UR1987_54

1987/54. Diamond and churn drilling in the Dans Rivulet valley

V. M. Threader

Abstract

Two diamond-drill holes were drilled in the Dans Rivulet goldfield to search for mineralisation or related geological structures beneath the alluvial plain. Shearing was confined to a 200 m lutite sequence but little mineralisation was found. Alluvial cassiterite was recovered from sludge from the borehole on the west side of the valley. Further investigation is recommended. Churn drilling found only low concentrations of gold in the alluvial plain. Further drilling is recommended to complement this work and possible sites are discussed.

INTRODUCTION

The principal gold-bearing lodes of the New Golden Gate mine at Mathinna have a north-south strike, are nearly vertical, and are terminated in the south by a fault known locally as 'The Main Slide'. This structure was parallel to the regional cleavage (strike 150°, dip 70° SW) and was intersected in diamond-drill holes drilled by the Department of Mines in 1964 (Golden Gate 1 and 2). The intersection consisted of around 60 m of highly contorted country rock, in part mylonitised, and containing folded quartz veins, some sulphide mineralisation but little gold. The courses of the Dorset River and Dans Rivulet are also parallel to the regional cleavage. The purpose of the drilling programme described in this report was to investigate the possibility that the northerly continuation of 'The Main Slide' lay concealed beneath the sediments of the Dans Rivulet alluvial plain.

LOCATION AND ACCESS

Dans Rivulet is a tributary of the South Esk River, which it joins one kilometre north of Mathinna. The confluence is geographically 60 km east of Launceston. Road distances from Launceston are about 200 km, either through Ringarooma to the north or Fingal to the south. A westerly route, through Roses Tier, is shorter but not always passable during wet weather.

PREVIOUS INVESTIGATIONS

Hughes (1947) reported on the Dans Rivulet goldfield, described the old workings, and selected drilling targets at O'Briens mine and at the Starlight-Carnegie-King Edward mines. These holes were drilled and logged in 1963 (Threader, 1964).

Turner (1968) carried out a preliminary drilling programme for alluvial gold in the Dans Valley but considered the alluvial sediments too shallow and the primary source too insignificant for further study.

Mitchell (1978) cleaned out some abandoned workings and carried out some alluvial drilling. Results were not encouraging and the investigations were discontinued.

There has been no regionally-based exploration of this goldfield, and the only drilling to date has been to search for extensions of known lodes or

for alluvial gold. The drilling reported here is an attempt to redress this by siting the drilling to gain more data on geological structures and on the structural control of gold mineralisation.

THE GOLDFIELD

The Dans Rivulet goldfield is an integral part of a line of goldfields which trends subparallel to the regional cleavage from Mangana in the south to Lyndhurst in the north, a distance of 80 km (fig. 3).

There were twenty-five named lodes worked in this field but only a few were developed from shafts or adits, the others were only surface stoped and then abandoned. In addition to the above, there was a large number of un-named leases which were probably no more than prospects containing outcrops of barren quartz.

All but a few of the known gold-bearing lodes occurred on the western slopes of the valley. The exceptions are the Carnegie, Starlight and King Edward group in the northern part; and the Waterfall and New Golden King in the south-east. The extent of mineralisation under the alluvial plain is not known, as this drilling programme is the first attempt at exploring it.

THE DRILLING PROGRAMME

It was originally intended to drill one hole only, which was to be drilled perpendicular to the cleavage and therefore the shear zone, if it was present. This hole (DDH 1) was abandoned at 423.64 m due to mechanical problems, and a second hole (DDH 2) was drilled from the other (east) side of the valley to complete the return. This hole was continued 200 m beyond the crossing point to obtain additional structural data (fig. 1).

DDH 1 remained in Mathinna Beds lutite for its entire length; bedding and cleavage were sub-parallel and numerous zones of kink folding, kink banding, boudinage and folding of quartz veins occurred throughout, but more particularly in the upper part of the hole. DDH 2 passed through 200 m of arenite with minor lutite, then 240 m of lutite, and finally 170 m of an arenite-predominant lithology but containing a higher proportion of lutite members than the earlier arenite sequence.

Bedding and cleavage angles are consistent with vertical to steep easterly dips and the geological structure consists either of:

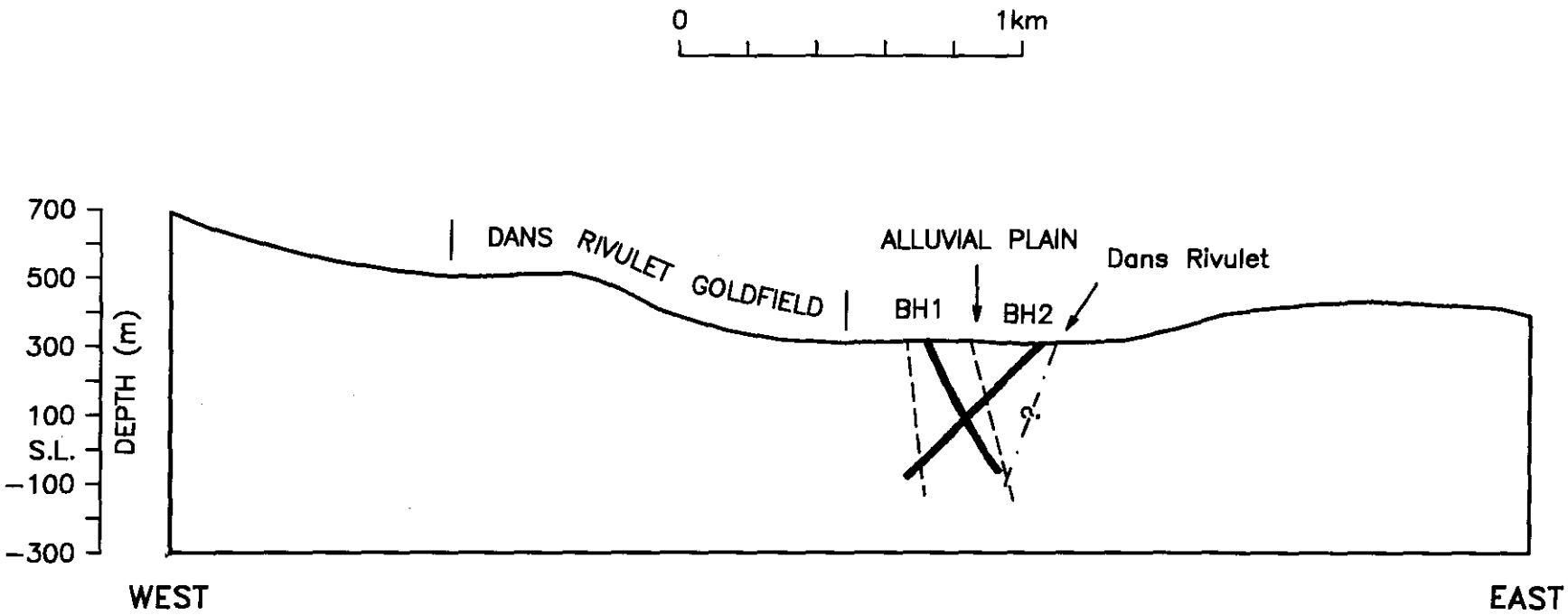
(a) a near-isoclinal fold with a lutite core, or

(b) the east limb of an anticline with a wavelength of at least one kilometre.

The lack of evidence of overturning in the arenite at the bottom of DDH 2 and the dissimilarity of these beds to the arenites in the upper 200 m of this borehole do not support the first alternative.

Both folded and undeformed quartz veins were noted in sheared zones, indicating at least two ages of vein formation. In some sections of core the presence of contorted quartz veins completely masked all other features. In other sections, which were less quartz veined, intense kink banding was evident, and it is possible that this structure occurred throughout the deformed section but was in places obliterated by quartz. The shearing is almost certainly attributable to post-folding deformation,

SECTION THROUGH DANS RIVULET BOREHOLES 1 AND 2



------ *Zone of Mathinna Beds lutite*

– . — . – *Shear Zone (If present, was anticipated to dip towards the west at approx. 70° and to lie somewhere beneath the alluvial plain which is here, about 600m wide)*

Figure 1.

5 cm

and is identical to structures which were observed in core from the Golden Gate boreholes at Mathinna.

Shearing is confined to the lutite formation, and the alignment of Dans Rivulet with 'The Main Slide' may therefore be due to lithology as much as it is due to structure, in that the lithology determined the location of the structure.

MINERALISATION

Minor sulphide mineralisation was noted in diamond-drill core from both holes but mainly in DDH 1. All sulphide-bearing core and all quartz-veined core was sampled and analysed for As, Cu, Pb, Sn, W, Zn and S. Eight of the samples which had anomalous sulphur content were assayed for gold; all but one (which contained 0.05 g/t Au) were negative. A small particle of gold (probably <0.5 mm) was seen in the core at 89 m but was lost during preparation before it could be positively identified.

All drilling sludge was collected on a daily basis and was pan concentrated and assayed. It was thought that the results obtained would assist in identifying mineralised sections of core for assay. Values were generally low, with the highest being at the bottom of the hole (38 mg/t). Sludge gold values were higher in the upper 100 m when the hole was cased; this may be due to surface contamination.

The presence of cassiterite was noted in all the sludge prior to casing the hole to 100 m. No cassiterite was recorded from the pan concentrates beyond this depth.

No lode cassiterite was found in the core and the cassiterite must therefore all have come from the six metre thickness of alluvium. This was confirmed by Bottrill (Appendix 1).

A total of 175.83 grams of cassiterite was extracted from this hole. If all the cassiterite came from the six metre thickness of overburden the grade would be 160 g/m^3. This grade is not payable in present market conditions but the occurrence is unusual and should be investigated further.

A line of twelve churn drill holes (fig. 2) was drilled across the alluvial plain to gather more information on the occurrence of alluvial cassiterite but these holes found little gold and no cassiterite. The location of these holes, their depth and gold grade, are given in Appendix 2.

Individual logs of these holes are not included in this report, as in all cases, the sequence consisted of 0.5 m soil and then pebbly clay to Mathinna Beds bedrock, which was at 6 m depth in all but two holes (7 and 8) where it was 8 m. This probably indicates the existence of a buried minor channel, and the higher gold grade of 25 mg/m^3 in the bottom of Hole 7 seems to confirm this.

Churn drill hole 8 (K8 on the map of Appendix 2) was 18 m from DDH 1 (which contained the cassiterite), and is the nearest churn hole to DDH1; K7 was 22 m from DDH 1 and, as already noted, is probably in an abandoned channel. No trace of cassiterite was found in the heavy mineral concentrates from these two holes.

There is no record of cassiterite in the literature appertaining to this area but the occurrence is significant and further exploration is

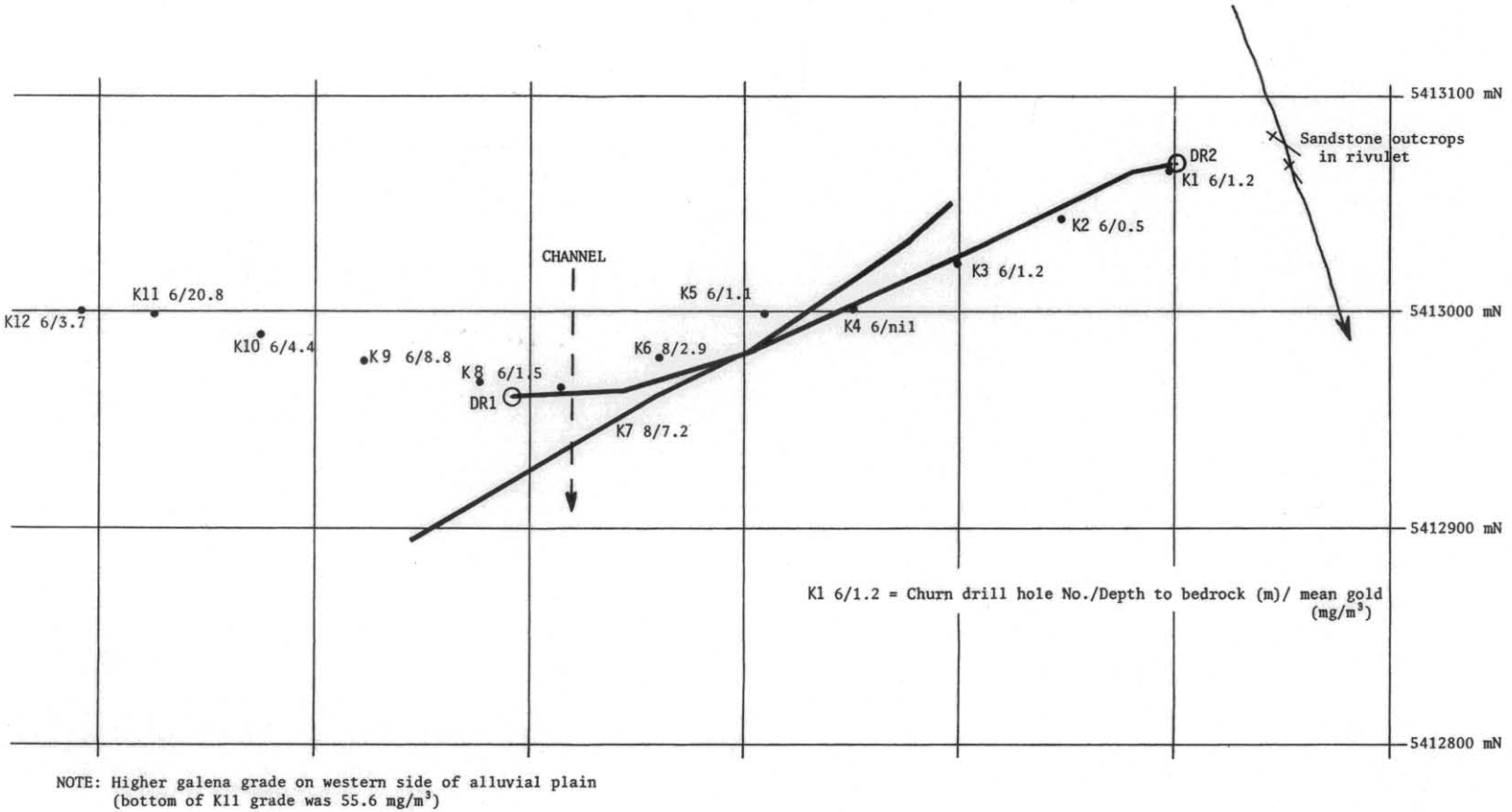
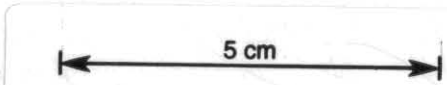


Figure 2. *Plot of DDH 1 and DDH2, and Keystone Holes K1 to K12*



warranted, firstly to determine the size and shape of the deposit with further drill or excavator holes, and secondly to trace the mineral to its primary source.

CONCLUSION AND RECOMMENDATIONS

The diamond drilling programme has made a contribution to the knowledge of the structure of the area in that a shear zone was intersected. Drilling beneath the alluvium between O'Briens mine and the Carnegie mine would be a suitable site for a follow-up drilling programme because these mines were two of the best lode prospects of the district and the ground between them is therefore more prospective. This site was the first choice for the diamond drilling reported here, but was and still is, under Exploration Licence so was not available for this investigation.

Further drilling west of DDH 1, i.e. towards and beneath the Dans Rivulet goldfield, would also extend the knowledge on this section line. New forestry roads in this area have greatly increased the number of bedrock exposures, which should permit further surface mapping which would augment any new drilling data obtained, and hopefully enhance structural interpretation.

The occurrence of detrital cassiterite warrants further investigation.

REFERENCES

HUGHES, T. D. 1947. The Dan Rivulet Goldfield. *Unpubl. Rep. Dep. Mines Tasm.* 1947:87-124.

MITCHELL, P. R. 1980. *Geological appraisal of the Dan Rivulet area (E.L. 31/76), Mathinna, Tasmania.* Unpublished report A. C. A. Howe Australia Pty Ltd for Sturts Meadows Prospecting Syndicate N.L. Meadows. [TCR 80-1464].

THREADER, V. M. 1963. Diamond drilling at Dan Rivulet. *Tech. Rep. Dep Mines Tasm.* 7:66-68.

TURNER, W. S. 1974. *Final report on mineral exploration on lode and alluvial gold prospects at Mathinna, north east Tasmania, E.L. 6/68.* Unpublished report Geophoto Resources Consultants for Texins Development Pty Ltd. [TCR 74-994].

[29 October 1987]

APPENDIX 1

1986/52. Mineralogy/petrology of some Dan Rivulet Bore Hole 1 samples

R. S. Bottrill

Abstract

Two samples of drill core and one pan-concentrated sludge sample from this borehole were examined and found to be mineralised. The pan concentrate is preponderately cassiterite with minor pyrite, while the drill core samples exhibit minor sulphides (pyrite, chalcopyrite, marcasite, sphalerite, galena, bornite and covellite). These sulphides principally occur in quartz-carbonate veins, but are also disseminated in phyllitic Mathinna Beds. The cassiterite is presumed to derive from Cainozoic alluvium, while the sulphides may be polygenetic, perhaps representing syngenetic sulphides overprinted or remobilised by Devonian hydrothermal fluids.

INTRODUCTION

Two samples of sulphide-bearing drill core from this borehole were submitted for examination by V. M. Threader. The samples, from the 89.0 m and 94.2 m levels, are of the Mathinna Beds.

Sludge samples collected from this borehole over the interval 76.62-85.62 m were pan concentrated at the Department's Launceston laboratories. This product, of about 0.2-2.0 mm grain size, was submitted for mineral identification.

DESCRIPTIONS

BH1 (89.0 m)

This rock is a contorted, quartz-rich phyllite with a foliation defined by phengitic muscovite and lesser chlorite. Bedding is poorly defined but is probably approximately parallel to the tectonic foliation. Rutile is very abundant as stringers and disseminations of very fine grains. Graphite flakes, zircon and pyrite are rare, while blebs of chalcopyrite-sphalerite-galena (up to 40 um) are very rare.

Numerous veins, of several generations and orientations, cut this rock and are often contorted and disjointed by shearing. Quartz is predominant but a carbonate is sporadically present and sulphides are sporadic but minor. Pyrite occurs as crystals and aggregates up to a few hundred micrometres, sometimes intergrown with marcasite. Chalcopyrite is relatively abundant as blebs to about 100 um, or as fine veinlets a few micrometres wide. The blebs often contain sphalerite, galena, bornite and covellite, and these sulphides are practically always associated with chalcopyrite in these rocks. Chalcopyrite may replace the galena and sphalerite in places.

BH1 (94.2 m)

This rock has a similar mineralogy to the above, but is less contorted and quartzose. Rutile and sulphides (as above) seem less common, while graphite may be more abundant. A large proportion of the sulphides occur as blebs in the phyllite, and a pyrite vein is present, parallel to the cleavage. A mawsonite-like mineral and other unidentified minerals are present.

BH1 (76.62 - 85.62 m - sludge)

Cassiterite comprises about 70-80% of the sample, as subangular to rounded grains, rarely subhedral. The colour varies from deep red to brown and yellow and inclusions of quartz, pyrite, mica, tourmaline and rutile are present.

Pyrite comprises about 5% of the sample, it is anhedral and often intergrown with quartz.

Hematite comprises about 5% of the sample, as reticulated aggregates probably pseudomorphous after magnetite.

Rock fragments comprise about 10-20% of the sample, and are dominantly dolerite and hornfels, often weathered.

Goethite, tourmaline, pyroxene, rutile, and an unidentified metal contaminant are all trace constituents.

CONCLUSIONS

Base metal sulphides are minor but widespread phases within both the phyllite and the quartz-carbonate veins. The veins (probably Devonian) may have only remobilised the sulphides locally, by lateral secretion. Alternatively, metals may have migrated from the veins into the phyllite (this seems less likely). The pyrite and chalcopyrite veins are probably due to late stage remobilisation. No gold was detected microscopically; some seemed visible in the original core, but was lost during preparation.

The coarse, subangular to rounded nature of the cassiterite indicates an alluvial source, probably close to the original (Devonian) tin-bearing vein or greisen, of Cainozoic age.

[2 September 1986]

APPENDIX 2

Examination of churn drill samples

L. J. Rhodes
P. L. James

Samples of cradle concentrates from churn drill holes 1 to 12 at Dans Rivulet, submitted by V. M. Threader, have been examined.

The samples were screened on a 2 mm screen, and the screen undersize was submitted to magnetic separation with a hand magnet to remove tramp iron. The magnetics were discarded. The non-magnetics were concentrated by panning and the pan concentrate was examined by concentration on the vanning plaque.

Only a minor amount of heavy mineral was present in the samples, including zircon, native lead, and a few sulphide particles. All pan concentrates assayed less than 0.01% Sn, so the masses of the respective fractions have not been included in this report.

The gold results are given in the attached table.

Reg. No.	Depth (m)	Gold content: Mass (mg)	Gold content: Grade (mg/m^3)	No of pieces of gold to size (um): +500	+200	+100	-100
Hole 1							
861031	0-2	Nil	-	-	-	-	-
032	2-4	0.01	0.4	-	1	1	-
033	4-6	0.08	3.2	-	1	1	-
		mean	1.2				
Hole 2							
861034	0-2	nil	-	-	-	-	-
035	2-4	0.04	1.6	-	-	1	-
036	4-6	nil	-	-	-	-	-
		mean	0.5				
Hole 3							
861037	0-2	nil	-	-	-	-	-
038	2-4	nil	-	-	-	-	-
039	4-6	0.09	3.6	-	2	2	-
		mean	1.2				
Hole 4							
861040	0-2	nil	-	-	-	-	-
041	2-4	nil	-	-	-	-	-
042	4-6	nil	-	-	-	-	-
		mean	nil				
Hole 5							
861043	0-2	nil	-	-	-	-	-
044	2-4	0.08	3.2	-	-	2	-
045	4-6	nil	-	-	-	-	-
		mean	1.1				
Hole 6							
861046	0-2	nil	-	-	-	-	-
047	2-4	0.05	2.0	-	1	-	-
048	4-6	nil	-	-	-	-	-
049	6-8	0.24	9.6	-	2	1	-
		mean	2.9				

Reg. No.	Depth (m)	Gold content Mass (mg)	Gold content Grade (mg/m^3)	No of pieces of gold to size (um) +500	+200	+100	-100
Hole 7							
861429	0-2	0.05	2.0	-	2	1	-
430	2-4	0.04	1.6	-	-	-	1
431	4-6	nil	-	-	-	-	-
432	6-8	0.63	25.2	-	3	-	-
		mean	7.2				
Hole 8							
861433	0-2	nil	-	-	-	-	-
434	2-4	0.42	17.0	-	3	1	1
435	4-6	0.07	2.8	-	1	-	-
		mean	1.5				
Hole 9							
861436	0-2	0.14	5.6	-	-	2	-
437	2-4	nil	-	-	-	-	-
438	4-6	0.52	20.8	1	2	1	1
		mean	8.8				
Hole 10							
861439	0-2	0.09	3.6	-	-	3	-
440	2-4	0.11	4.4	-	-	2	1
441	4-6	0.13	5.2	-	1	2	-
		mean	4.4				
Hole 11							
861442	0-2	0.06	2.4	-	1	-	-
443	2-4	0.11	4.4	-	-	3	-
444	4-6	1.39	55.6	1	4	1	-
		mean	20.8				
Hole 12							
861445	0-2	0.14	5.6	-	1	-	-
446	2-4	0.14	5.6	-	1	1	-
447	4-6	nil	-	-	-	-	-
		mean	3.7				

APPENDIX 3

Logs of Diamond Drill Holes 1 and 2

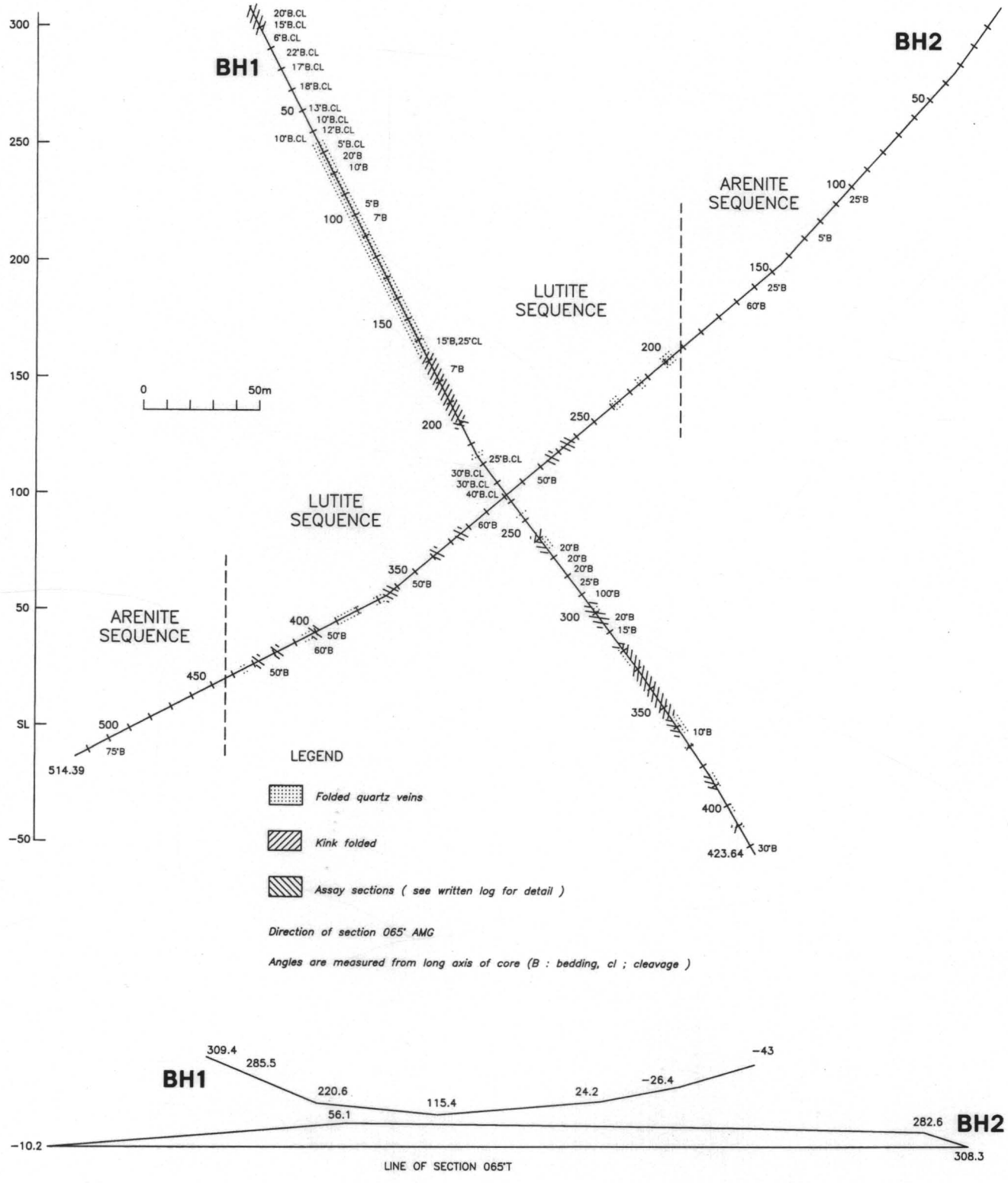


Figure 4. *Section through DDH 1 and 2, Dans Rivulet.*

5 cm

TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL CORE RECORD

HOLE No. DAN RIVULET No. 1
REF. No. _____ SHEET No. 1 of 9

PROJECT: DAN RIVULET
OBJECTIVE: STRUCTURES INFLUENCING GOLD MINERALISATION

PROPOSED BY: V.M. Threader LOGGED BY: V.M. Threader

LOCATION: 360 m on 237° AMG from Dan Rivulet bridge on Mathinna Plains Road

MAP SHEET: 84152 GEOL. ATLAS: Alberton (40)
A.M.G. CO-ORDS: 572291 mE 5412961 mN
COLLAR R.L.: 307.8 TOTAL DEPTH: 423.64
COLLAR DIP: 60 AZIMUTH: 073
DATE COMMENCED: 29.7.85 DATE COMPLETED: 15.10.85
DRILL RIG: Longyear 44 No. 1
DRILL CREW: C.S.I. Mitchell, R. Schier

HOLE SIZE:

HQ imp	to	222.57	m
NQ	to	E.O.H.	m
	to		m
	to		m
	to		m

HOLE CONDITION AFTER COMPLETION:
No casing left in hole. Hole plugged

SURVEY DATA INSTRUMENT:

DEPTH	INCLINATION		AZIMUTH		COMMENTS
	As read	Dip	As read, °M	°A.M.G.	
56.3	30	60	N73E	086	
149	30	60	N61E	074	
299	34	56	N42E	055	
369.4	34	56	N41E	054	
421.2	33	57	N36E	049	

SUMMARY GEOLOGICAL LOG

From (m)	To (m)	ROCK DESCRIPTION
0	423.64	Lithologically similar throughout: well cleaved laminite.
		The following zones were recognised:
0	12.00	Highly kink banded
65.6	167.40	Quartz veins, some buckled (2 generations?)
167.40	204.00	Kink banded, minor quartz veining
215.00	218.50	Intense folding of quartz veins
258.50	260.00	Kink banding
260.00	267.80)	Intense folding of quartz veins
295.50	300.20)	
315.87	355.05	Kink folded cleavage and minor quartz veining
355.05	363.80)	Intense folding of quartz veins
369.00	370.90	
373.64	383.00)	
392.60	396.55)	
399.50	403.00	Kink banded cleavage and minor folding of quartz veins
		Cleavage and bedding are parallel or sub-parallel throughout
		Minor sulphide mineralisation was noted, and some anomalous sulphide
		and metallic content was noted in the sheared zones but gold was
		virtually absent..

SUMMARY GEOCHEMICAL DATA (g/t unless specified)

From	To	Length	Rec. (%)							

REPORT REFERERENCE: 1986/52 Mineralogy/Petrology of some Dan Rivulet Borehole 1 samples. Appendix

OTHER COMMENTS: Sludge was collected daily, pan concentrated and assayed for cassiterite and gold. The results are attached (pp7, 8).

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DIAMOND DRILL CORE GEOLOGICAL RECORD

HOLE No. DAN RIVULET No. 1
REF. No. _____ SHEET No. 2 of 9

INTERVAL From (m)	INTERVAL To (m)	REC. (%)	Core lift	Core loss	Depth (m)	Graphic Log	Min	DESCRIPTION	SPECIMEN Number	SPECIMEN Depth	SPECIMEN Prep'n
0	6.00	nil						Overburden			
6.00	12.00	50						Highly kink banded			
12.00	30.00	90						Bedding/cleavage angle: 22° at 28 m, 17° at 30 m (measured from core length)			
30.00	36.00	nil						Bedding/cleavage angle: 17° at 33 m, 14° at 36 m			
36.00	65.60	Full						Small amount pyrite in vuggy quartz at 36.0 m, barren vuggy quartz at 37.7 m			
		recovery						vuggy quartz veins parallel to B/Cl at 41.4 m. Bedding/cleavage angle: 18° at 41 m, 15° at 44			
								13° at 49 m, 14° at 52 m, 10° at 55 m, 10° at 57.7 m, 12° at 59.6 m, 10° at 62 m, 16° at 62.5			
								10° at 63.5 m, 5° at 64.5 m.			
65.60	86.00							Increase in quartz veins, folding of quartz veins, boudinage and/or mylonitisation of some			
								slate beds: 68.5-68.8. B/Cl 5° at 68 m with parallel quartz veins, QV 5° at 70 m,			
								B 10° at 70 m, B 20°, QV 30° at 77 m, B 10°, QV 22° at 80 m. angle between bedding and			
								cleavage 10° at 77° and 85°			
86.00	95.00							Intensely folded phyllite - petrological description by Bottrill 1986/52. Small particle			
								of free gold at 89 m and pyrite at 94.3 m.			
95.00	100.84							Two generations of quartz vein, a deformed one containing bedding and cleavage and an un-			
								deformed one parallel to cleavage bedding 5° cleavage 25° to core length.			
100.84	102.70							Fewer quartz veins and undeformed sequence.			
102.70	111.70							Occasional quartz veins. Bedding 7°, QV and cleavage 12° at 106.18			
111.70	167.00							Highly kink folded with occasional quartz veins. Bedding and cleavage clearly distinguishable			
								by presence silt and mud interlayers B 15°, Cl 25° at 165.8 crush zone 132.9-134			
167.00	194.00							Minor folding and quartz veining only.			
194.00	204.00							Kink banding and minor quartz veining			
204.00	215.00							Relatively undeformed.			
215.00	218.50							Numerous quartz veins - intensely contorted			
218.50	244.90							B/Cl : 25° at 219 m, 30° at 221 m, 230 and 236 m, 40° at 240 m.			
244.90	245.40							Kink folded cleavage			
245.50	258.50							B/Cl : 30° at 246 m and 250.5, 40° at 257 m, o° at 260 m.			
258.50	260.00							Kink folded cleavage			
260.00	267.80							Kink folded cleavage intensely contorted quartz veins			
267.80	295.50							B/Cl: 20° at 270m, 276 m, and 282 m, 25° at 289 m, 10° at 290			
295.50	300.20							Contorted quartz veins. Quartz veins 60% of core			
300.20	307.60							Minor quartz veining, B/Cl: 20° at 305 m			
307.60	315.87							B/Cl 20° at 309 m, 15° at 311.			
315.87	355.05							Kink folding and minor quartz veining			
355.05	363.80							Intensely contorted quartz veins - 60% of core			
363.80	369.00							Bedding 10° at 365 m, abundant quartz veins (60%)			
369.00	370.90							Kink banded cleavage and intensely contorted quartz veins			
370.90	373.64							Relatively undisturbed.			

5 cm

TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL CORE GEOLOGICAL RECORD

HOLE No. DAN RIVULET No. 1
REF. No. _____ SHEET No. 3 of 9

INTERVAL From (m)	INTERVAL To (m)	REC. (%)	Core lift	Core loss	Depth (m)	Graphic Log	Min	DESCRIPTION	SPECIMEN Number	SPECIMEN Depth	SPECIMEN Prep'n
373.64	383.00							Kinked and contorted as above (QV 50-60%)			
383.00	392.60							Relatively undisturbed.			
392.60	396.55							Kinked and contorted as above (QV 40% at 393 m and 75% at 395 m).			
396.55	399.50							Relatively undisturbed.			
399.50	403.00							Kinked cleavage - but less contorted than above (QV 60%).			
403.00	423.64							Relatively undisturbed B/Cl 30° at 421 and 423 m.			

5 cm

17/28

TASMANIA DEPARTMENT OF MINES
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DIAMOND DRILL CORE GEOCHEMICAL DATA

HOLE No. DAN RIVULET No. 1
REF. No. _____ SHEET No. 4 of 9

SAMPLE No.	SAMPLE Type	INTERVAL From (m)	INTERVAL To (m)	Sample Length	Rec. (%)	METAL CONTENT (g/t unless specified) As	Cu	Pb	Sn	W	Zn	S	Au						COMMENTS
860715	H.C.	67.60	68.60			21	59	23	<4	13	115	300							
860716		68.60	69.60			19	41	44	4	<9	105	320							
860717		69.60	70.60			18	23	15	<4	<9	57	320							
860718		70.60	71.60			10	36	21	6	<9	105	340							
860719		71.60	72.60			<10	36	31	<4	<9	105	220							
860720		72.60	73.60			11	36	32	8	<9	95	185							
860721		73.60	74.60			12	38	51	7	<9	91	200							
860722		74.60	75.60			15	41	23	11	<9	99	150							
860723		75.60	76.60			15	45	38	6	<9	95	210							
860724		76.60	77.60			19	46	26	9	<9	110	175							
860725		77.60	78.50			15	36	27	<4	11	98	170							
860726		78.50	79.62			11	31	22	4	<9	99	160							
860727		79.62	80.60			16	30	29	4	<9	100	230							
860728		80.60	81.60			17	30	27	7	<9	97	150							
860729		81.60	82.60			19	30	100	<4	<9	85	700	0.02						
860730		82.60	83.60			17	30	21	6	9	100	240							
860731		83.60	84.60			16	28	17	5	<9	98	190							
860732		84.60	85.60			22	32	24	6	<9	110	190							
860733		85.60	86.60			16	34	32	6	<9	105	170							
860734		86.60	87.60			17	32	17	8	12	96	230							
860735		87.60	88.60			16	31	22	<4	<9	91	310							
860736		88.60	89.60			17	28	22	4	<9	94	280							
860737		89.60	90.60			15	36	19	11	<9	96	270							
860738		90.60	91.60			12	28	15	<4	<9	69	250							
860739		91.60	92.60			16	30	24	4	<9	87	360							
860740		92.60	93.60			16	30	17	<4	<9	96	250							
860741		93.60	94.60			18	31	19	4	<9	94	310							
860742		94.60	95.60			14	30	25	7	<9	98	320							
860743		215.50	216.50			10	34	15	5	18	115	195							
860744		216.50	217.50			12	35	18	5	17	94	270							
860745		217.50	218.40			13	32	16	6	16	87	260							
860746		259.97	260.90			11	27	19	<4	25	72	390							

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TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL CORE GEOCHEMICAL DATA

HOLE No. Dan Rivulet No. 1
REF. No. _____ SHEET No. 5 of 9

SAMPLE No.	SAMPLE Type	INTERVAL From (m)	INTERVAL To (m)	Sample Length	Rec. (%)	METAL CONTENT (g/t unless specified) As	Cu	Pb	Sn	W	Zn	S	Au						COMMENTS
860747	H.C.	260.90	261.90			19	36	14	<4	12	92	180							
860748		261.90	262.88			13	37	22	6	12	100	150							
860749		262.88	263.90			14	33	53	<4	30	64	540							
860750		263.90	264.90			21	39	25	5	18	100	280							
860751		264.90	265.89			11	36	25	10	25	100	310							
860752		265.89	266.80			23	38	25	6	19	110	350							
860753		266.80	267.85			17	32	18	4	19	93	240							
860754		294.94	295.94			17	27	24	4	32	91	350							
860755		295.94	296.94			24	21	21	6	44	74	510							
860756		296.94	297.94			<10	27	30	4	34	84	240							
860757		297.94	298.93			18	35	32	<4	42	88	300							
860758		298.93	299.93			18	35	50	<4	49	81	650	<0.02						
860759		299.93	300.93			25	58	23	5	45	110	310							
860760		300.93	301.94			19	34	20	8	38	94	180							
860761		301.94	302.94			19	38	28	8	40	96	170							
860762		302.94	303.90			15	38	16	7	47	110	130							
860763		303.90	304.88			15	46	22	<4	54	105	150							
860764		315.87	317.90			18	35	25	6	79	88	650	<0.02						
860765		355.05	355.96			20	46	24	6	125	95	250							
860766		355.96	356.94			38	37	33	10	71	135	200							
860767		356.94	357.92			25	43	23	9	115	98	280							
860768		357.92	358.87			28	35	26	7	130	95	220							
860769		358.87	359.70			29	41	24	5	250	99	210							
860770		359.70	360.65			41	46	30	<4	1050	88	180	<0.02						
860771		360.65	361.61			20	39	13	<4	22	86	140							
860772		361.61	362.49			39	36	15	6	18	86	1800	<0.02						
860773		362.49	363.80			62	38	24	5	13	88	1050	<0.02						
860774		373.72	374.64			47	25	27	4	13	69	580							
860775		374.64	375.64			22	40	17	5	11	97	250							
860776		375.64	376.60			30	43	23	5	13	105	780							
860777		376.60	377.55			63	45	36	<4	16	105	1100	<0.02						
860778		377.55	378.50			12	31	19	5	10	94	290							

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TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL CORE GEOCHEMICAL DATA

HOLE No. Dan Rivulet No. 1
REF. No. _____ SHEET No. 6 of 9

SAMPLE No.	SAMPLE Type	INTERVAL From (m)	INTERVAL To (m)	Sample Length	Rec. (%)	METAL CONTENT (g/t unless specified) As	Cu	Pb	Sn	W	Zn	S	Au						COMMENTS
860779	H.C.	378.50	379.45			23	40	20	<4	10	105	220							
860780		379.45	380.40			28	35	20	4	15	95	580							
860781		380.40	381.35	0.95		28	36	26	4	<9	100	730	0.05						
860782		381.35	382.60			18	38	27	6	9	95	210							
860783		392.60	393.60			21	26	36	5	<9	90	360							
860784		393.60	394.60			20	27	22	4	<9	98	230							
860785		394.60	395.60			13	28	10	<4	15	84	170							
860786		395.60	396.55			22	22	28	<4	12	62	270							

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TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

(SLUDGE ASSAYS)

DIAMOND DRILL CORE GEOCHEMICAL DATA

HOLE No. DAN RIVULET BH No. 1
REF. No. _____ SHEET No. 7 of 9

SAMPLE No.	SAMPLE Type	INTERVAL From (m)	INTERVAL To (m)	Sample Length	Rec. (%)	METAL CONTENT (g/t unless specified) Mass	%Sn	Mass Sn g.	Cassit. g/m^3	Mass Au mg.	Au mg/t.	COMMENTS
851225	S	0	4.18	4.18		65.4	10.4	6.80	395	0.12		
851226		4.18	13.62	9.44		48.7	1.88	0.92	24	0.13	2	
851227		13.62	22.62	9.00		77.1	11.6	8.94	241	0.11	2	$\frac{\text{g Sn}}{\text{sample length}} \times 243$
851228		22.62	34.62	12.00		87.5	1.12	0.98	20	0.03	0.2	= g cassiterite/m^3 (HQ core)
851229		34.62	46.62	12.00		72.7	0.35	0.25	5	0.13	1	
851230		47.12	55.62	7.50		77.5	0.13	0.10	5	0.70	9	
851231		55.62	64.62	9.00		29.9	0.98	0.29	8	0.10	2	
851232		64.62	76.62	12.00		58.2	0.36	0.21	4	0.10	1	$\frac{\text{mg Au}}{\text{sample length}} \times 132$
851233		76.62	85.62	9.00		293.4	45.5	133.5	3604	0.40	4	= mg/t (NQ hole)
851234		85.62	97.62	12.00		37.4	0.37	0.14	3	0.08	1	The factor is 93.5 for HQ core
851235		100.6	106.70	6.10		87.1	27.2	23.7	944	0.78	12	(calculation of grade of cassiterite
851434		106.70	115.75	9.05		Total mass 175.83				0.12	2	is valueless due to contamination)
851435		115.75	127.80	8.05						0.02	0.3	
851436		127.80	145.90	18.10						0.02	0.1	
851437		145.90	154.88	8.98						0.01	0.1	
851438		154.88	163.74	8.86						0.02	0.3	
851439		163.74	181.75	18.01						<0.01	-	
851440		181.75	196.84	15.09						0.02	0.2	
851441		196.84	211.89	15.05						0.13	1.2	
851442		211.89	220.88	8.99						0.06	0.9	
851443		220.88	241.99	21.11						0.03	0.1	
851444		241.99	268.89)	16.90					)	0.05	0.2	
851445		241.99	268.89)	26.90					)			
851446		268.99	280.99	12.01						0.01	0.1	
851447		280.99	292.94	11.95						0.02	0.2	
851448		292.94	304.88	11.94						<0.01	-	
851449		304.88	313.00	8.12						0.15	2.4	
851450		313.00	328.85	15.85						0.07	0.4	
851451		328.85	350.00	21.15						<0.01	-	
851452		350.00	361.86	11.86						0.02	0.2	
851453		361.86	370.90	9.04						0.07	1	
851454		370.90	379.87	8.97						<0.01	-	

TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH (SLUDGE ASSAYS contd.)

DIAMOND DRILL CORE GEOCHEMICAL DATA

HOLE No. DANS RIVULET BH No. 1
REF. No. _____ SHEET No. 8 of 9

SAMPLE		INTERVAL		Sample Length	Rec. (%)	METAL CONTENT (g/t unless specified)													COMMENTS
No.	Type	From (m)	To (m)			Mass	%Sn	Mass Sn g.	Cassit. g/m^3	Mass Au mg	Au .mg/t								
851528	S	379.82	383.93	9.11						0.02	0.3								
851529		388.93	401.02	11.09						<0.01	-								
851530		401.02	416.08	15.06						0.39	2.4								
851531		416.08	423.64	7.56						2.68	33								

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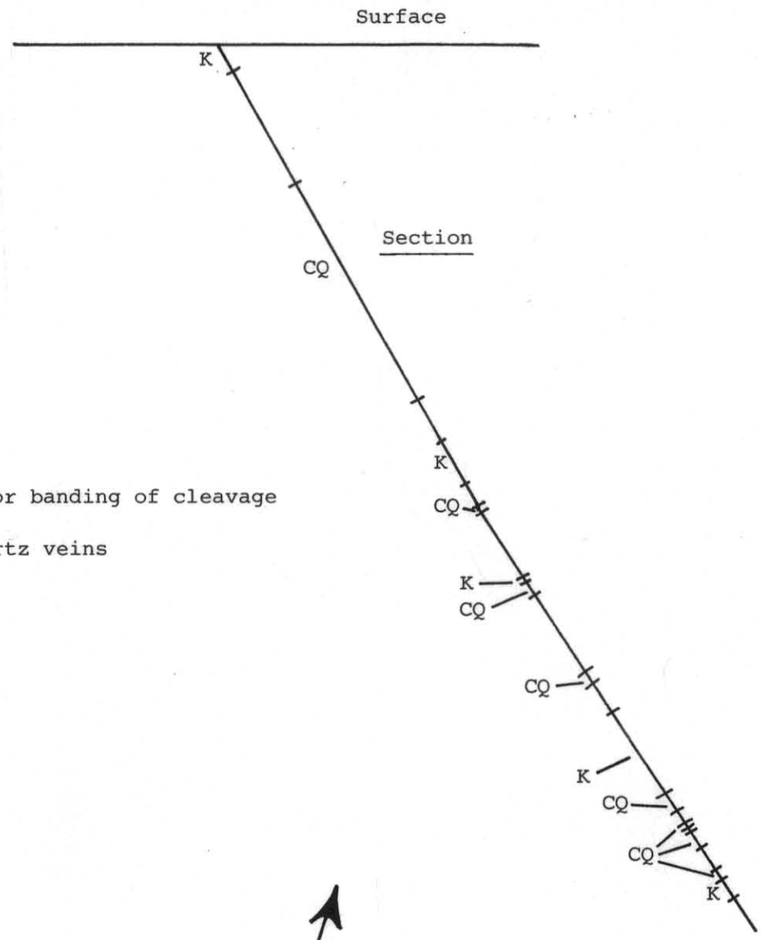
TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL HOLE PLOT

HOLE No. DAN RIVULET No. 1
REF. No. _____ SHEET No. 9 of 9

A.M.G. CO-ORDS: 572291 mE
5412961 mN
COLLAR R.L.: 307.8
TOTAL DEPTH: 423.64
COLLAR DIP: 60
AZIMUTH: 073

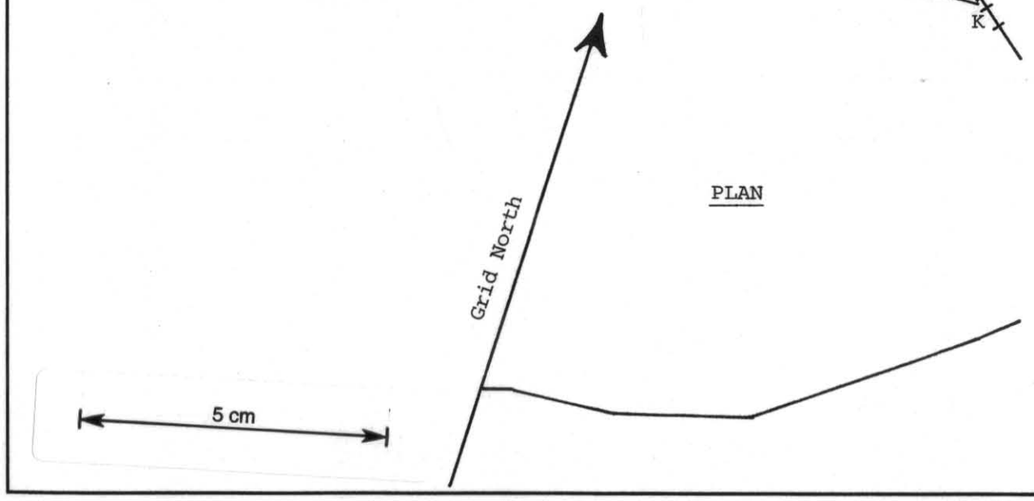
SCALE 1 : 100 200 m
(Bar scale must be shown)



Section

K: Kink folding or banding of cleavage

CQ: Contorted quartz veins



PLAN

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TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL CORE RECORD

HOLE No. DAN RIVULET No. 2
REF. No. _____ SHEET No. 1 of 5

PROJECT: DAN RIVULET
OBJECTIVE: Structures influencing gold mineralisation

PROPOSED BY: V.M. Threader LOGGED BY: V.M. Threader

LOCATION: 327 m on 070° AMG from DR1

MAP SHEET: 84152 GEOL. ATLAS: Alberton (40)
A.M.G. CO-ORDS: 572602 mE 5 413 068 mN
COLLAR R.L.: 308.3 TOTAL DEPTH: 514.39
COLLAR DIP: 50° AZIMUTH: 249
DATE COMMENCED: 29.10.85 DATE COMPLETED: 25.2.86
DRILL RIG: Longyear 44 No. 1
DRILL CREW: C.S.J. Mitchell, R. Schier

HOLE SIZE:

HQ	to	33	m
NQ	to	EOH	m
	to		m
	to		m

HOLE CONDITION AFTER COMPLETION:
No casing left in hole
Hole plugged

SURVEY DATA INSTRUMENT:

DEPTH	INCLINATION		AZIMUTH		COMMENTS
	As read	Dip	As read, °M	°A.M.G.	
67	42	48	S52W	245	
224	50	40	S52W	245	
513	63	27	S47W	240	

SUMMARY GEOLOGICAL LOG

From (m)	To (m)	ROCK DESCRIPTION
0.00	7.00	Alluvium
7.00	17.00	Weathered Mathinna Beds
17.00	200.00	Sandstone predominant sequence
200.00	440.00	Lutite predominant sequence
440.00	514.39	Sequence changes between sandstone predominant and 50:50
		Sheared and contorted zones 206-212
		225-225.35
		235.5-240 (intense)
		301-303
		368-371
		380-391
		402-409
		436-436.50
		478.4-482.0 and 498.9-507
		(Much less evidence of post folding disturbance than in DR1
		Pyrite film on cleavage surface common.

SUMMARY GEOCHEMICAL DATA (g/t unless specified)

From	To	Length	Rec. (%)							

REPORT REFERERENCE: 1987/54

OTHER COMMENTS: Sludge was collected daily from concentrate and assayed for gold (p. 4)

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TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL CORE GEOLOGICAL RECORD

HOLE No. DAN RIVULET No. 2
REF. No. _____ SHEET No. 2 of 5

INTERVAL From (m)	INTERVAL To (m)	REC. (%)	Core lift	Core loss	Depth (m)	Graphic Log	Min	DESCRIPTION	SPECIMEN Number	SPECIMEN Depth	SPECIMEN Prep'n
0.00	7.00	6						Rounded pebbles, boulders of Mathinna Beds (Hornfels)			
7.00	10.00	30						Ironstained sandstone			
10.00	17.00	29						Pale (leached) sandstone			
17.00	25.00	31						Light grey sandstone/mudstone - broken core			
25.00	34.00	13						As above but mudstone fraction lost			
34.00	72.00	100						Light grey sandstone/mudstone - full recovery			
								unmineralised quartz veins at 37.2-37.5 m and 45-47 m			
								pyrite film on cleavage surfaces at 41 m and 57 m			
								bedding/cleavage 0 to 30° at 41.5 m.			
72.00	79.00							Lutite predominant sequence, broken core			
79.00	83.50							Pyrite on bedding/cleavage surfaces in sandstone predominant sequence			
83.50	97.00							Same as previous but increase in quartz vein - unmineralised.			
								Quartz veins often terminate on bedding surfaces - indicating BP slip			
97.00	153.00							Relatively undisturbed bedding 25° to core length at 106 m.			
								and 5° to core length at 140 m.			
153.00	200.00							Fine grained sandstone predominant sequence grading into a lutite predominant sequence			
								at 200 m. 153-172 distinctive purple colouration.			
								bedding 25° at 155 m and 60° at 170 m.			
200.00	235.50							Quartz veining in lutite predominant sequence 204-205, shearing 206-212, bedding 60° at216 m.			
								shearing 225.00-225.35 and increase in quartz veining to 235.50.			
235.50	240.00							Intense contortion of quartz veins and displacement of quartz veins on bedding surfaces.			
								Lithology becoming strongly laminated clay grade/silt grade towards base.			
240.00	440.00							Laminated lutite with kink banding at 264, 265, 267, 275, 325, 340, 343, 349, 361, 365, 397,			
								403, 420, 429 m.			
								Unmineralised quartz veins at 275-277, 287, 295, 299, 301-303 (contorted in part disrupted)			
								304-305, 359-360 (parallel to bedding), 368-371 (contorted), 380-391 (contorted),			
								402-409 (contorted) 436-436.50 (slightly contorted).			
								bedding 50° at 297 m, 60° at 328 m and 357 m, 50° at 361 m.			
								50° at 394 m, 60° at 415 m, 50° at 433 m, 60° at 438 m. pyrite film on cleavage surfaces			
440.00	443.50							Sandstone predominant sequence. Slightly contorted unmineralised quartz veins at			
								442.50-443.50			
443.50	452.00							Laminite sequence			
452.00	459.80							Sandstone predominant sequence			
								pyrite film on cleavage surfaces			
								bedding 50° to 65° at 455.5 m (angles measured from core length)			
459.80	467.00							Interbedded sequence 50:50 Sandstone:Lutite			
467.00	490.00							Sandstone predominant sequence			

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5 cm

TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL CORE GEOLOGICAL RECORD

HOLE No. DAN RIVULET No. 2
REF. No. _____ SHEET No. 3 of 5

INTERVAL From (m)	INTERVAL To (m)	REC. (%)	Core lift	Core loss	Depth (m)	Graphic Log	Min	DESCRIPTION	SPECIMEN Number	SPECIMEN Depth	SPECIMEN Prep'n
								bedding 50° at 487 m, 60° at 490 m, 45° at 490.4 m.			
								contorted quartz veins 478.4-482 m.			
								scattered pyrite grains 483.4-485.5			
490.00	504.00							Interbedded sequence (50:50)			
								Contorted quartz veins, in part brecciated from 498.9-507 m			
504.00	514.13							Sandstone predominant sequence bedding 75° at 510 m			

5 cm

TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

(SLUDGE ASSAYS)

DIAMOND DRILL CORE GEOCHEMICAL DATA

HOLE No. DAN RIVULET BH 2
REF. No. _____ SHEET No. 4 of 5

SAMPLE No.	SAMPLE Type	INTERVAL From (m)	INTERVAL To (m)	Sample Length	Rec. (%)	METAL CONTENT (g/t unless specified) Mass	%Sn	Mass Sn g.	Cassit. Mass g/t	Au mg.	Au mg/t	COMMENTS
851612	S	0	7	7.00						0.07		
851613		7.00	13.35	6.35						0.02		
851614		13.35	19.35	6.00						0.12		
851615		19.35	25.35	6.00						0.09		
851616		25.35	33.00	8.00						0.02		
851617		33.00	43.35	10.00						0.01		
851618		43.35	61.35	8.00						<0.01		
851619		61.35	68.90	7.55						0.01		
851620		68.90	85.35	6.45						<0.01		
851621		85.35	112.35	17.00						<0.01		
851622		112.35	127.35	15.00						0.21		
851623		127.35	157.27	9.92						<0.01		
851624		157.27	172.30	15.03						<0.01		
851897		172.30	203.40	31.10						18.1	0.9	
851898		203.40	231.40							31.8	1.5	
851899		231.40	247.38							52	1.4	
851900		247.38	268.43							<10		
851901		268.43	284.57							<10		
851902		284.57	304.43							<10		
851903		304.43	325.51							<10		
851904		325.51	346.46							<10		
851905		346.46	358.46							19.4	0.4	
860239		358.46	371.22							0.0032		
860240		371.22	403.47							0.0095		
860241		403.47	421.49							0.0020		
860242		421.49	439.54							0.0086		
860243		439.54	451.49							0.0258		
860244		451.49	463.51							0.0159		
860245		463.51	478.80							0.0106		
860246		478.80	496.47							0.0053		
860247		496.47	508.40							0.0152		
860248		508.40	514.39							0.1130		

TASMANIA DEPARTMENT OF MINES
GEOLOGICAL SURVEY BRANCH

DIAMOND DRILL HOLE PLOT

HOLE No. Dan Rivulet No. 2
REF. No. _____ SHEET No. 5 of 5

A.M.G. CO-ORDS 572 602 mE
5 413 068.0 mN

COLLAR R.L.: 308.3
TOTAL DEPTH: 514.39

COLLAR DIP: 50°
AZIMUTH: 249°

SCALE 100 0 100 200
(Bar scale must be shown)

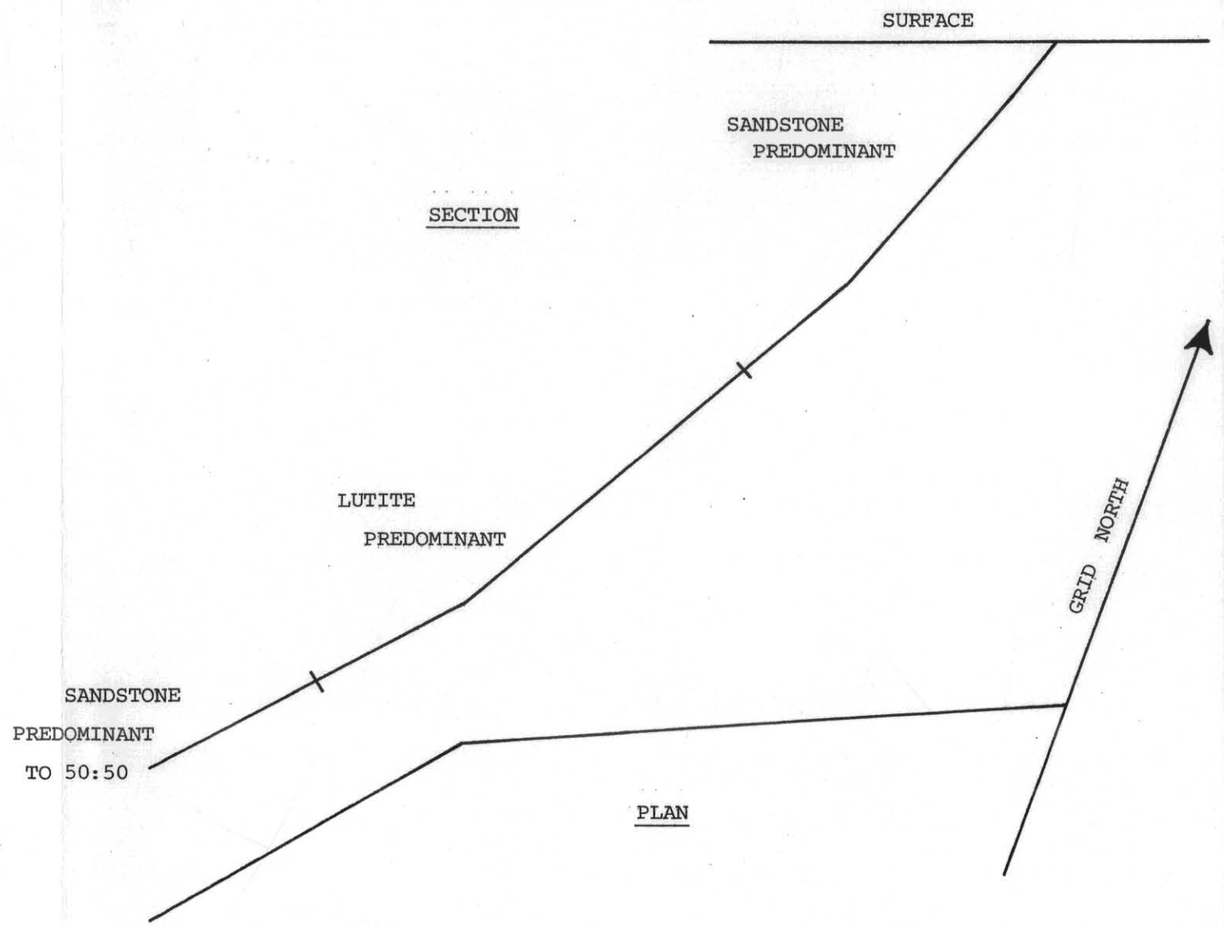

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Figure 3. PORTION OF DANS RIVULET GOLDFIELD

1 : 20 000 SCALE

5 cm

BH1 ◉ Borehole

Strike and dip of bedding

Strike and dip of cleavage

Quaternary sediments

LOCATION DIAGRAM

EXEMPT AREA
S.R.1984 No.209

STATE FOREST

CORNWALL

MATHINNA FALLS FOREST RESERVE

Strickland Ridge

Havelock Flat

Walkers Flat

Davenports Flat

Dilgers Flat

Botchers Flat

Delvins Flat

Gully Flat

Rosedale Flat

Mt.Blackboy

Mathinna Falls

Waterfall

Creek

Ridge

Hill

Plain

Back

Bream

Caves

Snake

Wines

Rivulet

Rayner

Watts

Taylor

Billy

Eton

Lady Heaton

Mary

Hicksons Swamp

Harrow

Link

Claytons

Mine

Road

Revenue

Weise

Dans

Rains

Delvin

Blackboy

Havelock

Walkers

Strickland

Uno

Mathinna

Diggers

New

King

Rosedale

Tasmania

Approx. Only

12M/86 100 Ha
STRICKLAND
GOLDQUEST (VIC) P/L & MINERAL HOLDINGS AUST P/L

13M/86 100 ha
LARANDA
GOLDQUEST (VIC) P/L & MINERAL HOLDINGS AUST P/L

14M/86 100 ha
HAVELOCK (HICKSONS)
GOLDQUEST (VIC) P/L & MINERAL HOLDINGS AUST P/L

1231P/M 100 ha
1232P/M 100 ha
1234P/M 100 ha
1235P/M 85 ha
1236P/M 100 ha
1237P/M 96 ha
GOLDQUEST (VIC) P/L & MINERAL HOLDINGS AUST P/L

53/6ss
53/7ss
53/8ss

KING EDWARD
STARLIGHT
CARNEGIE
NATIONAL EVENT
OBRIENS
BAILEYS
MABEL
OCTOBER
BRIGHT STAR
KING SOLOMON
ETON HILL
LADY MARY
GOLDEN HORSESHOE
TRUE BLUE
CITY OF MELBOURNE
NEW GOLDEN KING

BH1 BH2

close folding

H.A.Rayner 96 ha
191 2 23
78 1 13
52 2 28 W.Walker
25 1 28 W.Walker
98 2 26 W.Baker
18 3 16 H.G.Rayner
22 0 0 T.Ward
50 0 0 H.Polley
50 2 0 W.Burt
15 2 12 A.S.Davenport
39 3 3 A.S.Davenport
40 0 5 H.Polley
25 0 3 H.Polley
24 2 0 H.G.Rayner
20 0 4 A.S.Davenport
20 2 2 A.S.Davenport
20 0 0 A.S.Davenport
2 1 0 J.A.Harper
30 1 0 A.S.Davenport
52 0 0 J.E.McKenzie
42 1 0 J.E.McKenzie
50 0 0 D.Harper
51 2 13 D.Harper
49 0 D.Harper
30 0 1 H.G.Rayner
45 2 0 B.J.Rayner
89 2 23 J.F.McKenzie
74 2 22 J.McKenzie
67 0 0 J.McKenzie
79 2 0 J.McKenzie
76 2 0 J.McKenzie
185 3 0 J.McKenzie
60 0 0 J.M.McKenzie
47 2 18 J.E.McKenzie
50 1 8 A.S.McKenzie and Others
60 3 25 V.F.Williams and C.C.W.Egan
51 0 23 V.F.Williams and C.C.W.Egan
30 0 31 V.F.Williams and C.C.W.Egan
50 0 35 W.Williams
20 0 0 A.J.Williams
50 0 8 A.J.Williams
195 2 37 Tamar Sawmilling Co. Pty. Ltd.
300 0 0 W.H.Peddle Pty. Ltd.
157 2 27 J.F.W.Mellor

s4200000mN
s570000mE
s5410000mN