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NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2014

# A Guide to the National Policy Statement for Freshwater Management 2014

## Fourth Report of the Land and Water Forum

November 2015





Ministry for the Environment  
Mātauranga Mōi Te Taiao

Ministry for Primary Industries  
Manatū Ahu Matua



NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2014

# A Guide to the National Policy Statement for Freshwater Management 2014

New Zealand Government

LAND & WATER FORUM 

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New Zealand Government



Next steps for fresh water  
SUMMARY OF SUBMISSIONS



SUSTAINABLE DAIRYING – **WATER ACCORD**  
A commitment to New Zealand by the dairy sector

**TWO YEARS ON...**  
What have we achieved?  
What do we need to keep working on?

 DairyNZ



# Economic costs and environmental benefits of riparian restoration in New Zealand

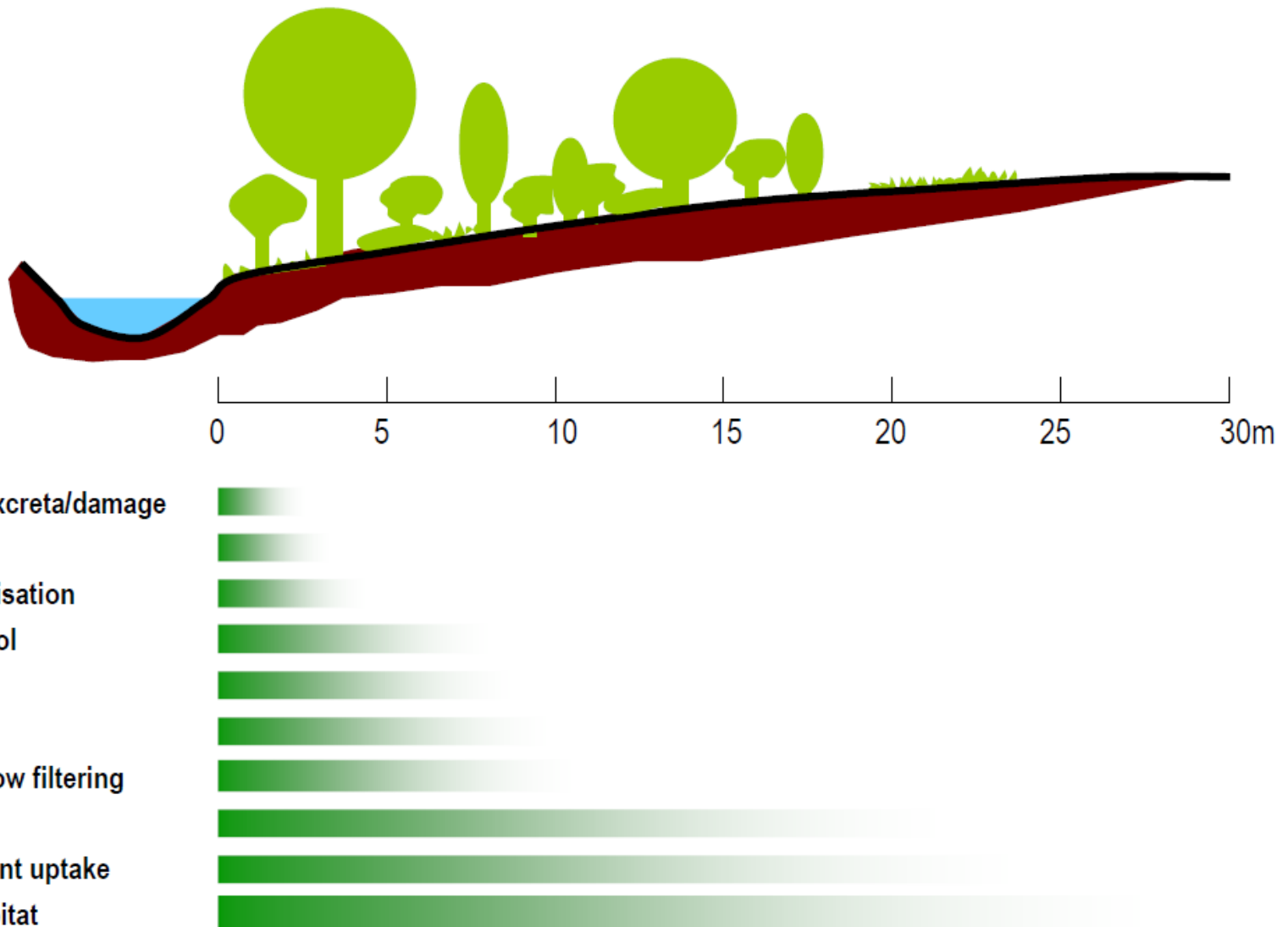


Landcare Research LINK Seminar  
6 September 2016



**LANDCARE RESEARCH**  
MANAAKI WHENUA

# Impact of riparian margins



# Methodology - baseline

- Spatially explicit baseline estimates:
  - Land use
  - Land productivity and stock numbers
  - Net farm revenue
  - Environmental impacts



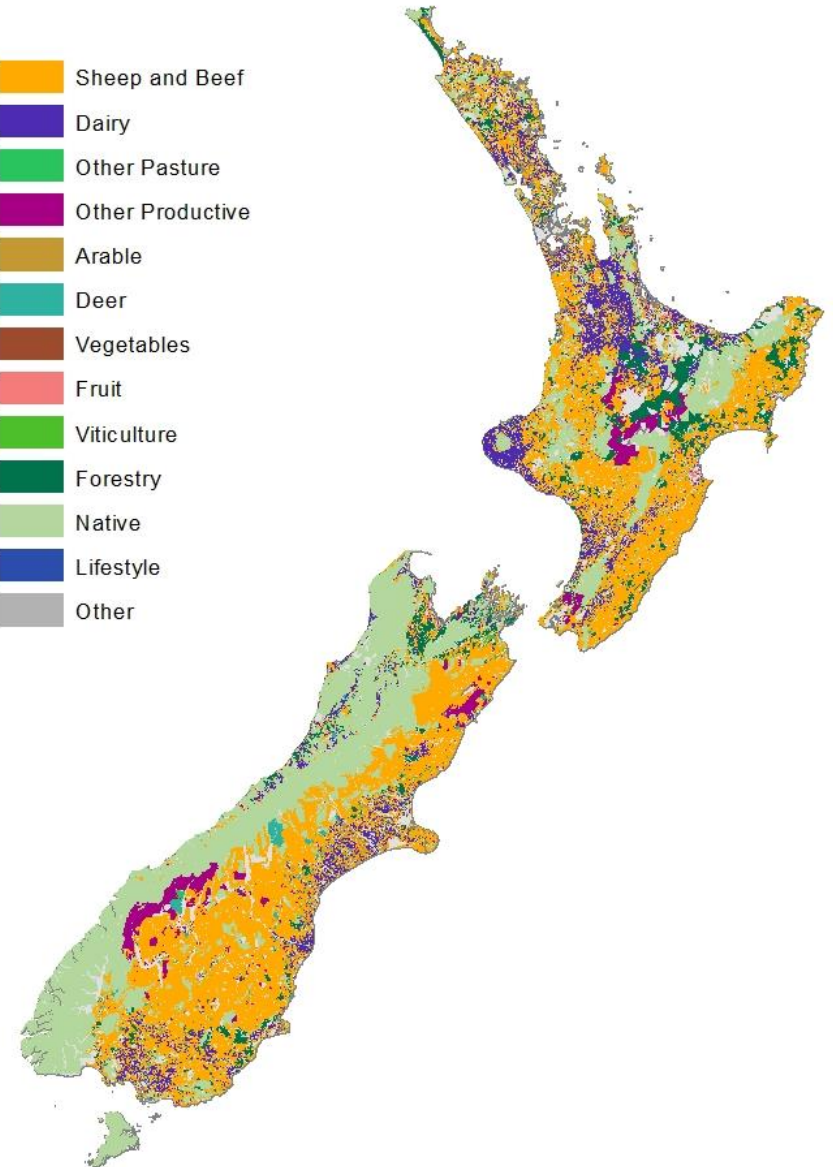
# New Zealand Land Use

Total area:  
~27 million ha

New Zealand Land Use



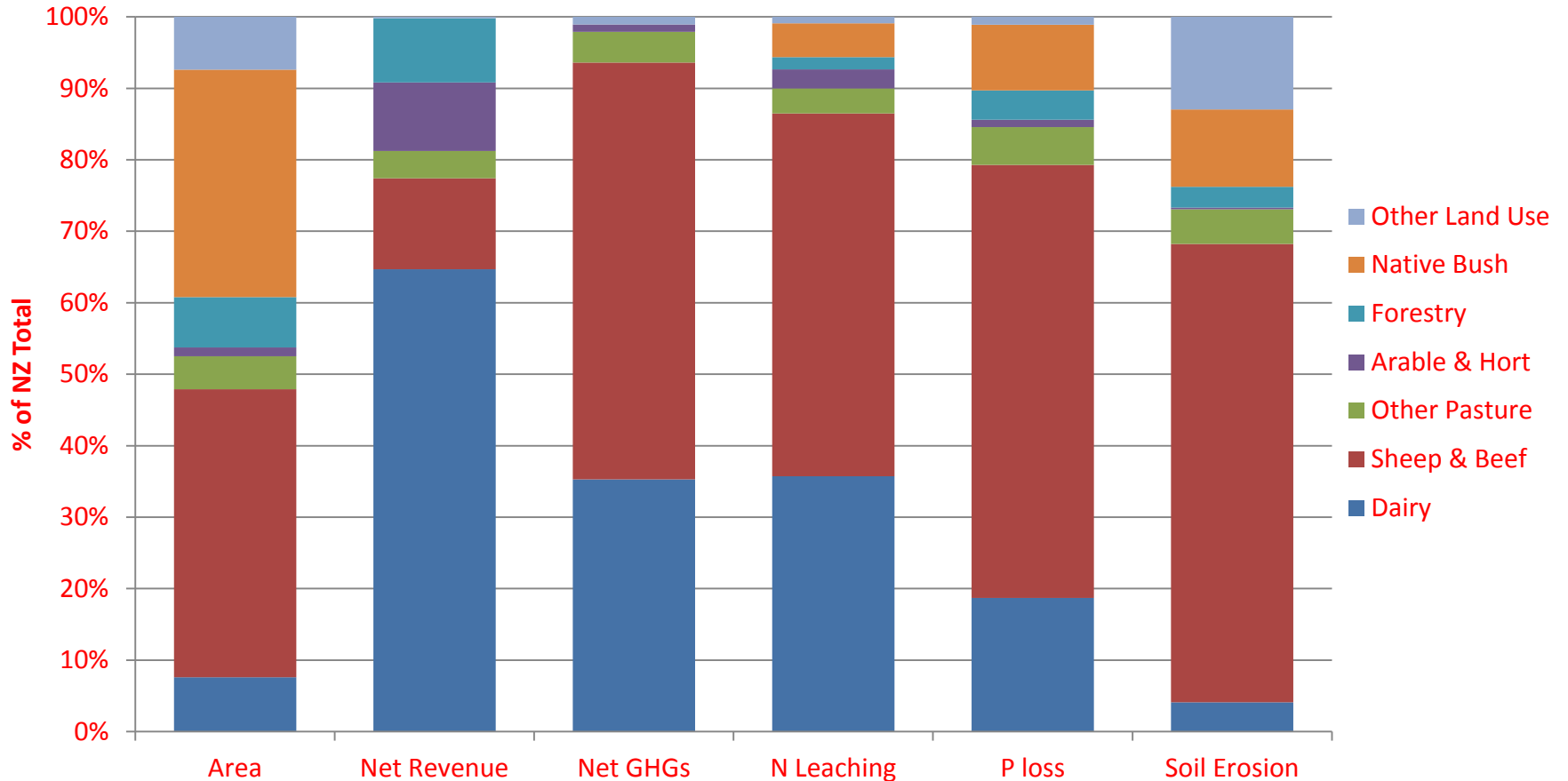
- Sheep and Beef
- Dairy
- Other Pasture
- Other Productive
- Arable
- Deer
- Vegetables
- Fruit
- Viticulture
- Forestry
- Native
- Lifestyle
- Other



0 60 120 240 360 480 Kilometers

# Baseline estimates

Percent of Baseline Outputs by Aggregated Land Use



Area (Mha)	Net Revenue (mil \$)	Net GHGs (MtCO <sub>2</sub> e)	N Leaching (Kt)	P loss (Kt)	Soil Erosion (Mt)
27.4	11,018	10.7	221.7	9.5	213.6



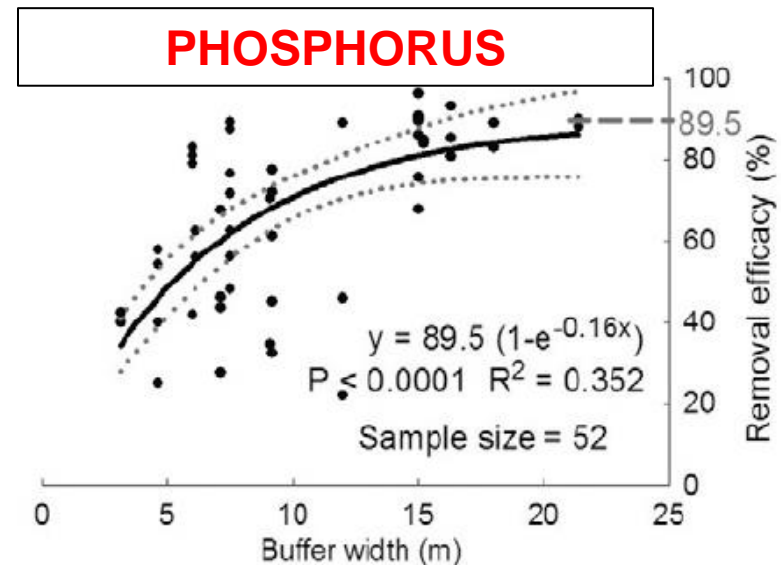
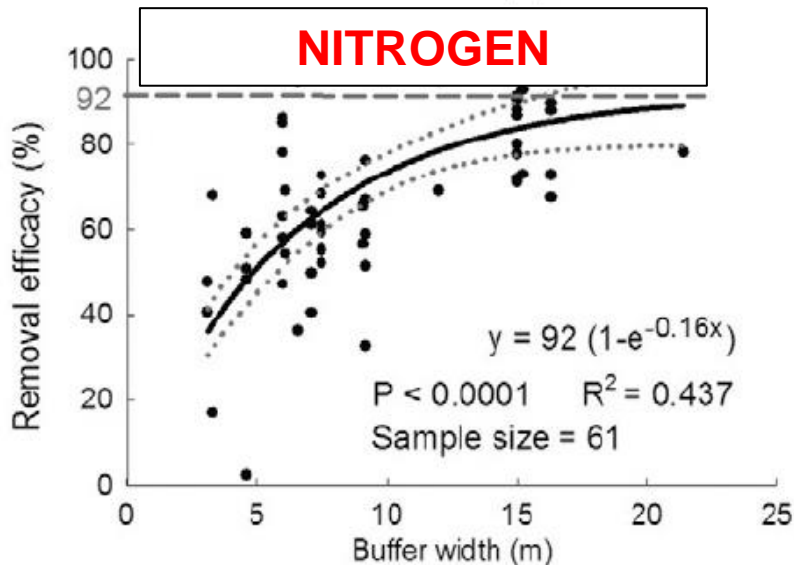
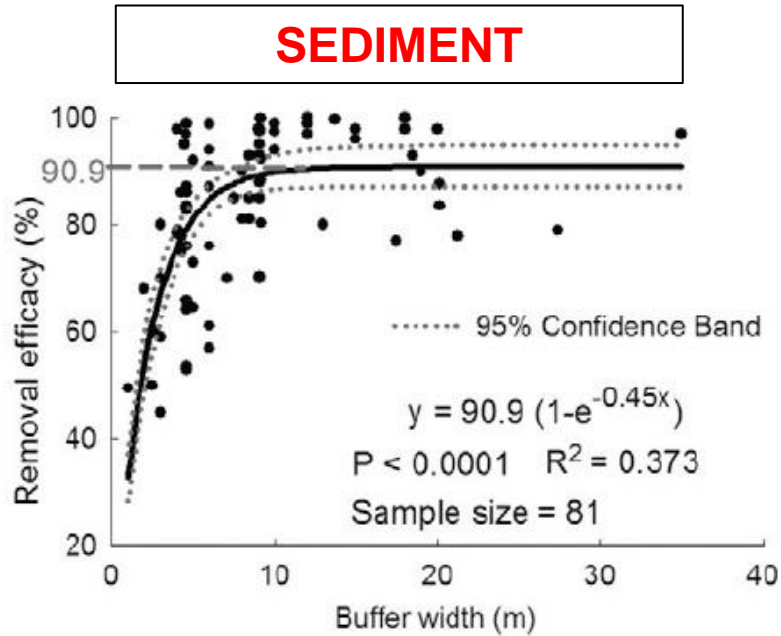
# Methodology – riparian margins

- Overlay of agriculture and streams/margins
- > 508,000 km of streams in NZ
  - ~ 348,000 km on productive land
  - 5, 10, 20, and 50m margins on all such streams
- Cost and impact mitigation
  - Sensitivity analyses

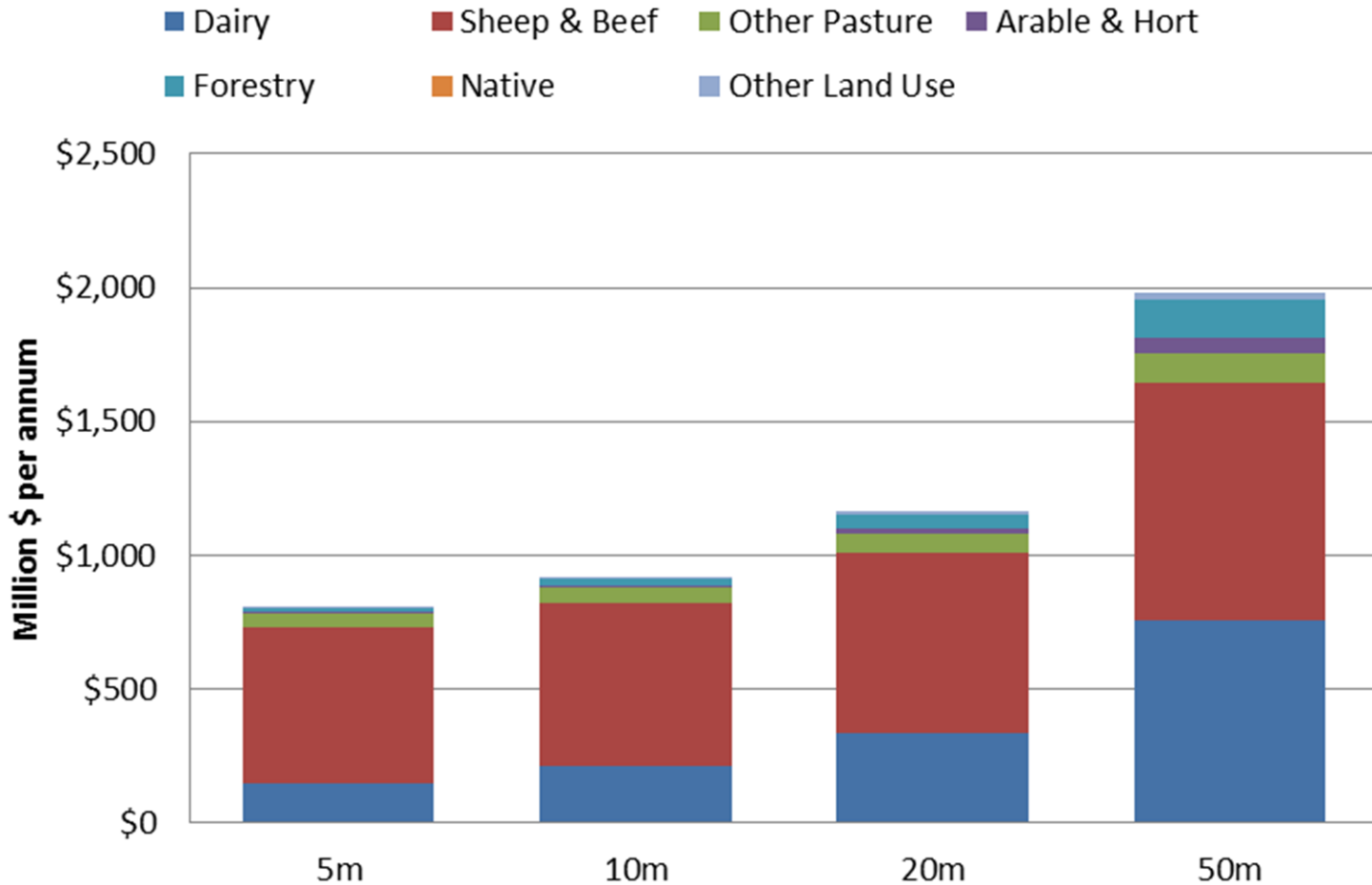
# Riparian margin costs

Cost Component	Low	Medium	High
Fence (pastoral; per m stream)	\$2	\$8	\$16
Water supply (pastoral; per paddock)	\$100	\$250	\$500
Revegetation (per ha)	\$0	\$300 \$1,000	\$1,000 \$5,000
Opportunity cost	0%	50%	100%

# Margin width and mitigation effectiveness

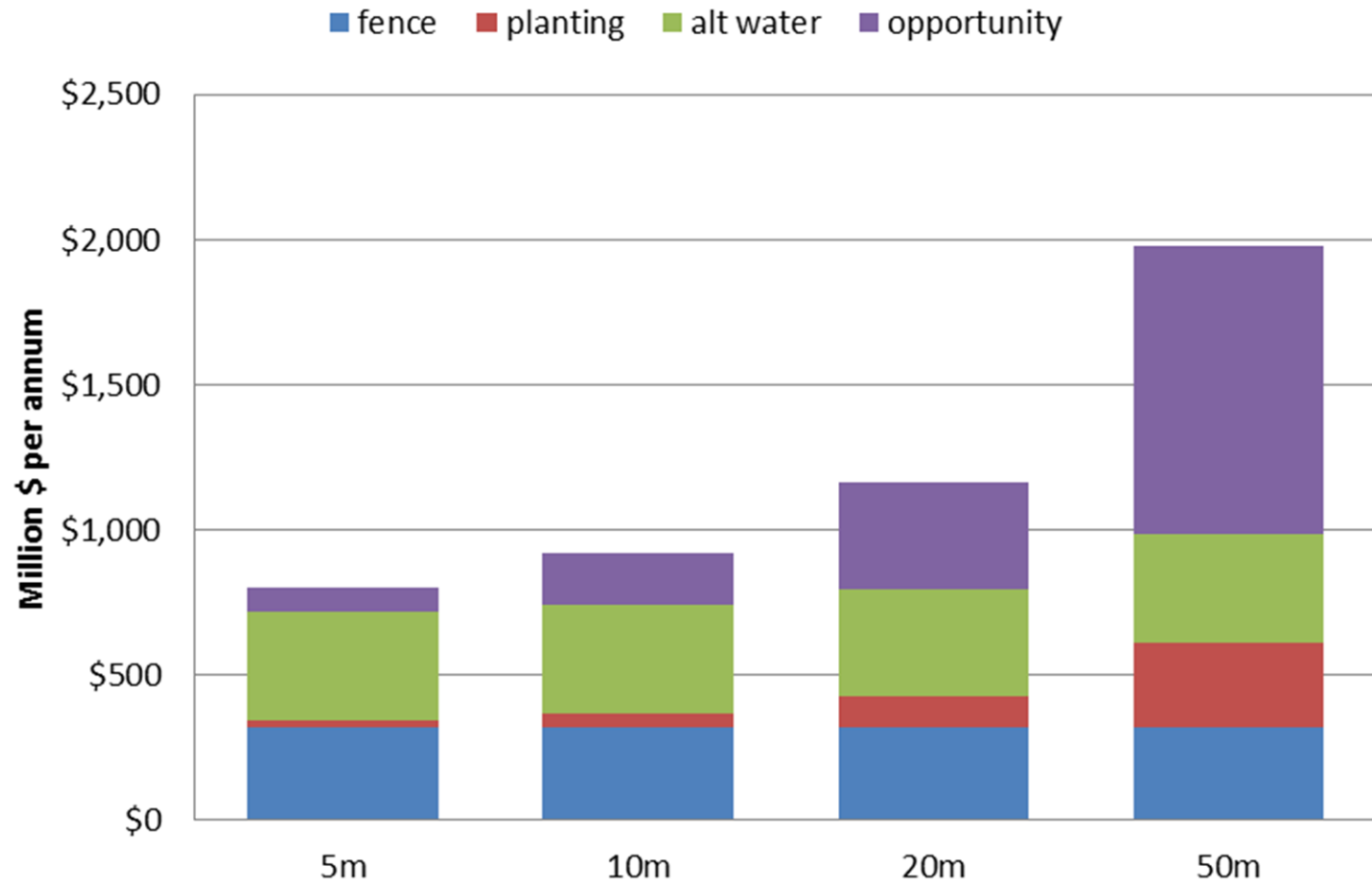


# Results – Sectoral cost



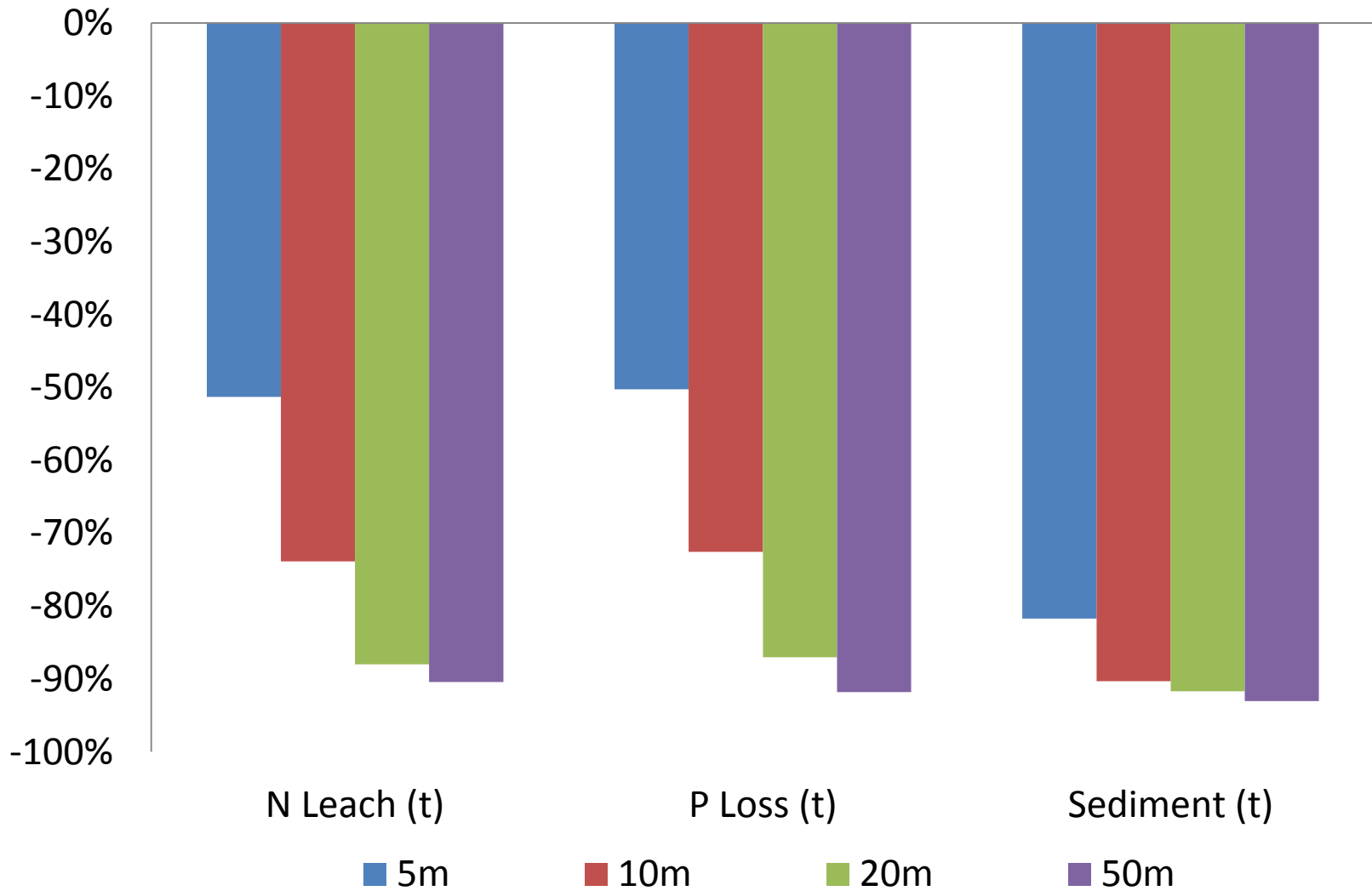
**A 7-17% reduction in net farm revenue**

# Results – Cost type

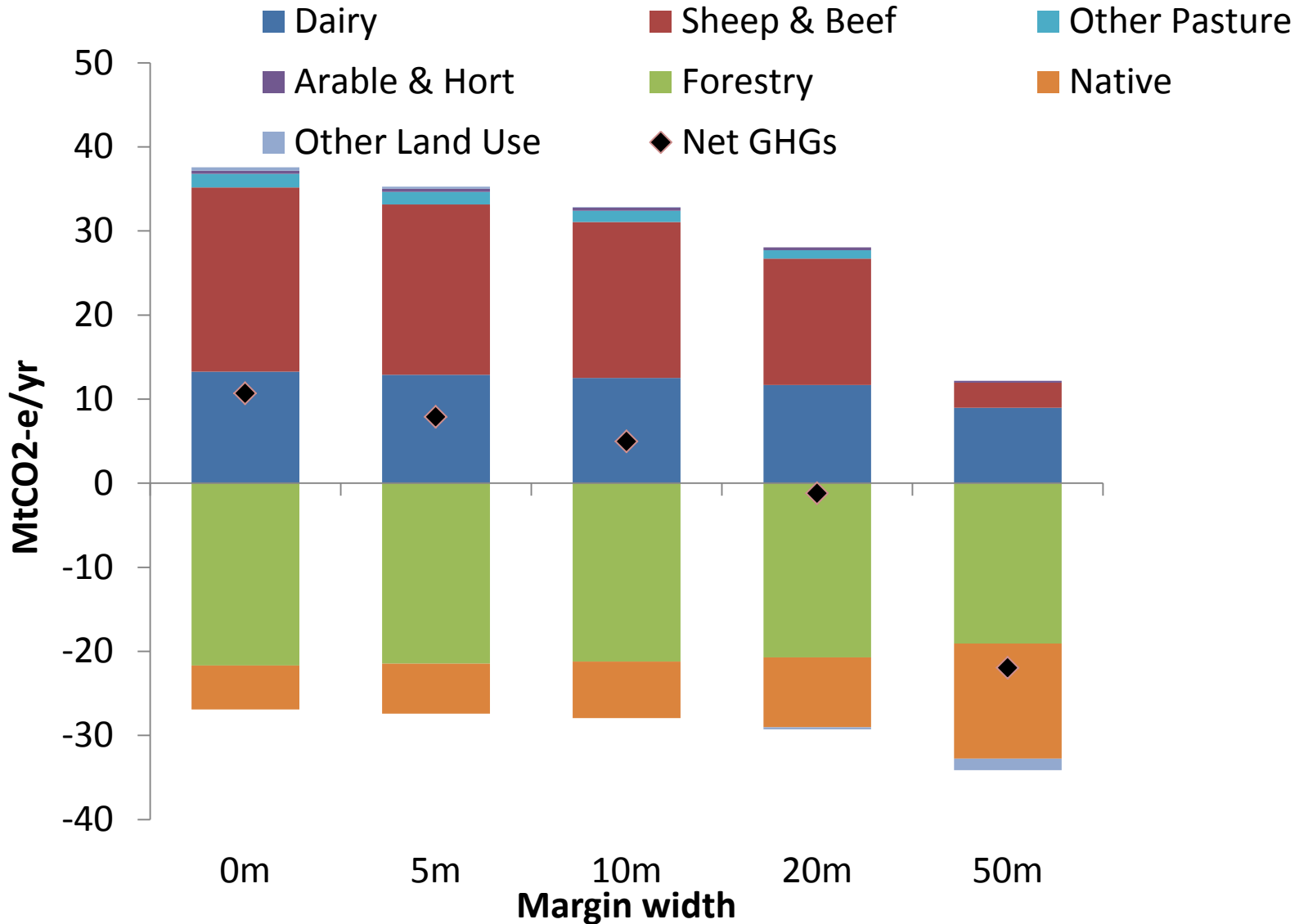




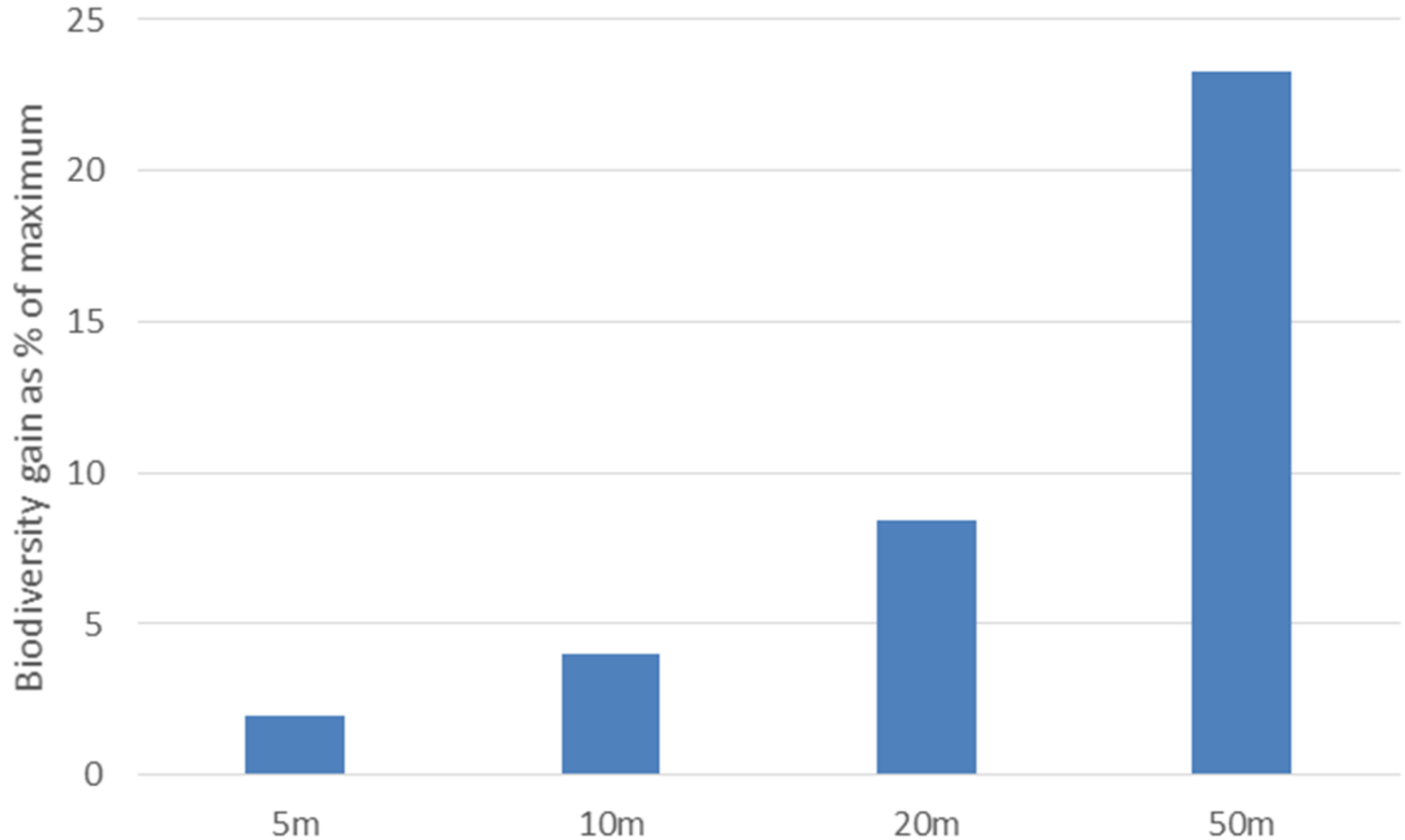
# Results – water benefits



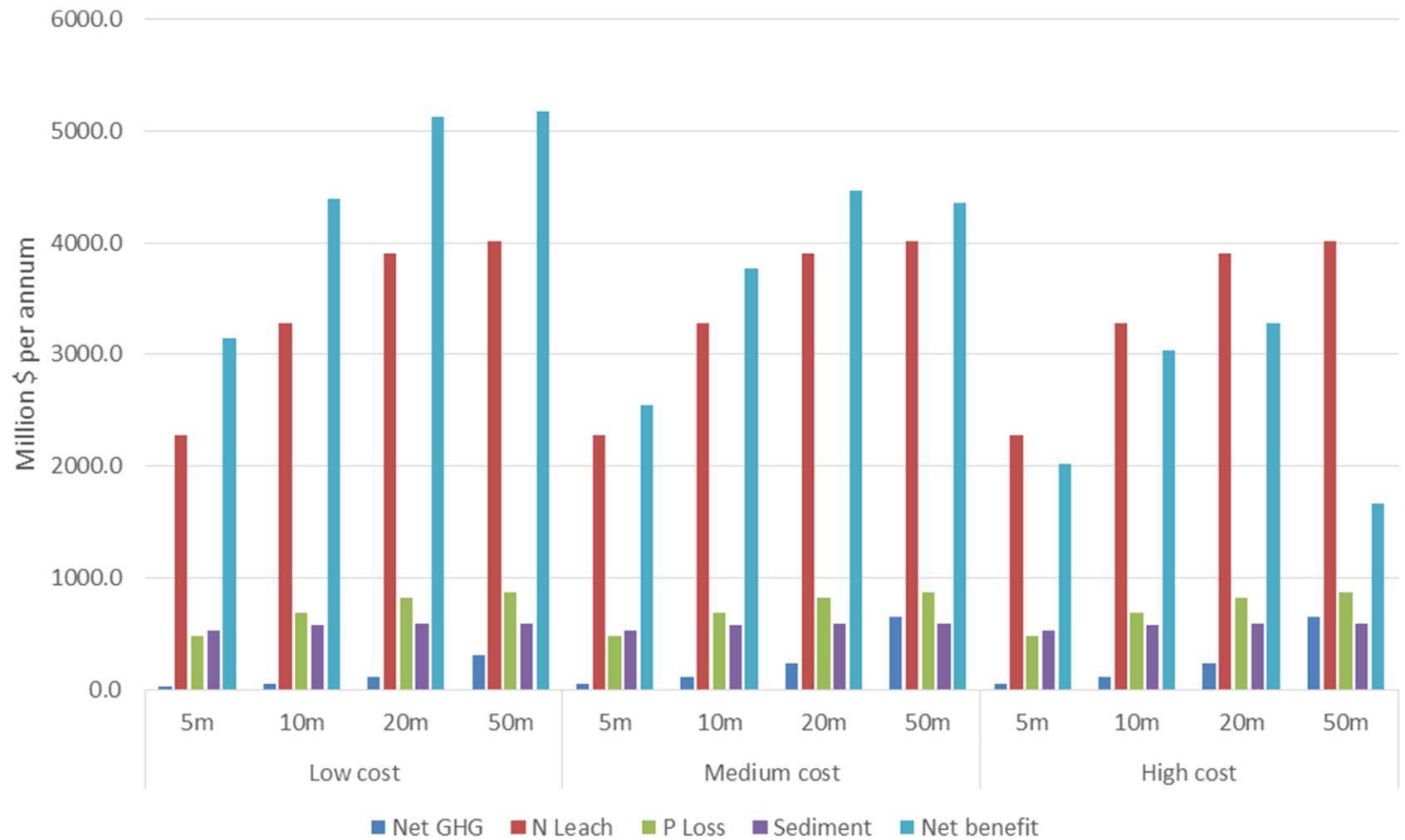
# Results – GHG benefits



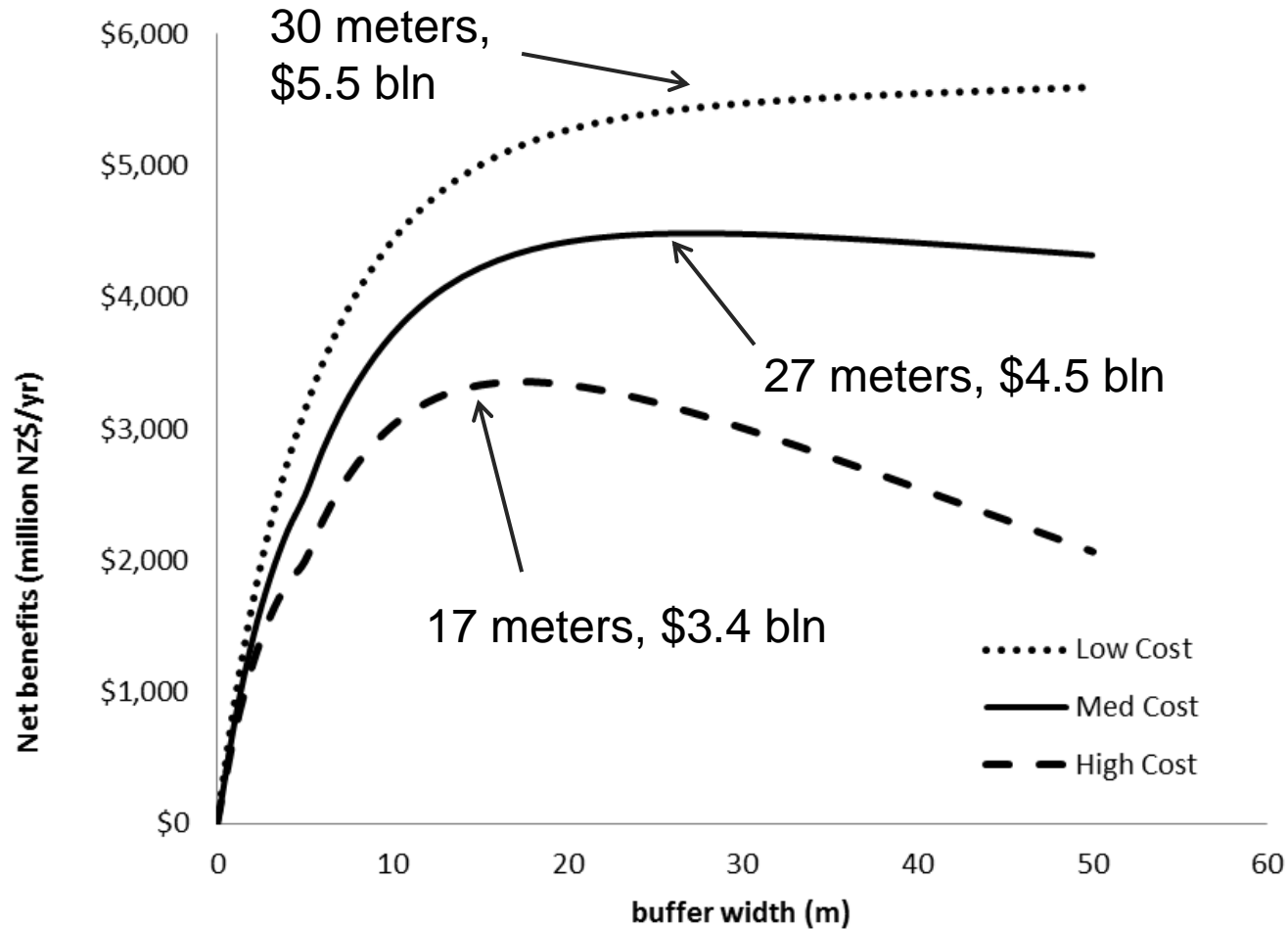
# Results – biodiversity



# Results – net benefits

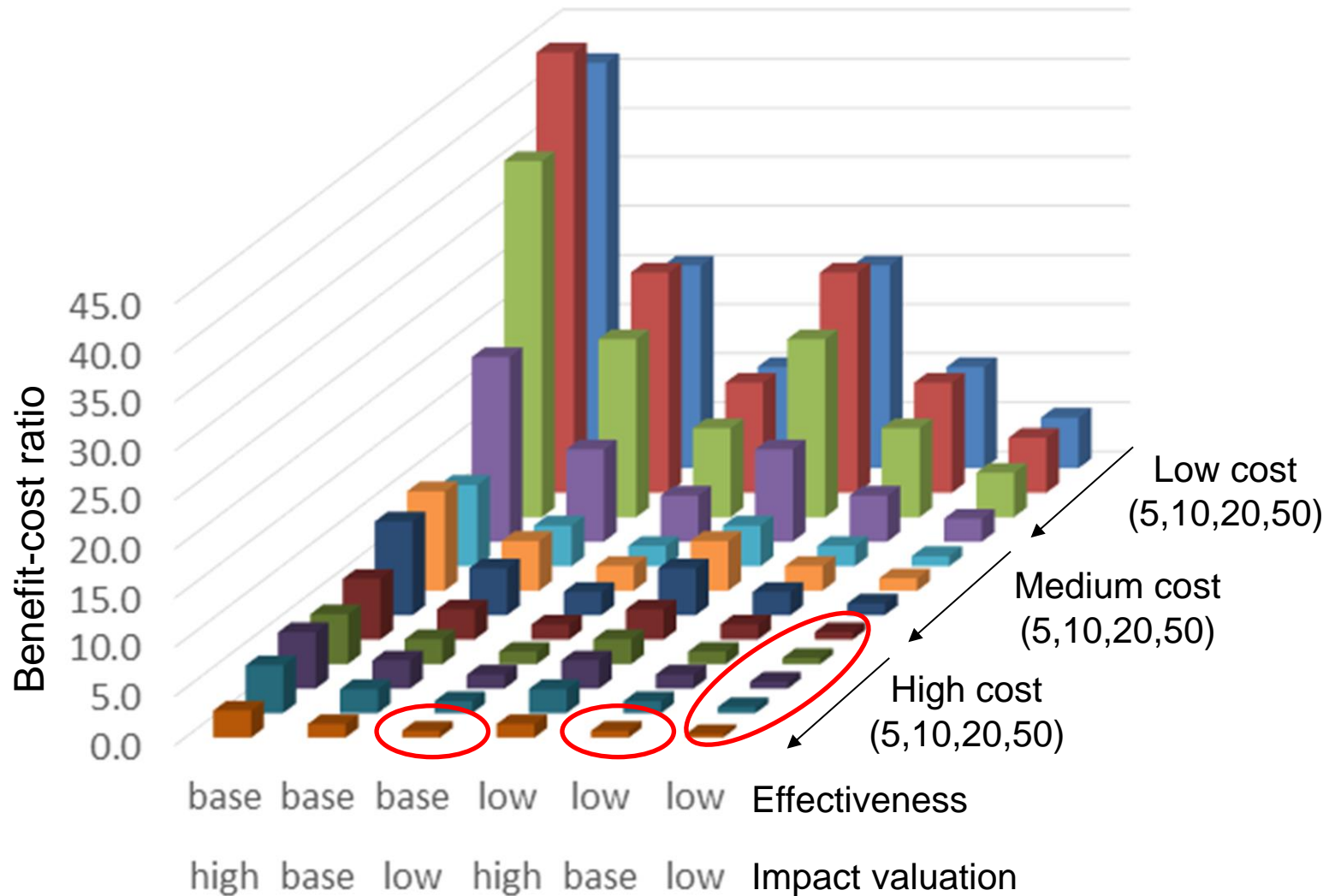


# Results – Optimal margin





# Results – Sensitivity analysis



# Summary

- Total cost of \$0.8 to \$1.9 billion per year
  - ~ 7-17%
- S&B and Dairy to face costs
  - Regional variation
- Positive welfare impacts are very likely
  - \$1.7 – \$5.2 bln / year
  - Non-market benefits!

# Refinements

- Existing fencing and margins<sup>a</sup>
- Slope<sup>b</sup>, soil type, ...
- Improved biodiversity and cultural value
- Spatial optimisation with budget constraints

<sup>a</sup> DairyNZ, DCANZ 2015. *Sustainable dairying water accord: two years on*. DairyNZ and DCANZ.

<sup>b</sup> MfE 2016. *Next steps for freshwater: consultation document*. Wellington, Ministry for the Environment

Thank you

