

Proposal for Stage One Dioxin Survey in Noosa Area

Water Quality and Investigations

February 2020

Introduction

This document outlines the Stage One proposal for sampling the dioxin TCDD in the Noosa River. There have been concerns raised by members of the Noosa community that historical usage of the pesticide 2,4-D and 2,4,5-T in the forestry industry in the Noosa catchment has contaminated the river with TCDD. There is some evidence that TCDD is a contaminant in 2,4-D and is a known contaminant in 2,4,5-T. TCDD cannot be analysed on its own, and so a standard suite of dioxins and furans will be analysed.

Dioxins and furans are persistent organic pollutants (POPs) and are ubiquitous. They are formed by combustion process (e.g. bushfires, sugar cane burns and motor vehicle emissions) as well as being bi-products of manufacturing (such as the production of pesticides). Dioxins are insoluble in water, and so will be found in sediments and biota in the aquatic environment. The National Dioxin Survey found the presence of dioxins in every sediment sample that was tested (Müller et al. 2004).

As there are no guidelines for TCDD in sediments, the best way to assess the results from this survey is to compare the dioxin results to those reported in the National Dioxin Program's *Dioxins in Aquatic Environments in Australia* (Müller et al. 2004). Therefore, the sampling design and methodology outlined in Müller et al. (2004) will be followed.

Noosa council have been using methoprene for many years to control mosquitos, and the use of this chemical is also potentially of concern. Methoprene breaks down rapidly, is only sparingly soluble in water and is likely to bind to sediments. Therefore, the analysis of methoprene in sediments is also going to be undertaken during this survey.

Sampling Sites

Five sites downstream of historic forestry in the Noosa River were chosen (Figure One) for sediment sampling. Two additional control sites in the Cooloola National Park (Figure Two) were also selected. Lakes were chosen as these are likely to be sinks for contaminated sediments.

Sampling Strategy

Sampling will follow that outlined in the *Dioxins in Aquatic Environments in Australia* (Müller et al. 2004) technical report. Ten samples will be collected at each site using a standardised coring device, comprising aluminium tubes (15 cm length, 2.8 cm diameter) attached to a sediment coring device. This methods ensures the collection of sediment from a shallow profile (10 cm depth) of surface sediment. These samples will be composited prior to sending them to the laboratory. The ten samples will be collected in a triangular formation and will be approximately 25 m apart. At three sites samples will be split and sent as blind duplicates to the main analytical laboratory and to a second laboratory. As well as dioxins, particle size distribution and total organic carbon analysis will be undertaken on each sample.

Budget

The total budget for the sampling and analysis is approximately \$16, 233 (exc. GST) (Table One).

References

Müller J, Muller R, Goudkamp K, Shaw M, Mortimer M, Haynes D, Paxman C, Hyne R, McTaggart A, Burniston D, Symons R & Moore M 2004, *Dioxins in Aquatic Environments in Australia*, National Dioxins Program Technical Report No. 6, Australian Government Department of the Environment and Heritage, Canberra.

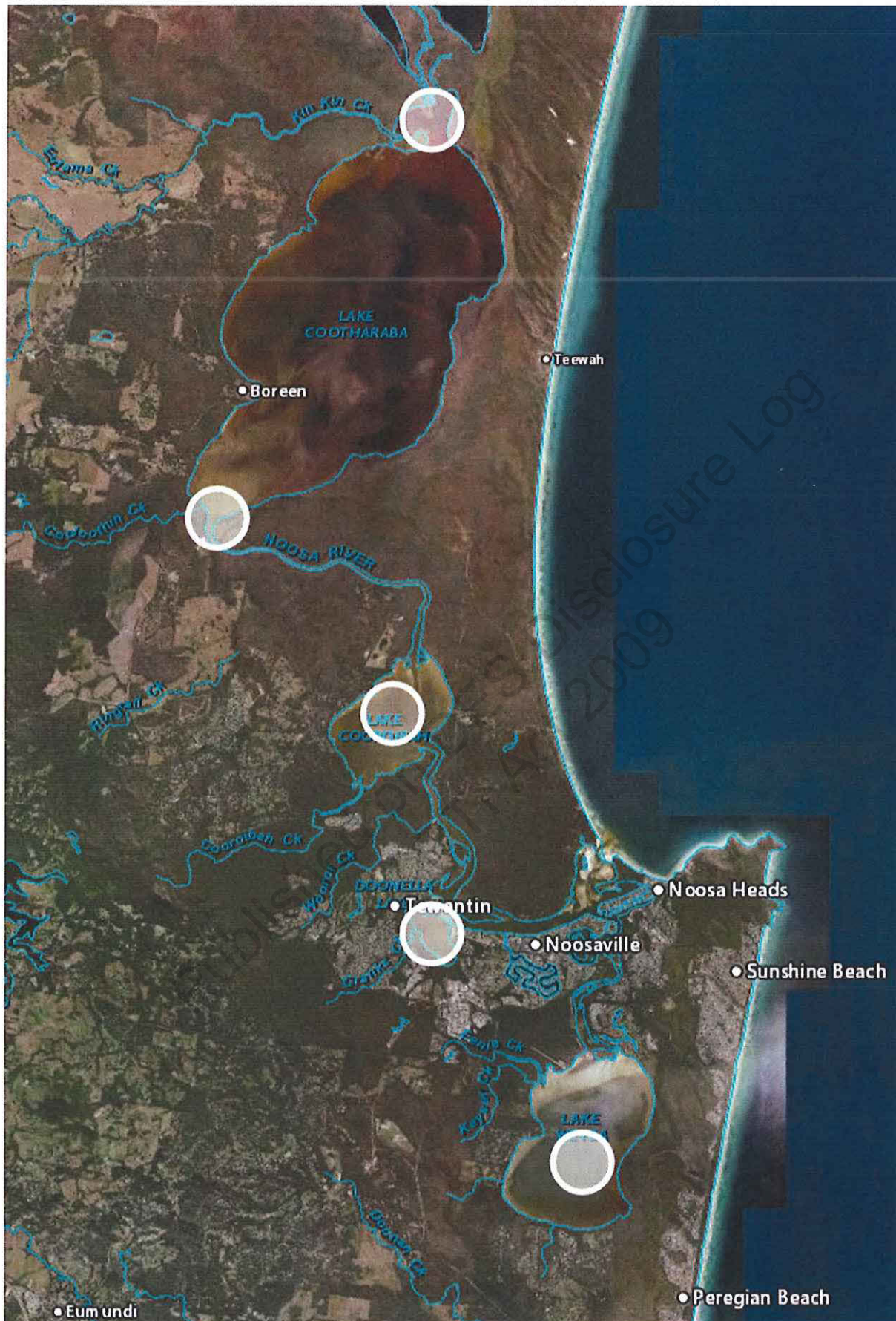


Figure One: Sites in the Noosa River Catchment downstream of historical forestry.

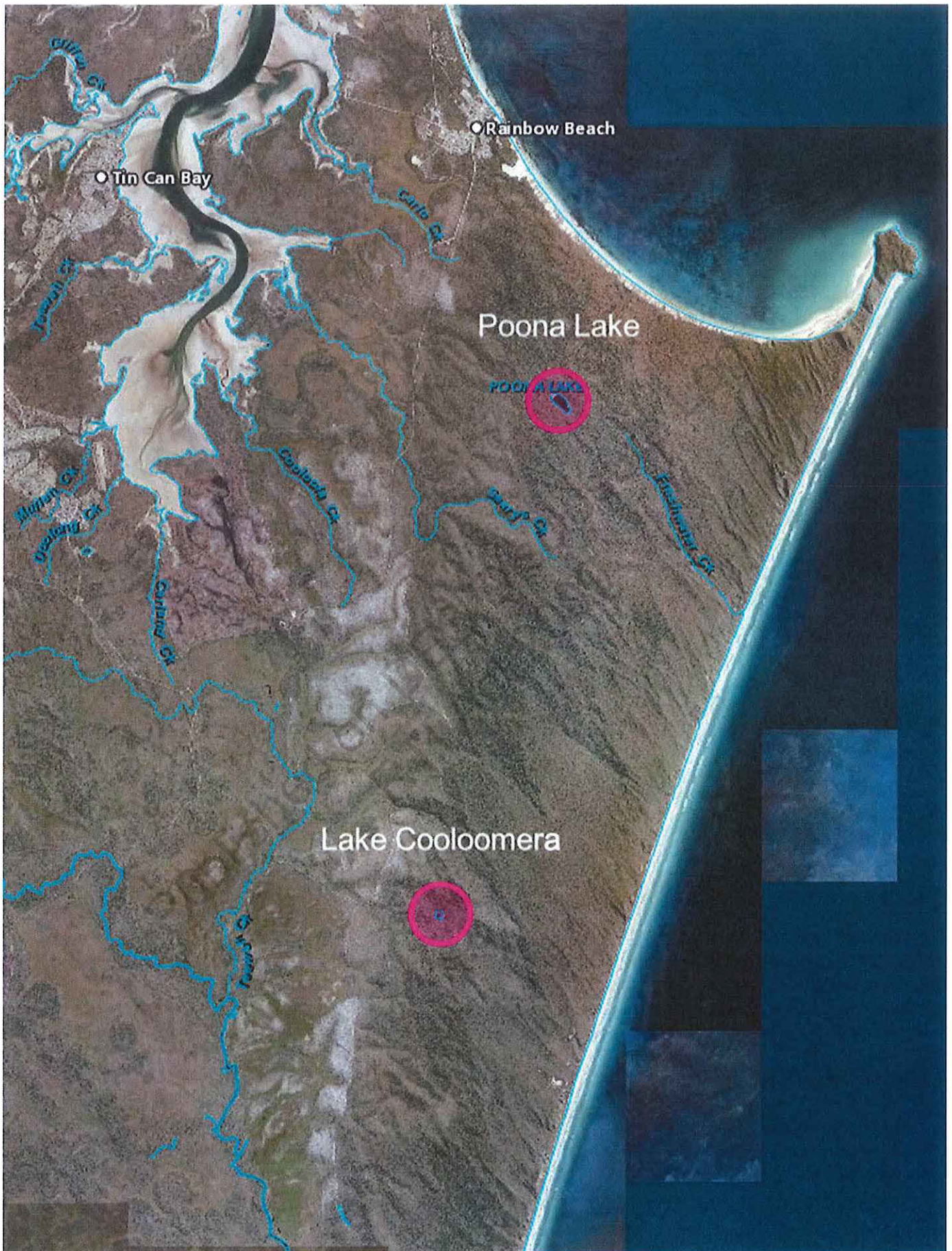


Figure Two: Control sites in the Cooloola National Park

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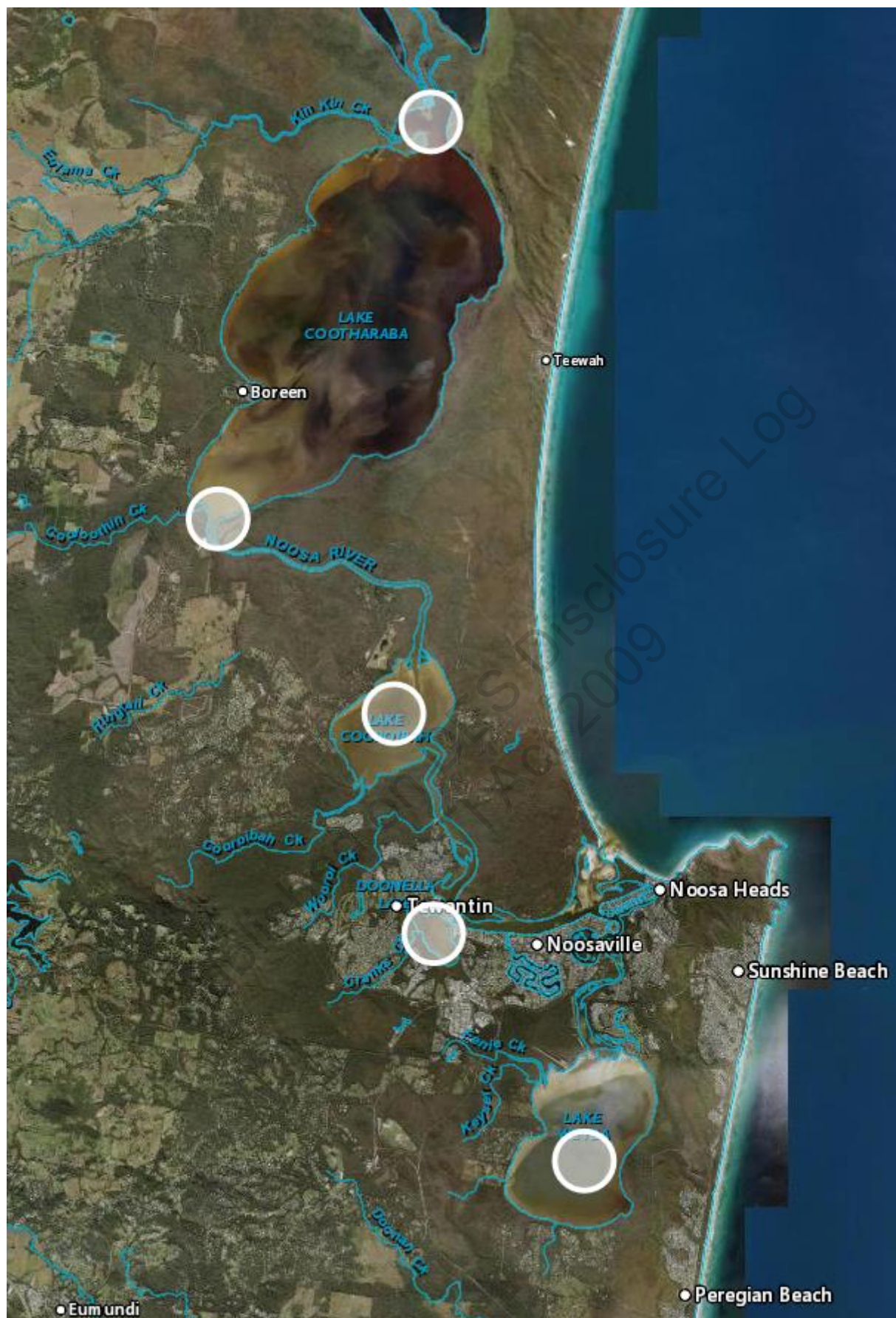


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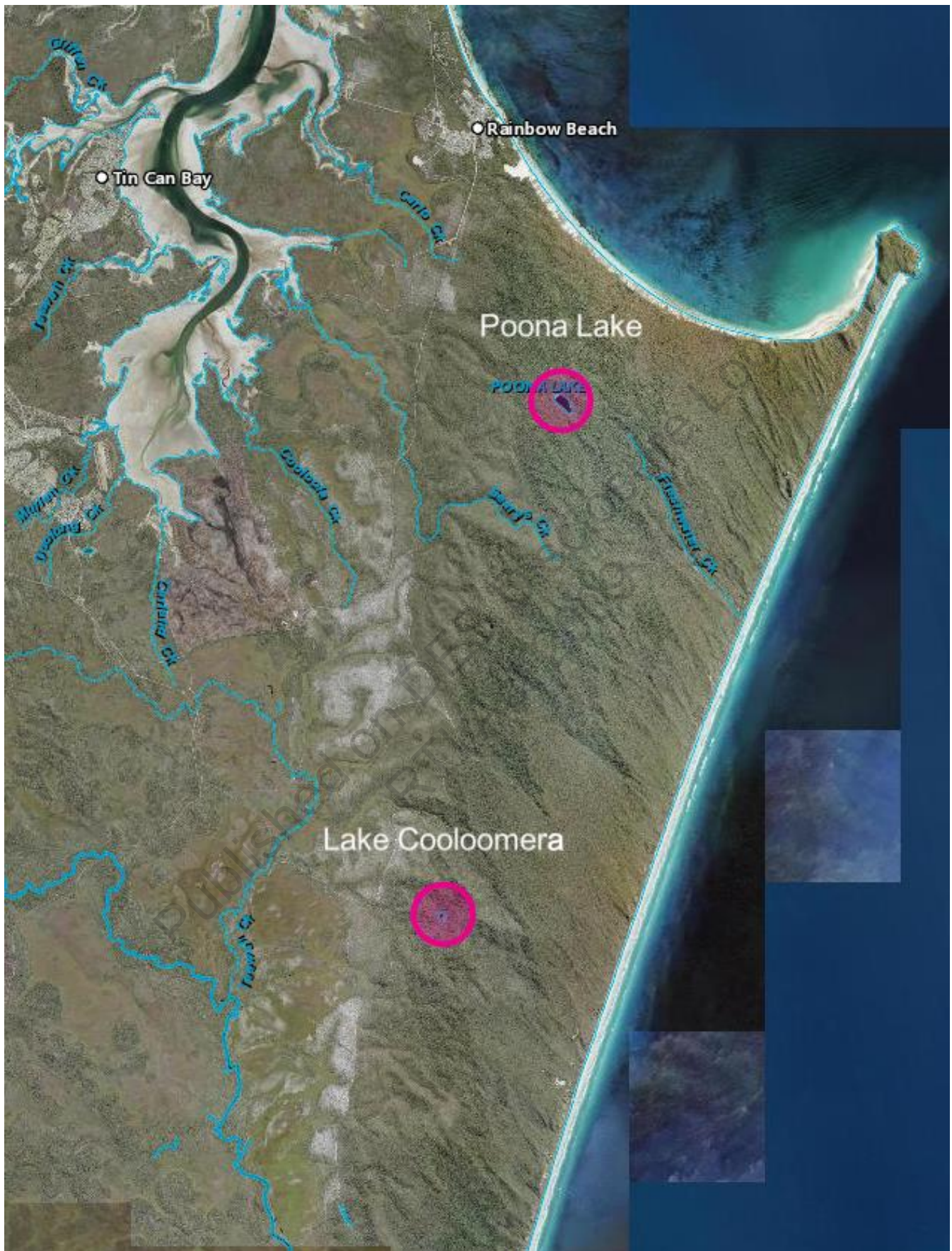


Figure Two: Control sites in the Coolool National Park

Table One: Budget summary

	No. Samples	Cost per sample	Total cost
Dioxin Analysis Laboratory One	10	850	8500
Dioxin Analysis Laboratory Two	3	1521	4563
PSD Analysis	10	36	360
TOC Analysis	10	21	210
Accommodation (2 nights, three people)			
Travel allowance			800
Hotels			1200
Grand total			\$15, 633

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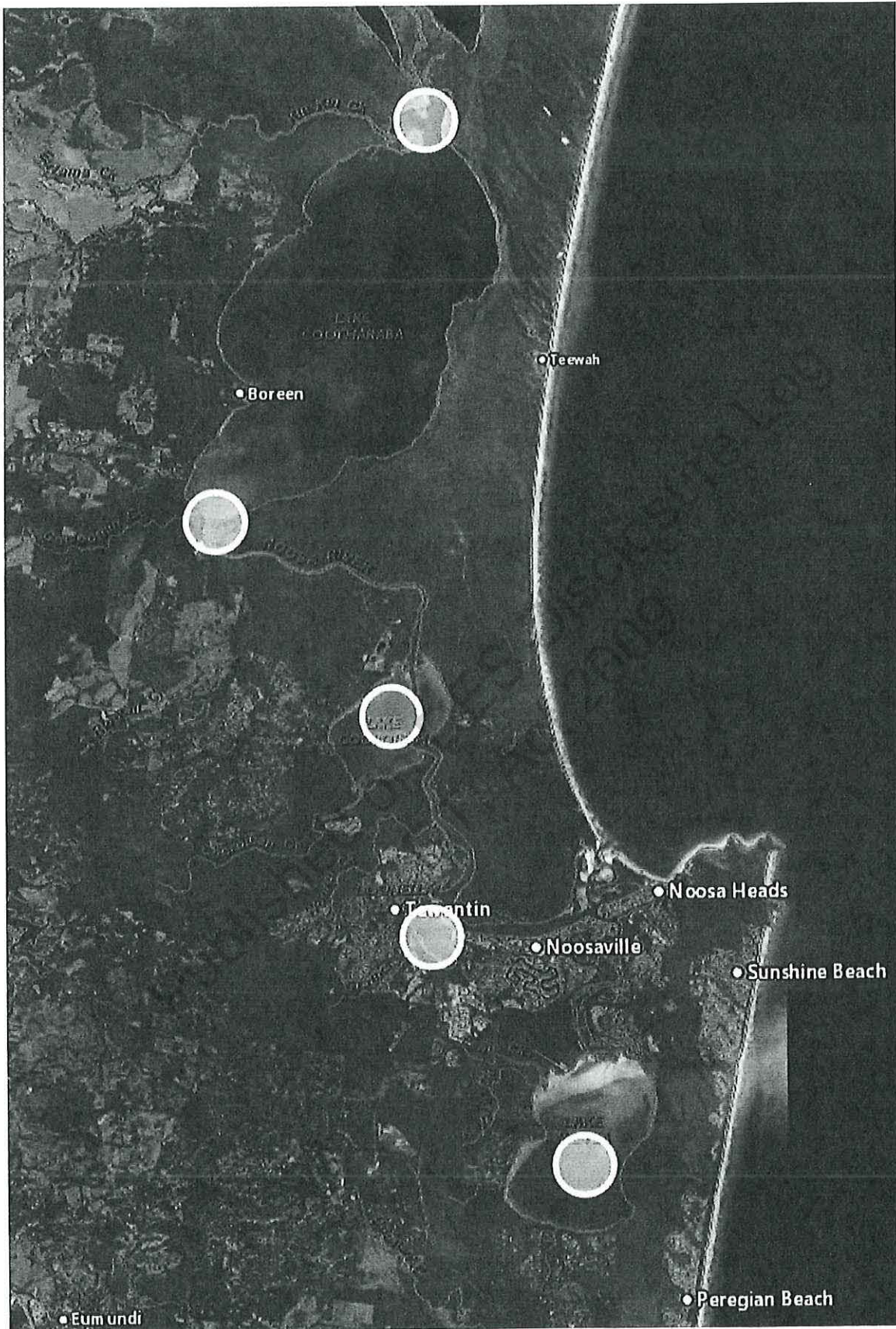


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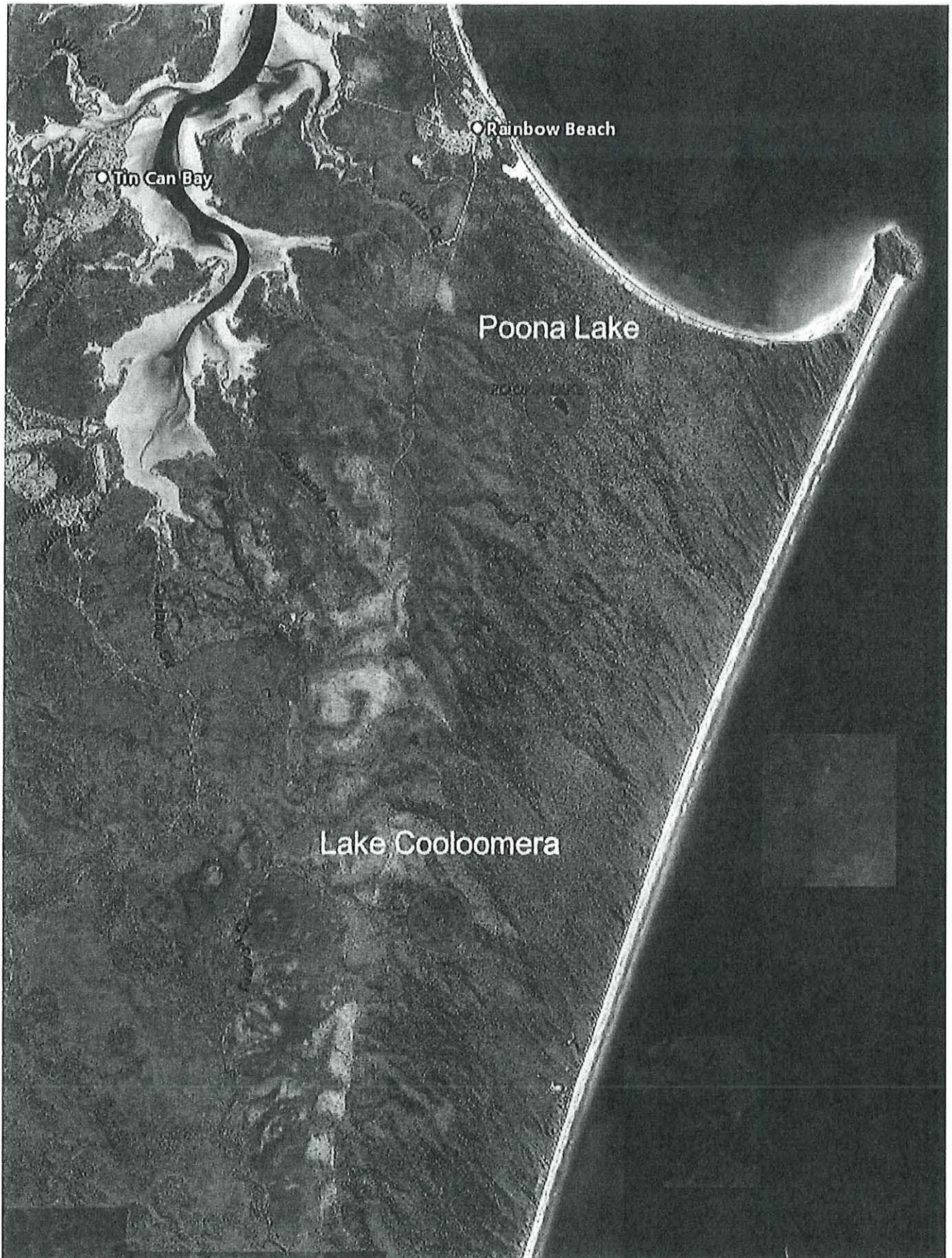


Figure Two: Control sites in the Cooloola National Park