

Supplementary information:

Table S1. Fence costs by farm and slope type.

Farm and fence type	Slope	Capital cost (2023 NZ\$/m)	Stdev	Maintenance (2023 NZ\$/m/year)
Dairy (electric 3-wire)	Flat	9.20	3.11	0.09
Dairy (electric 3-wire)	Rolling (<11°)	10.16	3.17	0.10
Sheep and beef (electric 4-wire)	Flat	11.08	3.17	0.11
Sheep and beef (5-wire)	Rolling (<11°)	18.44	4.06	0.18

Table S2. Estimated proportion of catchment contributed TN in each flow path for two slope classes and four hydrologic landscape classes.

Slope class	HL T	Surface run-off	Tile drainage	Interflow/Shallow groundwater	Surface drains/ditches/1st order streams	2nd/3rd order stream	Deep ground
Flat/undulating (< 7°)	A	10%	0%	90%	10%	50%	50%
Flat/undulating (< 7°)	B	10%	80%	10%	90%	100%	0%
Flat/undulating (< 7°)	C	30%	0%	70%	40%	60%	40%
Flat/undulating (< 7°)	D	30%	70%	0%	90%	100%	0%
Rolling/hilly (7-15°)	A	20%	0%	80%	20%	50%	50%
Rolling/hilly (7-15°)	B	20%	0%	80%	90%	100%	0%
Rolling/hilly (7-15°)	C	30%	0%	70%	40%	60%	40%
Rolling/hilly (7-15°)	D	30%	0%	70%	90%	100%	0%

Table S3. Estimated proportion of catchment contributed TP in each flow path for two slope classes and four hydrologic landscape classes.

Slope class	HL T	Surface run-off	Tile drainage	Interflow/Shallow groundwater	Surface drains/ditches/1st order streams	2nd/3rd order stream	Deep ground
Flat/undulating (< 7°)	A	40%	0%	60%	50%	70%	30%
Flat/undulating (< 7°)	B	40%	40%	20%	90%	100%	0%
Flat/undulating (< 7°)	C	80%	0%	20%	80%	80%	20%
Flat/undulating (< 7°)	D	80%	20%	0%	90%	100%	0%
Rolling/hilly (7-15°)	A	70%	0%	30%	70%	70%	30%
Rolling/hilly (7-15°)	B	70%	0%	30%	90%	100%	0%
Rolling/hilly (7-15°)	C	80%	0%	20%	80%	80%	20%
Rolling/hilly (7-15°)	D	80%	0%	20%	90%	100%	0%

Table S4. Estimated proportion of catchment contributed TSS in each flow path for two slope classes and four hydrologic landscape classes.

Slope class	HL T	Surface run-off	Tile drainage	Interflow/Shallow groundwater	Surface drains/ditches/1st order streams	2nd/3rd order stream	Deep ground
Flat/undulating (< 7°)	A	100%	0%	0%	100%	100%	0%
Flat/undulating (< 7°)	B	100%	0%	0%	100%	100%	0%
Flat/undulating (< 7°)	C	100%	0%	0%	100%	100%	0%
Flat/undulating (< 7°)	D	100%	0%	0%	100%	100%	0%
Rolling/hilly (7-15°)	A	100%	0%	0%	100%	100%	0%
Rolling/hilly (7-15°)	B	100%	0%	0%	100%	100%	0%
Rolling/hilly (7-15°)	C	100%	0%	0%	100%	100%	0%
Rolling/hilly (7-15°)	D	100%	0%	0%	100%	100%	0%