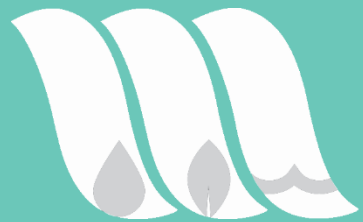


Rous County Council

Liaison Committee - Groundwater

28 August 2018



ROUS
COUNTY COUNCIL

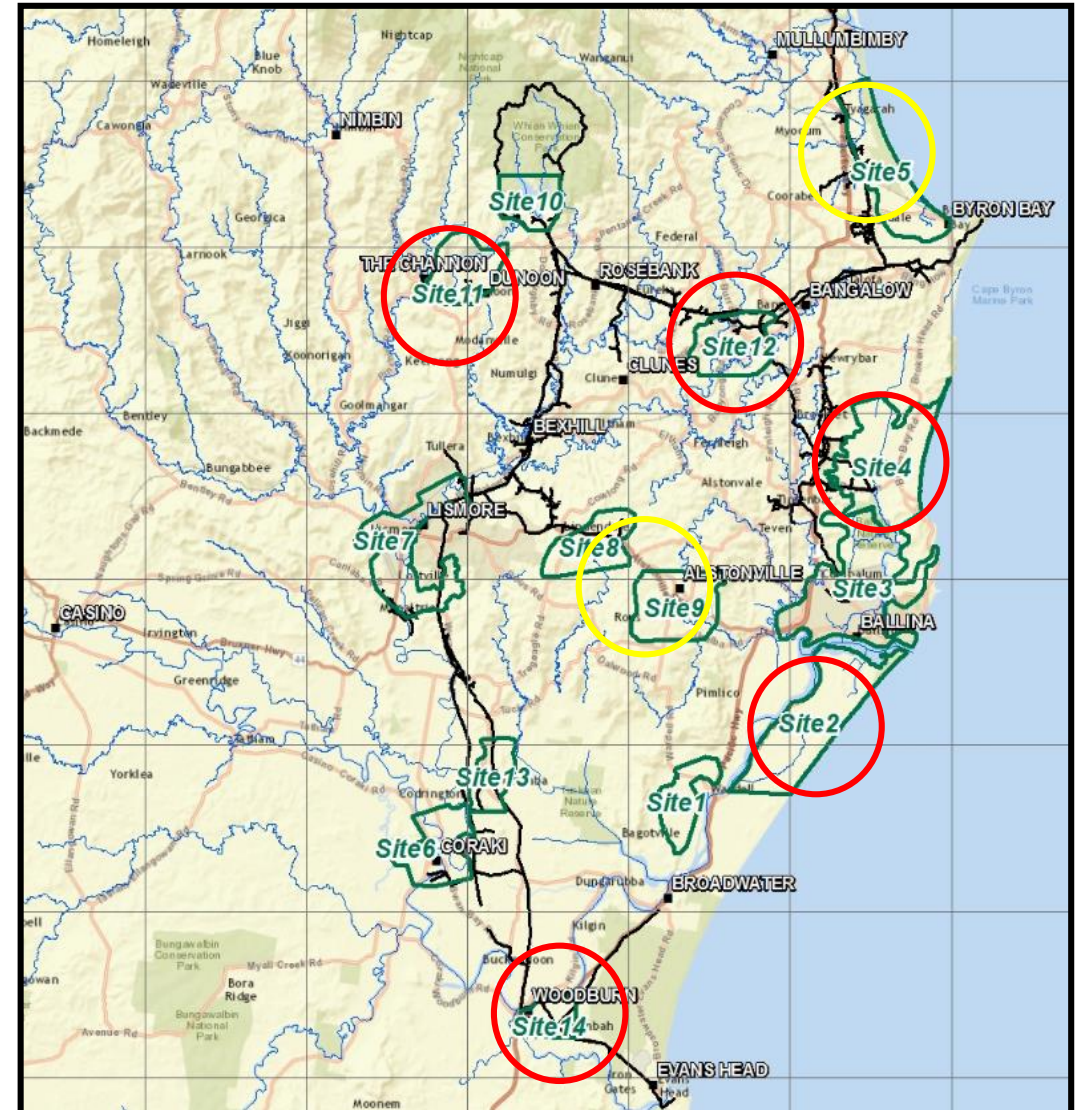
Multi-criteria assessment - outcomes

■ Five shortlisted sites:

- 2: Wardell to Ballina
- 4: North of Lennox Head
- 11: Dunoon
- 12: West of Bangalow
- 14: Woodburn

■ Geology:

- 2 x fractured basalt
- 3 x coastal sands



Woodburn: conceptual layout of proposed borefield

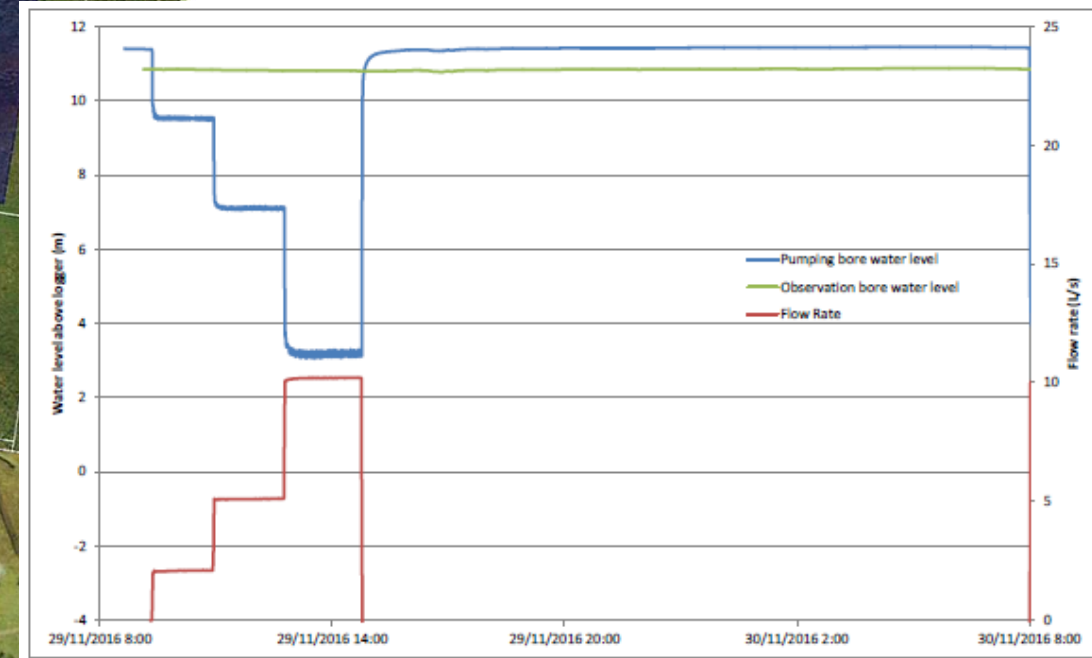
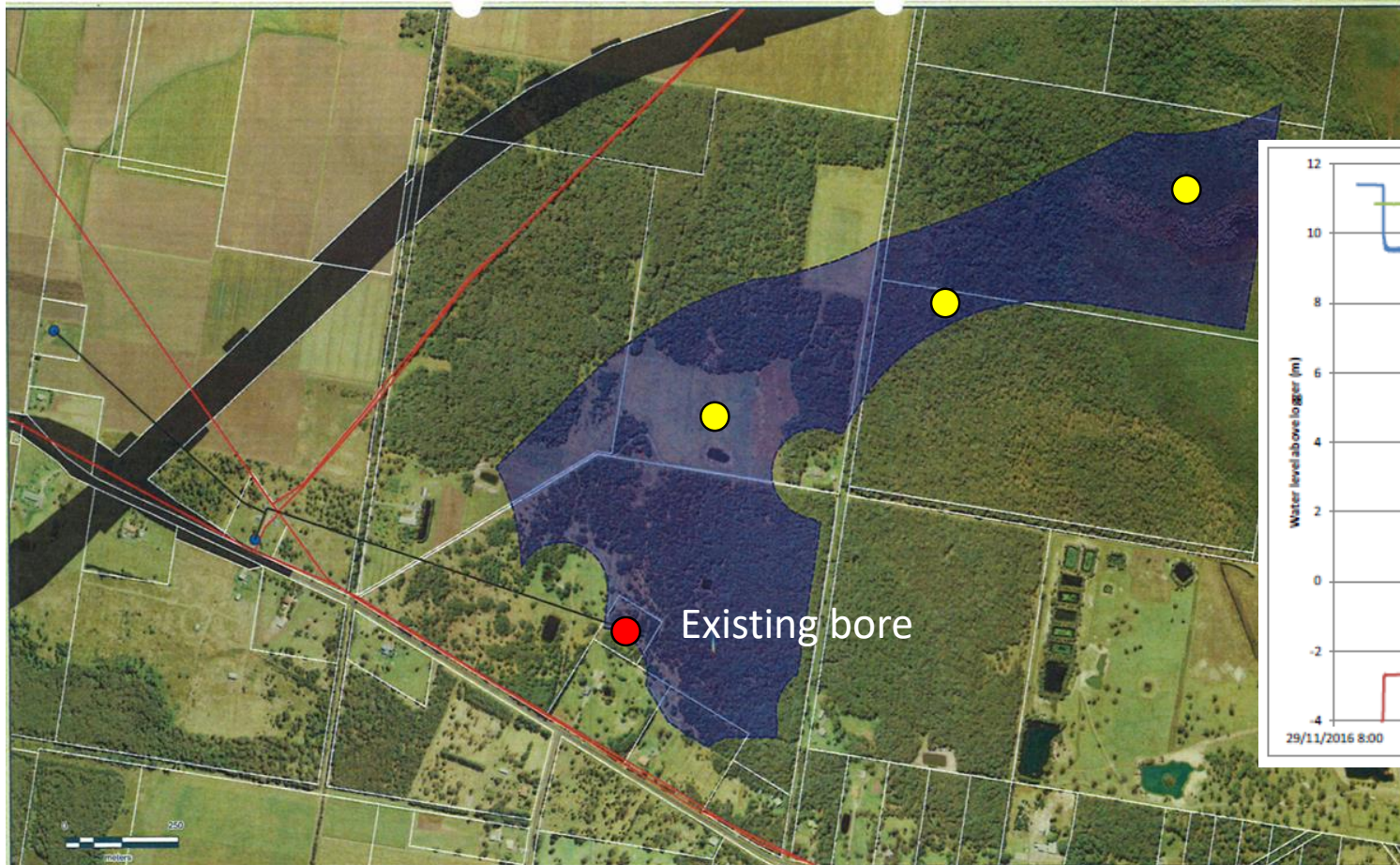


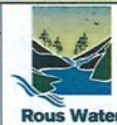
Figure 4: Woodburn Bores - Area identified for further investigation of potential bore sites

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
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- Rous Owned Bore
- Pipeline to Bore
- Turb Main
- Pacific Highway Upgrade
- Constraint Free Area For Potential Bore Site Investigation

Printed Date: 15/04/2016
 Prepared By: Kim Edwards
 Projection: MGA Zone 56

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Woodburn: borefield simulation

Borefield Sustainable Daily Yield 22 hours/day – Conservative and Optimistic yields for a range of bore numbers

No. of Bores	Avg. Bore Spacing (m)	Conservative Sy = 0.01		Optimistic Sy = 0.1	
		Avg. Instantaneous Flow per bore (L/s)	Total Borefield Yield (ML/d)	Avg. Instantaneous Flow per bore (L/s)	Total Borefield Yield (ML/d)
1	-	20	1.6	24	1.9
2	1,700	17	2.8	21	3.4
4	570	12	3.9	16	5.0
6	420	9	4.4	13	6.0
8	290	7	4.7	10	6.5

Woodburn: local town water supply demands

Projected Local Demands** – Woodburn, Evans Head, Broadwater and Coraki

Parent Meter	Existing Demand (2013)			Future (2030)			Future (2060)		
	Total PDD (ML/d)	Total ADD (ML/d)	PDD:ADD	Total PDD (ML/d)	Total ADD (ML/d)	PDD:ADD	Total PDD (ML/d)	Total ADD (ML/d)	PDD:ADD
Broadwater	1.4	0.29	4.7	1.9	0.40	4.7	2.8	0.60	4.7
Woodburn	0.92	0.19	4.8	1.03	0.21	4.8	1.43	0.30	4.8
Evans Head	3.49	0.90	3.9	4.61	1.20	3.9	7.24	1.88	3.9
Coraki	1.26	0.36	3.5	1.26	0.36	3.5	1.26	0.36	3.5
TOTAL	7.0	1.7	4.0	8.8	2.2	4.0	12.7	3.1	4.1

**From Rous Water Long-Term Peak Day Demand Forecast Report, May 2013, Hydrosphere Consulting

Concept plan - water treatment plant

6.2 Capital Cost Estimate

Table 6.1 : Capital Cost Estimate for Borefield, Conventional Treatment, Disinfection and Treated Water Transfer

Item	Description	Amount
A	Woodburn Borefield	\$ 2,559,200
B	Raw Water Transfer Pipework to GWTP	Included in Borefield Cost
C	Conventional Water Treatment Plant, Disinfection and 2ML CWS	\$ 8,733,000
D	Treated Water Transfer	\$ 526,000
Total Construction Cost		\$ 11,818,200
Design, Project Management and Permits for items not covered by allowance in NSW Reference Rates (15%)		\$1,772,730
Contingency (25%)		\$3,397,733
Estimated Capital Cost – Construction and On-costs		\$16,988,663

Table 6.2 : Capital Cost Estimate for Ozone/BAC Process

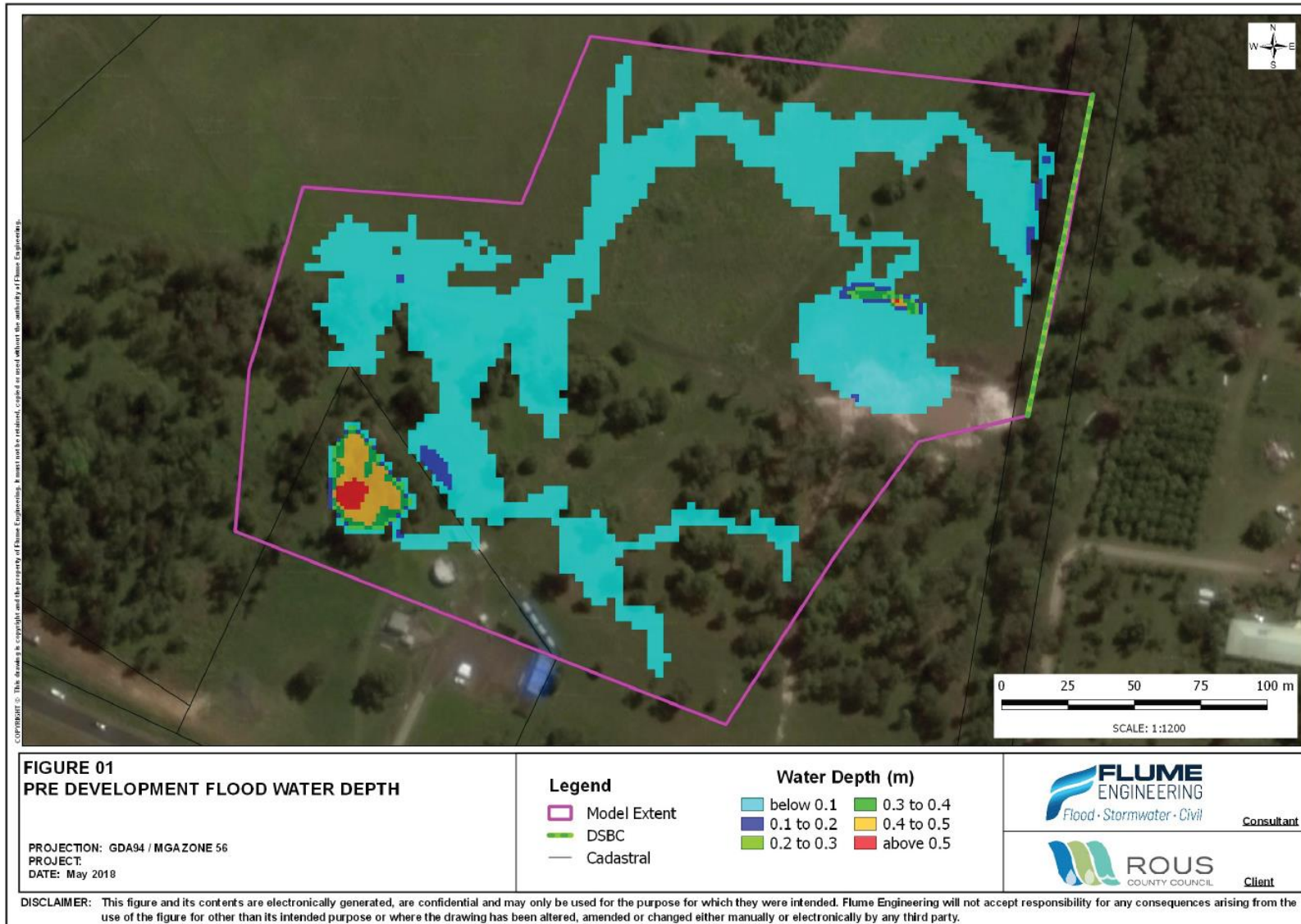
Item	Description	Amount
C2	Ozone/BAC Process	\$ 3,865,000
Total Construction Cost		\$ 3,865,000
Design, Project Management and Permits for items not covered by allowance in NSW Reference Rates (15%)		\$579,750
Contingency (25%)		\$1,111,188
Estimated Capital Cost – Construction and On-costs		\$ 5,555,938

CCE Figures do not include for power to the bore or WTP sites. Also no land acquisition/easement costs have been included.

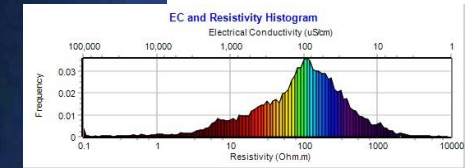
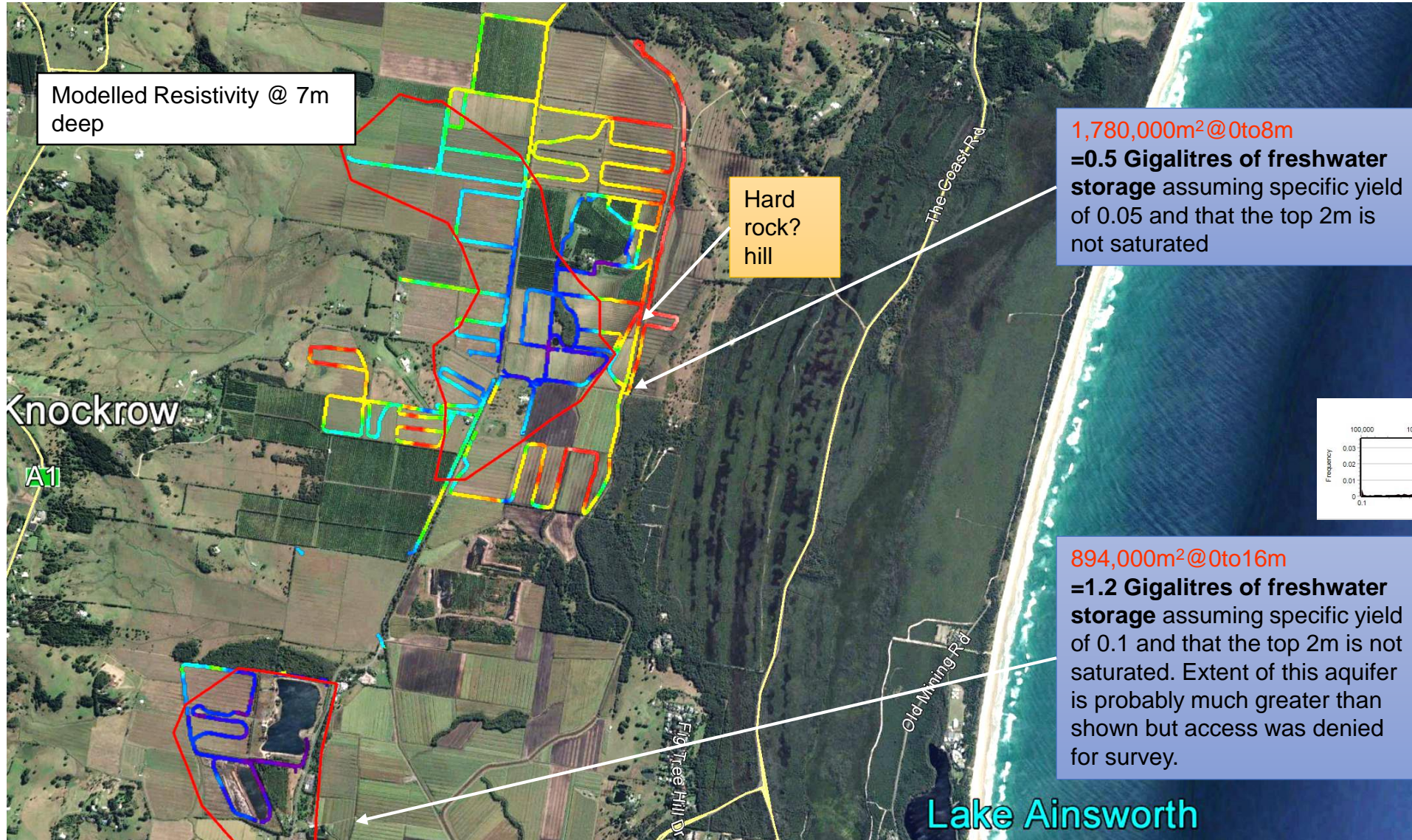


Figure 4.3 : Concept Layout for new Groundwater Treatment Plant

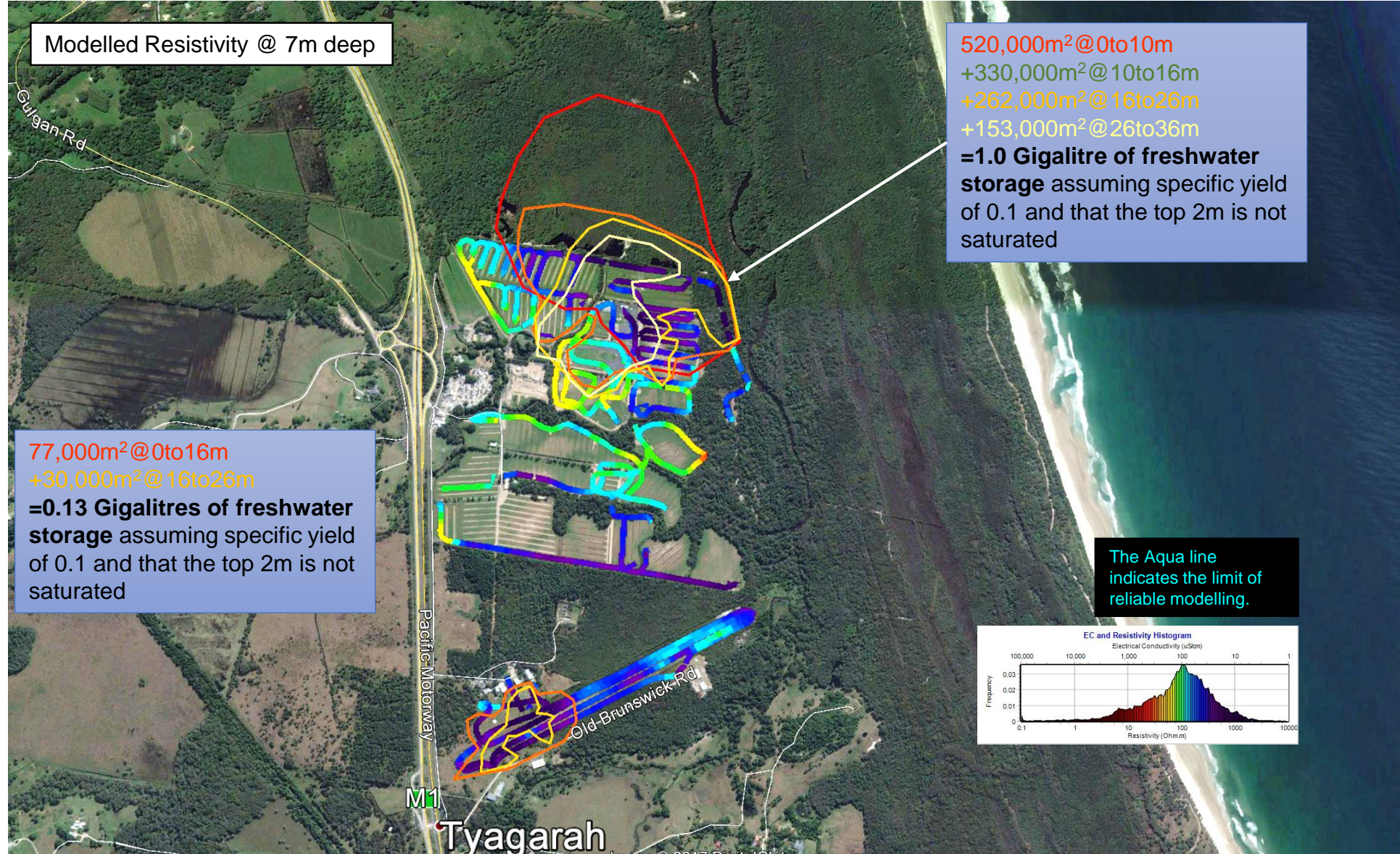
Seven pump test – flood assessment



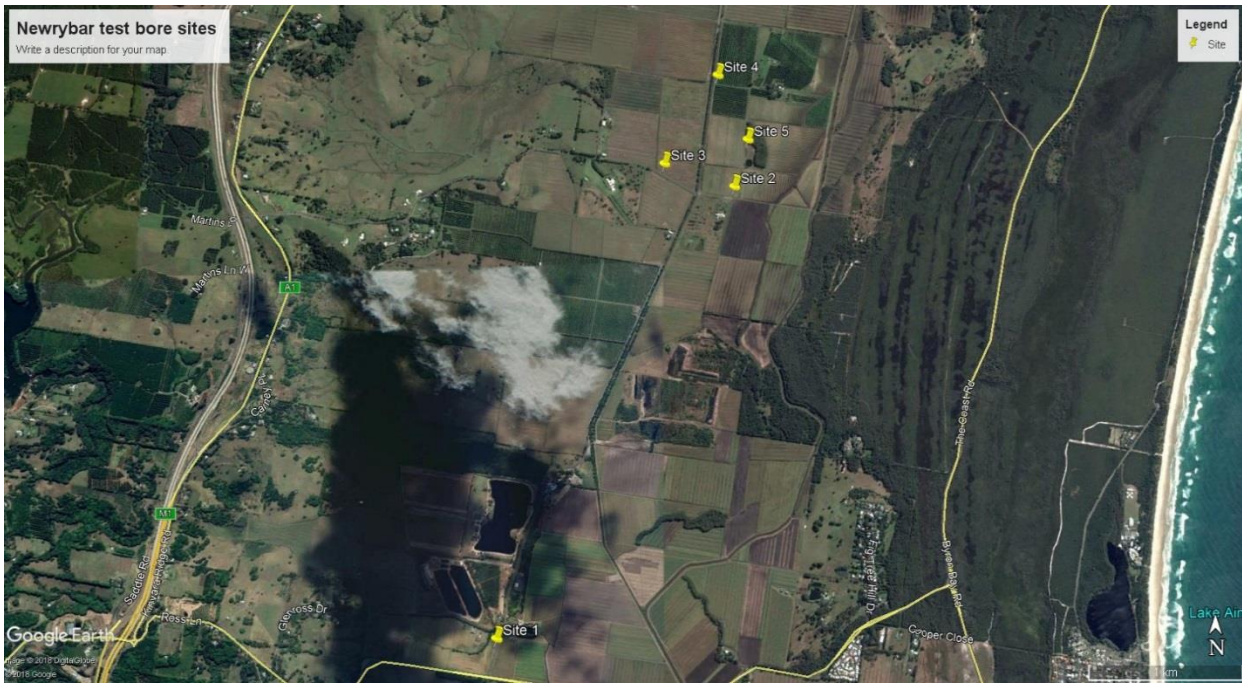
Aquifers inferred at Newrybar



Inferred freshwater storage Tyagarah

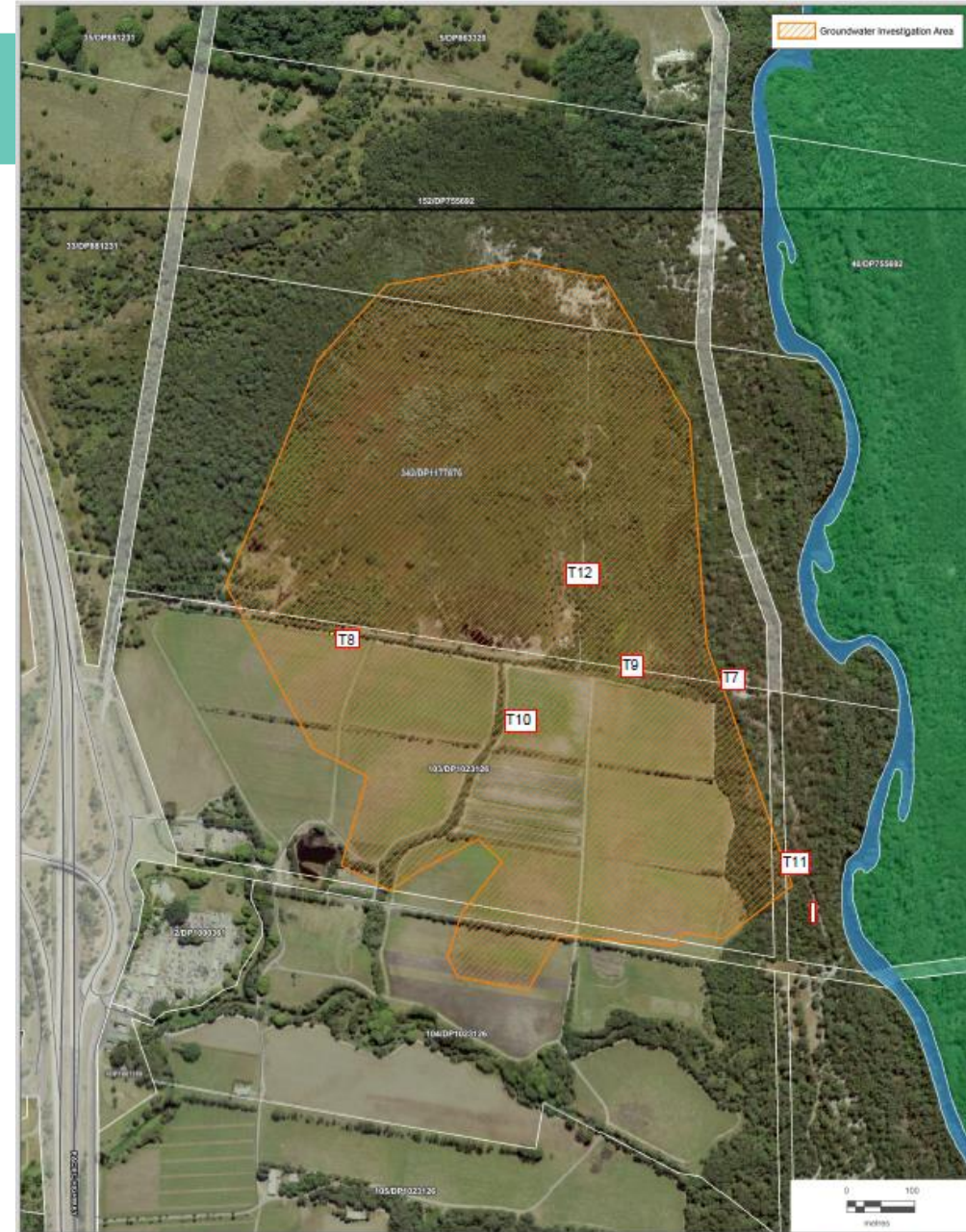


Potential bore sites



Potential bore sites

Item	Quantity/unit	Rate	Cost (GST excl.)
Mobilise/Demobilise	1	\$3,800	\$3,800
Site setup: test holes	17 sites	\$1,100	\$18,700
Drill test holes to 30m	510 m	\$99	\$50,490
Geophysical logging (see notes)	9 bores	\$3,000	\$27,000
Ream/construct as test production bore	6 bores	\$18,000	\$108,000
Pumping test	3 bores	\$15,000	\$45,000
			\$252,990



Groundwater Investigation Area

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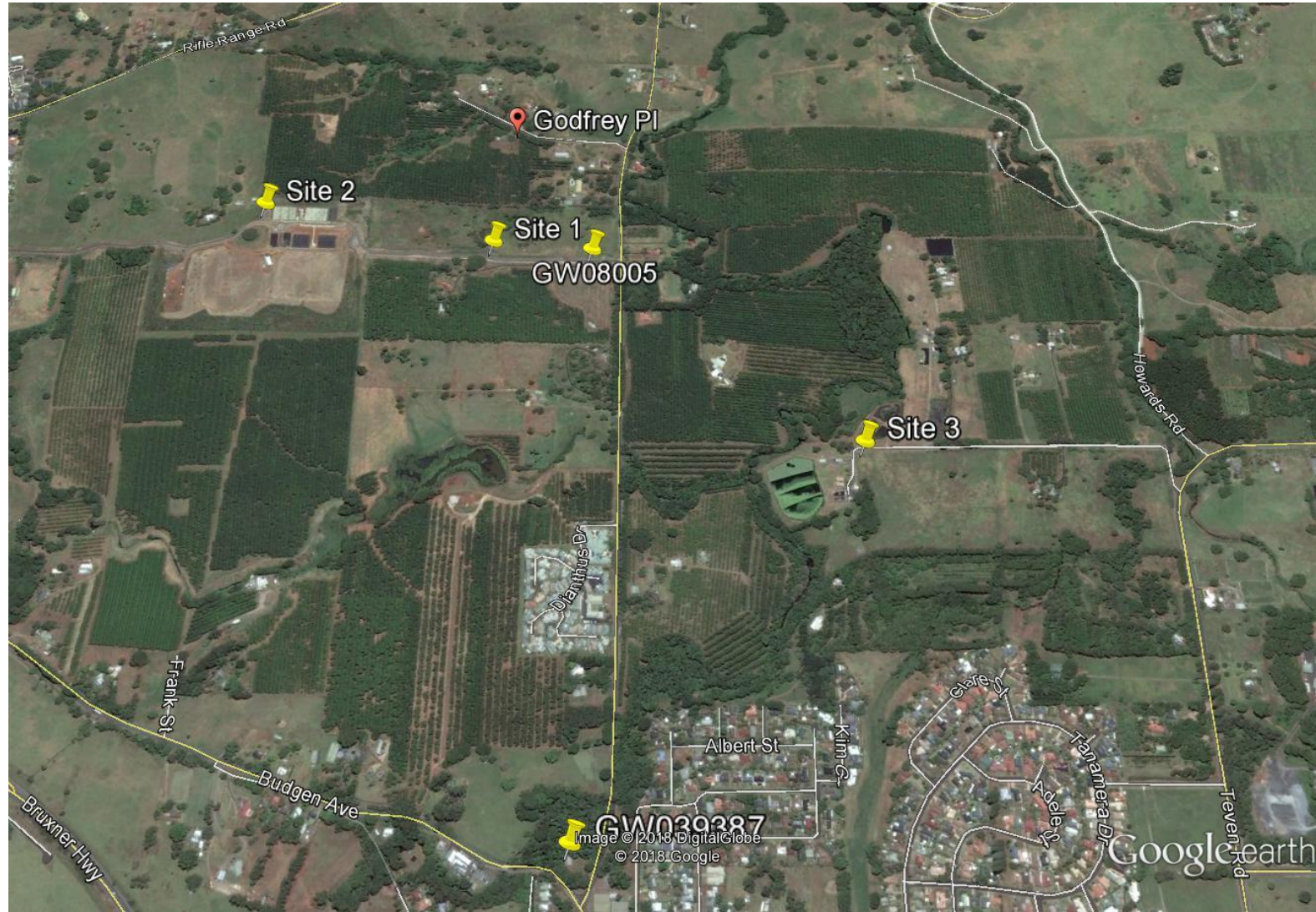


Printed Date: 12/03/2018
 Prepared By: Kim Edwards
 Projection: MGA Zone 56

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Alstonville area



Alstonville area



Alstonville - Site 1 – Looking West.



Alstonville - Site 2 – Looking West



Item	Quantity/unit	Rate	Cost (GST excl.)
Converys Lane replacement	1	\$40,000	\$40,000
Lumley Park north: Test hole to 150m (not constructed)	1	\$23,000	\$23,000
Lumley Park north: 150m test production bore & pumping tests	2	\$40,000	\$80,000
			\$143,000

Next step

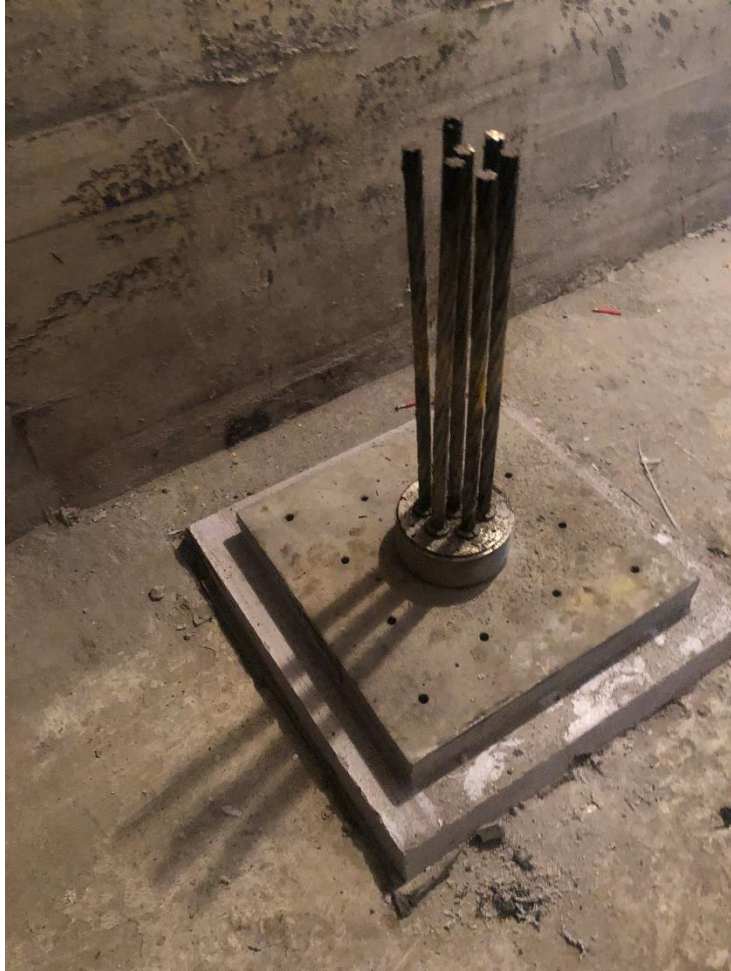
- Completed a seven day pump test at Woodburn (awaiting analysis)
- Strategy drilling project for Newrybar and Tyagarah (Sept – Feb??)
- Deep aquifer testing in the Alstonville Plateau (Sept – Feb??)
- Further geophysical testing South Ballina (Early 2019)
- Testing plan for Binna Burra site 12 West of Bangalow (Late 2019)

Questions?

History of anchors



Completed remediation works – ECD anchors



Questions?

Rocky Creek Dam - New plug Project

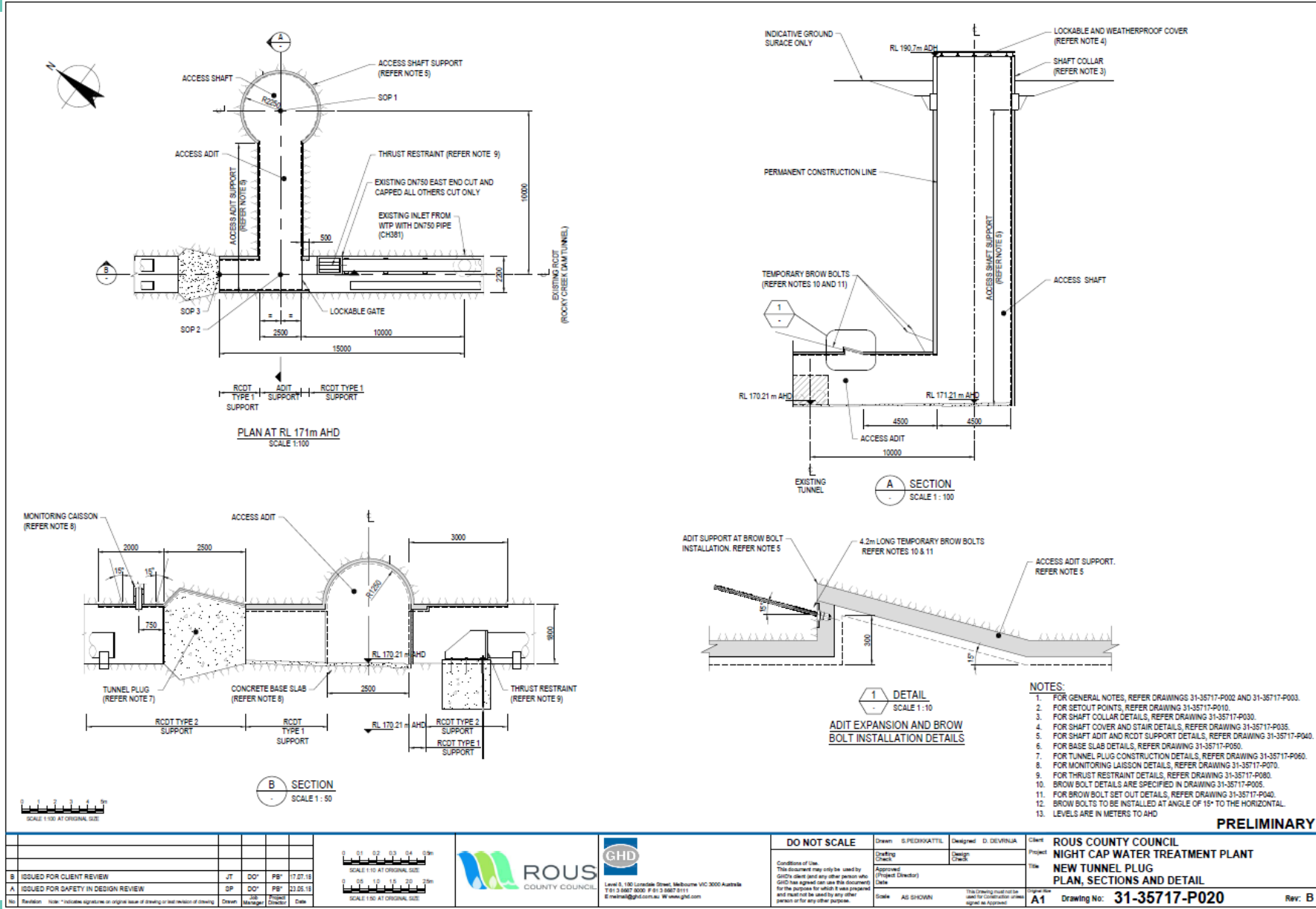
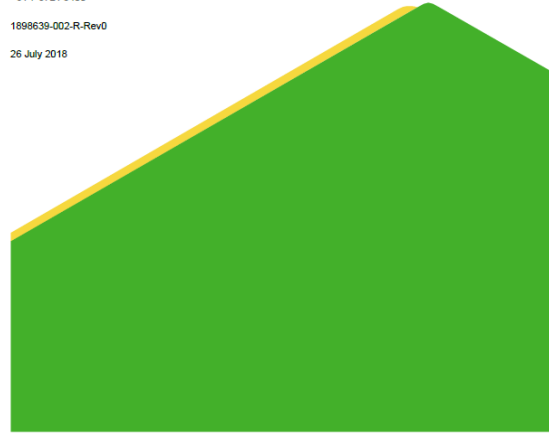


REPORT
Rous County Council - New Tunnel Bulkhead at Nightcap Water Treatment Plant
 Supplementary Geotechnical Investigation for design of new tunnel bulkhead

Submitted to:
Alexander Manning - Project Manager North
 Rous County Council
 Level 4, 218-232 Molesworth Street
 PO Box 230
 Lismore NSW 2480

Submitted by:
Golder Associates Pty Ltd
 147 Coronation Drive Milton, Queensland 4064 Australia

+61 7 3721 5400
 1898639-002-R-Rev0
 26 July 2018



B ISSUED FOR CLIENT REVIEW JT DC* PE* 17.07.18				Scale 1:10 AT ORIGINAL SIZE 0 0.5 1.0 1.5 2.0 2.5m						DO NOT SCALE Drawn: S.PEDRIGATTI, Checked: [blank], Approved: [blank], Date: [blank] Scale: AS SHOWN	Client: ROUS COUNTY COUNCIL Project: NIGHT CAP WATER TREATMENT PLANT Title: NEW TUNNEL PLUG PLAN, SECTIONS AND DETAIL Drawing No: 31-35717-P020	Rev: B
A ISSUED FOR SAFETY IN DESIGN REVIEW SP DC* PE* 23.05.18				Scale 1:50 AT ORIGINAL SIZE 0 0.5 1.0 1.5 2.0 2.5m								

PRELIMINARY

Rocky Creek Dam - New plug Project - next steps

- Tender (September – November)
- Connections completed by (Early 2019)
- Construction Completed (June 2019)

Questions?