Tasmania Department of Mines — Unpublished Report 1986/102

# The Storys Creek pollution problems

*by P. Allan*

## SYNOPSIS

In late June 1986 a freak storm occurred in the vicinity of the Storys Creek and Rossarden townships.

The large volumes of water generated by the storm far exceeded the capacity of the existing stormwater drainage and caused damage to protective structures in the area, i.e. a precipitate dam at the old Storys Creek mine site and a tailings dam at Rossarden.

These dams are adjacent to Storys Creek and Aberfoyle Creek respectively and any serious failure poses an environmental threat to the entire South Esk River system.

The Minister for Mines directed the Department of Mines to investigate and take necessary action.

As the damage occurred at the onset of winter prompt action was required with little or no time for consideration. A local contractor, Mr H. Stacpoole, was contacted and requested to make immediate protective repairs to prevent further damage.

The area is in State Forest and nominally under the control of the Forestry Commission.

Storys Creek township is controlled by the Riverside High School.

The situation was environmental and the concern of the Department of Environmental Control.

Roads involved were the responsibility of the Department of Main Roads.

The entire area lies within the Fingal Municipality.

Funding had to be approved by Cabinet and Treasury.

Despite the number of agencies and instrumentalities involved emergency action was put in hand immediately. All the organisations involved co-operated to the fullest extent necessary. Throughout the operation everyone concerned was kept informed of progress, including landowners on the South Esk River who had expressed concern.

The main problem overall has been funding as, although Cabinet gave authority to spend the necessary funds, these have had to be taken from Departmental allocations. The total cost was $16,862.10.

## THE STORYS CREEK POLLUTION PROBLEMS:

### *Problem 1*

Storys Creek as a mine site first came into production around 1895 when Chinese prospectors and miners moved into the area to mine tin and wolfram.

The original workings were blind adits driven into the outcrops which appeared in a small creek bed informally known as Side Creek.

Soon after the turn of the century a more rational mining venture was set up with local capital in the shape of the Storeys Creek Mining Company. The confusion over the spelling of the name still continues, with the mine being called Storeys Creek but the formal gazetted name being spelled without the ‘e’ (Storys Creek).

The ore, although principally tin and wolfram, also contains cadmium and this latter mineral has been and continues to be a problem, as during the processing of the ore the cadmium always finished up in the final slimes.

For the major part of the life of the mine, all the tailings or waste products were simply dumped into Storys Creek and washed downstream. This process was eventually recognised as undesirable, if not anti-social, and all waste materials were later impounded or stacked.

In the last few years of the mine’s life, it was recognised that the final wash waters from the mill were heavily polluted with cadmium salts and a system was introduced to settle these out using soda ash, with the resulting sludge being stored in a special dam.

It was very difficult to find a suitable site for a dam in the vicinity of Storys Creek and the only area available was a bay-like area alongside the main Storys Creek channel below a small dry-weather creek. The dam was duly constructed on this site and the slimes impounded.

As no time was available to draw up and call tenders, the Department examined the problem, decided on remedial action, and engaged a local available contractor to proceed immediately.

Had there not been a local dependable contractor available and willing to co-operate, the task would have been extremely complicated and the resultant delays possibly catastrophic.

One winter storm occurred within days of the first major storm and carried more slimes away, as well as further damaging the dam wall and moving the spillway further out.

A very early start to temporary patching prevented further damage when a second winter storm occurred.

Heavy snow and sub-zero temperatures slowed down the delivery of heavy earth-moving equipment, as did a lock-in strike at the site on which the equipment was operating when it was urgently required.

That the entire operation was put in motion merely on the mutual trust between Department staff and the contractor must be regarded as a testimonial for the Department. It must be recorded that Mr Trevor Brown, Director of Environmental Control, and Mr Andy Skuja, Deputy Commissioner for Forests, displayed an equal trust in our capability.

## Problem 2

Side Creek has for a long time been a known source of pollution to Storys Creek and the South Esk River, with Chinese workings on one side of the creek and the numerous adits from the Storys Creek mine on the other. Water flowing down the creek has been able to enter the workings and come out strongly polluted with heavy metals.

Subsequent to the mine closure, and as part of the environmental clean-up requirements, the original adits were made inaccessible and buried under tailings. This makes the possibility of water sealing them an impossible task.

Originally Side Creek was a simple wet-weather creek and did not pose a serious problem. It only flowed when the flow in Storys Creek was high and thus dilution was correspondingly high.

In the last few years Side Creek has developed into an all-weather creek resulting in periods of pollution to Storys Creek when that waterway had a low flow rate.

The water sampling program conducted by the Department on a continuous basis highlighted the problem after a number of seasons in which there was a relative increase in pollution in the South Esk River during the 'dry', indicating a consistent source. A number of options were considered for the Side Creek problem and an investigation of the area showed that despite its limited catchment area Side Creek was being constantly fed by the Storys Creek township water supply.

This consists of two large freshwater dams, which are not maintained, but are still used in the township which is retained by the Education Department as an adventure camp.

It was therefore decided to intervene between the dams and Side Creek by installing a system of surface drains with which to collect and divert the surface waters away from Side Creek.

## Problem 3

Damage from the original storm was not confined to Storys Creek but also seriously affected the tailings storage areas at Rossarden. There, because of the configuration of the tailings areas, the run-off was confined to a narrow road access between the dams. The water breached the main side wall of the impoundment area, swept through the dam and took out a section of the front dam wall overhanging Aberfoyle Creek.

This front failure appears to have occurred very quickly, allowing the flood to escape before it had time to liquefy the material.

It was originally planned to protect the area from any recurrence by having a stormwater drain installed alongside the Rossarden/Storys Creek road to catch surface run-off and direct it to a major stormwater drain excavated through the tailings area along the access road. The first drain was arranged to be done by the Fingal Council but as all other works were completed before the council proceeded, time was available to re-examine the plan and this drain was omitted.

## Costs

Originally the basic costs were calculated on an individual job basis but in fact operated as a package to spread equipment and time costs overall.

The Fingal Council despatched an excavator on its journey to Rossarden on the day their involvement was cancelled, leaving a $450 account for an excavator's non-productive journey.

Although Cabinet approved expenditure to $23,000 for the emergency works the funding had to come from departmental allocation and this has only been possible by the coincidence of payment with the new financial year.

As the emergency works proceeded a modified estimate was established in the light of more detailed information, at $19,800. At the completion of the work the total cost came to $16,862.10, made up as follows:

| *Cost* | |
|---|---|
| **Precipitate dam** | |
| To supply equipment, labour and materials<br>Repairs to dam<br>Repair, re-site and install spillway<br>Install by-pass drain<br>Install road drains | $15,000 |
| **Tailings** | |
| Re-site and re-establish tailings on Storys Creek | $300 |
| **Side Creek** | |
| To establish catchment drains throughout township<br>To establish catchment drains as required around water storage dams<br>To establish drainage channels to drain surface waters away from the township and Side Creek | $1,000 |
| **Rossarden** | |
| To establishing main stormwater channel between tailings areas<br>To re-establishing breached dam walls | $2,500 |
| To supply of grader (travelling cost only) (Fingal Council) | $450 |
| General | |
| To advising on area history, background detail etc. | $112.10 |
| **Total cost** | **$19,362.10** |
| Works voluntarily subscribed at Rossarden (Mr H. Stacpoole) | $2,500 |
| **Actual cost** | **$16,862.10** |

### *Solution to Problem 1*

Weather conditions and urgency are given as an excuse for not having photographs of the original problem but the truth is it was not considered a priority at the time.

Photographs taken after the event do however give some idea of the extent of the problem and the remedial measures taken.

Plates 1 and 2 show the general configuration of the impounded area with the dam repaired and the spillway installed.

The dark-coloured area of the dam wall is the original dam with its rock facing. The new spillway marks the end of this original dam wall. The spillway is approximately 2½ metres wide.

The light-coloured portion of the wall is the repaired section. The original spillway was positioned about the mid-point of the repaired section and fed directly over the wall to Storys Creek. This site was the most probable cause of failure as it appears it became blocked and was then eroded out.

**Plate 1**

**Plate 2**

The new spillway site is on solid rock on the side of the hill and is separated by a rock bank from the newly installed diversion channel which will prevent a major run-off entering the dam. The spillway and diversion channel are connected and water is now carried along the hillside to enter Storys Creek well downstream from the dam.

Plate 3 shows the spillway (centre) and the diversion channel to the right from the confluence while Plate 4 shows the diversion channel above the dividing wall relative to the spillway.

**Plate 3**

**Plate 4**

**Plate 5**

**Plate 6**

Plate 5 shows the lower portion of the diversion channel while Plate 6 shows the upper portion connected to the feeder creek.

**Plate 7**


**Plate 8**

Plate 7 shows a subsidiary problem which existed on the opposite bank of Storys Creek where tailings on an undermined bank were threatening to divert the creek towards the dam. The area at most risk was cleared of tailings.

Plate 8 demonstrates that the dam is sound and water is building up to cover the slimes.

### *Solution to Problem 2*

**Plate 9**

**Plate 10**

Plate 9 is a general view of the lower level freshwater dam serving the Storys Creek township with the upper level dam behind the earth wall bearing vegetation in the middle distance. The spillway is at the other end of the dam and is shown in Plate 10.

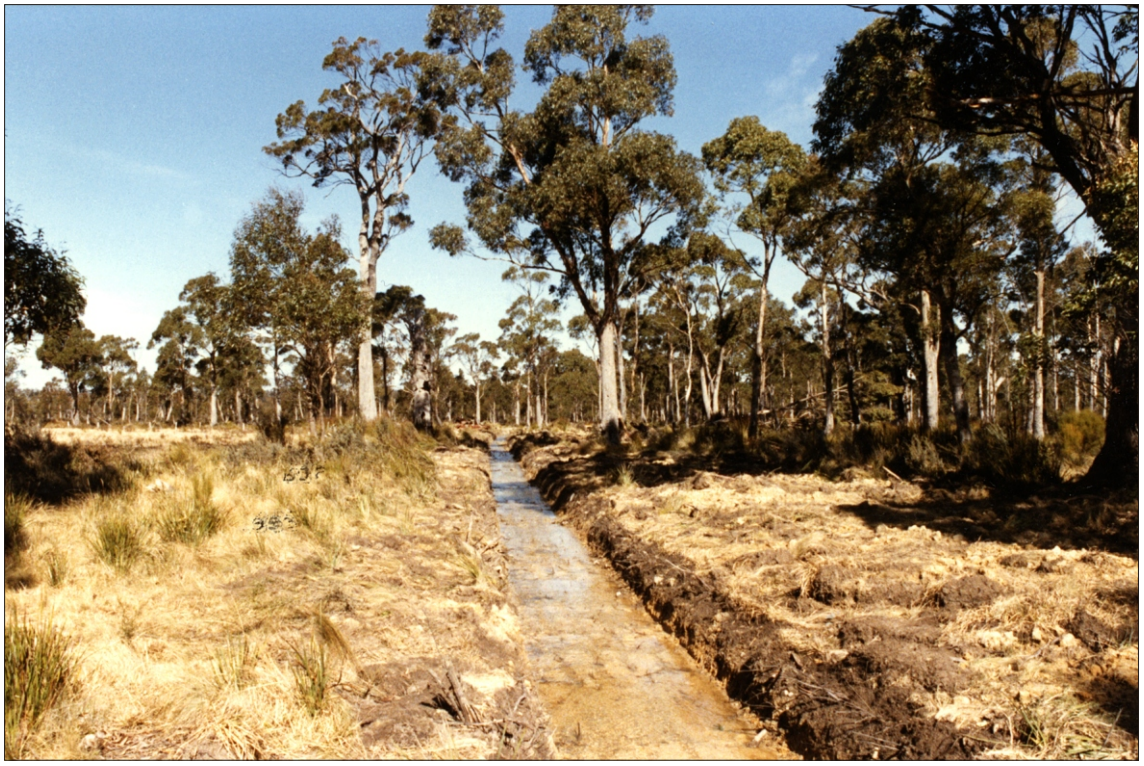

**Plate 11**

**Plate 12**

Plate 11 shows the diversion channel which has been established to carry water from the freshwater spillway away from Storys Creek.

Plate 12 shows a historical wood-stave pipe close to the old mine site running a reasonable flow of water draining from the ground.

**Plate 13**

Plate 13 shows the stormwater channel cut at the far end of the township to carry run-off well clear of Side Creek.

### *Rossarden*

The Rossarden area did not escape the storm and the amount of damage done to the tailings impoundment area can only be estimated.

Plate 14 shows the side of the Rossarden–Storys Creek road. The road surface is on the right and the tailings dam wall is on the left just behind the tree line. The drainage is from right to left with the roadway acting as a dam.

The water was in such volume that it forced material from under the road and this can be seen as the lighter patches in the middle of the photograph.

The tailings dam wall prevented run off which was forced down an access road between the dams.

Plate 15 shows this access road on the left with the new stormwater drain which has been installed from the road to the crest of Aberfoyle Creek.

**Plate 14**

**Plate 15**

**Plate 16**

**Plate 17**

The water breached the dam wall down the access road and Plate 16 shows where this was repaired while excavating the storm drain.

Plate 17 illustrates the road-like pathway the water established for itself towards the middle of the tailings area.

**Plate 18**

**Plate 19**

Plate 18 shows the scouring effects of the water as it flooded the area. The breach in the front wall is on the extreme left edge.

Plate 19 shows the repaired breach from outside the dam area. The cutting is approximately six metres deep.

**Plate 20**

Plate 20 is a further illustration of the destruction caused by the flood.

**Plate 21**

**Plate 22**

Plates 21 and 22 show the slimes dams which were not affected by the flood but illustrate the damage caused by trail bike riders.

Plates 23, 24 and 25 illustrate a problem for the future as the old, large fraction tailings 'migrate' towards Aberfoyle Creek.

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**Plate 23**

**Plate 24**

**Plate 25**