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TODD RIVER
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Prepared by:

D Evans
Monitoring Section
Water Resources
Alice Springs

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INTRODUCTION

The Monitoring Section, Water Resources, Alice Springs, mapped and photographed waterholes in the Todd River from the proposed Junction Waterhole Dam site to Gosse Street in the Town Area on 2 July 1990.

The Section Nos. used cross reference with Figure 3.1, Appendix G of the draft Environmental Impact Statement Volume 2 (copy at end of report). Figures 1, 2 and 3, which also accompany this report, show the same section numbers together with locations of all photographs. The 3 figures are taken from 1:10000 scale Alice Springs Map Sheets BH09502SPECIAL1 and 08.09.

The survey was carried out some six weeks after the Todd River had flowed.

It should be noted that the river bed is a dynamic system. Its detailed morphology may change with virtually any flow: waterholes periodically fill with sand or scour out to depth, while reaches may be bare and rocky on one occasion yet possess a smooth sandy bed on another. Some observations on regularly visited gauging sites are included.
SITE DESCRIPTIONS

Section No. 24.3 refer photos 1 and 2.

20 m downstream of proposed dam wall at Junction Waterhole - small semi-permanent waterholes - evidence of green algae - rocky outcrops 0.5 m deep, clear water, silty bottom. Would probably dry up in summer.

Section Nos. 24.0 - 24.3 refer photos 3, 4 and 5.

River bed reasonably rocky - reasonable gradient, numerous large rocks, Ti-Tree bushes and small river gums. Rocky banks - little or no grass cover, many small temporary waterholes 100 - 200 mm deep, some evidence of algae. Photo 5 shows mosquito larvae - photo 4 shows crevices up to 1.0 m deep in rocky outcrops - potential water traps. Evidence of kangaroos in the general area.

Section No. 24 refer photo No. 6.

Photo taken looking downstream - series of waterholes becoming larger further down. Approximately 10 - 15 m² and up to 1.0 m deep - clear water with some mosquito larvae - river gradient less steep.

Section Nos. 23 - 24 refer photos 7, 8, 9.

Photo 7 is taken looking downstream, steep banks, small clumps of bushes, rocky bed water 0.5 - 1.0 m deep, clear with little or no algae. Photo 8 shows first sign of salt on sandy patches. Photo 9 is taken looking downstream - steep banks, rocky bed, small temporary rock holes with some algae - clear shallow water approximately 200 mm deep.
Section No. 23 refer photo 10.

Photo taken looking downstream - large waterhole over 2.0 m deep in the centre. 80 m long and 10 - 15 m across - probably permanent in its deepest part.

Section Nos. 22 - 23 refer photos 11, 12, 13, 14 and 15.

Fence crosses river approximately 100 m downstream of photo 10; bed beginning to flatten out with more sand built up. Some couch grass and larger river gums, series of small waterholes leading into eventual larger waterhole (signs of human litter), evidence of mosquito larvae, and fish - water cloudy and between 100 - 200 mm deep. Photo 11 looking downstream into Wigley Waterhole: very cloudy 100 m long 15.0 m wide 1.0 - 2.0 m deep - adult mosquitos active (this waterhole is popular with town people). Photo 12 first sign of bullrushes southern end of waterhole (considered permanent). Photo 13 - next waterhole downstream of Wigley Waterhole: 30 m long - 8.0 m wide 200 - 500 mm deep - considered semi-permanent. Photo 14 next permanent waterhole 20 m wide 1.0 - 2.0 m deep, 30.0 m long - cloudy water - bull rushes and ordinary rushes, mosquito larvae, river gums, and grassy banks. Photo 15, small rain filled pockets of stagnant water 2 m by 0.5 m - lots of mosquito larvae evident and evidence of salt on river banks.

Section No. 22 - refer photos 16, 17, 18.

Photo 16 taken 200 m upstream of Wigley Gorge (section 22) - patches of bullrushes, series of relatively shallow pools - 100 - 300 mm deep. Clear water - silty bottoms. Photo 17 looking downstream at PAWA control weir in Wigley Gorge - water hole is semi-permanent 30 m long - 8.0 m wide and 0.5 m deep. Clear water at site of PAWA monitoring station. Photo 18 - downstream side of weir looking back through gorge. Waterhole possibly over 2.0 m deep - about 20.0 m long - no sign of growth - water level approximately 0.5 m lower than upstream of weir.
Section Nos. 21 - 22 refer photos 19, 20, 21.

Photo 19 shows small rockholes downstream of weir - they eventually peter out to a sandy river bed with some small sandy pools 100 - 300 mm deep - cloudy water with evidence of dried salt. Photo 20 shows last of small pools - areas of saturated sand. Photo 21 shows algae from one of the pools. All pools are considered temporary.

Section No. 21 refer photo 22.

Wigley waterhole recreation area access track across Todd River - small stagnant pools (not shown) just downstream of crossing.

Section Nos. 20 - 21 refer photo 23.

100 m downstream of crossing - sandy bed gives way to rocks and Ti-Trees - shallow pools some ordinary rushes - water clear - no signs of life; considered temporary.

Section Nos. 18 - 20 refer photo 24.

Slightly larger pools - steeper gradient leading into one semi-permanent waterhole 30.0 m long 2.0 - 5.0 m wide 1.0 - 2.0 m deep - becomes rocky downstream of photo with temporary pools with fish and algae, and hops and pines on banks.

Section Nos. 17 - 18 refer photos 25 and 26.

River divides into two channels for approximately 800 m - left channel remains dry in small flows. Semi-permanent rock hole where channel joins again. 1.0 m deep - 30.0 m long and 8.0 m wide (photo 25) - some fish. River bed slopes down to temporary rock pools (photo 26).

Section Nos. 16 - 17 refer photo 27.

Large waterhole with ducks and fish approximately 1.0 m deep 100 m long. 5.0 - 15.0 m wide - semi-permanent.

Section Nos. 15 - 16 refer photo 28.

River bed falls steadily away - rock pools with sandy edges - approximately 0.5 m deep not considered permanent.
Section Nos. 14 - 15.

Rocky bed - Ti-Tree - small temporary pools with some mosquito larvae. No photo.

Section Nos. 12 - 14 refer photo 29.

Semi-permanent waterholes, sandy bed, approximately 100.0 m long - some mosquito larvae evident.

Section Nos. 11 - 12 refer photo 30.

River bed becomes rockier with some quite large rocks, with small temporary waterholes - evidence of fish, mosquito larvae and algae - water clear and approximately 0.5 m deep.

Section Nos. 8 - 10 refer photos 31 and 32.

River divides - no sign of waterholes until photo 32 - rock pool, semi-permanent 1.0 m deep, 30.0 m long, 5.0 m wide, evidence of fish.

Section Nos. 7 - 7.1 photo 33.

Sandy river bed with occasional temporary pools between 0.2 m and 0.5 m deep, some mosquito larvae - will probably dry up reasonably soon.

Section Nos. 6 - 7 refer photo 34.

River joins up again at Telegraph Station Look-out - flat sandy dry river bed. Section 6 (Telegraph Station) semi-permanent pool 20.0 m by 8.0 m approximately 1.0 - 1.5 m deep, lots of algae.

Section Nos. 5 - 6 refer photos 35 and 36.

500 m downstream of Telegraph Station: secondary channels with semi-permanent stagnant water - lots of algae - bamboo and bullrushes.

Section Nos. 1 - 5 refer photos 37 and 38.

Sporadic clumps of bamboo - sandy flat river bed - occasional temporary pools with algae - occasional bullrushes. Photo 38 is of an old well opposite the end of Gosse Street.
GENERAL OBSERVATIONS ON TODD RIVER GAUGING SITES

The monitoring section visit, on a regular basis, a number of locations on the Todd River to service streamflow equipment. The following are general observations about the changes or lack of, in and around the stream bed at each locations.

1. TODD RIVER - WIGLEY GORGE

At the moment there exists a deepish (0.5 - 1.0 m) pool both upstream and downstream of the control weir. A flow in 1977 (G.H. 4.8 m) deposited sand both upstream and downstream of the weir (photo available). It became possible to drive upstream within the river bed to nearly the gauging station. Subsequent flows, especially the 1983 one, have scoured out the area again, exposing the rocks downstream.

2. TODD RIVER - WILLS TERRACE

Cross-sections of the river bed taken from bank to bank immediately opposite the gauging station show that there has been relatively little change to the bed level since 1969, and only very slight bank erosion.

3. TODD RIVER - HEAVITYREE GAP

Any major scouring has occurred 230 m upstream of the causeway. The 1983 flow created a reasonably large pool within the Gap proper. There appears to have been little change within the gauging station cross-section itself.

4. TODD RIVER - AMOONGUNA

At the gauging site itself the bed level has remained reasonably stable although some erosion has occurred with the banks. Back upstream in the vicinity of the end of Heffernan Road and St Mary's evidence of scouring exists - photos of floodwater after the 1988 flood show many exposed gum tree root systems. This may be connected with sand mining in the general area, although similar scour was present in other, undisturbed, rivers after the large floods of 1988.
PHOTO # 6
PHOTO # 9
PHOTO # 10
PHOTO # 29