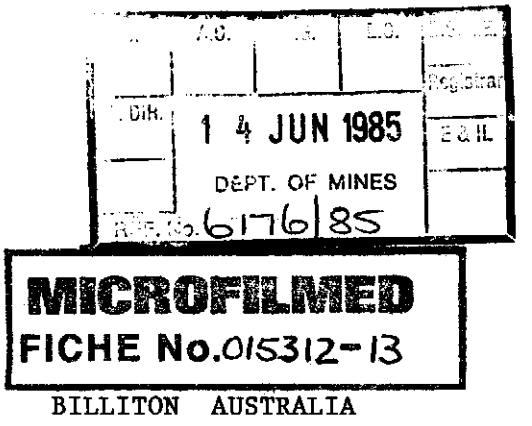
000

160001



BILLITON AUSTRALIA

THE METALS DIVISION OF THE SHELL COMPANY OF AUSTRALIA LIMITED

E.L. 30/84 - AVOCA

PROGRESS REPORT ON EXPLORATION

FOR THE PERIOD 18/7/84 TO 18/7/85

Author: A. Whitaker Report No.: 08.2846
Date: June, 1985

DISTRIBUTION :
1. Tasmanian Mines Department
2. Billiton Australia, Melbourne
3. Billiton Australia, Fingal

BXHE/1.6852

SUMMARY

Exploration Licence (E.L. 30/84) Avoca covers sediments of the Mathinna Beds and phases of the Ben Lomond Granite, both of which are hosts of tin mineralisation.

Stream sediment sampling has identified several streams carrying anomalous levels of Sn and these will be followed up in the Licence's second year.

002

160003

C O N T E N T S

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1	Location Plan	1:250,000	MT24/1085
2	Avoca Sheet 1 Geology	1:25,000	LD03/1000
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5	Stream Sediment Sample Location Sheet 2	1:25,000	LD03/1004
6	Stream Sediment Assays Sheet 1	1:25,000	LD03/1005
7	Stream Sediment Assays Sheet 2	1:25,000	LD03/1006
8	Roys Hill Prospect	1:1,250	LD03/1002

1. Property

Exploration Licence 30/84 was granted to The Shell Company of Australia Limited on the 18th July, 1984.

The 216 sq. km. licence is roughly centred on the township of Avoca (Fig.1) approximately 100 km south east of Launceston. Property and forestry tracks give good access to the licence area.

2. Objectives

A number of granite and sediment hosted tin prospects occur either in or near the licence. Exploration is being carried out to assess the varying styles and locate new tin carrying systems. The most significant occurrences in the region are Royal George, Aberfoyle and Storeys Creek tin, tin-tungsten mines. The styles of mineralisation exposed by those mines are the most likely target types at this stage.

3. Regional Geology (Figs. 2 and 3)

Silurian - Devonian

The oldest rocks in the area are sandstones, siltstones of the Mathinna Beds. Mines Department work suggests that they are deepwater sediments of turbidity current origin.

The Mathinna Beds are complexly folded with the most prominent fold axes trending NW and bedding dipping to the NE and SW. Quartz veining is common and often fills steeply dipping fractures roughly parallel to the fold axes.

Upper Devonian

Phases of the Ben Lomond granite intruded the Mathinna Beds during the Upper Devonian. The main body of granite is largely composed of coarse grained biotite granite with minor tourmaline and occasional phenocrysts of feldspar. Porphyritic phases of granite are abundant at and near the contacts with the surrounding Mathinna Beds. The granite has imposed hornfelsing and spotting on the Mathinna Beds to at least 200 m from the contact.

Permian - Triassic

Erosion prior to the Permian unroofed much of the now exposed granite. The Gasal Permian conglomerates contain cobbles of Mathinna Beds and granite adjacent to the respective source rocks. The Permian sediments grade upwards quickly into sandstones and silty-sandstones many of which are fossiliferous.

Overlying the Permian sediments are sandstones, siltstones and coal measures of the Triassic. No attempt has been made to separate these two rock groups when mapping.

Jurassic

Overlying the Permian-Triassic sediments are extensive dolerite sheets. Although now hill forming, the dolerites apparently intruded as sills. A number of small bodies of dolerite occur in the St. Pauls and South Esk River valleys and must represent eroded feeder 'pipes'.

Tertiary

Tertiary basalt is exposed in the South Esk River valley both east and west of Avoca and in the St. Pauls River valley south of Avoca. The flows are generally composed of vesicular basalt.

Recent

Extensive areas of alluvium/colluvium occur in and flanking both the St. Pauls and South Esk River valleys.

4. Work Undertaken During the Report Period

Summary

- Regional 1:25,000 geological mapping
- Stream sediment sampling
- Prospect mapping / evaluation

Discussion

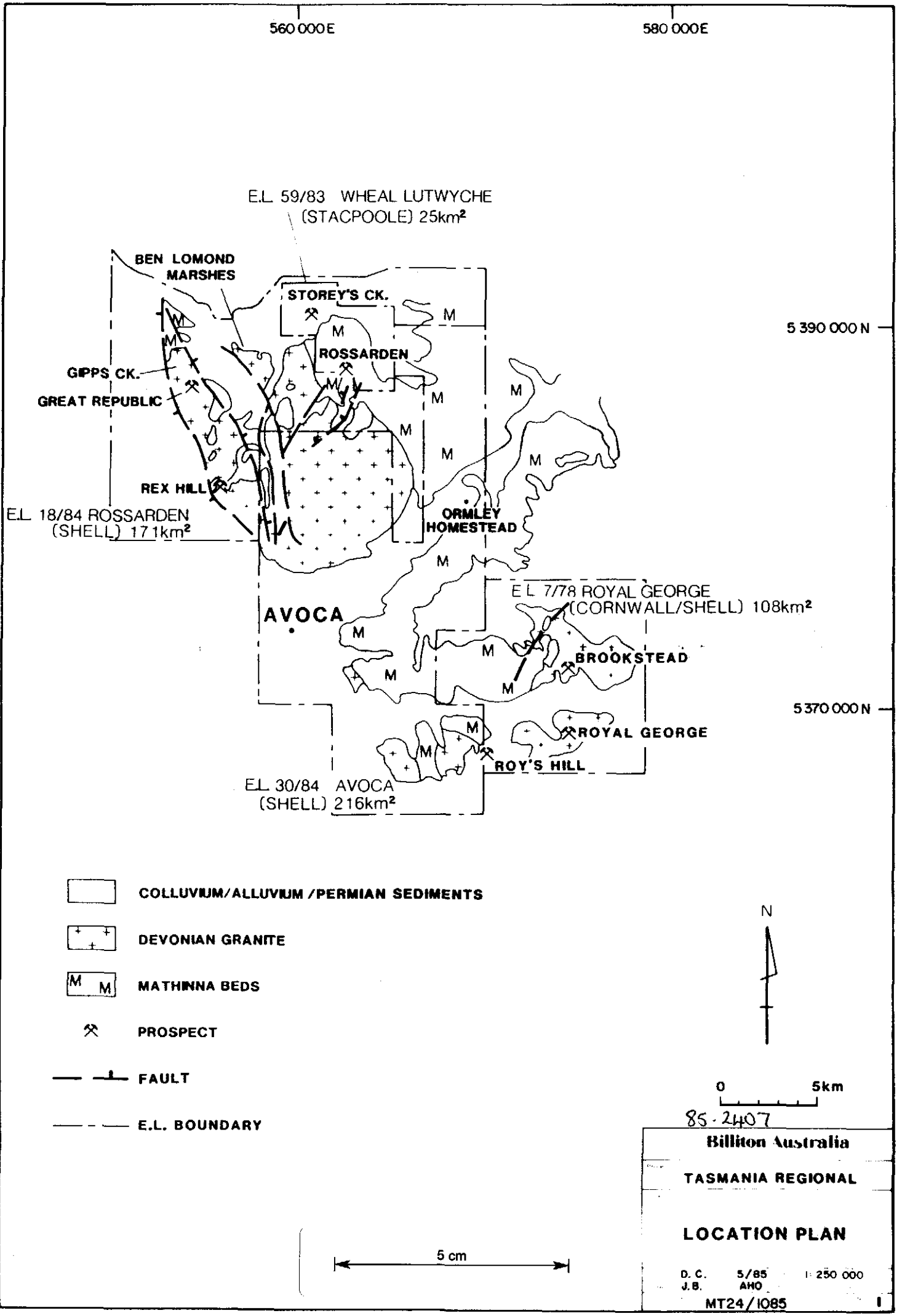
4.1. Stream Sediment Sampling

Approximately 130 stream sediment samples were collected from the licence area (Figs. 4 & 5). All samples were sieved with the -10# portion assayed for Sn, As, Cu, Pb and Zn (Figs. 6 and 7). Most of the assays have now been received. Assays for tin from streams draining the Mathinna Beds were generally low (3 - 20 ppm). However, a 516 ppm Sn anomaly was returned for a stream approximately 1.5 km west of Ormley Homestead and north of the South Esk River. Several of other streams produced Sn assays in the range 90 - 165 ppm Sn.

Assays of Cu and Pb were generally low i.e. the range 5-25 ppm, while Zn gave typical values of 10-70 ppm with a few isolated values to 140 ppm. Arsenic gave an assay range of 1-30 ppm. The results will be assessed, with the more significant values followed up in the second half of 1985.

4.2. Roys Hill Prospect (Fig. 8)

Roys Hill Prospect exposes a greisenised granite cusp beneath 1- 2 m of Permian conglomerates and sandstones. The cusp dips under Mathinna Beds at 15-35° to the west, north and east of the prospect. The old workings exploited the tin bearing basal Permian conglomerates and the upper most portions of the greisenised granite. Five chip samples have been taken from the workings to obtain a rough estimate of the greisen's tin content. Assays have not been returned, however, the tin grade is not expected to be greater than 0.1-0.2% Sn (as with other flat lying greisens in NE Tasmania) and if so, the immediate prospect will not be a favourable target. This assessment is confirmed by earlier work carried out by CRAE and the Department of Mines.



85-2407

Billiton Australia

TASMANIA REGIONAL

LOCATION PLAN

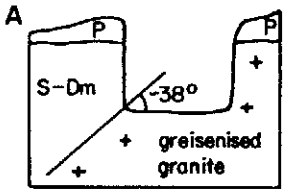
D. C. 5/85 1:250 000
J.B. AHO

MT24/1085

160010

003

SECTION



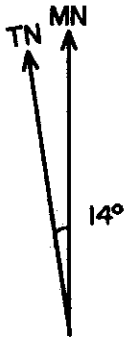
ALTERATION STYLES

Greisenised granite cap

Qtz 50%
W. Micas 25%
Sericite / Kaolinised } Feldspars 23%
Tourmaline? 2%

Vertical veins

Qtz 70% – 95%
W. Micas 25% – 5%
Tourmaline 5% – 0%



LEGEND

Qv	QUARTZ VEINS
P	PERMIAN
+	GRANITE (GREISENISED)
S-Dm, ~	MATHINNA BEDS
◪	SHAFT
□	PIT

Samples	Sn	As	Cu	Pb	Zn	Ag	Description
6932							Chip of GREISEN
6933							Chip of GREISEN
6934							Chip of BASAL PERMIAN
6935							Chip of VERTICAL QUARTZ VEINS
6936							Chip of GREISEN

5 cm

0 25m

Scale 1 : 1250

Billiton Australia
The Metals Division of The Shell Company of Australia Limited

Project: E.L. 30/84 AVOCA

Title: ROYS HILL PROSPECT MAP

Author	A.W.	Date	5/85	Scale	
Drawn	J.B.	Office	AHO	Revised	Date
Drawing No.	LD03/1002			Fig. No.	8

85-2407

560 000 565 000 570 000 571 000

5 390 000

5 385 000

5 380 000

STORYS CREEK

ROSSARDEN ROAD

Storys Ck

Eggs Ck

Tasmania Ck

ROSSARDEN

H.E.C. TRANSMISSION ROAD

Abbotsford Ck

Sawpit Ck

Burnt Gully Ck.

Aberfoyle Ck

STORYS CREEK ROAD

E.L. 30/84

Castle Carl Rivulet

Rosslers Ck

Gilligan Ck

Gravel pits

LEONA MINE

"Aberfoyle"

Henbury

Rostrevor

Ormley

ESK HIGHWAY

ORMLEY

South Esk River

FINGAL LINE

Ormley Ck

Alford Ck

S - Dm

P

Tb

F

RECENT — River alluvium (St. Pauls R.); Alluvium / colluvium

TERTIARY — Tb — Basalt

JURASSIC — Dolerite; Dolerite / tallus (Alt. Recent)

UNDIFFERENTIATED TRIASSIC & PERMIAN — p — Sandstones, conglomerates, siltstones shale, coal measures

CARBONIFEROUS – UPPER DEVONIAN — + — BENLOMOND GRANITE

P (F,Q) Porphyritic (Feldspar and quartz porphyroblasts)
Fg Mg Cg Fine grained, Medium grained, Coarse grained
Bi, Tour, Musc. Biotite, tourmaline, muscovite accessories
Alk. granite Alkalic granite i.e. biotite content <5% gen. 1%
qtz. tour. clots Quartz ring with tourmaline cores

SILURIAN - DEVONIAN — S-Dm — MATAINNA BEDS Sandstones, silty sandstones, siltstones Hornfelsed in places by the Benlomond Granite

⊗ 6911 Rock sample

Air photo linear

80° \ 127° Jointing dip and strike (Bearings are magnetic)

80° \ 127° Cleavage dip and strike

80° \ 127° Bedding dip and stike

Geological traverse in granite - road, foot

5° Granite/sediment contact, apparent dip direction

Fence, gate

Pit workings

Alluvial workings

SHEET 1

SHEET 2

LOCATION PLAN

DEVONPORT

Avoca

HOBART

GN TN MN

GRID CONVERGENCE 0.5°

GRID/MAGNETIC ANGLE 14.1°

TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1975 AND MOVES EASTERLY BY 0.1° IN ABOUT THREE YEARS.

160011

0 1 2 KILOMETRES

5 cm

The Shell Company of Australia Limited
METALS DIVISION

TASMANIA
AVOCA E.L. 30/84

GEOLOGY 010

SHEET 1 85-2407

SCALE	1:25000	DATE	May 1985
AUTHOR	A. W.	DRAWN	A.S., V.C.
OFFICE	Melbourne/AHO	REP No.	
DRG No.	LD 03/1000	FIG No.	FIG. 2

560 000 565 000 570 000 571 000

5375 000 5370 000 5365 000

E.L. 30/84

AVOCA

Castle Cary Rivulet
South Esk River
ESK HIGHWAY
STOPPS CREEK ROAD
FINGAL LINE
Bona Vista Estate
South Esk River
ESK HIGHWAY
ROYAL GEORGE ROAD
Batemans Ck
St Paul's River
Benham
Thomsons Gully
Forbes Ck
Kelly's Ck
Long Marsh Ck
"Glenair"
St Paul's River
Robinstown
ROYAL GEORGE ROAD
Butler Ck
Pole Ck
Bushy Hill Ck
Hepburn Ck
Roys Hill Ck
Snow Hill
Styles Ck

S-Dm
Tb
p
Dol
Dol scree
Dol talus

RECENT — River alluvium (St. Pauls and Sth. Esk Rivers); Alluvium / colluvium

TERTIARY — Tb — Basalt

JURASSIC — Dolerite; Dolerite / talus (Alt. Recent)

UNDIFFERENTIATED TRIASSIC & PERMIAN — p — Sandstones, conglomerates, siltstones shale, coal measures

CARBONIFEROUS – UPPER DEVONIAN — + — BENLOMOND GRANITE
P (F,Q) Porphyritic (Feldspar and quartz porphyroblasts)
Fg Mg Cg Fine grained, Medium grained, Coarse grained
Bi, Tour, Musc. Biotite, tourmaline, muscovite accessories
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qtz. tour. clots Quartz ring with tourmaline cores

SILURIAN - DEVONIAN — S-Dm — MATAINNA BEDS Sandstones, silty sandstones, siltstones Hornfelsed in places by the Benlomond Granite

⊗ 6911 — Rock sample

Air photo linear

80° ↘ 127° — Jointing dip and strike (Bearings are magnetic)

80° ↘ 127° — Cleavage dip and strike

80° ↘ 127° — Bedding dip and stike

Geological traverse in granite - road, foot

5° — Granite/sediment contact, apparent dip direction

Fence, gate

Pit workings

Alluvial workings

SHEET 1
SHEET 2

LOCATION PLAN
DEVONPORT
Avoca
HOBART

GN TN MN
GRID CONVERGENCE 0.5°
GRID/MAGNETIC ANGLE 14.5°
TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1979 AND MOVES EASTERLY BY 0.1° IN ABOUT THREE YEARS

160012

5 cm

0 1 2
KILOMETRES

The Shell Company of Australia Limited
METALS DIVISION

TASMANIA
AVOCA E.L. 30/84

GEOLOGY

011

SHEET 2

SCALE	1:25000	DATE	May 1985
AUTHOR	A.W.	DRAWN	A.S., V.C.
OFFICE	Melbourne/AHO	REP. No.	
DRG. No.	LD03/1001	FIG. No.	FIG. 3

85-2047

560 000
565 000
570 000
571 000
5 390 000
5 385 000
5 380 000

STORYS CREEK
ROSSARDEN ROAD
Storys Ck
ROSSARDEN
Eyan Ck
Tasmania Ck
STORYS CREEK ROAD
H.E.C. TRANSMISSION ROAD
Sawpit Ck
Abertoyle Ck
Abbotsford Cr
Burns Gully Ck
Ormley Ck
Attard Ck
"Restrevor"
ESK HIGHWAY
ORMLEY
"Ormley"
South Esk River
FINGAL LINE
"Abertoyle"
"Henbury"
Storys Ck
Castle Cary Rivulet
Storys Ck
Rosers Ck
Gilligan Ck

E.L. 30/84

9122 9123 9124 9125 9129 9131 9127 9128 9130 9133 9132
9323 9324 9325 9326 9328 9327 9329 9330 9331 9343 9342 9344 9345 9332 9334 9333 9335 9336 9339 9340 9337 9341 9338
9313 9312 9311 9310 9314 9316 9315 9318 9317 9319 9320 9321 9322 9139 9136 9138 9137 9104 9105 9108 9109 9112 9110 9111 9178 9177 9106 9179 9186 9185 9191 9184 9183 9190 9188 9189 9182 9196 9197 9187 9180 9181 9194 9195 9193 9192 9207 9208 9209 9206 9203 9215 9200 9201 9214 9205 9202

SHEET 1

SHEET 2

LOCATION PLAN

DEVONPORT
Avoca
HOBART

GN TN MN
GRID CONVERGENCE 0.5°
GRID-MAGNETIC ANGLE 14.1°

TRUE NORTH GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1979 AND MOVES EASTERLY BY 0.1° IN ABOUT THREE YEARS.

DATA BASE NUMBERS THE SAME AS THESE NUMBERS.

160013

5 cm

0 1 2
KILOMETRES

95-2407

The Shell Company of Australia Limited
METALS DIVISION

TASMANIA
AVOCA E.L. 30/84
STEAM SEDIMENT
SAMPLE LOCATIONS
SHEET 1 012

SCALE	1:25000	DATE	May 1985
AUTHOR	A.W.	DRAWN	V. Caton
OFFICE	Melbourne/AHO	REF No.	
ORG No.	LD 03/1003	FIG No.	FIG. 4

560 000
565 000
570 000
571 000
5 375 000
5 370 000
5 365 000

Castle Cary Rivulet
South Esk River
ESK HIGHWAY
STORYS CREEK ROAD
FINGAL LINE
"Bona Vista Estate"
South Esk River
AVOCA
ESK HIGHWAY
ROYAL GEORGE ROAD
"Benham"
St Paul's River
Batemans Ck
Forbes Ck
Kelly's Ck
Long Marsh Ck
Compasons Gully
St Paul's River
FREEMAN
"Glendir"
"Robinslown"
M.E. & T.W. WILLIAMS
ROYAL GEORGE ROAD
Roys Hill Ck
Heptown Ck
Butler Ck
Fox Ck
Bushy Hill Ck
Sykes Ck
"Snow Hill"
TONY GEE

E.L. 30/84

9198 9199 9204
9210 9211 9212? 9213 9214 9220/7X 9222 9223
9216 9217 9218 9219 9224 9225 9226 9227
9228 9229 9230 9231 9232 9233 9234 9235
9237 9238 9239 9240 9241 9242 9243 9244 9245 9246 9247 9248 9249 9250 9251
9252 9253 9254 9255 9256 9257 9258 9259 9260 9261 9262 9263 9264 9265 9266
9267 9268 9269 9270 9271 9272 9273 9274 9275 9276
9280 9281 9282 9283 9284 9285 9286 9287 9288 9289 9290 9291 9292 9293 9294 9295 9296 9297 9298 9299 9300

SHEET 1

SHEET 2

LOCATION PLAN

DEVONPORT
Avoca
HOBART

GN TN MN
GRID CONVERGENCE 0.5°
GRID-MAGNETIC ANGLE 14.1°
TRUE NORTH GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1979 AND MOVES EASTERLY BY 0.1° IN ABOUT THREE YEARS

160014

5 cm

0 2
KILOMETRES

85
84-2407

The Shell Company of Australia Limited
METALS DIVISION

TASMANIA
AVOCA E.L. 30/84
013

STREAM SEDIMENT SAMPLE LOCATIONS
SHEET 2

SCALE	1:25000	DATE	May 1985
AUTHOR	A. W	DRAWN	V. Caton
OFFICE	Melbourne/AHO	REP. No.	
DRG. No.	LD03/1004	FIG. No.	FIG. 5

560 000
565 000
570 000
571 000
5 390 000
5 385 000
5 380 000
STORYS CREEK
ROSSARDEN ROAD
ROSSARDEN
Storys Ck
Egan Ck
Tasmania Ck
STORYS CREEK ROAD
H.E.C. TRANSMISSION ROAD
Soapit Ck
Burns Gully Ck
Abertoyle Ck
Castle Cary Rivulet
Rossers Ck
Gilligan Ck
Abbotsford Ck
Ormley Ck
Alford Ck
E.L. 30/84
ANOMALY 3
ANOMALY 2
"Restrevor"
"Abertoyle"
"Henbury"
ORMLEY
ESK HIGHWAY
FINGAL LINE
South Esk River
22 / 10 5 100
22 / 10 5 100
50 / 10 5 100
17 / 10 – 25
1 / 10 5 25
1 / 10 5 35
5 / 10 – 30
20 / 10 10 80
42 / 10 5 75
2 / 10 5 25
18 / 10 – 65
12 / 10 – 40
– / 10 – 10
4 2 / – 10
21 5 / 10 5 20
– / 10 5 30
1 / 10 15 30
35 13 / 10 – 30
171 6 / 10 – 30
14 4 / 5 – 5
62 15 / 10 – 40
28 5 / 5 – 30
12 5 / 1 – 35
63 5 / 10 – 45
82 8 / 10 – 50
8 5 / 5 – 30
49 6 / 5 5 40
46 13 / 5 – 40
31 7 / 10 – 50
7 9 / 10 5 30
52 7 / 10 5 55
132 8 / 10 – 50
52 7 / 10 – 55
61 7 / 10 – 45
186 / 5 – 35
149 / 15 5 50
26 4 / 10 5 50
21 7 / 10 – 60
44 12 / 10 – 35
23 15 / 10 5 40
14 5 / 5 – 30
50 25 / 15 10 70
4 5 / 15 35
4 3 / 5 15 15
16 7 / 10 – 35
9 5 / 10 – 30
15 3 / 15 25 45
21 8 / 10 5 45
30 8 / 10 – 35
15 15 / 15 25 55
– 9 / – 10
10 12 / 10 10 15
10 – 15 / 10 – 15
15 12 / 15 – 25
10 – 7 / 15
21 5 / 10 5 20
35 13 / 10 – 30
171 6 / 10 – 30
14 4 / 5 – 5
62 15 / 10 – 40
28 5 / 5 – 30
82 8 / 10 – 50
63 5 / 10 – 45
31 7 / 10 – 50
132 8 / 10 – 50
52 7 / 10 – 55
56 11 / – 10 10

← See TCR 86-2556 For these results

SHEET 1
SHEET 2

LOCATION PLAN
DEVONPORT
Avoca
HOBART

LEGEND

7 9 / 10 5 30 Sn As / Cu Pb Zn

All samples were sieved with the −10# portion retained for assay.

All values in ppm.

GN TN MN
GRID CONVERGENCE 0°
GRID/MAGNETIC ANGLE 14°
TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1979 AND MOVES EASTERLY BY 0° 1' IN ABOUT THREE YEARS.

160015

5 cm

0 1 2
KILOMETRES

85-2407

The Shell Company of Australia Limited
METALS DIVISION

TASMANIA
AVOCA E.L. 30/84

STREAM SEDIMENT ASSAY RESULTS

014

SHEET 1

SCALE	1:25000	DATE	May 1985
AUTHOR	A.W.	DRAWN	V.Caton
OFFICE	Melbourne/AHO	REPT. No.	
DRG. No.	LD03/1005	FIG. No.	FIG. 6

560 000

565 000

570 000

571 000

5375 000

5370 000

5365 000

Castle Cary Rivulet

South Esk River

ESK HIGHWAY

STODYS CREEK ROAD

FINGAL LINE

"Bona Vista Estate"

AVOCA

ROYAL GEORGE ROAD

"Benham"

St Paul's River

Batemans Ck

ANOMALY 1

ANOMALY 2

Fiddlers Ck

Kelly's Ck

Long Marsh Ck

Thompsons Gully

"Glenair"

"Robinslawn"

Hepburn Ck

Roys Hill Ck

Bully Ck

Bushy Hill Ck

Pole Ck

Symes Ck

"Snow Hill"

E.L. 30/84

LEGEND

Sn As
Cu Pb Zn

All samples were sieved with the −10# portion retained for assay.

All values in ppm.

SHEET 1

SHEET 2

LOCATION PLAN

DEVONPORT

Avoca

HOBART

GN TN MN

GRID CONVERGENCE 0.5°

GRID/MAGNETIC ANGLE 14.1°

TRUE NORTH, GRID NORTH AND MAGNETIC NORTH ARE SHOWN DIAGRAMMATICALLY FOR THE CENTRE OF THE MAP. MAGNETIC NORTH IS CORRECT FOR 1979 AND MOVES EASTERLY BY 0.1° IN ABOUT THREE YEARS

160016

5 cm

0 1 2

KILOMETRES

85-2407

The Shell Company of Australia Limited
METALS DIVISION

TASMANIA

AVOCA E.L. 30/84

STREAM SEDIMENT ASSAY RESULTS

015

SHEET 2

SCALE	1:25000	DATE	May 1985
AUTHOR	A.W.	DRAWN	V. Caton
OFFICE	Melbourne/AHO	REP No.	
DRG No.	LD03/1006	FIG No.	FIG. 7