



WAIRAKEI
ESTATE

Block 2 Evidence - Plan Change 1

Assessment criteria for Decision Support Tools (DST)

- Appropriate spatial resolution?
- Appropriate temporal resolution to assess water quality statistics?
- Appropriate representation of temporal dynamics?





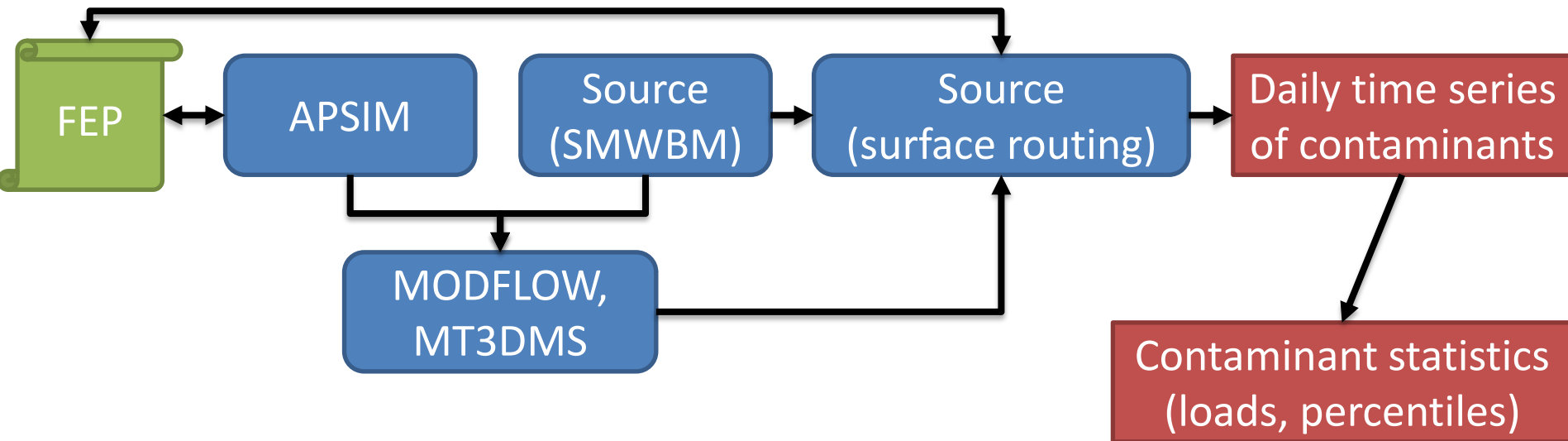
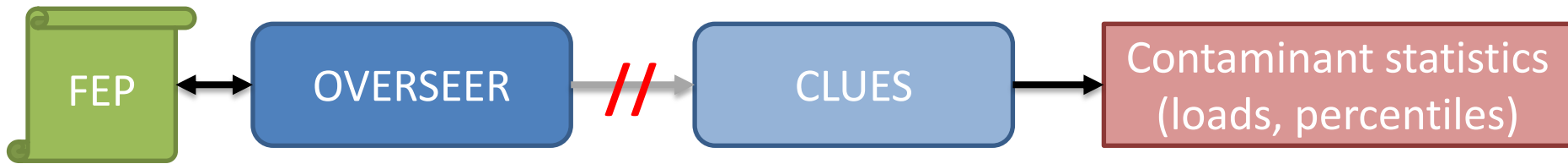
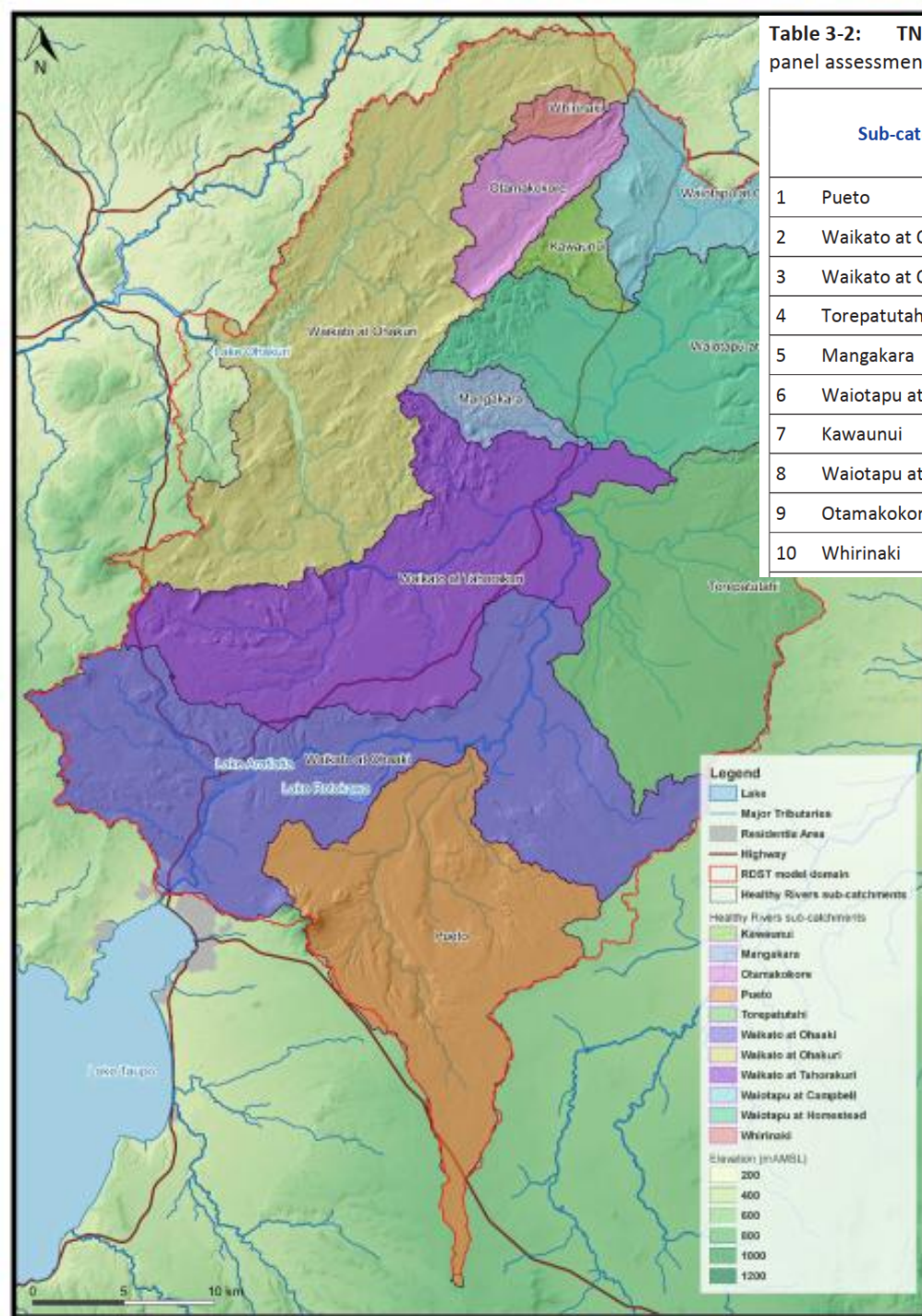
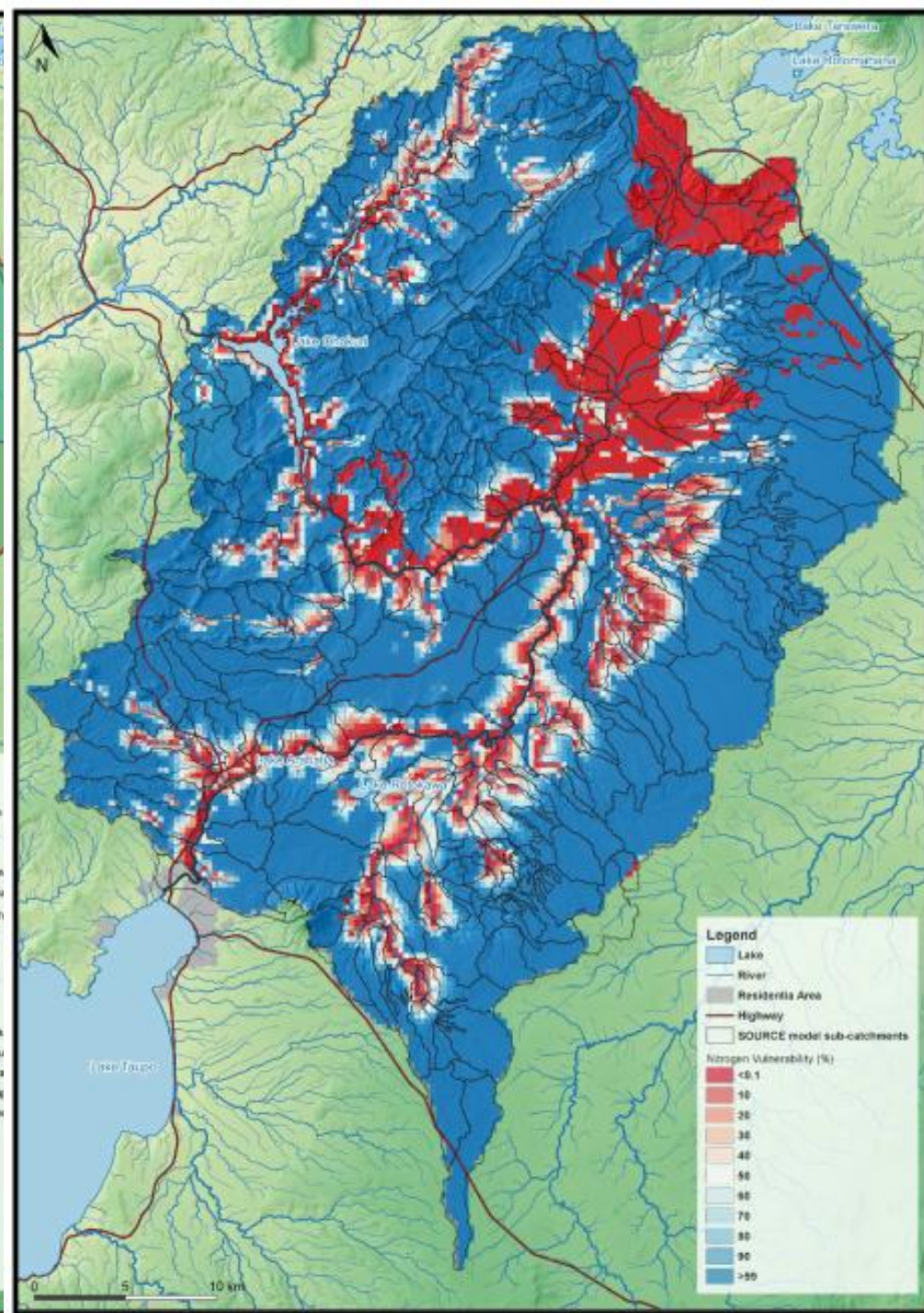
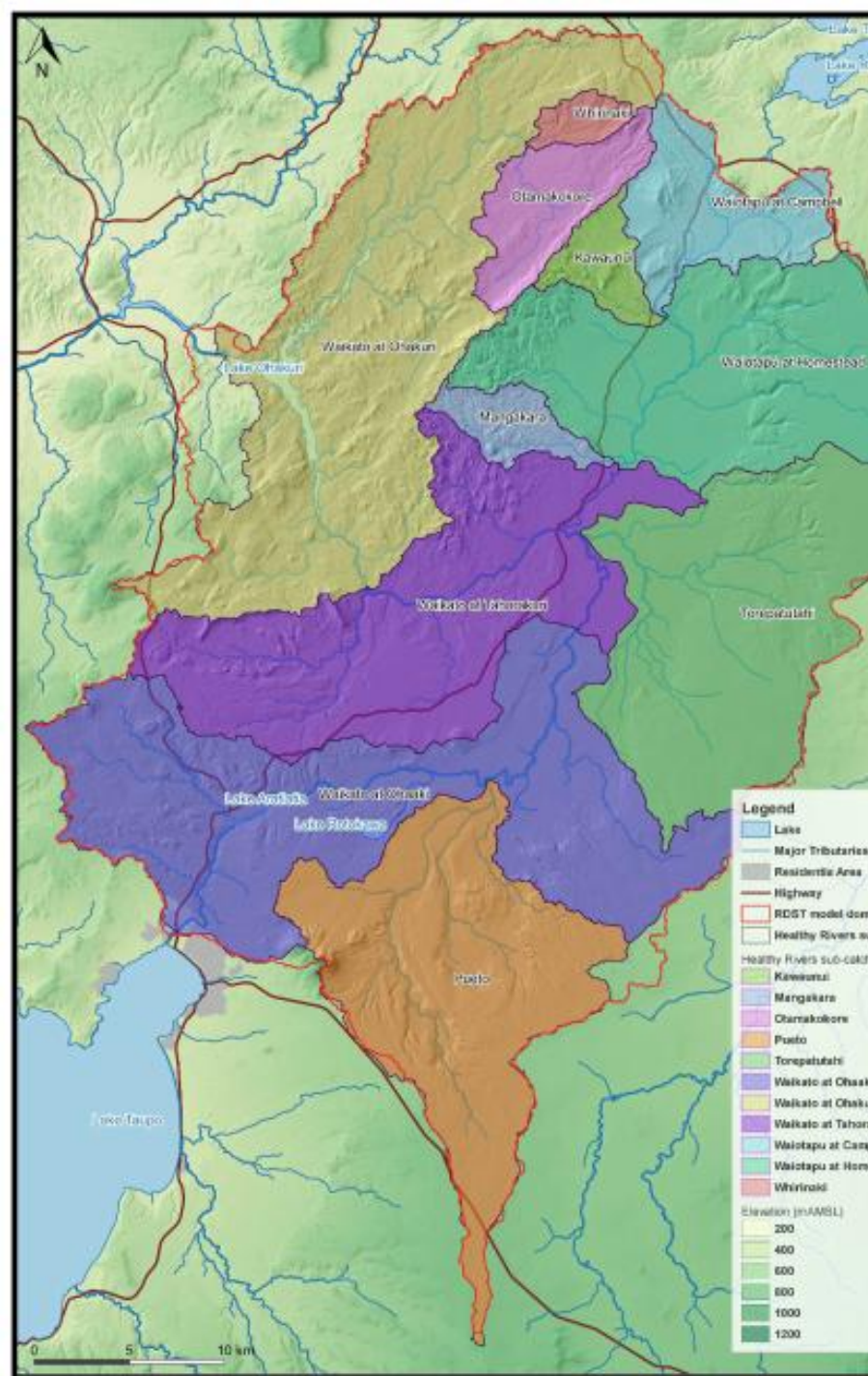


Table 3-2: TN attenuation factors. *Load to come and expected level of attenuation taken from the expert panel assessments (see Appendix I).*

	Sub-catchment	Apparent attenuation		Load to come	Expected level of attenuation	Ultimate attenuation factor
		Calibrated	Adjusted			
1	Pueto	0.38	0.40	Yes	Medium	0.60
2	Waikato at Ohaaki	0.67	0.50	Yes, minor	Medium	0.60
3	Waikato at Ohakuri	0.31	0.35	Yes, considerable	Low to medium	0.70
4	Torepatutahi	0.11	0.12	Yes, considerable	Low	0.80
5	Mangakara	0.98	0.80	Yes, minor	Low	0.80
6	Waiotapu at Homestead	0.71	0.80	?	Medium	0.80
7	Kawaunui	0.87	0.80	Yes, minor?	Low to medium	0.80
8	Waiotapu at Campbell	1.23	0.80	Yes?	Low	0.80
9	Otamakokore	0.66	0.63	Yes	Low	0.80
10	Whirinaki	0.80	0.63	Yes	Low	0.80





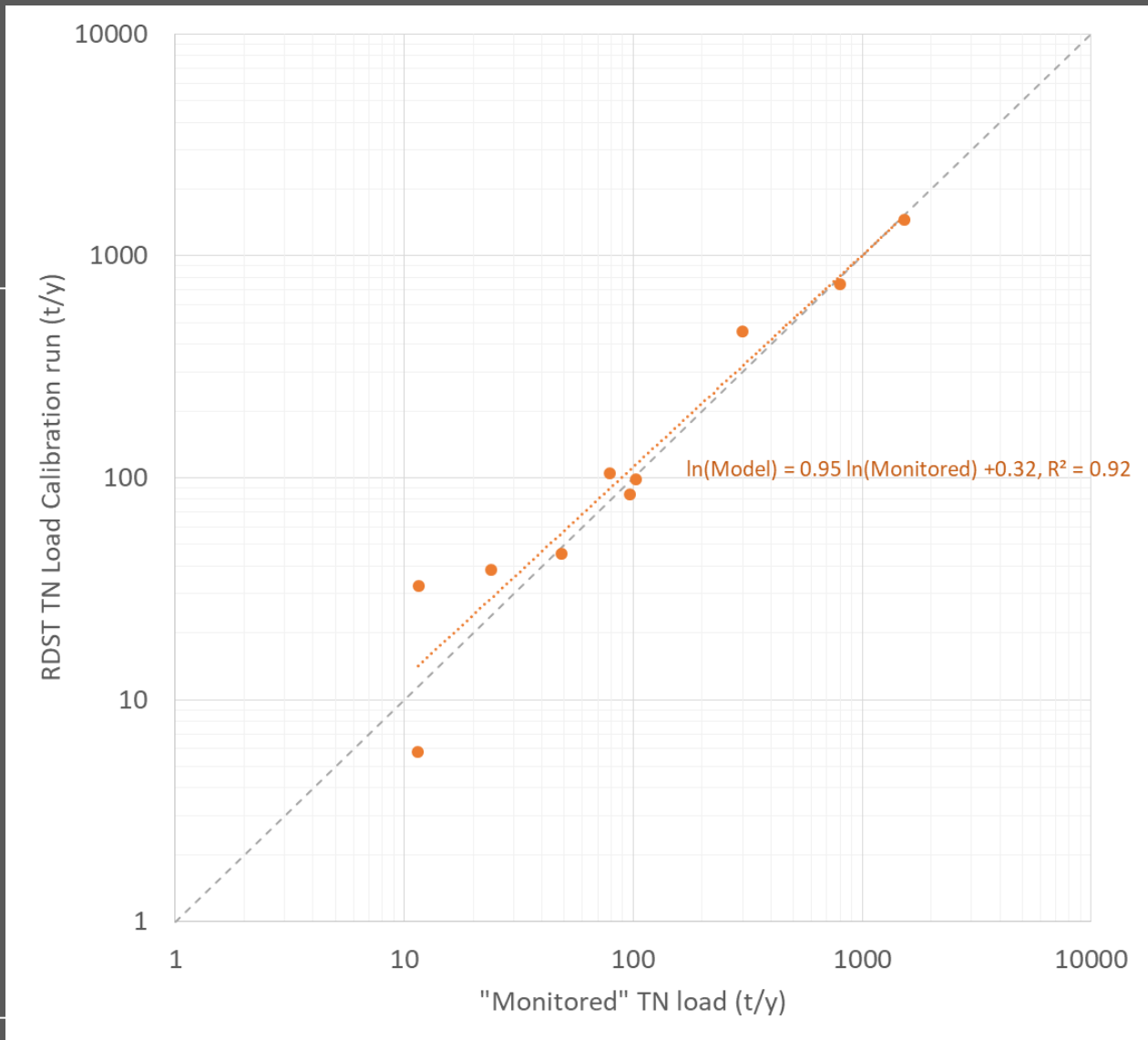
Ruahuwai Decision Support Tool (RDST)

Model layout

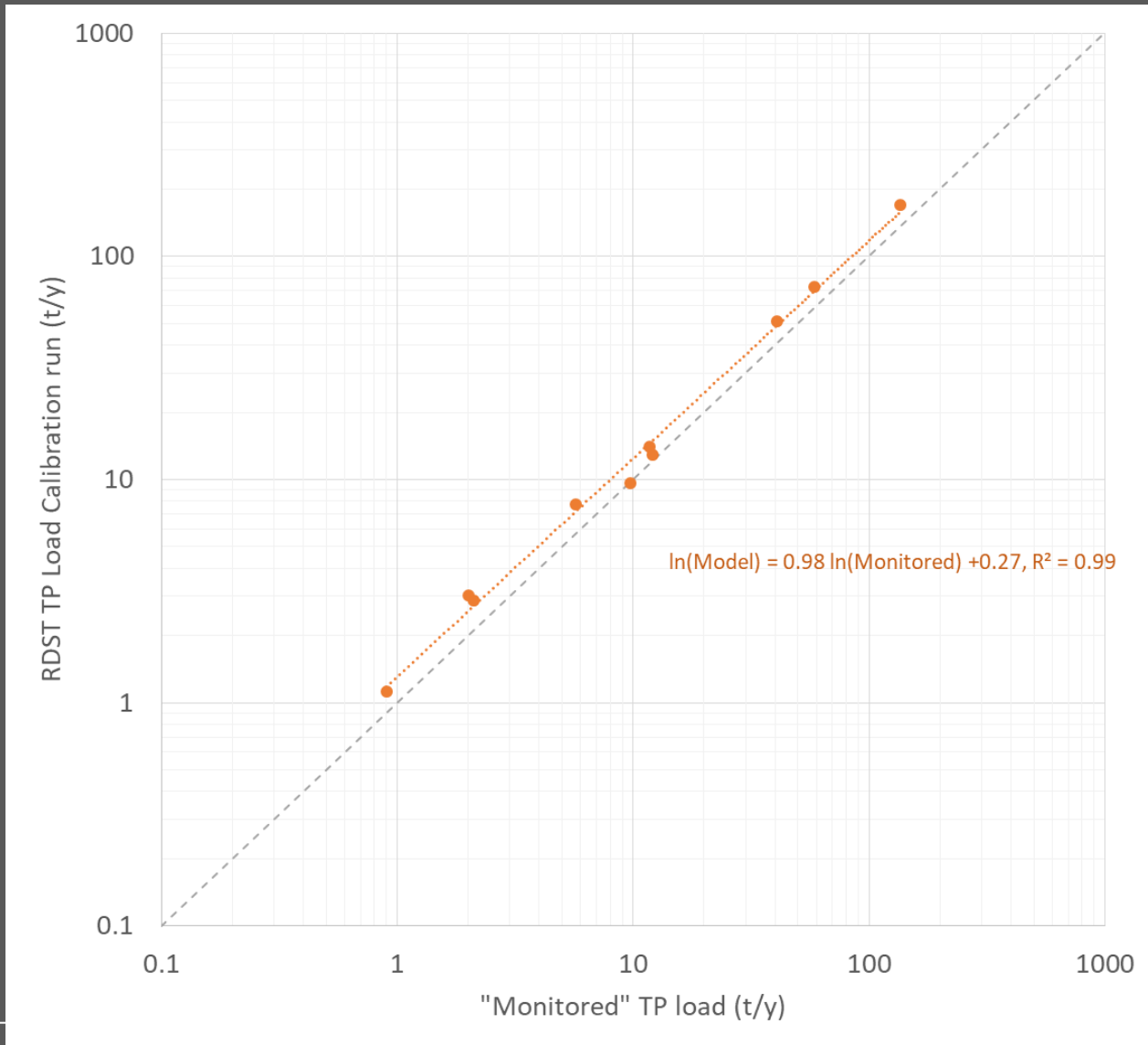
- 415 model subcatchments
- Daily climate from NIWA VCSN at 5 km resolution



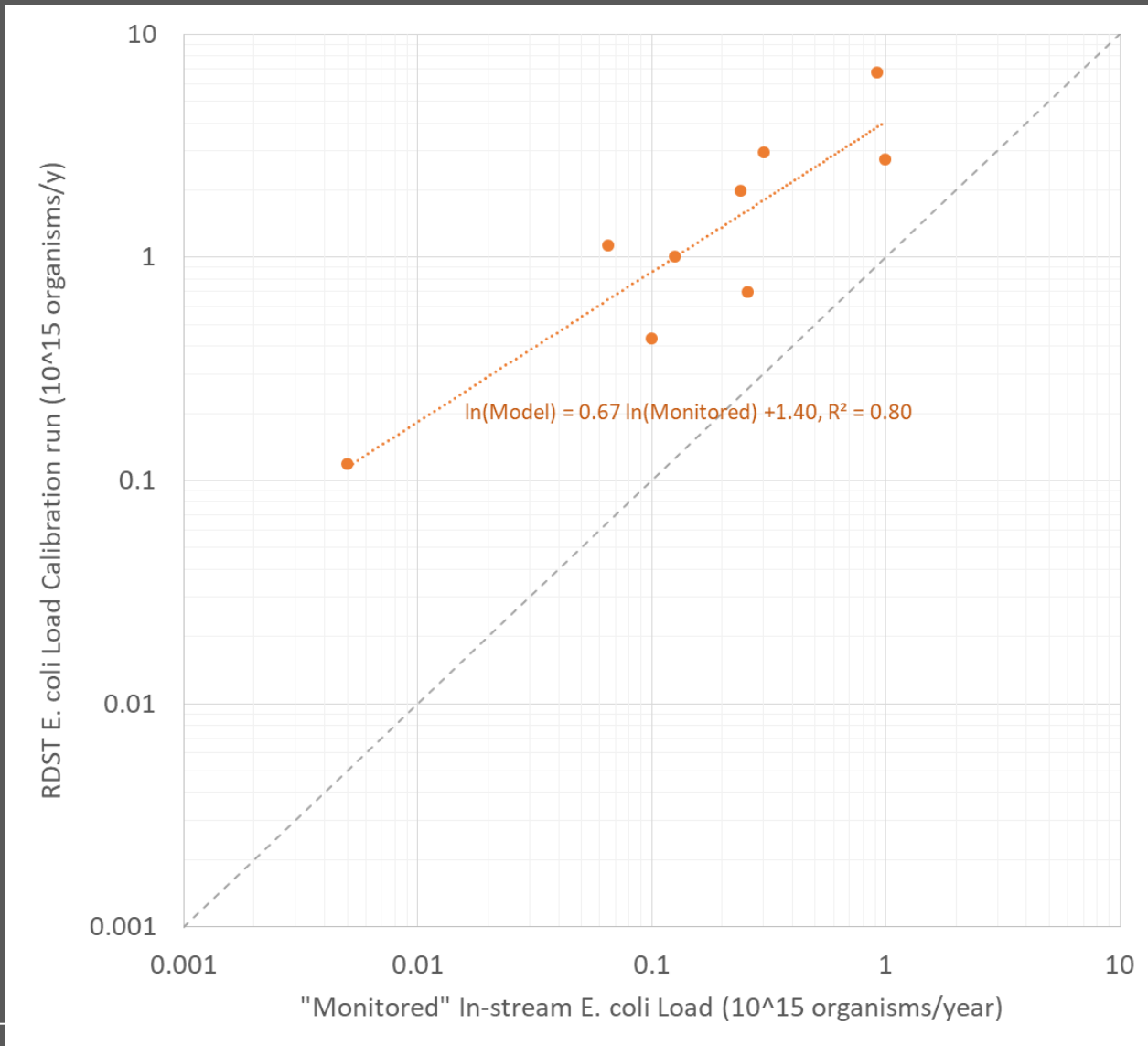
RDST Calibration: TN mean annual loads



RDST Calibration: TP mean annual loads



RDST Calibration: E. coli mean annual loads



RDST and HRWO Calibration: E. coli 95th percentile

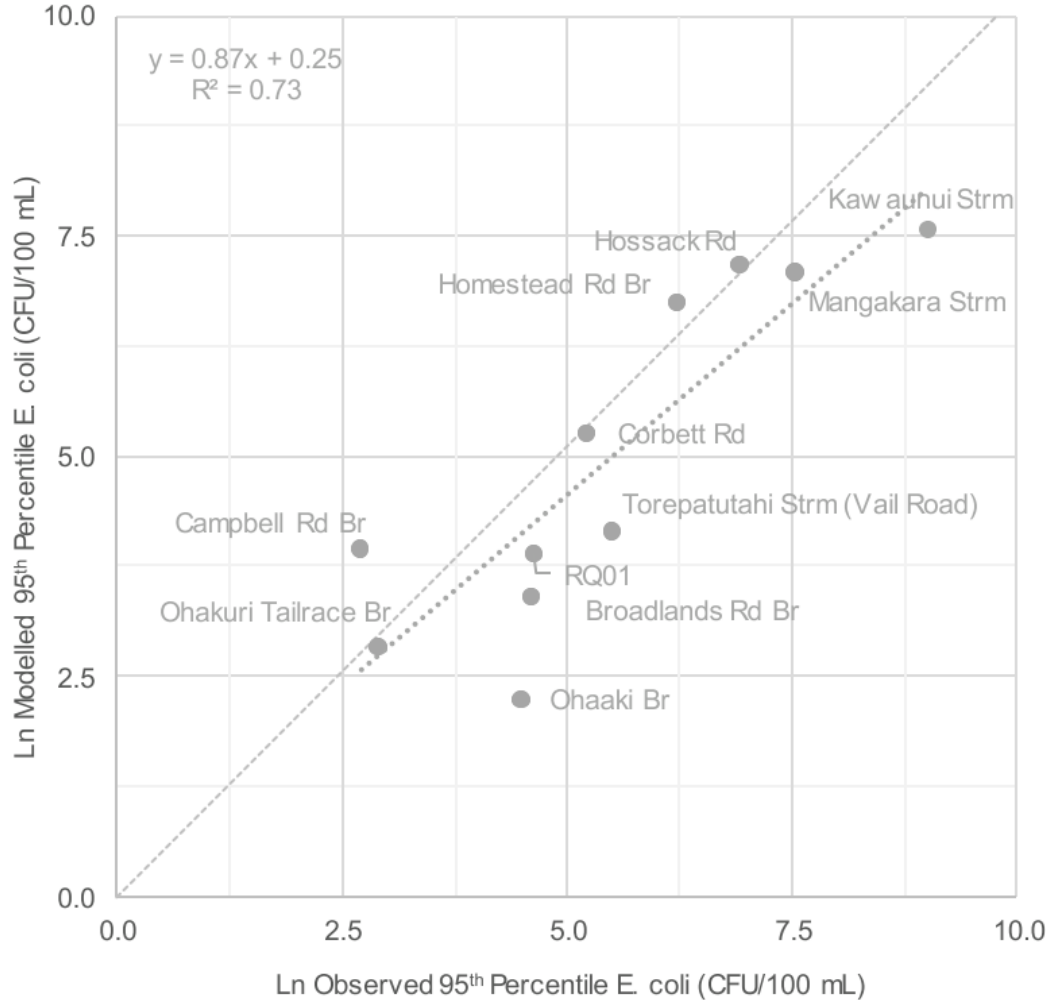


Figure 77. Comparison of observed and modelled 95th Percentile E. coli concentrations.

Overall assessment of RDST

- Appropriate spatial resolution?
 - ✓ 415 subcatchments, 300 m groundwater grid
- Appropriate temporal resolution?
 - ✓ Water quality statistics derived from daily timestep
- Appropriate representation of temporal dynamics?
 - ✓ Landuse change explicitly represented (4 maps)
 - ✓ Temporal evolution of contaminant concentrations
 - ✓ Scatter plots of flows, loads and concentrations