

Eucalyptus camaldulensis (river red gum)
**Biogeochemistry: An Innovative Tool for Mineral
Exploration in the Curnamona Province and
Adjacent Regions**

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E. camaldulensis (leaves) Biogeochemistry Pine Creek Broken Hill W/NSW - (Zn)

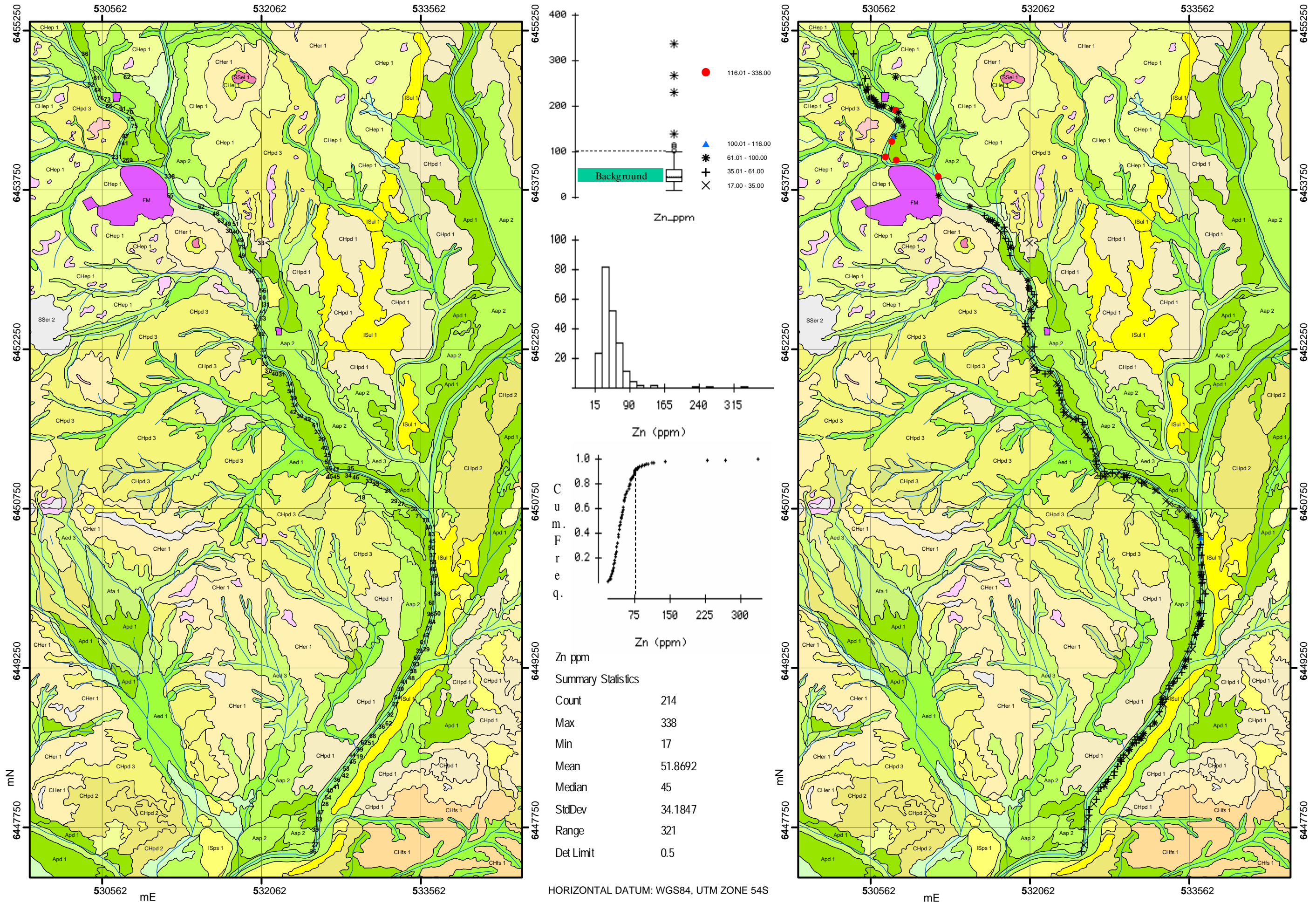


Figure 4.40: Raw data and spatial distribution of detectable Zn in *E. camaldulensis* (leaves) down Pine Creek with accompanying boxplots, histogram, cumulative frequency plot and summary statistics.

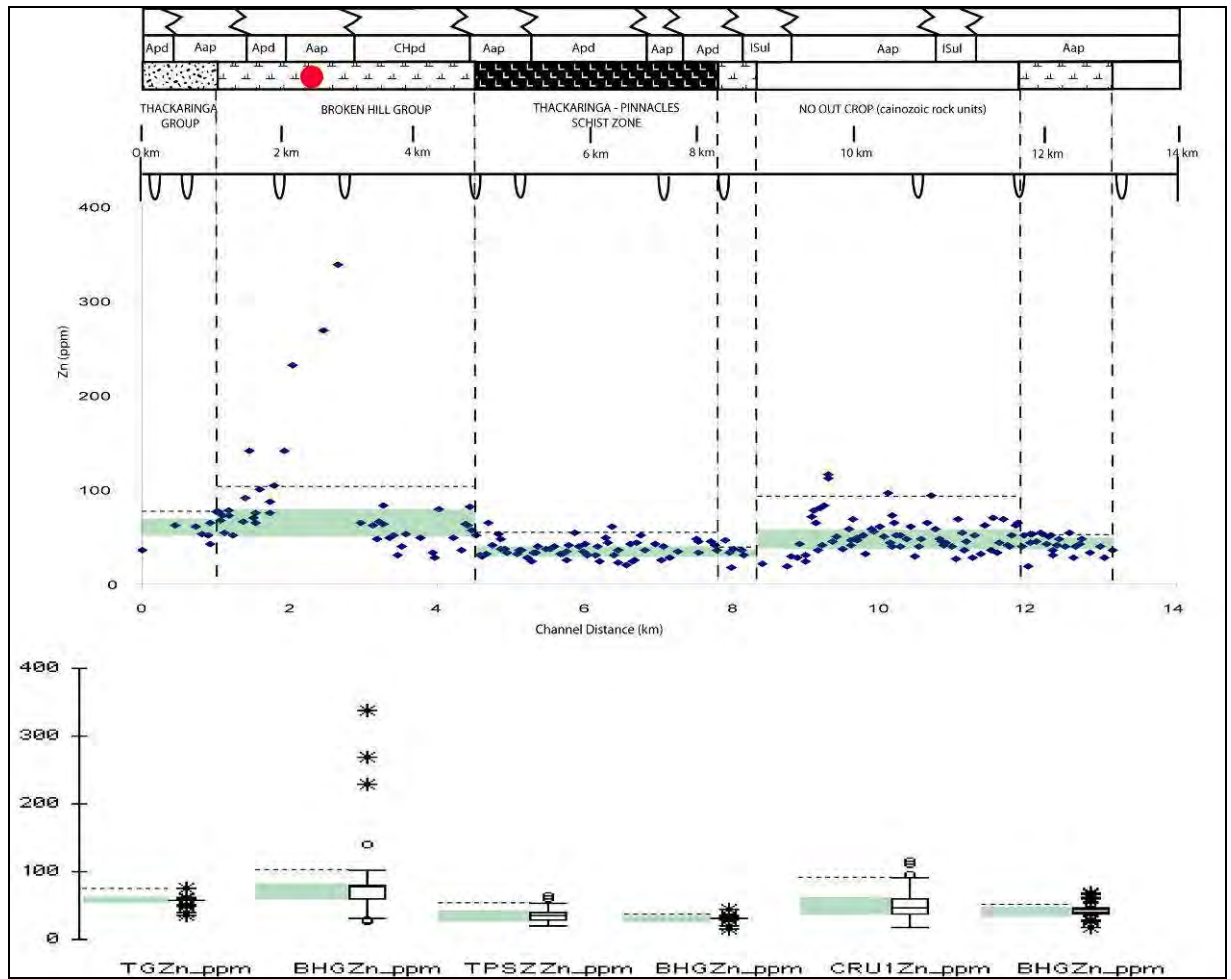


Figure 4.41: Zn concentrations within *E. camaldulensis*, flanking different land-form settings along Pine Creek. Thackaringa Group (TG), Broken Hill Group North (BHGN), Thackaringa-Pinnacles Schist Zone (TP/SZ), Broken Hill Group Central (BHGC), Cainozoic rock units (CRU) and Broken Hill Group South (BHGS). Green region denotes 'values below the mean, red dot the approximate location of the Barrier Pinnacles Mine and the dashed line indicates the 90th percentile.

Element (ppm) [detection limit] Analytical Method	Parameters	Total data set (C) n=214	Setting					
			Thackaringa Group TG (Apd, Aap) n=9	Broken Hill Group BHGN (Aap, Apd & CHpd) n=42	Thackaringa- Pinnacles Schist Zone TP/SZ (Aap, Apd) n=60	Broken Hill Group BHGC (Apd & ISul) n=7	No outcrop (CRU) (ISul, Aap) n=61	Broken Hill Group BHGS (Aap) n=35
Zn [0.5] XRF	Concentration range (Mean)	17-338 (52)	36-76 (58)	27-338 (82)	20-65 (37)	17-46 (31)	18-116 (52)	19-70 (45)
	25 th - 75 th percentile	35-61	49-67	62-82	31-41	23-37	39-61	42-45
	95% confidence level	4.6	11	19	2	9	5	4
	>90 th percentile (outliers), # of samples	100-338 (8)	No outliers [†]	141-388 (5)	61-65 (2)	No outliers [†]	96-116 (3)	50-70 (13)
	<i>E. camaldulensis</i> position with the greatest concentration.	north region of the Pine Creek catchment, adjacent to the Barrier Pinnacles Mine.	southern margin at the interface between TG and BHGN. Down stream of an NW intersecting Aed unit.	upstream and adjacent to the Barrier Pinnacles Mine.	northern margin at the interface between BHGN and TP/SZ, and central down stream of depositional flood out region.	northern margin at the interface between BHGN (CL) and TP/SZ.	downstream of the confluence of tributary alluvial channel deposits ACar ₁ (Gum Creek).	evenly distributed flanked by regolith- landform units CHpd ₁ and Aap ₂ .

Table 4.40: Variations of Zn concentrations within *E. camaldulensis* (river red gums), flanking different land-form settings along Pine Creek. Initial values concentration range (mean), 25th - 75th percentile concentration range, 95 % confidence; level, >90th percentile (outliers), C= composite sample.

E. camaldulensis (leaves) Biogeochemistry Pine Creek Broken Hill W/NSW - (Nd)

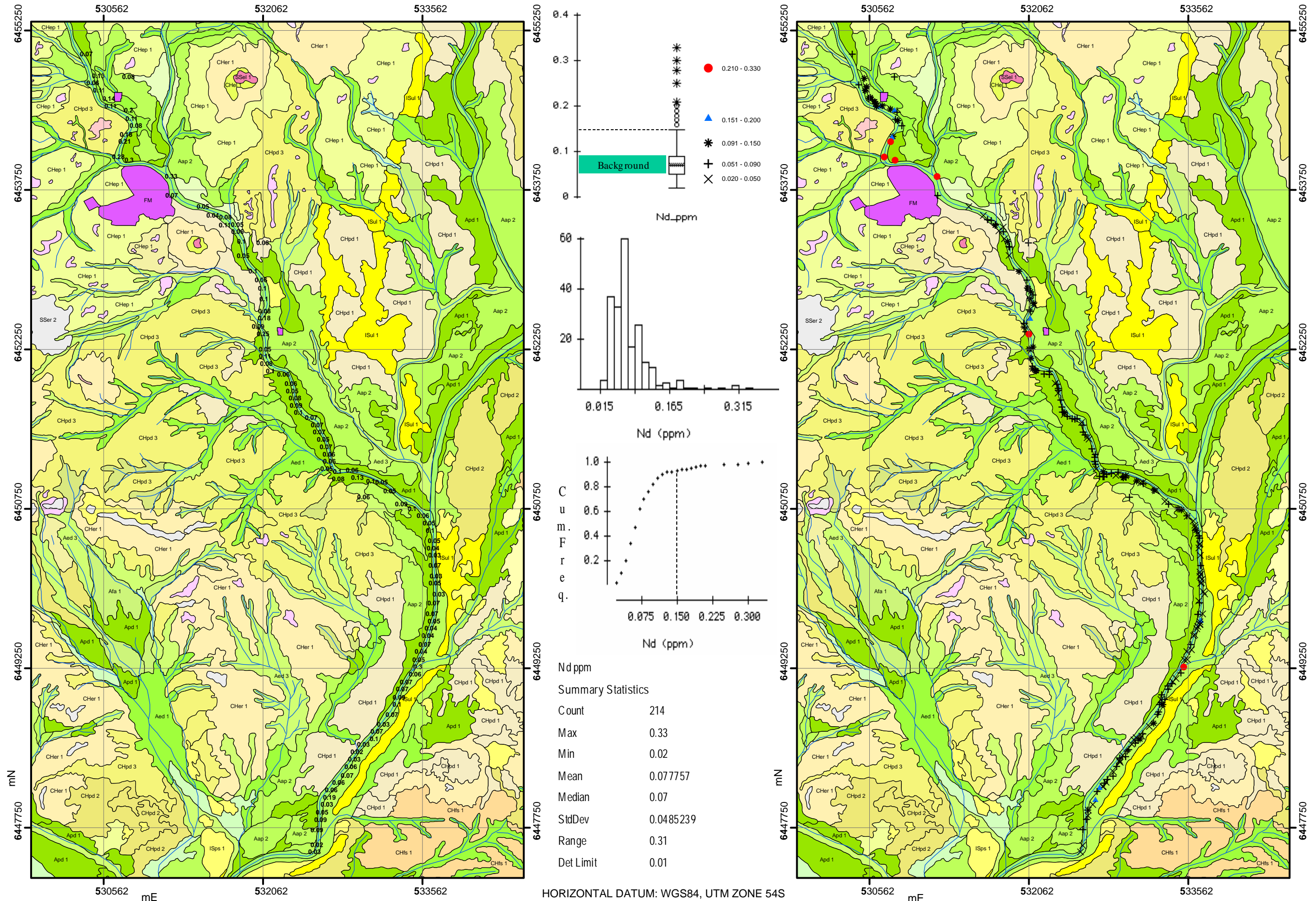


Figure 4.42: Raw data and spatial distribution of detectable Nd in *E. camaldulensis* (leaves) down Pine Creek with accompanying boxplots, histogram, cumulative frequency plot and summary statistics.

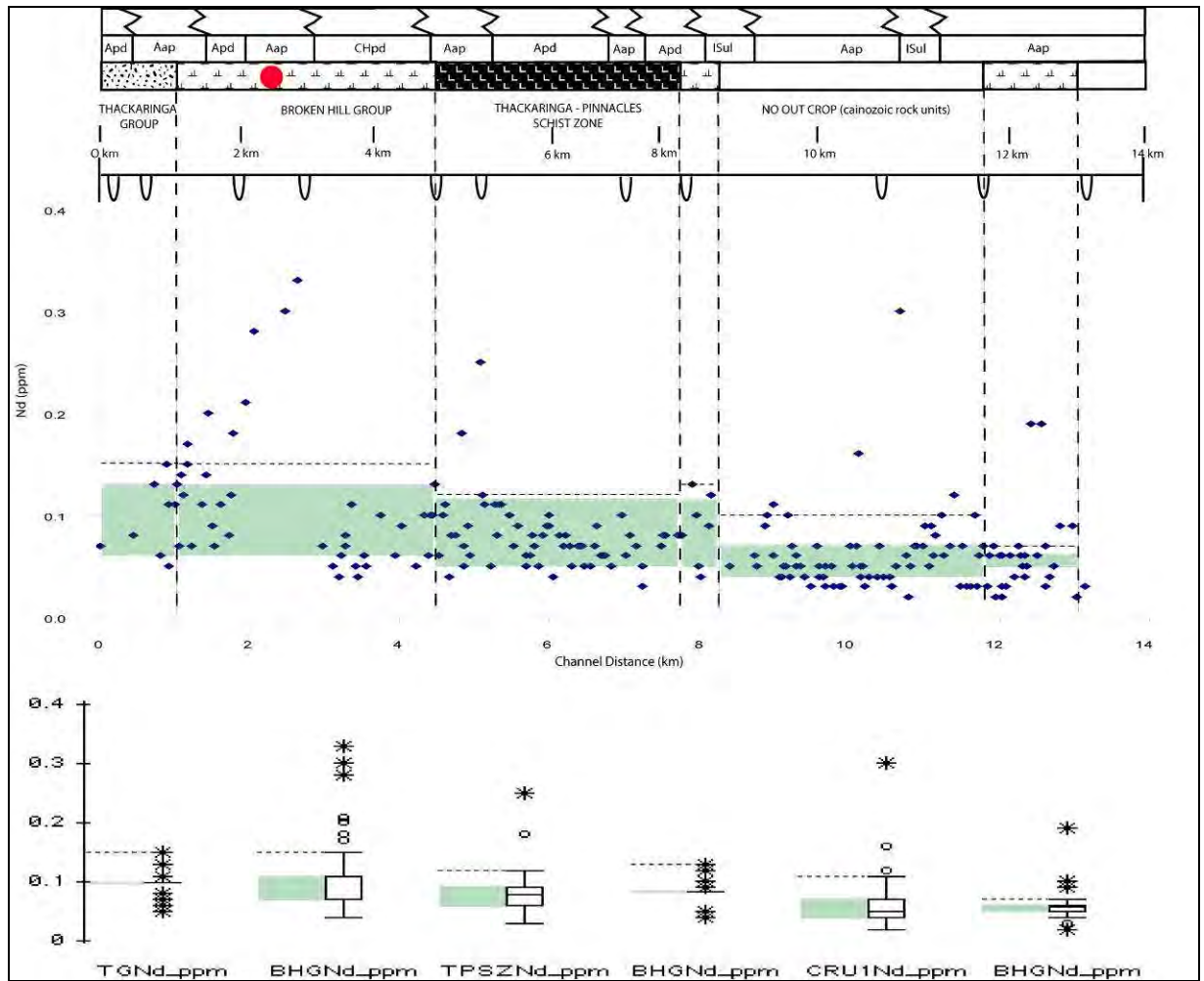


Figure 4.43: Nd concentrations within *E. camaldulensis*, flanking different land-form settings along Pine Creek. Thackaringa Group (TG), Broken Hill Group North (BHGN), Thackaringa-Pinnacles Schist Zone (TP/SZ), Broken Hill Group Central (BHGC), Cainozoic rock units (CRU) and Broken Hill Group South (BHGS). Green region denotes 'values below the mean, red dot the approximate location of the Barrier Pinnacles Mine and the dashed line indicates the 90th percentile.

Element (ppm) [detection limit] Analytical Method	Parameters	Total data set (C) n=214	Setting					
			Thackaringa Group TG (Apd, Aap) n=9	Broken Hill Group BHGN (Aap, Aap & CHpd) n=42	Thackaringa- Pinnacles Schist Zone TP/SZ (Aap, Aap) n=60	Broken Hill Group BHGC (Aap & ISul) n=7	No outcrop (CRU, ISul, Aap) n=61	Broken Hill Group BHGS (Aap) n=35
Nd [0.01] ICP-MS	Concentration range (Mean)	0.02-0.33 (0.7)	0.05-0.15 (0.1)	0.04-0.33 (0.11)	0.03-0.25 (0.08)	0.04-0.13 (0.08)	0.02-0.30 (0.06)	0.02-0.19 (0.06)
	25 th - 75 th percentile	0.051-0.090	0.07-0.13	0.06-0.13	0.06-0.09	0.05-0.12	0.04-0.07	0.03-0.06
	95% confidence level	0.007	0.03	0.02	0.008	0.03	0.01	0.01
	>90th percentile (outliers), # of samples	0.151-0.330 (20)	No outliers	0.17-0.33 (7)	0.18-0.25 (2)	No outliers'	0.12-0.30 (3)	0.09-0.19 (4)
	<i>E. camaldulensis</i> position with the greatest concentration.	upstream margin of Pine Creek catchment, and adjacent to the Barrier Pinnacles Mine, on the downward side of alluvial drainage depressions.	central and down stream of intersecting NE Aed units. Flanked by regolith- landform units Aap ₂ , and CHpd ₃ .	upstream and adjacent to the Barrier Pinnacles Mine. Flanked by regolith- landform units Apd ₁ , Aap ₁ and CHpd ₁ .	northern margin at the interface between BHG (N) and TP/SZ. Down stream of intersecting Aed units. Flanked by regolith-landform unit Aap ₂ .	southern margin, at the interface between BHG (CL) and CRU. Flanked by regolith- landform unit Apd ₁ .	central region, down stream of intersecting Aed units. Flanked by regolith- landform units Apd ₁ and Aap ₂ .	northern and southern margins margin at the interface between BHG (CL), CRU & BHGS).

Table 4.41: Variations of Nd concentrations within *E. camaldulensis* (river red gums), flanking different land-form settings along Pine Creek. Initial values concentration range (mean), 25th - 75th percentile concentration range, 95 % confidence; level, >90th percentile (outliers), C= composite sample, * signifies values below detection limit.