



LUWQ 2017

Transforming the stream banks of Taranaki, New Zealand: Voluntary regional-scale stream enhancement

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New Zealand



Taranaki

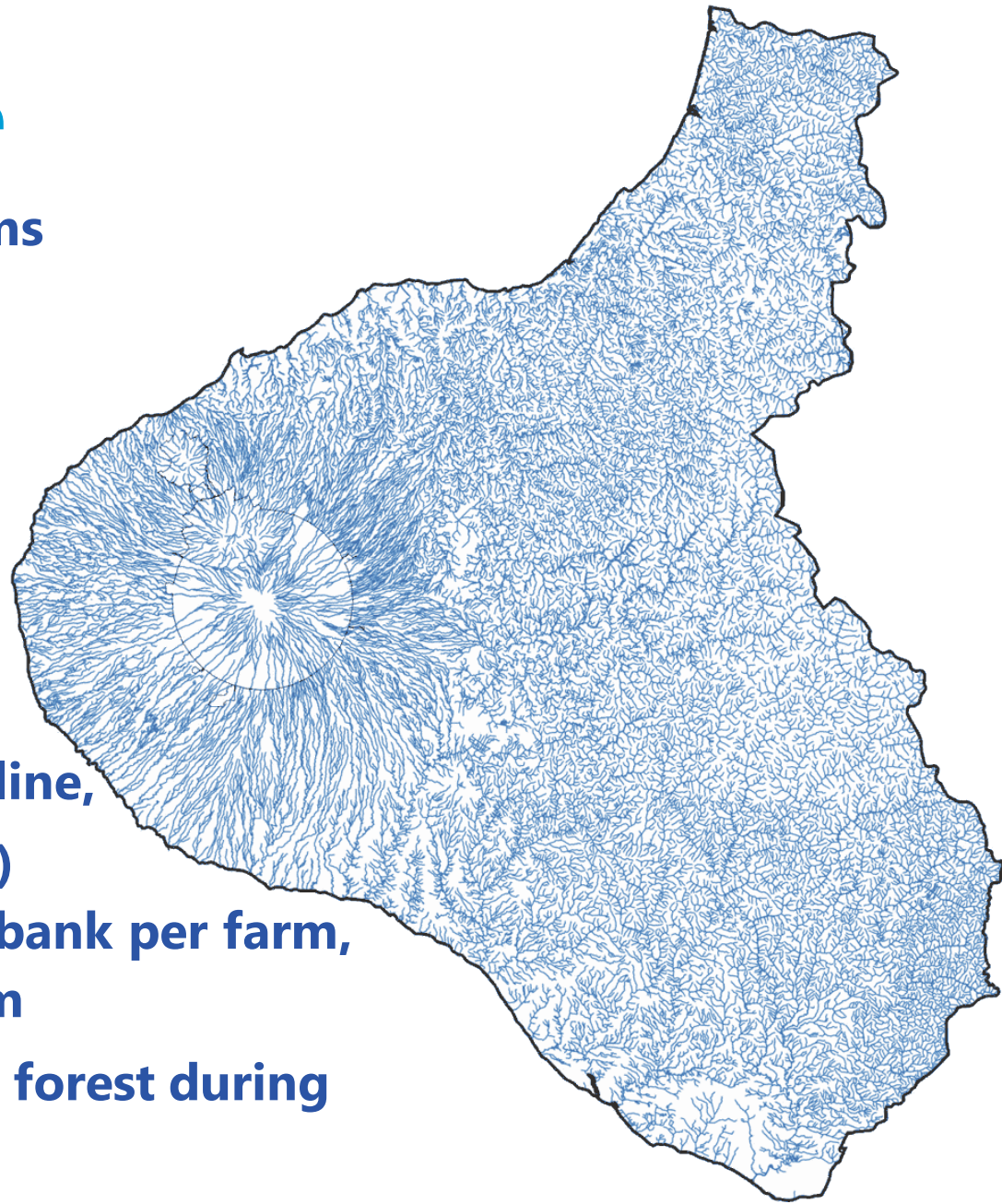


Dairy farming context in Taranaki

- Pasture-based, year-round grazing, variable supplementary feed
- 1,719 dairy herds in Taranaki
- 496,500 dairy cows in Taranaki (13% increase in last 20 years, on same land area)
- Average farm 102 ha effective
- Average herd size 287 = 2.85 animals/ha
- Urea usage: 5,000 tonnes/yr 1980s -> 60,000 tonnes/yr 2012 (clover N -> fertiliser N)

The challenge

- 286 primary river systems
- 530 named rivers
- 14,600km of riverbanks on the ring plain (same length as entire New Zealand coastline,
 - or >UK + Ireland,
 - or 2x Denmark coastline,
 - or 3x Spain coastline)
- Average of 6km streambank per farm, and up to 35km per farm
- Loss of native scrub and forest during settlement 1840s-1860s





Why have a riparian programme?

- **1970s: regulations targeting point source farm discharges.**
- **More than 60% of stream lengths lacking riparian vegetation, and many waterways not fenced (to allow stock drinking access; streams used as physical boundaries)**
- **1992 community consultation agreed strategic value of non-regulatory riparian programme with intensive Council support: faster uptake, greater community buy-in, more enduring sense of ownership and management responsibility; avoided complexities of trying to establish regulatory regime for defining inputs and outcomes of diffuse pollution management**

Riparian Management Strategy

- **Agreed objectives: retain existing riparian vegetation, promote streambank retirement and planting**
- **Implementation strategy progressively developed 1993-2000**
- **Based on education, advocacy, advice, support**
- **Service delivery by Council through technical advice and farm plan preparation**
- **Comprehensive engagement by Council officers ensures quality delivery on-farm**
- **Voluntary and without subsidies for landowners**
- **Regional benefits recognised through ratepayer funded one-on-one advice, plans**

How did we get it to happen?

- **Unsubsidized, non-regulatory, initially costly for the farmer**

So how did we persuade them it's a great idea?

- **Marketing (by a regulatory agency!): personal correspondence, phone calls, one-on-one visits, field days. Assigned territories for land management officers ('client managers'). Initial and on-going personal contact (close to 10,000 contacts per year by 13 staff members)- key for timely and effective implementation**

How did we get it to happen?

- Engaged sector leaders as champions to set example and deliver message-
'Good people doing the right thing. Do it now voluntarily or have it done to you later by compulsion.'
- Using GIS and mobile technology to efficiently and promptly generate plans and to monitor subsequent implementation progress via farm walk-overs (annual ground-truthing)

The offer to landowners

- **Riparian plan tailored to the property**
- **The plan sets out all fencing and planting plans and maps; budgets; plant species and numbers tables for ordering; and agreed schedule of works**
- **Access to low-cost unsubsidized native eco-sourced riparian plants at cost of about 2 euros/plant – savings of about 40% below private procurement**
- **Quality-controlled bulk supply – administered by Council contracting multiple plant nurseries**
- **Option for farmers to use pre-approved planting contractors - provides control of quality of planting and of cost for time-poor farmers**

The offer to landowners

- **Frequent personal contact and visits by Council officer – advice, monitoring, encouragement**
- **Very high appreciation by farmers of Council support**
- **Unexpected side benefits in natural disaster response- personal knowledge of farmers and farms has proved invaluable in providing an effective impact assessment and response and recovery targeting**

Regional industry and sports champions

“Lead or be led”

Riparian planting is going to happen in Taranaki and we farmers can choose to be the heroes by getting on with doing it now, or we can be the villains and force the regional council into a more regulatory enforcement attitude – it is our choice!”

Blue Read

Former Chair, Fonterra Shareholders' Council



Regional industry and sports champions

“Riparian management is core farming business”

Dairy farmers have to understand that responsible environmental management is part of day to day farm management if they want to continue to operate a sustainable and financially viable business ... riparian management is absolutely essential to securing the future of dairy farming in Taranaki”

Nick Barrett

Fonterra Shareholders' Council



The views of the farming sector- predominantly but not exclusively in favour

Advantages and positive perceptions

- **Increased shade and shelter for stock**
- **Cows grazing for longer**
- **Reduced stock deaths/trapped stock**
- **Increased biodiversity within margins/ecological corridors**
- **Potential for other products - eg honey, timber**
- **Attracting better staff (more interested, caring, conscientious)**
- **Increased property value**
- **Being seen as good citizen, responsible**

The views of the farming sector

Advantages and positive perceptions (more)

- **Easier grazing management**
- **Easier to monitor and manage farm water supplies and quality**
- **Increased aquatic habitat**
- **Less stream eutrophication**
- **Less sediment in stream**
- **Less bank erosion and collapse**
- **More satisfying environment to work in**
- **Cost-neutral**

The views of the farming sector

(continued)

Disadvantages and negative perceptions

- **Establishment costs**
- **Equity issue – why should farmers be paying when other benefit?**
- **Increased risk of facial eczema (damp shaded pasture)**
- **Increased habitat for pests, weeds**
- **Doubts that planting achieves any more benefits for water quality than just fencing alone?**
- **Loss of production land**
- **Reduced grass growth in the shade**
- **Increased farm management requirements**





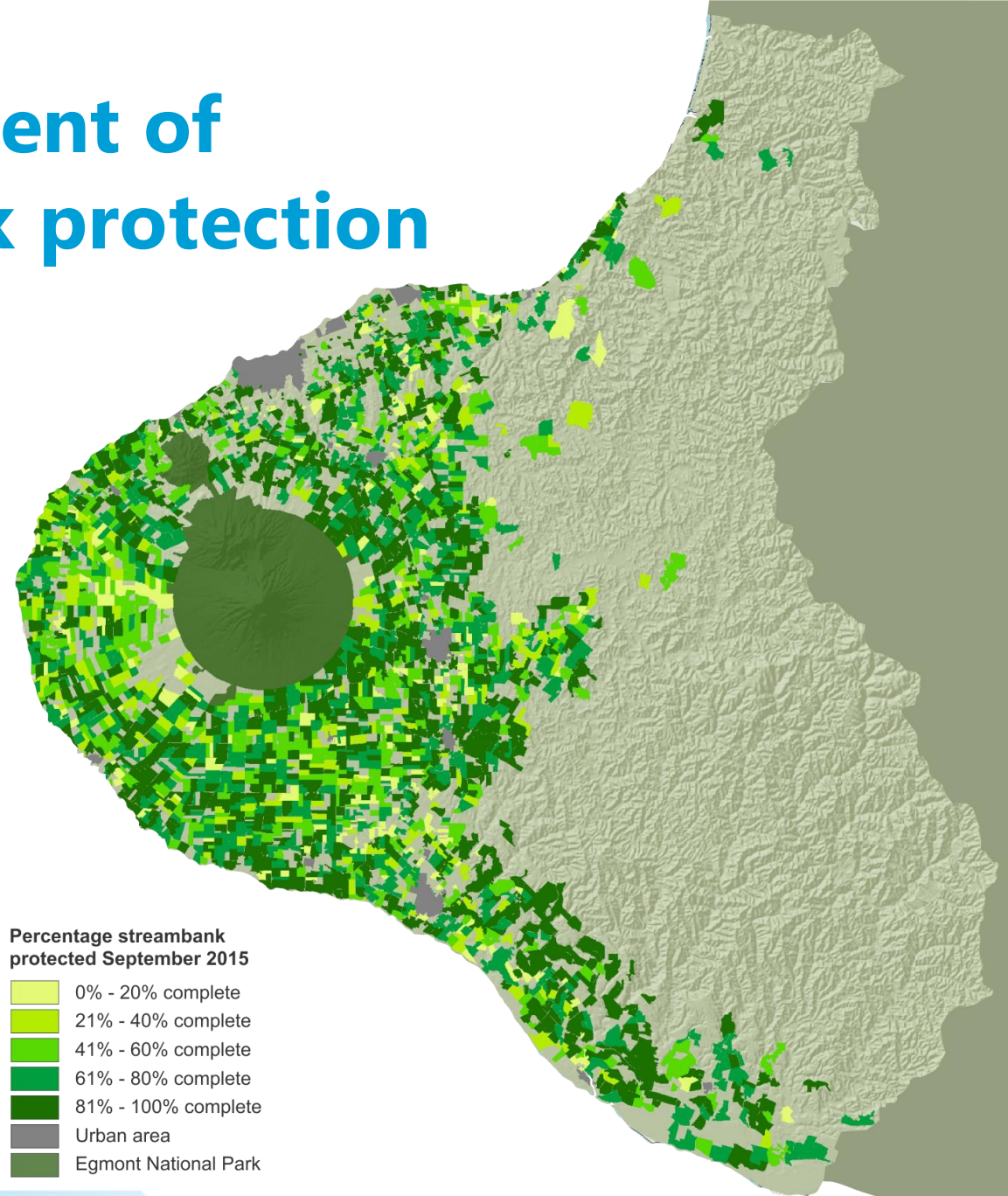
Ultimate goals

- **Focused on plan preparation 1992-2000, and majority of plans done 2001-2008 (accelerated with technology adoption)- marketing**
- **Since 2000 focusing on implementation – accelerating uptake, and targeting substantial completion by 2020-sales**
- **Largest revegetation project in New Zealand on private land without subsidies or rules or private profit**
- **Government has recently announced compulsory riparian fencing with progressive implementation 2017-2030**
- **Council is now in a stage of tailoring completion actions to individual farm circumstances and with regard to the imminent Government regulation**

Ultimate scale

- **Total anticipated cost to farming sector: 52 million euros**
- **Scale: fence 7,000 km (by 2023) and plant 4,500 km of stream margins with over 8 million trees (by 2026)**
- **Transforming Taranaki landscape-corridors from mountain to sea, converting over 3,000 ha of pasture to bush**
- **Collaborative engagement with over 2,500 plan holders**

Current extent of streambank protection



Riparian programme progress to date

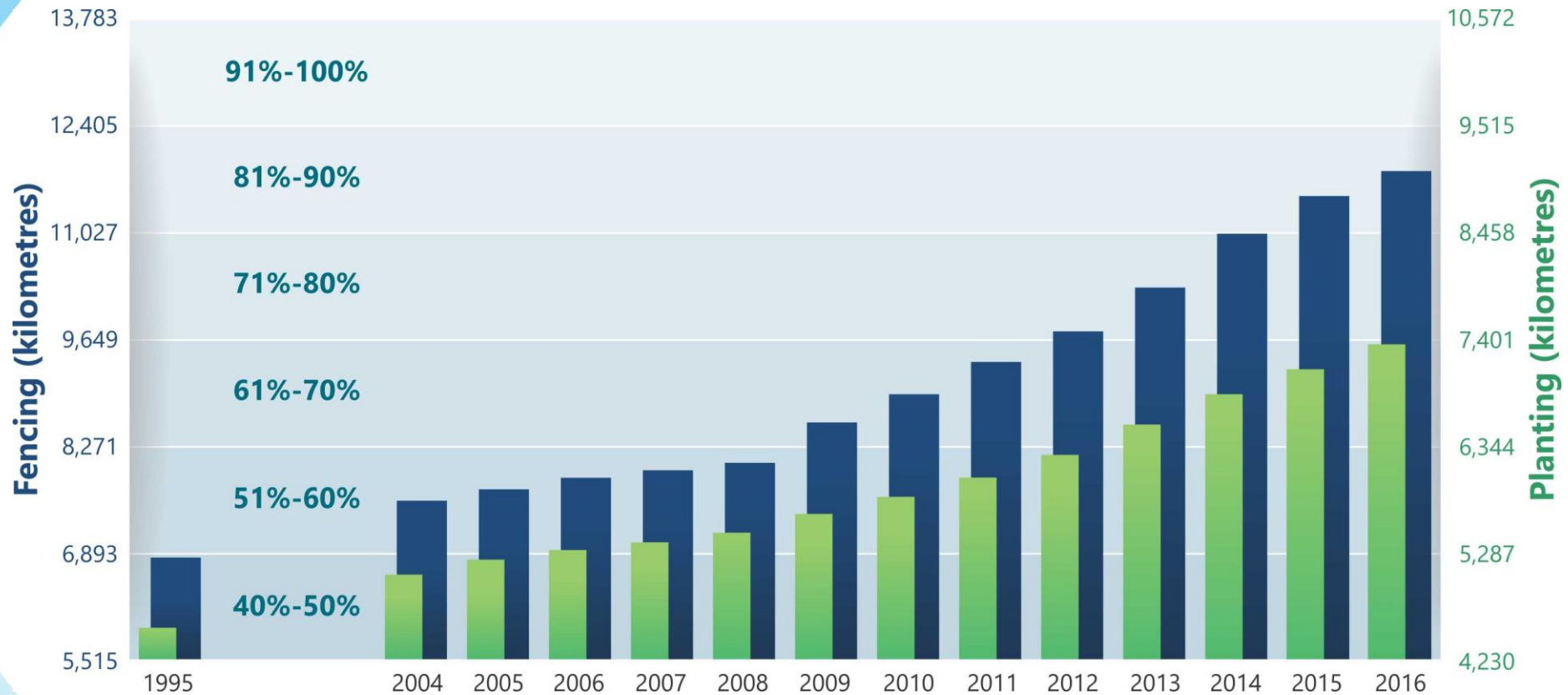
- **2,587 riparian plans – 99.5% of dairy farms**
- **Almost 14,500km of streambank covered by riparian plans**
- **12,200km (85%) of streambank is protected by fencing – 66% of targeted new fencing now done**
- **7,700km (70%) of streambank is protected with riparian vegetation – 42% of targeted new planting now done**

Riparian programme progress to date

In year 2015-16 (despite dairy farm income downturn)

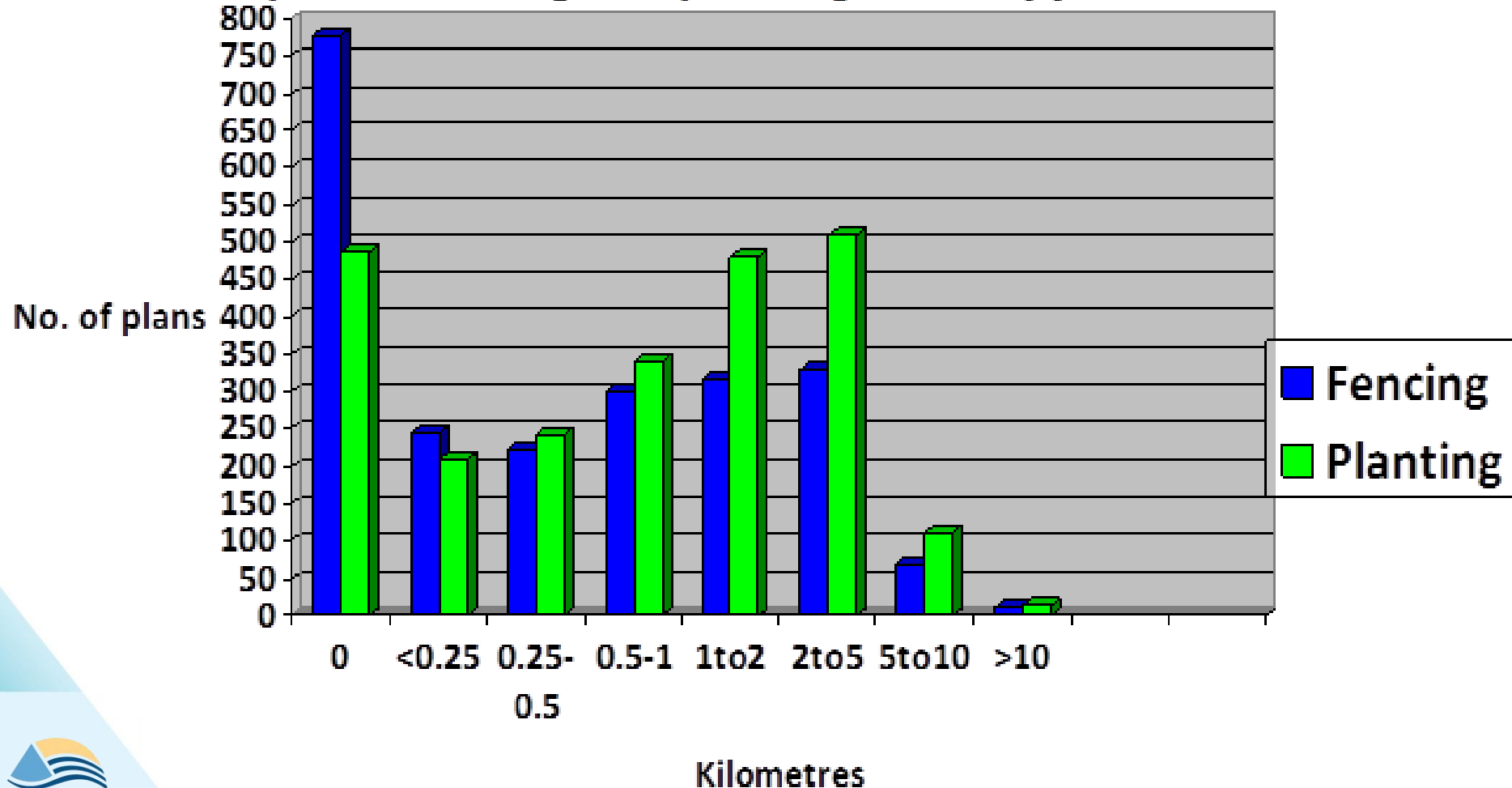
- **390,722 plants supplied to 1,084 landholders**
- **241 more kilometres of fencing and 249 more kilometres of planting**
- **9,056 liaisons with 2,600 active planholders**

Riparian fencing and planting completion



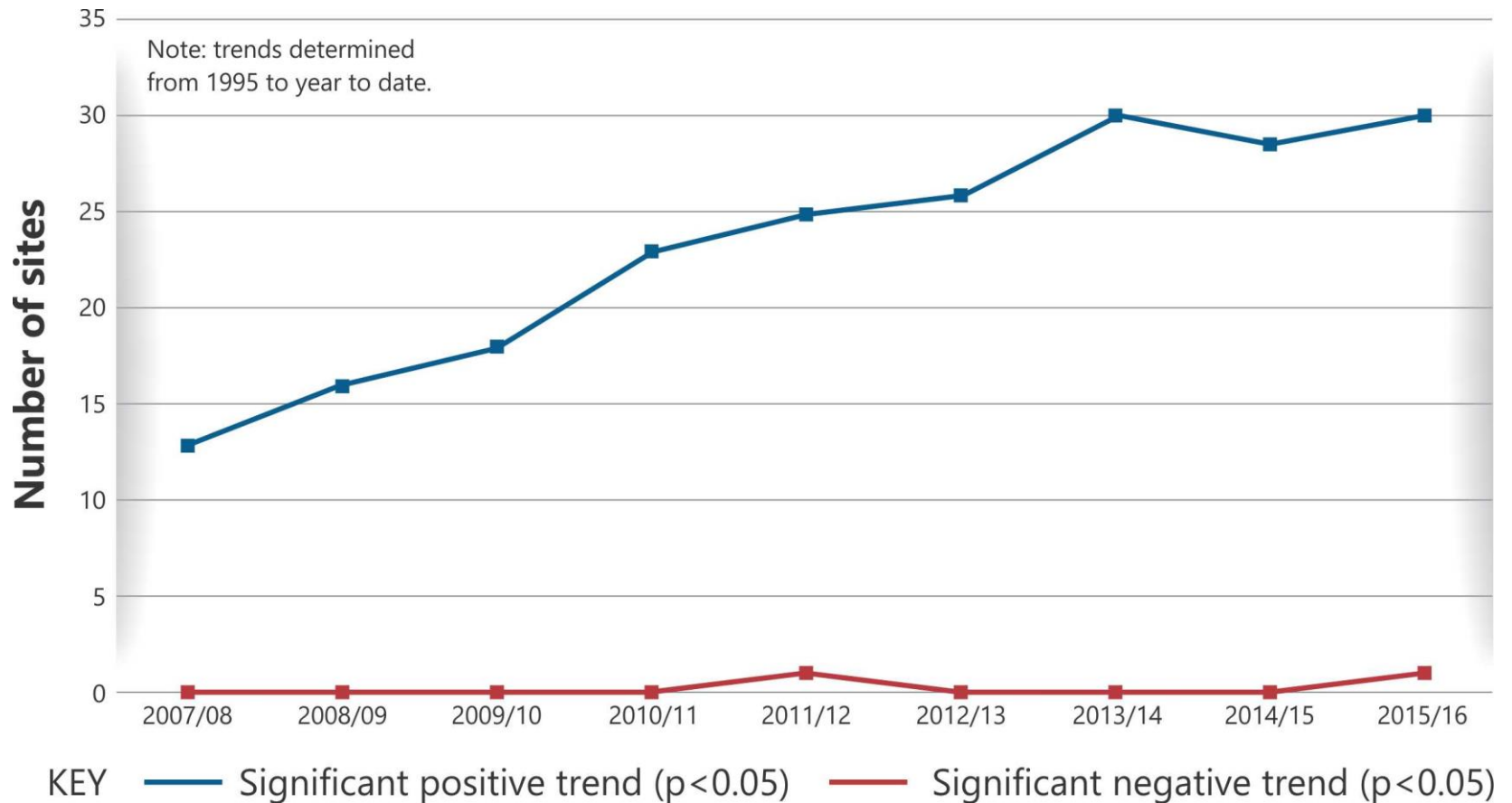
Farm work to do by job size

Riparian fencing and planting to do by job size



Environmental outcomes

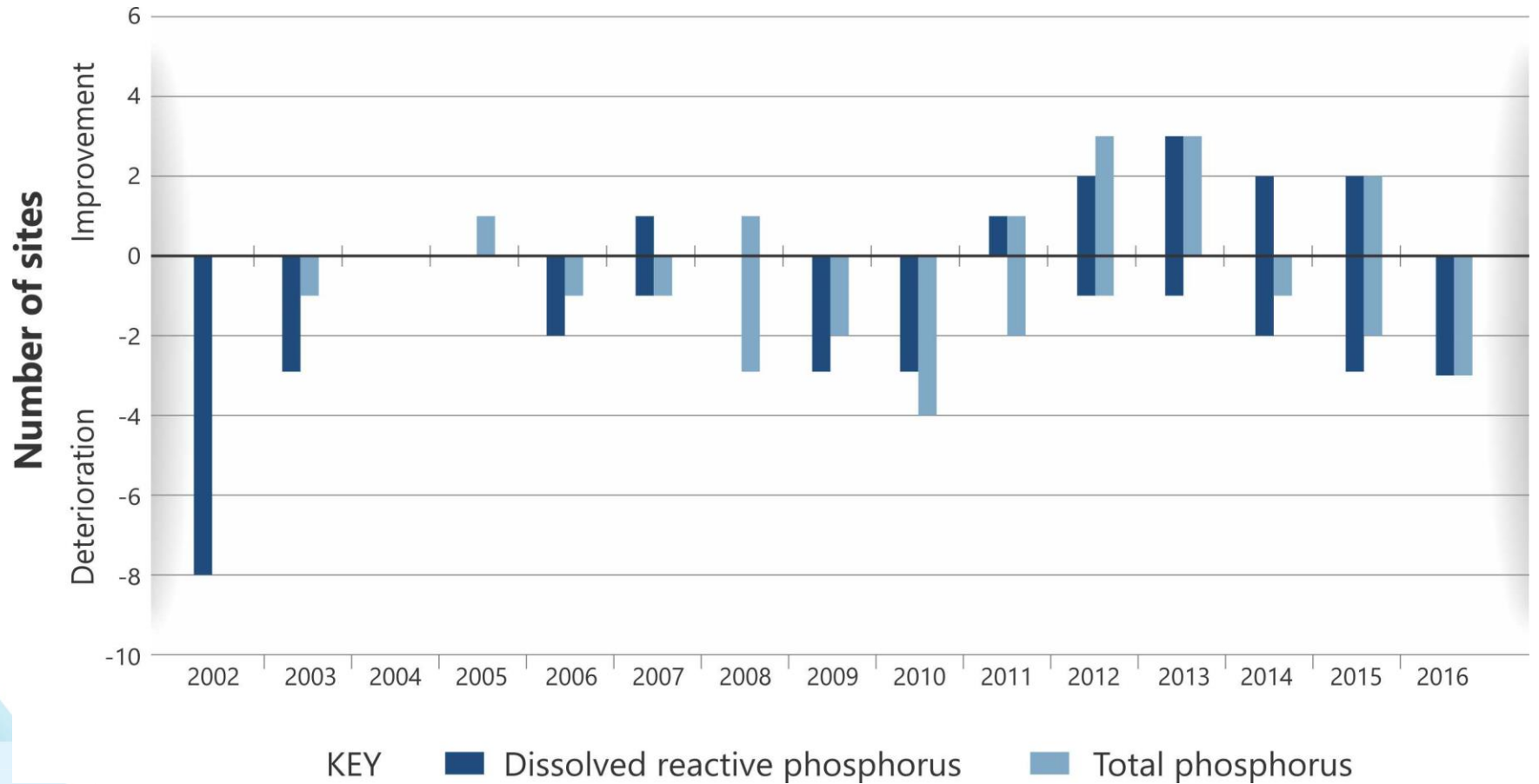
Outcome for stream health: very significant improvement



Outcome for in-stream phosphorus trends: improvement, but other influences

Seven-year trends

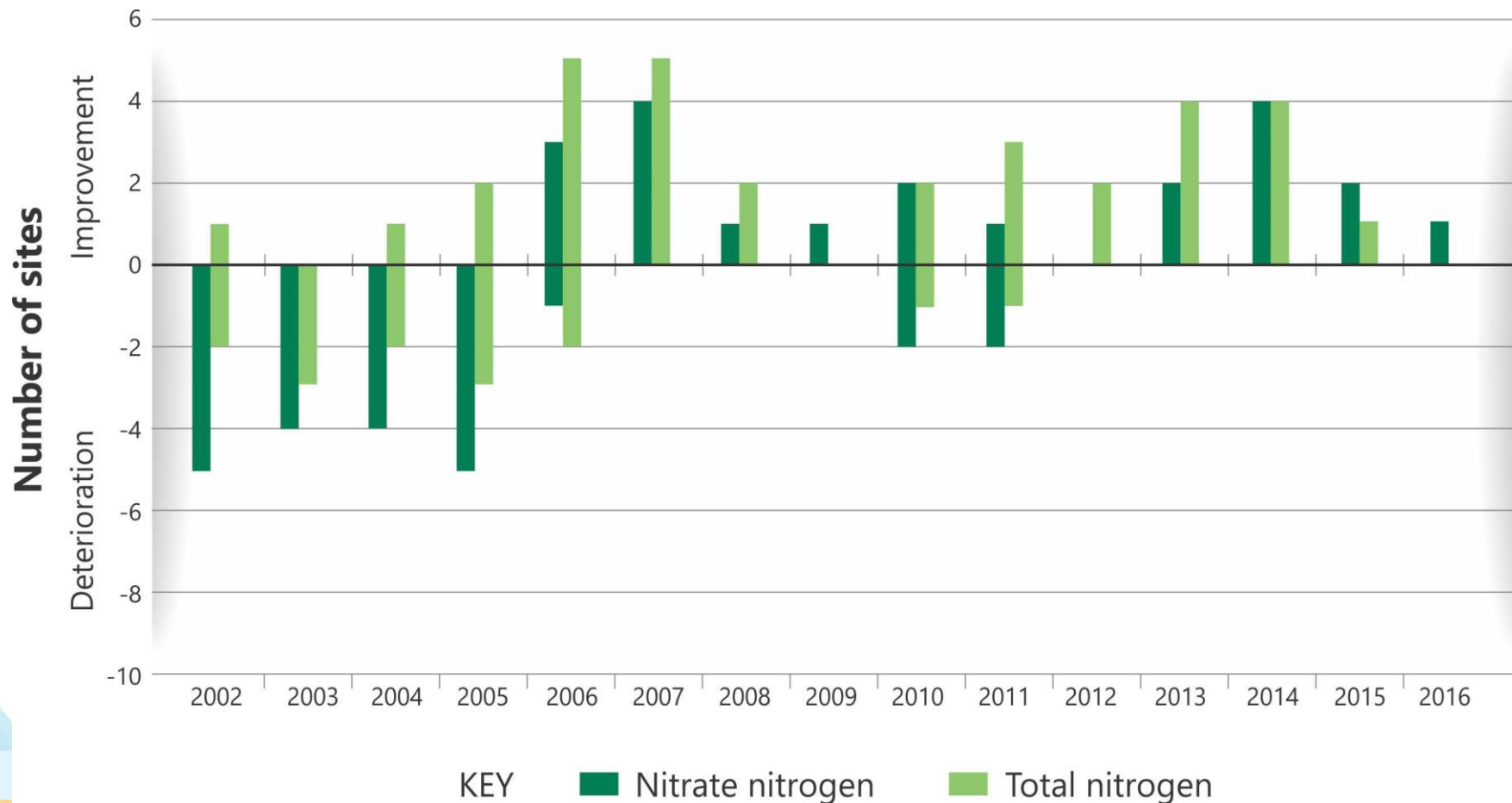
Context: DRP in lower catchments: median 0.024 gm^{-3} (0.009-0.054)



Outcome for in-stream nitrogen trends: improvement, but other influences

Seven year trends

Context: N-NO₃ in lower catchments: median 0.27 gm⁻³ (0.02-1.87)



Outcome for microbiological quality: unclear

- **On a region-wide perspective, there is no indication of any significant trend (in either recent or long-term periods) in the microbiological state of the region's waterways**
- **Does this mean that riparian management does not affect bacterial run-off rates? The scientific literature is clear that it does**
- **16% increase in stocking intensity in last 2 decades, but no increase in in-stream bacterial contamination- riparian effect?**
- **Main bacterial source might instead be the discharge of milking platform effluent (a separate programme underway to eliminate these) rather than diffuse run-off. (Note: human sewage works discharges to inland waters almost entirely eliminated within Taranaki)**

Questions?

