

17 November 2017

Robin Smith
Department of Conservation
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RECENT WATER QUALITY DATA FROM THE ARARIRA/LII CATCHMENT

Dear Robin

1. INTRODUCTION

This letter summarises recent water quality sampling results from the Ararira/LII River catchment. **Not in scope**

[Redacted]

[Redacted]

[Redacted]

[Redacted] Water quality samples were taken from each site and delivered on ice the same day to Hill Laboratories for analysis of nitrate-nitrogen (nitrate), dissolved reactive phosphorus (DRP), total suspended solids (TSS), turbidity, and *Escherichia coli*.

Not in scope
[Redacted]

¹ Golder Associates (2015). Ararira/LII catchment: hydrology, ecology and water quality. Report prepared for the Department of Conservation and Fonterra Living Water Partnership. Golder Report No. 1414458_7410-003-R-Rev2, November 2015.

3. RESULTS

Not in scope [redacted]

[redacted] At most sites nitrate concentrations were well above the guideline of 1.5 mg/L; nitrate is unlikely to be limiting plant growth at such levels. In addition, nitrate concentrations exceeded the national bottom line toxicity limit of 6.9 mg/L at four sites (two farm drains and two rated drains, Table 2). Not in scope [redacted]

[redacted]

[redacted]

Not in scope [redacted]

[redacted]

s.9(2)(a) [redacted]

Dr Greg Burrell
Director
Instream Consulting Ltd

- Attachments:
- Map of Sampling Sites
 - Site photographs
 - Tables of water quality sampling sites and results

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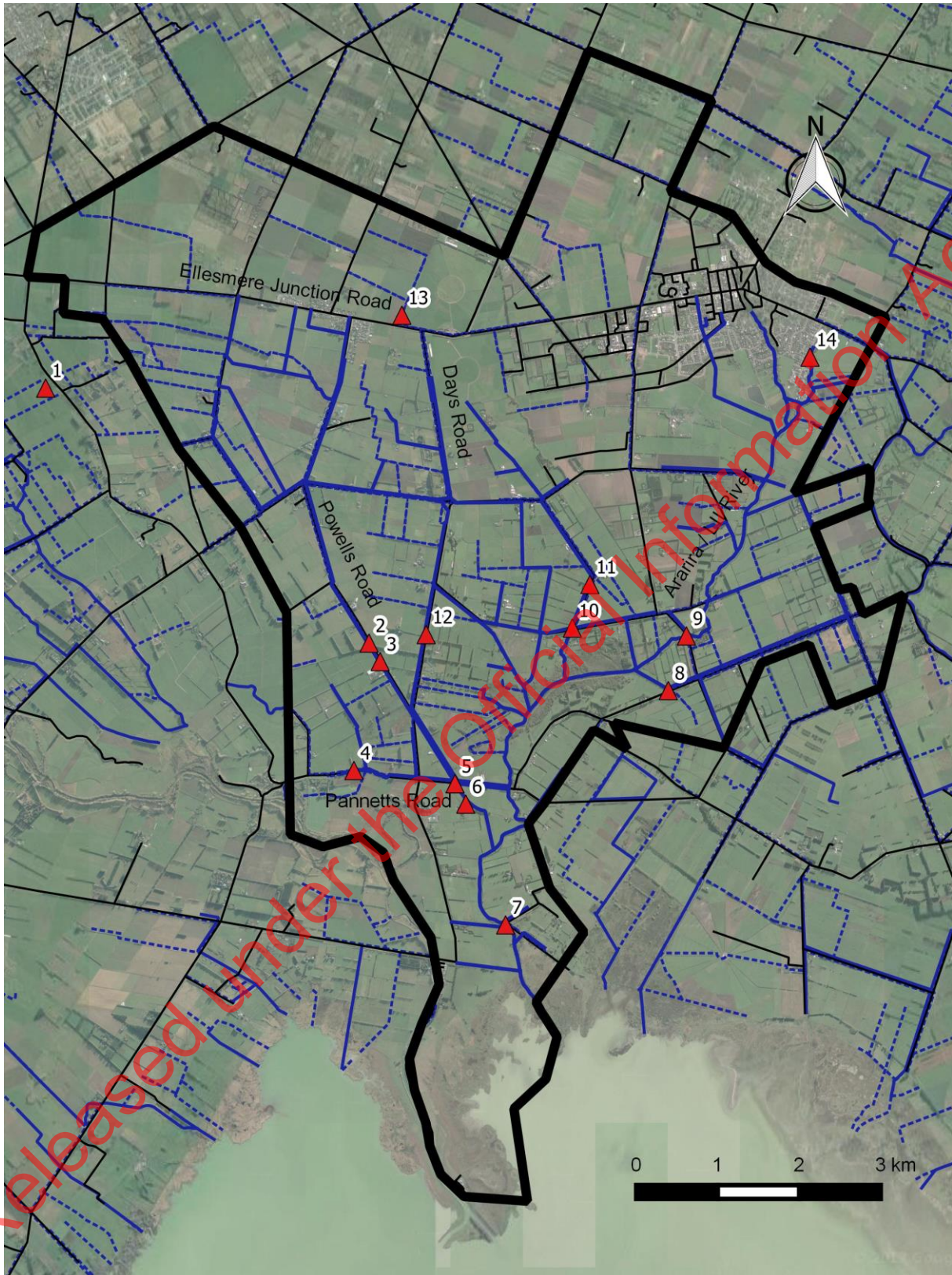


Figure 1: Water quality sampling locations (red triangles) and the Ararira / LII River catchment (black outline).

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Table 2: Water quality data from dry weather sampling on 31 October 2017.

Site	Name	Nitrate-N (mg/L)
1	9(2)(a) Farm Drain	9.70
2	Powells Road Drain at 9(2)(a) Farm	8.00
3	9(2)(a) Farm Drain at Powells Rd	8.40
4	s.9(2)(a) Farm Drain at Pannetts Rd	1.54
5	Powells Road Drain at Pannetts Rd	6.10
6	9(2)(a) Farm Drain	3.10
7	Ararira/LII River at Wolfes Rd	3.30
8	Carters Road Drain	0.62
9	Ararira/LII River at Englishs Rd	3.30
10	Sergeants Old Drain at Goodericks Rd	1.58
11	9(2)(a) Farm Drain at Sergeants Rd	1.25
12	Days Road Drain at Days Rd	7.50
13	Lincoln Dairy Farm Water Race	0.003
14	Liffey at Liffey Springs	3.90
Guidelines		1.5 / 6.9

Not in scope

Guideline Notes: The nitrate guideline of 1.5 mg/L and the DRP guideline of 0.016 mg/L are receiving water standards in the Canterbury Land and Water Regional Plan; they are also the median of data from Canterbury spring-fed streams on the Canterbury Plains (Hayward et al. 2009²) and are indicative of nutrient-enriched conditions. The nitrate guideline of 6.9 mg/L is the national bottom line in the National Policy Statement for Freshwater Management 2014, and is for protection against toxicity effects. The *E. coli* guideline of 540 MPN/100 mL is from the National Policy Statement for Freshwater Management 2014 and is for protection of human health. The turbidity and TSS guidelines are medians for spring-fed Canterbury Plains rivers (Stevenson et al. 2010³); higher concentrations will impact aesthetics, recreation, and aquatic ecosystems.

² Hayward, S., Meredith, A., and Stevenson, M. (2009). Review of proposed NRRP water quality objectives and standards for rivers and lakes in the Canterbury region. Environment Canterbury Report R09/16, March 2009.

³ Stevenson, M., Wilks, T., and Hayward, S. (2010). An overview of the state and trends in water quality of Canterbury's rivers and streams. Environment Canterbury Report R10/117, November 2010.

Table 3: Water quality data from Golder (2015) wet and dry weather sampling.

Site	Weather	Nitrate-N (mg/L)
LII at Englishs Rd	Dry	4.7
	Wet	4.5
LII at Pannetts Rd	Dry	5.1
	Wet	3.8
LII at Wolfes Rd	Dry	3.6
	Wet	3.7
LI Creek	Dry	8
	Wet	6.5
Liffey	Dry	4.7
	Wet	4.4
Lincoln Main Drain	Dry	10.3
	Wet	9
Springs Creek	Dry	2.3
	Wet	2.2
Ellesmere Drain	Dry	3.4
	Wet	4.2
Goodericks Drain	Dry	6.1
	Wet	5.8
Powells Road Drain	Dry	2.3
	Wet	3

Not in scope

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