



A Federal - State Partnership

November 2002 Preliminary Hearing to  
FUTURE WATER SUPPLIES FOR  
AUSTRALIA'S RURAL INDUSTRIES AND  
COMMUNITIES

by

Carol G. Williams, Break O'Day Waterwatch  
Facilitator (coastal)

Secretary: .....  
RECEIVED  
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HOUSE OF REPRESENTATIVES  
STANDING COMMITTEE ON  
AGRICULTURE, FISHERIES  
AND FORESTRY

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## **FOREWORD**

At the National Waterwatch Conference held recently in Launceston (July 2002), it was mentioned by the opening speaker that the north east of Tasmania was especially suffering from the effects of the recent drought. Well, this is not entirely true and the speaker would have been more accurate if she had referred to the south east instead. Last year the north east in fact received substantial rainfall and remained green. True, vegetation is now beginning to turn dry due to the winds, however, rainfall has been good in comparison to the rest of the east coast.

A meteorological analysis has shown that there are two areas in the north east, at Grey near St. Marys and on the Blue Tier behind St. Helens, that receive the highest intensity rainfall in the state, respectively (APPENDIX 1). So, in effect, the rain falls on these elevated areas all at once and rushes to the Tasman Sea, not too many kilometers away. Highest rainfall occurs on the peaks at about 1200 mm per annum with the coast receiving on average between 750 - 800 mm per annum.<sup>1</sup>

Rainfall in the summer months is the result of a north easterly winds, and so the December rains that quite often precede the summer months may not arrive this year due to the El Nino, but there are no bets on this one.

Unlike much of the river systems to the south, from the about the Apsley River on, most streams and water courses in the north east do continue to flow all summer and it will be interesting to see what happens this season during the worst drought on the Australian mainland for a century.

Also, unlike other areas, the major catchments of the north east have not been unduly modified by dams, canals, off takes for irrigation, nor have they been re-directed into other catchments. Most wetlands stay wet much to the dismay of farmers during times of flood. I am sure some would like to continue to engineer the river system to curb natural flooding. This has in fact occurred to a small extent on the North George River in Pyengana and in the lower George River catchment, but to a greater extent, these rivers have not been unduly modified.

The Waterwatch program has had a handful of dedicated volunteers over the past 6 years, who have been proactive in their catchments at different times. Up until now, the issue of water quality has been of the utmost importance, and it has only been recently that the issue of water quantity has become important. There are several reasons for this.

The recent draft of the *Break O'Day Natural Resource Management Strategy* which has just finished for public comment states, that, water supplies at a 4 ML/day capacity from the treatment plant near St. Helens for local drinking water out of the George River is at present adequate but goes on to say that capacity is there to also supply Scamander and Beaumaris with their water supplies.<sup>2</sup> However, Waterwatchers that I have spoken with and the recently published *Initial Studies for Water Resources Development Options on the East Coast* (2002, DPIWE and Serve-Ag) have not recommended this. Possibly because the real answer to adequate water

<sup>1</sup> Koehnken, L. 2001. North-East Rivers Environmental Review, p. 5.

<sup>2</sup> Stafford, P. 2002. Break O'Day Natural Resource Management Strategy : Draft for Public Comment, October 2002, p. 20.

supplies in to the future rests with the proper management of the catchments in the first place. For example, it may be more pertinent to fix up the catchment in question rather than supply surrogate water from another catchment in the longer term.

#### **THE SCAMANDER CATCHMENT**

Speaking with a successful berry farmer in the Scamander catchment, it is his opinion that it is not the quality of the Scamander drinking water which is at issue but the quantity. He believes that, in times of low water flow, nasties are not sufficiently diluted (D. Buchanan, pers. com).

The Scamander catchment comprises two main river systems, the Scamander and the Avenue Rivers, providing the major water supply for the township of Scamander. The catchment has had a very chequered history and despite its large catchment area, the community is concerned about the water quality and quantity. Degradation appears to be taking place and questions being asked do need answers.

It has only recently come to Waterwatchers' attention that a water monitoring station exists in Upper Scamander, some few kilometers from the town's intake weir. I have copies of the Rivers and Waters supply water quantity readings from 1968 to early 1996 (APPENDIX 2). This is most valuable, however monitoring needs to be continued, so that a baseline is available to better calculate environmental flows, especially since the large establishment of plantations in the upper catchment (APPENDIX 3)

#### **Recommendations**

That funds be made available for a Healthy Rivers study in to the greater Scamander catchment in order to assess its environmental flow from past data. That water quality and water quantity monitoring resume at this station (Easting - 598400, Northing - 5410900) and upstream in both the Avenue and Scamander River upper catchments. That rehabilitation take place in this catchment to ensure continuing good water quality and quantity in to the future.

#### **Rationale**

Ten years ago this large catchment was virtually a wilderness, but now much of the upper Scamander river catchment has been clearfelled and turned in to plantations (APPENDIX 4: Photos).

Information and research needs to proceed to ascertain how much modification to the hydrological system has occurred in the past 10 years. It has been said that, in the summer months, the river flow in the Scamander River is much lower than that of the Avenue River which has had less human impact (N. Ransley, pers. com).

The receiving waters of the Scamander catchment was the scene of a much heated community debate over the use of Atrazine in the mid-1990's and as a consequence the local Council successfully lobbied Forestry Tasmania not to use this and its allied chemicals on public land. However, this chemical is still used in the Break O'Day municipality in the upper catchments on private timber reserves and both the Council and Waterwatch either still monitor for, or are able to obtain information on, its use and levels (it assumed for all applications).

## THE GEORGE RIVER CATCHMENT

Waterwatch monitoring for physical and biological parameters (turbidity, pH and temperature) have been taking place along the Groom River, a major tributary of the George River which flows in to Georges Bay just north of St. Helens. In the middle catchment, turbidity has been monitored each day for approximately 2.5 years.

Due to the high intensity rainfall (as previously mentioned) and to the highly erodible granitic soils of the Blue Tier<sup>3</sup> it was assumed that any disturbances in the upper catchments would cause the release of sediment to travel downstream.

Two years ago, a control monitoring plan was set up to also monitor for turbidity in a very similar catchment close by along the Ransom River. This was to measure more closely the effects of human activity on the one catchment (the Groom) and to match results with another (the Ransom) which has no known disturbance occurring. (APPENDIX 5: graph). Specifically, Waterwatchers are interested to know the effects of forestry operations on Class 4 streams, and on new roading and logging that had just begun to take place in a steep escarpment below the Blue Tier plateau.

Unlike the Scamander catchment which has seen massive amounts of clearing and plantation establishment, the areas above the monitoring sites on the Groom River have only just begun to come under forestry practices but more are planned.

A considerable amount of community concern has grown over the past few years of the potential degradation in water quality and quantity if proposed forestry clearing plus plantation establishment were to go ahead. (APPENDIX 6: Notes of Associate Professor Brian Finlayson and Dr. Ingles research on Diddleum Plains soil and water).

Several books could be written on the debate which occurred between the local community and Forestry Tasmania (Blue Tier folder) when logging commenced at just below 600 m above a steep escarpment which had only seen selectively logging in the past. At present, there is tremendous concern for the protection of both water quality and quantity emanating from the Blue Tier. Many north east rivers rise here, such as the Great Musselroe, the Little Musselroe, the Ansons, the George River tributaries and the Weld River. The community is especially concerned about further soil erodibility and uncontrolled flash flooding and alterations to the upper catchment hydrology. Proposed logging next month may adversely effect drinking water of householders downstream, the water supply of St. Helens and subsequently the receiving waters in to Georges Bay.

At this year's September meeting, the Break O'Day Council passed a unanimous motion which reads in part, "That Council opposes all Forestry activities on the Blue Tier now and in the future, and by this action recognises the long term conservation and economic value that this area holds for the Break O'Day community."<sup>4</sup> (APPENDIX 7: Volunteer Waterwatcher input by Beris Hansberry).

<sup>3</sup> Pinkard, G.J. 1996. "Agricultural soils in northeast Tasmania" in *Biogeography of northeast Tasmania* p. 52.

<sup>4</sup> Break O'Day Council Meeting Minutes - 9 September, 2002 Item 4.2 Notice of Motion CLR Osborne, Logging on the Blue Tier

Realising the tourist potential of this magnificent area may have initiated the wish to have the area protected in the first instance by Council, but of late, water quality and quantity issues are now becoming increasingly important issues to local government and the community alike.

A recent move to set up a Georges Bay Management Committee has originated from concern by local aquaculture growers about the deteriorating decline of the bay. Once again the Break O'Day Council has supported this industry's initiative and has recently passed the following motion, "That a study be undertaken into the deterioration of Georges Bay and what work is needed to stop such deterioration further occurring." The 'deterioration' referred to here being "the changes that occurred in Georges Bay, being an increase of dead weed being found washed up on the beaches and also laying at the bottom of the bay, the beaches have gone black, evidence of foreign weed in the bay, and flathead that has been caught in the bay has black flesh"<sup>5</sup>

### **Recommendations**

That this Inquiry support the aspirations of the general Break O'Day community and local government with its request to cease all further logging on the Blue Tier. That financial assistance be given to the Georges Bay Management Committee and local government for research in to the deterioration of Georges Bay, including the setting up of a thorough monitoring program.

### **ANSONS RIVER CATCHMENT**

Like the Scamander River, a monitoring station has also been lying idle several kilometers upstream from Ansons Bay in the far north east of the municipality. It is recommended that this be reactivated again to also monitor for parameters which will provide indicators for environmental flow. Like the Scamander River catchment there has been quite intensive logging and plantation establishment in the upper reaches of the Ansons River. (APPENDIX 8: Aerial and ground photos of the Ansons River catchment and logging of class four stream).

This is also the case for the mid to upper reaches of other north east catchments such as the Great Mussleroe River and Musselroe Creek. More intensive forestry operations are planned to continue for the Great Musselroe River, being the most north easterly habitat for the Giant Fresh Water Crayfish (*Astacopsis gouldii*).

### **NORTH EAST TREE DECLINE**

This is being referred to as an issue effecting the great northern plain in the far north east of the municipality. It is not well known, but serious tree decline is occurring in the area. A recent Bushcare project was set up to address this decline. However, land clearing has not abated and this region is the site of some of the greastest cleared land in the state.(APPENDIX 9: North east tree decline photos). Alteratons to the wetland hydrology and threats to the Dwarf Galaxis, plus potential salination issues have also been flagged here.

### **Final Recommendations**

That Water Management Plans and Healthy River studies be carried out in all remaining north east catchments and their tributaries so that both environmental

<sup>5</sup> Break O'Day Council Meeting Minutes - 9 September, 2002, 5.1 Health of Georges Bay CLR J McGiveron

flows can be determined and informed decisions can be made, to ensure good water quality and quantity are provided for present and future needs.

### **References**

Break O'Day Council Minutes - September 9, 2002, The Esplanade, St. Helens, Tasmania.

Koehnken, Lois. 2001. North-East rivers environmental review: A Review of Tasmanian environmental quality data 2001. Supervising scientist Report 168, Supervising Scientist, Darwin. NHT, Environment Australia, DPIWE Supervising Scientist Hobart, Tasmania.

Pinkard, G.J. "Agricultural soils in northeast Tasmania" in *Biogeography of northeast Tasmania* (1996). Records of the Queen Victoria Museum, Launceston. Queen Victoria Museum and Art gallery. Tasmania, Australia.

Stafford, Peter, "Break O'Day Natural Resource Management Strategy: Draft for Public Comment 2002, Break O'Day Council, St. Helens.

## APPENDIX 1

Meggs, J.M. (1996), *Distribution and conservation status of two threatened species of lucanid beetle in Tasmania*, National Estate Grants Program Project Number 9507, Commonwealth of Australia.

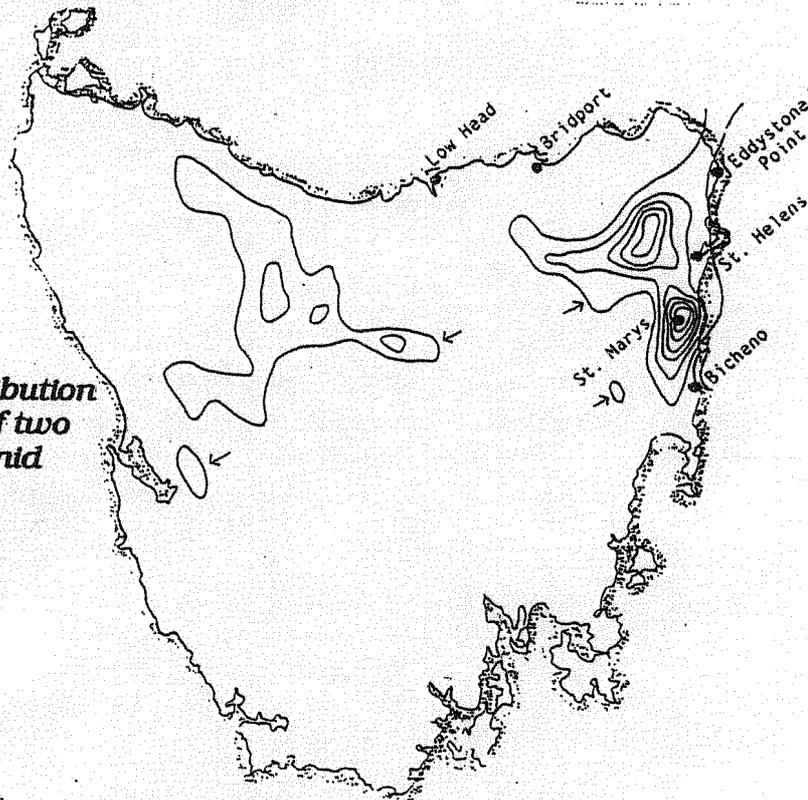


Fig. 12. Rainfall intensity contours for one-hour falls expectable every two years. Contour interval is 5 mm/hr, with outer-most contour (arrows) = 20 mm/hr (from Mesibov 1988b, originally redrawn from map 1.9 in vol. 2 of Barton, A.C.T. (1987), *Australian Rainfall and Run-Off: A Guide to Flood Estimation*. Institution of Engineers, Australia).

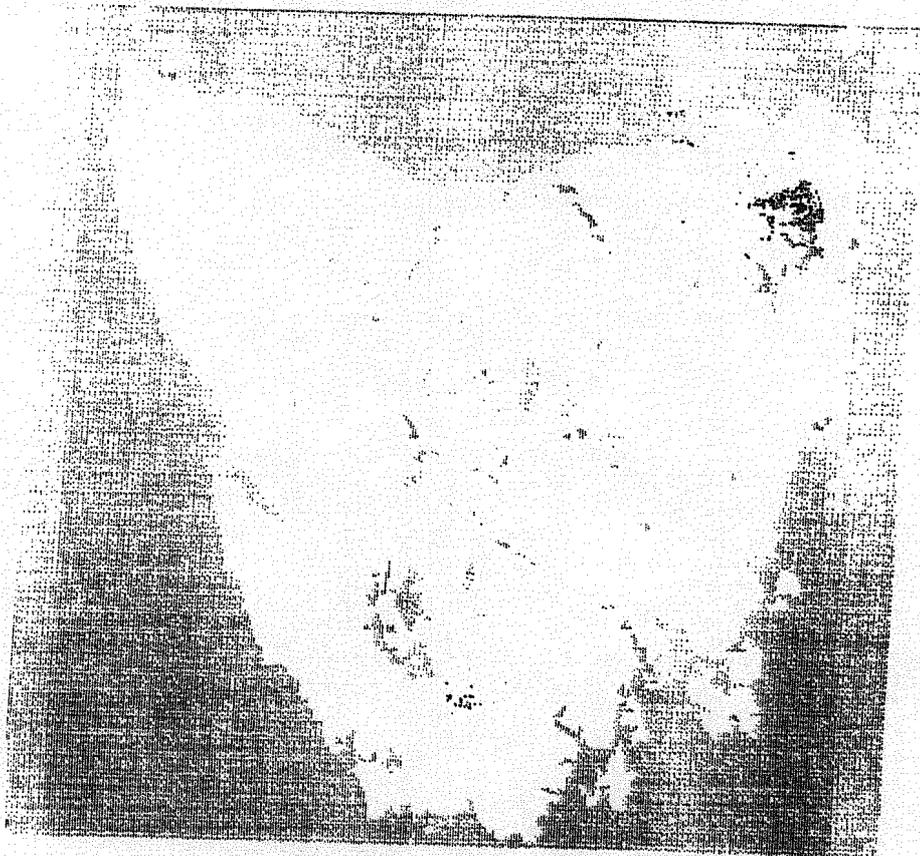


Fig. 13. Predicted distribution of *H. simsoni* using CORTEX 4, an environmental modelling software package (Peters 1996). Black areas = high probability of occurrence; grey areas = moderate probability; white areas = little to no probability.

**APPENDIX 2**Scamander River Upstream Scamander Water Supply Intake - Monthly Data  
summary of Stream Flow (Cumecs). Easting - 598400, Northing - 5410900

2206

East Coast

**Scamander River u/s Scamander Water Supply Intake****Period of Record:**From: Apr 1968 To: Sep 1996**Location:**Easting: 598400 m Northing: 5410900 m**Purpose of Installation:**Water resource assessment**Physical Characteristics of Site:**

Catchment Area	<u>261</u> km <sup>2</sup>	Elevation	<u>5.0</u> m
Approx. Average Annual Rainfall	<u>850</u> mm	Control	<u>weir</u>

**Catchment Characteristics:**Description of Major Land Use Forestry, AgricultureUpstream Regulation Nil**Statistics:**

	<u>Minima</u>	<u>Maxima</u>	<u>Mean*</u>
Recorded Gauge Height (m)	<u>-0.190</u>	<u>6.370</u>	<u>0.252</u>
Rated Flow (m <sup>3</sup> s <sup>-1</sup> )	<u>0.071</u>	<u>555.0</u>	<u>1.913</u>
Gauged Flow (m <sup>3</sup> s <sup>-1</sup> )	<u>0.076</u>	<u>183.3</u>	

\* Mean annual statistics reported.

**Other Information:**

Australian Water Resources Council Number	<u>302206</u>
Bureau of Meteorology Number	<u></u>

Station closed

2206 SCAMANDER RIVER UPSTREAM SCAMANDER WATER SUPPLY INTAKE

MONTHLY DATA SUMMARY OF STREAM FLOW (Cumecs)

PERIOD: 1991 to 1996

(NOTE: Monthly values are for period up to 24:00:00 on last day of month)

Month	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Month
January	1.594	3.464	0.812	1.434	11.54X	2.506					January
February	0.235	1.303	0.635	1.276	2.169	1.139					February
March	0.431	0.474	0.659	0.55	0.365	0.422					March
April	0.271	2.453	0.402	0.483	0.299	0.861					April
May	0.242	2.364	0.349	0.471	0.352	0.542					May
June	1.962	1.83	0.374	0.448	0.346	0.695					June
July	4.283	3.128	2.699	0.463E	0.491	4.077?					July
August	2.035	2.608	1.11	1.039Y	0.373E	3.222					August
September	1.815	2.81	0.699	0.304E	0.307E						September
October	0.677	2.246	0.431	0.696	0.2						October
November	0.525	6.798	0.516	0.347	1.698D						November
December	3.229	1.938	14.63X	0.139	2.545						December
Max Flow Cumcs	68.55	98.34	344.6X	17.03Y	531.7X						Decade
Time of Max	Dec-15	Nov-21	Dec-23	Oct-02	Jan-29						
Min Flow Cumcs	0.131	0.314	0.234X	0.075Y	0.074X						
Time of Min	Mar-06	Apr-03	Dec-13	Dec-30	Jan-01						
Avg Flow Cumcs	1.455	2.616	1.970X	0.635Y	1.732X						

2206 SCAMANDER RIVER UPSTREAM SCAMANDER WATER SUPPLY INTAKE

MONTHLY DATA SUMMARY OF STREAM FLOW (Cumecs)

PERIOD: 1981 to 1990

(NOTE: Monthly values are for period up to 24:00:00 on last day of month)

Month	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	Month
January	0.202	0.27	0.29	0.29	0.64	0.395Y	1.399	3.545	0.164	0.585	0.375 January
February	0.146	0.166	0.124	0.277	0.277	0.276	0.637	0.488	0.137	0.489Y	0.532 February
March	0.321	0.248	3.442	0.504	0.504	0.494	0.677	0.390E	0.103	0.799Y	0.284 March
April	0.381	0.212	3.262	0.331	3.103	0.46	0.46	0.303	0.542	14.64	0.63 April
May	1.421	0.218	2.105	0.263	1.162	15.77X	1.515	0.479	11.65	1.323	0.375 May
June	10.18E	0.839	1.347	0.302	1.057	1.515	8.364	0.584	2.987	2.973	0.391 June
July	MISSING	3.27	3.627	3.214Y	0.666	2.317	0.647	1.589	8.255	4.992	0.53 July
August	6.494	0.343	1.095	11.86Y	2.235	2.317	0.647	1.589	1.616	1.71	1.71 August
September	2.014Y	0.281	9.450X	13.07	0.941	3.154	0.33	3.562	1.284	1.284	0.368 September
October	1.189Y	0.178	1.951	1.627	3.568	1.621	0.332	0.964	1.859	1.859	0.376 October
November	0.471	0.121	0.826	0.839	2.084	0.893	0.323	4.03	1.146	1.146	0.399 November
December	0.383	2.965	0.69	0.669Y	13.38	0.767	0.384	0.977	0.721	0.721	0.228 December
Max Flow Cmcs	131.8?	77.97	447.4X	240.1Y	142.9Y	555.0X	86.25E	139.5	186.1Y	34.55	Decade
Time of Max	Jun-01	Jul-05	Sep-06	Aug-06	Oct-17	May-18	Jan-05	Jul-08	Apr-02	Aug-10	May-86
Min Flow Cmcs	0.126?	0.08	0.092X	0.198Y	0.233Y	0.360X	0.176E	0.079	0.281Y	0.161	0.079?
Time of Min	Feb-21	Dec-05	Feb-19	Mar-09	Feb-15	Apr-14	Nov-05	Apr-06	Feb-15	Dec-17	Apr-88
Avg Flow Cmcs	2.125?	0.769	2.354X	2.804Y	2.471Y	3.169X	0.717E	2.93	2.695Y	0.517	2.055?



2206 SCAMANDER RIVER UPSTREAM SCAMANDER WATER SUPPLY INTAKE

MONTHLY DATA SUMMARY OF STREAM FLOW (Cumecs)

PERIOD: 1968 to 1970

(NOTE: Monthly values are for period up to 24:00:00 on last day of month)

Month	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	Month
January									0.106		2.594 January
February									1.566		0.61 February
March									0.41		11.79X March
April									0.245		1.918 April
May									MISSING		1.051 May
June								0.249	MISSING		10.42Y June
July								0.287	MISSING		1.932Y July
August								0.516	0.528R		9.044Y August
September								1.203	4.607R		3.053Y September
October								0.483	2.554R		1.253 October
November								0.486	1.182X		1.313 November
December								0.277	8.979X		4.043 December
								0.174	1.132R		

	Decade
Max Flow Cumcs	235.67
Time of Max	267.0Y MISSING
Min Flow Cumcs	Nov-61
Time of Min	0.07F?
Avg Flow Cumcs	Jan-23
	1.9687
	4.113Y MISSING

River health measures are output from AUSRIVAS by comparing the number and type of animals found at the test site compared to the number and type of animals that were expected. This is expressed as an Observed to Expected (O/E) ratio. For convenience the O/E ratios can be compared to bands that categorise the degree of biological disturbance (see table below).

**Using River Health Assessments**

O/E ratios are currently being used to measure

improvements or declines in river health at a site over time, to assess the relative condition of a range of sites within a catchment, and for certain regulatory purposes. River health indices are recognised under Tasmania Together, the National Action Program for Salinity and Water Quality, and the State NRM Strategy as a key indicator for ensuring that we maintain our water resources in a sustainable way.

**AUSRIVAS O/E Score Bands**

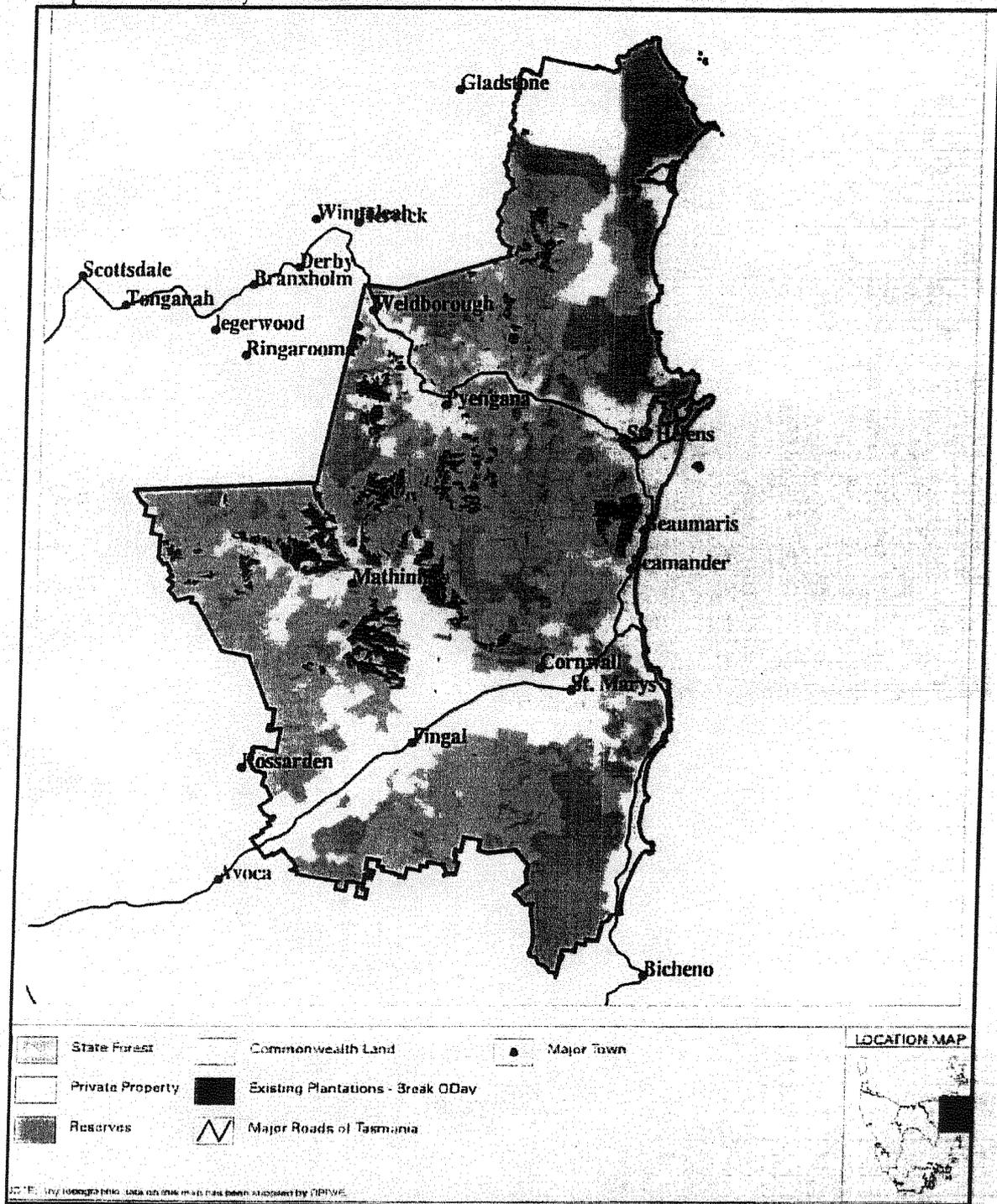
Band Label	O/E Ratio	Band Name	Comments
X	>1.15	Potentially Diverse	<ul style="list-style-type: none"> <li>• More families than expected</li> <li>• Potentially diverse site</li> <li>• Possible mild organic enrichment</li> </ul>
A	0.85-1.14	Unimpacted	<ul style="list-style-type: none"> <li>• Good quality site with most expected macroinvertebrates present</li> </ul>
B	0.52-0.84	Significantly Impacted	<ul style="list-style-type: none"> <li>• Significantly fewer families than expected</li> <li>• Potential mild to moderate impact on water quality, habitat or both, resulting in the loss of families</li> </ul>
C	0.12-0.54	Severely Impacted	<ul style="list-style-type: none"> <li>• Considerably fewer families than expected</li> <li>• Loss of families due to moderate to severe impact on water and/or habitat quality</li> </ul>
D	<0.12	Impoverished	<ul style="list-style-type: none"> <li>• Very few families collected</li> <li>• Highly degraded</li> <li>• Very poor water quality and/or habitat</li> </ul>

**For more information about Monitoring River Health in your catchment, contact:**

Water Assessment Section  
 Department of Primary Industries, Water and Environment  
 GPO Box 44  
 Hobart 7001  
 Telephone: (03) 6233 6328

[www.dpiwe.tas.gov.au/water](http://www.dpiwe.tas.gov.au/water)

Map 6: Break O'Day Plantations 2002



**APPENDIX 4 (a)**

Examples of clearfelling and plantation establishment in the upper Scamander River catchment.



**APPENDIX 4 (b)**

Examples of clearfelling and plantation establishment in the upper Scamander River catchment



A coupe in Toms Gully (NE Tasmania) recently clearfelled and then burnt in May 1998.



Riparian clearing in Toms Gully (NE Tasmania) May 1998.

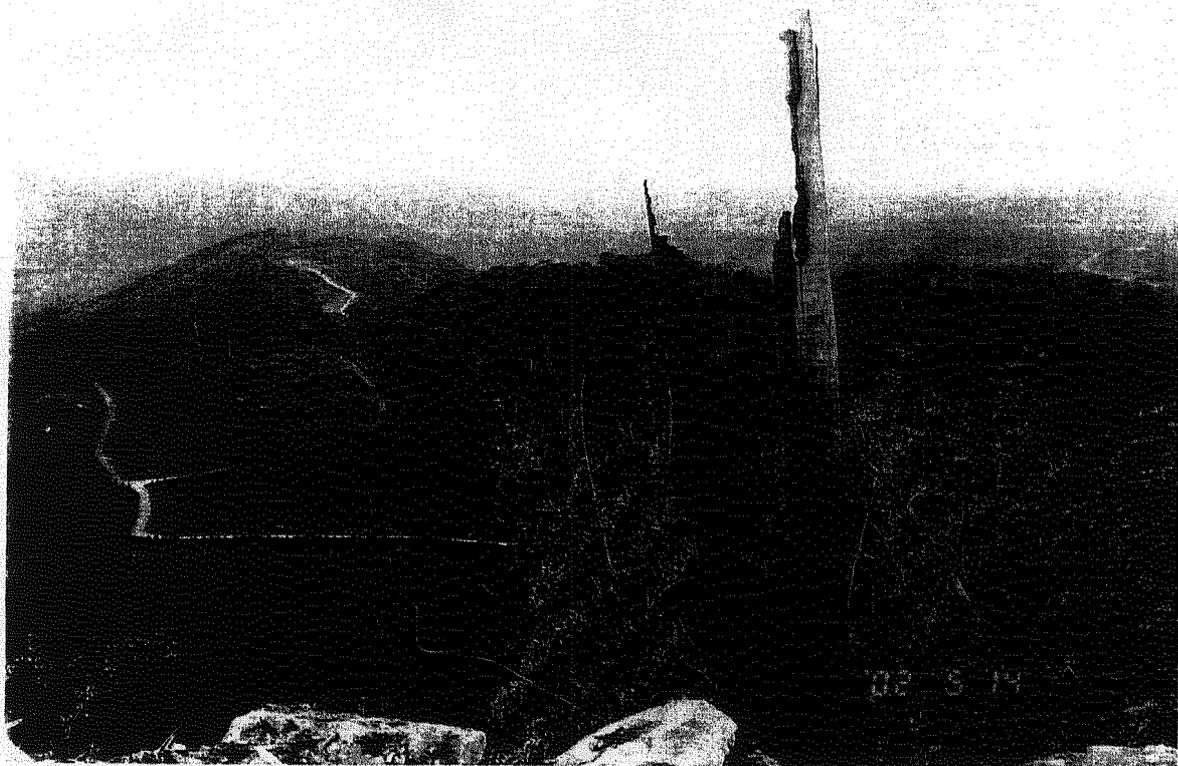
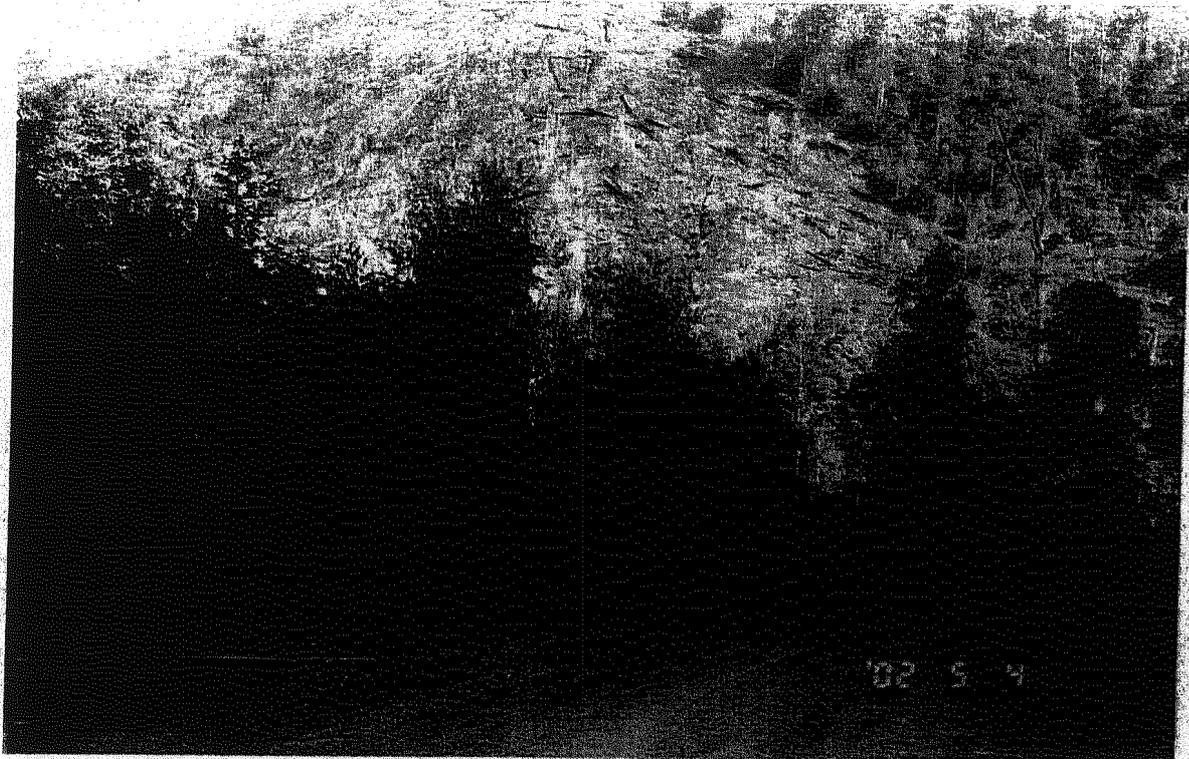
**APPENDIX 4 (c)**

Examples of clearfelling and plantation establishment in the upper Scamander River catchment



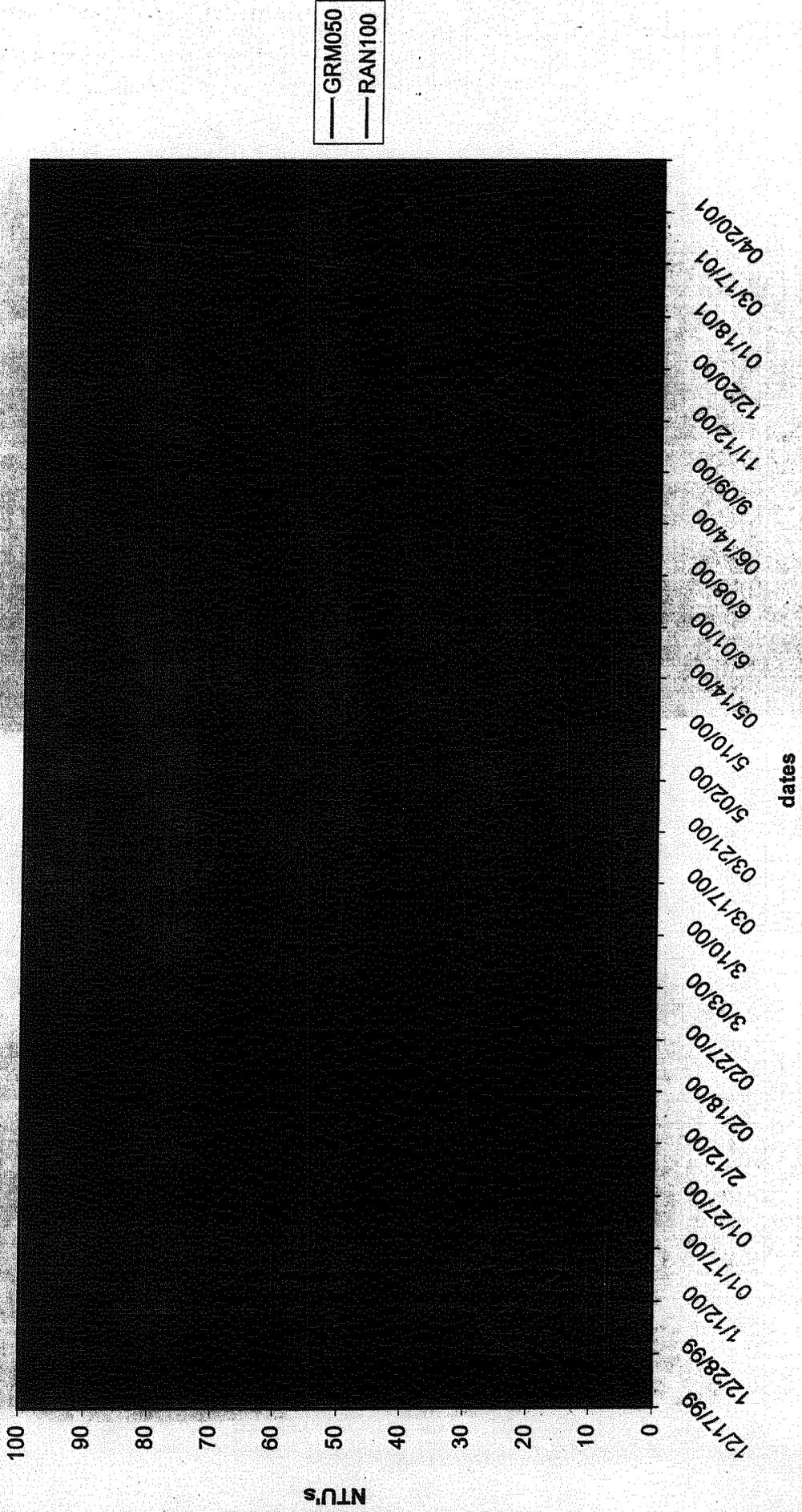
**APPENDIX 4 (d)**

Examples of clearfelling and plantation establishment in the upper Scamander River catchment.



# APPENDIX 5

Site 1 GRM050 turbidity levels as compared to Site 2 (control) RAN100 3 kms away on the Ransom River for the same dates



**APPENDIX 6 - Diddleum Plains Meeting, Scottsdale and Mt. Scott Road,  
Organised by Dorset Waterwatch, (Notes by Carol Williams - Break O'Day  
Vegetation Waterwatch and Rivercare Facilitator) February 2001.**

1. **Dr. Own Ingles** (Soil engineering & Risk Management consultants) - worked in soils 40 years. Knows district as a child. Very sandy soils. Granitic. High permeability - 1m per day for underground zone. Granite weathers down to non-expanding clays (derived from Feldspars) that washes away very quickly. Very concerned with types of chemicals put on during forestry operations. "Risk of ground water contamination". Buffer zones on class 4 streams of 10 - 20 m too little. 1080 cruel soluble poison "passes along in food chain". Velpar is carcinogenic. (*Diddleum Plains Meeting Scottsdale and Mt. Scott Road, Organised by Dorset Waterwatch*)

2. Associate Professor Brian Finlayson (Centre for Environmental Applied Hydrology, Dept. of Anthropological Geography and Environmental Studies, Uni. of Melbourne).  
He was first contacted by the environmental defenders Office  
Asked three questions.

1. what is the impact of logging and conservation to plants and quantity of water
2. What is the impact on water quality due to logging and conversion to plantations.
3. Comment on the effectiveness of buffer zones.

Problem - no data at all on what the impact of forestry operations are on water yield. However, he can compare with water catchments of the Upper Yarra. (Brian was asked to do this study. Major study took 20 years. MCC asked by forestry whether they could log the upper catchment of the water supply. Council said not until study done. Once finding of study completed - Council said no to forestry)

To a certain extent Brian had to use guess work with Diddleum Plains but "so is everyone else".

Task - to determine the area of catchment of the two springs in question plus rainfall and evaporation balance.

Spring 1 = 8 mega/L per year

Spring 2 = 14 mega/L per year

Plants (ie trees) have an affect on WATER YIELD. More transpiration from rapidly growing trees - such as plantation trees. Biggest impact will be in the summer - time of greatest transpiration. *E. nitens* (proposed crop for DP) like *E. regnans* (Upper Yarra) have an aged related water yield.

Plantations:

1 - 2-4 years yield goes up then yield will fall down to 50% of yield of old growth trees. This 50% figure disputed by forestry who says it is 25%.

Recommendation - do not put in plantations - let them grow old. Diddleum Plains is the source (the two springs) for the St. Patricks, the Brid and the Great Forrester Rivers).

Forestry scientist Dr. Macintosh challenges Finlayson - says the water is coming from other side of hill. Finlayson says then if that is the case the situation is even worse for water yield.

Water quality

In this area drainage lines tend to be soaks. Due to high permeability of soil there is no run-off but rather water permeates (ie springs and underground water system). Soil has CONDUITS made by roots and contaminants will get into these - not absorbed by sand. Any chemicals applied to surface are likely to get into the system.

The Geschwendtner's were given three options by forestry.

1. Remove pipe and cease obtaining water from forested area. Instead take from spring head of Brid River. This is no solution as water is coming from area to be logged!
2. Lease pipeline easement and lease buffer zone around spring. However this buffer is DOWNSLOPE of lease land and has no impact on water quality.
3. Area offered as a lease - \$700 per annum - again 95% is all downslope of spring.

**APPENDIX 7: Greater Goshen Waterwatch input by Beris Hansberry, Goulds Country.**

During it's 4 years of operation, the volunteers of the GGWW have spent much time and effort in monitoring the rivers and streams in the forested catchment of the Blue Tier, North East Highlands, inland from St Helen's. The area is mainly State forest, with substantial areas designated for wood production via clearfelling and plantation establishment by Forestry Tasmania.

Although large areas were cleared by mining, timber harvesting, and fires during early settlement, these have since regenerated and it's many water courses have been identified as being in pristine condition. <Federal Healthy Rivers Program 200?>

The Blue Tier catchment provides water for many farms, small towns, and domestic use on it's way down to the coast, where it supplies the town of St. Helens before flowing into Georges Bay.

The pristine condition of the streams in the upper catchment is directly related to the forest community surrounding them remaining largely intact,.. Due to the expansion of clearfelling and plantation establishment in the N:E, these water courses are under threat of chemical contamination, siltation and removal of vitally important streamside vegetation. The much touted Forest Practice Code allows little or no protection for headwaters, drainage lines and class 4 streams, the very beginnings of rivers and creeks.

The Granitic soils of the Blue Tier are highly erodible, the massive disturbance caused by roading, clearfelling, and fire bomb hot burns creates siltation, scouring and light exposure, all of which alter stream ecology, in many cases forever.

With world water supplies diminishing in quality quantity and availability, it is critical that catchments like these are recognised as the rare and endangered eco systems they are.

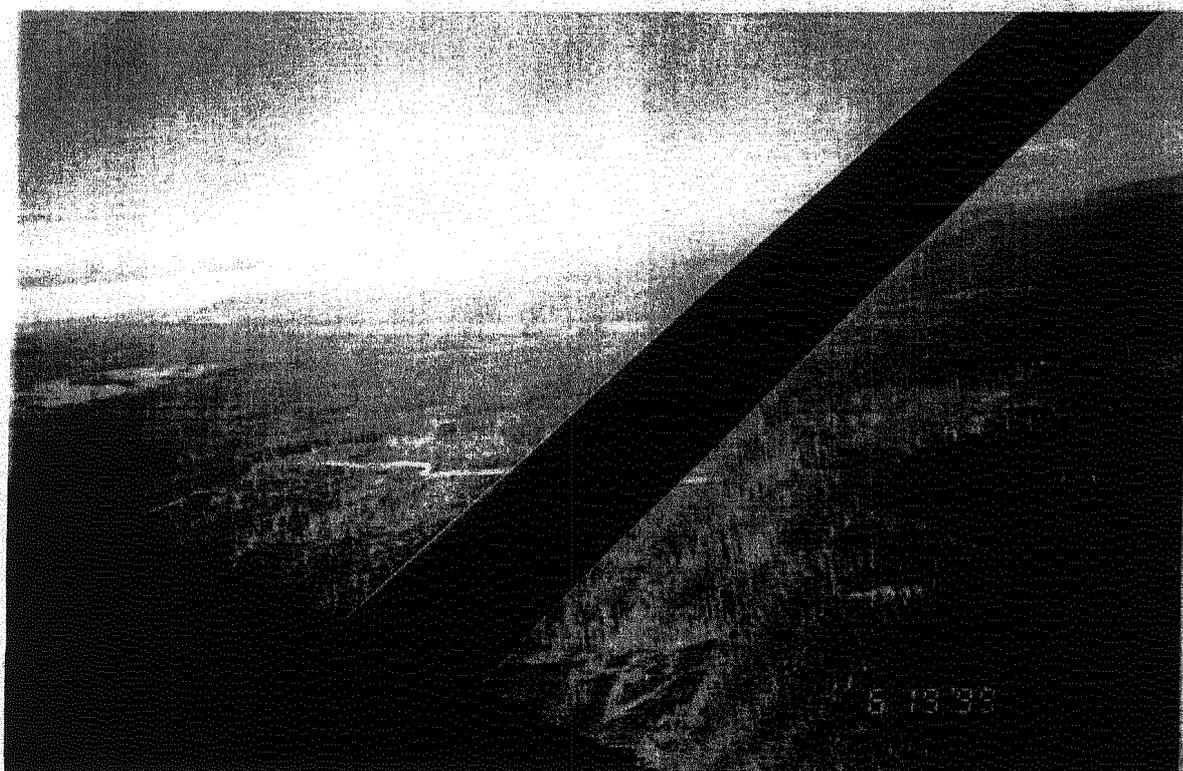
While there is agreement between Gov't departments and industry bodies about the need for action to repair damaged ecosystems, a multitude of publications large and small, and many volunteer programs in place, there is nothing in place to protect a catchment as a whole. In my experience in stream monitoring in both disturbed and undisturbed areas, it is clear that this is a very short sighted approach to water management.

If we hope to maintain an adequate and sustainable supply of water, it is essential to start with protection for natural areas, where all the requirements necessary are provided by nature. This is far more practical than spending untold millions in restoration works.

Prevention is better than cure- It is now time for Gov't to be serious about protection, with laws not recommendations, such places must not be available to industry, for short term gain - they are a precious resource for which we have a moral obligation to leave for generations of life forms to come.

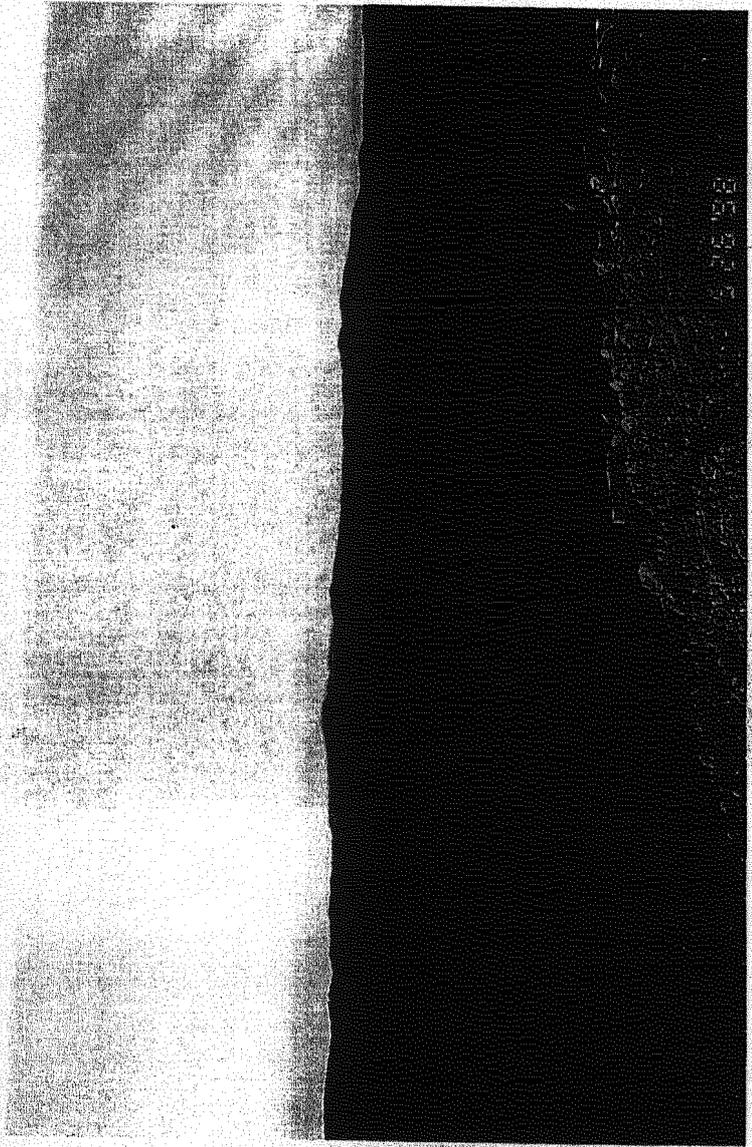
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**APPENDIX 8 (a):** Aerial and ground photos of the Ansons River catchment and logging of class four stream.



**APPENDIX 8 (b):** Aerial and ground photos of the Ansons River catchment and logging of class four stream.

Upper Ansons River catchment recently cable logged and burnt including the creek line.



Upper catchment coupe being showing Toms with the foreground and large coupe in the foreground. Scattered trees in the background.

**APPENDIX 9: North east tree decline**

