CAT GULLY

Figure 1 – Location Map –South Mt Cameron –
Showing road and access tracks to Cat Gully Mine Rehabilitation Site

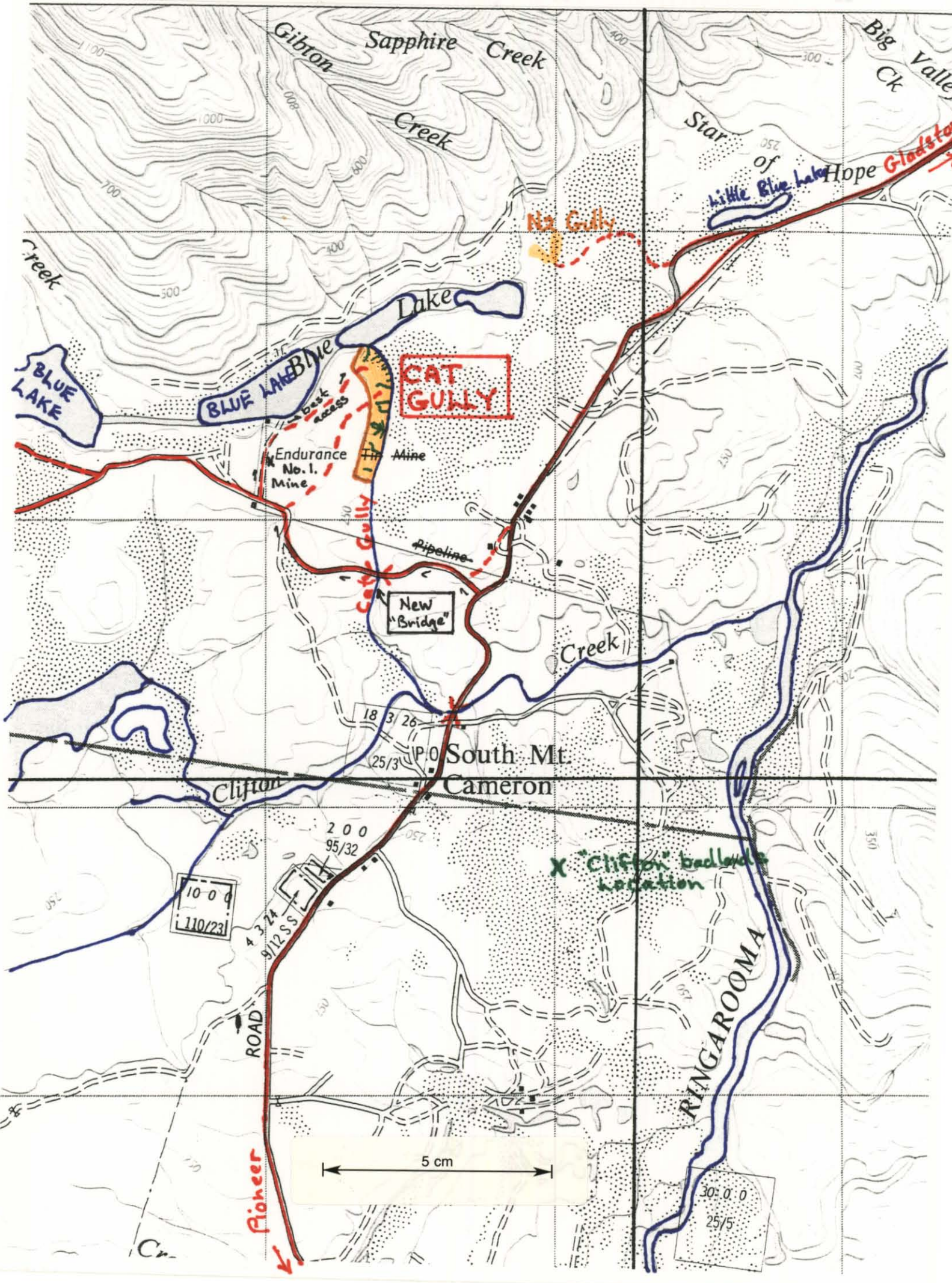


Figure 2 – Location Aerial Photo Blow-up – Cat Gully – South Mt Cameron – Tasmania

Photograph shows gullies (numbered according to table in report)

A proposed program to rectify severe gully erosion in the vicinity of Cat Gully, the Endurance Mine, South Mt Cameron, N. E. Tasmania.

SUMMARY

An area of three ha is actively eroding at an estimated rate of about 550 m^3 per ha per year (over the last 18 years) and if unmanaged will affect a further four ha.

Via a network of over 1500m of gullies greater than 2 m deep and up to 9m, slumping and runoff erosion are contributing some 3000 tonnes of suspended solids into the Ringarooma River per year from just a small area. Erosion at similar rates could be expected to continue for decades.

One of Tasmania's most 'intense' erosion occurrences is essentially a recent (last 20 years) event due to a compilation of:

- **The errodibility of exposed weathered granite basement rock.**
- **Excavation of Cat Gully in 1968, lowering drainage by about 5m.**
- **Scraper mining operation removing vegetation, soil and subsoil to an impervious clay base.**
- **Superficial post mining revegetation effort resulting in only scant vegetation cover.**

Introduction:

Much of some 15 square kilometers of land between the Ringarooma River and the Mount Cameron Range and centered on the old mining center of South Mt Cameron is a complex mosaic of mine workings and associated features. Some of this area including the project site is located in FIGURE 1.

Mining occurred from the late 1870,s until 1982. Individuals, syndicates and companies using methods such as ground sluicing, dredging, shallow and deep gravel pump elevated sluicing, hydraulic elevator sluicing and scraper feed sluicing to produce a heavily modified landscape. Major features of this resultant landscape are large flooded mine workings, exposed and denuded clay / gravel plains (now partially revegetated), gravel tailings deposits and many (often dissected) gullies, drains, water races, access tracks and dam structures.

Since 1983 revegetation and erosion control works have been undertaken by organisations such as Boral Ltd., Greening Australia (Tas.) and Mineral Resources Tasmania (MRT) as agent for the Rehabilitation of Mining Lands Trust Fund (Trust). Some particularly difficult or expensive sites remain.
This proposal is for the most significant actively eroding alluvial mining initiated occurrence in N.E. Tasmania. This project is termed the Cat Gully project, based on the local nomenclature for a modified drainage channel at the Endurance Mine.
This proposal is for further Trust funded rehabilitation works to be supervised by MRT. The same organisational structure has initiated works at Cat Gully before. Previously SEMF had engaged Stornoway Civil Pty. Ltd. to "rehabilitate" one of the Cat Gully tributary gullies. The work was abandoned due to the onset of May rains in 1998. The work was never resumed and is now negated by continued erosion and slumping (PHOTO 4). This proposal does not intend to replicate the SEMF "major earthworks" techniques.

Background:

General

Cat Gully is a natural small drainage line that once was part the course for Gibton Creek and other small creeks draining a small portion of the granitic Mount Cameron Range. Following major deepening dragline? excavation works in 1968? it is now a 1.2km tributary of Ruby Creek. Cat Gully is the primary outlet for Blue Lake drainage.

Geological Setting and Mining History

The Endurance Mine through the Endurance Tin Mining Co. is best known for its 'Bottom of the Harbour' takeover and the exploitation of the Endurance deep lead. This placer deposit is an entrenched, narrow, "mountain hugging" middle Tertiary, deepening to the west, cassiterite bearing lead. It was worked by the Launceston based Endurance Tin Mining Co. Ltd. from 1935 to 1968. The aerial photograph – March 1964 shows the deep open cut working the lead adjacent to the present Cat Gully problem. The open cut hydraulic sluicing operation severed many of the drainage lines flowing south off the bordering Mt Cameron massif. This included the Gibton Creek drainage line. Runoff from the mountain side (northern) was diverted away from the open cut mine workings by intercepting drains.
The now flooded "deep" workings of the Endurance Tin Mining Co. are now the tourist feature known as Blue Lake. There are now a number of "Blue Lakes" as the long linear lead has since been barred with tailings. These tailings are the result of the subsequent mining of "shallow" Quaternary aged sediments to the south of the deep lead. These shallow deposits are extensive on both sides of the northern part of Cat gully.

1.The Eastern side of Cat Gully: Much of the shallow deposits to the immediate east of Cat Gully were worked on or before 1940. Most of the ground was then

covered by a veneer of tailings from the deep lead workings (all older than 1943 and shown on aerial photo – circa 1953). Small undisturbed patches (including a moist flat dominated with melaleuca) of ground remain to the eastern side of Cat Gully. This side of the gully is bordered by the heaped (and still bare) spoil from the major 1968? Dragline? excavation of the gully. This proposal does not consider any rehabilitation on this side of the gully.

2. The Western side of Cat Gully: The area targeted for erosion control and revegetation by this proposal is the **northern (600m) half of Cat gully on the western side**. Features of the area are shown in FIGURE 2, a blow-up aerial photograph.

Again, a veneer of Quaternary tin (with a little gold) bearing sediments, rarely in excess of a meter deep, once blanketed this flat ground. These deposits were exploited by scraper 'feed' centralized sluicing operations. The western side of Cat Gully area was part of the Endurance No. 1 operation. This mine was set up by BMI Mining Ltd. in 1973-74 following the closure of the Monarch Mine and the companies debacle in the Ringarooma River above Morrina. Utilizing only rudimentary grade control, self-elevating contract scrapers collected the shallow surface gravel in up to a 900 meter radius of a central stockpile. Water from Blue Lake was used to supply a monitor to sluice the sediments. Two operators were employed. Concentrate was collected in an in-ground race with tailings collecting in another portion of Blue Lake. Amdex Mining took over operations on BMI Mining leases in 1978 and the Endurance No. 1 mine continued intermittently until 1982. Mining ceased due to all sediments within en economic carting distance had been extracted.

The Problem:

The location of the network of erosion gullies is shown on FIGURE 2 and their attributes tabulated in TABLE 1. Numerous photographs taken partly as photo points also show the range of erosion problems.

The scraper operations previously described have extracted all possible ore bearing gravels. Only a thin discontinuous marginal, remnant vegetation rim can be found along the break of slope. The large central gullies [K] and [L] partially predate the scraping. The area between these gullies is disturbed by early activity, but is now thickly vegetated with steep but stable banks.

There is considerable variation in the erosional activity of the gullies. Ranking based on remedial prioritization has been made (see TABLE 1). Gully system [N] differs somewhat from the others in respect of morphology. This dendritic system, see FIGURE 2, and PHOTOS 10 to 16, is particularly active and more advanced with respect of reaching a more stable equilibrium. It contains sedimentalogical features such as alluvial fans, braided streams and drainage capture, see PHOTO 23, on a scale suitable for scientific research. Indeed further study of Cat Gully erosion, perhaps comparing it with older, less youthful badlands sites (such as the Clifton mine of the Mark Ireland era – PHOTOS 19 to

22) may well be suited to an engineering, geomorphology or sedimentology honours student.
The common underlying basement rock at Endurance is granite. It is both frequently encountered as out crop often in low knolls or in old workings in a decomposed form. Drilling at Endurance has frequently recorded a thickness of soft decomposed granite of ten metres plus. This material is exceedingly erodable. They are kaolinite from feldspar rich. The relict texture suggest that the quartz component is low, perhaps about 5%. Micas and mafic minerals, weathered or unweathered are also only minor components.
Besides being very soft and vulnerable to water erosion the writer feels that fretting of the gully walls is significant (see PHOTO . The cyclic (annual and more frequent) variations of wetness causing differential swelling and cracking plus wind and frost activity is particularly apparent where clay lenses are present. Some portions of gullies are very active in the absence of any drainage catchment. Slumping, both small and large scale, tunnel erosion, and undermining collapse due to water action is common in such situations.

The Prescription.

This proposal does not contain plans to markedly change the existing landscape morphology. If the techniques employed at the Endurance N2 gully location were adopted the current funds would be quickly used. This site is some three times more extensive with a 2-3times greater degree of difficulty than the N2 site.
The funding sought for this proposal seeks to:

1. **Stabilise the heads of all gullies ranked 5 to 10 in TABLE 1 utilizing the following techniques and materials**:

- Mining rock debris and oversize/basalt in heads of gullies
- Addition of the tailings/pyrethrum/lime/gypsum/fertiliser mix and also scrub
- Pipe works, sand bags, sheet metal, rock drop structures in gullies still carrying significant water.

2. **Control all drainage into these ranked gullies by means of contoured, armored and absorbent spoon drains and / or diversions** utilizing the following techniques and materials:

- Surveyed routes collecting a number of channels
- Wide spoon drains using geotextile in critical areas, hay, scrub, sand bags to absorb and hinder runoff
- Use double layer jute matting to secure materials
- Sow native seeds and / or short term grasses
- Construct small impoundments if necessary

3. **Decrease sheet runoff adjacent to these gullies** utilizing the following techniques and materials:

- Scarify or rip if necessary and incorporate up to 3cm of tailings/pyrethrum/lime/gypsum/fertiliser mix with native seed +/- grass, maybe in bands

Cat Gully Rehabilitation proposals -Endurance Mine, South Mt Cameron

TABLE 1

Proposed works to alleviate severe gully erosion - Funded by the Rehabilitation of Mining Lands Trust Fund

R. Munro

Gully Code	Description and Notes	Degree of Activity	Average Dimensions Lx	W	x H	Height of gully Head	Estimated Volume m3	Oct-00 Catch-ment* size m3	Photo	Priority	X sec-tional Profile	Longit-udinal Profile
on a Scale 1 to10 ~ 1 is low priority / small / not severe												
A	OLD RACE ~circa 1973~only a little backcutting~over hard Fe rich seds-130m	2	16	2	1.5	1.5	48	1000	y	1	V	Steep
A.1	on Blue lake side parallell and close to lake -inaccessable~hard Fe seds.	5	18	3.5	3.5	4	221	600		4	U	Moder
B	OLD RACE 130m long~circa 1973 ~ back cutting` harder Fe rich seds	3	30	6	4	1.6	720	1000	2y	3	U	Steep
B.1	"multi pod" offshot from race	6	21	5.5	4	4	462	2700	y	5	U	Moder.
B.2	small , slumping	6	16	3	3	2.5	144	400		4	V	Steep
C	White graval, older erosion, small branches not entrenched	1	25	2	2	1	100	150		1	V	Steep
D	Small, linear, some veg. growing	2	15	2.5	2	1	75	150		1	V	Steep
E	Bent, narrow, in harder ground, some veg stabilization (large a. sophore) pt drain	3	85	1.5	1.5	nil	191	800	y	3	V	V Steep
F	Linear, abundant soft slumping, tributaries forming	8	20	2	3	0.5	120	150	y	5	V	Steep
G	Deep wide gulch	7	20	6	5	5	600	150		4	U	Mod
H	Deep, "poddy", with narrow angled upper reach following drainage line	7	60	3	4	2	720	1000		6	U	V Steep
I	Small, linear	3	10	2	2	1	40	150		3	V	Steep
J	Modified by SEMF / Stornoway rehad attempt.	9	60	5	4	nil	1200	1300	y	9	V	V Steep
J.1	sth small trib.	6	8	3.5	3	2	84	150		7	V	V Steep
K	Major gully ~old channel with active head & tribs on nth, sth bank stable veg,	5	120	8	5	3.8	4800	1200	4y	9	U	Flat
K.1	Stubby gully ~ nth side	4	8	6	6	5	288	300		4	V	Steep
K.2	Stubby gully ~ nth side	4	15	4	4	3.5	240	300		4	V	Steep
K.3	Stubby gully ~ nth side	4	10	4	4	3.5	160	300		4	V	V Steep
K.4	Stubby gully ~ nth side	5	5	5	3	3	75	200		5	V	V Steep
L	Major gully ~old channel with active head & tribs on sth, nth bank stable veg,	4	140	15	7	3.5	14700	150	y	3	U	Flat
L.1	Gully trib, nth side, old, well veg, carries the largest stream,	2	25	7	5	3	875	23400		8	U	mod
L.2	Linear very active trib, sth side	9	45	5.5	4.5	2	1114	800	y	9	V	Steep
L.3	Linear very active trib, sth side	9	55	4.5	3.5	1	866	300		9	V	Steep
L.3.1	Short trib	9	10	4	3.5	2.5	140	50		9	V	V Steep
L.4	Slump / "sink hole type structures	7	7	4	3	2.5	84	50		6	N/A	N/A
L.5	Slump / "sink hole type structures	7	7	4	3	2.5	84	50		6	N/A	N/A

L.6	Slump / "sink hole type structures	7	7	4	3	2.5	84	50		6	N/A	N/A
							0					
M	Slumping flank of Cat Gully	9	9	35	6	2	1890	100		6	N/A	N/A
N	Short gully cut through headland,old, opens out to recieve many trib.in a fan	2	15	4	3.5	N/A	210	N/A	y	2	U-V	Moder.
N.1	Entrenched, essentially linear gully in soft dec. granite	7	20	4	3.5	3	280	150		5	V	Moder.
N.2	Entrenched, essentially linear gully in soft dec. granite	6	26	5	3	2	390	150		4	V	Moder.
N.2.1	Entrenched, essentially linear gully in soft dec. granite	7	10	7	4	4.5	280	70		8	V	Steep
N.2.2	Entrenched, essentially linear gully in soft dec. granite	9	38	6.5	4	5	988	300		8	V-U	Steep
N.3	Entrenched, essentially linear gully in soft dec. granite	6	30	4	3.5	2	420	150		8	V	Steep
N.4	Entrenched, essentially linear gully in soft dec. granite	7	11	3	3.5	3	116	60		8	V	Steep
N.5	Entrenched, essentially linear gully in soft dec. granite	7	50	2	4	1.5	400	150		8	V	Steep
N.6	Entrenched, essentially linear gully in soft dec. granite, branching at top	9	81	4	4	2.5	1296	400	2y	9	V	Steep
N.7	Entrenched, essentially linear gully in soft dec. granite	9	19	2	3.5	3	133	70	y	10	V	Steep
N.7.1	Entrenched, essentially linear gully in soft dec. granite, branching at top	9	29	3.5	3.5	3.5	355	150		9	V	Steep
N.8	Entrenched, essentially linear gully in soft dec. granite	8	44	3	3.5	1	462	700	y	5	V	Steep
N.8.1	Entrenched, essentially linear gully in soft dec. granite	8	12	2	3.5	2.5	84	80		5	V	Steep
N.8.2	Entrenched, essentially linear gully in soft dec. granite	7	9	3	3.5	3	95	80		9	V	Steep
N.9	Gully in soft dec. granite	6	22	4	3	1.5	264	300		5	U	Flat
N.9.1	Gully in soft dec. granite	5	4	4	3	3	48	300		5	U	Flat
O	Entrenched, narrow gully, reletively shallow,irregular direction, drain fed	3	140	1.8	2	1	504	9600		5	U	Moder.
O.1	Entrenched, narrow gully, reletively shallow	5	25	1.5	1.5	2	56	1000	y	5	U	Moder.
O.2	Entrenched, narrow gully, reletively shallow,short	4	13	1.2	1.4	2	22	400		3	U	Moder.
P	Old tail race? Linear	2	85	3.5	1.8		536	10000		2	U	Moder.
TOTALS			1550				37063	61060				
Note: Catchment size relates only to the land area above the gully head which can collect run-off												

- Add hay, scrub and jute matting to most areas

4. **Increase the fertility, pH and organic mater content of gully flanks, (where accessible) and encourage some stabilisation through revegetation by applying a native seed mix** utilizing the following techniques and materials:

- Spin on with tractor or hired truck a heavy dose of pyrethrum/lime/gypsum/fertiliser mix with seed added.

5. **Increase the infiltration rate, fertility, pH and organic mater content of bare and sparsely covered adjacent mined land and vegetate with native seed mix** utilizing the following techniques and materials:

- Spin on with hired truck a heavy dose of pyrethrum/lime/gypsum/fertiliser mix with additional seed and fertiliser added.
-

No funding is sought for the substantial modification of the existing landscape. 'Smoothing' of the gullied landscape would require much expenditure on heavy machinery and intensive application of rehabilitation, well beyond the allocated budget.

Materials required: This is an estimate only, more rock and a higher pyrethrum component could be most beneficial. A range of treatments selected for low cost and local availability is listed below with an approximate costing in Table 2.

TABLE 2 – Estimate of Materials

Material	Quantity	Material Cost	Procurement Cost	Cost
Rock (silcrete and forkings from Endurance No.1 mine + rubbish)as in PHOTO 25	104 m3/ 13 loads	0	Truck +loader 1km trip	450
Tailings (from blower heap or Blue Lake tails)	640 m3 / 40 to 80 loads	0	Truck and pig trailer + loader 2km trip	1700
Pyrethrum (spent marc)	240 m3 / 4 loads	0	$170 / load	680
Lime (agricultural)	40 m3 /2 loads	$44 m3	0 (Delivered)	1760
Gypsum (conditioner which we already have)	60 x 50kg bags	0 (have)	Handling from Telita	100
Fertiliser (high analysis, maybe with trace elements)	6 tonnes, some in a 2nd application	Say $550 / ton	$100	3300
Jute Matting @ 500m x1.2m + staples	6000m2	6000 +300	Say$200	6500
Geotextile	1 roll	Have	0	500
Grass seed – say cheap tamma	4 bags – 100kg?	$200	0	200
Scrub	50 trailer loads?	0	0	See labour cost
Hay	20 round bales	$30 each	$200	800
Hay / straw	300 bales	$1 each	100	400
Sandbags	10100	$80	0	80
Cement	12	$110	0	110
Native Seed	Balance of stock	0 (have)	0	Use up
Native Seed (*Acacia sophore* of local providence) as in PHOTO 24	8 kg	$90 / kg	0	720
Pipe & elbows –probably 100mm sewer	?	?	0	Say 500
Misc- Materials				1000
TOTALS				18800

Labour and plant and equipment costs: Table 3 is a schedule quantifying these inputs. A similar exercise for works at N2 gully was a useful guide to planned expenditure with funds spent being less than anticipated.

The Cat Gully project has the flexibility to treat gullies of lower priority, or increase or decrease the 'intensity' of treatment according to the funds available. An allocation of $43,000 cannot fully rehabilitate the Cat Gully. Other areas subject to gully erosion, slippage, sheet wash or still denuded exist nearby.

FUNDING FOR CAT GULLY -Endurance Mine, South Mt Cameron

TABLE 3

LIST OF TASKS AND TREATMENTS (for consideration)

Condition	Treatment	Other Labour hrs	@ charge out $16.50	RAAM Labour hrs	@Charge out $28.75	Other Hire etc Charge out various	% comp-lete
Survey site and establish photo points	Planning, surveying mapping & photography	5	$83	15	$431		50
Improve access	Grade road to Endurance (Dorset Council Task) & hire council grader to improve access track. (the one alongside Blue Lake)			3	$86	$150	
Drainage modifications	Survey contoured spoon drains	2	$33	10	$288	$875	
	to amalgamate some drainage lines using an excavator and then applying [prescription 2]	20	$330	15	$431	$200	
	to all drainage lines						
Collect native seed	There a numerous *Acacia sophore* bushes in the area whose form makes for excellent erosion control. More *Acacia mucranata* would also be desirable.	Table 2		2	$58		
Construct ramps & add fill to gully heads	see [prescription 1] in text	2	$33	6	$173	Table 2	
Construct drop structures at gully heads	see [prescription 1] in text	25	$413	25	$719	$500	
Apply 'soil replacement' mix to critical, broad areas	see [prescription 3] in text, it is envisage that large amount of this growing medium would created by excavator mixing & dump truck spreading and harrow leveling. Ripping / scarifying excavator leveling of the substrate may proceed the application of this material	5	$83	5	$144	$2,000	
	Tractor Hours @ $40 /hr bare	10	$165	12	$345	$800	
Decrease sheet wash and surface run-off	Mix and match hay and cereal straw , both in round bale and small square bale form. The hay would be either spread & staked or used in bale form.	25	$413	25	$719		
	Use jute matting, sand bags, geotextile scrub and the soil replacement mix where necessary	30	$495	15	$431	$100	
	Tractor Hours @ $40 /hr bare	2	$33	2	$58	$120	
Collect and lay scrub - in gullies and for micro climate creation on esposed surfaces	The quantity of this remedial task may depend on the quantity of other materials available.	50	$825	25	$719		
	Equipment		$0		$0	$300	
Sow native seed & fertilise bare area of the gully catchment	Spin and hand sow native seed mix with fertiliser as per [prescription 5] , trial (again) ryecorn or tamma on fertile areas of high erodability	5	$83	20	$575		
	Tractor Hours @ $40 /hr bare or Truck	3	$50	5	$144	$200	
	Spreader @ $80 /hr- say 50% / 50%		$0		$0	$400	
			$0		$0		
			$0		$0		
			$0		$0		
Research for this submission			$0	25	$719	$140	100
Travel		30	$495	30	$863	$975	
Misc. materials acquisition & hire			$0	5	$144	$500	
General admin, reporting , accounting, phone calls,			$0	100	$2,875	$400	
	TOTALS	214	$3,531	345	$9,919	$7,660	

Grand Total - This Table	$21,110
Materials costs from Table 2	$18,800
CONTINGENCY say 10%	$4,000
Total for project	$43,910

Table 4 is a suggested time table for actions

TABLE 4

Month	Activities
NOVEMBER 2000	DETAILED PLANNING & SURVEYING
DECEMBER	ROAD & TRACK ACCESS SEED COLLECTION PRIMARY GULLY FILL TAILINGS ON SITE
JANUARY 2001	PYRETHRUM ON SITE DRAINS DUG HAY & LIME ON SITE JUTE MATTING ON SITE
FEBRURARY	MIX OF MATERIALS GULLY DROP STRUCTURES WORKS STABILISING DRAINAGE NETWORK
MARCH	TREATMENT OF BROAD AREAS- MATTING, HAY, SCRUB ETC SPIN AND BROADCAST FERTILISERS AND SEED
APRIL	CONTINUE MARCH ACTIVITIES

Compiled by Revel Munro – 8th November 2000

South Mt Cameron
NE Tasmania
Mineral Resources
Tasmania
Sept. 2000

Photo 1 RIGHT>>>>>
Cat Gully Area
Gully B

Old tail race
Circa i974

Shows 1.6m nick point in the gully cut back process. In Quaternary sediments

Photo 2 - Cat Gully area - Gully B.1 -4m multi lobed gully

South Mt Cameron
NE Tasmania
Mineral Resources
Tasmania
Sept. 2000

Photo 3 RIGHT>>>>>
Cat Gully Area
Gully F

Shows youthful short gully, active and close to Cat Gully
Mt Cameron & Blue Lake in background

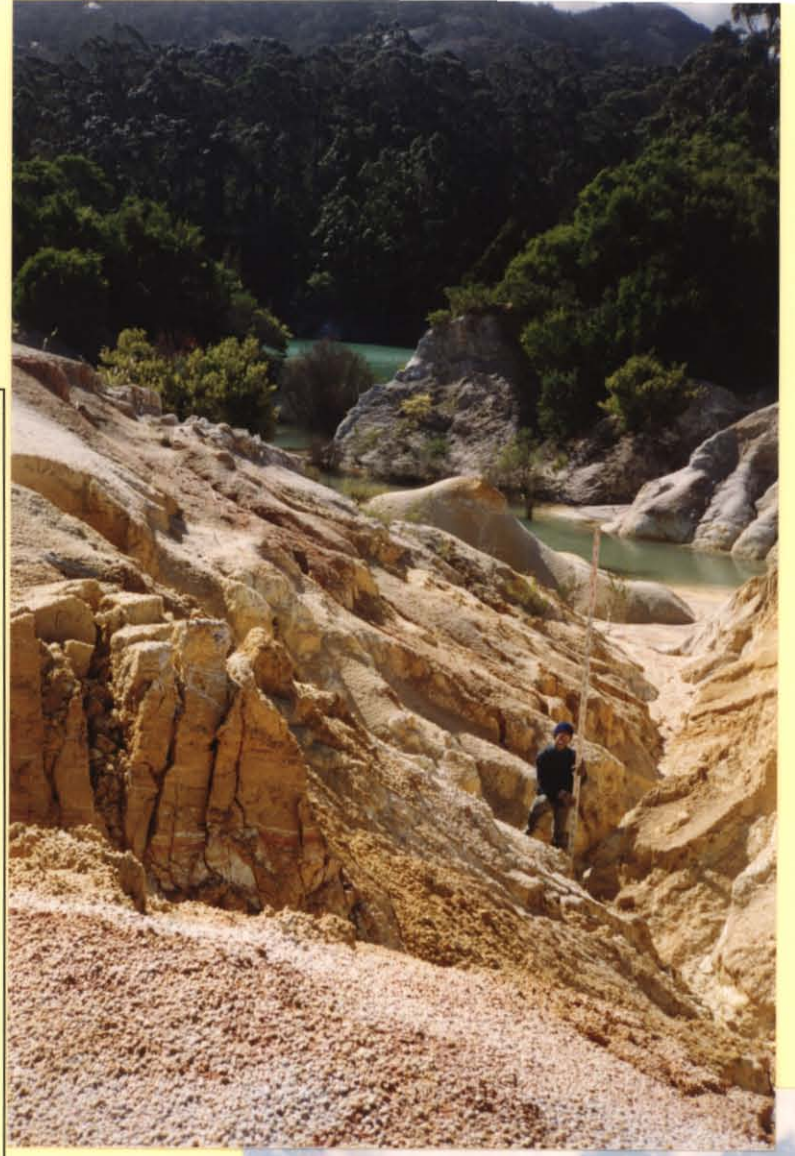
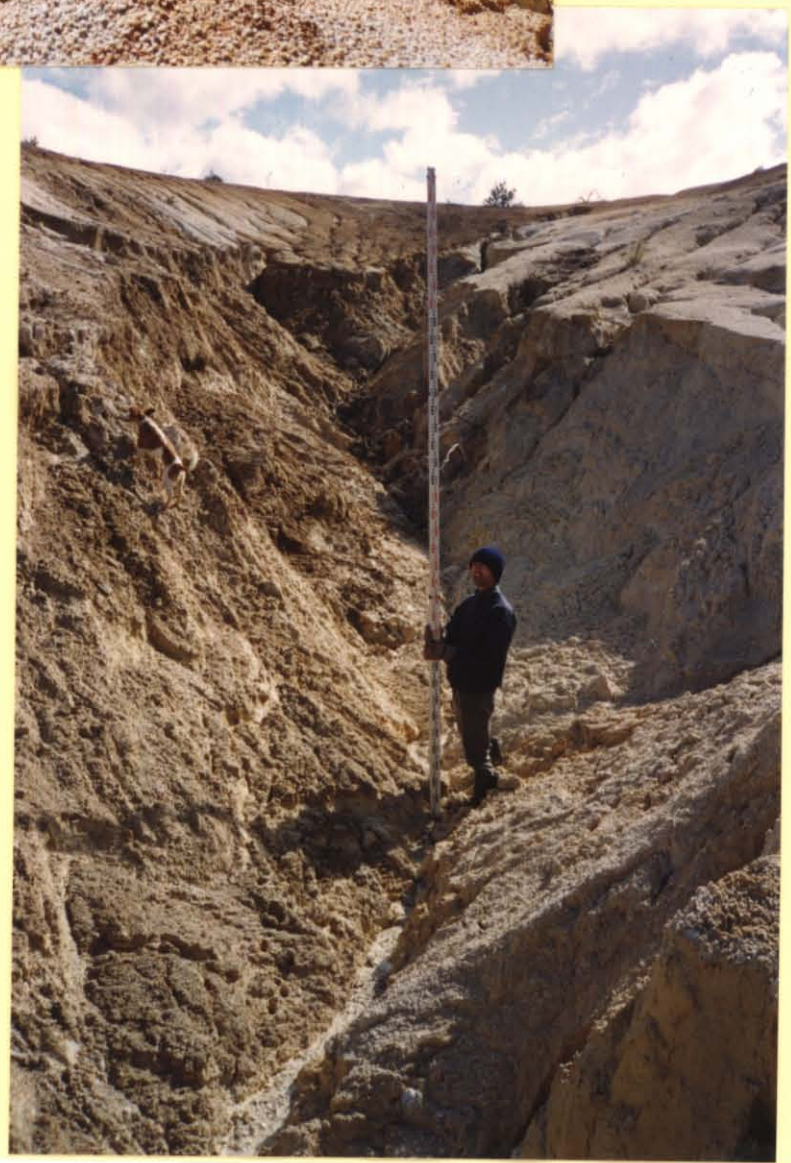


Photo 4 >>>>>>>>>

Cat Gully area

Gully J

Mobile, saturated decomposed granite partly mobilized by previous incomplete SEMF / Stornoway rehabilitation in 1998. Rilled amphitheater (Upper) is now heavily dissected.



South Mt Cameron
NE Tasmania
Mineral Resources
Tasmania
Sept. 2000

Photo 5 RIGHT>>>>>
Cat Gully Area
Gully k

Shows stable 6m deep, long gully. Advanced regrowth on tailings layer. Solid floor with meandering channel.

Photo 6 >>>>>>>>>

Cat Gully area

Gully K

View up same gully showing short but active side gullies, K.2 & K.3. A gully primarily predating scrapers.

South Mt Cameron
NE Tasmania
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Tasmania
Sept. 2000

Photo 7
RIGHT>>>>>

Cat Gully Area
Gully k

Shows a 3.8m drop at the head of K gully.

Photo 8 >>>>>>>>>

Cat Gully area

Gully K

View of head showing the retreat of the gully head over a period of several years. Retreat crudely shown by four log markers ~ approx. 2m movement.

South Mt Cameron
NE Tasmania
Mineral Resources
Tasmania
Sept. 2000

Photo 9
RIGHT>>>>>

Cat Gully Area
Gully L
Person with a 5m staff shows the large dimensions of gully L. Estimated depth here is 8.5m. The nothern side of this gully is vegetated and stable. The southern side is very active.

Photo 10
>>>>>>>>>

Cat Gully area

Gully N

View of head showing the an *Acacia mucranata* shrub partially undermined. *A. mucranata* is clearly the premier rehabilitation species, some covering many square meters.

South Mt Cameron
NE Tasmania
Mineral Resources
Tasmania
Sept. 2000

Photo 1 1
RIGHT>>>>>

Cat Gully Area
Gully N system

Person with a 5m staff shows the narrowness and the gully density of the dendritic gully system N

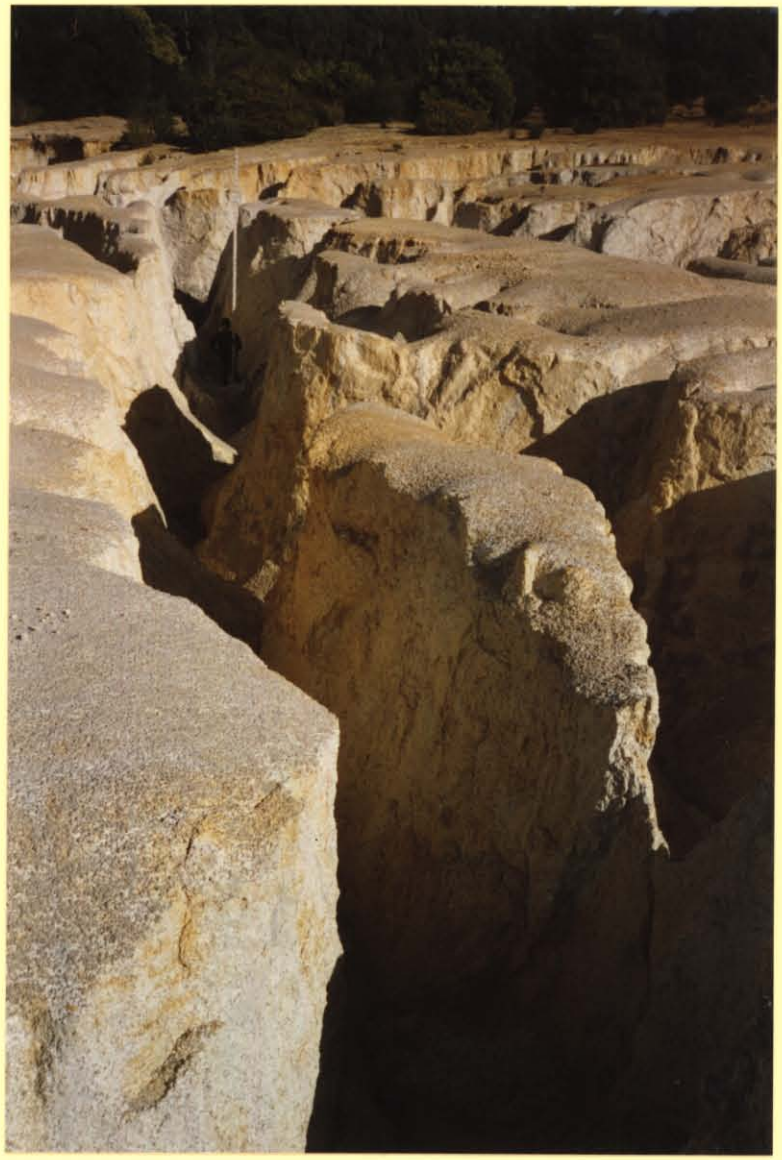


Photo 1 2
RIGHT >>>>

Cat Gully area

Gully N

Overall view looking towards the outlet. Mounds from the dragline? Excavation of Cat Gully circa 1968 in middle ground.

South Mt Cameron
NE Tasmania
Mineral Resources
Tasmania
Sept. 2000

Photo 13
RIGHT>>>>>

Cat Gully Area
Gully N system

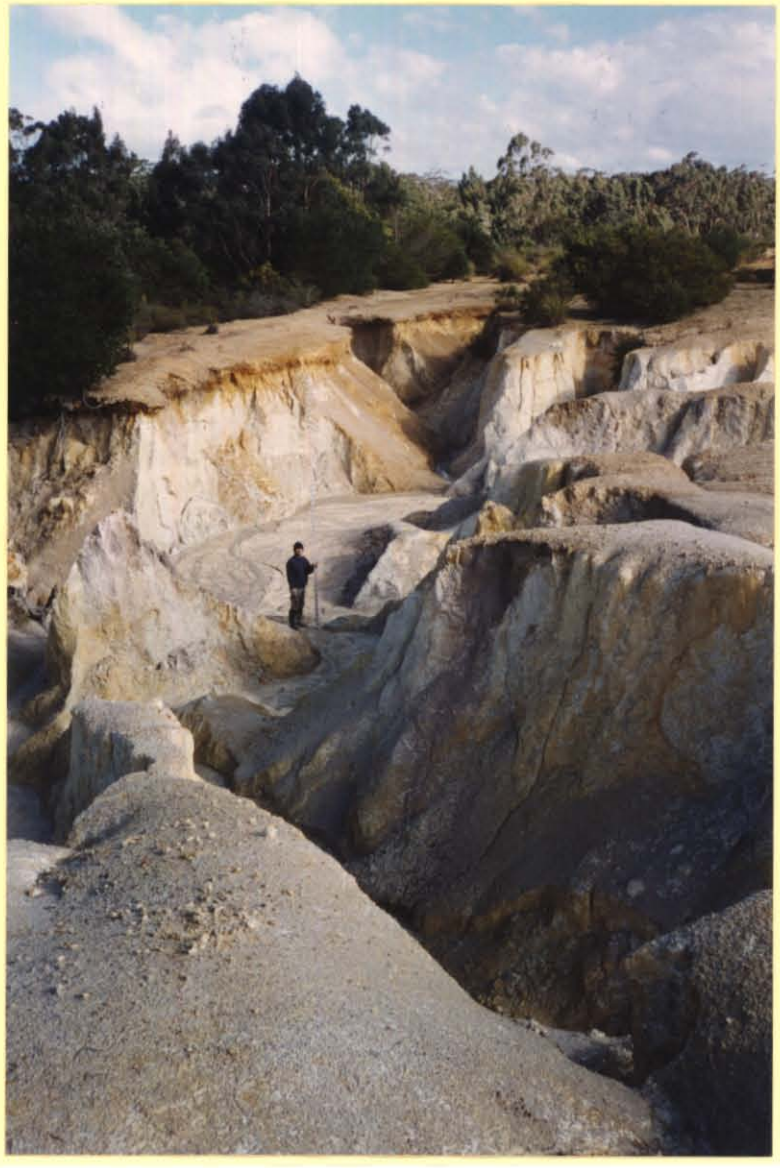
Person with a 5m staff is hidden in this dendritic gully. Can you find him?
The gully is uniformly about 3.5m deep

Photo 14
RIGHT >>>>

Cat Gully area

Gully N

Overall view of the confluence.



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Mineral Resources
Tasmania
Sept. 2000

Photo 15
RIGHT>>>>>

Cat Gully Area
Gully N system

Detail showing common tunnel erosion. Quasi sinkhole features are also found.

Photo 16
RIGHT >>>>

Cat Gully area

Gully N

Detail showing clays and clay grits (non-stanniferous) overlying decomposed granite. The Quaternary sediments form a slightly more erosion resistant capping.

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Photo 17
RIGHT>>>>>

Cat Gully Area
Gully 0.1

Gully 0 is in an area with less fall. It is a system with two narrow, entrenched gullies only some 1.5m deep.

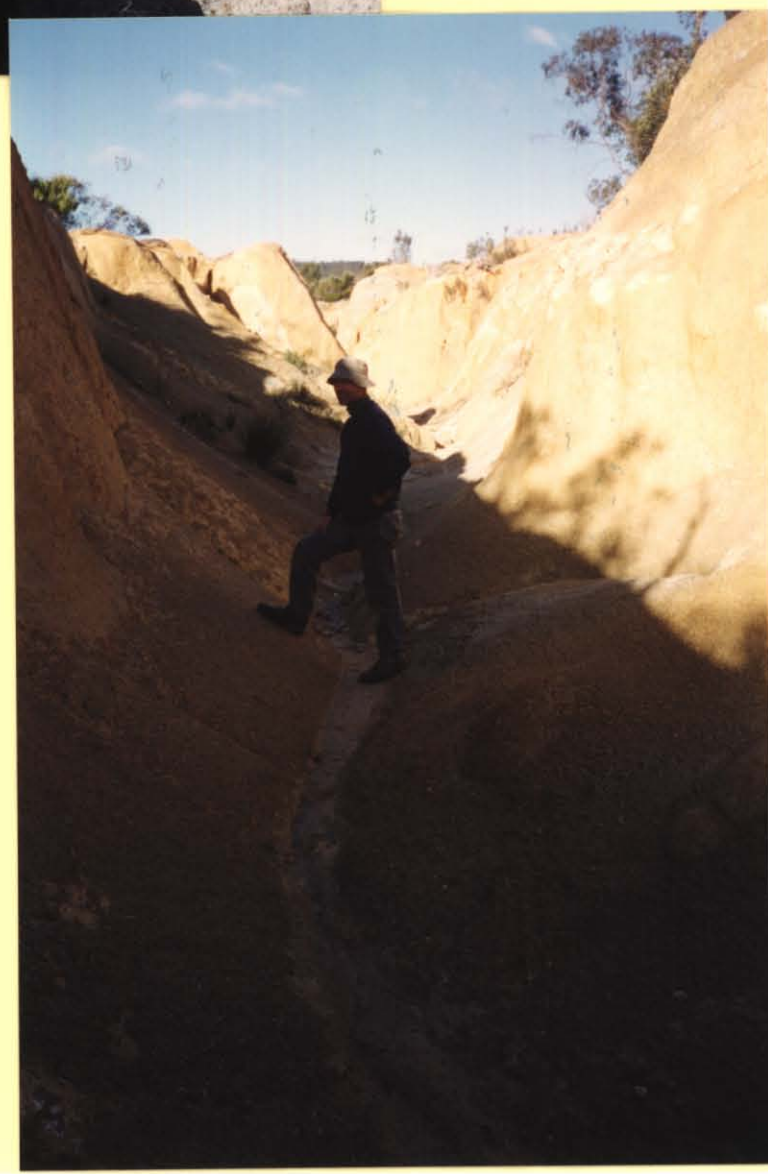

Photo 18
RIGHT >>>>

Dredge Cut Area

Stable gullying activated by the Dorset Dredge "Cut", a system of loch chambers sluiced to relocate the dredge between Dorset Flats and New Dorset in 1959-60. I.e. this area has had 40 years to reach a partial equilibrium.

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Photo 19
RIGHT>>>>>

Clifton Mine?
Area circa turn of the century. Decomposed granite with some veination showing the effects of the gullying process over time. Note the rounding of all surfaces.

Photo 20
RIGHT >>>>

Clifton Mine?
Area circa turn of the century. Near Photopoint site from 1990.

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Photo 21
RIGHT>>>>>

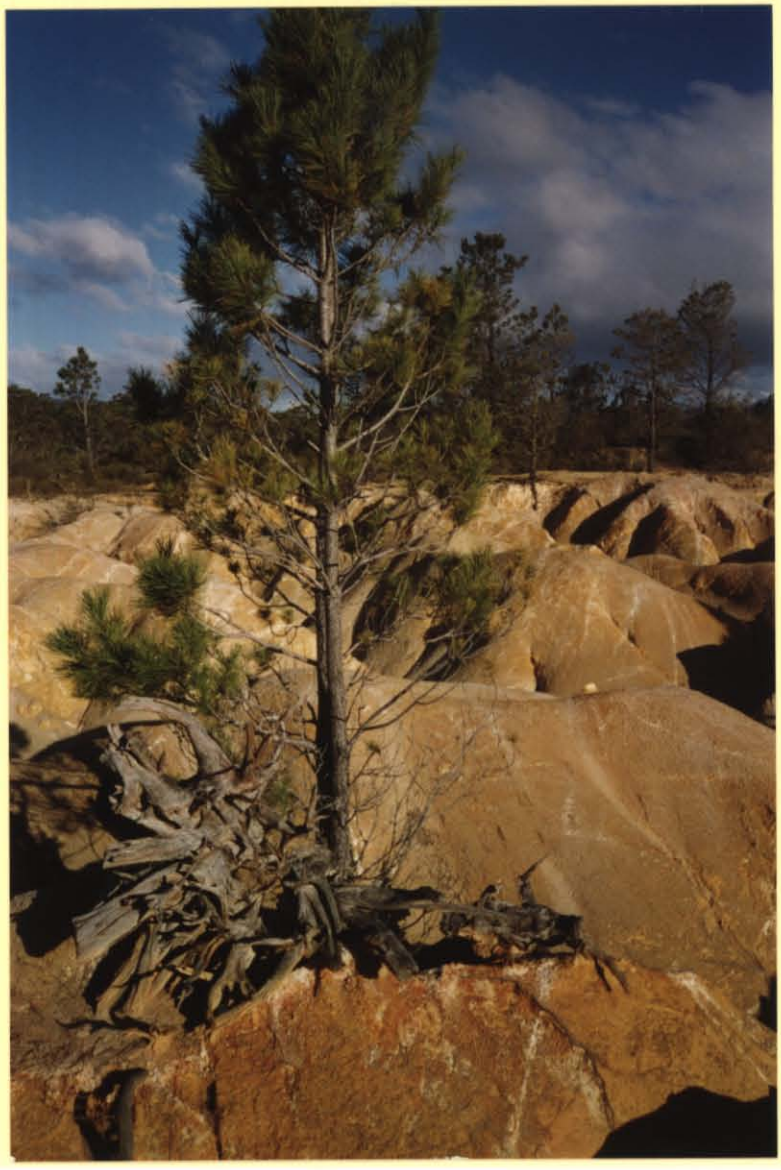
Clifton Mine?
Area circa turn of the century.

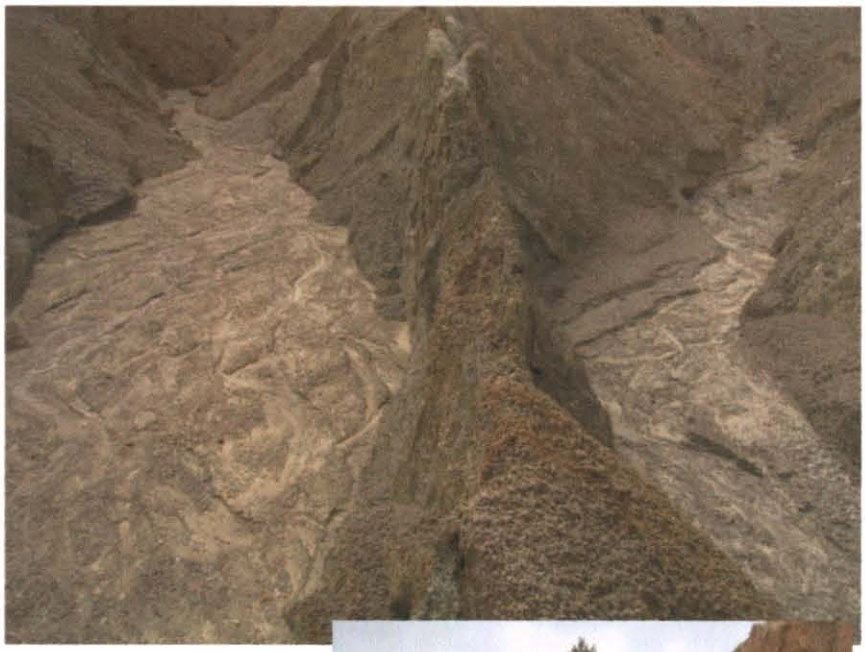
Note the rounding of all surfaces.

Photo 22
RIGHT >>>>

Clifton Mine?
Area circa turn of the century.

Self sown *pinus* species.
Note: *Pinus radiata* is also colonising bare decomposed granite.





"N" Gully system
Detail

photo 23

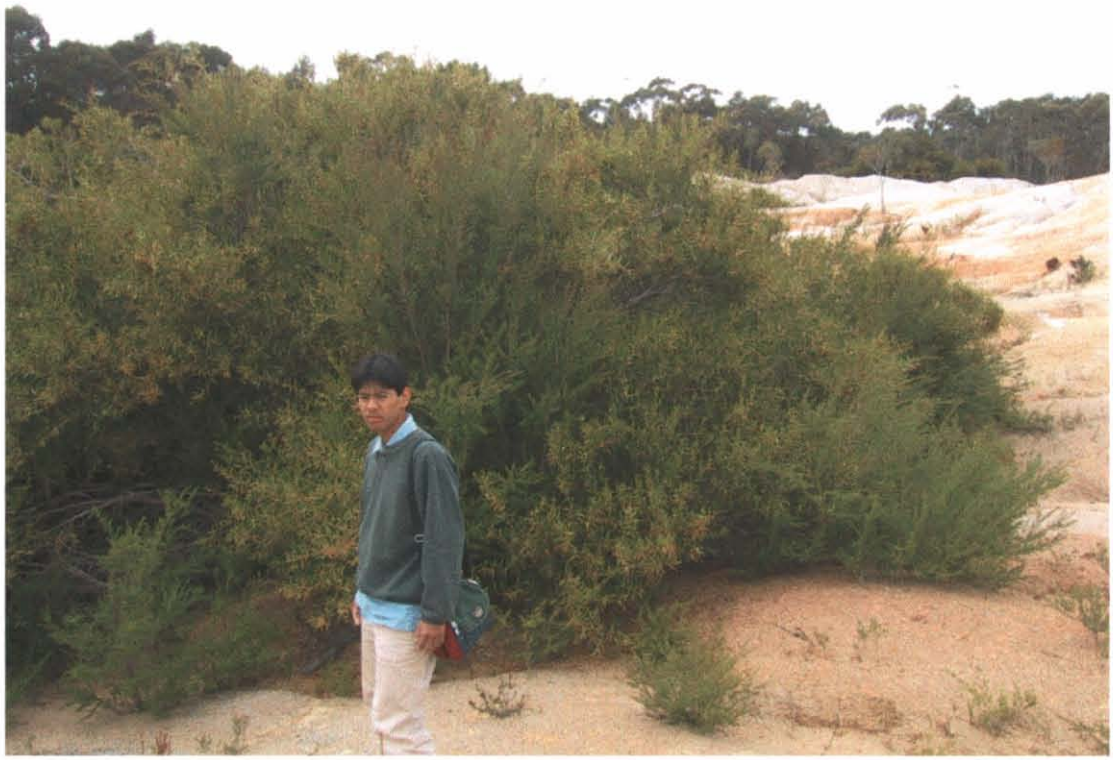
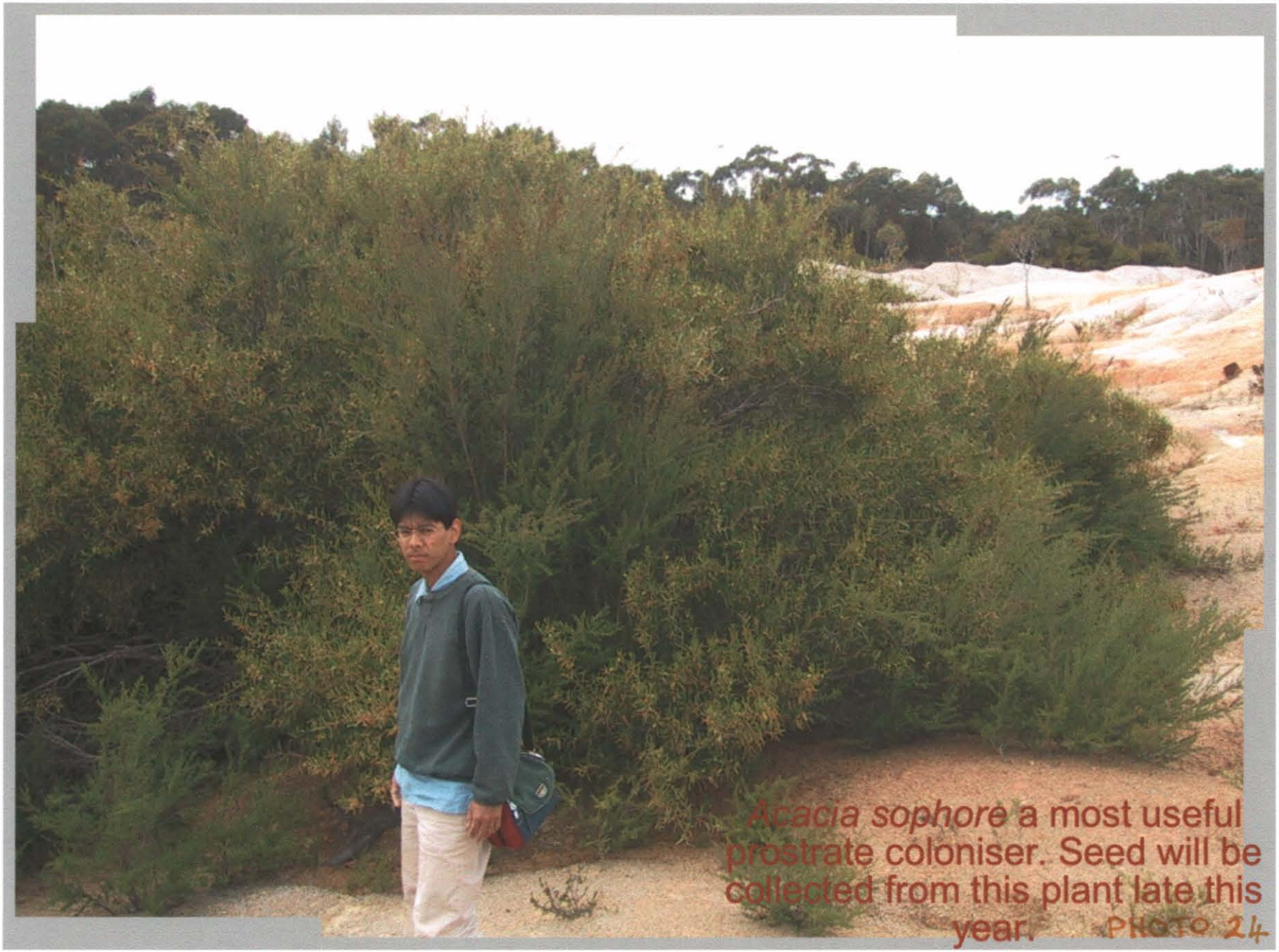


Photo 24
Acacia sophorae
seed will be
collected from this bush

Photo 25
Oversize from
Endurance No. 1



Acacia sophore a most useful prostrate coloniser. Seed will be collected from this plant late this year. PHOTO 24

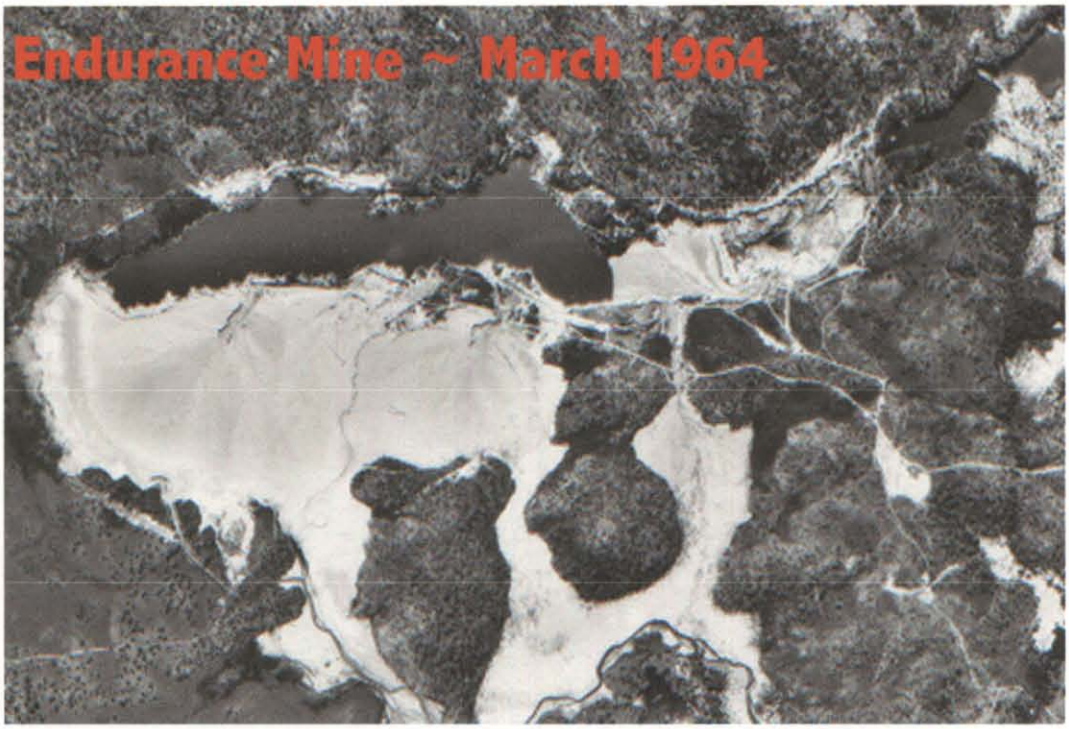
Photo25a.
Remnant vegetation
kunzea, e. amygdalina,
leptospenum, banksia
& acacia mucranata

Photo26
Remains of
Endurance No. 1

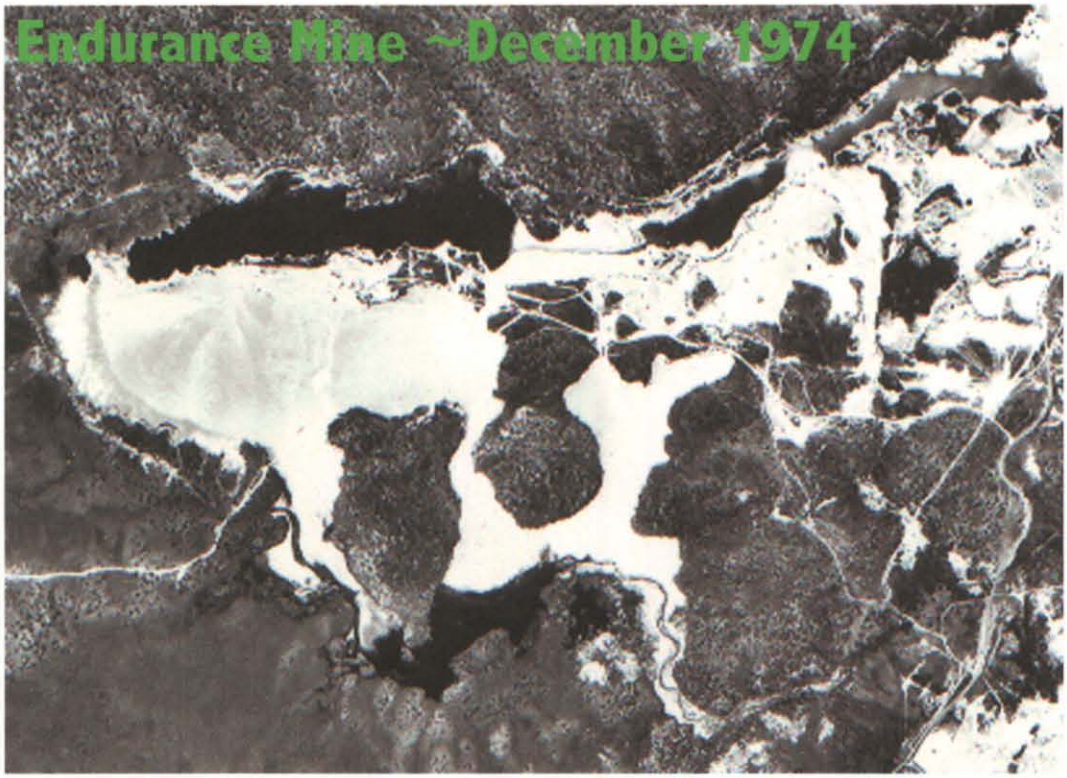
Photo 27
N 2.2 gully

Photo 28
L3 gully

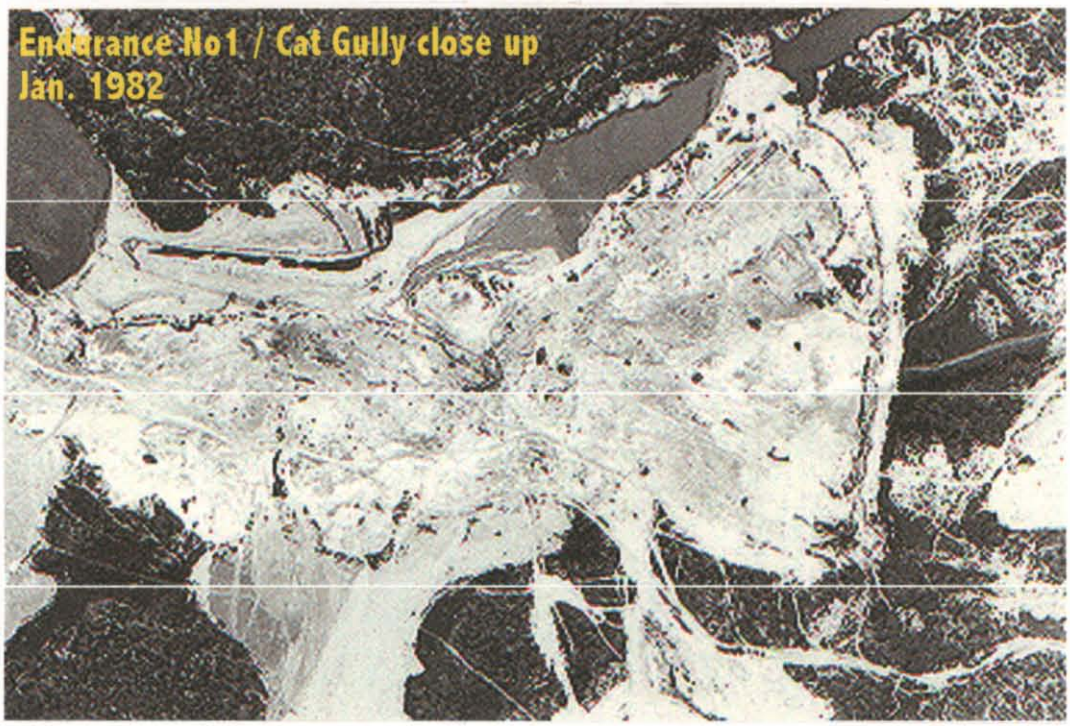

Endurance Mine circa 1953


Endurance Mine ~ March 1964


Endurance Mine ~October 1969


Endurance Mine ~December 1974


Endurance Mine ~ January 1982


Endurance No1 / Cat Gully close up
Jan. 1982

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RIGHT >>>>
Swains Mine

General View

NE Tasmania

Tasmania
Sept. 2000

RIGHT >>>>
Monarch Mine

On Crosses tailings.

Remains of the buckets from the Water wheel built by the Cross Bros. Before 1924.

Photo
RIGHT >>>>
Monarch Mine

On Crosses tailings.

Remains of the buckets from the Water wheel built by the Cross Bros. Before 1924.