Serpentine Ridge
Exploration Licence 45/2010

Annual Technical Report for the period 29/05/2021 to 28/05/2022

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1 Summary

Several priority conductors were identified from a heliborne electromagnetic survey in 2019 and Venture has been progressively validating these through prospecting and surface geochemistry for drill testing. Prospecting of a strong late time conductor coincident with a +250 ppm Cu in soil anomaly in the Harman River area on the boundary of EL21/2005 and EL45/2010 (mainly in EL21/2005) suggests it is associated with a pyrrhotite-bearing gabbro flanking the western margin of the Wilson River Ultramafic Complex. A drill site to test this mafic hosted Ni-Cu sulfide target, Harman 1, was flora & fauna surveyed in early 2021 but COVID-19 and contractor availability issues delayed the drilling. VTEM conductors in the Wilson River – Serpentine Ridge – Limestone Creek and Merton Hill areas were additionally prospected in 2021, and the strongest conductor rock sample traversed showing the presence of three +0.4% Ni rock anomalies although the host of the Ni mineralisation should be established before drill testing (low S contents indicate silicate or Ni-Fe alloy). Flora & fauna surveys were conducted over four potential drill sites in the Serpentine Ridge area.

2 Introduction

Exploration Licence 45/2010 is located within the tin-tungsten province of western Tasmania and includes part of the Meredith Granite's southern margin. The Meredith Granite is part of a suite of Devonian granites and is very important to tin-tungsten mineralization in Tasmania. Deposits associated with this suite include Renison Bell (26 Mt at 1.46% Sn), Mount Bischoff (10.54 Mt at 1.1% Sn), Cleveland (12.4 Mt at 0.62% Sn, 0.25% Cu) and King Island (17 Mt at 0.85% WO_3). EL45/2010 is situated immediately east of Venture's EL21/2005, from which 7M/2012, and 3M/2012 have been excised and comprise Main and No.2 Sn-W-magnetite deposits at Mt Lindsay and the Livingstone and Reward Sn-W-Fe deposits in the Stanley River area respectively. Exploration Licence 45/2010 includes the Big Wilson Sn-skarn and veined greisen deposit, Merton Hill Sn+Cu+Pb+Zn+Ag vein and carbonate replacement deposit, and several Sn, W and/or Cu geochemical anomalies in the Little Wilson River, Keenan Creek, Harman River, and Limestone Creek areas.

EL45/2010 also includes part of the Wilson River Ultramafic Complex (WRUC) which is prospective for nickel (Ni) and Platinum Group Metal (PGM) mineralisation. Most of the streams draining the WRUC were prospected and mined for alluvial osmiridium (Os) in the early 1900s, with some alluvial deposits also yielding small amounts of gold. Much of the ultramafic complex is covered with a thin, residual lateritic soil, and at several locations, most notably Riley Creek, Keenan Creek and Limestone Creek areas, there are residual and colluvial deposits of ferruginous laterite to several metres thick. The ferruginous laterite deposits at Riley Creek were previously evaluated by Callina NL for chromite and platinoids, and more recently Direct Shipping Iron Ore (DSO) by Venture Minerals. The iron laterite deposits at Riley Creek have been excised from EL45/2010 into 5M/2012.

Exploration Licence 17/2012 covering 7 km^2 was amalgamated with EL45/2010 in February 2014. 17 km^2 was relinquished from EL45/2010 in 2015, and a further 15 km^2 in 2017 to leave the current 32 km^2.

3 Location and Access

EL45/2010 currently covers 32 km^2 and is located c. 120 km by road southwest of the port of Burnie, and c. 25 km by road from the nearest town Tullah (Figure 1). The southern boundary of the licence is approximately 4 km north of the Renison Bell tin mine. The licence is covered by the Pieman 1:100,000 map sheet, and Parsons and Roseberry 1:25,000 map sheets. Topography is moderately rugged and the most notable topographic features comprise of Serpentine Ridge and Websterite Hill. Average annual rainfall is approximately 2000 mm and vegetation is dominated by temperate rainforest, with dense scrub over ultramafic and granitic basement and in areas of regenerating forest.

The bitumen HEC Pieman Road and Transend transmission lines traverse the southern half of EL45/2010, and a mixture of HEC, forestry and mineral exploration roads provide mediocre access throughout much of the tenement south of the Wilson River. Access to the northern part of the licence is currently best obtained via an old 4WD track from the Wilson River over Websterite Hill to the upper Harmen area, or by helicopter. Principal land uses include State Forest, Regional Reserve, and Forest Reserve.

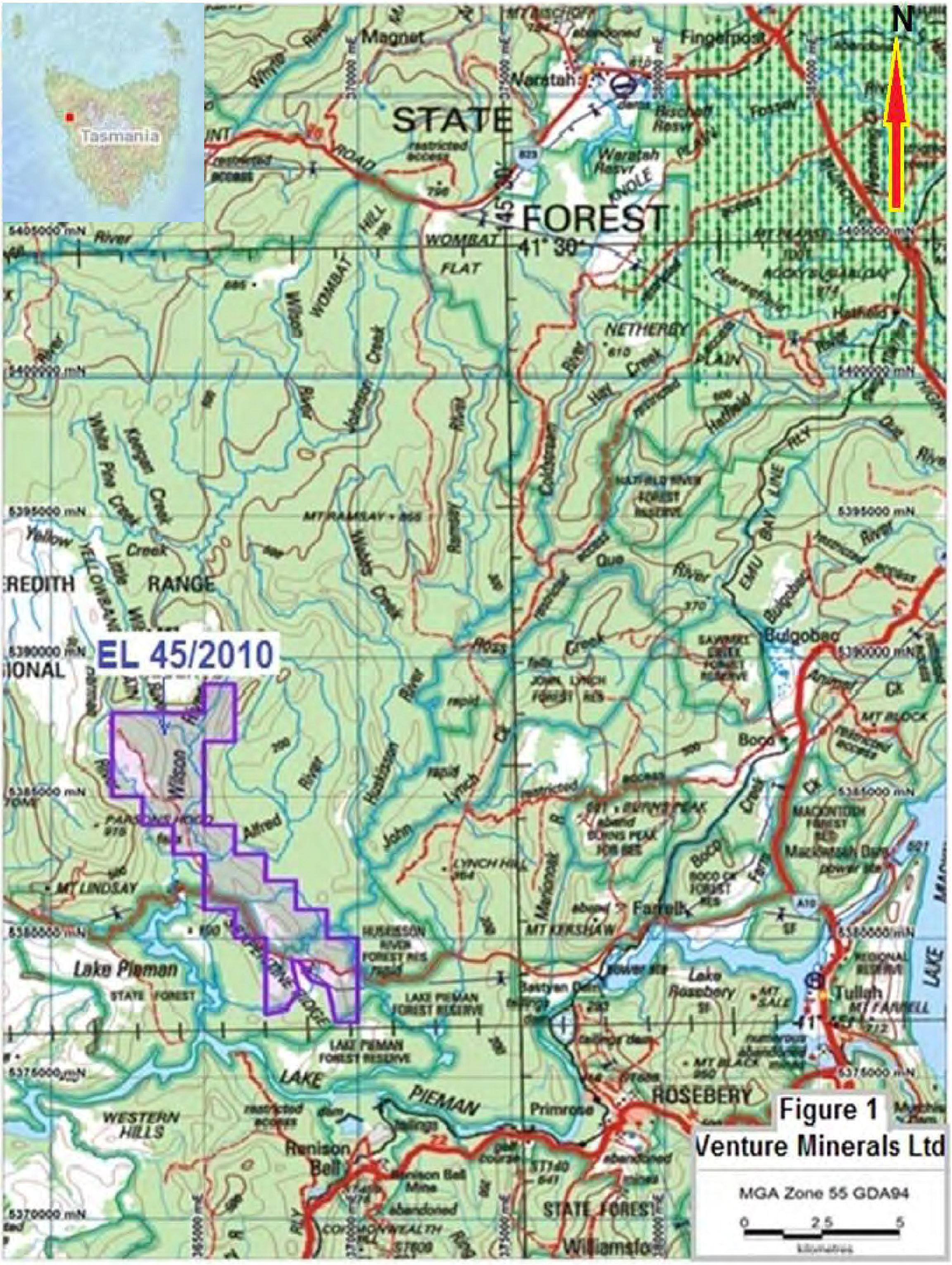

Figure 1: EL45/2010 location map

4 Geological Setting

EL45/2010 is situated in the Dundas Trough of western Tasmania and underlain from west to east by the Crimson Creek Formation, the Wilson River Ultramafic Complex (WRUC), the Dundas and Gordon groups, and the Eldon Group (Figure 2). Sedimentary stratigraphy is moderately dipping to vertical. The Meredith Granite rims the northern extent of the licence and dips away at a modest angle beneath the sedimentary and ultramafic units, albeit complicated by numerous irregular granitic dykes, shelves and apophyses. Preliminary interpretation suggests several phases of granite intrusion culminating in late stage quartz-tourmaline veining and the localised development of quartz-tourmaline-topaz greisen and siderite-sericite greisen.

The Neoproterozoic - Early Cambrian Crimson Creek Formation comprises mainly of thin to thick bedded greenish grey lithic sandstones, siltstones, and mudstones with scattered horizons of laminated to thinly bedded light grey, green and pink felsic to mafic tuffites and thin to thick bedded calcareous sandstones, along with rare tholeiitic basalt flows. Total thickness in the Mt Lindsay area is estimated at c. 5000 m, and EL45/2010 includes a narrow strip of the Crimson Creek Formation along its western edge (Figure 2).

The WRUC occupies the central NW-trending spine of the licence and general interpretation is that the WRUC is entirely fault bounded: the lower margin against Crimson Creek Formation; the upper margin against Devonian conglomerate, quartz arenite, siltstone and marl of the Eldon Group with localised slivers of the Ordovician Gordon Limestone. Radiometric dates are not available for the WRUC and a Neoproterozoic to Cambrian age has been estimated according to stratigraphic constraints (Brown, 1986). A major episode of folding during the Devonian formed the northwest to north trending Huskisson Syncline, and contact metamorphism indicates emplacement of the WRUC into the current stratigraphic position prior to the intrusion of the Meredith Granite around 370 Ma. Vein and replacement-style tin and tungsten mineralization appears to be associated regionally with the intrusion of the Meredith Granite. The WRUC is part of a group of similar ultramafic bodies scattered along the Dundas and Adamsfield troughs in northwestern and western Tasmania. The WRUC is one of the largest exposed ultramafic bodies in the Dundas Trough at approx. 17 km long and up to 2 km wide, and was probably continuous with the Mt Stewart ultramafic body c. 11 km to the north-northwest, before intrusion of the Meredith Granite. Brown (1986) identified two petrogenetically distinct ultramafic successions within the WRUC, namely the Layered Dunite-Harzburgite succession (LDH) comprising dunite, orthopyroxene-bearing dunite, and harzburgite layered on a 10 mm to 400 mm scale, and the Layered Pyroxene-Dunite succession (LPD) consisting of thinly (<150 mm) layered orthopyroxenite, olivine orthopyroxenite, and dunite. Both units are partially serpentinised. Chromite is a ubiquitous accessory phase (1-5%) in the LDH, occurring as disseminated grains and locally in discontinuous laminations up to c. 1-2 mm thick and 1-2 m long. The LPD has less chromite (1-2%), which is more common in the dunite layers. PGE-rich chromite nodules have been identified in the LDH of the Serpentine Ridge area (Brown 1986). The western 100-150 m of the LDH in the Harman River area consists of interlayered dunite and pyroxene-bearing dunite, and the eastern part layered harzburgite with minor thin dunite layers (Brown, 1986). According to Brown (1986) serpentinite shears or faults separate the LDH and LPD everywhere and the original relationship of the two successions is unclear. The exposed WRUC is dominated by the LDH sequence. Two small, infaulted blocks of LPD have been mapped by Brown (1986) in the Websterite Hill area and the southern part of the complex comprises LPD. Work by Venture also suggests slivers of a third unit, the Layered

Pyroxenite-Peridotite and associated Gabbro (LPG) succession recognised by Brown (1986) elsewhere in western Tasmania, may be present on the eastern edge of the WRUC in the Limestone Creek and Little Wilson River areas. The LPG as defined by Brown (1986) comprises disrupted blocks of layered orthopyroxenite in peridotite intruded by massive two-pyroxene gabbro.

Brown (1986) proposed intrusion of ultramafic bodies into the opening Dundas Trough during the Early Cambrian followed by tectonic re-emplacement prior to the Devonian. The presence of serpentinite pebbles and abundant detrital chromite within Huskisson Group sedimentary rocks at Merton Hill (Adamus observations) and Red Lead Conglomerate of the correlative Dundas Group in the Mt Razorback area (Brown, 1986) suggests exposure and partial erosion of the ultramafic complexes prior to the Middle Cambrian.

Quaternary fluvioglacial sediments and Quaternary-Recent alluvial gravels cover minor parts of the WRUC. Osmiridium, gold, and chromite are locally concentrated in the Quaternary-Recent alluvial gravels. Patches of laterite and saprolite are locally present over the WRUC representing a mixture of in situ relicts of a more extensive Tertiary lateritic blanket and Quaternary-Recent colluvial-alluvial deposits. Goethitic soils are widespread over Serpentine Ridge and the Websterite Hill area.

Significant deformation is recognised in the Crimson Creek Formation with narrow zones of bedding-parallel isoclinal folding with an associated S0-parallel cleavage (S1), and a later generation of metre-scale gentle to open folds with north to north-northeast striking axial planes and crenulation cleavage (S2).

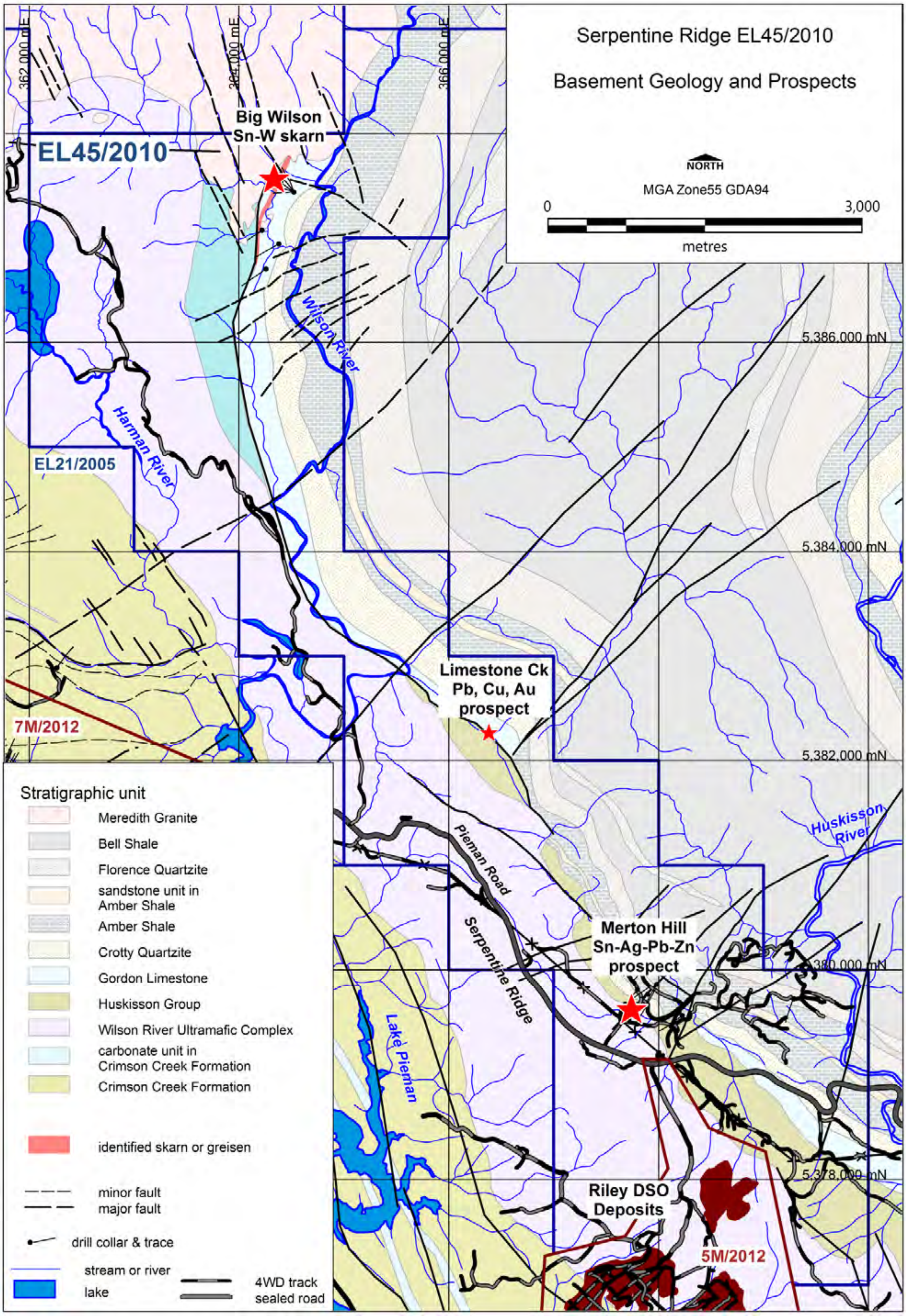

Figure 2: EL45/2010 basement geology and prospect location map

5 Exploration and Mining History

Osmiridium was first reported in Tasmania from the Wilson River valley in the 1876 by Surveyor-General Sprent, and the Riley, Trinder, Three Mile, Lippy Jane, Fowler, Sweeney, Osmiridium and Gold Creeks were later extensively worked for detrital osmiridium. An exact osmiridium production figure for the Serpentine Ridge – Wilson River area is not available, but of the total 31,100 oz produced from Tasmania between 1910 and 1968 (first and last reported production) around half came from the Adamsfield area ca. 120 km to the southeast and much of the rest from the Heazlewood-Bald Hill area near Waratah approx. 30 km to the north. The detrital osmiridium typically occurs as flaky nuggets up to a few millimetres dimension. Petrographic work (Callina NL 1985-1990, Brown 1986) on material from the Riley Creek area also indicates occurrence as inclusions within chromite grains from the ultramafic basement. Numerous workers have identified small chromite lenses up to 20-30 mm thick and 1-2 m long within the ultramafics, and analyses of some primary chromitites indicate highly anomalous PGM levels (Brown 1986).

There was additionally minor alluvial tin and gold production from the Wilson and Huskisson valleys and during the 1970-1980s the area in the vicinity of the Meredith Granite was extensively explored for tin and tungsten mineralization. Tin-bearing alluvial gravels occur in many streams on the north-eastern side of Serpentine Ridge, including Barnes, Sweeney and Tin creeks and Alfred River. Occurrences of primary tin mineralization were identified in the Harman River and Merton Hill areas, and Reid (1921) reported narrow dykes of tinstone-bearing quartz-feldspar porphyry cropping out in the vicinity of Tin Creek and Merton Hill.

Merton Hill was tested with 3 small adits by prospectors in the early 1900s. Exploration activities by Rension Ltd in the 1979-1983 period identified the presence of an irregular +100 ppm tin in soil anomaly centred around the three small adits at Merton Hill. Seven diamond core holes were drilled by Renison and the best result obtained was c. 3 m of gossanous breccia assaying 0.19% Sn, 1.27% Pb, 3.68% Zn & 53g/t Ag from 52.9 m down hole in MH1 directly beneath the old workings. The identified mineralization was associated with veins and breccias within the Devonian Eldon Group (specifically, within the Crotty Quartzite and unnamed limestone member of the Amber Shale) associated with a northeast dipping fault zone adjacent to the contact with the Wilson River ultramafic body. MH2 appears to have intersected the same fault-hosted mineralisation but recoveries were very poor (<8%). Very thin veins with sphalerite, galena and silver and rarely cassiterite were encountered by most of the drill holes within the limestone and shale of the Crotty Quartzite. Narrow granitic dykes with disseminated pyrrhotite were encountered in some of the drill holes.

Mapping, geophysics and soil sampling by Renison in the early 1980s around the upper Harman and lower Little Wilson rivers in the early 1980s also identified Sn targets at Tadpole Hill within the Meredith Granite, and around the confluence of the Wilson and Little Wilson rivers within the granite and adjacent Gordon Limestone. Renison planned several drill holes to test the Wilson River target but terminated the project when the tin price collapsed in the mid-1980s.

The source of the alluvial gold was not thoroughly investigated and while most is probably reworked from glacial gravels, exploration by Callina NL in the 1980s suggested there could also be an ultramafic source. Significant gold mineralization has not been reported from any of the identified tin prospects within EL45/2010, although it was not commonly assayed. Adit samples and some of the Renison drill core from the Merton Hill tin prospect was subsequently re-assayed for gold (Black Horse Mining, 1986-1987 and Cyprus Gold Australia Corp, 1987-1989) with a best result of 2 m at 0.165 ppm Au obtained in a magnetite skarn.

Lateritic nickel and cobalt mineralization was identified in the southern Serpentine Ridge area by Aberfoyle in the late 1960s by a program that included hand auger drilling and man-portable coring (5 core holes) to a maximum depth of 30 ft. Grades of up to ca. 2% Ni and 1.5% Co were obtained from thin (<1-5 m) patches of laterite and in the underlying saprolitic serpentinite assays of >0.5% Ni were commonly obtained. There was no systematic investigation for Ni-sulfide mineralization beyond the Serpentine Ridge area (Camp 30 area of Aberfoyle). Variably serpentinised dunite from the Wilson River ultramafic complex typically assay c. 0.2-0.4% Ni although Brown (1986) could not detect nickel in the silicate phases. The nickel sulfide healzewoodite and Ni-Fe alloy awaruite were identified by Renison in serpentinite drill core from Merton Hill, and awaruite in serpentinised dunite samples from the Riley Creek area by Callina.

Callina NL (1985-1990) defined a detrital chromite resource in the Riley Creek area which was also the focus of the historic osmiridium workings. While the chromite is premium quality (>60% Cr_2O_3) the Callina resource was small (approx 1.7 Mt at 1.9% chromite) and at the time not considered economic. The associated detrital PGM (Os and Ir, lesser Pt) and gold content were not assigned any economic value by Callina.

Adamus Resources Ltd explored the area for nickel sulfides in the mid-2000s, conducting rock chip, stream sediment and soil sampling. Relict nickel-rich lateritic soils made it very difficult to interpret the results and clear primary nickel targets could not be delineated. The soil sampling does indicate some geochemical anomalism (mainly As and Cu) in the lower Harmen River area which could be associated with tin-tungsten metasomatism.

6 2021-2022 Anniversary Year Exploration Activities

Previous imaging and modelling of Venture's 2019 VTEM survey data by Core Geophysics identified five conductors within EL45/2010. Several of these conductors in the Wilson River – Serpentine Ridge – Limestone Creek and Merton Hill areas were investigated in the 2020 – 2022, notwithstanding COVID 19 related complications to field activities. A total of 103 rock samples from the Serpentine Ridge and Limestone Creek areas were assayed for a suite of elements focused on the identification of Ni-Cu-PGE mineralization (the main target in the Wilson River Ultramafic Complex and associated mafic intrusions). Refer to Figure 3 and to Appendix A for location of rock chips, and to Appendix B for assay results.

Activities also included drill site evaluation: access to potential drill sites were flagged, existing tracks were monitored and maintained, and a flora and fauna survey (Natural Values Assessment) was conducted by ecological consultants North Barker. The proposed drill locations as surveyed by North Barker are shown in Figure 3. Refer to Appendix C for North Barker Natural Values Assessment Report.

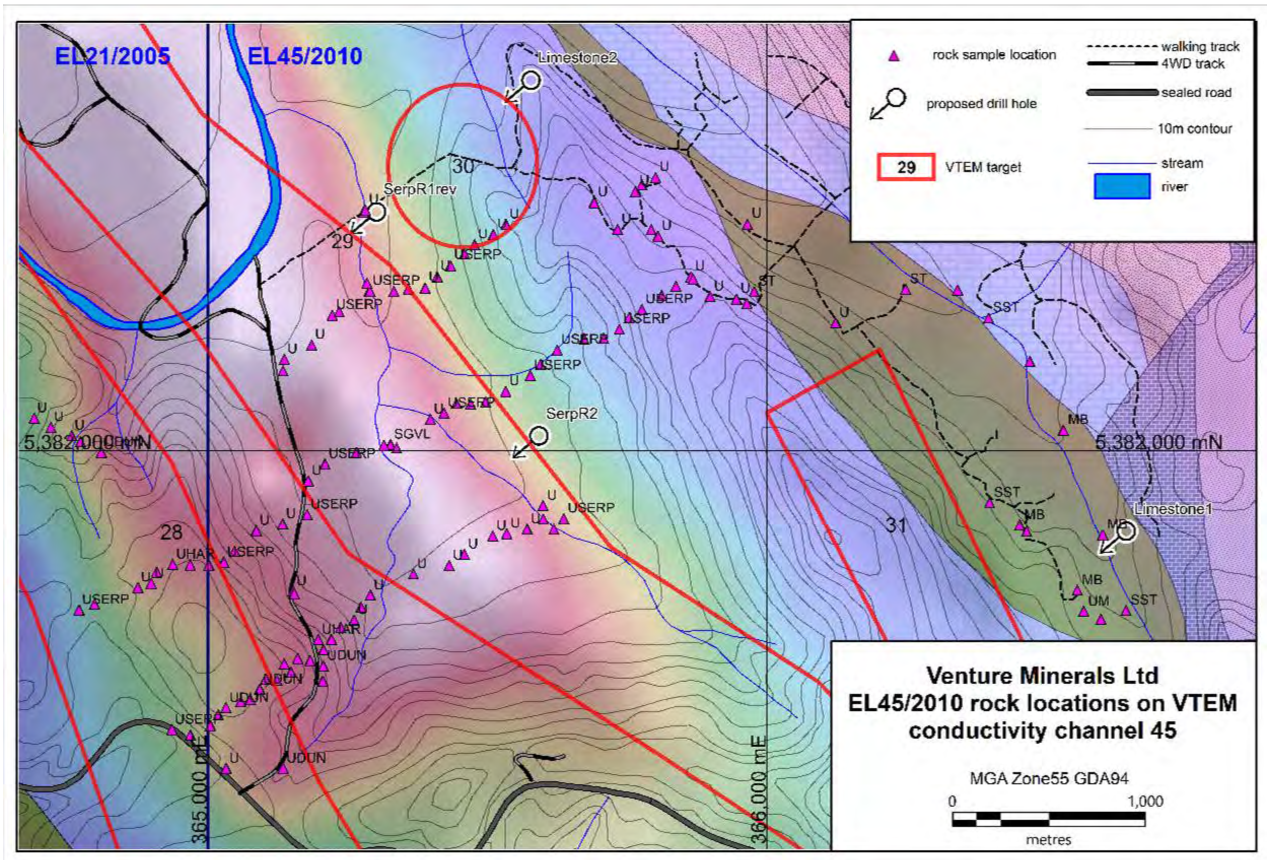

Figure 3: 2021 – 2022 rock sample locations, and proposed drill locations on VTEM channel 49. Logging code: MB: basalt; SGVL: unconsolidated gravels; SST: sandstone; ST: siltstone; U: Undifferentiated ultramafic; UHAR: harzburgite; UDUN: dunite; USERP: serpentinite. See Appendix D for complete logging code.

6.1 Rock Sampling

A total of 83 rock samples were collected from three transects running perpendicular to VTEM targets 28, 29, and 30 (Figure 3) over the WRUC. A mix of float and outcrop was encountered among dense woodland vegetation, consistently banksia, hakea, tee tree and eucalypt over gahnia and bauera scrub, and ultramafic basement was best exposed on ridges and along creek beds (Figure 4). WRUC ultramafic samples had varying degrees of both magnetism and serpentinization, with no obvious spatial correlation across the tenement.

Rockchip samples were assayed at ALS for a broad suite of elements including Ni, Cu, Zn, Pb, As, Bi and Sb by 4 acid digestion with ICP-MS finish and Au, Pt and Pd by fire assay and AES on 50 g nominal sample weight.

Figure 4: Prospecting and rock chip sample collection on Serpentine Ridge, over the Wilson River Ultramafic Complex.

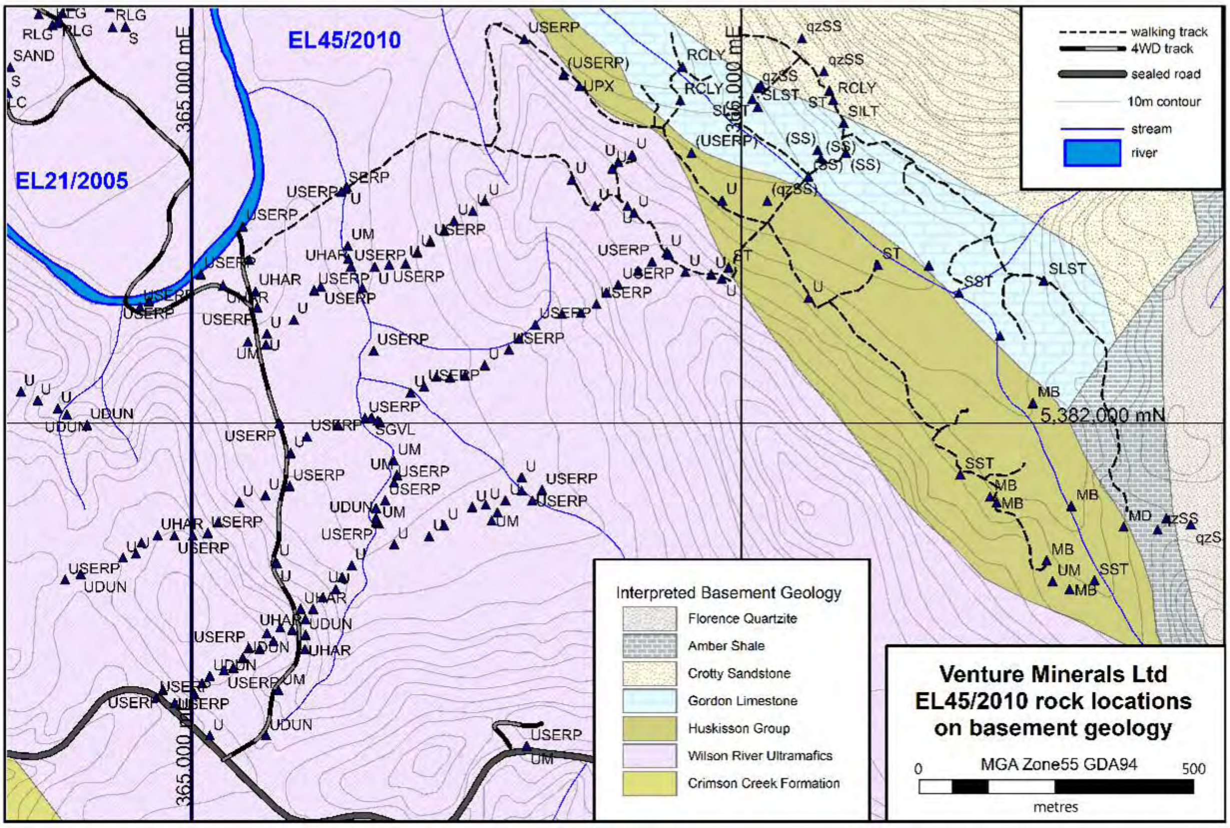

Figure 5: 2021-2022 rock sample locations on interpreted basement geology.

Ni values mostly range from 2500 – 4500 ppm and may be loosely controlled by stratigraphy (Figure 6). Three discrete +0.4% Ni zones are identified in the Serpentine Ridge – Wilson River area, with maxima of 0.57% Ni. There was no sign of sulfide, fresh or oxidized, and S assays were <0.01% confirming the lack of sulfides. It is possible Ni could be hosted in Ni-Fe alloys such as awaruite as observed elsewhere in the Wilson River Ultramafic Complex. Petrographic works is proposed to investigate the Ni deportment.

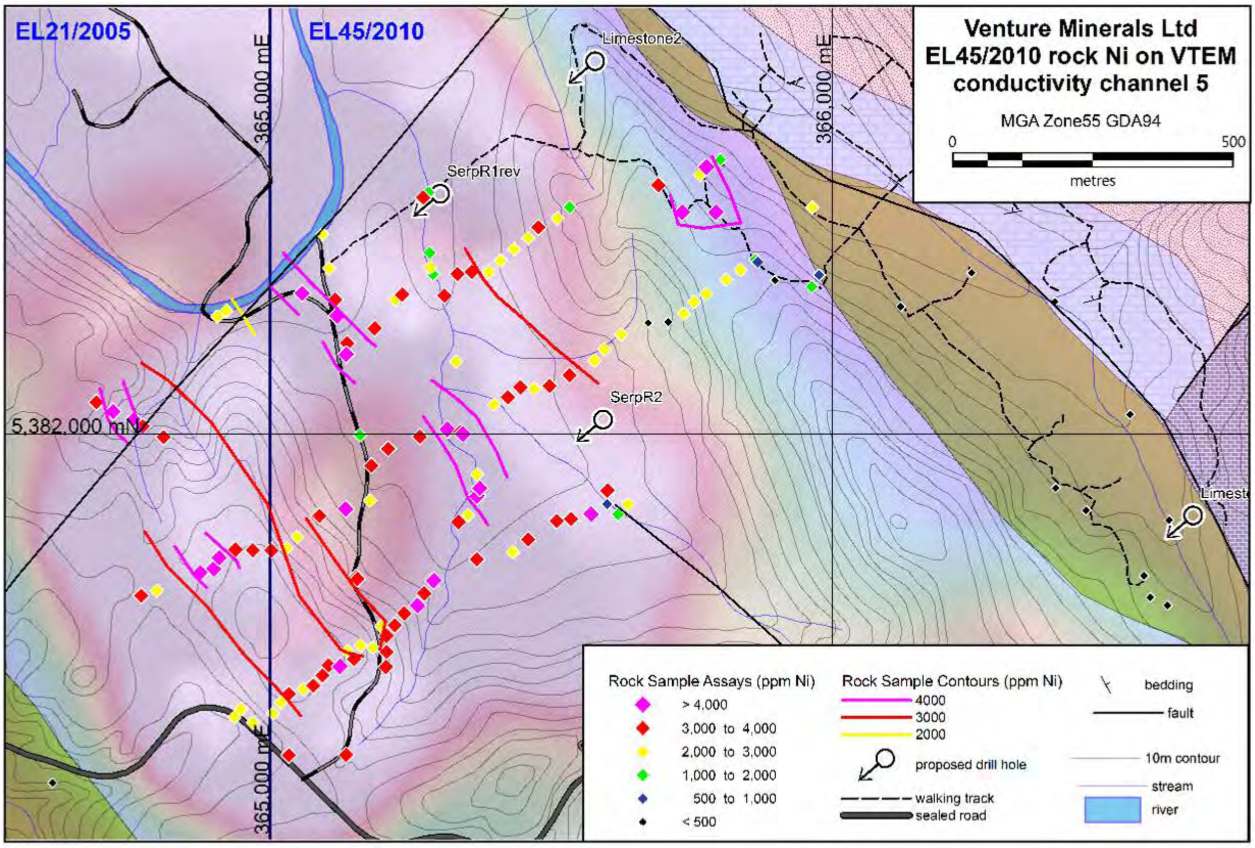

Figure 6: Rock Ni on VTEM conductivity channel 5 and basement geology.

Chromite was commonly observed and assays returned up to 8,780 ppm Cr. Lateritic samples were also strongly elevated in Cr (residually enriched). Low level Pt and Pd anomalism is also noted (to 20 ppb and 28 ppb Pt & Pd respectively) Maxima 28 ppb Pd occurs in a fine-grained dark-grey basalt with metallic magnetic clasts, within the Huskisson Gp, rather than the WRUC.
Elevated Pd and Pt seem to coincide with weakly anomalous Cu in soil (>50 ppm) within the Huskisson Gp (Figure 7).

Refer to Appendix B for full assay results.

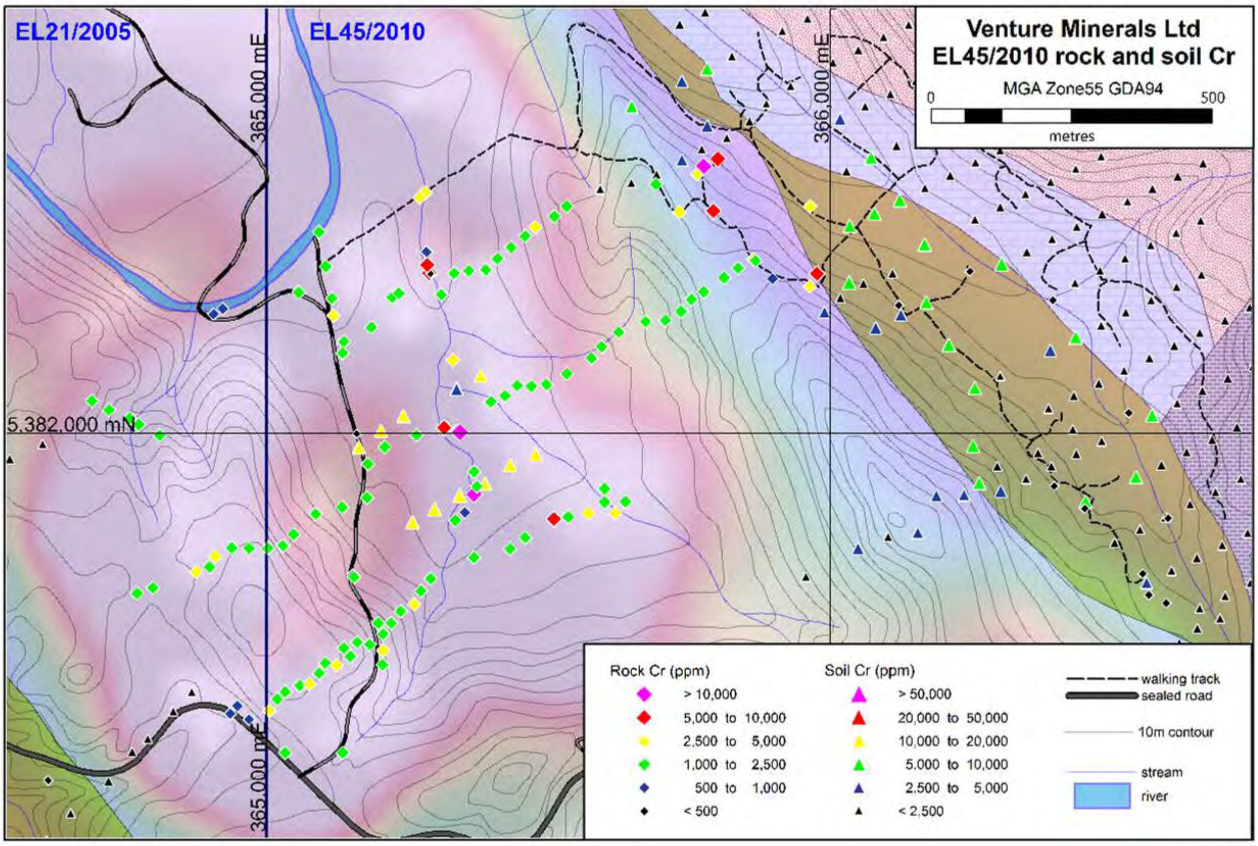

Figure 7: Soil and Rock Cr on VTEM Conductivity Channel 5.

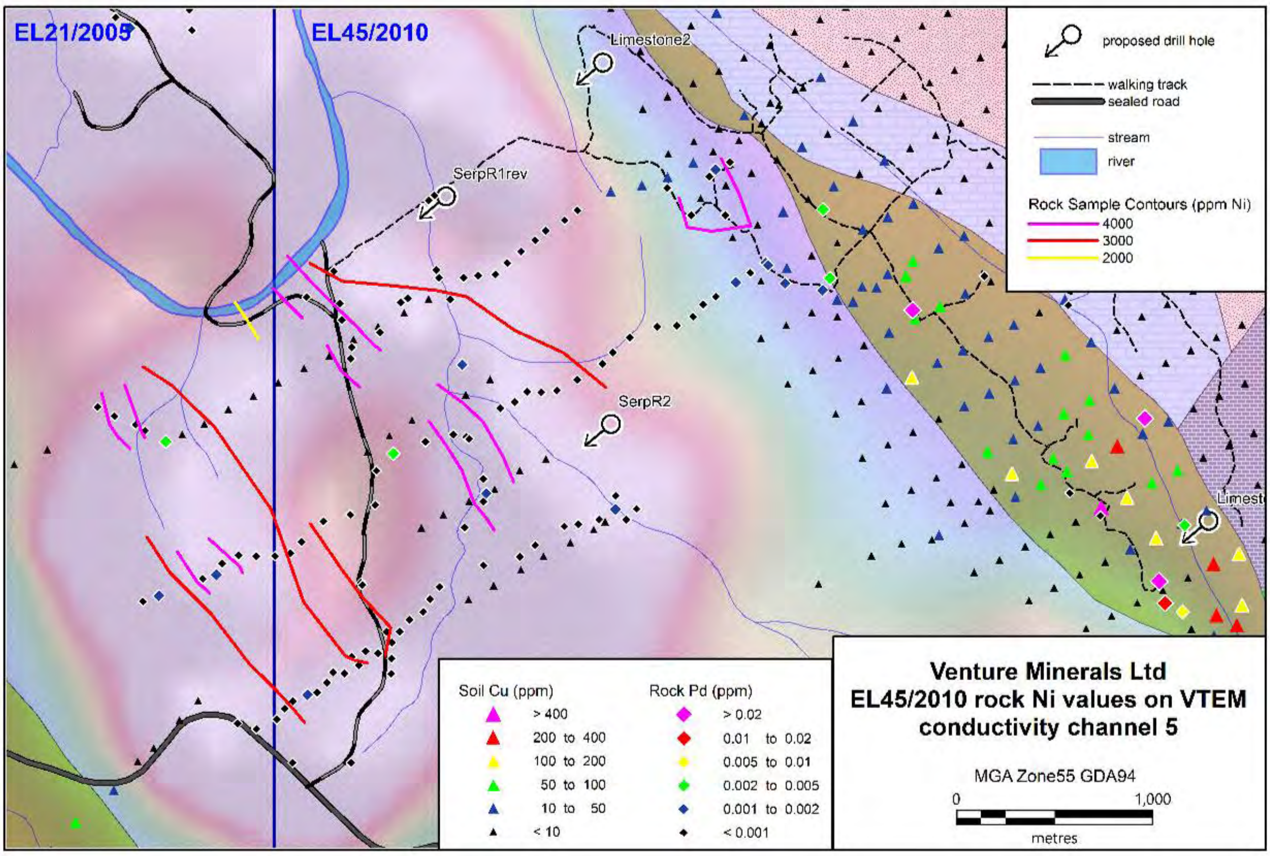

Figure 8: Rock Pd and soil Cu on VTEM channel and basement geology.

6.2 Drill Targets

The rock chip traverses were used to refine potential drill targets in the Serpentine Ridge area and two diamond drill holes, SerpR1rev and SerpR2, were proposed to test both the geochemical and geophysical VTEM 29 anomaly.

Diamond drill hole proposal Limestone1, designed in 2021 to test both the VTEM 29 anomaly and the Cu soil anomaly in the Huskisson Gp, has been maintained and it may also test the weakly Pt+Pd anomalous basalt unit flanking the WRUC (see Figure 8).

Position of Limestone2, originally proposed in 2021 to test the +400 ppm Cu soil anomaly, has been slightly revised to test the VTEM 30 target, see Figure 3.

A Natural Values Determination (flora and fauna) survey was conducted over EL45/2010 by North Barker in March 2022 (refer to Appendix C) and includes drill pads Limestone1, Limestone2 and SerpR1Rev. North Barker 2022 survey found *Micrantheum serpentinum* occurs at drill site SerpR1rev and along the proposed access track to Limestone2 (*Micrantheum serpentinum* is known to grow on serpentinite across Serpentine Ridge). Recommendations were made.

6.3 Environmental Management

Litter from non-company individuals camping at two sites along the track towards the Wilson River was removed by Venture personnel. Windfall across the 4WD track between the Pieman Road and Wilson River was also removed. Drill collars at Merton Hill were checked.

6.4 Desktop Studies

Soil contours for As, B, Sn and Cu were created or updated for all recent assay results.

Soil contouring for Sn in the Merton Hill vicinity, when displayed in conjunction with topography (10m contours), hydrology (streams), and the 2019 VTEM results, better defines a new target for drilling. Figure 9 (below) shows a total Sn anomaly down slope from the Merton 1 proposed drill hole. The anomaly covers an area approximately 500m x 200m, peaks at 1,295 ppm, and appears to be constrained by topography rather than lithology. The Sn anomaly is coincidental with As, which peaks at 772 ppm in the same area (figure 10).

The Limestone Creek prospect (Pb, Cu, Au) approx 1.5 km northwest of Merton Hill is defined by the Cu contours created from 2019 – 2020 assays results. Cu is weakly anomalous in soils on the Huskisson group volcaniclastic sediments, with a strong (200 – 300 ppm) anomaly in the vicinity of the upper reaches of Limestone creek, which peaks at 411 ppm. Proposed drill hole Limestone1 is collared near the center of this anomaly and plunges perpendicular to stratigraphy, toward VTEM target 31 (Figure 11).

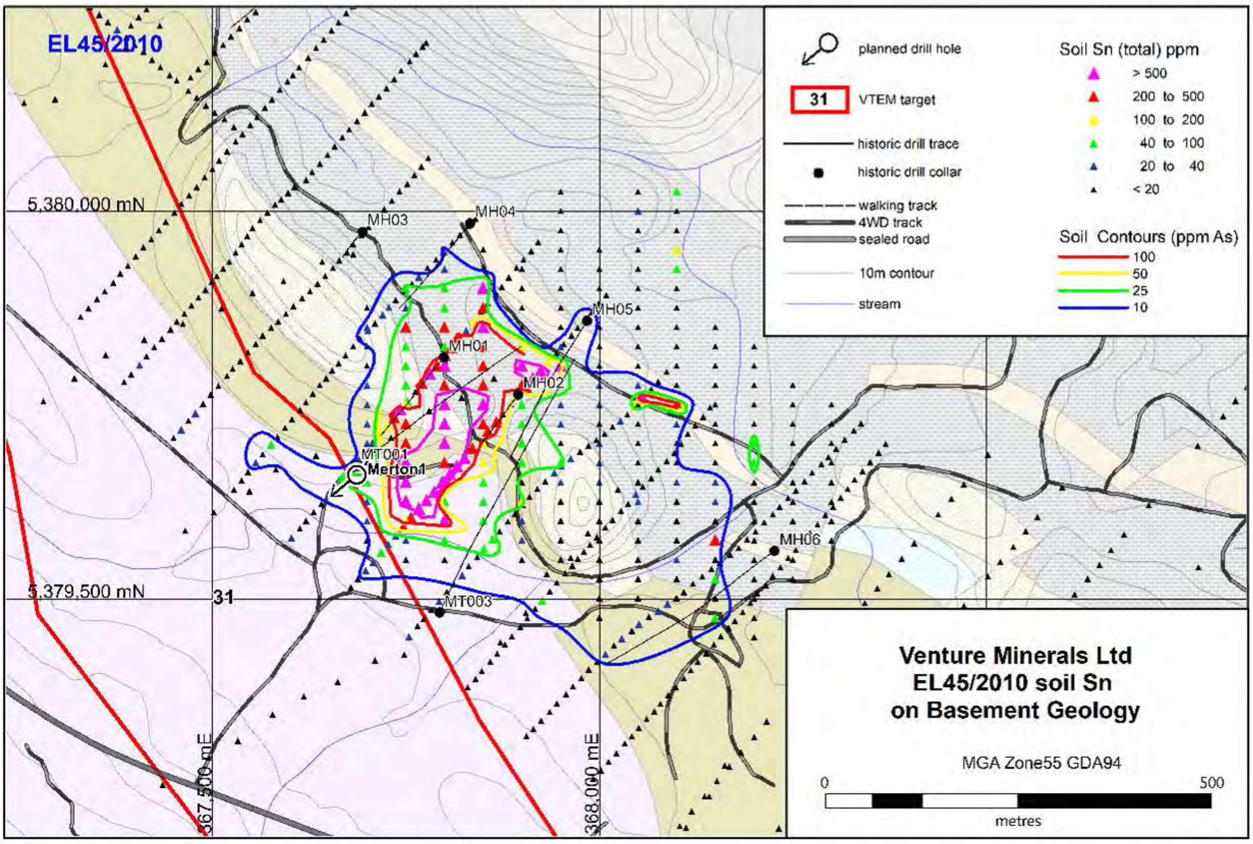

Figure 9: Merton Hill soil Sn contours in relation to planned and previous drilling.

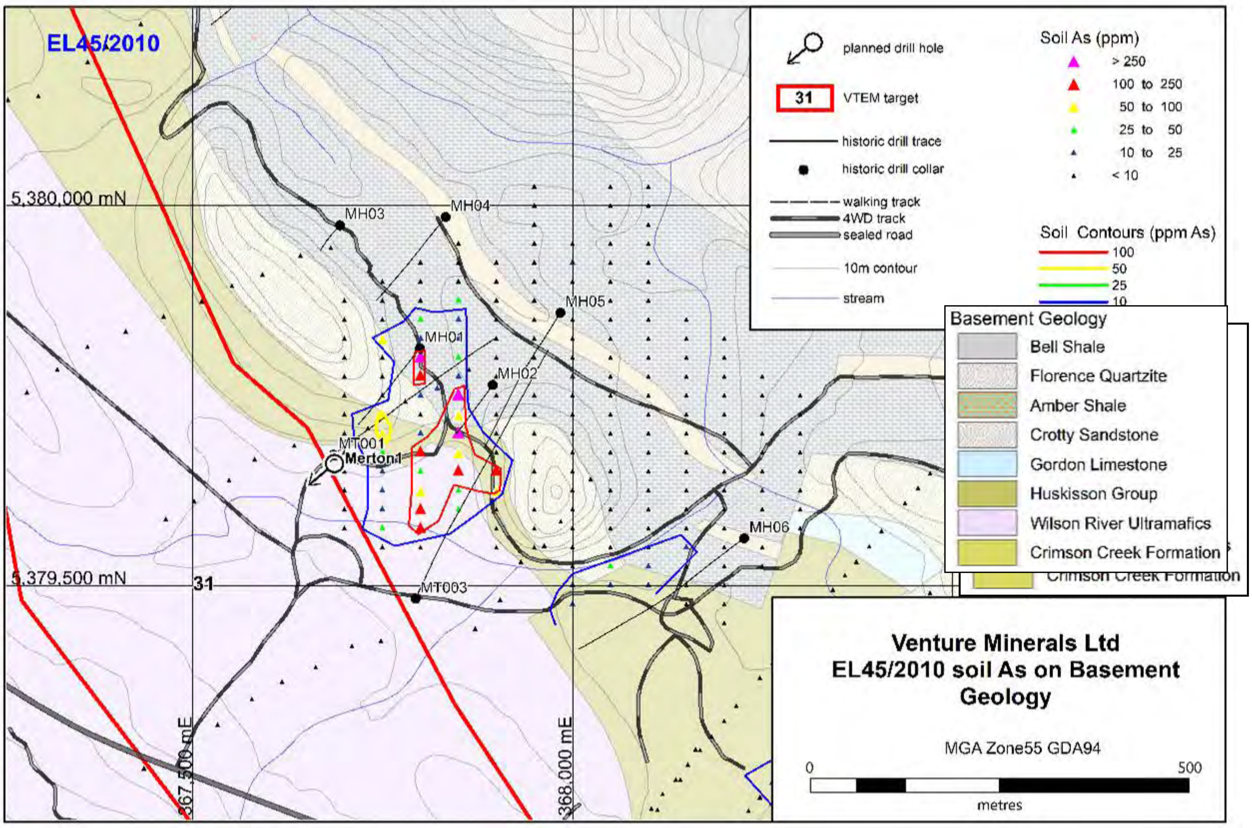

Figure 10: Merton Hill soil As contours in relation to planned and previous drilling.

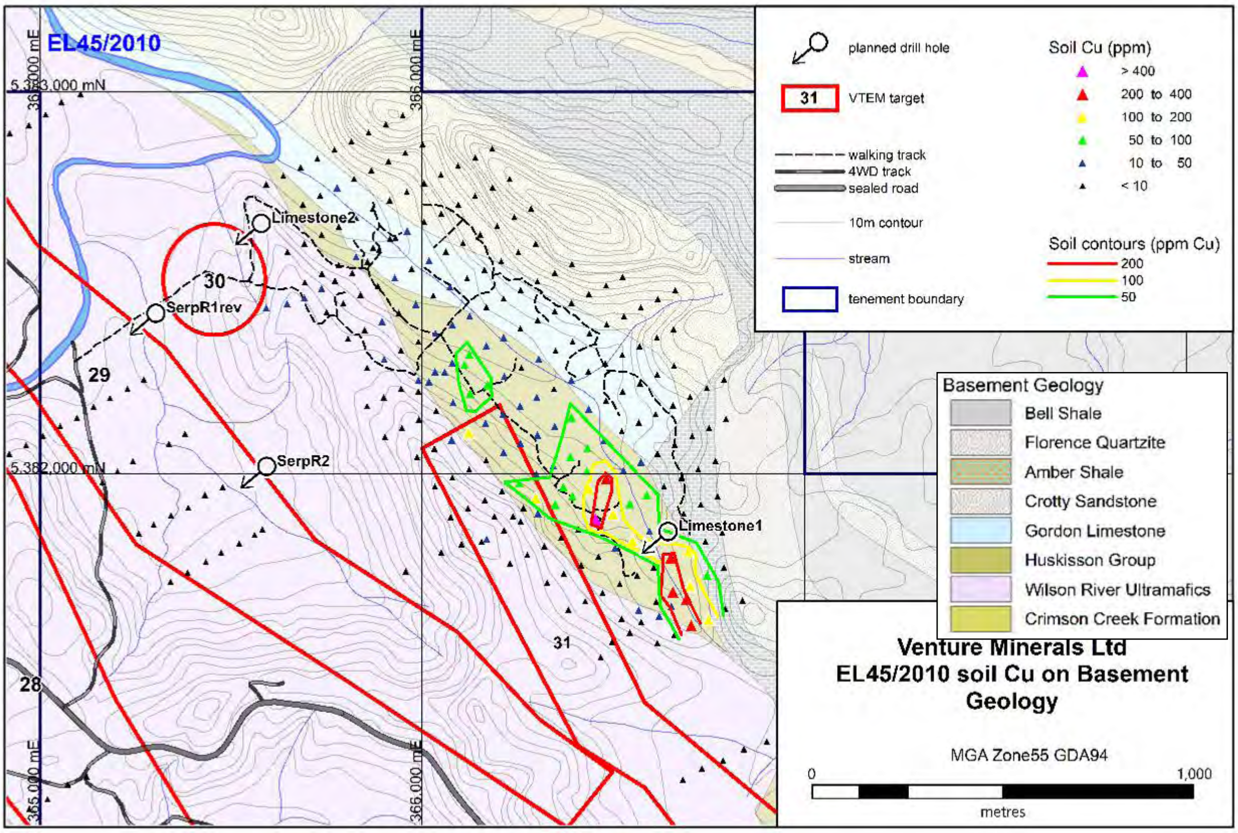

Figure 11: Limestone Creek soil Cu contours in relation to planned drilling.

7 Conclusions and Recommendations

Activities in the 2020-2022 period within EL45/2010 were focused on the evaluation and prioritization of conductors identified from a heliborne electromagnetic survey conducted for Venture Minerals in 2019. Venture has been progressively validating these targets through prospecting and surface geochemistry for drill testing.

Prospecting of a strong late time conductor coincident with a +250 ppm Cu in soil anomaly in the Harman River area on the boundary of EL21/2005 and EL45/2010 (mainly in EL21/2005) suggests it is associated with a pyrrhotite-bearing gabbro flanking the western margin of the Wilson River Ultramafic Complex. A drill site to test this mafic hosted Ni-Cu sulfide target, Harman 1, was flora & fauna surveyed in early 2021 but COVID-19 and contractor availability issues delayed the drilling.

VTEM conductors in the Wilson River – Serpentine Ridge – Limestone Creek and Merton Hill areas were additionally prospected in 2021 and 103 rock samples were assayed for a Ni focused suite of elements including Ni, Cu, Zn, Pb, As, Bi, Sb, Au, Pt and Pd. The strongest VTEM conductor within the WRUC was rock sample traversed (rocks were collected every 25 – 50 m on 3 transects approximately 200 m apart) showing the presence of three +0.4% Ni rock anomalies peaking at 0.57% Ni. Nickel deportment should be established before drill testing (low S contents indicate silicate or Ni-Fe alloy). Potential diamond coring drill sites SerpR1rev, Limestone 1, Limestone2 and Merton1 were flora & fauna surveyed. Desktop studies and soil contouring show a coincident As and Sn soil anomaly and diamond drill hole Merton1 has been proposed to test this slightly offset geochemical and geophysical VTEM target.

Further field validation (prospecting, rock sampling, soil sampling and petrography) of the proposed targets is recommended prior to commitment to drilling.

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Appendix A: Rock Sample Locations

Appendix A - Rock Locations

H0002	Version	1																	
H0003	Date_generated	21/04/2022																	
H0004	Reporting_period_end_date	28/05/2022																	
H0005	State	TAS																	
H0100	Tenement_no	EL45/2010																	
H0101	Tenement_holder	Venture Minerals																	
H0102	Project_name	Serpentine Ridge																	
H0106	Tenement_operator	Venture Minerals																	
H0200	Start_date_of_data_acquisition	19/12/2021																	
H0201	End_date_of_data_acquisition	28/01/2022																	
H0202	Template_format	SL_1																	
H0203	Number_of_data_records	84																	
H0204	Date_of_metadata_update	21/04/2022																	
H0500	Feature_located	surface sample																	
H0501	Geodetic_datum	GDA94																	
H0502	Vertical_datum	NA																	
H0503	Projection	MGA																	
H0530	Coordinate_system	GDA94																	
H0531	Projection_Zone	55																	
H0532	Surveying_instrument	Garmin GPSmap64s																	
H0533	Surveying_company	Venture Minerals																	
H1000	Hole_id	Easting	Northing	Elevatio	Outcrop	Lith1	Lith2	Sample_description	Sample	Logged	Date	Comments	Project	Prospect	Company	Tenement	Grid	Surveying_instru	Survey
H1001	Units	metres	metres	metres															
H1004	Accuracy	*10*	*10*	*10*															
D	EHSR001	365137	5382163	113	subcrop	U	UDUN	mw gn and pl weakly magnetic UDUN? With <1mm g	EHSR001	EH	19/12/2021	subcrop on r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR002	365186	5382189	112	float	U		dgy and lgn sw U (DUN or ex SERP) weakly magnetic	EHSR002	EH	19/12/2021	very light (w	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR003	365223	5382242	116	float	USERP		pl and gn mw USERP) weakly magnetic	EHSR003	EH	19/12/2021	float in low r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR004	365235	5382249	118	float	USERP		pl and gn mw USERP) weakly magnetic	EHSR004	EH	19/12/2021	float in low r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR005	365289	5382285	118	outcrop	USERP		dk gn and lgn sw USERP, heavy, non magnetic	EHSR005	EH	19/12/2021	outcrop in c	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR006	365290	5382285	118	outcrop	UHAR		lyw and lgn icg mw U	EHSR006	EH	19/12/2021	outcrop in c	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR007	365279	5382426	112	outcrop	SERP		dgy and gn USERP	EHSR007	EH	19/12/2021	outcrop on c	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR008	365282	5382430	112	outcrop	U		dgy, bz and pl ifg U	EHSR008	EH	19/12/2021	float in creel	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSC009	365135	5382143	116	subcrop	U		mw lgn and dgn U with chr flecks 1-2mm	EHSC009	EH	19/12/2021	subcrop in r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR010	365180	5381946	125	subcrop	U		mw dpl ifg U	EHSR010	EH	19/12/2021	subcrop in r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR011	365178	5381886	133	subcrop	USERP		mw dgn and lg soft flakey USERP, non magnetic	EHSR011	EH	19/12/2021	subcrop in r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR012	365153	5381749	146	subcrop	U		sw gn and pl U with 1 - 2mm mt and chr in ifg	EHSR012	EH	19/12/2021	subcrop in r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR013	365155	5381745	148	subcrop	U		sw gn and pl U with 1 - 2mm mt and chr in ifg	EHSR013	EH	19/12/2021	subcrop in r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR014	365198	5381663	171	subcrop	UHAR		sw dgn and lgn img phanaritic UHAR (?) with large w	EHSR014	EH	19/12/2021	subcrop in r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR015	365207	5381616	175	outcrop	UDUN		sw gn and lgn img UDUN	EHSR015	EH	19/12/2021	outcrop on t	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR016	365207	5381644	174	outcrop	UHAR		mw lg, dgn and pl UHAR, ifg with img ol, mt and chr	EHSR016	EH	19/12/2021	outcrop on t	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR017	365206	5381589	179	outcrop	UHAR		sw lgn img UDUN with pl mt weathering rind	EHSR017	EH	19/12/2021	outcrop on t	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR018	365135	5381433	195	subcrop	UDUN		gn and dgn UDUN	EHSR018	EH	19/12/2021	subcrop in r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR019	365033	5381433	178	outcrop	U		dgn and pl U	EHSR019	EH	19/12/2021	outcrop at b	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR022	365005	5381509	195	outcrop	UDUN		mw lgn - cm UDUN, img (or ex USERP)	EHSR022	EH	20/12/2021	outcrop or r	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	9
D	EHSR023	365019	5381528	204	outcrop	USERP		mw lgn, gn, cm USERP, ifg	EHSR023	EH	20/12/2021	on spur near	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR024	365033	5381541	207	outcrop	UDUN		lgn and cm sw UDUN with 1 - 2mm chr and mt nodul	EHSR024	EH	20/12/2021	at top of hill	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR025	365059	5381552	205	outcrop	USERP		lgn and dbn sw USERP with 1 - 2mm chr and mt nodu	EHSR025	EH	20/12/2021	below surfac	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	5
D	EHSR026	365076	5381556	203	outcrop	UDUN	U	mw - sw lgn UDUN with <mm chr flecks AND lgy mas	EHSR026	EH	20/12/2021	regolith und	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR027	365093	5381574	204	outcrop	UDUN		lgn UDN, img with dbn veinlets and chr flecks	EHSR027	EH	20/12/2021	outcrop on e	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR028	365104	5381592	209	outcrop	USERP		sw gn USERP with 1 - 2 mm mt and chr nodules	EHSR028	EH	20/12/2021		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR029	365124	5381590	202	float	U		lgn U, img with chr flecks and metallic nodules	EHSR029	EH	20/12/2021		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR030	365149	5381604	200	float	USERP		gn, lgn, dgn USERP with metallic nodules	EHSR030	EH	20/12/2021	float on ridg	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR031	365137	5381619	199	outcrop	USERP		dgn USERP, ifg - img with maroon euhedral cubic cry	EHSR031	EH	20/12/2021	extensive su	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	9
D	EHSR032	365161	5381629	184	outcrop	USERP		sw USERP	EHSR032	EH	20/12/2021	substanial o	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	9
D	EHSR033	365183	5381625	173	outcrop	UHAR		gn and dgn ifg - img UHAR with px and mt 2 - 4mm	EHSR033	EH	20/12/2021	substanial o	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	9

Appendix A - Rock Locations

D	EHSR039	365210	5381976	117	float	USERP		gn fiberous soapy weak mag with chr cubes up 1 - 2 r	EHSR039	EH	11/01/2022	start line SR	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR040	365266	5381997	116	float	USERP		gn (with pl rind) mod mag with chr flecks	EHSR040	EH	11/01/2022	low relief, ve	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR041G	365327	5382011	116	float	SGVL	U	rdbn gvl and laterite cobbles and dgy chr <1mm		EH	11/01/2022	assorted gra	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	6
D	EHSR041	365315	5382010	117	outcrop	USERP		gn sw weak mag with chr cubes 1 - 2 mm	EHSR041	EH	11/01/2022	good o/c we	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	4
D	EHSR042	365338	5382005	117	outcrop	USERP		gn sw weak mag with Fe nodules 2 - 4mm	EHSR042	EH	11/01/2022	good o/c eas	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	4
D	EHSR043	365398	5382056	119	outcrop	U		gn sw weak mag	EHSR043	EH	11/01/2022	good examp	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	7
D	EHSR044	365423	5382067	123	float	USERP		gn sw with mt veins, strong mag in places	EHSR044	EH	11/01/2022	in open bau	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	11
D	EHSR045	365445	5382085	126	float	USERP		gn sw non mag, soapy	EHSR045	EH	11/01/2022	regolith / br	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR046	365470	5382084	127	float	USERP		gn and dplgn with chr cubes 1-2mm, mod mag	EHSR046	EH	11/01/2022	regolith / br	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR047	365497	5382087	125	float	U		gn and pl mw	EHSR047	EH	11/01/2022	low relief, o	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR048	365533	5382106	129	float	U		gn and pl mw	EHSR048	EH	11/01/2022	regolith / br	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR049	365577	5382134	131	outcrop	USERP		gn with chr and mt modules 1 - 4mm	EHSR049	EH	11/01/2022	outcrop ann	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR050	365595	5382154	134	outcrop	USERP		gn and cngn and dgypl, strong and mod mag, fr - sw,	EHSR050	EH	11/01/2022	Afternoon te	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR051	365625	5382180	137	outcrop	USERP		gn and dgn with pl, ifg, striated / schistose strong to	EHSR051	EH	11/01/2022	o/c in ck bar	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR052	365673	5382199	143	float	U	USERI	dgn and dgy, img - ifg, very hard, very heavy	EHSR052	EH	11/01/2022	float in dry c	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR053	365708	5382201	153	float	USERP		gn and dgn, ifm - img, with pl weathering rind, mod r	EHSR053	EH	11/01/2022	float in reen	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR054	365736	5382217	163	U	USERP		dgn - dgy, ifg, very hard, very heavy, with <mm chr fl	EHSR054	EH	11/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR055	365754	5382238	176	outcrop	U	USERI	gn and dpl, heavy, mod mag, ifg	EHSR055	EH	11/01/2022	o/c / broken	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR056	365776	5382252	185	outcrop	USERP	UHAR	gn and dgy, ifg, schistose texture	EHSR056	EH	11/01/2022	o/c near top	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR057	365812	5382277	185	float	USERP		gn and dgy, ifg, schistose texture	EHSR057	EH	11/01/2022	ovre crest of	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR058	365837	5382294	182	float	USERP	UDUN	gn and dgy, ifg - img, with chr cubes 1-2mm	EHSR058	EH	11/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR059	365864	5382311	185	outcrop	U		dgy, non mag, low density, metallic	EHSR059	EH	11/01/2022	o/c approx 5	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR060	365868	5382307	184	outcrop	USERP		dgn and gn, ifg, soapy, straited / fiberous, mod mag,	EHSR060	EH	11/01/2022	road cutting	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	7
D	EHSR068	365002	5381796	209	outcrop	USERP		gn and dgn, fr - mw, soapy, ifg with chr cubes 1 - 2m	EHSR068	EH	12/01/2022	on north sid	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	15
D	EHSR069	365029	5381801	195	outcrop	USERP		gn and dgn, sw, ifg, with mt and chr flecks and nodul	EHSR069	EH	12/01/2022	GPS all over	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	15
D	EHSR070	365048	5381821	181	outcrop	USERP		gn and dgn, sw, ifg - img, mt and chr flecks to 2mm	EHSR070	EH	12/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	15
D	EHSR071	365087	5381857	153	float	U	USERI	ex USERP, gn and cmgn, mw, ifg - img	EHSR071	EH	12/01/2022	surface blea	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR072	365134	5381869	138	float	U	USERI	ex USERP, gn and cmgn, mw, ifg - img	EHSR072	EH	12/01/2022	surface blea	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	12
D	EHSR073	365533	5382404	159	outcrop	U	USERI	U with USERP veins, dplgy with gn and dgn	EHSR073	EH	18/01/2022	bull ants nes	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR074	365511	5382386	156	float	U		dpl, weak mag, sw, ifg, massive	EHSR074	EH	18/01/2022	steep descer	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	15
D	EHSR075	365477	5382368	146	float	U		dpl and lgn, ifg, sw - mw	EHSR075	EH	18/01/2022	see photo	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR076	365459	5382351	139	outcrop	UDUN	USERI	o/c and reg float at to 10cm bgl, cm and dgn, igf - im	EHSR076	EH	18/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	15
D	EHSR077	365434	5382331	129	outcrop	USERP		dgn with chocolate bn vein, very soft (scratches with	EHSR077	EH	18/01/2022	best sample	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR078	365410	5382311	124	float	U	USERI	reg o/c ex USERP, gn and pl, sw - mw, weak mag, ifg,	EHSR078	EH	18/01/2022	terrain open	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR079	365389	5382291	120	float	U	SERP	reg o/c ex USERP, gn and dgn with dgy nodules, mod	EHSR079	EH	18/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR080	365359	5382289	117	float	USERP		reg o/c gn and dgn with og staining, sw - mw, mod -	EHSR080	EH	18/01/2022	tall banksia l	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR081	365333	5382285	115	float	U	exSER	reg o/c at 10cm bgl, gn and plgy, weak mag, ifg, mw	EHSR081	EH	18/01/2022	soil is og anc	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR082	365285	5382299	111	outcrop	U	USERI	o/c in creek bed U (exSERP) with Fe nodules 2-4mm,	EHSR082	EH	18/01/2022	End of line,	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR083	365637	5381879	133	outcrop	USERP		dgn and lgn, soapy, striated	EHSR083	EH	28/01/2022	good o/c. So	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR084	365619	5381860	126	float	USERP		float in ck bd, gn and dgn, heavy, non mag	EHSR084	EH	28/01/2022	upstream of	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR085	365600	5381878	125	outcrop	USERP		o/c in ck bd, gn and gdn with wt veins, fr, weak mag	EHSR085	EH	28/01/2022	horrendous	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR086	365571	5381860	124	float	U		lgn reg at 10cm bgl, mw, weak mag	EHSR086	EH	28/01/2022	open banksi	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
D	EHSR087	365535	5381852	127	float	U		lgn, mw, weak mag	EHSR087	EH	28/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR088	365510	5381848	126	float	U		lgn and dpl, mw, mod mag, with chr cubes 1-2mm	EHSR088	EH	28/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR089	365459	5381815	123	float	U		lgn, mw, weak mag	EHSR089	EH	28/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR090	365432	5381795	123	outcrop	U		lgn - cm, mw, weak mag, with chr cubes 1-2mm	EHSR090	EH	28/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR091	365368	5381780	120	outcrop	U	USERI	exSERP? cm and rdbn, mw - vw, weak mag, chr cube	EHSR091	EH	28/01/2022	in low relief	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	8
D	EHSR092	365291	5381742	127	float	U		cm and rdbn, mw - vw, weak mag, chr cubes 1-2mm	EHSR092	EH	28/01/2022	dug from va	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	7
D	EHSR093	365274	5381720	133	float	U		lcm and lgn, mw - vw, weak mag, chr cubes 1-2mm	EHSR093	EH	28/01/2022	dug from va	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	7
D	EHSR094	365262	5381698	140	float	U		lgn and dpl, sw -mw, non mag	EHSR094	EH	28/01/2022	dense banks	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	7
D	EHSR095	365238	5381684	152	outcrop	USERP		dgn and gn, sw, weak mag, with mt nodules and chr	EHSR095	EH	28/01/2022		Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	7
D	EHSR096	365221	5381663	164	float	U	USERI	exSERP, gn - cmgn, sw - mw, weak mag	EHSR096	EH	28/01/2022	bottom side	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	7
D	EHSR097	365600	5381902	135	outcrop	U		lgn and gm cm with mt and chr nodules 1-4mm, wea	EHSR097	EH	28/01/2022	Note: first sa	Mt Linds	Serpentin	Venture M	EL45/2010	MGA Zone55	Garmin GPS64s	10
EOF																			

Appendix B: Rock Sample Assays

Appendix B - Rock Assays

H0002	Version	1																																									
H0003	Date_generated	20/05/2022																																									
H0004	Reporting_period_end_date	28/05/2022																																									
H0005	State	TAS																																									
H0100	Tenement_no	EL45/2010																																									
H0101	Tenement_holder	Venture Minerals																																									
H0102	Project_name	Serpentine Ridge																																									
H0106	Tenement_operator	Venture Minerals																																									
H0200	Start_date_of_data_acquisition	29/05/2021																																									
H0201	End_date_of_data_acquisition	28/05/2022																																									
H0202	Template_format	SG_1																																									
H0203	Number_of_data_records	103																																									
H0204	Date_of_metadata_update	9/05/2021																																									
H0300	Related_data_files	point																																									
H0305	Surface_Geochem_data_file	GDA94																																									
H0308	File verification list	NA																																									
H0318	QAQC_data_file																																										
H0500	Feature_located	Surface sample																																									
H0501	Geodetic_datum	GDA94																																									
H0502	Vertical_datum	AHD																																									
H0503	Projection	UTM																																									
H0530	Coordinate_system	Projected																																									
H0531	Projection_Zone	55																																									
H0532	Surveying_instrument	GPS																																									
H0533	Surveying_company	Garmin GPSmap64s																																									
H0601	Sample_type	Venture Minerals																																									
H0602	Sampling_description	Rock chip hand sample aprroximately 0.5kg (float or outcrop)																																									
H0700	Sample_preparation_code	CRU-31	SPL-22Y	PUL-31h																																							
H0701	Sample_preparation_description	Fine crushin	Split samp	Pulverise to nominal 85% passing 75 microns																																							
H0702	Laboratory_batch_number	PH22058745,																																									
H0800	Assay_code	ME-ICP61	PGM-ICP2	Ni-OG62																																							
H0801	Assay_company	ALS Geochemistry, Perth																																									
H0802	Assay_description	four acid dig	fire assay	four acid overlimit (Ni)																																							
H1000	Sample_id	Easting	Northing	Elevation	Sample_ty	Batch_Numbe	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Ga	K	La	Mg	Mn	Mo	Na	Ni	P	Pb	S	Sb	Sc	Sr	Th	Ti	Tl	U	V	W	Zn	Ni	Au	Pt	Pd
H1001	Units	*metres*	*metres*	*metres*			ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	%	ppm	%	ppm	ppm	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
H1002	Assay_code						ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	ME-ICP61	Ni-OG6	PGM-ICP2	PGM-ICP2	PGM-ICP24
H1003	Lower_detection_limit						0.5	0.01	5	10	0.5	2	0.01	0.5	1	1	1	0.01	10	0.01	10	0.01	5	1	0.01	1	10	2	0.01	5	1	1	20	0.01	10	10	1	10	2	0.001	0.001	0.005	0.001
H1004	Accuracy	10	10	10																																							
H1005	Upper_detection_limit																																										
H1007	Assay_company						ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS	ALS
D	EHLC001	365691	5382443	172	rock chip	PH21350794	<0.5	0.09	<5	<10	<0.5	<2	0.01	<0.5	126	1455	3	5.09	<10	0.01	<10	23.3	813	2	<0.01	3030	10	<2	0.01	<5	4	3	<20	<0.01	<10	<10	11	<10	37		0.001	<0.005	<0.001
D	EHLC002	365733	5382395	176	rock chip	PH21350794	<0.5	0.13	<5	10	<0.5	<2	0.02	<0.5	282	2810	5	6.45	<10	0.01	<10	22.7	2690	1	0.01	4180	10	<2	0.01	<5	5	4	<20	<0.01	<10	<10	15	<10	54		0.001	<0.005	<0.001
D	EHLC003	365765	5382463	163	rock chip	PH21350794	<0.5	0.27	<5	<10	<0.5	<2	0.02	<0.5	137	4710	2	4.99	<10	0.01	<10	23.3	1385	3	<0.01	2160	10	<2	0.01	<5	4	2	<20	<0.01	<10	<10	16	<10	45		0.001	<0.005	<0.001
D	EHLC004	365776	5382475	162	rock chip	PH21350794	<0.5	1.32	<5	70	<0.5	14	0.06	<0.5	820	>10000	11	41.4	10	0.08	10	0.61	7170	2	0.03	5670	50	<2	0.01	<5	12	15	<20	0.07	10	<10	103	<10	195		<0.001	<0.005	0.001
D	EHLC005	365801	5382488	156	rock chip	PH21350794	<0.5	0.54	6	10	<0.5	<2	0.04	<0.5	148	6020	15	6.49	<10	0.01	<10	22.7	887	1	<0.01	1965	10	3	0.03	<5	5	2	<20	0.01	<10	<10	29	<10	57		0.001	0.007	<0.001
D	EHLC006	365965	5382405	148	rock chip	PH21350794	<0.5	1.14	<5	10	<0.5	<2	0.11	<0.5	104	4770	22	5.22	<10	0.02	<10	22.1	1035	<1	0.02	2120	30	<2	0.01	<5	8	6	<20	0.01	<10	<10	34	<10	52		0.003	0.008	0.002
D	EHLC007	366248	5382288	152	rock chip	PH21350794	<0.5	0.95	14	40	0.6	<2	0.03	<0.5	7	217	15	2.99	<10	0.44	10	0.26	108	1	0.02	181	80	51	0.01	<5	3	3	<20	0.06	<10	<10	56	<10	86		0.002	<0.005	<0.001
D	EHLC008	366122	5382228	160	rock chip	PH21350794	<0.5	6.83	<5	30	<0.5	<2	5.28	<0.5	51	143	84	8.05	10	0.39	<10	4.32	1835	2	2.77	115	80	<2	0.01	<5	40	95	<20	0.12	<10	<10	249	<10	76		<0.001	0.02	0.026
D	EHLC009	365977	5382284	174	rock chip	PH21350794	<0.5	2.37	5	30	<0.5	3	0.1	<0.5	103	5110	39	36.9	<10	0.2	<10	0.29	480	1	0.09	504	60	18	0.01	<5	9	9	<20	0.08	<10	<10	526	<10	158		0.001	<0.005	0.002
D	EHLC010	365964	5382263	187	rock chip	PH21350794	<0.5	0.83	<5	<10	<0.5	<2	0.21	<0.5	123	3860	6	7.62	<10	0.02	<10	21.4	1090	1	0.05	1670	20	<2	0.05	<5	9	6	<20	0.01	<10	<10	44	<10	57		0.001	0.005	0.001
D	EHLC012	365945	5382271	190	rock chip	PH21350794	<0.5	6.82	<5	<10	<0.5	<2	4.01	<0.5	55	549	4	6.26	10	0.02	<10	15.3	3710	<1	0.03	276	50	<2	<0.01	<5	33	6	<20	0.03	<10	<10	93	<10	76		0.001	0.006	0.001
D	EHLC014	365805	5382383	178	rock chip	PH21350794	0.6	0.3	<5	180	<0.5	7	0.07	0.7	2030	8780	3	31.3	<10	0.05	<10	3.84	40200	<1	0.04	>10000	20	6	0.01	<5	6	35	<20	0.01	20	<10	48	<10	102	1.07	<0.001	<0.005	<0.001
D	EHLC015	365793	5382395	170	rock chip	PH21350794	<0.5	6.22	<5	90	<0.5	<2	2.08	<0.5	26	38	97	7.16	10	0.57	<10	0.87	507	<1	0.99	23	210	<2	0.02	<5	30	50	<20	0.29	<10	<10	82	<10	20		0.001	<0.005	<0.001
D	EHLC016	366398	5381907	192	rock chip	PH21350794	<0.5	6.59	<5	80	<0.5	<2	3.01	<0.5	107	237	58	7.85	10	0.44	<10	1.35	1930	<1	2.01	466	200	<2	0.01	<5	29	86	<20	0.23	<10	<10	238	<10	31		0.001	<0.005	<0.001
D	EHLC017	366452	5381867	181	rock chip	PH21350794	<0.5	7	<5	60	<0.5	<2	4.42	<0.5	73	74	17	8.35	10	0.59	<10	2.57	1235	<1	1.67	239	100	<2	0.02	<5	42	77	<20	0.16	<10	<10	314	<10	27		0.001	0.019	0.028
D	EHLC018	366566	5381713	190	rock chip	PH21350794	<0.5	7.6	<5	430	<0.5	3	4.88	<0.5	71	156	6	8.41	10	1.5	<10	4.43	1065	<1	1.67	234	40	<2	<0.01	<5	44	79	<20	0.11	<10	<10	242	<10	29		0.001	0.016	0.02
D	EHLC019	366597	5381699	184	rock chip	PH21350794	<0.5	7.66	<5	20	<0.5	2	8.3	<0.5	47	369	22	5.25	<10	0.41	<10	6.09	1065	1	0.94	201	40	2	<0.01	<5	37	150	<20	0.05	<10	<10	151	<10	43		0.001	0.014	0.009
D	EHLC021	366600	5381850	172	rock chip	PH21350794	<0.5	6.58	<5	50	<0.5	<2	3.85	<0.5	49	265	7	4.76	<10	0.05	<10	4.79	1500	1	4.17	342	20	<2	<0.01	<5	29	47	<20	0.04	<10	<10	123	<10	23		0.001	0.007	0.005
D	EHLC022	366530	5382037	162	rock chip	PH21350794	<0.5	7.16	<5	210	<0.5	2	5.79	<0.5	51	155	23	8.11	10	1.1	<10	4.18	1625	<1	1.32	99	70	<2	<0.01	<5	46	54	<20	0.1	<10	<10	266	<10	51		0.001	0.014	0.021
D	EHLC024	366396	5382237	152	rock chip	PH21350794	<0.5	1.62	<5	80	0.5	5	26.6	<0.5	10	105	5	1.1	<10	0.8	10	3.26	343	<1	0.25	51	80	<2	0.2	<5	4	261	<20	0.08	<10	<10	25	<10	20		0.001	<0.005	<0.001
D	EHSR001	365137	5382163	113	rock chip	PH21350794	<0.5	0.1	<5	<10	<0.5	<2	0.4	<0.5	133	1815	2	4.92	<10	0.02	<10	22	872	<1	0.03	3840	<10	<2	0.01	<5	3	4	<20	<0.01	<10	<10	10	<10	38		<0.001	<0.005	<0.001
D	EHSR002	365186	5382189	112	rock chip	PH21350794	<0.5	0.04	<5	10	<0.5	<2	0.09	<0.5	303	1885	1	5.5	<10	0.01	<10	22.4	2290	<1	0.01	3350	10	<2	0.01	<5	2	6	<20	<0.01	<10	<10	4	<10	46		<0.001	<0.005	<0.001
D	EHSR003	365223	5382242	116	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	<2	0.13	<0.5	122	1425	1	4.29	<10	0.01	<10	23	1020	<1	0.01	2820	10	<2	0.01	<5	2	4	<20	<0.01	<10	<10	5	<10	35		<0.001	<0.005	<0.001
D	EHSR004	365235	5382249	118	rock chip	PH21350794	<0.5	0.05	<5	10	<0.5	<2	0.04	<0.5	232	1750	1	5	<10	0.01	<10	22.9	2390	<1	0.01	3430	<10	<2	0.01	<5	4	6	<20	<0.01	<10	<10	10	<10	42		<0.001	<0.005	<0.001
D	EHSR005	365289	5382285	118	rock chip	PH21350794	<0.5	0.13	<5	10	<0.5	<2	1.16	<0.5	119	6140	2	4.99	<10	0.01	<10	20.9	1660	1	0.01	1500	<10	<2	<0.01	<5	5	5	<20	<0.01	<10	<10	19	<10	48		<0.001	0.005	<0.001
D	EHSR006	365290	5382285	118	rock chip	PH21350794	<0.5	9.86	<5	10	<0.5	4	21.9	<0.5	69	279	1	1.64	<10	0.01	<10	3.97	1925	2	0.01	1200	20	2	<0.01	<5	7	5	<20	0.01	<10	<10	33	<10	34		<0.001	<0.005	<0.001
D	EHSR007	365279	5382426	112	rock chip	PH21350794	<0.5	0.27	<5	<10	<0.5	<2	0.59	<0.5	101	1485	1	3.71	<10	<0.01	<10	22.8	475	<1	<0.01	2540	<10	<2	<0.01	<5	1	1	<20	<0.01	<10	<10	4	<10	25		<0.001	<0.005	<0.001
D	EHSR008	365282	5382430	112	rock chip	PH21350794	<0.5	0.2	<5	<10	<0.5	<2	1.94	<0.5	99	3960	2	5.44	<10	<0.01	<10	22	961	<1	<0.01	1590	<10	<2	0.01	<5	5	1	<20	<0.01	<10	<10	22	<10	46		<0.001	0.02	<0.001
D	EHSC009	365135	5382143	116	rock chip	PH21350794	<0.5	0.05	<5	<10	<0.5	<2	0.11	<0.5	157	1680	1	5.39	<10	<0.01	<10	23.6	935	<1	0.01	4510	<10	<2	0.01	<5	2	2	<20	<0.01	<10	<10	3	<10	37		0.001	<0.005	<0.001
D	EHSR010	365180	5381946	125	rock chip	PH21350794	<0.5	0.02	<5	<10	<0.5	<2	0.01	<0.5	155	1345	1	5.79	<10	<0.01	<10	22.8	901	1	<0.01	3610	<10	<2	0.01	<5	2	1	<20	<0.01	<10	<10	4	<10	38		0.002	<0.005	<0.001
D	EHSR011	365178	5381886	133	rock chip	PH21350794	<0.5	0.04	<5	<10	<0.5	<2	0.03	<0.5	105	1280	1	4.44	<10	<0.01	<10	22.4	546	<1	0.01	2800	<10	2	<0.01	<5	2	<1	<20	<0.01	<10	<10	5	<10	25		0.001	<0.005	<0.001
D	EHSR012	365153	5381749	146	rock chip	PH21350794	<0.5	0.01	<5	<10	<0.5	<2	0.02	<0.5	111	735	1	3.82	<10	<0.01	<10	24.3	643	<1	<0.01	3190	<10	<2	<0.01	<5	1	<1	<20	<0.01	<10	<10	2	<10	26		<0.001	<0.005	<0.001
D	EHSR013	365155	5381745	148	rock chip	PH21350794	<0.5	0.04	<5	<10	<0.5	4	0.03	<0.5	123	1630	1	5.21	<10	0.01	<10	24	755	<1	0.01	3080	10	<2	<0.01	<5	3	<1	<20	<0.01	<10	<10	5	<10	34		<0.001	<0.005	<0.001
D	EHSR014	365198	5381663	171	rock chip	PH21350794	<0.5	0.04	<5	<10	<0.5	2	0.01	<0.5	99	1495	1	4.28	<10	<0.01	<10	24.1	665	<1	<0.01	2510	<10	<2	0.01	<5	3	<1	<20	<0.01	<10	<10	7	<10	37		<0.001	<0.005	<0.001
D	EHSR015	365207	5381616	175	rock chip	PH21350794	<0.5	0.02	<5	<10	<0.5	<2	0.01	<0.5	147	2600	1	5.51	<10	0.01	<10	24.2	921	<1	0.01	3950	<10	<2	<0.01	<5	2	1	<20	<0.01	<10	<10	4	<10	33		<0.001	<0.005	<0.001
D	EHSR016	365207	5381644	174	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	2	0.02	<0.5	136	1900	1	5.04	<10	<0.01	<10	23.2	873	<1	<0.01	3800	<10	<2	<0.01	<5	3	2	<20	<0.01	<10	<10	6	<10	37		0.001	<0.005	<0.001
D	EHSR017	365206	5381589	179	rock chip	PH21350794	<0.5	0.02	<5	<10	<0.5	<2	0.01	<0.5	113	1580	2	3.87	<10	0.01	<10	23.9	632	<1	0.01	3600	<10	<2	<0.01	<5	1	1	<20	<0.01	<10	<10	1	<10	27		<0.001	<0.005	<0.001
D	EHSR018	365135	5381433	195	rock chip	PH21350794	<0.5	0.04	<5	<10	<0.5	2	0.01	<0.5	109	1775	1	4.53	<10	<0.01	<10	23.6	677	<1	<0.01	3180	<10	<2	<0.01	<5	3	2	<20	<0.01	<10	<10	7	<10	40		<0.001	<0.005	<0.001
D	EHSR019	365033	5381433	178	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	<2	0.01	<0.5	120	2160	2	4.35	<10	<0.01	<10	23.6	736	<1	0.01	3770	<10	<2	0.01	<5	2	1	<20	<0.01	<10	<10	6	<10	41		<0.001	<0.005	<0.001
D	EHSR022	365005	5381509	195	rock chip	PH21350794	<0.5	0.02	<5	<10	<0.5	<2	0.01	<0.5	121	3740	2	4.58	<10	<0.01	<10	24.8	626	<1	<0.01	2730	<10	<2	<0.01	<5	2	1	<20	<0.01	<10	<10	4	<10	39		<0.001	<0.005	<0.001
D	EHSR023	365019	5381528	204	rock chip	PH21350794	<0.5	0.01	<5	<10	<0.5	<2	0.01	<0.5	128	1630	1	4.77	<10	<0.01	<10	24.5	838	<1	<0.01	2880	<10	<2	<0.01	<5	2	1	<20	<0.01	<10	<10	3	<10	28		<0.001	<0.005	<0.001
D	EHSR024	365033	5381541	207	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	<2	0.02	<0.5	167	2010	1	4.74	<10	<0.01	<10	23.8	1495	1	<0.01	3250	<10	2	<0.01	<5	3	3	<20	<0.01	<10	<10	5	<10	50		0.001	<0.005	<0.001
D	EHSR025	365059	5381552	205	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	<2	0.02	<0.5	123	1815	1	4.79	<10	<0.01	<10	23.6	1125	<1	<0.01	2890	<10	<2	<0.01	<5	3	2	<20	<0.01	<10	<10	6	<10	49		<0.001	<0.005	0.001
D	EHSR026	365076	5381556	203	rock chip	PH21350794	<0.5	0.03	<5	10	<0.5	3	0.03	<0.5	241	3950	2	6.22	<10	0.01	<10	22.5	2920	<1	<0.01	3900	10	<2	<0.01	<5	2	7	<20	<0.01	<10	<10	7	<10	60		<0.001	<0.005	<0.001
D	EHSR027	365093	5381574	204	rock chip	PH21350794	<0.5	0.01	<5	<10	<0.5	<2	0.02	<0.5	143	1300	2	4.7	<10	<0.01	<10	23.5	974	<1	<0.01	3240	<10	<2	<0.01	<5	2	1	<20	<0.01	<10	<10	3	<10	36		0.001	<0.005	<0.001
D	EHSR028	365104	5381592	209	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	<2	0.01	<0.5	159	1745	3	5	<10	<0.01	<10	23.2	1410	<1	<0.01	3340	<10	<2	<0.01	<5	3	1	<20	<0.01	<10	<10	8	<10	43		<0.001	<0.005	<0.001
D	EHSR029	365124	5381590	202	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	<2	0.02	<0.5	253	3440	2	6.21	<10	<0.01	<10	22.2	1780	<1	<0.01	4250	<10	<2	<0.01	<5	3	2	<20	<0.01	<10	<10	6	<10	54		0.001	<0.005	<0.001
D	EHSR030	365149	5381604	200	rock chip	PH21350794	<0.5	0.05	<5	<10	<0.5	<2	0.03	<0.5	139	1890	1	4.51	<10	<0.01	<10	22.5	1225	<1	<0.01	3270	<10	<2	0.01	<5	4	3	<20	<0.01	<10	<10	9	<10	56		<0.001	<0.005	<0.001
D	EHSR031	365137	5381619	199	rock chip	PH21350794	<0.5	0.04	<5	<10	<0.5	3	0.01	<0.5	97	1585	1	3.77	<10	<0.01	<10	23.8	611	<1	<0.01	2410	<10	<2	0.01	<5	3	1	<20	<0.01	<10	<10	10	<10	39		0.001	<0.005	<0.001
D	EHSR032	365161	5381629	184	rock chip	PH21350794	<0.5	0.03	<5	<10	<0.5	<2	0.01	<0.5	100	1330	1	4.4	<10	<0.01	<10	24.2	689	<1	<0.01	2470	<10	<2	0.01	<5	3	1	<20	<0.01	<10	<10	9	<10	37		0.001	<0.005	<0.001
D	EHSR033	365183	5381625	173	rock chip	PH21350794	<0.5	0.04	<5	<10	<0.5	<2	0.01	<0.5	102	1275	1	3.98	<10	<0.01	<10	24.9	743	<1	<0.01	2680	<10	<2	0.01	<5	3	2	<20	<0.01	<10	<10	7	<10	40		0.001	<0.005	<0.001
D	EHSR039	365210	5381976	117	rock chip	PH22020426	<0.5	0.02	<5	<10	<0.5	3	0.02	<0.5	135	1415	1	4.29	<10	0.01	<10	22.6	1010	<1	0.01	3100	<10	3	0.01	<5	1	4	<20	<0.01	<10	<10	3	<10	35		<0.001	<0.005	0.002
D	EHSR040	365266	5381997	116	rock chip	PH22020426	<0.5	0.03	<5	10	<0.5	2	0.01	<0.5	174	1995	<1	5.04	<10	0.01	<10	21.1	1420	<1	0.01	3280	<10	<2	0.01	<5	2	2	<20	<0.01	<10	<10	5	<10	39		<0.001	<0.005	<0.001
D	EHSR041	365315	5382010	117	rock chip	PH22020426	<0.5	0.05	<5	<10	<0.5	4	0.01	<0.5	146	5060	<1	4.63	<10	<0.01	10	22	1330	<1	0.01	4630	10	3	<0.01	<5	2	2	<20	<0.01	<10	<10	11	<10	46		<0.001	<0.005	<0.001
D	EHSR042	365338	5382005	117	rock chip	PH22020426	<0.5	0.05	<5	<10	<0.5	6	0.03	<0.5	133	1930	<1	5.3	<10	<0.01	<10	22.4	347	<1	0.01	3400	<10	2	0.01	<5	4	3	<20	<0.01	<10	<10	11	<10	43		<0.001	<0.005	<0.001
D	EHSR043	365398	5382056	119	rock chip	PH22020426	<0.5	0.07	<5	<10	<0.5	<2	0.01	<0.5	97	1835	<1	4.93	<10	<0.01	<10	23.4	519	<1	0.01	2520	<10	2	0.01	<5	3	2	<20	<0.01	<10	<10	7	<10	37		<0.001	<0.005	<0.001
D	EHSR044	365423	5382067	123	rock chip	PH22020426	<0.5	0.02	<5	10	<0.5	3	0.01	<0.5	292	1380	<1	4.94	<10	<0.01	<10	23	2020	<1	0.01	3580	10	2	<0.01	<5	2	2	<20	<0.01	10	<10	3	<10	35		<0.001	<0.005	<0.001
D	EHSR045	365445	5382085	126	rock chip	PH22020426	<0.5	0.04	<5	<10	<0.5	4	0.01	<0.5	141	1590	<1	4.61	<10	<0.01	<10	22.8	804	<1	0.01	3290	<10	2	0.01	<5	3	1	<20	<0.01	<10	<10	7	<10	33		<0.001	<0.005	<0.001
D	EHSR046	365470	5382084	127	rock chip	PH22020426	<0.5	0.07	<5	<10	<0.5	<2	0.03	<0.5	130	1390	<1	4.66	<10	<0.01	<10	22.8	1185	<1	0.01	2890	<10	<2	0.01	<5	3	3	<20	<0.01	10	<10	8	<10	39		<0.001	<0.005	<0.001
D	EHSR047	365497	5382087	125	rock chip	PH22020426	<0.5	0.04	<5	10	<0.5	3	0.02	<0.5	339	1710	<1	6.16	<10	<0.01	<10	21.6	2320	<1	0.01	3370	10	2	<0.01	<5	3	5	<20	<0.01	<10	<10	6	<10	43		<0.001	<0.005	<0.001
D	EHSR048	365533	5382106	129	rock chip	PH22020426	<0.5	0.04	<5	<10	<0.5	3	0.02	<0.5	236	2220	<1	5.79	<10	<0.01	<10	21.7	1620	<1	0.01	3660	10	<2	0.01	<5	3	3	<20	<0.01	<10	<10	7	<10	39		<0.001	<0.005	<0.001
D	EHSR049	365577	5382134	131	rock chip	PH22020426	<0.5	0.05	<5	<10	<0.5	<2	0.01	<0.5	110	1555	1	4.73	<10	<0.01	<10	23.4	674	<1	<0.01	2670	10	4	0.01	<5	3	1	<20	<0.01	<10	<10	8	<10	37		<0.001	<0.005	<0.001
D	EHSR050	365595	5382154	134	rock chip	PH22020426	<0.5	0.07	<5	<10	<0.5	<2	0.01	<0.5	106	2020	<1	4.35	<10	<0.01	<10	23.2	838	<1	<0.01	2950	<10	2	<0.01	<5	3	1	<20	<0.01	<10	<10	7	<10	42		<0.001	<0.005	<0.001
D	EHSR051	365625	5382180	137	rock chip	PH22020426	<0.5	0.06	<5	<10	<0.5	2	0.01	<0.5	95	1145	<1	4.48	<10	<0.01	<10	23.4	600	<1	<0.01	2170	<10	<2	0.01	<5	3	1	<20	<0.01	<10	<10	7	<10	35		<0.001	<0.005	<0.001
D	EHSR052	365673	5382199	143	rock chip	PH22020426	<0.5	0.25	<5	<10	<0.5	<2	2.04	<0.5	71	1320	<1	5.65	<10	0.02	<10	19.15	1295	<1	0.02	360	<10	3	<0.01	<5	7	28	<20	0.01	<10	<10	14	<10	51		<0.001	0.005	<0.001
D	EHSR053	365708	5382201	153	rock chip	PH22020426	<0.5	0.22	<5	<10	<0.5	<2	9.11	<0.5	63	1230	<1	5.84	<10	<0.01	<10	15.55	1560	<1	0.01	329	10	5	0.01	<5	5	26	<20	0.01	<10	<10	10	<10	26		<0.001	0.009	<0.001
D	EHSR054	365736	5382217	163	rock chip	PH22020426	<0.5	0.11	<5	<10	<0.5	3	1.58	<0.5	104	2130	<1	6.73	<10	<0.01	<10	21.1	784	1	<0.01	2200	10	3	0.01	<5	5	4	<20	<0.01	<10	<10	13	<10	46		<0.001	<0.005	<0.001
D	EHSR055	365754	5382238	176	rock chip	PH22020426	<0.5	0.08	<5	<10	<0.5	3	0.06	<0.5	130	1560	<1	4.61	<10	<0.01	<10	23.6	1075	<1	<0.01	2940	<10	<2	0.01	<5	4	3	<20	<0.01	<10	<10	10	<10	41		<0.001	<0.005	<0.001
D	EHSR056	365776	5382252	185	rock chip	PH22020426	<0.5	0.07	<5	<10	<0.5	3	0.04	<0.5	110	1625	<1	4.96	<10	<0.01	<10	23.7	958	<1	<0.01	2840	<10	4	0.01	<5	4	1	<20	<0.01	<10	<10	9	<10	39		<0.001	<0.005	<0.001
D	EHSR057	365812	5382277	185	rock chip	PH22020426	<0.5	0.08	<5	<10	<0.5	3	0.02	<0.5	127	1630	<1	4.73	<10	<0.01	<10	23.5	1070	<1	<0.01	2770	<10	4	0.01	<5	4	2	<20	<0.01	<10	<10	11	<10	44		<0.001	<0.005	0.001

D	EHSR058	365837	5382294	182	rock chip	PH22020426	<0.5	0.07	<5	10	<0.5	2	0.02	<0.5	114	1390	2	4.32	<10	<0.01	<10	23.8	1295	<1	<0.01	2960	10	<2	0.01	<5	4	1	<20	<0.01	<10	<10	10	<10	46		<0.001	<0.005	<0.001	
D	EHSR059	365864	5382311	185	rock chip	PH22020426	<0.5	0.45	5	<10	<0.5	<2	0.01	<0.5	97	3140	5	5.81	<10	<0.01	10	22.6	816	1	0.01	1230	10	9	0.02	<5	8	1	<20	0.01	<10	<10	20	<10	43		<0.001	0.013	0.001	
D	EHSR060	365868	5382307	184	rock chip	PH22020426	<0.5	0.53	<5	<10	<0.5	3	0.01	<0.5	85	2210	<1	3.45	<10	<0.01	<10	22.5	1020	<1	<0.01	826	<10	<2	0.01	<5	6	<1	<20	0.01	<10	<10	17	<10	36		<0.001	0.011	0.001	
D	EHSR068	365002	5381796	209	rock chip	PH22058745	<0.5	0.02	<5	<10	<0.5	<2	0.01	0.5	120	1410	1	4.31	<10	0.01	<10	24.4	838	<1	<0.01	3080	10	2	0.01	<5	2	6	<20	<0.01	<10	<10	4	<10	33		0.001	<0.005	<0.001	
D	EHSR069	365029	5381801	195	rock chip	PH22058745	<0.5	0.06	<5	<10	<0.5	<2	0.02	0.6	102	1725	<1	3.95	<10	<0.01	<10	24.8	763	<1	<0.01	2600	<10	3	0.01	<5	4	3	<20	<0.01	<10	<10	6	<10	51		0.001	<0.005	<0.001	
D	EHSR070	365048	5381821	181	rock chip	PH22058745	<0.5	0.03	<5	<10	<0.5	<2	0.02	<0.5	114	1535	1	4.51	<10	<0.01	<10	24.4	785	<1	<0.01	2800	10	2	0.01	<5	3	4	<20	<0.01	<10	<10	6	<10	45		0.001	<0.005	<0.001	
D	EHSR071	365087	5381857	153	rock chip	PH22058745	<0.5	0.01	<5	<10	<0.5	<2	0.03	0.6	169	1240	2	4.83	<10	0.01	<10	24	1355	<1	<0.01	3280	10	<2	0.01	<5	2	7	<20	<0.01	<10	<10	2	<10	40		0.001	<0.005	<0.001	
D	EHSR072	365134	5381869	138	rock chip	PH22058745	<0.5	0.03	<5	10	<0.5	<2	0.03	<0.5	282	2230	1	5.43	<10	0.01	<10	22.9	3390	<1	<0.01	4050	<10	2	0.01	<5	3	7	<20	<0.01	<10	<10	4	<10	60		0.001	<0.005	<0.001	
D	EHSR073	365533	5382404	159	rock chip	PH22058745	<0.5	0.16	<5	<10	<0.5	<2	1.6	0.5	92	1810	1	5.04	<10	0.01	<10	21.7	1015	<1	<0.01	1710	<10	2	0.01	<5	6	4	<20	0.01	<10	<10	14	<10	49		0.001	0.005	<0.001	
D	EHSR074	365511	5382386	156	rock chip	PH22058745	<0.5	0.06	<5	<10	<0.5	4	0.03	<0.5	148	1530	1	4.85	<10	<0.01	10	23.7	1250	<1	<0.01	2710	<10	<2	0.01	<5	3	3	<20	<0.01	<10	<10	8	<10	45		0.001	<0.005	<0.001	
D	EHSR075	365477	5382368	146	rock chip	PH22058745	<0.5	0.08	<5	<10	<0.5	4	0.02	<0.5	191	2880	<1	5.36	<10	<0.01	10	22.6	1355	<1	<0.01	3310	10	<2	0.01	<5	3	2	<20	<0.01	<10	<10	8	<10	58		0.001	<0.005	<0.001	
D	EHSR076	365459	5382351	139	rock chip	PH22058745	<0.5	0.04	<5	<10	<0.5	2	0.02	<0.5	92	1440	<1	3.67	<10	<0.01	10	23.2	615	<1	<0.01	2040	<10	<2	0.01	<5	3	<1	<20	<0.01	<10	<10	4	<10	27		0.001	<0.005	<0.001	
D	EHSR077	365434	5382331	129	rock chip	PH22058745	<0.5	0.04	<5	<10	<0.5	<2	0.02	<0.5	96	1250	1	3.97	<10	<0.01	10	23.7	641	<1	<0.01	2160	<10	<2	0.01	<5	3	<1	<20	<0.01	<10	<10	5	<10	33		0.001	<0.005	<0.001	
D	EHSR078	365410	5382311	124	rock chip	PH22058745	<0.5	0.04	<5	<10	<0.5	4	0.02	<0.5	130	1655	1	4.99	<10	<0.01	10	23.7	820	<1	<0.01	2570	<10	<2	0.01	<5	3	1	<20	<0.01	<10	<10	7	<10	40		0.001	<0.005	<0.001	
D	EHSR079	365389	5382291	120	rock chip	PH22058745	<0.5	0.03	<5	<10	<0.5	<2	0.02	<0.5	129	1735	1	5.1	<10	<0.01	10	23.2	995	<1	<0.01	2620	<10	3	0.01	<5	3	3	<20	<0.01	<10	<10	6	<10	45		0.001	<0.005	<0.001	
D	EHSR080	365359	5382289	117	rock chip	PH22058745	<0.5	0.03	<5	<10	<0.5	2	0.01	<0.5	177	1595	1	4.61	<10	<0.01	10	23.4	1055	<1	<0.01	3350	<10	<2	0.01	<5	3	1	<20	<0.01	<10	<10	7	<10	40		<0.001	<0.005	<0.001	
D	EHSR081	365333	5382285	115	rock chip	PH22058745	<0.5	0.03	<5	10	<0.5	<2	0.02	<0.5	364	1775	1	5.24	<10	0.01	10	23.1	2200	<1	0.01	3310	10	<2	0.01	<5	3	4	<20	<0.01	<10	<10	6	<10	44		0.004	<0.005	<0.001	
D	EHSR082	365285	5382299	111	rock chip	PH22058745	<0.5	0.03	<5	<10	<0.5	2	0.01	<0.5	119	5020	<1	5.29	<10	<0.01	10	23.8	483	1	<0.01	2810	<10	2	<0.01	<5	1	1	<20	<0.01	<10	<10	4	<10	41		0.001	<0.005	<0.001	
D	EHSR083	365637	5381879	133	rock chip	PH22058745	<0.5	0.02	<5	<10	<0.5	2	0.01	<0.5	95	1350	1	3.83	<10	<0.01	10	24.7	462	1	<0.01	2170	<10	2	0.01	<5	2	1	<20	<0.01	<10	<10	6	<10	29		0.001	<0.005	<0.001	
D	EHSR084	365619	5381860	126	rock chip	PH22058745	<0.5	0.11	<5	<10	<0.5	6	0.87	<0.5	109	4270	1	4.86	<10	0.01	10	23	1245	<1	0.01	1015	<10	<2	<0.01	<5	6	4	<20	<0.01	10	<10	14	<10	44		0.001	0.008	<0.001	
D	EHSR085	365600	5381878	125	rock chip	PH22058745	<0.5	0.26	<5	<10	<0.5	<2	4.53	<0.5	74	1005	1	4.36	<10	<0.01	<10	19.15	1660	<1	0.01	736	<10	<2	<0.01	<5	7	2	<20	0.01	<10	<10	18	<10	37		0.001	<0.005	0.001	
D	EHSR086	365571	5381860	124	rock chip	PH22058745	<0.5	0.04	<5	30	<0.5	2	0.05	<0.5	441	3220	1	8.08	<10	0.01	<10	20.1	5240	<1	0.01	4520	<10	2	0.01	<5	5	23	<20	<0.01	<10	<10	8	<10	64		0.001	<0.005	<0.001	
D	EHSR087	365535	5381852	127	rock chip	PH22058745	<0.5	0.01	<5	<10	<0.5	<2	0.02	<0.5	119	1625	1	5.22	<10	<0.01	10	22.7	764	<1	<0.01	3300	<10	<2	<0.01	<5	1	2	<20	<0.01	<10	<10	2	<10	39		0.001	<0.005	<0.001	
D	EHSR088	365510	5381848	126	rock chip	PH22058745	<0.5	0.04	<5	10	<0.5	2	0.05	<0.5	249	5020	1	6.04	<10	0.01	10	21.2	3880	<1	0.01	3660	<10	2	0.01	<5	2	6	<20	<0.01	<10	<10	5	<10	45		<0.001	<0.005	<0.001	
D	EHSR089	365459	5381815	123	rock chip	PH22058745	<0.5	0.02	<5	20	<0.5	<2	0.02	<0.5	158	1705	1	4.94	<10	0.01	10	22.7	2410	<1	<0.01	3070	<10	<2	0.01	<5	3	17	<20	<0.01	<10	<10	5	<10	46		0.001	<0.005	<0.001	
D	EHSR090	365432	5381795	123	rock chip	PH22058745	<0.5	0.01	<5	<10	<0.5	3	0.02	<0.5	95	1250	<1	3.44	<10	<0.01	10	23.2	488	<1	<0.01	2260	<10	3	0.01	<5	1	<1	<20	<0.01	<10	<10	1	<10	32		0.001	<0.005	<0.001	
D	EHSR091	365368	5381780	120	rock chip	PH22058745	<0.5	0.01	<5	10	<0.5	5	0.02	<0.5	167	1540	1	5.32	<10	0.01	10	22.2	2250	<1	0.01	3140	10	<2	0.01	<5	1	2	<20	<0.01	<10	<10	2	<10	32		0.001	<0.005	<0.001	
D	EHSR092	365291	5381742	127	rock chip	PH22058745	<0.5	0.04	<5	20	<0.5	<2	0.01	<0.5	568	2420	<1	6.38	<10	<0.01	10	22.2	4740	<1	<0.01	4220	10	4	0.01	<5	3	3	<20	<0.01	<10	<10	5	<10	57		0.001	<0.005	<0.001	
D	EHSR093	365274	5381720	133	rock chip	PH22058745	<0.5	0.03	9	10	<0.5	6	0.02	<0.5	388	1680	4	6.24	<10	0.01	10	22.2	3130	1	0.01	3420	10	<2	0.01	<5	2	6	<20	<0.01	<10	<10	3	<10	47		<0.001	<0.005	<0.001	
D	EHSR094	365262	5381698	140	rock chip	PH22058745	<0.5	0.04	<5	20	<0.5	4	0.02	<0.5	426	3060	1	5.41	<10	<0.01	10	22.6	3690	<1	<0.01	4650	<10	<2	0.01	<5	2	9	<20	<0.01	<10	<10	4	<10	50		0.001	<0.005	<0.001	
D	EHSR095	365238	5381684	152	rock chip	PH22058745	<0.5	0.07	<5	20	<0.5	7	0.02	<0.5	318	1685	<1	4.94	<10	<0.01	10	22.9	3860	<1	<0.01	3840	10	2	0.01	<5	3	5	<20	<0.01	<10	<10	6	<10	57		0.001	<0.005	<0.001	
D	EHSR096	365221	5381663	164	rock chip	PH22058745	<0.5	0.04	<5	<10	<0.5	4	0.02	<0.5	150	1840	1	5.41	<10	<0.01	10	23	1050	<1	<0.01	3480	<10	<2	0.01	<5	3	4	<20	<0.01	<10	<10	8	<10	50		0.001	<0.005	<0.001	
D	EHSR097	365600	5381902	135	rock chip	PH22058745	<0.5	0.01	<5	<10	<0.5	4	0.01	<0.5	130	1135	1	4.16	<10	<0.01	10	23.1	1075	<1	<0.01	3890	<10	<2	0.01	<5	2	1	<20	<0.01	<10	<10	3	<10	34		0.001	<0.005	<0.001	
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Appendix C: Flora and Fauna Survey Report for Drill Site Clearance

Venture Minerals Drill Test Sites, Mt Lindsay

Natural Values Assessment

22nd April 2022

For Venture Minerals

PAS066

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Acknowledgements

Project	Venture Minerals Drill Test Sites
Location	Mt Lindsay
Proponent	Venture Minerals
Proponent contact	Alexandra Colwell
NBES Job Code	PAS066
NBES Project Manager	Phillip Barker – pbarker@northbarker.com.au
Field Surveys	Fiona Walsh
Field Dates	March 22nd – 24th 2022
Reporting	Fiona Walsh
Mapping	

Version	**Date**	**Author / Comment**
Draft 0.1	6th April 2022	Fiona Walsh
Draft 1.0	22 April	P Barker Review

Summary

Venture Minerals owns the Mt Lindsay Tin-Tungsten mine, including all the surrounding prospects. Recently, Venture has focussed efforts at Mt Lindsay on identifying additional high-grade tin/tungsten targets near the Mt Lindsay deposits.

There are 24 sites which are proposed for consideration in the exploration drilling program.

Vegetation

There are four native vegetation communities present across the site. None are threatened and all are well reserved.

- *Nothofagus – Atherosperma* rainforest (RMT)
- *Nothofagus – Phyllocladus* short rainforest (RMS)
- *Eucalyptus nitida* forest over rainforest (WNR)
- *Eucalyptus nitida* dry forest and woodland (DNI)

Threatened flora

Micrantheum serpentinum is present at SerpR1rev. It is listed as rare under the Tasmanian *Threatened Species Protection Act 1995* (TSPCA).

Threatened fauna and threatened fauna habitat

There are no significant fauna values present, however there are large habitat trees present at Limestone1. Disturbance should be excluded within 20m of these trees to protect the root zones.

Weeds

No declared weeds were found at the site.

Legislation

Environment Protection and Biodiversity Conservation Act 1999:

No MNES present therefore no action needed

Threatened Species Protection Act 1995:

A permit is required if disturbance to *Micrantheum serpentinum* is anticipated.

Tasmanian Weed Management Act:

No declared weeds present

Table of Contents

1 Introduction

1.1 Background

Venture Minerals owns the Mt Lindsay Tin-Tungsten mine, including all the surrounding prospects. Recently, Venture has focussed efforts at Mt Lindsay on identifying additional high-grade tin/tungsten targets near the Mt Lindsay deposits.

There are 24 sites which are proposed for consideration in the exploration drilling program.

North Barker Ecosystem Services (NBES) undertook a natural values survey of the drill sites in March 2022. The findings of these surveys, with recommendations and a comment on relevant legislation, are presented in this Natural Values Report (NVA).

1.2 Project and survey areas

The project area is located ~20 km west of Tullah off the Pieman Road within the Meredith Range Regional Reserve. The land is in the West Coast Council area and is in the West bioregion[1] (Figure 1).

Each drill site was surveyed within a 25 m radius.

[1] IBRA 7 (2012)

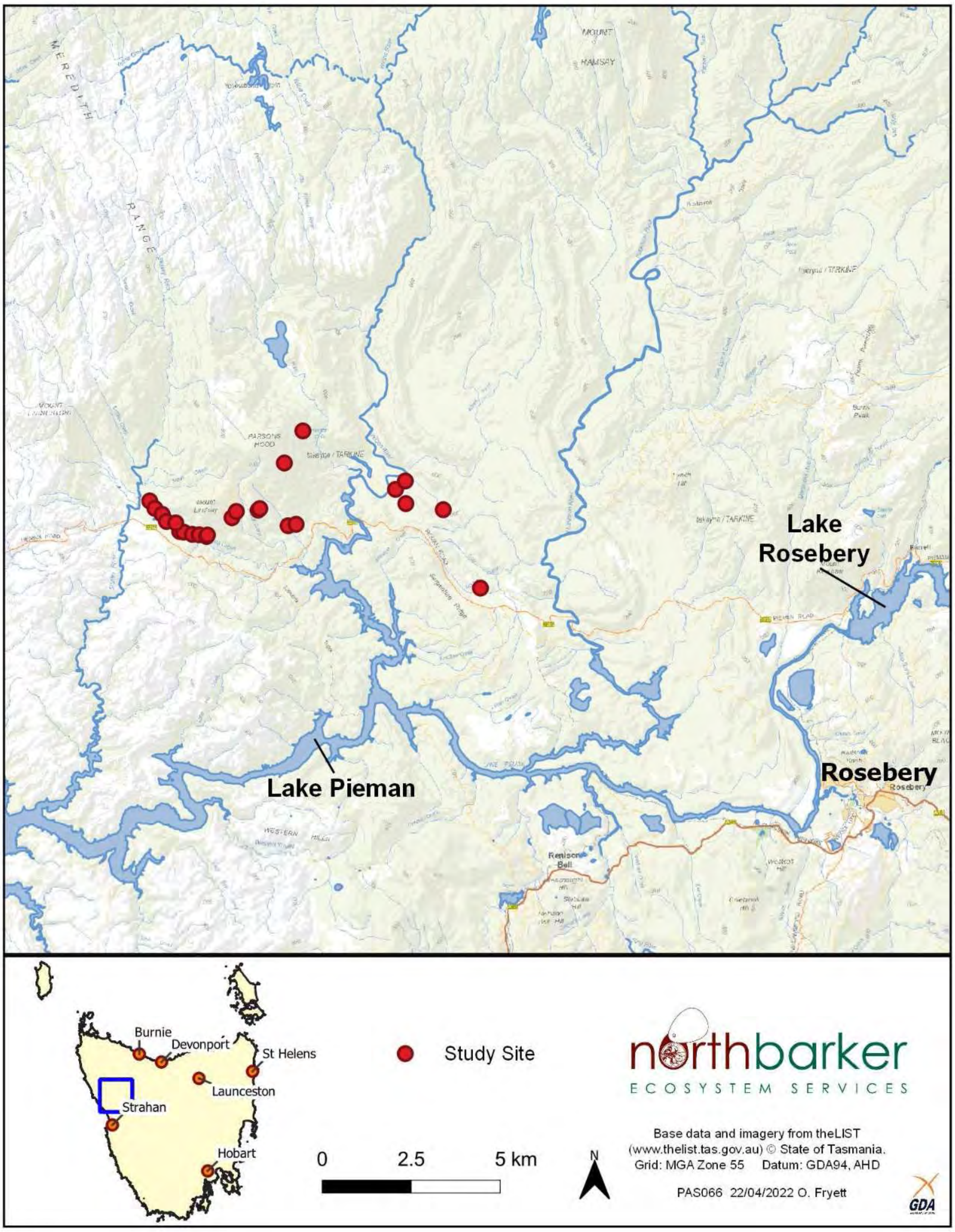

Figure 1: Landscape context of drill sites

2 Methods

This assessment was undertaken in accordance with the 'Guidelines for Natural Values Surveys – Terrestrial Development Proposals'[2].

The following sources were used for biological records for the region:

- TASVEG version 4.0 digital layer[3]
- Natural Values Atlas (NVA) - all threatened species records within 500m and 5 km of the survey area and threatened fauna considered possible to occur in suitable habitat[4]
- Various thematic layers from LISTmap

The survey of plant species composition consisted of a meandering area search[5], with the level of survey effort proportional to the local values and the likelihood of the habitat supporting conservation significant species. Vegetation was classified according to TASVEG 4.0 units[6].

Plant species list was taken and classified according to the latest census of Tasmanian plants[7]. Species with threatened or declared status under the Tasmanian Threatened Species Protection Act 1995 (TSPA), the Commonwealth Environment Protection Biodiversity Conservation Act 2000 (EPBCA), or the Tasmanian Weed Management Act 1999 (WMA) were noted, and GPS located as encountered.

The survey area was searched for the potential presence, habitat, and signs (e.g. scats, tracks, nests) of threatened fauna concurrently with the botanical survey.

2.1 Limitations

The field survey was undertaken in early autumn. Some seasonal species may have been overlooked or seasonally absent. To compensate for these limitations, data from the present survey are supplemented with data from the Tasmanian *Natural Values Atlas* (NVA)[8]. These data include records of all threatened species known to occur, or with the potential to occur, up to 5 km from the survey area.

Three of the drill test sites were unable to be safely accessed due to nature of the terrain and vegetation cover. These sites were assessed using aerial imagery.

Data points were recorded on a handheld GPS with an average accuracy < 10 m.

[2] DPIPWE (2015)
[3] Kitchener and Harris (2013)
[4] DPIPWE (2021) nvr_1_06-Apr-2022
[5] Goff *et al.* (1982)
[6] DPIPWE (2020)
[7] de Salas and Baker (2021)
[8] DPIPWE (2021) nvr_1_06-Apr-2022

3 Results - Biological values

3.1 Vegetation

There are four native vegetation communities present across the site. None are threatened and all are well reserved.

- *Nothofagus – Atherosperma* rainforest (RMT)
- *Nothofagus – Phyllocladus* short rainforest (RMS)
- *Eucalyptus nitida* forest over rainforest (WNR)
- *Eucalyptus nitida* dry forest and woodland (DNI)

Vegetation across much of the project area is dominated by rainforest communities, with intersections by wet *Eucalyptus* forest and dry *Eucalyptus* forests .

Overall there is a relatively low species diversity due to the domination of rainforest communities and the small sample areas at each drill site (20 m circumference). The exception are the four which are within Eucalyptus nitida dry forest on an ultra-mafic/serpentine rich substrate, these sites have a higher diversity.

Table 1 lists each site and the vegetation community that dominates it. Appendix B includes an index to maps of each site.

Table 1: Vegetation communities and comments relating to locations and natural values for each proposed drill site

Map (App B)	Site	Easting	Northing	TASVEG community	Comments
1	SS02	358400	5382115	RMT	
1	SS03	358545	5381905	RMT	ATV track
1	SS04	358750	5381740	RMT	
1	SS05	358870	5381540	RMT	
1	SS06	359130	5381500	RMT	
1	SS07	359240	5381260	RMT	
2	SS08	359355	5381240	RMT	
2	SS09	359598	5381178	RMT	4WD track
2	SS10 (Salmons5)	359790	5381165	RMT	4WD track
2	SS11rev2	359995	5381120	RMT	4WD track
2	SS12	360020	5381160	RMT	4WD track
3	Main1	361444	5381858	RMT	Existing drill pad
3	No1	361490	5381900	RMT	Existing drill pad
3	WT1	360710	5381645	RMT	Existing drill pad On 4WD track
3	WT2	360830	5381820	RMT	Existing drill pad
4	SECK	362510	5381460	RMT	
4	Main2	362286	5381420	RMT	Existing drill pad
5	Eastern1	362180	5383180	RMS	Unable to access
6	Fareast	362700	5384080	RMS	Unable to access
7	Serp2	365590	5382040	DNI	Unable to access
7	Limestone2	365576	5382675	DNI	Up slope of ATV track
7	SerpR1rev	365300	5382440	DNI	Micrantheum serpentinum present. ATV track
8	Merton1	367685	5379670	DNI	Existing drill pad
9	Limestone1	366640	5381870	WNR	Large trees present.

3.1.1 *Nothofagus – Atherosperma* rainforest (RMT)

RMT is extensive across the project area and is the community in which majority of the drill sites are located. Distribution of RMT is influenced by lack of fire and other disturbances. Structurally it ranges between callidendrous (open understory) and thamnic (more shrubby understory). RMT grades to RMS with some overlapping species particularly where the two communities meet.

Canopy heights can exceed 30 m with mature old growth *Nothofagus cunninghamii* dominating. *Atherosperma moschatum*, *Eucryphia lucida*, *Nothofagus cunninghamii* and *Phyllocladus aspleniifolius* area also present, as large canopy trees as well as establishing saplings. The shrub layer is comprised mostly of *Anodopetalum biglandulosum*, *Anopterus glandulosa* and *Cenarrhenes nitida*.

Ferns are present at vary densities, including *Dicksonia antarctica*, *Histiopteris incisa*, *Blechnum nudum* and epiphytic ferns such as *Hymenophyllum rarum* ,*Grammitis billardierei* and *Microsorum pustulatum*.

Drill sites within RMT include: SS02, SS03, SS07, SS08, SS09, SS10, SS11rev2, SS12, Main1, Main2, No1, WT1, WT2, SS04, SS05, SS06 and SECK.

This community is well reserved and not threatened.

Plate 1: Existing drill pad on access track at Main1

Plate 2: Example of RMT at drill site SS06

Plate 3: Example of RMT at drill site SS03

3.1.2 *Nothofagus – Phyllocladus* short rainforest (RMS)

RMS has a particular association to riparian and lower laying areas of rainforest and grades from RMT. Canopy trees are up to 15 m tall with a dominance of *Phyllocladus aspleniifolius*, mixed with other rainforest species including *Nothofagus cunninghamii* and *Eucryphia lucida*. Small trees and shrubs are moderately diverse and quite often form a thick tangled understory. Species include Anodopetalum biglandulosum, Anopterus glandulosa and Cenarrhenes nitida.

Drill sites within RMS include Eastern1 and Fareast. An attempt was made to access these sites by foot, however the steep terrain and thick nature of the forest resulted in us only getting part way. Aerial imagery and photos of the site provided by Venture have been used to determine the vegetation type as RMS.

Plate 4: Looking out from RMS

Plate 5: RMS located on the way to Eastern1 and Fareast drill sites

3.1.3 *Eucalyptus nitida* forest over rainforest (WNR)

WNR occupies only one drill site at Limestone1. It has a tall canopy of large Eucalyptus nitida ranging from 40 cm DBH to over 1 m. There are two large habitat trees within this site, both are over 1 m DBH, one has a broken top and the other is quite healthy. Visibility to the top of the canopy was very low. *Nothofagus cunninghamii*, *Phyllocladus aspleniifolius* and *Eucryphia lucida* also form part of the canopy. The understory is open with shrubs such as *Anodopetalum biglandulosum*, *Anopterus glandulosa*, *Monotoca glauca*, *Pomaderris apetala* and *Lomatia tinctoria.*

Limestone1 is the only drill site located within this community.

This community is well reserved and not under threat.

Plate 6: Large habitat tree located at Limestone1

3.1.4 *Eucalyptus nitida* dry forest and woodland (DNI)

DNI is comprised of a diverse mix of woodland species with the community in this area influenced predominantly by its geology (ultra-mafic/serpentine) and relatively frequent fire history.

Eucalyptus nitida forms a sparse canopy with a height of 10-12 m. The shrub layer consists mainly of *Acacia mucronata*, *Allocasuarina zephyrea*, *Banksia marginata* and *Leptospermum scoparium* with a dense thicket of *Bauera rubioides* and sedges such as *Gahnia grandis* and *Lepidosperma elatius*.

Within this community there are numerous small creeks/channels which are fed by groundwater which occasionally open into larger areas which lack taller vegetation cover. Within these areas there is a concentration of species which tend to favour wetter and more open areas, such as the threatened species of *Micrantheum serpentinum*, *Euphrasia amplidens* and *Epacris glabella*.

Drill sites within DNI include SerpR1rev, which is located on an already existing access track and Limestone2 and SerpR2 which are both located within densely vegetated areas of the site.

This community is well reserved and not under threat.

Plate 7: Example of scrubby vegetation within DNI

Plate 8: Example of DNI showing canopy and understory

3.2 Threatened flora

Threatened flora recorded within the surveys is restricted to one species within one proposed drill site. Ten plants of *Micrantheum serpentinum* was recorded within the 25 m radius at SERP2. The access track which continues on from this site and will potentially be used to access sites further on has quite a number of plants along it, these have been outlined in Figure 2.

There are two other threatened species, *Epacris glabella* (TSPA endangered, EPBCA endangered)and *Euphrasia amplidens* (TSPA endangered) which are also found within the vicinity, but not within the footprint of any proposed drill sites. *Euphrasia amplidens* is restricted to the open areas where the creek lines transect the DNI, and *Epacris glabella* to similar areas where the vegetation is less dense. These species should not be impacted as long as the proposed works stay clear of the open, less vegetated areas surrounding creek lines.

3.2.1 Micrantheum serpentinum

This is a small shrub which is restricted to ultra-mafic/serpentine substrates in the Tasmanian northwest. It favours sites with disturbance and is concentrated along edges of DNI, including 4WD tracks as well as unused ATV and walking tracks. The species is also found through the clear areas which coincide with the creek lines which intersect the surrounding area.

This species is only found within the survey area at drill site SerpR1rev where around 10 plants were recorded as well as following the access track heading east.

Micrantheum serpentinum is listed as rare under the TSPA.

Plate 9: Micrantheum serpentinum

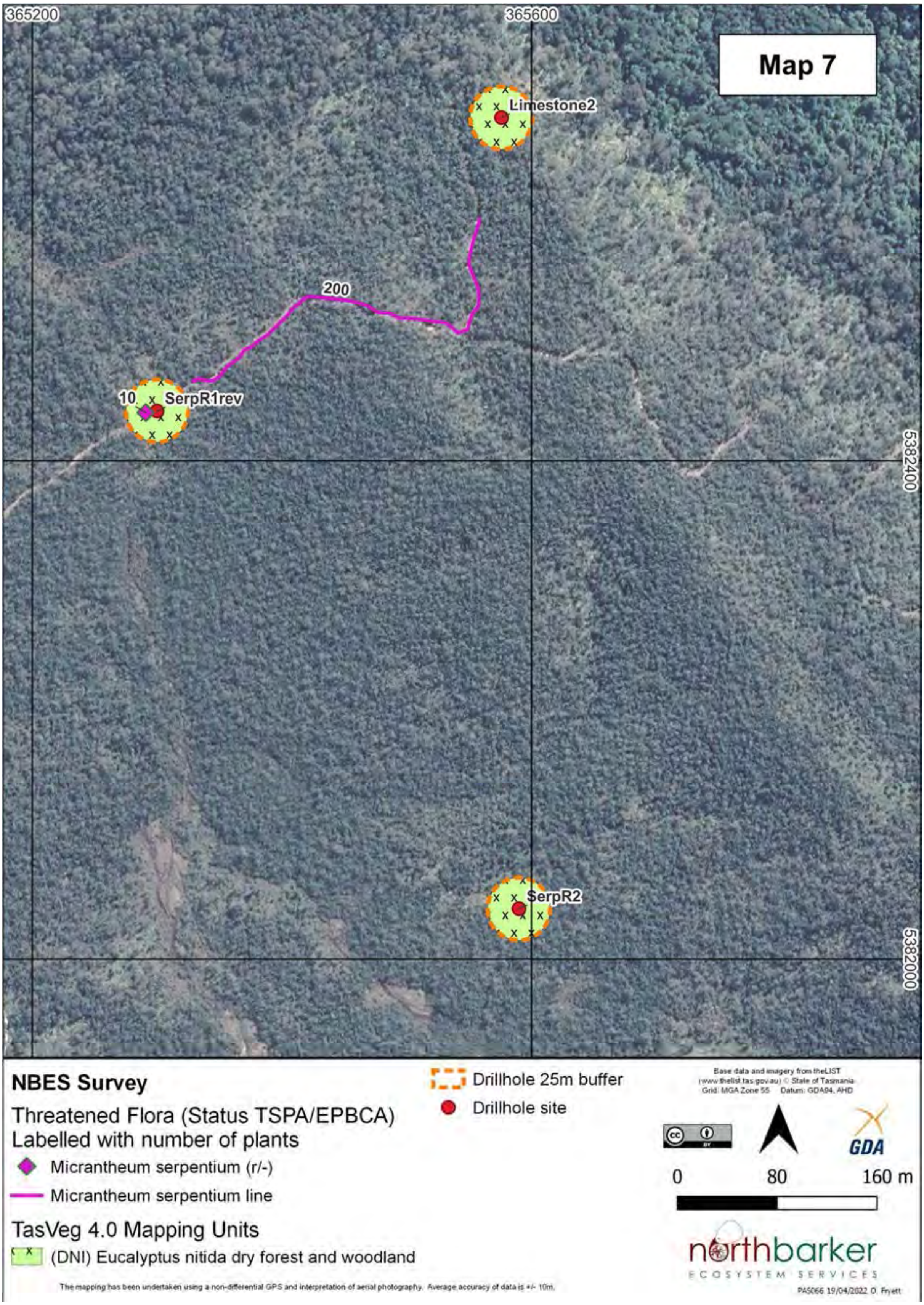

Figure 2: Location of Micrantheum serpentinum

3.3 Threatened fauna and threatened fauna habitat

During the field survey, only one site, Limestone1, contains large *Eucalyptus nitida* trees which have the potential to provide habitat, they range from 80 – over 100 cm DBH (Figure 3). Only two trees were over 100 cm DBH, one which had a broken top. No hollows or nests were observed, however visibility to the top of the canopy was low. Although masked owls have range boundaries within 5 km, there have been no recorded sightings within the area.

No evidence in the form of scats were found for Tasmanian devils or quolls. No suitable dens or layups were identified within the 25 m radius of any drill sites, this does not demonstrably rule out the potential for dens to occur elsewhere and for devils and quolls to be present in the area.

Grey goshawks have been recorded within 5 km of the area, however no suitable nesting habitat was found within any drill sites.

Figure 3: Large trees located within Limestone1

Table 2: Verified threatened fauna records attributed to within 500 m of the project area; SS = Tasmanian Threatened Species Protection Act 1995, NS = Commonwealth Environment Protection and Biodiversity Conservation Act 1999

Threatened fauna within 500 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Accipiter novaehollandiae	grey goshawk	e		n	1	11-Oct-2012
Oxyethira mienica	caddis fly (ouse river)	r		e	2	04-Apr-2012
Sarcophilus harrisii	tasmanian devil	e	EN	e	52	14-Dec-2020

Table 3: Verified threatened fauna records attributed to within 5 km of the project area; SS = Tasmanian Threatened Species Protection Act 1995, NS = Commonwealth Environment Protection and Biodiversity Conservation Act 1999

Threatened fauna within 5000 metres

Verified Records

Species	Common Name	SS	NS	Bio	Observation Count	Last Recorded
Accipiter novaehollandiae	grey goshawk	e		n	2	11-Oct-2012
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	5	15-Jun-2009
Beddomeia bowryensis	hydrobiid snail (bowry creek)	r		eH	1	13-Feb-1989
Dasyurus maculatus subsp. maculatus	spotted-tail quoll	r	VU	n	1	07-Jul-2011
Lathamus discolor	swift parrot	e	CR	mbe	3	23-Feb-1994
Oxyethira mienica	caddis fly (ouse river)	r		e	2	04-Apr-2012
Sarcophilus harrisii	tasmanian devil	e	EN	e	63	14-Dec-2020
Thylacinus cynocephalus	thylacine	x	EX	ex	1	20-Nov-1974

Table 4: Threatened fauna with potential to occur within 5 km of the project area based on range boundaries; SS = Tasmanian Threatened Species Protection Act 1995, NS = Commonwealth Environment Protection and Biodiversity Conservation Act 1999

Threatened fauna within 5000 metres
(based on Range Boundaries)

Species	Common Name	SS	NS	BO	Potential	Known	Core
Litoria raniformis	green and gold frog	v	VU	n	1	0	0
Dasyurus maculatus subsp. maculatus	spotted-tail quoll	r	VU	n	1	0	0
Beddomeia bowryensis	hydrobiid snail (bowry creek)	r		eH	0	1	0
Prototroctes maraena	australian grayling	v	VU	ae	1	0	0
Ceyx azureus subsp. diemenensis	Tasmanian azure kingfisher	e	EN	e	0	0	1
Pseudemoia pagenstecheri	tussock skink	v		n	1	0	0
Haliaeetus leucogaster	white-bellied sea-eagle	v		n	3	0	0
Tyto novaehollandiae subsp. castanops	masked owl (Tasmanian)	e	VU	e	1	0	1
Accipiter novaehollandiae	grey goshawk	e		n	1	0	1
Sarcophilus harrisii	tasmanian devil	e	EN	e	1	0	0
Aquila audax subsp. fleayi	tasmanian wedge-tailed eagle	e	EN	e	1	0	0

3.4 Weeds

No weeds listed under the *Tasmanian Weed Management Act 1999* were recorded.

4 Impact Assessment and Mitigation

Out of the 24 drill sites surveyed, there are only two which contain significant natural values.

4.1 Vegetation Communities

The proposal will have no impact to threatened vegetation communities listed under the NCA.

4.2 Threatened Flora Species

Micrantheum serpentinum occurs at SERPR1rev and along the access track to the east of this site. The species should be avoided and protected from disturbance. If the species cannot be avoided then a Permit to take will be required under the Tasmanian Threatened species protection Act 1995

4.3 Threatened Fauna Habitat and Trees

The large habitat trees at Limestone1 one should be retained and protected from major root disturbance by limiting disturbance within 20 m of each tree.

4.4 Weeds

The use of machinery and vehicles during drilling brings an increased risk of introducing weeds. Some form of primary and secondary control should be implemented to prevent the introduction of weeds due to the proposal. It is recommended that works utilise washdown facilities to ensure machinery, tools and boots have been cleaned of soil prior to being brought to the site.

4.5 Machinery Access to Drill Sites

4.5.1 Salmons Creek Drill Sites

SS02, SS03, SS04, SS05, SS06, SS07, SS08, SS09, SS10(Salmons5), SS11rev2, SS12, WT1, WT2, Main1, No1, Main2, SECK (Maps 1,2,3 and 4)

There is currently existing access tracks to a number of these proposed drill holes via established 4wd tracks or historical ATV tracks. Majority of these drill holes are right on the track, or are located within ~10—20 m from the existing tracks. In terms of upgrading these tracks, or creating new sections to accommodate drilling rigs etc, there are no significant natural values which would be impacted.

4.5.2 Fareast and Eastern1 Drill Sites

(Maps 5 and 6)

It is understood these sites will be accessed via helicopter.

4.5.3 Serpentine Ridge Drill Sites

SerpR1rev1, Limestone2, SerpR2, Limestone1, Merton1 (Maps 7, 8 and 9)

There is an existing 4wd track to SerpR1rev. Parts of it are currently overgrown and would require minimal works to upgrade.

The existing ATV track from SerpR1rev1 to Limestone2 is currently very overgrown and would require clearing in order to upgrade to allow drill rigs through. There are numerous plants of Micrantheum serpentinum growing along this track in parts and would require a permit to take.

The track from Limestone2 to Limestone1 was part overgrown ATV track, part walking track. It meandered through wet forest and rainforest (WNR, RMT). There are no significant natural values in terms of threatened species along this track, however it is advised to avoid damage to any large trees which may be along the edges.

SerpR2 is located ~200 m from any existing track and would require new tracks to be cut to the site. As there are threatened flora species recorded within the vicinity it is advised to avoid the open, less vegetated areas surrounding creek lines, which is where these species are concentrated. Cutting the track in a south-easterly direction from SerpR1rev would be the recommended route as it avoids the creek lines and goes mainly through thick scrub.

5 Legislative Requirements

5.1 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The EPBCA is structured for self-assessment, with guidelines and criteria available to assist any person who proposes to take an action to decide whether they should submit a referral to the federal Department of the Environment for a decision by the Environment Minister (the minister) on whether assessment and approval is required under the Act.

Under the Act, an action will require approval from the minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance (MNES), which includes all species and communities listed as threatened and/or migratory under the Act, as well as world heritage values.

- There will be no impact to MNES and will not warrant referral.

5.2 Tasmanian Threatened Species Protection Act 1995

Under the TSPA, a person cannot knowingly, without a permit, 'take' a listed species. With the definition of 'take' encompassing actions that kill, injure, catch, damage, destroy and/or collect threatened species or vegetation elements that support threatened species, e.g. nests and dens.

- A permit to take will be required if *Micrantheum serpentinum* is to be impacted (drill site SerpR1rev).

5.3 Tasmanian *Nature Conservation Act 2002* (NCA)

Protection of communities listed under the NCA is administered through LUPAA or under the *Forest Practices Code 2015* in areas where Forest Practices Plans apply. In case consideration will be via LUPAA and the local planning scheme provisions.

- No threatened vegetation communities present on the site

5.4 Tasmanian Weed Management Act 1999

- No weeds present.

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Appendix A: Vascular Plant Species list

Status codes:

ORIGIN	NATIONAL SCHEDULE	STATE SCHEDULE
i - introduced	EPBC Act 1999	TSP Act 1995
d - declared weed WM Act	CR - critically endangered	e - endangered
en - endemic to Tasmania	EN - endangered	v - vulnerable
t - within Australia, occurs only in Tas.	VU - vulnerable	r - rare

Sites:

62	RMT - E360017, N5381149	22/03/2022	Fiona Walsh
63	RMT - E359599, N5381169	22/03/2022	Fiona Walsh
64	RMT - E359354, N5381207	22/03/2022	Fiona Walsh
65	RMT - E360836, N5381827	23/03/2022	Fiona Walsh
66	RMT - E360707, N5381632	23/03/2022	Fiona Walsh
67	DNI - E365291, N5382439	23/03/2022	Fiona Walsh
68	DNI (WP 1788) - E, N	23/03/2022	Fiona Walsh
69	WNR - E366648, N5381871	23/03/2022	Fiona Walsh
70	DNI - E367684, N5379672	23/03/2022	Fiona Walsh

Site	Name	Common Name	Status
	DICOTYLEDONAE		
	APIACEAE		
62 63 64 65 66	*Hydrocotyle hirta*	hairy pennywort	
	ASTERACEAE		
63	*Euchiton japonicus*	common cottonleaf	
	ATHEROSPERMATACEAE		
62 63 65	*Atherosperma moschatum subsp. moschatum*	sassafras	
	CASUARINACEAE		
67	*Allocasuarina zephyrea*	western sheoak	en
	CONVOLVULACEAE		
70	*Dichondra repens*	kidneyweed	
	CUNONIACEAE		
62 63 64 65 66 69 70	*Anodopetalum biglandulosum*	horizontal	en
67 68 70	*Bauera rubioides*	wiry bauera	
	ERICACEAE		
63 66 67	*Leptecophylla pogonocalyx ssp. pogonocalyx*	pinkberry	en
69 70	*Monotoca glauca*	goldey wood	
65	*Trochocarpa cunninghamii*	straggling purpleberry	en
	ESCALLONIACEAE		
62 63 64 66 69	*Anopterus glandulosus*	tasmanian laurel	en

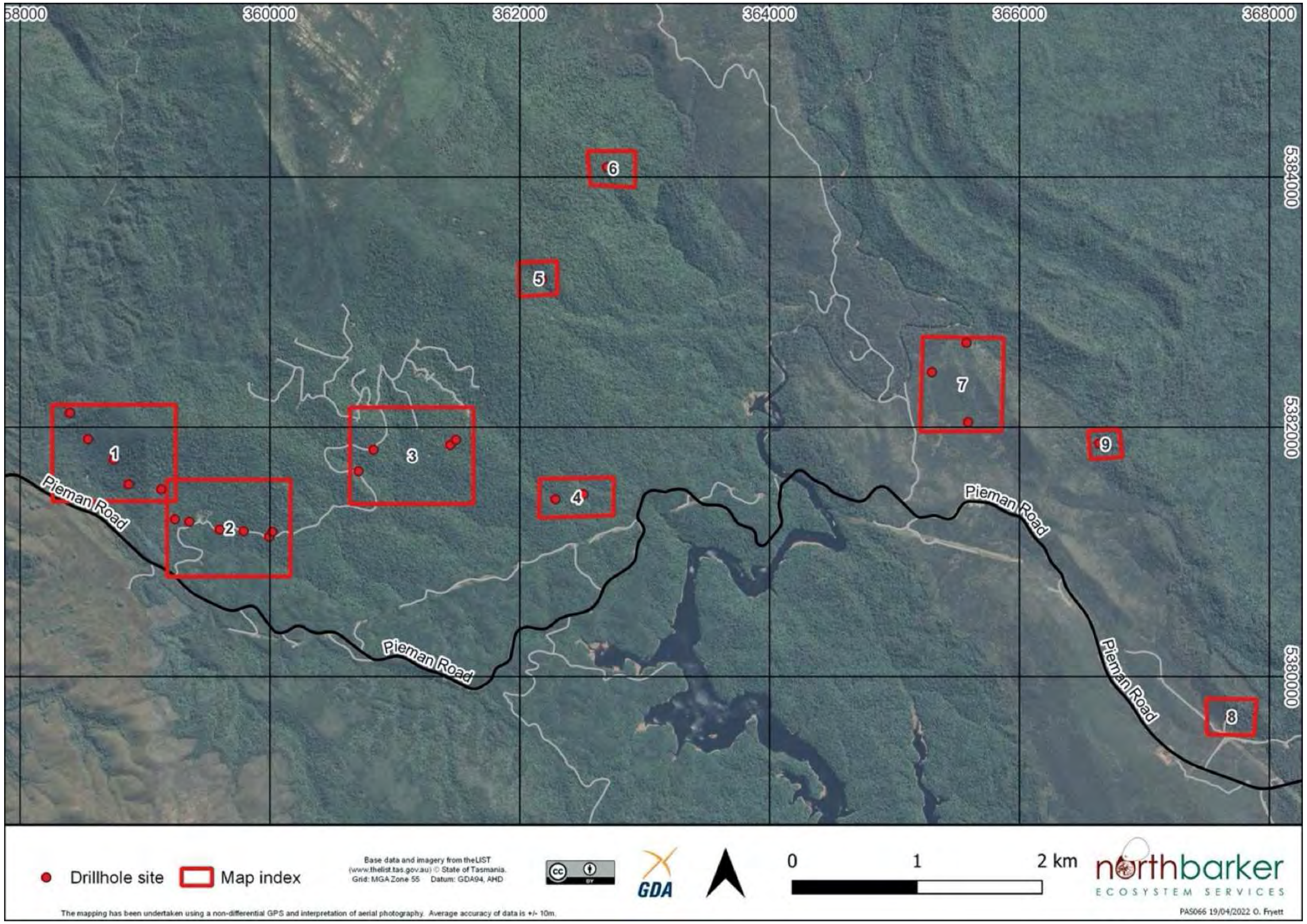
	EUCRYPHIACEAE		
62 63 64 65 66 69 70	*Eucryphia lucida*	leatherwood	en
	EUPHORBIACEAE		
67	*Micrantheum serpentinum*	western tridentbush	en r
	FABACEAE		
62 63 64 65 66 70	*Acacia melanoxylon*	blackwood	
67	*Acacia mucronata*	variable sallow wattle	
68	*Pultenaea juniperina*	prickly beauty	
	FAGACEAE		
62 63 64 65 66 69	*Nothofagus cunninghamii*	myrtle beech	
	HEMEROCALLIDACEAE		
66	*Dianella tasmanica*	forest flaxlily	
	LAMIACEAE		
66	*Prostanthera lasianthos var. lasianthos*	christmas mintbush	
67 68	*Westringia rubiaefolia*	sticky westringia	en
	MYRTACEAE		
67	*Baeckea gunniana*	alpine heathmyrtle	
67 68 69 70	*Eucalyptus nitida*	western peppermint	en
70	*Leptospermum lanigerum*	woolly teatree	
63 67 68 70	*Leptospermum scoparium*	common tea-tree	
68	*Melaleuca squamea*	swamp honeymyrtle	
	OLEACEAE		
68	*Notelaea ligustrina*	native olive	
	PITTOSPORACEAE		
62 63 66	*Pittosporum bicolor*	cheesewood	
	POLYGALACEAE		
67	*Comesperma retusum*	mountain milkwort	
68	*Comesperma volubile*	blue lovecreeper	
	PROTEACEAE		
67 68 70	*Banksia marginata*	silver banksia	
68 70	*Cenarrhenes nitida*	native plum	en
67	*Hakea epiglottis*	beaked hakea	en
70	*Hakea epiglottis subsp. epiglottis*	beaked needlebush	en
69	*Lomatia tinctoria*	guitarplant	en
70	*Telopea truncata*	tasmanian waratah	en
	RANUNCULACEAE		
63	*Clematis sp.*	clematis	
	RHAMNACEAE		
66 69	*Pomaderris apetala*	common dogwood	

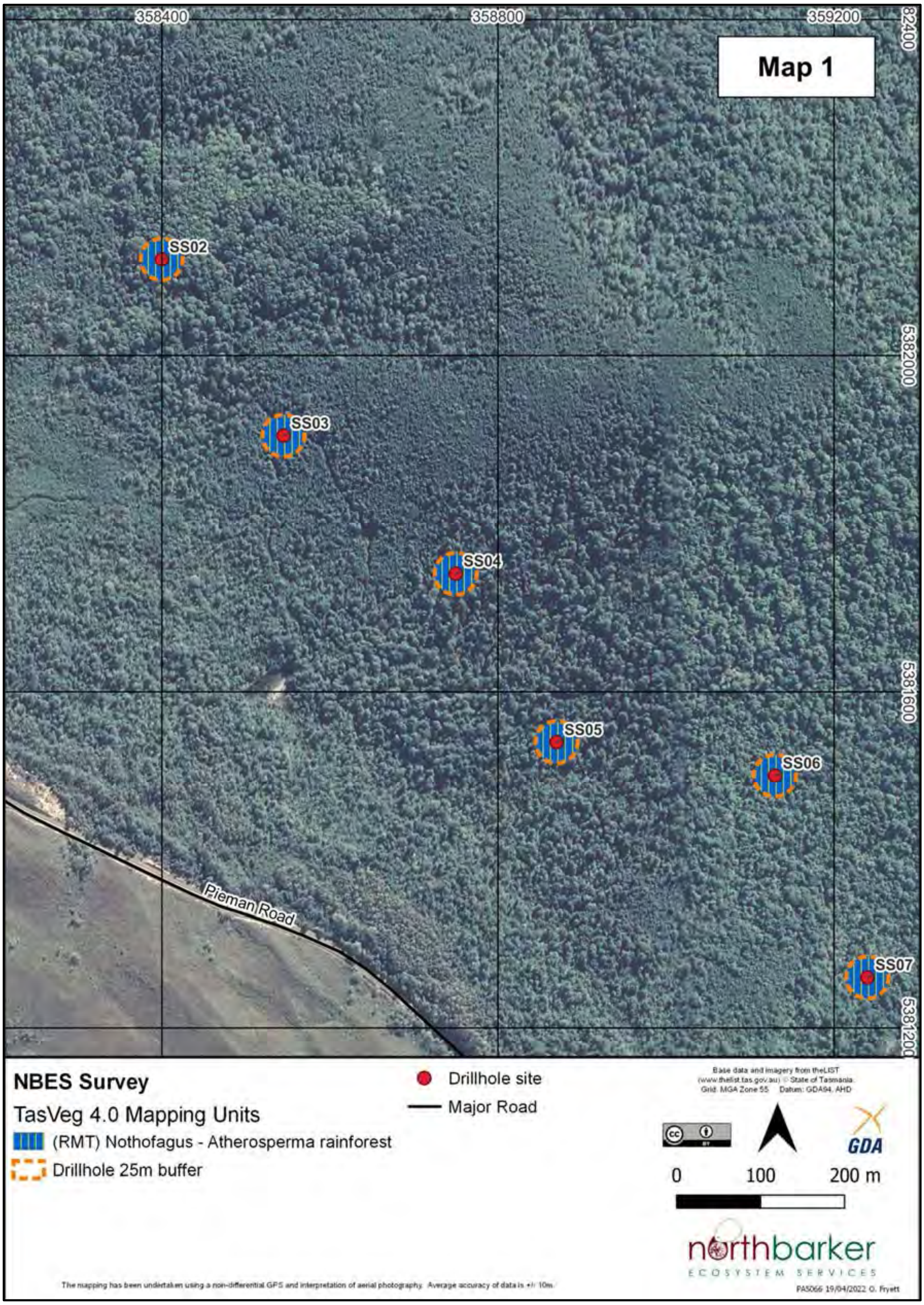
	ROSACEAE		
62 63	*Acaena novae-zelandiae*	common buzzy	
	RUBIACEAE		
63 64 67 70	*Coprosma quadrifida*	native currant	
	RUTACEAE		
70	*Philotheca virgata*	twiggy waxflower	
	THYMELAEACEAE		
62 63 64	*Pimelea drupacea*	cherry riceflower	
67 68	*Pimelea linifolia*	slender riceflower	
66	*Pimelea sericea*	mountain riceflower	en
	VIOLACEAE		
67 70	*Viola serpentinicola*	serpentine violet	en
	GYMNOSPERMAE		
	PHYLLOCLADACEAE		
69	*Phyllocladus aspleniifolius*	celerytop pine	en
	MONOCOTYLEDONAE		
	CYPERACEAE		
62 63 65 67 68 69 70	*Gahnia grandis*	cutting grass	
67 68	*Lepidosperma elatius*	tall swordsedge	
67	*Lepidosperma longitudinale*	spreading swordsedge	
67	*Schoenus sp.*	bogsedge	
	LUZURIAGACEAE		
69	*Drymophila cyanocarpa*	turquoise berry	
	POACEAE		
62 63	*Microlaena stipoides*	weeping grass	
	PTERIDOPHYTA		
	ASPIDIACEAE		
64	*Rumohra adiantiformis*	leathery shieldfern	
	BLECHNACEAE		
66 70	*Blechnum wattsii*	hard waterfern	
	DENNSTAEDTIACEAE		
62 63 64 65 66	*Histiopteris incisa*	batswing fern	
64 65	*Hypolepis rugosula*	ruddy groundfern	
62 63 64	*Pteridium esculentum subsp. esculentum*	bracken	
	DICKSONIACEAE		
62 63 64 65	*Dicksonia antarctica*	soft treefern	

	GLEICHENIACEAE	
70	*Gleichenia dicarpa*	pouched coralfern
62 63 65 66	*Sticherus tener*	silky fanfern
	GRAMMITIDACEAE	
64 65 66	*Notogrammitis billardierei*	common fingerfern
	HYMENOPHYLLACEAE	
64 65 69	*Hymenophyllum rarum*	narrow filmyfern
	POLYPODIACEAE	
62 63 64	*Microsorum pustulatum subsp. pustulatum.*	kangaroo fern

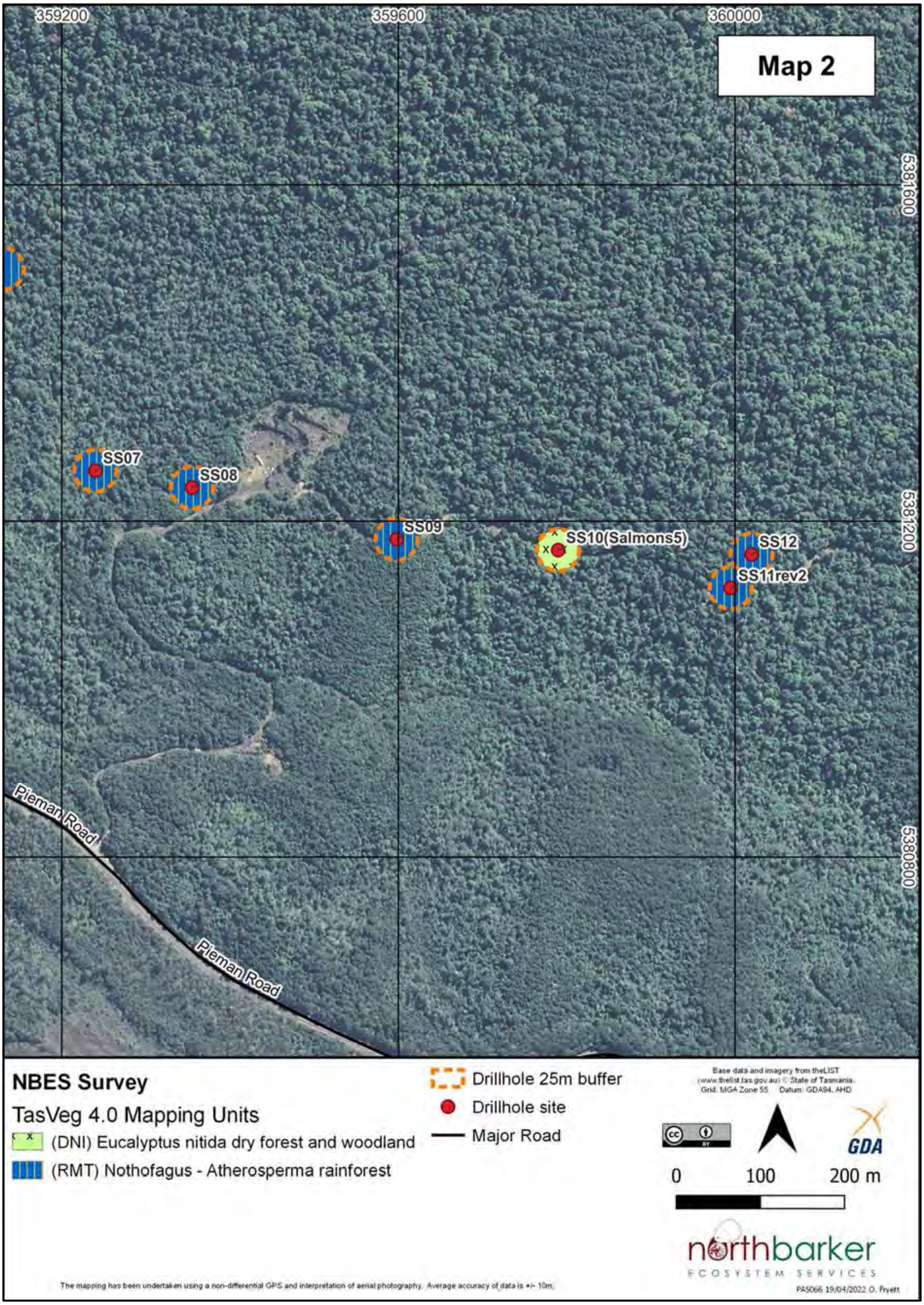
Appendix B: Maps of the project area

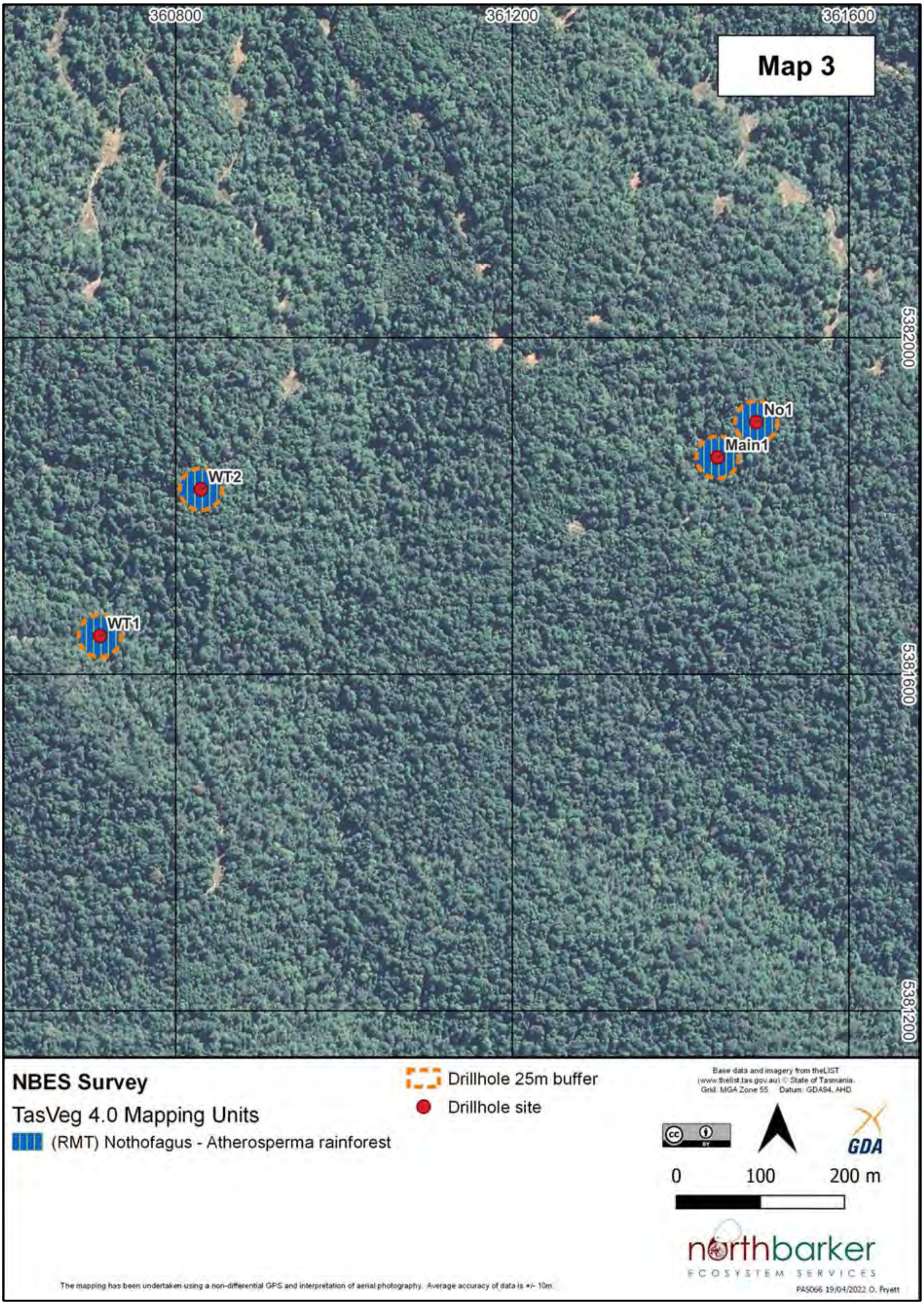
Maps showing drill point locations, vegetation types and significant flora or habitat.



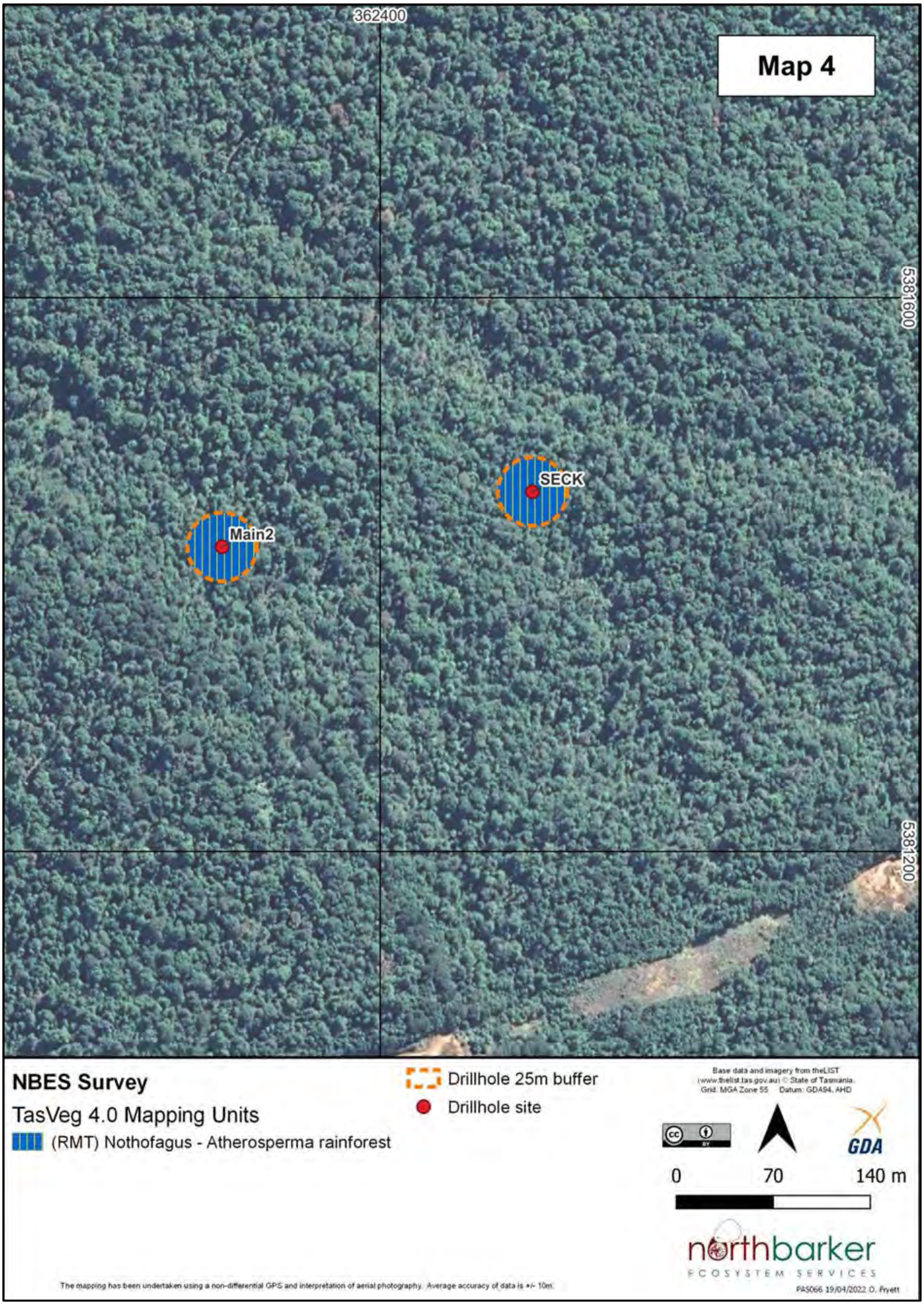


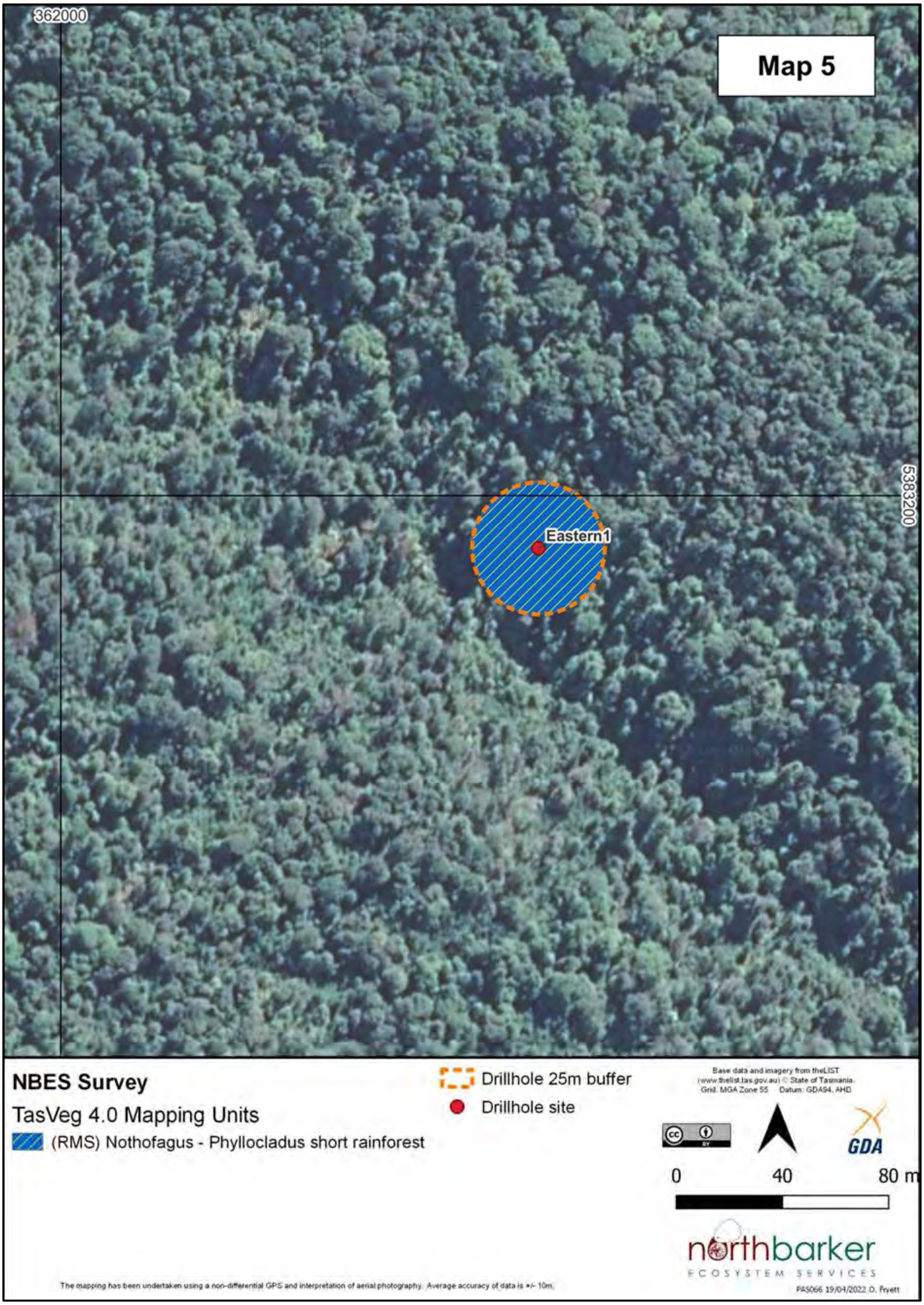
Map 1
358400
358800
359200
5382400
5382000
5381600
5381200
SS02
SS03
SS04
SS05
SS06
SS07
Pieman Road
NBES Survey
TasVeg 4.0 Mapping Units
(RMT) Nothofagus - Atherosperma rainforest
Drillhole 25m buffer
Drillhole site
Major Road
Base data and imagery from theLIST
(www.thelist.tas.gov.au) © State of Tasmania.
Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0
100
200 m
northbarker
ECOSYSTEM SERVICES
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.
PAS066 19/04/2022 O. Fryett

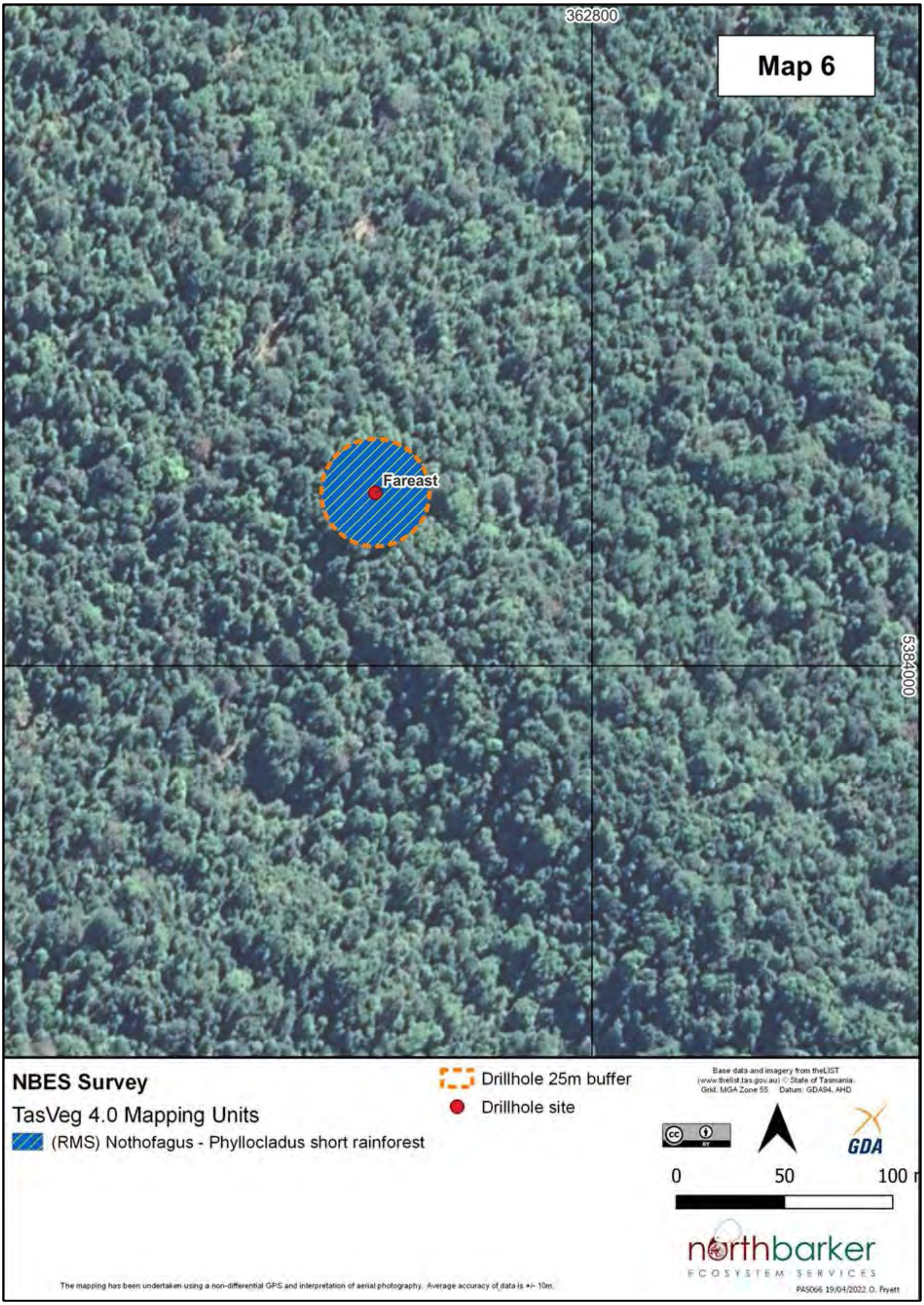

Map 2
359200
359600
360000
5381600
5381200
5380800
SS07
SS08
SS09
SS10(Salmons5)
SS12
SS11rev2
Pieman Road
Pieman Road
NBES Survey
TasVeg 4.0 Mapping Units
(DNI) Eucalyptus nitida dry forest and woodland
(RMT) Nothofagus - Atherosperma rainforest
Drillhole 25m buffer
Drillhole site
Major Road
0
100
200 m
GDA
northbarker
ECOSYSTEM SERVICES

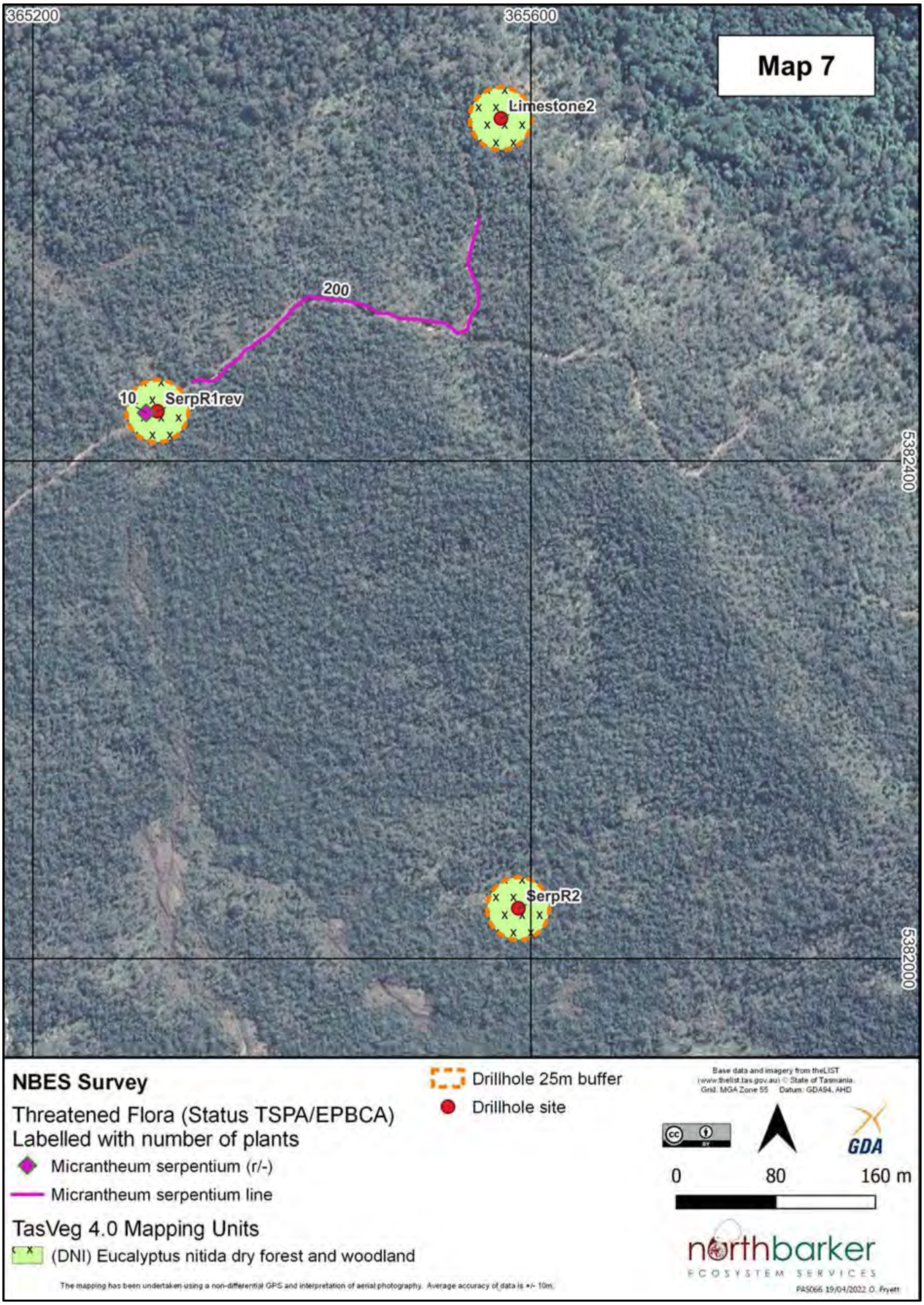


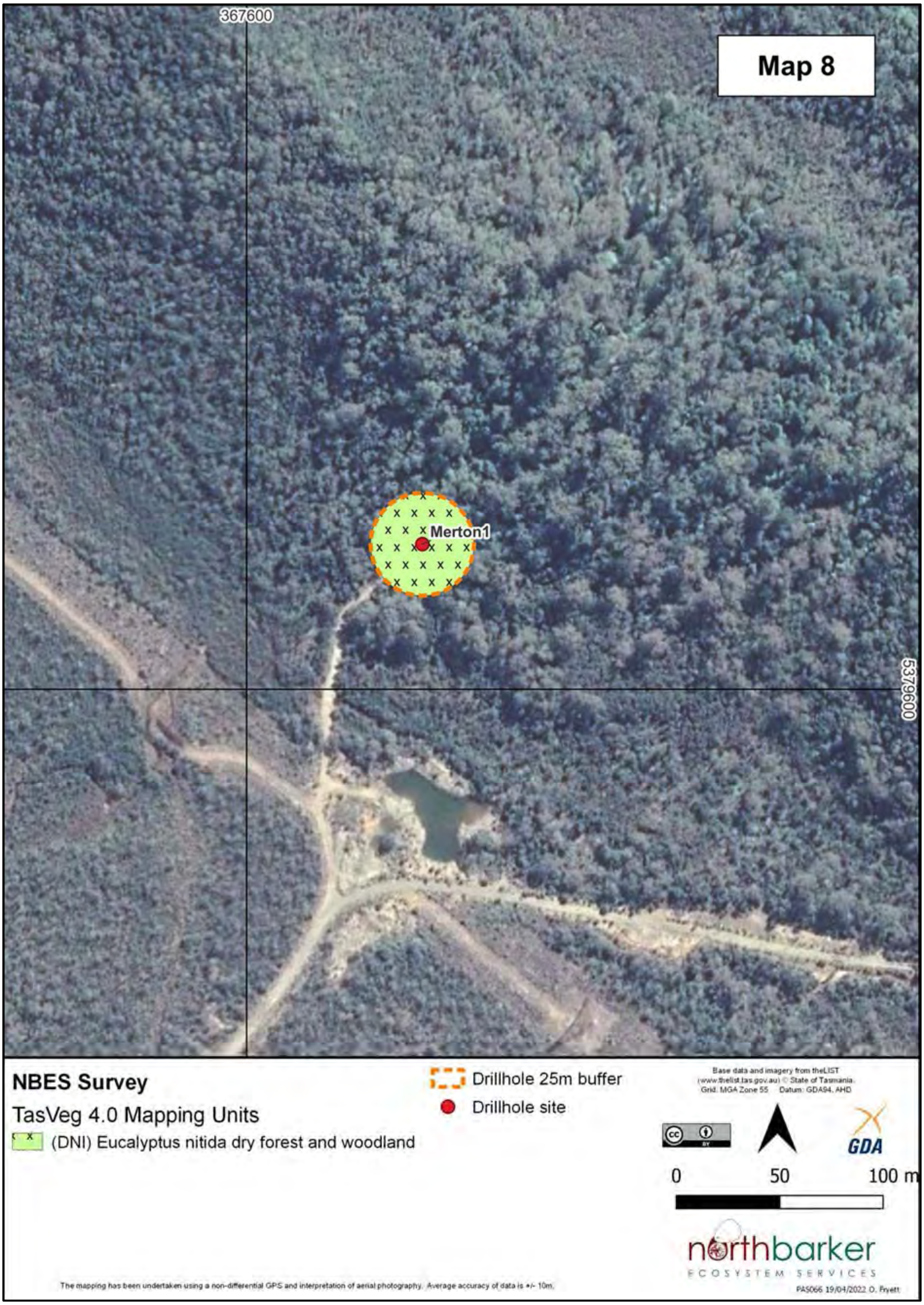
360800
361200
361600
Map 3
5382000
5381600
5381200
No1
Main1
WT2
WT1
NBES Survey
TasVeg 4.0 Mapping Units
(RMT) Nothofagus - Atherosperma rainforest
Drillhole 25m buffer
Drillhole site
Base data and imagery from theLIST
(www.thelist.tas.gov.au) © State of Tasmania.
Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0
100
200 m
northbarker
ECOSYSTEM SERVICES
PAS066 19/04/2022 O. Fryett
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.


362400
Map 4
5381600
5381200
SECK
Main2
NBES Survey
TasVeg 4.0 Mapping Units
(RMT) Nothofagus - Atherosperma rainforest
Drillhole 25m buffer
Drillhole site
Base data and imagery from theLIST
(www.thelist.tas.gov.au) © State of Tasmania.
Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0
70
140 m
northbarker
ECOSYSTEM SERVICES
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.
PAS066 19/04/2022 O. Fryett


362000
Map 5
5383200
Eastern1
NBES Survey
TasVeg 4.0 Mapping Units
(RMS) Nothofagus - Phyllocladus short rainforest
Drillhole 25m buffer
Drillhole site
Base data and imagery from theLIST
(www.thelist.tas.gov.au) © State of Tasmania.
Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0
40
80 m
northbarker
ECOSYSTEM SERVICES
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.
PAS066 19/04/2022 O. Fryett


362800
Map 6
Fareast
5384000
NBES Survey
TasVeg 4.0 Mapping Units
(RMS) Nothofagus - Phyllocladus short rainforest
Drillhole 25m buffer
Drillhole site
Base data and imagery from theLIST (www.thelist.tas.gov.au) © State of Tasmania. Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0 50 100 m
northbarker ECOSYSTEM SERVICES
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.
PAS066 19/04/2022 O. Fryett


Map 7
365200
365600
5382400
5382000
Limestone2
200
10
SerpR1rev
SerpR2
NBES Survey
Threatened Flora (Status TSPA/EPBCA)
Labelled with number of plants
Micrantheum serpentium (r/-)
Micrantheum serpentium line
TasVeg 4.0 Mapping Units
(DNI) Eucalyptus nitida dry forest and woodland
Drillhole 25m buffer
Drillhole site
Base data and imagery from theLIST
(www.thelist.tas.gov.au) © State of Tasmania.
Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0
80
160 m
northbarker
ECOSYSTEM SERVICES
PAS066 19/04/2022 O. Fryett
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.


Map 8
367600
5379600
Merton1
NBES Survey
TasVeg 4.0 Mapping Units
(DNI) Eucalyptus nitida dry forest and woodland
Drillhole 25m buffer
Drillhole site
Base data and imagery from theLIST
(www.thelist.tas.gov.au) © State of Tasmania.
Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0
50
100 m
northbarker
ECOSYSTEM SERVICES
PAS066 19/04/2022 D. Fryett
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.


366800
Map 9
5382000
Limestone1
NBES Survey
Significant Trees
Eucalyptus nitida
TasVeg 4.0 Mapping Units
(WNR) Eucalyptus nitida forest over rainforest
Drillhole 25m buffer
Drillhole site
Base data and imagery from theLIST
(www.thelist.tas.gov.au) © State of Tasmania.
Grid: MGA Zone 55 Datum: GDA94, AHD
GDA
0
30
60 m
northbarker
ECOSYSTEM SERVICES
PAS066 19/04/2022 O. Fryett
The mapping has been undertaken using a non-differential GPS and interpretation of aerial photography. Average accuracy of data is +/- 10m.

Appendix D: Venture Minerals Logging Codes

Lithologic Codes	Description
Regolith (R*)	
R	undifferentiated regolith
RCAC	calcrete
RSIC	silcrete
RFEC	ferricrete
RL	undifferentiated laterite
RLG	lateritic gravel (loose)
RLI	in situ laterite
RLT	transported laterite or cemented lateritic gravel
RCLY	in situ clay
RSAP	undifferentiated saprolite
RGOS	gossan ("iron cap") = iron oxide rock formed by weathering of sulphide rick rock. Textural or mineral prefix as appropriate (e.g. aciRGOS = acicular gossan, mcRGOS = malachite gossan)
Unconsolidated Sediments (S*)	
S	undifferentiated sediment
SLG	lateritic gravel
SGVL	unconsolidated gravel
SPCS	unconsolidated pebbly or cobbly sands
SAND	unconsolidated sand
SILT	unconsolidated silt
SMUD	unconsolidated mud
SCLY	unconsolidated clay (transported)
cyRB	regolith breccia with clay matrix
Sedimentary Rocks (S*)	
SS, qzSS, volcSS, lithSS, ccSS	>75% sandstone (undifferentiated) over minimum 5m logging interval, prefixes qzSS = quartz sandstone, lithSS = lithic sandstone, volcSS = volcanogenic sandstone, ccSS = calcareous sandstone
SM	>75% mudstone over minimum 5m logging interval
ST	>75% siltstone over minimum 5m logging interval
SSM	25-75% sandstone & mudstone over minimum 5m logging interval
SST	25-75% sandstone & siltstone over minimum 5m logging interval
SMH	shale
SML	slate
SMA	argillite (weakly metamorphosed mudstone)
SMP	phyllite
SGRT	grit
SSPC	pebbly or cobbly sandstone
SSIC	intraclastic sandstone and conglomerate
SCG	conglomerate
SCGR	mud chip conglomerate (rip-ups)
SCGM	monomict conglomerate
SCGP	polymict conglomerate
SBRM	monomict breccia
SBRP	polymict breccia
SCB, ooSCB, stSCB, bcSCB	undifferentiated carbonate, prefixes oo = oolitic, st = stromatolitic, bc = bioclastic
SLST	limestone
SDOL	dolomite
STIL	tillite
STUF	tuffite (redeposited)
SLAP	redeposited lapilli-stone
SCHT	chert
SBIF	banded iron formation
SLIG	lignite
Igneous Rocks (U* for Ultramafic, M* for Mafic, I* for Intermediate, F* for Felsic)	
UM	undifferentiated ultramafic
UDUN	dunite
UHAR	harzburgite
UPX	pyroxenite
UPD	peridotite
USERP	serpentinite
UKIM	kimberlite
ULAP	lamproite
ULAY	ultramafic lamprophyre
UK	komatiite (undifferentiated)
UKSTX	spinifex textured part of komatiite flow
UKoOC	olivine orthocumulate part of komatiite flow
UKoMC	olivine mesocumulate part of komatiite flow
MG	gabbro
MGL	leucogabbro
MD	dolerite
MB	basalt

Lithologic Codes	Description
MBHM	high-magnesium basalt
MBP	pillow-basalt
MBHY	basaltic hyaloclastite
MLAP	mafic lapilli-stone
MTUF	mafic tuff
IAND	andesite
IDIO, pxIDIO, amIDIO, btIDIO	diorite, with lower case mineral prefixes for key mafic phases, eg btIDIO, amIDIO, pxIDIO
F	undifferentiated felsic rock
FG, amFG, pxFG, btFG	undifferentiated granitoid, with lower case mineral prefixes for key mafic phases, eg btFG, amFG, pxFG
FGRA, amFGRA, btFGRA	granite, with lower case mineral prefixes for key mafic phases, eg btFGRA, amFGRA
FGRD, amFGRD, btFGRD	granodiorite, with lower case mineral prefixes for key mafic phases, eg btFGRD, amFGRD
FMON, amFMON, btFMON	monzonite, with lower case mineral prefixes for key mafic phases, eg btFMON, amFMON
FSYE, amFSYE	syenite, with lower case mineral prefixes for key mafic phases, eg btFSYE, amFSYE
FTUF	felsic tuff
FV	undifferentiated felsic volcanic rock
FRHY	rhyolite
FDAC	dacite
FPEG	pegmatite
FIGM	ignimbrite
Metamorphic & Metasomatic Rocks (Z*)	
ZSCH	undifferentiated schist
mZSCH	undifferentiated mafic schist, typically dominated by amphibole, chlorite and/or biotite with lesser feldspar, quartz, accessory leucoxene etc...
fZSCH	undifferentiated felsic schist, domianted by quartz & feldspar, muscovite, & accessory mafic minerals
btZSCH, btclZSCH, tcZSCH, etc…	biotite schist, biotite-chlorite schist, etc… using mineral code prefixes for only the distinguishing minerals
ZGNS	undifferentiated gneiss
btZGNS, kspZSCH, etc…	biotite gneiss, k-feldspar gneiss, etc… using mineral code prefixes for the key minerals
ZAMP	undifferentiated amphibolite
ZHF, pxZHF, btZHF, andZHF	hornfels = ZHF, microcrystalline, up to 2 lower case mineral prefixes as appropriate, eg. btZHF, andZHF, pxZHF etc...)
ZMRB, gtZMRB, olZMRB, veZMRB, etc...	marble, with up to 2 key alteration mineral prefixes, eg gtZMRB, gtpxZMRB, olZMRB, srZMRB, veZMRB
ZXS, gtZXS, gtpxZXS, woZXS	ZXS = exoskarn, with maximum 2 dominant mineral prefixes in alphabetical order, eg gtZXS, gtpxZXS, ccwoZXS, woZXS, gtmtZXS, cpygtZXS etc...
ZNS, gtpxZNS, epZNS,	ZNS = endoskarn (skarn formed within genetically related granitoid), with up to 2 dominant mineral prefixes in alphabetical order, eg epgtZNS, epZNS, pxZNS
ZGRS, tzZGRS, qztuZGRS	ZGRS = greisen comprising fine saccharoidal aggregate of quartz and muscovite, with up to 2 dominant mineral prefixes, eg. tzZGRS, qztuZGRS
Veins (V)	
*V	Veins, up to 2 key mineral prefixes as appropriate (eg qzV, qztuV), only use in Lith1 column
*VB	Vein breccias, up to 2 key mineral prefixes as appropriate according to mineralogy of cemment (eg clccVB), only use in Lith1 column
Hydrothermal Breccias, Faults and Shear Rocks (X*)	
XHB	hydrothermal breccia
XMYL	mylonite
XFB	Fault breccia - incohesive >30% clastic
XFG	Fault gouge - incohesive <30% clastic
XFC	Fault cataclasite - cohesive more than >30% clastic
No Recovery & Cavities (N*)	
NCAV	cavity
NREC	no sample recovery (unknown problems)
NSAV	sample no longer available (applies to relogging)

Mineral Codes	
aca	acanthite
act	actinolite
aik	aikinite
ala	alabandite
alb	albite
alm	almandine
am	amphibole
ana	anatase
adl	andalusite
and	andradite
ank	ankerite
ano	anorthite
atg	antigorite
ars	arsenates
asp	arsenopyrite
aue	auerlite
aug	augite
ax	axinite (Ca-Mg-Al borosilicate)
az	azurite
bar	baryte
bth	berthierite
byl	beryl
bt	biotite
bim	bismuthinite
bor	borate (undifferentiated)
brn	brannerite
bau	braunite
bru	brucite
bus	bustamite
cc	calcite
can	canfieldite
cb	carbonate (undifferentiated)
cs	cassiterite
cer	cerrusite
cha	chalcedony
cpy	chalcopyrite
cvx	chenevixite
cl	chlorite
cdp	chrome diopside
chr	chromite
cyb	chrysoberyl
crp	chrysoprase
crt	chrysotile
cin	cinnabar
cy	clay (undifferentiated)
cpx	clinopyroxene
cob	cobaltite
col	columbite
cd	cordierite
cos	cosalite
cub	cubanite
da	danalite
dd	diamond
di	diopside
dol	dolomite
dum	dumortite
elc	electrum
eng	enargite
ep	epidote
fay	fayalite
fsp	feldspar
fe	fe-oxide or hydroxide
feg	fergusonite
flu	flourite
flb	fluoborite
for	forsterite
gal	galena
gt	garnet
go	goethite
Au	gold
gra	graphite
grs	grossular
hau	hausmannite
hed	hedenbergite
he	hematite
hb	hornblende
hul	hulsite
ilt	illite
ilm	ilmenite
ilv	ilvaite
ixi	ixiolite
jap	jalpaite
jam	jamesonite
ka	kaolin
kes	kesterite
ksp	k-feldspar (undifferentiated)
kob	kobellite
ky	kyanite
lau	laumontite
lep	lepidolite
lx	leucoxene
lm	limonite (undifferentiated iron oxyhydroxide)
lol	loellingite
lw	ludwigite
luz	luzonite
mg	magnesite
mt	magnetite
mlc	malachite
mly	malayaite
mi	mica (undifferentiated)
mcr-pcl	microlite-pyrochlore
mn	mn-oxides
ms	moissanite
mol	molybdenite
mz	monazite
mon	montmorillonite
mu	muscovite

nac	nacrite
Bi	native bismuth
ol	olivine
ops	opaline silica
or	orthoclase
sxo	oxidised sulphide
pav	pavonite
pnt	pentlandite
pv	perovskite
pen	phenacite
phl	phlogopite
pl	plagioclase
pbs	polybasite
pcr	polycrase
pmg	polymignyte
prh	prehnite
pru	proustite
pyg	pyrargyrite
py	pyrite
pp	pyrope
px	pyroxene
po	pyrrhotite
qz	quartz
rhd	rhodenite
rdc	rhodochrosite
rf	rock fragments
rut	rutile
sam	samarskite
sa	saponite
scp	scapolite
sh	scheelite
sco	scorodite
se	sercite
sr	serpentine
sd	siderite
si	siliceous
spc	specularite
sph	sphalerite
spn	spinel
spd	spodumene
stan	stannite
snd	stannoidite
stb	stibnite
sb	stilbite
stp	stilpnomelane
stv	strueverite
sx	sulphide
tc	talc
tap	tapiolite
tt	tetrahedrite-tennantite
ti	titanite (sphene)
tz	topaz
tu	tourmaline
trm	tremolite
ve	vesuvianite (idocrase)
vo	vonsenite (Fe borate)
wlf	wolframite
wo	wollastonite
ze	zeolites
zin	zinnwaldite

Texture Codes	
aci	**acicular, mineral specific types coded with mineral code followed by a (eg mta = acicular magnetite)**
amg	amygdaloidal
anh	anhedral
bdn	boudins
blb	blobs; reasonably circular-ovoid, sharp-diffuse alteration shapes; ie. am-po-qz in hornfels.
blt	blotchy; harsher more irregular than mot, characterstic of recrystallised carbonate ie. in ccSS
bnd	banded
bot	botryoidal
bxw	boxwork
ctc	chaotic; disturbed bedding by structural or soft-sediment deformation; not an alteration product
chk	chunky
cqp	**specifically quartz prisms in calcite matrix**
col	cauliflower texture (of mineral growth)
den	dendritic
dis	disseminated
euh	euhedral
eqg	equigranular
fol	foliated
gph	graphic & micrographic texture (as in granites)
grd	graded bedding
grn	**granular texture (cf acicular or tabular textures), mineral specific types coded with mineral code followed by g (eg mtg = granular magnetite, gtg = granular garnet texture)**
gtp	specifically garnet or ex-garnet porphyroblastic texture
hbr	healed breccia (texture) ie. pre-alteration breccia that has been overprinted
lam	laminated
mas	massive
mos	mosaic
mot	mottled; irregular/diffuse patchy alteration running across bed boundaries, particularly in hornfels
mta	acicular magnetite (after vonsenite)
mtg	granular magnetite
mzn	mineral zoning in fine laminae
oph	ophitic
orb	**orbicules of any mineral, typically concentrically layered or zoned, mineral specific types coded with mineral code followed by o (eg veo = vesuvianite orbicules)**
pbl	**porphyroblastic, large metamorphic or metasomatic minerals in a finer matrix**
pcl	porphyroclastic
plt	platy (as in coarse mica, but also seen in pyrrhotite + others?)
ppy	porphyritic
psm	general prismatic texture code which could apply to a number of minerals
rcz	recrystalised
ruc	rip-up clasts; distinguish in comments between Carter's-like (small, platy), and large & irregular
sch	schistose
scl	cleaved
shz	shear or shear zone
spk	dark minerals such as biotite or magnetite scattered though paler matrix
s+p	specifically salt and pepper skarn with atoll textured magnetite with microscopic qz prisms and feldspar, in siderite matrix
spt	spotted, such as spotting in a hornfels
sqp	**specifically quartz prisms in siderite matrix**
stk	streaky; charactersitic of vw RCLY
stwk	stockwork
sub	subhedral
tab	**tabular, mineral specific types coded with mineral code followed by t (eg vet = vesuvianite tablets)**
tad	am±po spots with tales in px matrix
tuf	tuffaceous
ves	vesicular
vet	tabular vesuvianite texture
wrg	wrigglite
Structure Codes	
bkn	weak core broken by drilling (typically near beginning of hole)
brc	brecciated
flt	fault
frc	fracture zone
ftz	fault or fault zone
mcf	microfaults- displacement <1cm scale
slk	slickensides
sfl	small-scale folding (<4m period)
ssf	small-scale faulting (>1cm, <core diameter)
ssd	soft sediment deformation; disturbed protolith (precursor to ctc texture?)
BCA	acute angle between core axis and bedding (=alpha)
SCA	acute angle between core axis and cleavage or schistosity (=alpha)
FCA	acute angle between core axis and fault (=alpha)
Sedimentary Bedding Codes	
lam	laminated (<10mm)
tnb	thin bedded (10-100mm)
mdb	medium bedded (100-300mm)
tkb	thick bedded (>300mm)
vtkb	very thick bedded (>1m)
Sedimentary Grain size	
svfg	very fine grained <64 um (mud, silt & clay)
sfg	fine grained 64 um to 0.25 mm (fine sand)
smg	medium grained 0.25 to 0.5mm (medium sand)
scg	coarse grained 0.5 to 2 mm (coarse sand)
svcg	very coarse grain >2mm (2 - 4mm granules, 4 - 16mm pebbles, 16-256 mm cobbles, >256 mm boulders)
Igneous & Metamorphic Grain Size	
ifg	fine grained <1 mm
img	medium grained 1-5 mm
icg	coarse grained 5-30 mm
ipg	pegamatitic >30 mm
Weathering Codes	
vw	very weathered, BOTH PRIMARY TEXTURE & MINERALOGY DESTROYED by weathering, no sulphide, generally dominated by Fe and Al oxides and/or silica (= laterite, duricrust, lateritic gravel & massive textureless clays)

mw	moderately weathered, PRIMARY TEXTURE REMAINS but MINERALOGY SECONDARY clays (= saprolite)
ww	weakly weathered, MAINLY PRIMARY TEXTURE & MINERALOGY, low clay content, partially oxidised sulphide (= saprock & fresh rock with iron staining and clay development restricted to fractures)
fr	fresh (compeletely primary texture & mineralogy without significant iron staining on fractures)
Moisture Codes	
S	Sloppy
M	Moist
D	Dry
Colour Codes	
l	light (e.g. lgn = light green, lgy = light grey)
d	dark (e.g. dgn = dark green, dgy = dark grey)
bk	black
bl	blue
bn	brown
bz	bronze (e.g. sulphides such as pyrrhotite & pyrite)
cm	cream
gn	green
gy	grey
kk	khaki
og	orange
ov	olive
pk	pink
pl	purple
rd	red
wt	white
yw	yellow
Sample Recovery Codes	
ideally measured as weight in kg, below codes for estimates	
e	excessive
g	good
m	moderate
p	poor
n	none