861001

REPORT ON

DRILLING PROGRAMME

DOLOMITE PROSPECT E.L. 10/79

TASMANIA

FOR

MINERAL HOLDINGS AUSTRALIA PTY. LTD.

AMG REFERENCE POINTS ADDED

REF: RXT144/RJC
September, 1981

LONGWORTH & McKENZIE PTY. LIMITED

Sydney Office 3 Eden Street Crows Nest N.S.W. Telephone (02) 929 0122 Cable Longmack Telex AA24076
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LONGWORTH & McKENZIE PTY. LIMITED
CONSULTING ENGINEERS

REF: RXT144/LdeA/d.3/jt
2nd September, 1981

Mineral Holdings Australia Pty. Ltd.,
2nd Floor
100 Collins Street
MELBOURNE VIC 3000

Attention: Mr. N. Thomas

Dear Sir,

RE: DRILLING PROGRAMME DOLOMITE PROSPECT E.L. 10/79

Please find attached our report on the above.

We find that the dolomite at Irishtown has silica as a major contaminant. The assessment of the deposit's potential would initially be geologically dependant on the resolution of the extent of silifications and ground water condition across the area.

Accordingly, we have recommended a more extensive drilling, sampling and analytical programme. We trust the above meets your requirements and should you require further assistance please do not hesitate to contact us.

Yours faithfully,
LONGWORTH & McKENZIE PTY LIMITED

DR. L. de AMBROSIS

REPORT ON

DRILLING PROGRAMME

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TASMANIA

FOR

MINERAL HOLDINGS AUSTRALIA PTY. LTD.

REF: RXT144/RJC/D.3/JT

September, 1981

CONTENTS

1.0 INTRODUCTION

Longworth & McKenzie Pty Limited (L&M) were engaged by Mineral Holdings Australia (M.H.A.) to undertake a limited exploration programme on a dolomite prospect within the Irishtown area (Refer Figure No. 1) of E.L. 10/29 near Smithtown in northern Tasmania and to report on our findings.

The programme consisted of a one day reconnaisance survey and one days percussion drilling. The field work was carried out by R. J. Carr, a geologist from Longworth & McKenzie Pty Limited. The scope of the work was discussed with, and agreed on by Mr. Nye (M.H.A.'s 'resident' consulting geologist) prior to the programme's initiation. The specific locations of the exploration holes were limited to public roads by the exploration licence conditions (as M.H.A. declined to make a private lands deposit).

2.0 GEOLOGIC SETTING

The exploration licence has been mapped on a scale of 1:15,840 and reported on by Nye et al (Ref 1). This work has been incorporated in the Geological Survey of Tasmania - Department of Mines - Burnie Sheet (1973) which covers north western Tasmania.

Within the area of interest of E.L. 10/79 (See Figure No. 1) apart from the Quaternary unconsolidated sediments and Tertiary basalt the rocks are composed predominantly of relatively unmetamorphised Cambrian sequences of argillaceous and arenaceous sediments with interbedded dolomite units (Irishtown dolomite and Duck River dolomite). Generally, the sequence dips west to north west and has been intruded by basic and intermediate volcanics along the central western area of the E.L. adjacent to the Duck River.

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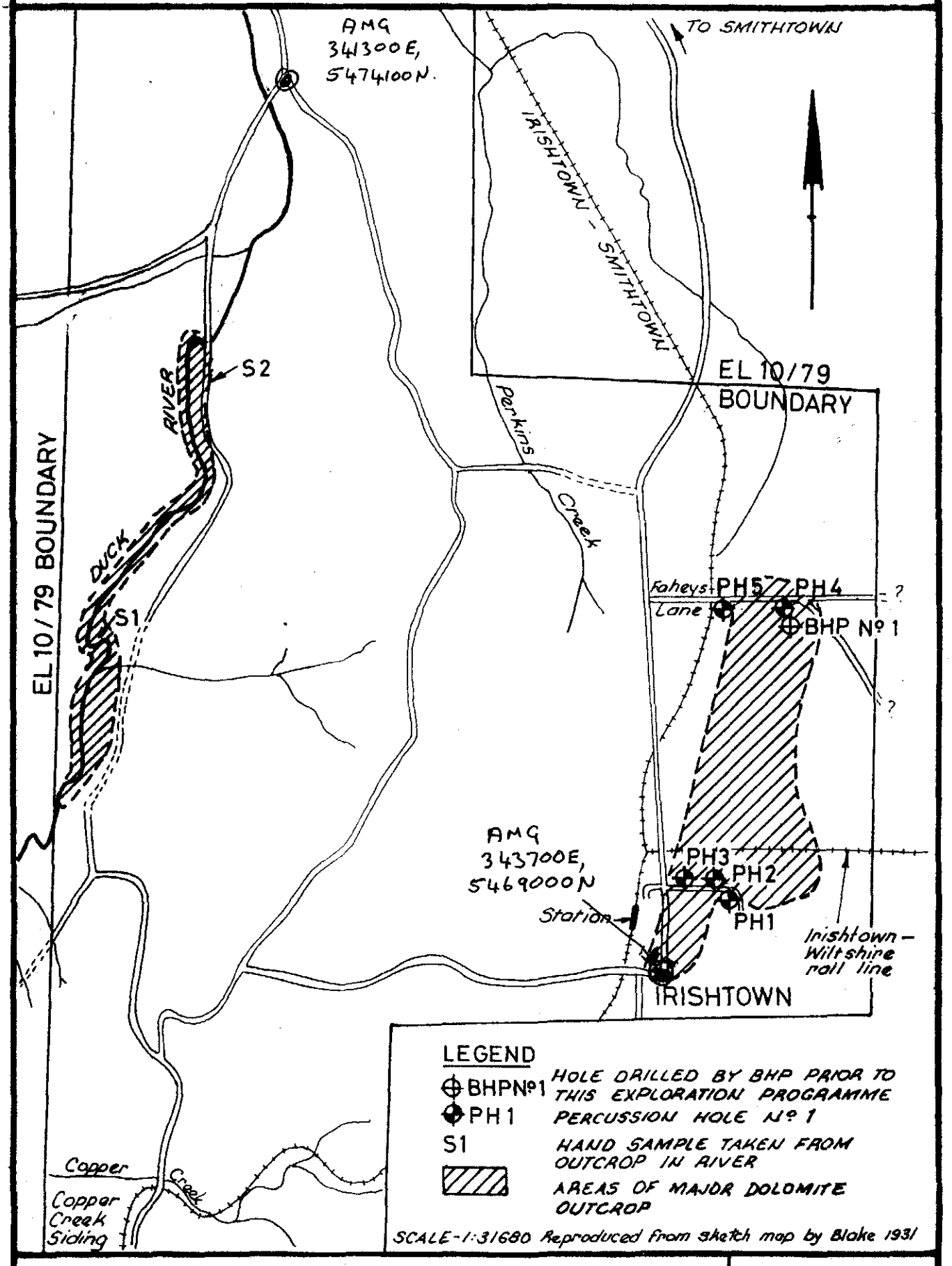
Client MINERAL HOLDINGS AUSTRALIA

Project EL 10/79 DRILLING PROGRAMME

Location IRISHTOWN

FIGURE Nº 1



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Job Nº RXT 144

AMG REFERENCE POINTS ADDED

The outcropping dolomite at Irishtown is the unit of interest within this investigation.

The Irishtown dolomite outcrops spazmodically on undulating country which ranges from a shallow drainage valley in the central region and on the western margin of the outcrop to mountainous country on the east of the outcrop area.

Within the E.L. the topographic setting of the Irishtown dolomite result in it being the more attractive area for subsequent mining development. The dolomite outcrops irratically over an area of approximately 200 acres, it is thought to be a lenticular body thining rapidly to the north and less rapidly to the south where it continues beneath basalt cover (Ref 1.). The dolomite is in part described (Ref 1) as being generally thickly bedded, fine grained, light grey to yellowish grey in colour (with small areas of white crystalline dolomite) traversed by numerous quartz veins and in many places silicified to a chert. The results of chemical analysis of surface samples collected by previous workers on the area are shown in Table 1. Based on analysis performed on surface samples, Nye et al (Ref.1) concluded that the dolomitization of these dolomites was complete (molecular ratio of MgO to CaO of 1:1).

Nye et al (Ref 1) estimates the thickness of the dolomite to be probably in the order of 500 feet to a maximum of 1000 feet.

3.0 NATURE OF THE INVESTIGATION

The fieldwork consisted of one day's general fieldwork reconnaisance and one day of percussion drilling.

Reference	Constituent %										
	SiO_2	Fe_2O_3	FeO	Al_2O_3	TiO_2	CaO	MgO	P_2O_5	S	LOI & OTHER	C
Ref (1)											
* Table No. 4 (1)	6.20	0.70	-	0.90	Trace	28.77	20.66	0.057	0.068	43.40	
(2)	15.00	2.29	-	0.91	-	26.00	18.01	-	-	38.00	
(3)	3.28	0.15	0.38	0.42	-	30.40	21.56	0.06	-	44.83	0.05
Ref (2)	4.16	0.40		2.12		29.1	19.67				
Supplied by Nye reportedly from 3 (a)	35.6					0.63	0.46	0.001	0.04	1.4	
Mining Systems 3 (b)	22.6					19.0	16.4	0.002	0.04	35.6	
Report of 3 (c)	72.6					5.0	5.7	0.003	0.04	12.3	
of 12/1/71											
+ Sampled by K. Pinner (MHA) and results supplied by Nye.	1.7					30.3	21.4				

NOTE: TABLE 1

* (1) Dolomite. Between Fahey's-lane and Ray's-road, vicinity of Irishtown. Typical sample of fine-grained type.

(2) Dolomite. Between Fahey's-lane and Ray's-road, vicinity of Irishtown. Grab sample.

(3) Dolomite. Railway cutting on Wiltshire-Irishtown railway 20 chains east of Smithtown-Irishtown road. Representative sample across 200 feet. Chiefly fine-grained type.

[ex Ref (1)]

\+ Dolomite 189 metres east of Irishtown station.

3.1.1 Reconnaisance Survey

During the reconnaisance survey, Mr. Carr was accompanied by Mr. B. Castleman from the Geological Survey.

During this work the;

1) Drill rig accessability in the Irishtown area was investigated.

2) Local property owners were visited and notified of our impending drilling activity.

3) Areas along the Duck River were inspected and sampled (Ref Figure No. 1 locations S1 and S2).

3.1.2 Drilling Programme

M.H.A. through Mr. Nye had advised that drilling should be limited to the Irishtown Dolomite and that the order of preferance for drilling locations should be: (with reference to Figure No. 1)

1) Any east-west trending public road that may exist between Fahey Lane on the north and the railway on the south.

2) Northern side of the railway reserve.

3) Southern side of Faheys Lane.

4) Northern side of road situation about 10 chains south of, and parallel to the railway to Stanely from Burnie.

Of the above, due to the private property restrictions only options 3 and 4 were available.

In total some five percussion holes were drilled in the Irishtown locality and their locations are shown on Figure No. 1.

The logs of these percussion holes are contained in Appendix A. Samples taken during drilling were lodged with Kevin Pinner, Flowerdale Road, Flowerdale, Tasmania (representative of M.H.A.)

3.2 LABORATORY TESTING

Two pecussion holes (P.H. No's 1 & 4) intersected dolomite. As P.H. No. 4 is in the same general vicinity as B.H.P.'s Irishtown North No. 1 drill hole (extensively analysed over its entire depth) analysis was confined to P.H. No. 1. Analysis on samples from this hole were performed over depth intervals 13.0 - 13.5 m, 19.5 - 22.5 m, 25.5 - 28.5 m and 31.5 - 34.5 m and the results are contained within Appendix B.

4.0 RESULTS OF FIELDWORK

Percussion Hole No. 1 (M.H.A's location preferance No. 3) intersected some two metres of weathered basalt top soil overlaying basalt rock to a depth of 8.5 metres. The basalt overlayed an apparently weathered profile of claystone and clay (weathered cherte) to 13 metres with siliceous dolomite from 13 metres. The siliceous component of the dolomite decreased with depth and the hole was terminated in fine grained light to medium grey dolomite at a depth of 34.5 metres. Water was intersected at a depth of approximately 33 metres.

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Percussion holes No. 2 and 3 were also along location preferance No. 3 but further west (Ref. Figure No. 1). PH No. 2 was terminated at 6 metres in the unconsolidated alluvium while PH No. 3 was terminated at 9 metres. Water was intersected in PH No. 3 at 3 metres.

Percussion Holes No. 4 (M.H.A's location preferance No. 4) intersect 1.5 metres of topsoil overlying light grey soft dolomite to 9 metres, this in turn was found to overlay light grey hard fine grained dolomite to 31.5 metres where the hole was terminated. Water was intersected in the hole at a depth of approximately 30 metres.

Percussion Hole No. 5 located on alluvium west of PH. No. 4 was terminated at 1.46 metres in the alluvium.

5.0 RESULTS OF ANALYTICAL WORK

The analytical results contained in Appendix B are shown graphically on Figure No. 2 for MgO, CaO, SiO_2. Also shown are the general trends from analysis performed by B.H.P. on B.H. No. 1.

It may be seen that the silica content of the dolomite intersected in PH No. 1 is high near its upper boundary but decreases approximately asymptotically with depth to that found by BHP's No. 1. Conversely MgO and CaO are relatively depleted at the dolomites upper boundary but increase with depth to that reported by BHP in B.H. No. 1.

Also shown in Figure No. 2 are the range of analysis results for SiO_2, MgO and CaO given in Table 1 for surface samples from the Irishtown dolomite.

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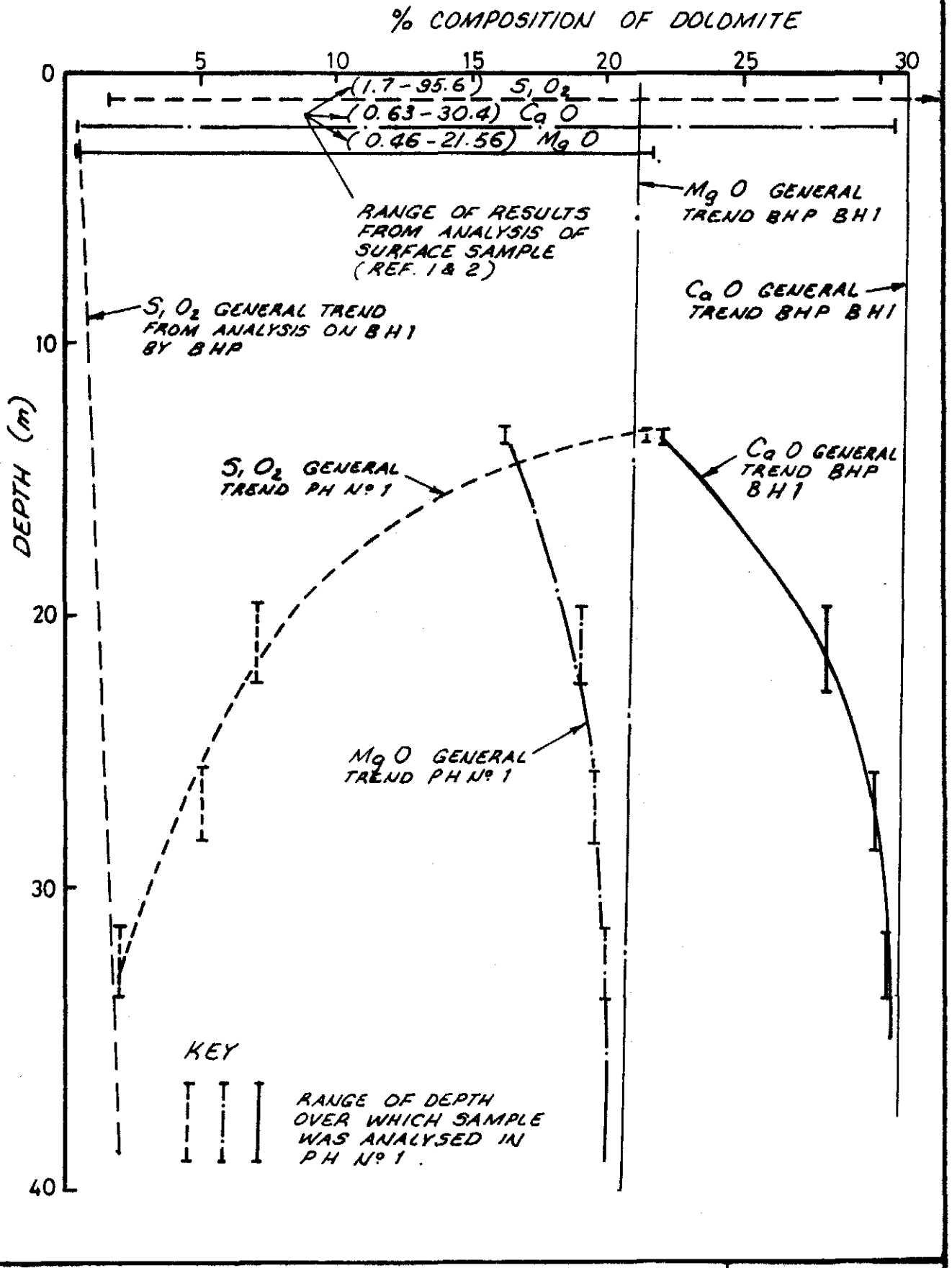
DEPTH v % S_1O_2, MgO, CaO

FIGURE Nº 2



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6.0 DISCUSSION AND CONCLUSIONS

Topographically the dolomite outcrop at Irishtown was considered by (M.H.A.) to be more attractive than that along the Duck River. This was due to the latter areas high probability of subsequent development encountering water problems (i.e. ground water and flooding by the Duck River during quarrying).

Analysis of samples (table 1), reports by previous workers on the area (Ref 1 & 2) and the results of analyses on PH No. 1 indicate the Irishtown dolomite to be in part siliceous. The silica occurs both as vein quartz and rock mass silicification producing a chert (Ref.1).

The analytical results from P.H. No. 1 indicate that the general level of surface silicification may be expected to decrease with depth. However with respect to quartz veining BHP's B.H. No. 1 which was sampled in detail showed the quartz veining to be present at depth (Note only general trends are shown on Figure No. 2). This later form of silicification would not be expected to decrease with depth.

The extent and nature of the contamination of the dolomite by silicification is not known and a complete understanding of the extent of this silicification would be necessary to effect an evaluation of the deposits potential.

The water level in PH No. 1 and PH No. 4 was intersected at a depth of 30 m plus, however, these holes are located on the higher portions of the outcrop area.

PH. No. 3 bored in alluvium on lower ground to the east intersect water at a depth of 3 m. The central region of the outcrop area ~~are~~ is in part covered by alluvium and topographically is lower than ground at PH No. 1 and 4. This area may also be subject to high ground water conditions.

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The resolution of the extent of silicification and ground water conditions would require an extensive drilling, sampling and analytical programme over the outcrop area with the installation of standpipes and piezometers in selected holes.

References

(1) NYE P. B., FINUCANE K.J., BLAKE F., The Smithton District, Geological Survey Bulletin No. 41 (1934) of the Tasmanian Department of Mines.

(2) THOMAS D.E., Dolomite in the Smithton Area., unpublished report of the Tasmanian Department of Mines. (1944)

APPENDIX A

PERCUSSION HOLE LOGS

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BOREHOLE LOG SHEET

Client: MINERAL HOLDINGS AUSTRALIA

Project: DOLOMITE EXPLORATION EL 10/79

HOLE NO 1

Location: IRISH TOWN

SHEET 1 OF 1

Position: REF. DIAG. Surface Elevation: G.L.

Date Started: 6/6/81 Date Completed: 6/6/81 Logged By: R.J.C.

Rig Type (Mounting): AIR TRACK ROC 601 (138mm) Contractor: G. GLEESON

Progress	Sample or Test	Depth (RL) metres	Strata	Description (moisture, colour, consistancy, structure, SOIL TYPE, origin)
				Moist, red brown, weathered basalt TOPSOIL.
		2.0		
	Chip sample			Black, fine grained BASALT chips
		8.5		
	Return blocked at 6m Sample			Moist, yellow clay with occasional immature ironstone pebbles (transported).
		13.0		As above extremely weak claystone? Weathered chert
	Chip sample			DOLOMITE, white to light grey with white calcarenite beds
	Chip sample			DOLOMITE, siliceous, light grey, blue fine grained and strong.
	Chip sample			As above, light grey, siliceous DOLOMITE.
	Chip sample			as above, light grey DOLOMITE.

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BOREHOLE LOG SHEET

Client: MINERAL HOLDINGS AUSTRALIA

Project: DOLOMITE EXPLORATION EL 10/79

HOLE NO 1

Location: IRISH TOWN

SHEET 1 OF 1

Position: REF. DIAG. Surface Elevation: G.L.

Date Started: 6.6.81. Date Completed: 6.8.81. Logged By: R.J.C.

Rig Type (Mounting): AIR TRACK ROC 601 (138mm) Contractor: G. GLEESON

Progress	Sample or Test	Depth (RL) metres	Strata	Description (moisture, colour, consistancy, structure, SOIL TYPE, origin)
	Chip Sample			moist as above DOLOMITE, light grey, wet, fine grained.
	Chip Sample			as above, medium grey DOLOMITE. (Silica content low)
▽	Chip Sample	33.0		as above DOLOMITE
		34.5		Hole TERMINATED(pug choking return)

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BOREHOLE LOG SHEET

Client: MINERAL HOLDINGS AUSTRALIA

Project: DOLOMITE EXPLORATION EL 10/79

HOLE NO 2

Location: IRISH TOWN

SHEET 1 OF 1

Position: REF. DIAG. Surface Elevation: G.L.

Date Started: 6.6.81 Date Completed: 6.8.81 Logged By: R.J.C

Rig Type (Mounting): AIR TRACK ROC 601 (138mm) Contractor: G. GLEESON

Progress	Sample or Test	Depth (RL) metres	Strata	Description (moisture, colour, consistancy, structure, SOIL TYPE, origin)
				moist, red, loose, silty CLAY (alluvium)
		6.0		Hole TERMINATED blow out occurring in adjacent road

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Client: MINERAL HOLDINGS AUSTRALIA

Project: DOLOMITE EXPLORATION EL 10/79

HOLE NO 3

Location: IRISH TOWN

SHEET 1 OF 1

Position: REF. DIAG. Surface Elevation: G.L.

Date Started: 6.6.81 Date Completed: 6.8.81 Logged By: R.J.C.

Rig Type (Mounting): AIR TRACK ROC 601 (138mm Contractor: G. GLEESON

Progress	Sample or Test	Depth (RL) metres	Strata	Description (moisture, colour, consistancy, structure, SOIL TYPE, origin)
▽				moist, red, loose, silty CLAY (alluvium)
		3.0		
				as above, wet
		9.0		HOLE TERMINATED, loosening and blow outs beginning in the edge of the gravel road.

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Client: MINERAL HOLDINGS AUSTRALIA

Project: DOLOMITE EXPLORATION EL 10/79

HOLE NO 4

Location: IRISH TOWN

SHEET 1 OF 2

Position: REF. DIAG. Surface Elevation: G.L.

Date Started: 6.6.81 Date Completed: 6.8.81 Logged By: R.J.C.

Rig Type (Mounting): AIR TRACK ROC 601 (138mm) Contractor: G. GLEESON

Progress	Sample or Test	Depth (RL) metres	Strata	Description (moisture, colour, consistancy, structure, SOIL TYPE, origin)
Drag-Bit 138mm		1.5		moist, red, loose, silty CLAY (residual)
	Chip Sample			
	Chip Sample			moist, light grey, fine grained, soft, DOLOMITE.
	Chip Sample			
Button bit 138mm		9.0	—	— — — — — — — — — —
	Chip Sample			
	Chip Sample			dry, light grey, fine grained, hard, DOLOMITE.
	Chip Sample			
	Chip Sample			
	Chip Sample			
	Chip Sample			

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Client: MINERAL HOLDINGS AUSTRALIA

Project: DOLOMITE EXPLORATION EL 10/79

HOLE NO 4

Location: IRISH TOWN

SHEET 2 OF 2

Position: REF. DIAG. Surface Elevation: G.L.

Date Started: 6.6.81 Date Completed: 6.8.81 Logged By: R.J.C.

Rig Type (Mounting): AIR TRACK ROC 601 (138mm) Contractor:

Progress	Sample or Test	Depth (RL) metres	Strata	Description (moisture, colour, consistancy, structure, SOIL TYPE, origin)
9	Chip Sample			as above, dry light grey, hard, DOLOMITE.
	Chip Sample	31.5		HOLE TERMINATED

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BOREHOLE LOG SHEET

Client: MINERAL HOLDINGS AUSTRALIA

Project: DOLOMITE EXPLORATION EL 10/79

HOLE NO 5

Location: IRISH TOWN

SHEET 1 OF 1

Position: REF. DIAG. Surface Elevation: G.L.

Date Started: 6-6-81 Date Completed: 6-6-81 Logged By: RJC

Rig Type (Mounting): AIR TRACK ROC 601 (138mm) Contractor: G. GLEESON

Progress	Sample or Test	Depth (RL) metres	Strata	Description (moisture, colour, consistancy, structure, SOIL TYPE, origin)
		1.46		moist, red brown, soft, silty CLAY (alluvium)
				Hole terminated as blow outs occurred adjacent to the bitumen road.

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APPENDIX B

ANALYTICAL RESULTS

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813 Dowling Street, Waterloo, N.S.W. 2017
Postal Address: Box 1, P.O. Waterloo, 2017
Telephone: 698 6611 x . 379 . . . . .

TEST REPORT

Client: Longworth & McKenzie,
3 Eden Street,
CROWS NEST, N.S.W. 2065

ATTENTION: MR. R. CARR

No.: 105030

Date: 15 September, 1981

Client O/No.:

Sample : 4 Dolomites BH1

Date : 21st August, 1981

Work required : Full X-ray Fluorescence Analysis

XRF Results in Percentage

Dolomite	13.0 - 13.5 m	19.5 - 22.5 m	25.5 - 28.5 m	31.5 - 34.5 m
CaO	22.0	28.1	28.9	30.1
MgO	16.2	20.1	20.6	20.9
SiO_2	21.5	7.2	5.2	2.3
Fe_2O_3	1.8	0.20	0.11	0.15
Al_2O_3	1.8	0.12	0.06	0.06
TiO_2	0.44	0.05	<0.05	<0.05
Na_2O	<0.05	<0.05	<0.05	<0.05
K_2O	<0.05	<0.05	<0.05	<0.05
L.O.I.	35.36	43.86	44.94	46.30

NOTE: Above results are based on samples after hand washing and sieving on a 36 mesh screen to remove slurry and fines.

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form no. T 56A

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Approved by B. CHEN
Section Leader
Spectrographics

The results reported hereon refer exclusively to the samples submitted and tested.