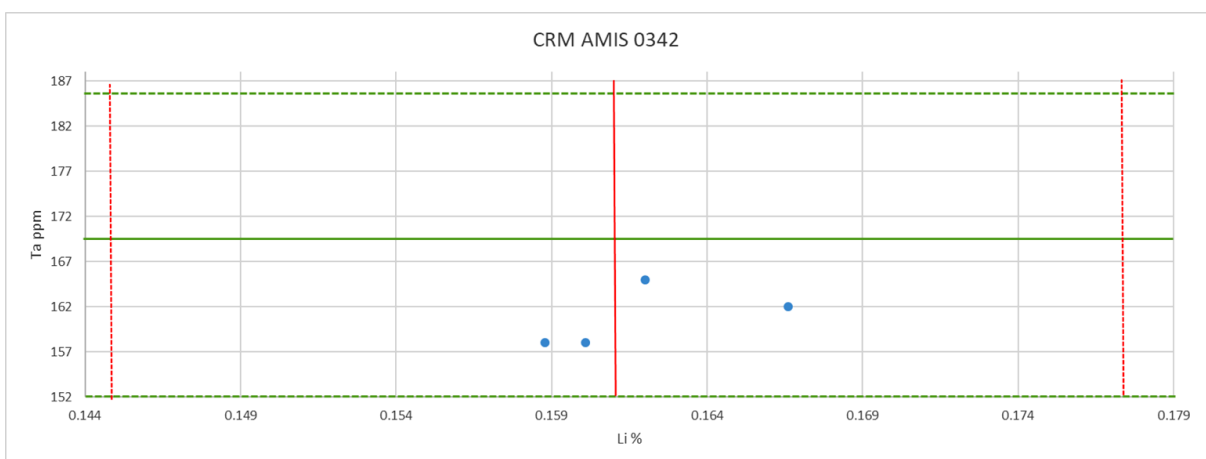
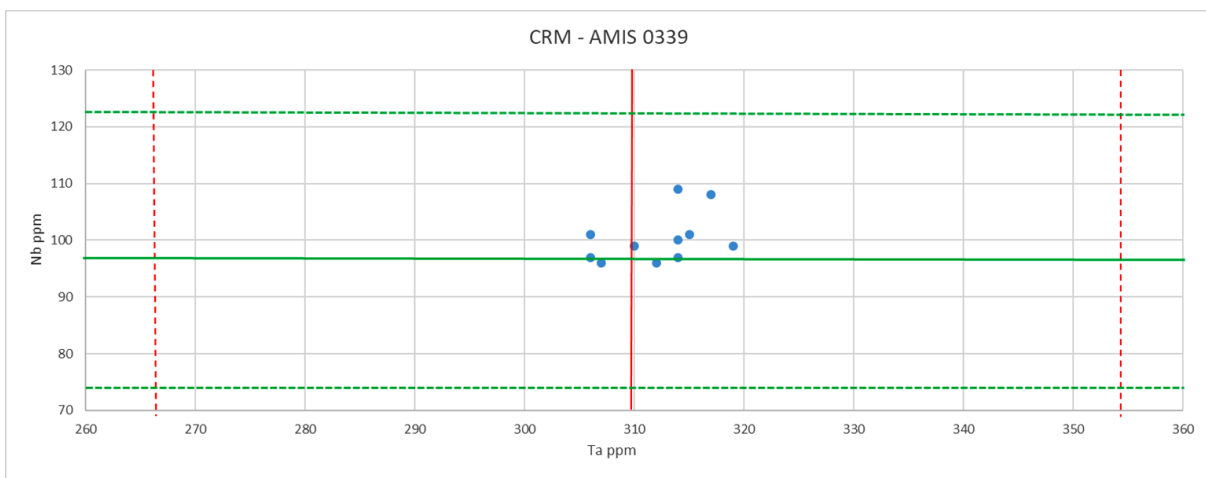
*Table 10: Assay standards.*

Standard	Source	Number Added	Element	Low	Medium	High
AMIS0339	Mt. Cattlin Pegmatite	8	Li_%	2.17	2.27	2.37
			Nb_ppm	73.5	97.6	121.7
			Ta_ppm	266	310	354
AMIS0340	Mt. Cattlin Pegmatite	1	Li_%	1.273	1.43	1.587
			Nb_ppm	2252	2510	2252
			Ta_ppm	11703	13738	15773
AMIS0342	Mt. Cattlin Pegmatite	4	Li_%	0.1445	0.1612	0.1779
			Nb_ppm	40	60	80
			Ta_ppm	152	169	186
AMIS0355	Volta Grande Pegmatite	2	Li_%	0.6432	0.7268	0.8104
			Nb_ppm	41	49	57
			Ta_ppm	172	214	256
AMIS0408	Mt. Cattlin Pegmatite	9	Li_%	1.36	1.6	1.84
			Nb_ppm	13200	15200	17200
			Ta_ppm	25800	30100	34400



In all cases, the analysed values for all three elements of interest (Ta, Nb, Li) fall within two standard deviation. Figure 34 show the distribution for AMIS0339 (Nb and Ta), AMIS0342 (Ta and Li) and AMIS0408 (Ta and Li).

A total of 22 blanks AMIS0439 (Blank Silica Chips) were added to the two batches of samples. The blanks were added at the start of each batch as well as at the start samples of a new pegmatite. This represents 7.8% of the total number of samples. All the blanks reported were below the detection limited for both Ta and Nb (<10 ppm) and less than 0.0041% Li. The results for blanks show no serious indications of systematic cross-contamination as a result of poor laboratory hygiene.



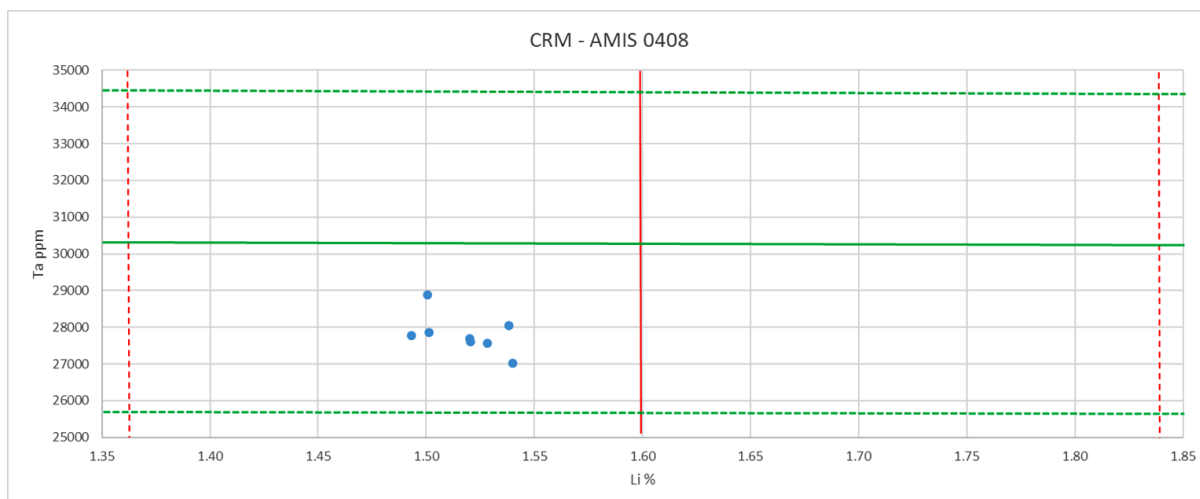


Figure 34: The distribution for AMIS0339 (Nb and Ta), AMIS0342 (Ta and Li) and AMIS0408 (Ta and Li) within two standard deviations.

## 10.2. Specific Gravity

ORP determined the specific gravity (SG) of the samples by using the Archimedes principle on 147 chip samples that were collected from all six pegmatites from the targeted pegmatite swarm. The SG of each sample was calculated using the formula  $SG = (\text{weight in air}) / (\text{weight in air} - \text{weight in water})$ .

This technique measures the volume of a sample by water displacement and density is then calculated as the ratio of mass to volume. No bulk density has been measured because the SG is considered appropriate as an input into the ore body model. It was found that the 147 samples have an average SG of 2.60 (Tables 11 & Table 12).

Table 11: Tested densities for each of the individual pegmatites

Pegmatite Swarm	No. SG Samples	Low	High	Mean
A	23	2.46	2.76	2.6
B	31	2.45	2.7	2.59
C	20	2.49	2.7	2.61
D	27	2.51	2.75	2.58
E	20	2.55	2.65	2.6
F	26	2.44	2.71	2.61
<b>Total</b>	<b>147</b>	<b>2.44</b>	<b>2.76</b>	<b>2.6</b>

Table 12: Densities of each of the pegmatite types present within the Swanson Pegmatite Swarm.

Geological Unit	No. of SG samples	Low	High	Mean
Feldspar Pegmatite	35	2.44	2.76	2.6
Quartz Pegmatite	23	2.44	2.73	2.59
Albite Pegmatite	86	2.46	2.68	2.6
Spodumene Pegmatite	3	2.67	2.75	2.71
<b>Total</b>	<b>147</b>	<b>2.44</b>	<b>2.76</b>	<b>2.6</b>

The tantalite mineralization is normally associated with the Albite Rich Pegmatite zone.

## 11. Mineral Processing and Metallurgical Testing

### 11.1. Mineralogy

Two samples were collected for mineralogical test work (Figure 35). The samples represent two different geological units identified within the D1 pegmatite.

**Sample X1437:** Spodumene - Albite rich pegmatite sample

**Sample X1438:** Aplitic pegmatite (Tantalum rich) pegmatite sample

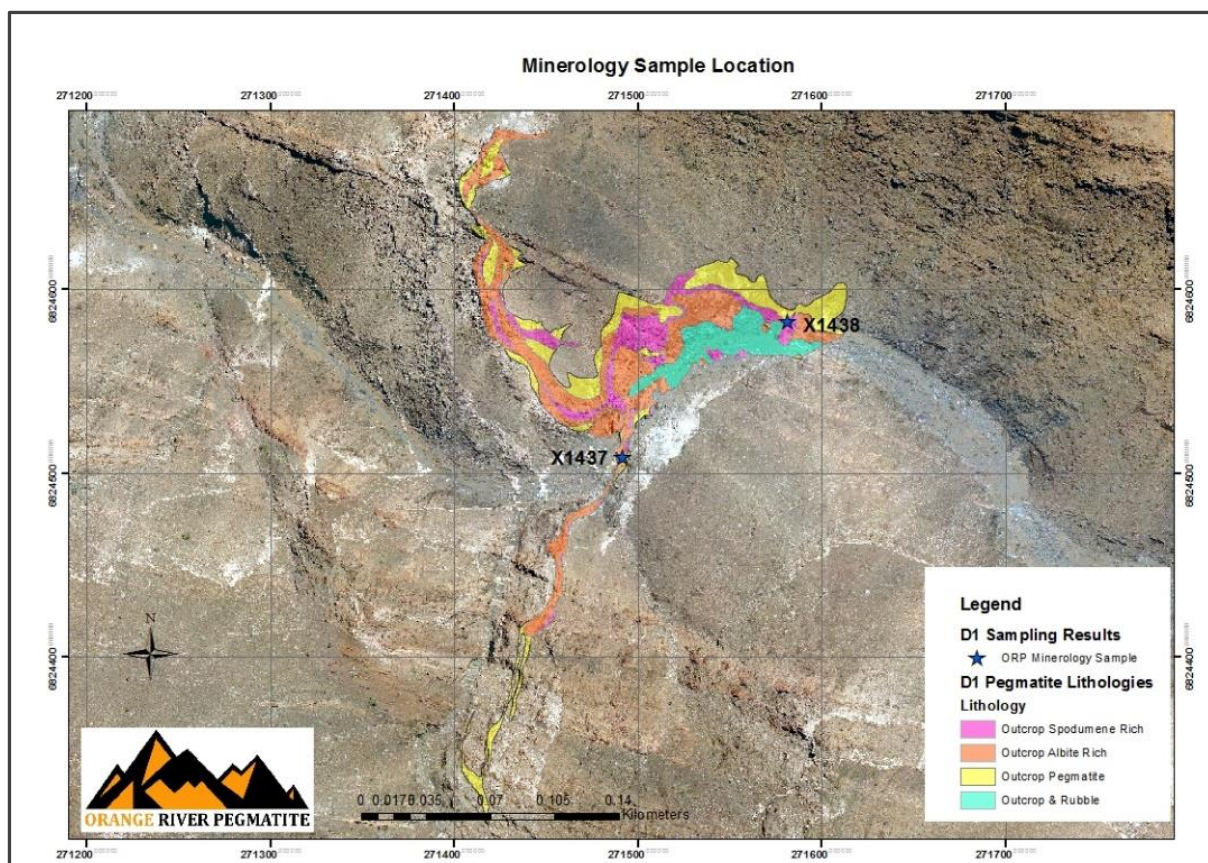


Figure 35: Localities of the two mineralogical samples (D Pegmatite).

The two samples were submitted to the Sci-Ba Laboratories in England where the samples were subjected to petrographic and XRD analyses at the University of Southampton. The Standard Method BS EN 12407-2007, natural stone method was used for a petrographic investigation of the samples.

A subsample (one piece of original sample) was selected and submitted for thin section preparation. The thin section was 30 mm x 20 mm in size and 30  $\mu$ m thick. For this work, a GXM XPLPOLTEX-1 petrographic microscope was used for both plan and cross polarised light from 40 – 600 x magnification. The microscope was fitted with a Bertrand lens, quartz wedge, lambda plate and condenser to make conoscopic and orthoscopic observations needed for the mineral identification. The microscope was calibrated using a glass calibration scale slide, all measurements were performed using a GX Capture Version 8.5 software and exported to spreadsheet for calculations.

A high resolution GXCAM HICHROME-MET camera was used to record 6MP microphotographs for high quality images. A summary of the petrographic results and interpretation for the two samples are presented in Section 11.1.1 and 11.1.2.

#### 11.1.1. Petrographic work on Sample X1437

The petrographic work that was done on the spodumene rich sample is presented in table 13.



Table 13: Thin section results of Sample X1437.

SAMPLE X1437 - PETROGRAPHIC RESULTS										
Mineral	Estimate Abundance %	Mean Grain Size (micron)	Min Grain Size (micron)	Max Grain Size (micron)	Habit	Shape	Boundaries	Distribution	Orientation	Weathering & Alteration
Quartz	25	321	73	919	Granular	Anhedral	Curved	In patches	Random	None
Plagioclase	50	261	87	548	Tabular	Subhedral	Straight	Homogenous	Random	None
Spodumene	15	124	55	265	Tabular	Subhedral	Straight	In patches	Random	None
Lepidolite	10	193	37	556	Platy	Subhedral	Straight	Homogenous	Random	None

Except for the above-mentioned main minerals, the matrix in the thin section mainly consisted of anhedral quartz, euhedral tabular plagioclase and clinopyroxene (Figure 36).

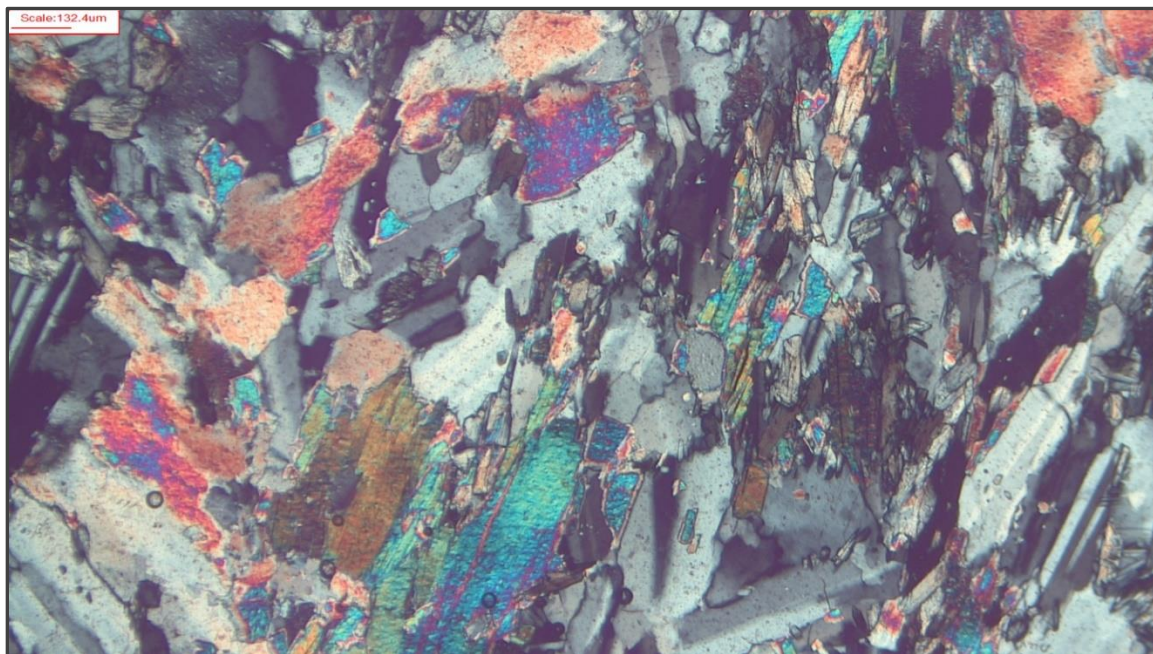


Figure 36: Thin section photo of Sample X1437.

The plagioclase displays simple and multiple twins in subhedral to anhedral, stubby crystals and quartz occurs as anhedral crystals with curved boundaries representing bulging re-crystallisation. This is the low temperature form of dynamic quartz re-crystallisation that is formed at temperatures of 250°C – 300°C. The quartz also has undulose extinction, representing strain within the crystal lattice. Both observations would indicate that the rock underwent a compressive event after the quartz crystals formed.

The spodumene that is present has low order grey birefringence colours with a high relief. Lepidolite is represented by high order birefringence colours and a mottled appearance. Crystals are anhedral and platy in habit.

11.1.2. Petrographic work on Sample X1438

Results of petrographic work on sample X1438 are presented in table 14.

Table 14: Results of microscope work on Sample X1438.

SAMPLE X1438 - PETROGRAPHIC RESULTS										
Mineral	Estimate Abundance %	Mean Grain Size (micron)	Min Grain Size (micron)	Max Grain Size (micron)	Habit	Shape	Boundaries	Distrubution	Orientation	Weathering & Alteration
Quartz	20	449	78	791	Granular	Anhedral	Curved	In patches	Random	None
Plagioclase & K Feldspar	75	312	182	433	Tabular	Subhedral	Convex	Homogenous	Random	None
Lepidolite	5	365	110	619	Platy	Subhedral	Straight	Homogenous	Random	None

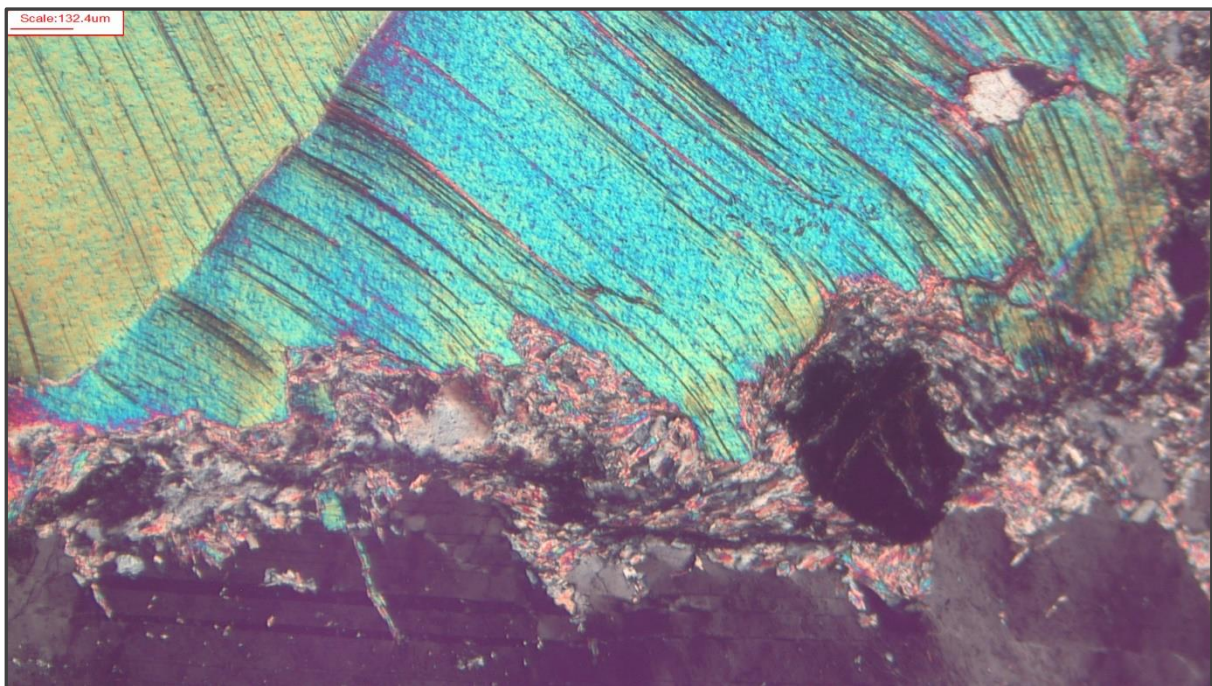


Figure 37: Polarised photo of Sample X1438

Under the cross polarised light, the high birefringence colours of lepidolite can be observed displaying birds eye mottling. An isotropic mineral is also present in the centre of the FOV (Ca, Ta- Rich mineral microlite). Fine grained micaceous material also forms a texture like flow-banding along the grain boundaries of the larger lepidolite grains, fully enclosing the microlites (Figure 37).

11.1.3. XRD Results for Samples X1437 and X1438

XRD analysis revealed the following mineralogical composition as shown in table 15 for samples X1437 and X1438.

Table 15: XRD mineral percentages for Sample X1437.

Mineral	Formula	Unit	X1437	X1438
Quartz	SiO <sub>2</sub>	%	26.2	12.7
Plagioclase	(Na,Ca)(Si, AL) <sub>4</sub> O <sub>8</sub>	%	46.1	29.9
Microcline	KAlSi <sub>3</sub> O <sub>8</sub>	%	2.0	52.5
Spodumene	Li,AL(Si <sub>2</sub> O <sub>6</sub> )	%	19.1	0.0
Lepidolite	K(Li, Al) <sub>3</sub> (Si, Al) <sub>4</sub> O <sub>10</sub> (F, OH) <sub>2</sub>	%	6.0	4.4
Diopside	CaMg(Si <sub>2</sub> O <sub>6</sub> )	%	0.6	0.5

EDX Spot analyses on Ta-rich minerals in Sample X1438 are indicated in table 16, with localities shown in figure 35.

Table 16: EDX Spot analyses on Ta-rich mineral in Sample X1438.

Element	Formula	Unit	33-23	34-24
Oxygen	O	%	16.58	19.5
Fluorine	F	%	30.18	3.48
Sodium	Na	%	0.93	3.56
Calcium	Ca	%	25.01	8.19
Titanium	Ti	%	0	0.36
Niobium	Nb	%	1.12	1.92
Tantalum	Ta	%	26.19	62.98
Total			100.01	99.99



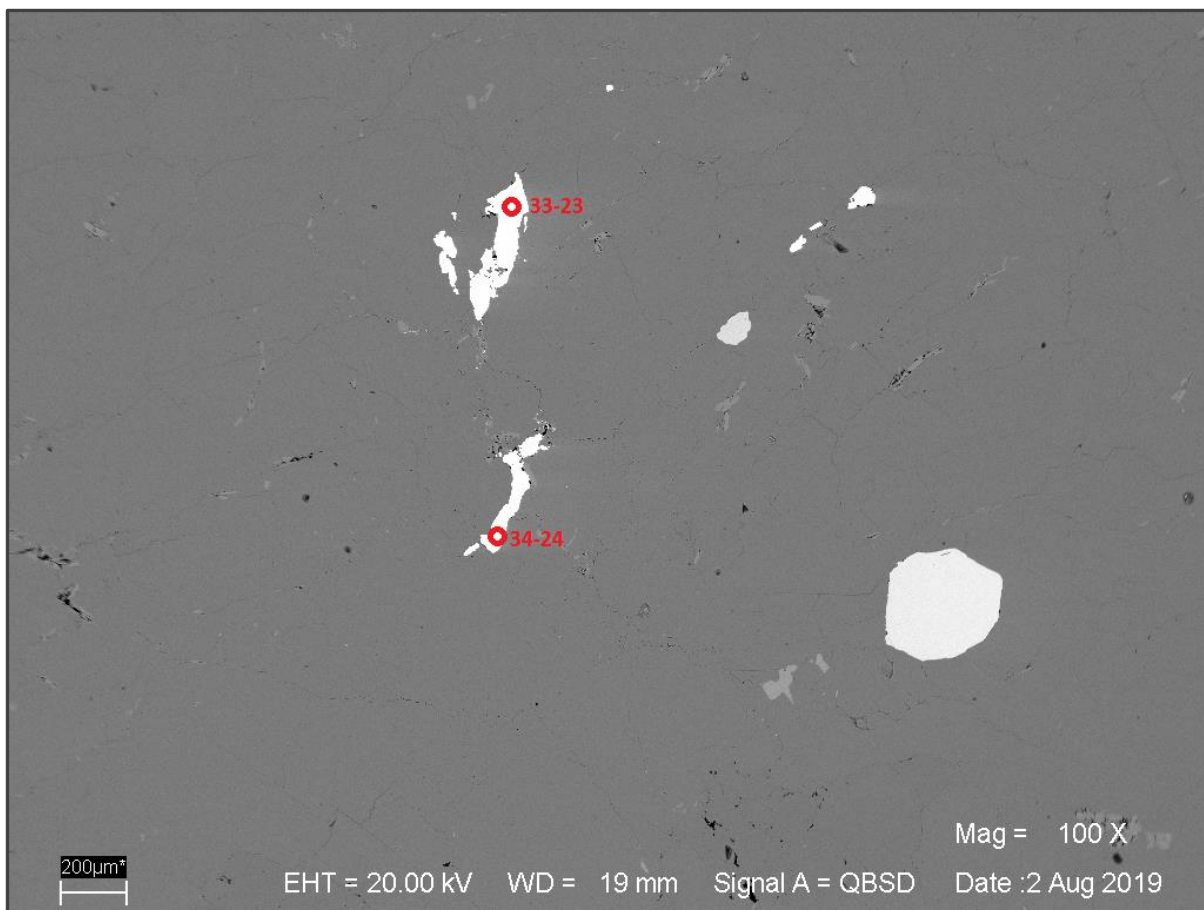


Figure 38: Photo of EDX Spot analyses on Ta minerals, indicating grain sizes.

Figure 38 shows the Ta-rich mineral size at approximately 70 by 500 micron in diameter. Additional work on the tantalum grain sizes is, however, required to determine a reliable grain size distribution.

### 11.2. Feldspar Analyses

Several feldspar mineral samples (probably albite) were collected from various pegmatites in the Swanson Prospect/Tantalite Valley pegmatite swarm. These samples were analysed by means of ICP-MS for their K, Rb and Cs content. The K/Rb and Cs content of the samples were plotted as shown in figure 39. All samples subsequently plot within the highly differentiated rare element pegmatite field, suggesting that all pegmatites within the Swanson Prospect/Tantalite Valley pegmatite swarm are evolved and of the rare element type.



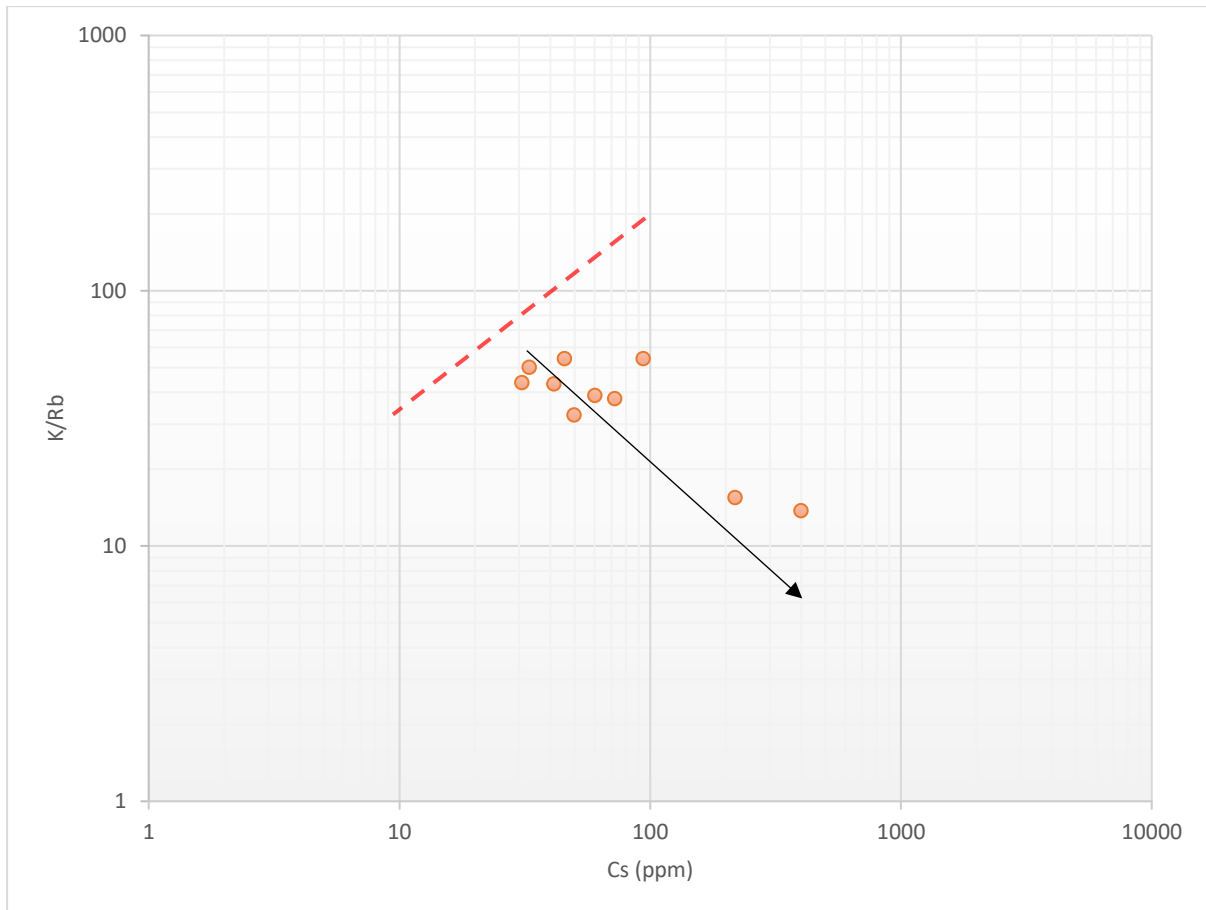


Figure 39: A plot of feldspar K/Rb and Cs ratio's according to Moller et al. (1987) indicating a highly differentiated rare element pegmatite being highly evolved and of the rare element type.

## 12. Mineral Resource Estimate

### 12.1 Introduction

Detailed investigations concerning mining-, processing-, metallurgical-, infrastructure-, economic-, marketing-, legal-, environmental-, government- and social factors ("modifying factors"; JORC, 2012) have not been undertaken to date.

There is insufficient information (regarding crucial modifying factors) to estimate a Mineral Resource (JORC, 2012) at this date and currently limited information regarding the spatial extent of the mineralisation is available.

### 12.2 Audit Procedures

Creo has independently verified the underlying sampling and assay data. Creo considers that given the general sampling programme, geological investigations, independent check assaying and, in certain instances, independent audits, the estimates reflect an appropriate level of confidence.

### 12.3 Quality and Quantity of Data

The spacing of sample positions in the channel sample and chip sample localities was not on definite sample spacing lengths but was taken randomly over the outcrop faces. The assay results were displayed spatially and ultimately tantalum and lithium grade values could be calculated expressed as Ta<sub>2</sub>O<sub>5</sub> and Li<sub>2</sub>O grade values.

### 12.4 Quality Assurance/Quality Control

Samples were prepared on site, under the personal supervision of the site geologist.

The samples were sealed and shipped to Scientific Services, Cape Town, South Africa, an ISO 17025 accredited laboratory. Scientific Services is accredited with SANAS and conducts its own quality checks to retain this rating. ORP performed random checks on the performance of the laboratory in the form of blank, standards and duplicate samples.

Although being an accredited laboratory, where the standards are supposedly kept as high as possible, the use of simple sample checks (duplicates, blanks and standards) are used as a standard procedure by ORP.

### 12.5 Classification

#### 12.5.1 Introduction

This section describes the status of the ORP project in terms of its classification into an appropriate resource category.

#### 12.5.2 Mineral Resource

For the ORP licence area or any portion thereof to be considered a mineral resource it must be an occurrence of tantalum and or lithium of economic interest in such form, quality and quantity that there are reasonable and realistic prospects of tantalum and or lithium recovery. Here, location, quantity, grade, continuity and other geological characteristics of this mineral resource should be known, estimated from specific geological evidence and knowledge.

Pegmatite deposits demonstrate an inherent variability in the distribution of potentially economic extractable minerals. Sampling this type of deposit requires large numbers of samples. Standard chip samples and channel samples are not able to provide sufficient sample volumes and, therefore, the required data to enable absolute estimation of grade continuity. Conventional surface surveying, as currently employed, can only provide information to determine the volume of the mineralised pegmatite, the grade on surface at the outcrop and its relationship to neighbouring geological features. The first phase of a drilling campaign was also completed in August 2020.

### 12.5.3 Classification

The Project does not contain any Ore Reserves or Mineral Resources, as defined by the JORC Code. Under the definition provided by the ASX and in the VALMIN Code, the Swanson Tantalum Project is classified as an 'exploration project', which is inherently speculative in nature. ORP's Project are considered to be sufficiently prospective, subject to varying degrees of risk, to warrant further exploration and development of their economic potential, consistent with the programs proposed by Creo.

## 13. Creo Comments

Creo considers that the quantity and quality of the, sampling, sample preparation and handling is insufficient to declare a mineral resource to the level of confidence required by JORC.

This cautious approach in the declaration of mineral resources is a consequence of the inability to predict even over short distances the extent and grade of the deposit due to the complex controls of the mineralisation and the correct interpretations thereof of this pegmatite feature.

ORP made good advances in their understanding of the pegmatite mineralization through their exploration and sampling campaigns. With a well-managed extended exploration plan such as ORP intends in launching, they will have a good chance in unlocking the full potential of the deposit. Creo considers there is good potential for the establishment of a mineral resource following on-going exploration and development.

## 14. Adjacent Properties

### 14.1 ML 171 (Kazera Global PLC)

The company Kazera Global PLC (AIM listed) currently holds a 75% share in African Tantalum (Pty) Ltd. (Aftan), which in turn has two wholly owned subsidiaries, Namibia Tantalite Investments (plant and operating assets) and Tameka (owner of the mining licence). Through the EPL 5047 ORP has exploration rights for all the areas within the EPL boundaries and all areas surrounding Kazera's Mining Licence - ML 77 (Figure 40). The mine primarily produces tantalite, although the company has indicated that they are assessing the lithium potential of the ore as well. For this reason, the company instituted an exploration programme during 2017.

Following the completion of this programme the company announced a JORC compliant, resource of 594,300 tons @ 247 ppm Ta<sub>2</sub>O<sub>5</sub> (Kazera Purple Haze Mineral Resource Statement 2019; Kazera Homestead-Mineral-Resource-Statement 2019; White City Mineral Resource

Statement 2019). The inferred resource is 501,100 tons at 206 ppm Ta<sub>2</sub>O<sub>5</sub>, and the indicated resource is 93,200 tons at 471 ppm Ta<sub>2</sub>O<sub>5</sub>.

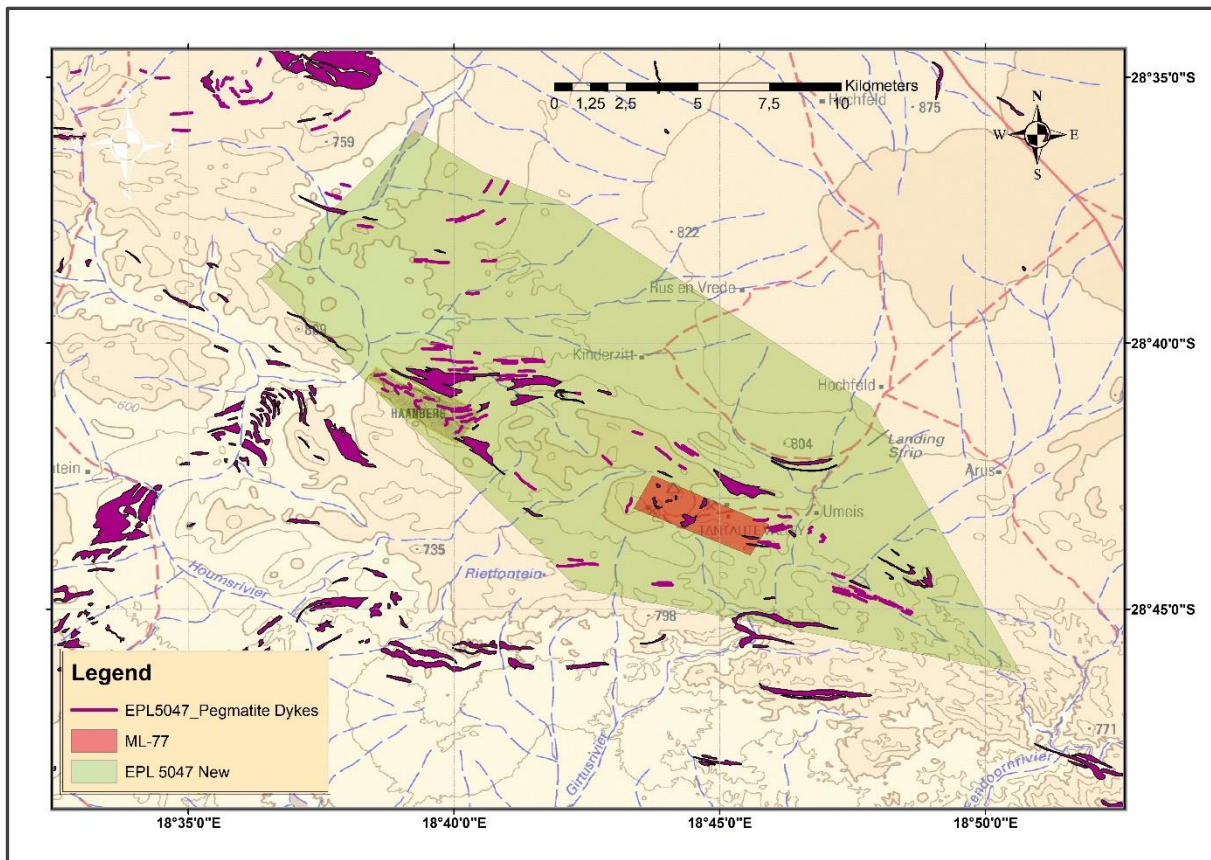


Figure 40: Locality of ML 77 with tantalite mining.

## 14.2 Other ORP EPLs

Although the mineralized pegmatites explored within EPL 5047 is currently the flagship operation of ORP, the company has extensive areas available for further exploration. The current understanding of mineralization seems to indicate that there is a potential relationship between the mafic-ultramafic complex present on EPL 5047 and ML 77 (Tantalite Valley Complex) and elevated tantalum in the associated younger pegmatites.

ORP owns the rights on EPL 6940 and EPL 7295, both located to the east and southeast of EPL 5047 (Figure 41). Both these licences have indicative potential for mineralized pegmatites as indicated on EPL 6940 and also the Kum Kum Mafic Complex that is located on EPL 7295. All indications are that the same mineralization model present could be applicable to these areas.



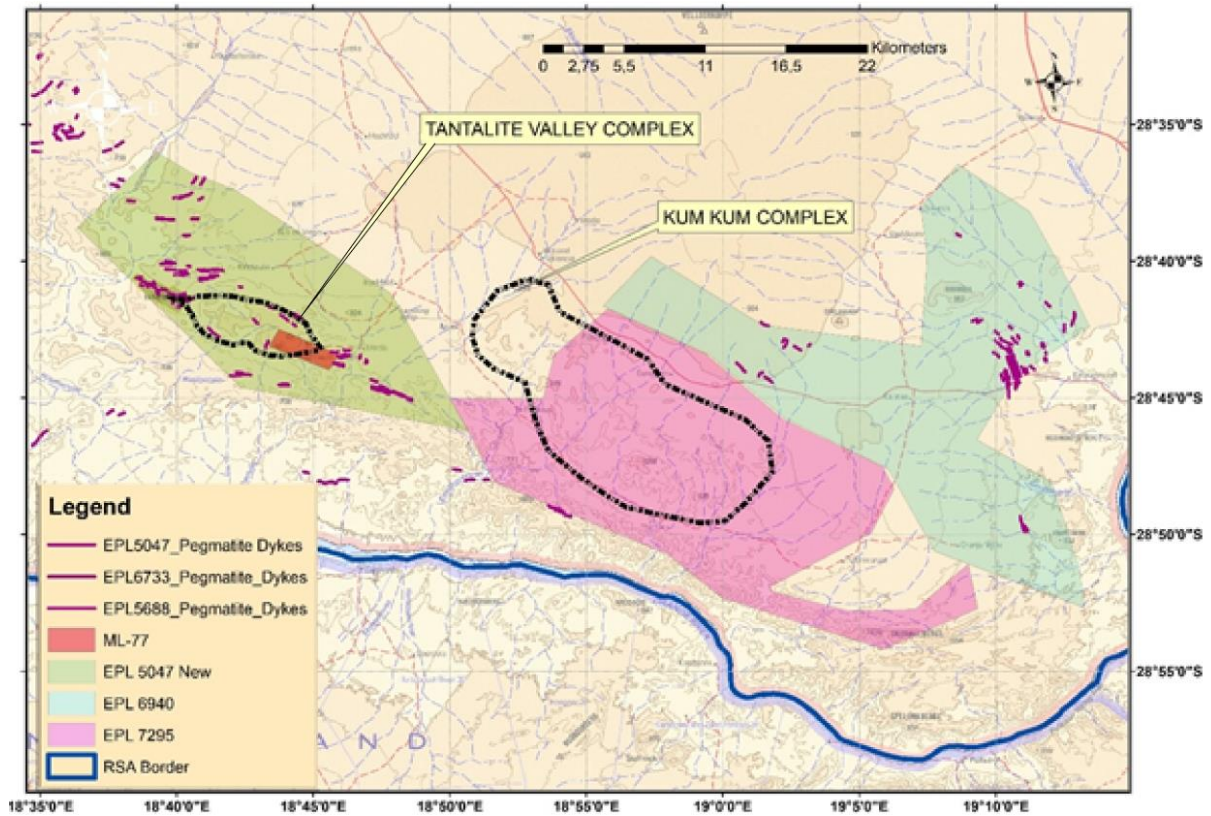


Figure 41: Localities of EPL 7295 and EPL 6940.

Previous exploration drilling, on ML 77 and EPL 5047 also intersected sulphide nickel mineralization in one of the boreholes. Additional boreholes were then targeted specifically at the nickel mineralization and this drilling confirmed a relatively thick zone with primary nickel, and secondary copper sulphide mineralization. This, however, falls outside the scope of this report and has since been developed by ORP as a separate and stand-alone project.

## 15. Next Exploration Phase

Based on the historical information and ORP’s exploration efforts, the company has managed to confirm the presence of substantial tantalum and lithium mineralization on EPL 5047. The first phase of a drilling campaign was completed in August 2020.

The next exploration and assessment phases should be aimed at establishing a resource base into hopefully an “Indicated” category, as well as undertaking the necessary research into markets and recovery processes in order to support a feasibility assessment for the project. The objectives for this phase are summarized in table 17.

Table 17: Future exploration objectives at EPL 5047.

No.	ASPECT	DESCRIPTION
1.0	<b>Exploration</b>	Upgrading project into a Resources Category
1.1	Diamond Drilling Programme	Diamond drilling preferred for quality geological information, determine mineral percentages, chemical values and size distributions.
1.2	Core Cutting and Sample Processing	Cutting core for sampling, and XRD Scanning
1.3	XRD Scanning	XRD Scanning of core to determine mineral relationships, concentrations and percentages.
1.3	ICP-OES Sample Analyses	Chemical analyses to determine Ta and Li content for grade determinations and lower limit cut-offs.
1.4	QC/QA implementation	General JORC standard Quality Control.
<b>2.0</b>	<b>BULK SAMPLING and RECOVERY TESTS</b>	General crushing and recovery tests
2.1	Crushing Tests	Crushing tests for costing, mineral liberation and material for recovery tests
2.2	Bench Scale Tests	Recovery Tests
2.2.1	Air Separation	Testing effectiveness of air separation, especially as a pre-concentrate application for combined spodumene and tantalum recovery.
2.2.2	Water Gravity Separation	Testing spiral, jigging or shaking table recoveries, especially relating to minimum size recoveries.
2.2.3	Flotation Tests	The possible effectiveness of flotation recoveries for both spodumene and tantalum. Primarily as regards to recovery percentages.
2.3	Flowsheet Design	Designing a recovery flowsheet, based on crushing and recovery process results.
2.4	Pilot Recoveries	The physical testing of ore recoveries by means of the proposed flowsheet design
<b>3.0</b>	<b>FEASIBILITY STUDY</b>	Determine Project Viability
3.1	Resources Model	3D Geologically based resource model for mine planning
3.2	Mine Planning	Initial open cast mine planning for pegmatites "D Group" and "F" pegmatites. Determine schedule and cost.
3.3	Market Research	General market research and off-take agreements for both Spodumene and Tantalum concentrate.
3.5	Pilot Plant Tests and Costs	Determine recovery percentage, concentrate grades and product quality that can be marketed.
3.6	Capital Item Budgets	Capital item list and spares for a CAPEX budget.
3.7	Construction	Costing on infrastructure development and plant construction.
<b>4.0</b>	<b>INFRASTRUCTURE DEVELOPMENT</b>	Some pre-implementation, limited infrastructure development.
	Access Roads	Creating some basic infrastructure to make the project site more accessible and possibly to get water on site.
	Windhoek	Implementing some longer-term infrastructure for the company in Windhoek

The pegmatite bodies not drilled yet should be the next drilling target to expand the existing mineralization base.

A programme of approximately 800 m of additional drilling is envisaged, constituting approximately 40 boreholes of 20 m.

The drilling programme should be adequate to:

- Place resources in an Indicated Resource category
- Allow for reliable information that is required for the various technical inputs into a Feasibility Study exercise.

Some infrastructure creation in the form of access roads and processing and storage facilities will be necessary to support the planned drilling programme.

### 15.1 Work Programme

ORP has developed an exploration budget for an allocation of AUD 3,224,190 over two years which is summarised in Table 18. The majority of the exploration budget is assigned to drilling the various drill-ready targets within the project.

Creo has reviewed the proposed budget and it is considered appropriate and reasonable for the mineralisation styles within the project and the stage of exploration. The proposed exploration budget exceeds the minimum required expenditure commitment for the Project.

*Table 18: Proposed work programme budget.*

<b>Exploration Budget - Swanson</b>	<b>Year 1 (\$)</b>	<b>Year 2 (\$)</b>	<b>Total (\$)</b>
Licence Fees and Environmental	\$ 30,000	\$ -	\$ 30,000
Field Expense	\$ 11,000	\$ 5,082	\$ 16,082
Soil / Grab Sampling	\$ 5,000	\$ -	\$ 5,000
Drilling	\$ 250,000	\$ -	\$ 250,000
Bulk Sample	\$ 300,000	\$ -	\$ 300,000
Feasibility Study	\$ 350,000	\$ 440,000	\$ 790,000
Infrastructure Development	\$ -	\$ 1,000,000	\$ 1,000,000
Project Administration	\$ 20,000	\$ 20,000	\$ 40,000
Lexrox - Management & Exploraiton Contract	\$ 250,000	\$ 250,000	\$ 500,000
<b>Sub - Total</b>	<b>\$ 1,216,000</b>	<b>\$ 1,715,082</b>	<b>\$ 2,931,082</b>
Contingency (10%)	\$ 121,600	\$ 171,508	\$ 293,108
<b>Total</b>	<b>\$ 1,337,600</b>	<b>\$ 1,886,590</b>	<b>\$ 3,224,190</b>

## 16. Recommendations

Some highly prospective areas on EPL 5047 are yet to be surveyed and are likely to contribute extensively towards the overall value of the project. The most obvious area is highlighted below but a proper survey of the entire area might reveal even more high priority targets.

- **Exploration of the Tantalite Complex area**

The areas immediately east-south-east and west-north-west of ML 77 (Figure 8) in EPL 5047 accommodate pegmatite swarms that have been established by ORP to be of a high priority for future follow-up work. These areas should be regarded as a next priority for future resource expansion.



## 17. References

Klaus J. Schulz, K.J., Piatak N.M., and Papp, J.F., (2017) Critical Mineral Resources of the United States—Economic and Environmental Geology and Prospects for Future Supply, Chapter Niobium and Tantalum. Professional Paper 1802–A,. USGS. pp22.

Lambert, C. W. 2013. Granitic melt transport and emplacement along transcurrent shear zones: Case study from the Pofadder Shear Zone in South Africa and Namibia. University of Stellenbosch M.Sc. thesis.

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Schulz, K.J., Piatak, N.M., and Papp, J.F., 2017, Niobium and tantalum, chap. M of Schulz, K.J., DeYoung, J.H., Jr., Seal, R.R., II, and Bradley, D.C., eds., Critical mineral resources of the United States—Economic and environmental geology and prospects for future supply: U.S. Geological Survey Professional Paper 1802, p. M1– M34, <https://doi.org/10.3133/pp1802M>.

White City Mineral Resource Statement December 2019

## Competent Person's Consent

Pursuant to the requirements of Listing Rules and  
Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

### Report name

Independent Geological Report on the Tantalum and Lithium Mineralization within EPL 5047, Warmbad District, Namibia

Released by Orange River Pegmatite (Pty) Ltd

On the Tantalum and Lithium Mineralization within EPL 5047, Warmbad District, southern Namibia on which the Report is based, for the period ended 24 March, 2021.

March 2021

I, Johan Hattingh

confirm that I am the Competent Person for the Report and that:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having twenty two years experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am registered with the South African Council for Natural Scientific Professions.
- I have reviewed the Report to which this Consent Statement applies.

I am a full time employee of Creo Design (Pty) Ltd and have been engaged by Arcadia Minerals Ltd to prepare the documentation for Orange River Pegmatite (Pty) Ltd Tantalum and Lithium Mineralization within EPL 5047, Warmbad District, southern Namibia on which the Report is based, for the period ended 24 March, 2021.

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results, Mineral Resources.

# Consent

I consent to the release of the Report and this Consent Statement by the directors of:


Arcadia Minerals Ltd

  
\_\_\_\_\_  
Signature of Competent Person

24 March 2021  
Date:

South African Council for Natural Scientific Professions  
Professional Membership:

#400112/93  
Membership Number:

  
\_\_\_\_\_  
Signature of Witness:

Riaan Zeeman  
Print Witness Name and Residence:

Robertson



## Appendix I JORC Code Table 1

### Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>• Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>• Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>• Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>• In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>• Sampling was undertaken using industry standard practices and consist of large-scale chip and channel sampling and diamond drilling by ORP during 2019 and 2020.</li> <li>• All drill holes are vertical.</li> <li>• 112 samples were taken from the core of the drilling campaign.</li> <li>• ORP conducted reconnaissance chip- and channel sampling during 2018. Samples were between 220 g and 6 kg.</li> <li>• A total of 283 samples consisting of 204 channel and 79 chip samples were taken from 15 pegmatites during 2019. The average sample weight is 7.5 kg.</li> <li>• 3 Additional samples were taken for mineralogy test work.</li> <li>• An additional 15 samples collected from different pegmatite feldspar types.</li> <li>• All drill hole and sample locations are mapped in WGS84 UTM zone 34S.</li> <li>• During 1981 Placer Development Ltd. collected 91 channel samples with an average weight of 14.22 kg.</li> <li>• Bulk samples were taken at 4 locations, with 3-5 tonnes of material being obtained through drilling and blasting.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>• Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</li> </ul>	<ul style="list-style-type: none"> <li>• 23 Vertical diamond drill holes were drilled at 3 pegmatites.</li> <li>• The drill holes are HQ with a 63.5 mmØ core.</li> <li>• The holes were drilled with a 50 m strike spacing on drill lines and have a total core length of 349.85 m.</li> <li>• The depth of the holes ranged from 4 m – 33 m.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>• Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>• Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>• Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul style="list-style-type: none"> <li>• Core recovery in the mineralised pegmatite was more than 90% due to the competent nature of the pegmatite bodies and even in the fractured country rock minimal core loss was recorded.</li> <li>• Core loss was recorded as part of the operational procedures where the core loss was calculated from the difference between actual length of core recovered and penetration depth measured as the total</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>length of the drill string after subtracting the stick-up length.</p> <ul style="list-style-type: none"> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples is not recorded in available documents.</li> <li>No apparent bias was noted between sample recovery and grade.</li> </ul>
Logging	<ul style="list-style-type: none"> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>All drill holes were fully logged and are qualitative.</li> <li>The core, channel and chip samples have been logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies; although a mineral resource was not estimated from this data.</li> <li>The total length of the intersected pegmatite logged is 101.93 m and the percentage is 29%.</li> <li>It is assumed that the Placer Development samples have been logged according to industry standards at the time; however the specific logging techniques used are not stated in available documents.</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>Three field duplicate samples of previously field channel sample F1_3, F1_25 and F1_37 were collected on the F pegmatite.</li> <li>The samples were dry.</li> <li>At the laboratory the samples were crushed to 2 mm. A 200g sub-sample of the crushed material was taken to be milled in a carbon milling pot to 90% &lt; 75 micron.</li> <li>Samples consisted of half core, with the core being split using a saw</li> <li>Approximately 200g to 220g of sample was taken per drilled mineralised meter was recovered.</li> <li>Half core samples were also taken for comparison purposes.</li> <li>No information is available on sub-sampling techniques and sample preparation by Placer Development, because such procedures are not recorded in available documents.</li> </ul>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their</li> </ul>	<ul style="list-style-type: none"> <li>The samples were analyzed at Scientific Services (Pty) Ltd., a laboratory based in Cape Town, South Africa.</li> <li>At the laboratory the samples were crushed to 2 mm. A 200g sub-sample of the crushed material was taken to be milled in a carbon milling pot to 90% &lt; 75 micron.</li> <li>0.25 g of the milled material was prepared and analyzed through ICP-</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>derivation, etc.</i></p> <ul style="list-style-type: none"> <li>• <i>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</i></li> </ul>	<p>OES analysis for Ta, Nb and Li.</p> <ul style="list-style-type: none"> <li>• The samples are measured against standards.</li> <li>• ORP added a total of 19 standards and the laboratory added an additional 9 standards to the samples.</li> <li>• The standards used are AMIS0339, AMIS0340, AMIS0342, AMIS0355 and AMIS0408.</li> <li>• A total of 22 blanks AMIS0439 (Blank Silica Chips) were added to the samples.</li> <li>• The two samples were submitted to the Sci-Ba Laboratories in England where the samples were subjected to petrographic and XRD analyses at the University of Southampton. The Standard Method BS EN 12407-2007, natural stone method was used for a petrographic investigation of the samples.</li> <li>• All QAQC samples plotted within acceptable analytical limits as defined for their type, i.e. CRMs.</li> <li>• No reporting issues were identified with any labs in question.</li> <li>• It is assumed that industry best practices was used by the laboratories to ensure sample representivity and acceptable assay data accuracy, however all the QAQC procedures used are not recorded in available documents.</li> </ul>
<p><i>Verification of sampling and assaying</i></p>	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned holes.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• All samples and data were verified by the ORP exploration geologist.</li> <li>• The database was structured in a format suitable for importing into ArcGIS and Micromine 3D modelling software</li> <li>• Creo reviewed all available sample and assay reports and is of the opinion that the electronic database supports the field data in almost all aspects and suggests that the database can be used for resource estimation.</li> <li>• Verification was done by comparing drilling results with the closest channel sample data for each borehole</li> <li>• All sample material was bagged and tagged on site as per the specific pegmatite it was located on. The sample intersections were logged in the field and were weighed at the sampling site.</li> <li>• All hard copy data-capturing was completed at the sampling locality.</li> <li>• All sample material was stored at a secure storage site at the company site office.</li> <li>• The original assay data has not been adjusted</li> </ul>

Criteria	JORC Code explanation	Commentary
Location of data points	<ul style="list-style-type: none"> <li>• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>• Specification of the grid system used.</li> <li>• Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>• No twin holes were drilled.</li> <li>• The sample locations are GPS captured using WGS84 UTM zone 34S.</li> <li>• The drill holes were surveyed by a qualified surveyor, with the accuracy being 20 cm.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>• Data spacing for reporting of Exploration Results.</li> <li>• Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>• Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>• The drill holes were drilled at the two locations involving three pegmatites with sections spaced 50 m apart with 50 m strike spacing on drill lines.</li> <li>• For the channel and chip samples, each sampling point was carefully selected according to the physical quality of a sample point, normally on a 15 m, 25 m or 50 m interval, depending on the sample density required.</li> <li>• The data spacing and distribution of the drill holes channel and chip sampling is insufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>• Where pegmatites had a true thickness of &gt; 2 m the channel samples were accordingly split into an equal length "top" and "bottom" channel sample. ORP prioritised the importance of bulk-pegmatite properties. Therefore, these channel sampling results were composited (i.e. weighted average of the entire intersection).</li> <li>• The Placer Development samples were spaced on a 100 m grid.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>• If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul style="list-style-type: none"> <li>• The holes were all drilled vertical.</li> <li>• The channel and chip samples were also take vertically from top to bottom of the pegmatites.</li> <li>• Channel sampling conducted on pegmatite faces approximate right angle intersections relative to the dip of the pegmatite at that specific location and thereof are unbiased by excessively oblique intersections.</li> <li>• The tantalite is very fine and mostly not visible; therefore, no bias could take place when selecting the sample position.</li> <li>• Orientation of the Place Development sampling data in relation to the geological structure is not known, because it is not recorded in available documents.</li> </ul>



Criteria	JORC Code explanation	Commentary
<i>Sample security</i>	<ul style="list-style-type: none"> <li><i>The measures taken to ensure sample security.</i></li> </ul>	<ul style="list-style-type: none"> <li>ORP maintained strict chain-of-custody procedures during all segments of sample handling, transport and samples prepared for transport to the laboratory are bagged and labelled in a manner which prevents tampering. Samples also remain in ORP's control until they are delivered and released to the laboratory.</li> <li>An export permit was obtained from the Namibian Mining Department to transport the samples across the border.</li> <li>Measures taken by Placer development to ensure sample security have not been recorded in available documents.</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<ul style="list-style-type: none"> <li>The deposit was visited by the Creo CP during 2019. The visits was specifically to review the recent sampling campaign, and to review the sampling and assay procedures being used by the Company.</li> <li>Creo considers that given the general sampling programme, geological investigations, check assaying and, in certain instances, independent audits, the procedures reflect an appropriate level of confidence</li> </ul>

## Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li><i>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</i></li> <li><i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</i></li> </ul>	<ul style="list-style-type: none"> <li>EPL 5047 is located in the Karas Region, southern Namibia, near the South African border, and approximately 15 km to the north of the Orange River.</li> <li>The EPL is held by ORP and is 19,493 hectares in size.</li> <li>ORP also obtained an Environmental Clearance Certificate on 4 April 2019 from the Ministry of Environmental and Tourism.</li> <li>A land-use agreement, including access to the property for exploration has been signed with the owners of the farms Norechab 130, Kinderzit 132 and Umeis 110</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>Swanson Enterprises held various claims on the farms Kinderzit and Umeis on EPL 5047 and mined tantalite, beryl, spodumene and tungsten on these claims in the 1970's to early 1990's.</li> <li>A Canadian company, Placer Development also conducted detailed exploration in this area between 1980 and 1982.</li> </ul>

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		<ul style="list-style-type: none"> <li>The Geological Survey of Namibia in collaboration with the Council of Geoscience of South Africa conducted a detailed, mapping programme (1: 50 000 scale) over large parts of Southern Namibia including EPL 5047 (2012-2017).</li> </ul>
Geology	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>Mineralization is in the form of pegmatites of the LCT type (lithium-cesium-tantalum) which intruded granitic gneisses, metasediments and gabbroic-troctolitic rocks of the Tantalite Valley Complex.</li> <li>The primary mineral commodities occurring are tantalum (Ta<sub>2</sub>O<sub>5</sub>) and spodumene LiAl(SiO<sub>3</sub>O)<sub>2</sub>.</li> </ul>
Drill hole Information	<ul style="list-style-type: none"> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>Drill results have been described in section 7.10 of this report.</li> <li>All relevant data is included in the report.</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>Information about data aggregation is not stated in the available documents.</li> <li>The thickness and grade in table 8 was calculated over the whole intersected pegmatite.</li> </ul>
Relationship between mineralisation widths and	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there</li> </ul>	<ul style="list-style-type: none"> <li>The drill holes were all drilled vertical, with the pegmatites dipping on average 12.33° to the SE.</li> <li>The pegmatite thickness intercepted range from 1.07 m to 9.55 m.</li> </ul>

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<i>intercept lengths</i>	<i>should be a clear statement to this effect (eg 'down hole length, true width not known').</i>	
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>• <i>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The appropriate diagrams and tabulations are supplied in the main report.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>• <i>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</i></li> </ul>	<ul style="list-style-type: none"> <li>• This report has been prepared to present the obvious targets and results of historical and recent exploration activities.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>• <i>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i></li> </ul>	<ul style="list-style-type: none"> <li>• ORP conducted reconnaissance and later detailed geological mapping to identify and prioritize targets.</li> <li>• ORP appointed Asset Mapping Solutions (Pty) Ltd. (AMS), a Cape Town based company, to conduct a detail drone survey of the Swanson prospect area in 2018.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>• <i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The next exploration and assessment phases should be aimed at establishing a resource base into hopefully an “Indicated” category, as well as undertaking the necessary research into markets and recovery processes in order to support a feasibility assessment for the project.</li> <li>• The pegmatite bodies not drilled yet should be the next drilling target to expand the existing resources base.</li> <li>• See sections 15 and 16 for detailed planned and recommended further exploration activities.</li> </ul>