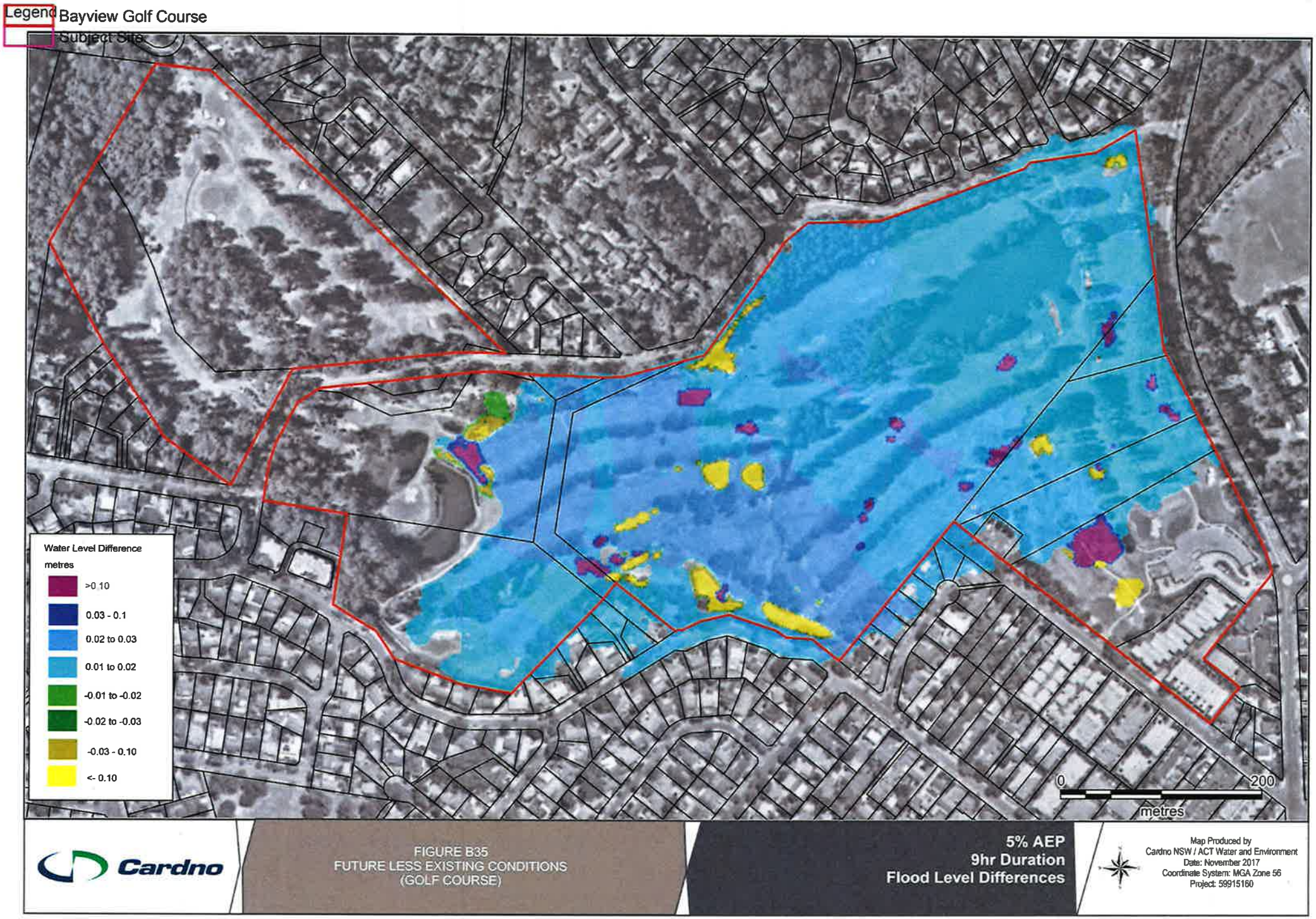
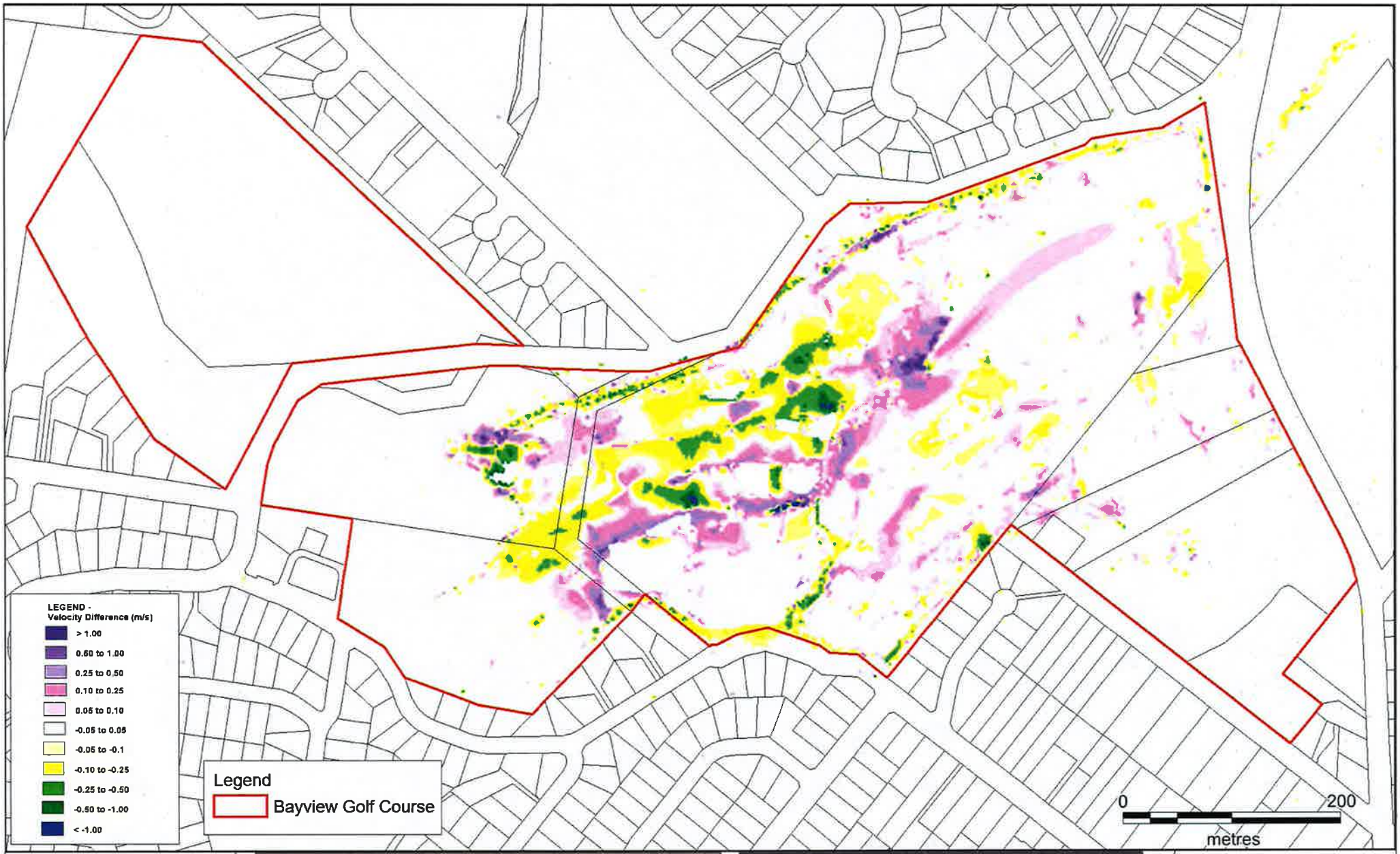


Cardno

FIGURE B35
FUTURE LESS EXISTING CONDITIONS
(GOLF COURSE)

5% AEP
9hr Duration
Flood Level Differences

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

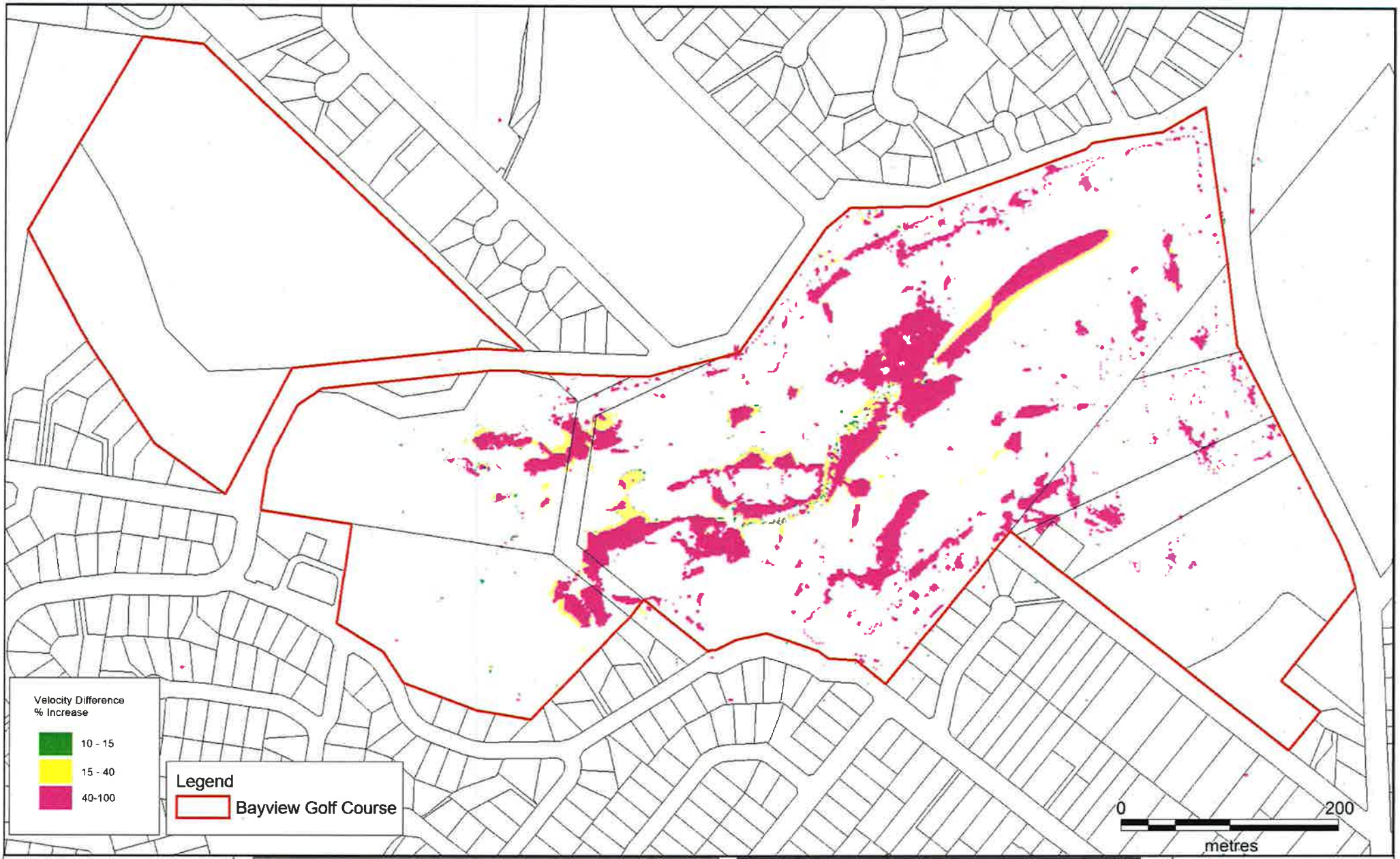


Cardno

FIGURE B36

5% AEP
9hr Duration
Velocity Difference

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

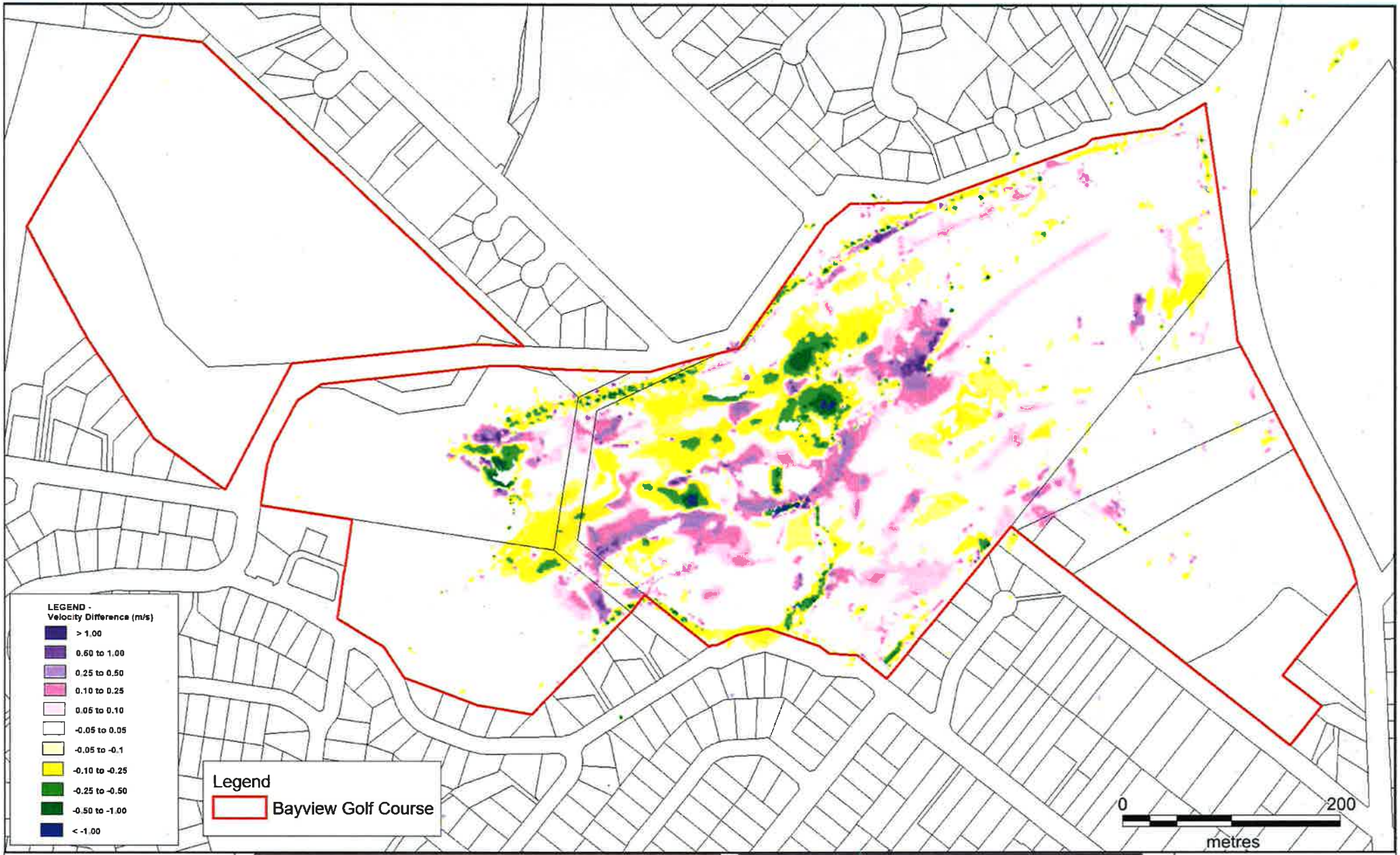


Cardno

FIGURE B37

5% AEP
9hr Duration
Velocity Difference (Percentage)

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

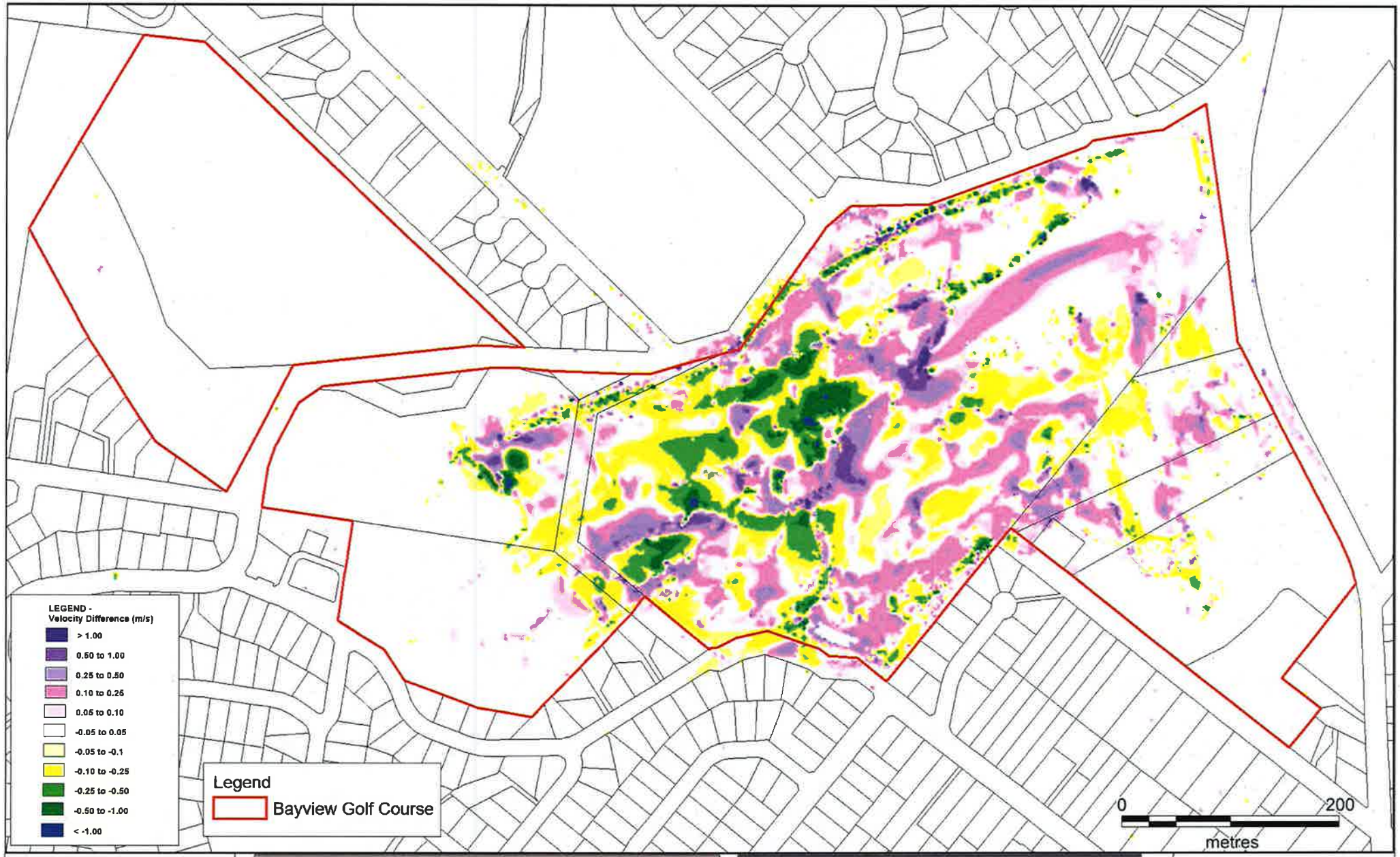


Cardno

FIGURE B38

1% AEP
9hr Duration
Velocity Difference

Map Produced by
Cardno NSW / ACT Water and Environment
Date November 2017
Coordinate System MGA Zone 56
Project 59915160

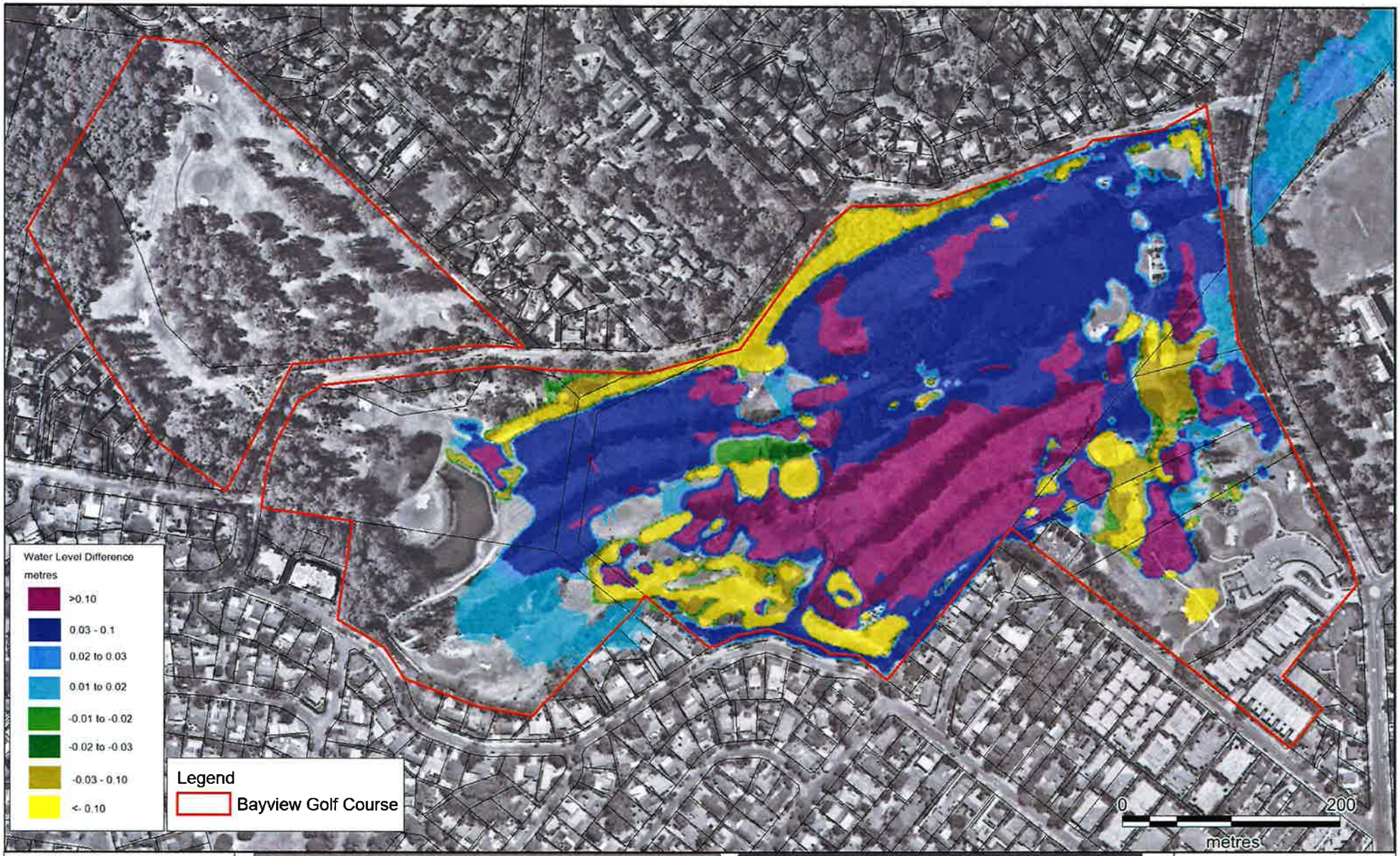


Cardno

FIGURE B39

PMF
2hr Duration
Velocity Difference

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

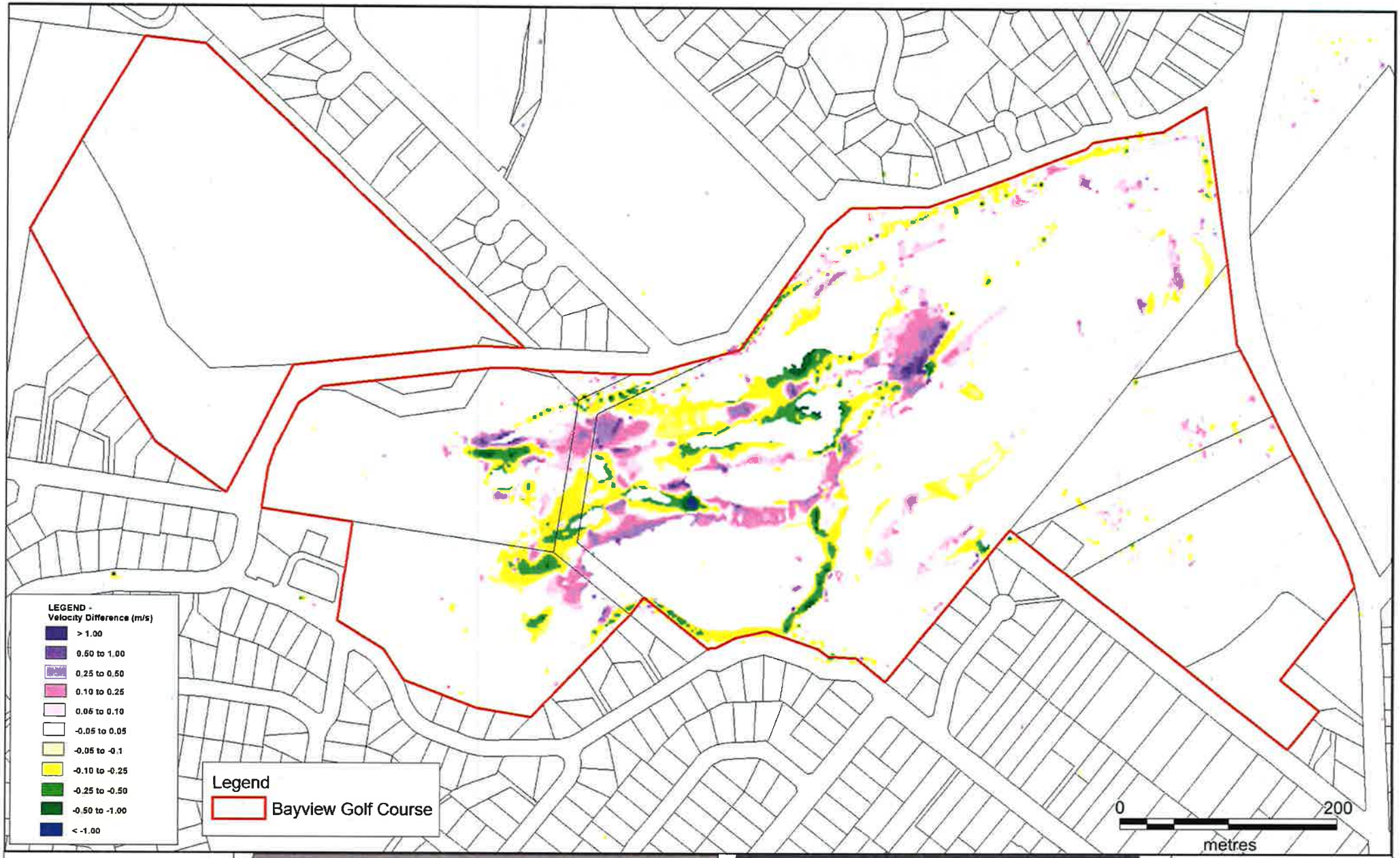


Cardno

FIGURE B40
FUTURE LESS EXISTING CONDITIONS
(GOLF COURSE)

50% AEP
9hr Duration
Flood Level Differences

Map Produced by
Cardno NSW / ACT Water and Environment
Date November 2017
Coordinate System MGA Zone 56
Project 59915160

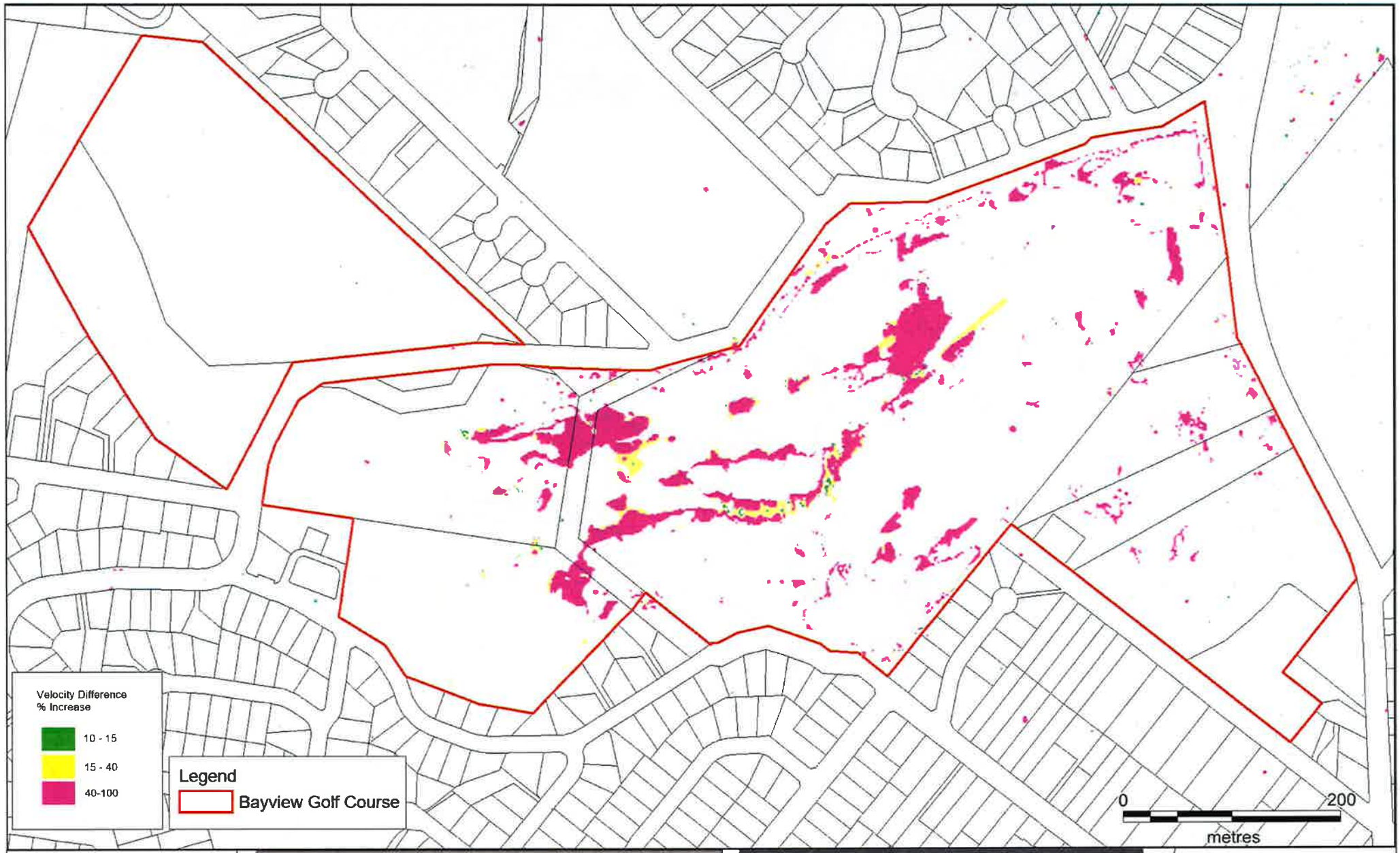


Cardno

FIGURE B41

50% AEP
9hr Duration
Velocity Difference

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

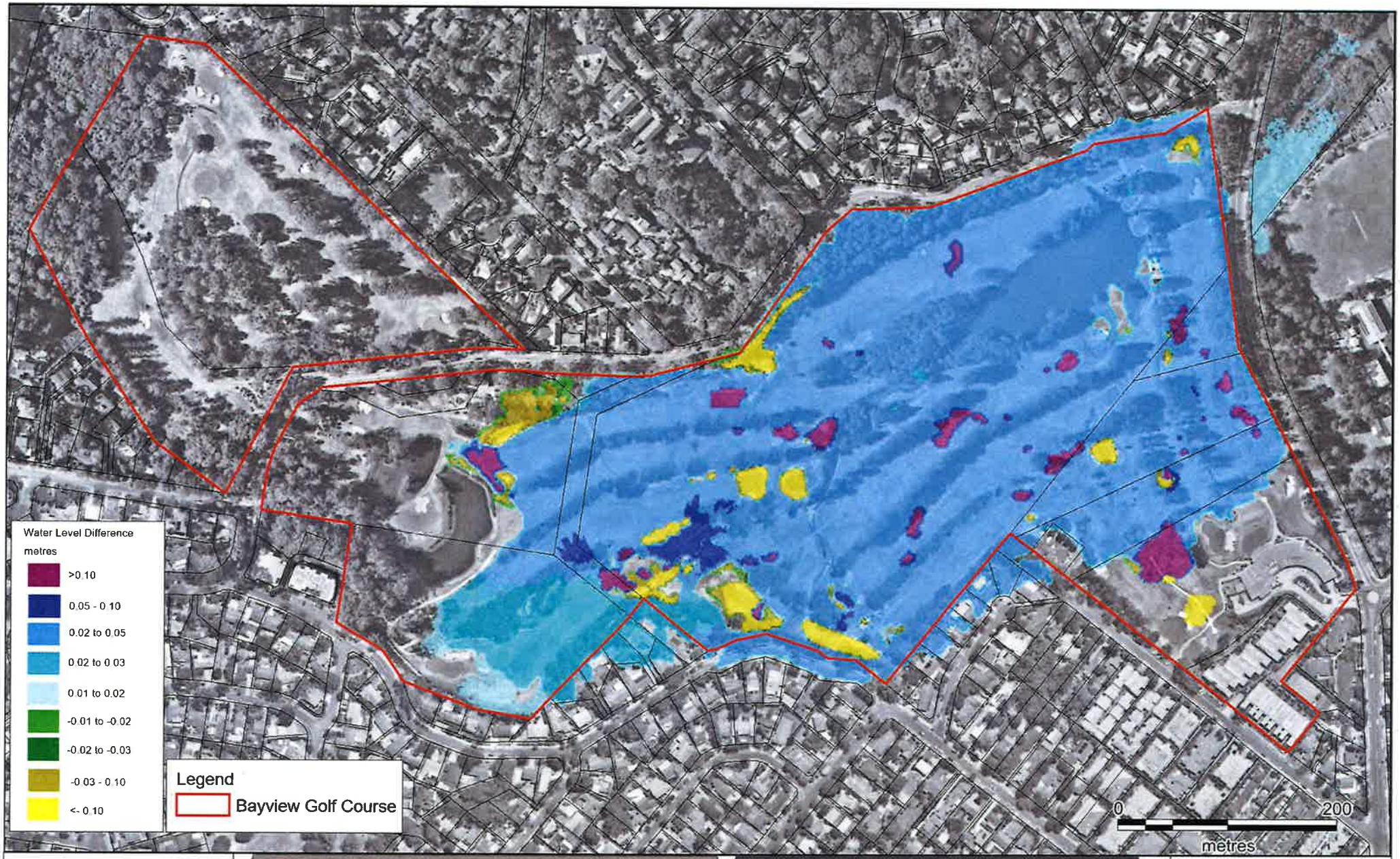


Cardno

FIGURE B42

50% AEP
9hr Duration
Velocity Difference (Percentage)

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

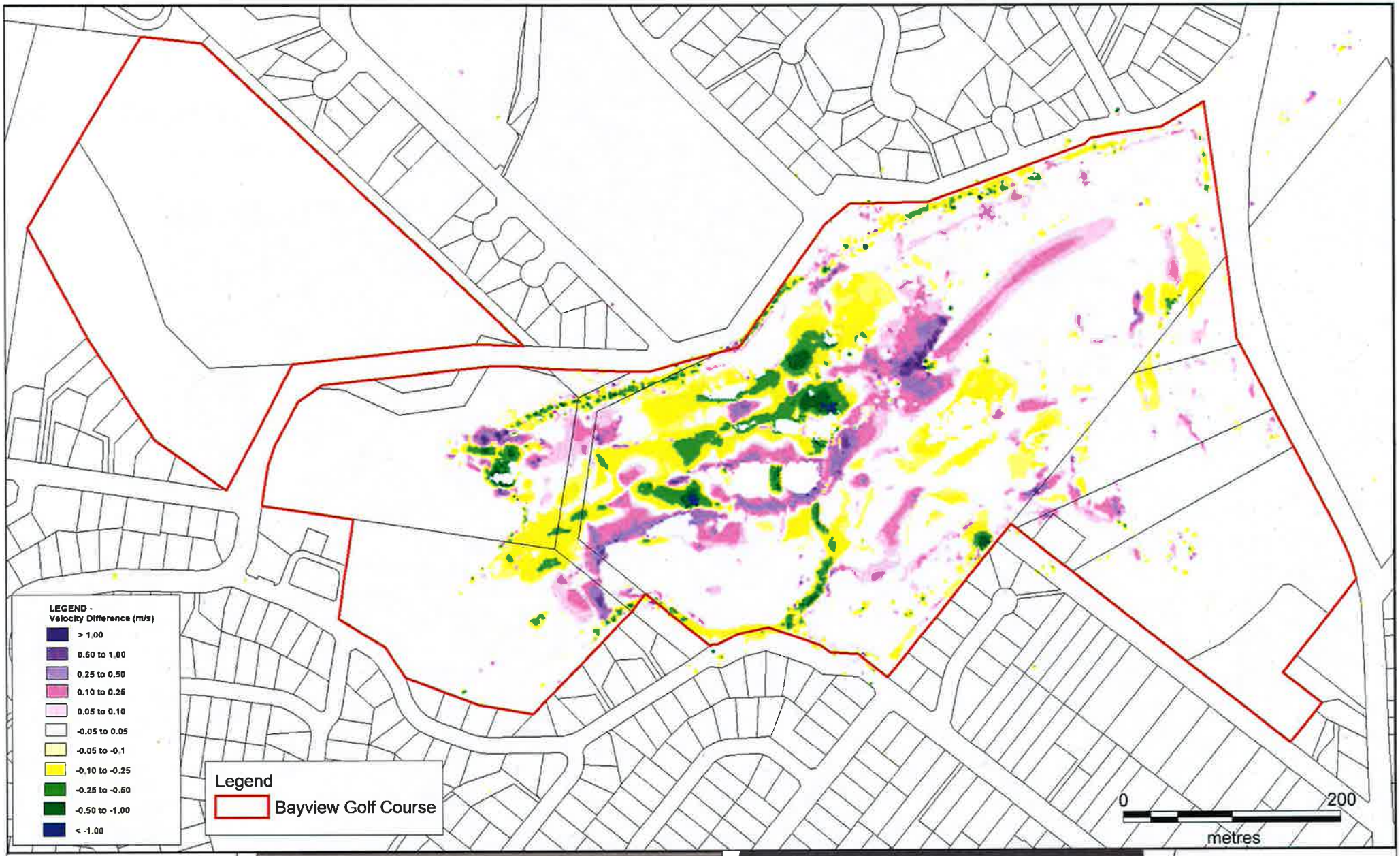


Cardno

FIGURE B43
FUTURE LESS EXISTING CONDITIONS
(GOLF COURSE)

5% AEP
9hr Duration Low Tailwater
Flood Level Differences

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915180

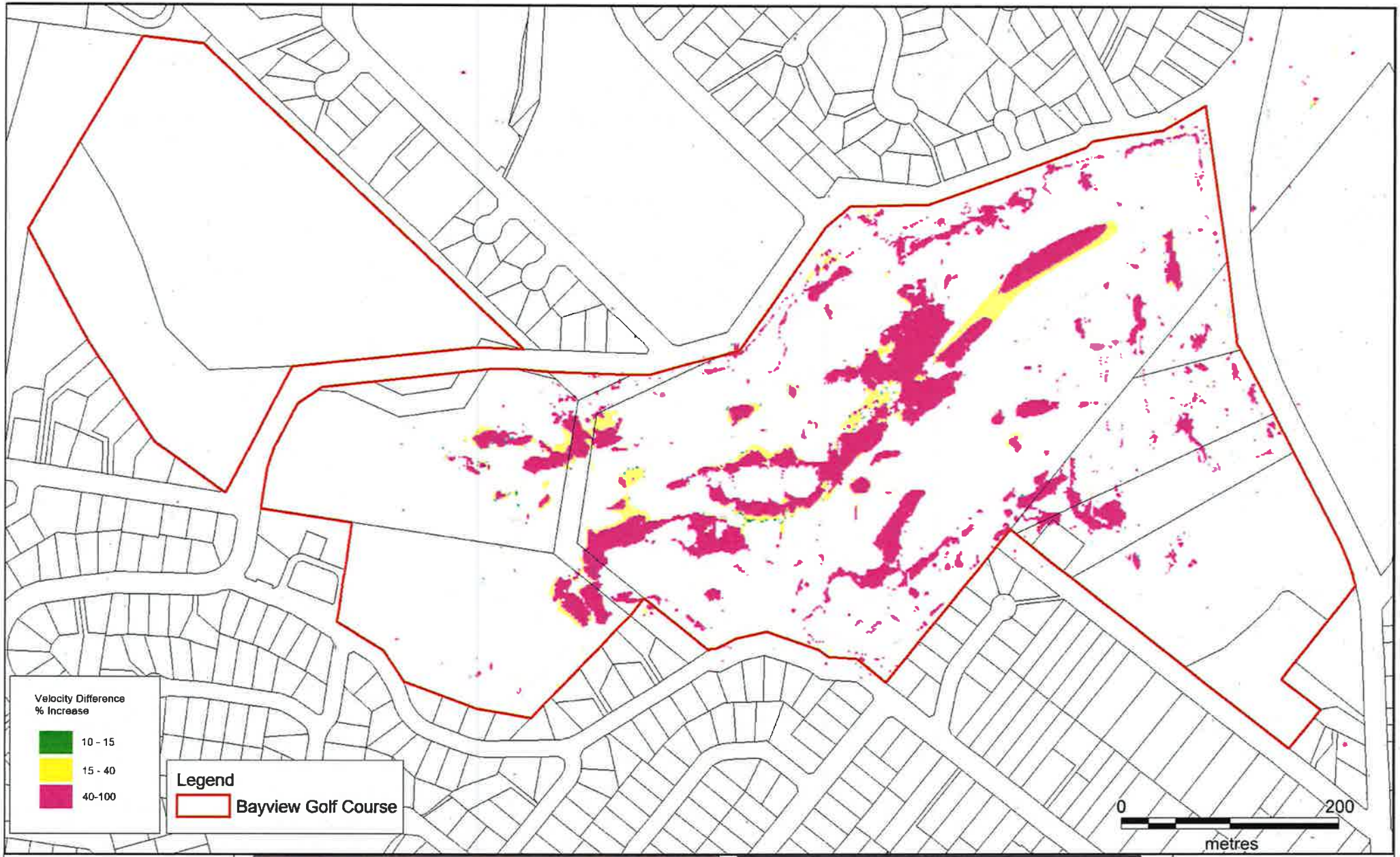


Cardno

FIGURE B44

5% AEP
9hr Duration Low Tailwater
Velocity Difference

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

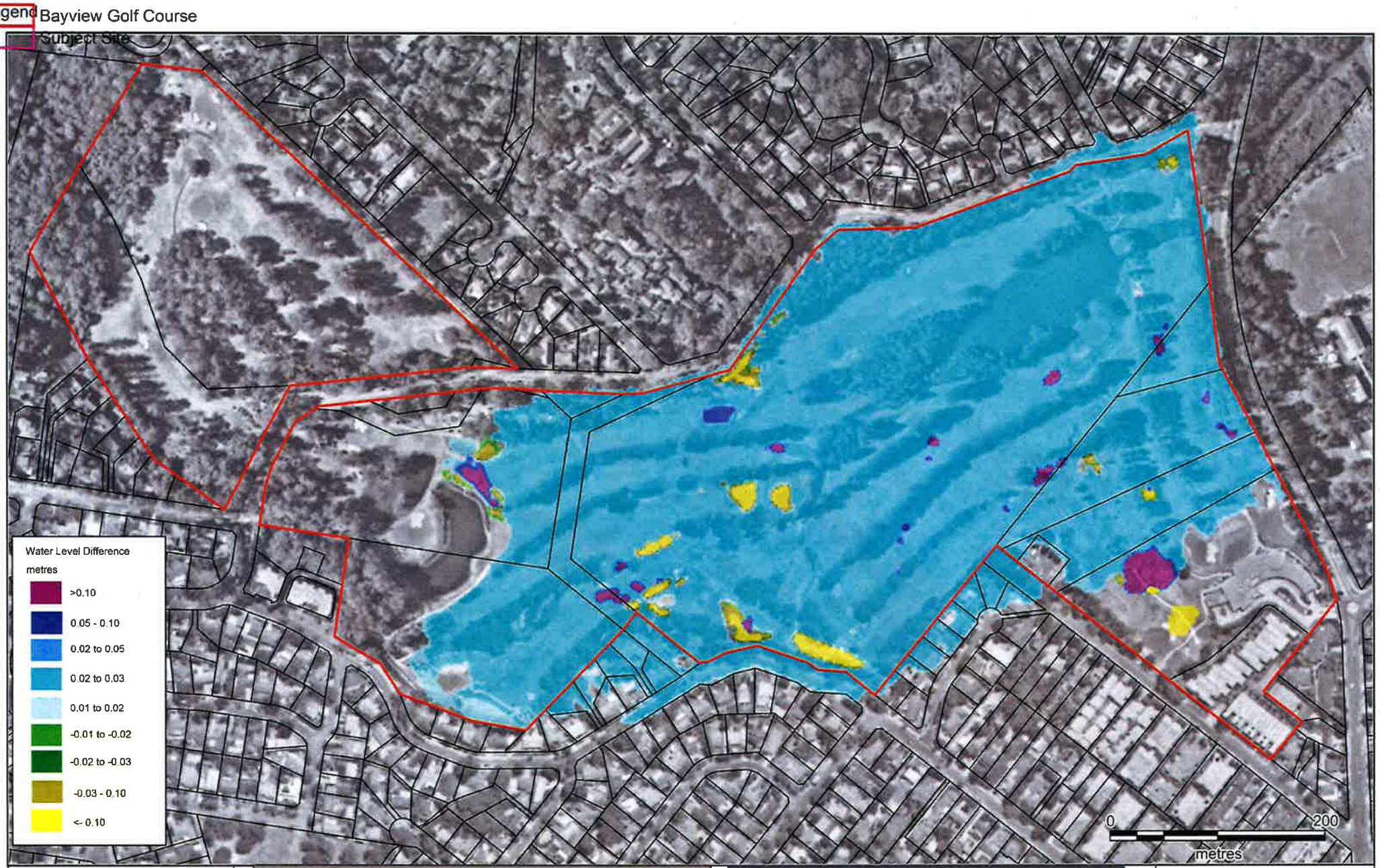


Cardno

FIGURE B45

5% AEP
9hr Duration Low Tailwater
Velocity Difference (Percentage)

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

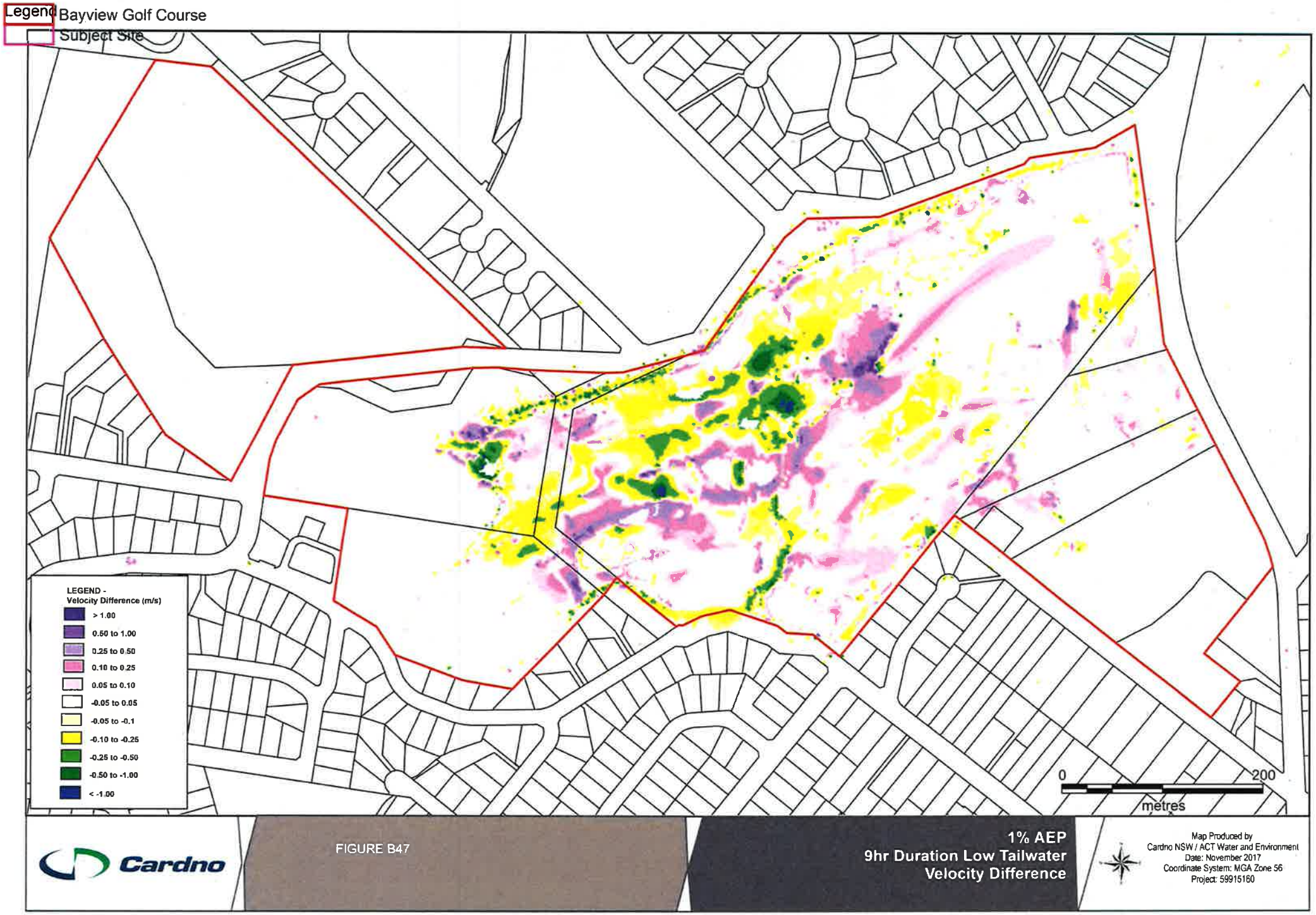


Cardno

FIGURE B46
FUTURE LESS EXISTING CONDITIONS
(GOLF COURSE)

1% AEP
9hr Duration Low Tailwater
Flood Level Differences

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

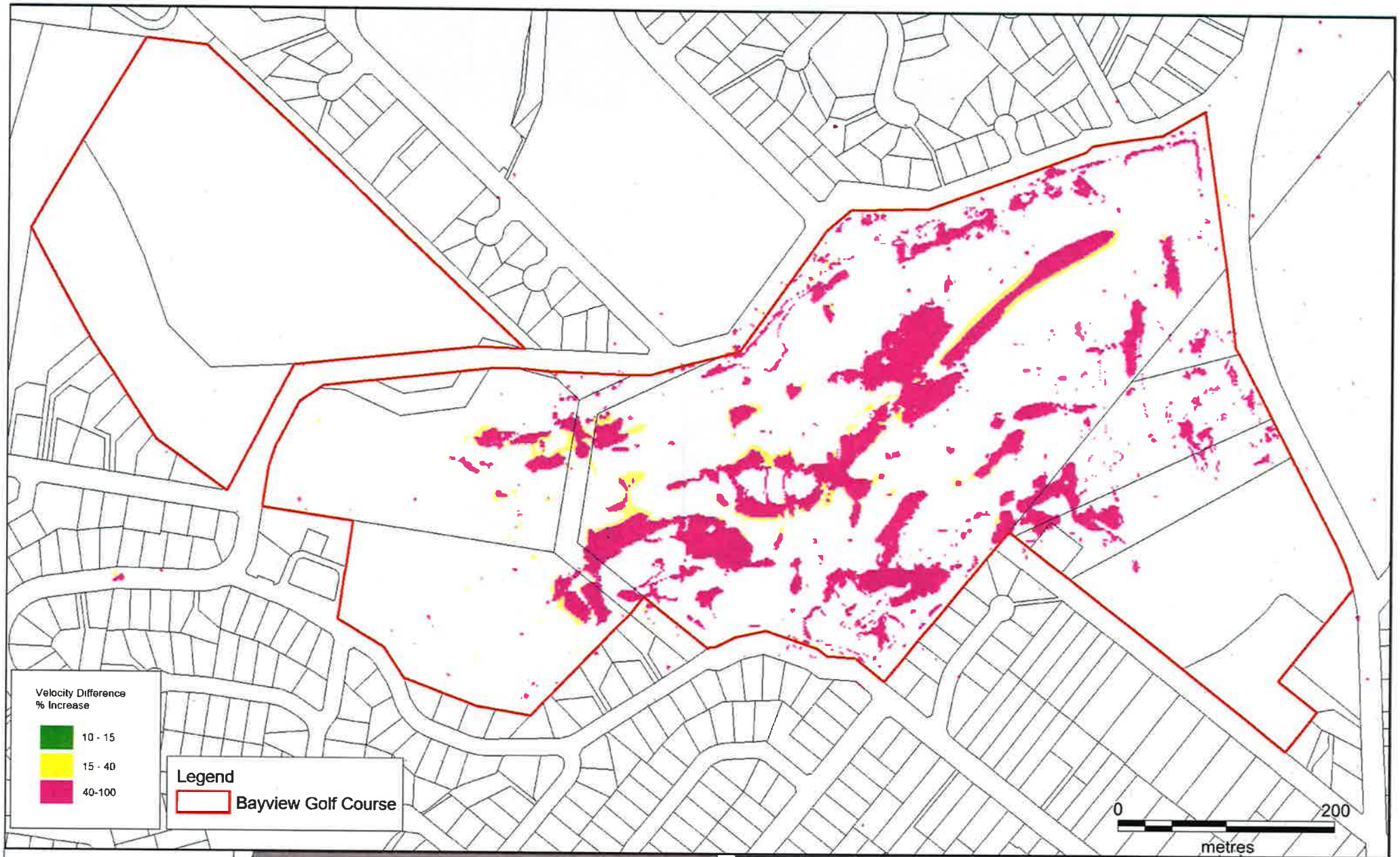


Cardno

FIGURE B47

1% AEP
9hr Duration Low Tailwater
Velocity Difference

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160



Cardno

FIGURE B48

1% AEP
9hr Duration Low Tailwater
Velocity Difference (Percentage)

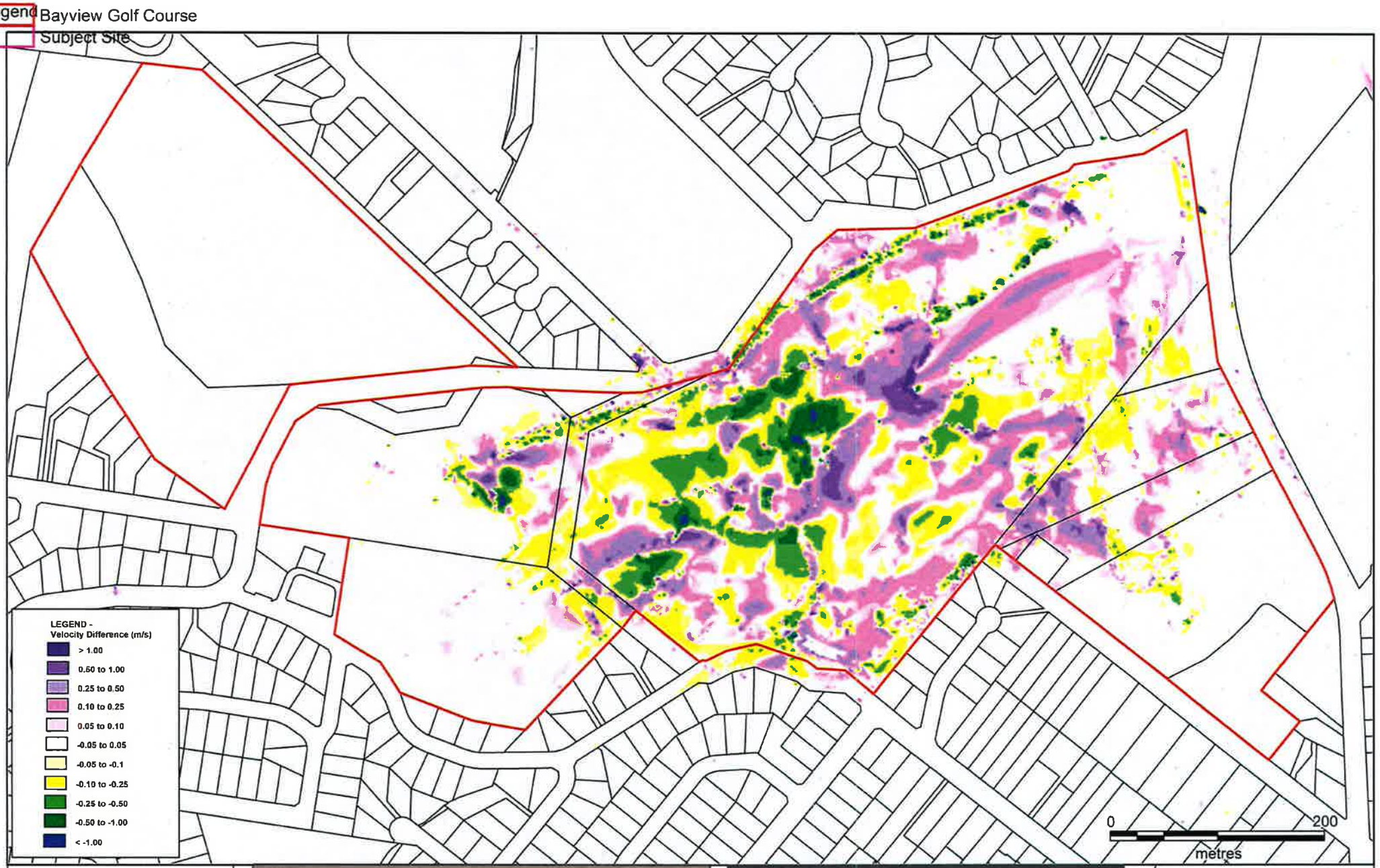
Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

Cardno

FIGURE B49
FUTURE LESS EXISTING CONDITIONS
(GOLF COURSE)

PMF
2hr Duration Low Tailwater
Flood Level Differences

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160

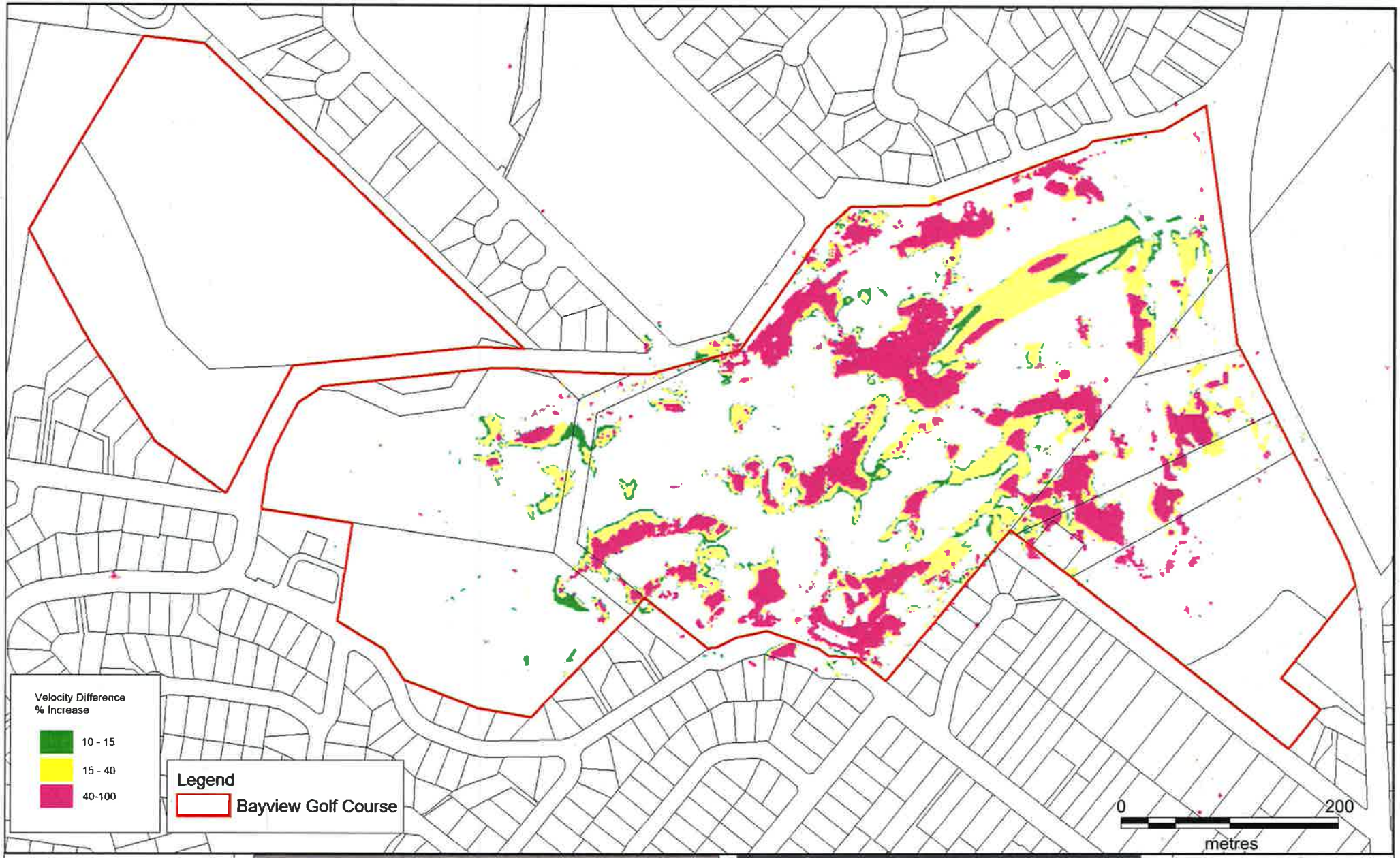


Cardno

FIGURE B50

PMF
2hr Duration Low Tailwater
Velocity Difference

Map Produced by
Cardno NSW / ACT Water and Environment
Date: November 2017
Coordinate System: MGA Zone 56
Project: 59915160



Cardno

FIGURE B51

PMF
2hr Duration Low Tailwater
Velocity Difference (Percentage)

Map Produced by
Cardno NSW / ACT Water and Environment
Date November 2017
Coordinate System MGA Zone 56
Project 59915180

Appendix C:
Photographs of watercourse sampling locations W1 to W21 from Appendix 5 in Clements *et al.* 2017

Appendix C: Photographs of watercourse sampling locations W1 to W21 from Appendix 5 in Clements *et al.* 2017

Location W1

Location W1 - *Backhousia myrtifolia*

Location W1 - Powerful Owl (*Ninox strenua*) fledglings

Location W2

Location W3

Near Location W3 – Common Eastern Froglet (*Crinia signifera*)

Location W3 - Eastern Water Dragon (*Intellagama lesueurii*) on a rock with A*cetosa sagittata* (Turkey rhubarb) and fronds of *Livistona australis* (Cabbage Tree Palm)

Location W3 - Little Wattle Bird (*Anthochaera chrysoptera*) perched on a *Ceratopetalum apetalum* (Coachwood)

Location W4

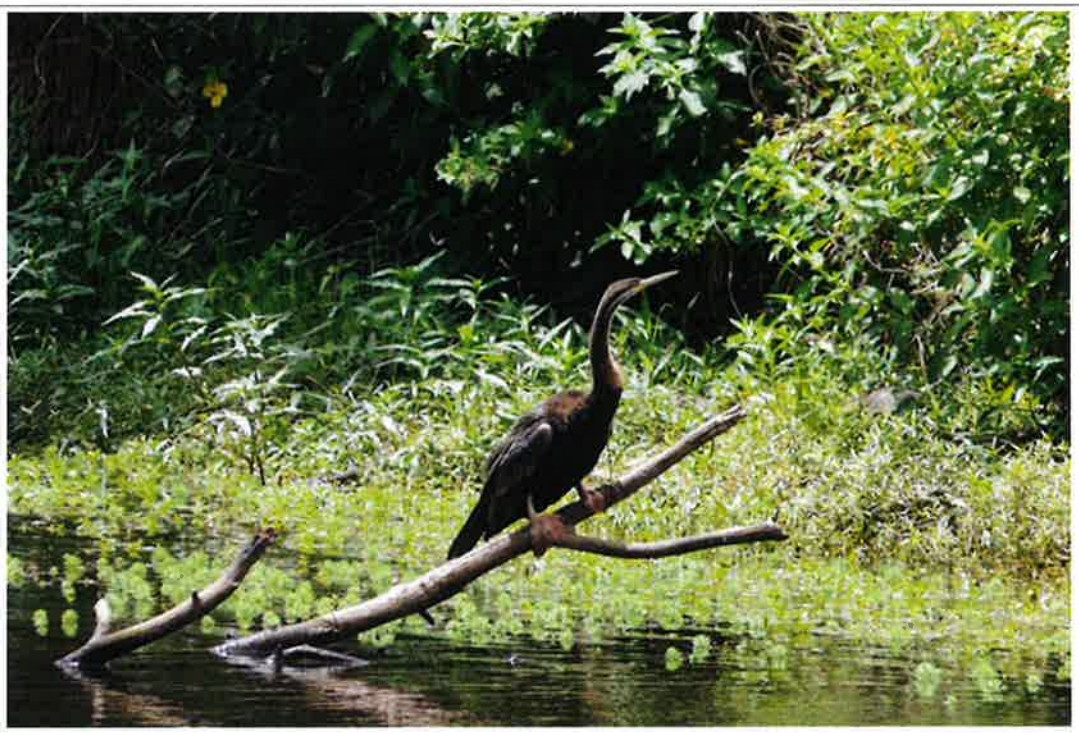
Culvert directing water onto the Golf course from residential property at sampling location W4

Culvert directing water onto the Golf course from residential property at sampling location W4

Location W5

Location W5 - existing golf bridge and culverts under Cabbage Tree Road

Location W6



Location W6 - Australasian Darter (*Anhinga novaehollandiae*)

Near Location W6 – Striped Marsh Frog (*Limnodynastes peronii)*

Location W7

Location W8

Location W9

Location W10

Near location W11 Wood Duck family (*Chenonetta jubata*)

Location W11

Location W12

Location W13

Location W13 *Amyema cambagei* (She-oak mistletoe) growing in *Casuarina glauca*

Location W14

Near Location 14

Location W15

Location W16

Location W17

Location W18

Location W19

Location W19 - Dwarf Tree Frog (*Litoria fallax*)

Location W20

Location W20 - *Avicennia marina* (Grey Mangrove) and *Aegiceras corniculatum* (River Mangrove)

Location W21

Appendix D
GPS Points for photos of Sample locations W1 to W21

Appendix D - GPS Points for photos of Sample locations W1 to W21

Sampling location	Easting	Northing
W1	341432	6273521
W2	341447	6273453
W3	341436	6273351
W4	341455	6273282
W5	341635	6273238
W6	341691	6273159
W7	341761	6273209
W8	341795	6273103
W9	341796	6273233
W10	341738	6273011
W11	341834	6273055
W12	341966	6273068
W13	342076	6273044
W14	342143	6273230
W15	342224	6273294
W16	342119	6273384
W17	342398	6273432
W18	342486	6273152
W19	342345	6273141
W20	342578	6273606
W21	342652	6273663

Figures (from Clements *et al.* 2017)
Tables (from Clements *et al.* 2017)
Appendices (from Clements *et al.* 2017)

Figures (from Clements *et al.* 2017)

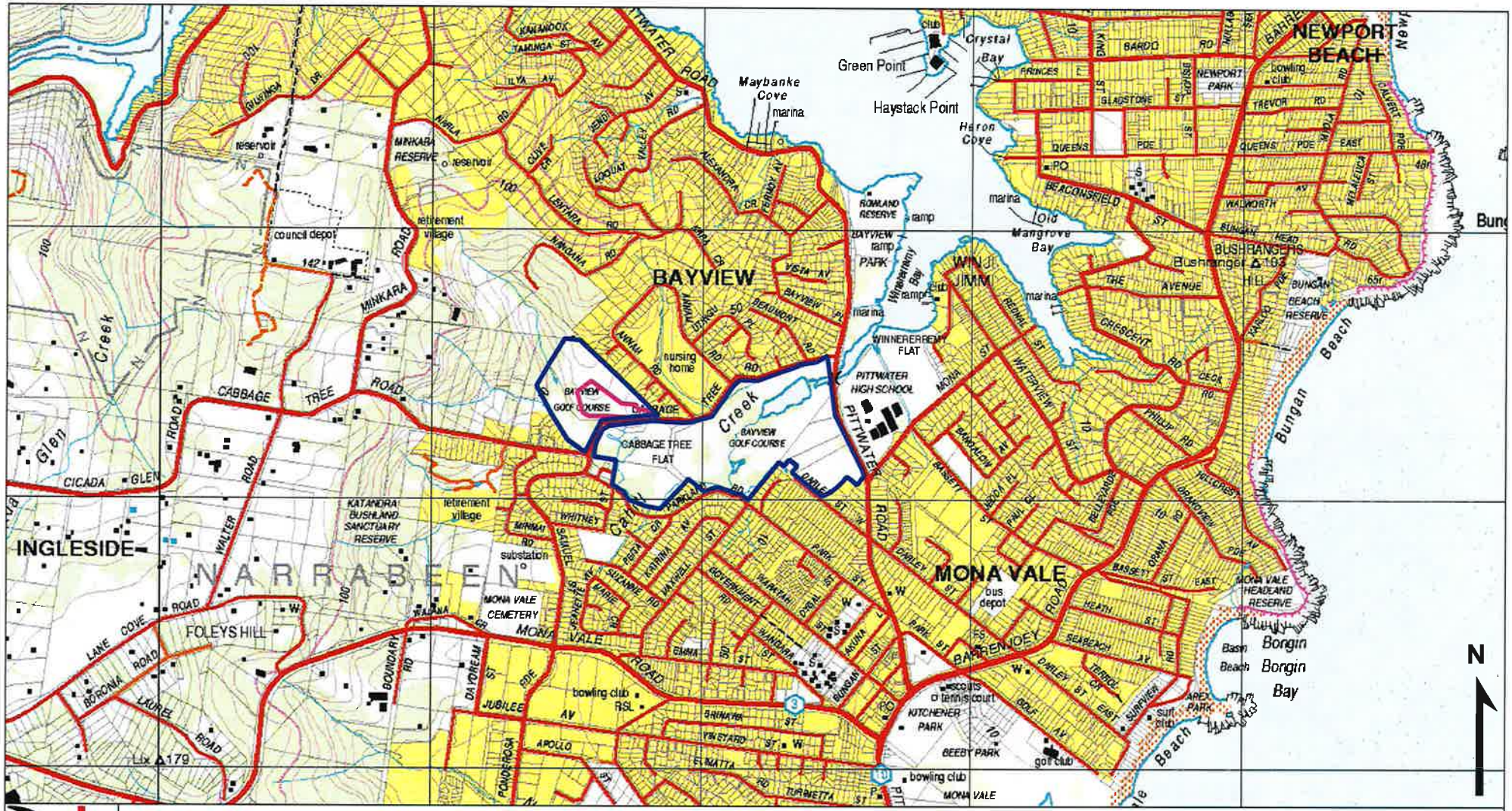


Figure 1a-1.
Site boundary overlaid on the Mona Vale1:25 000 topographic map

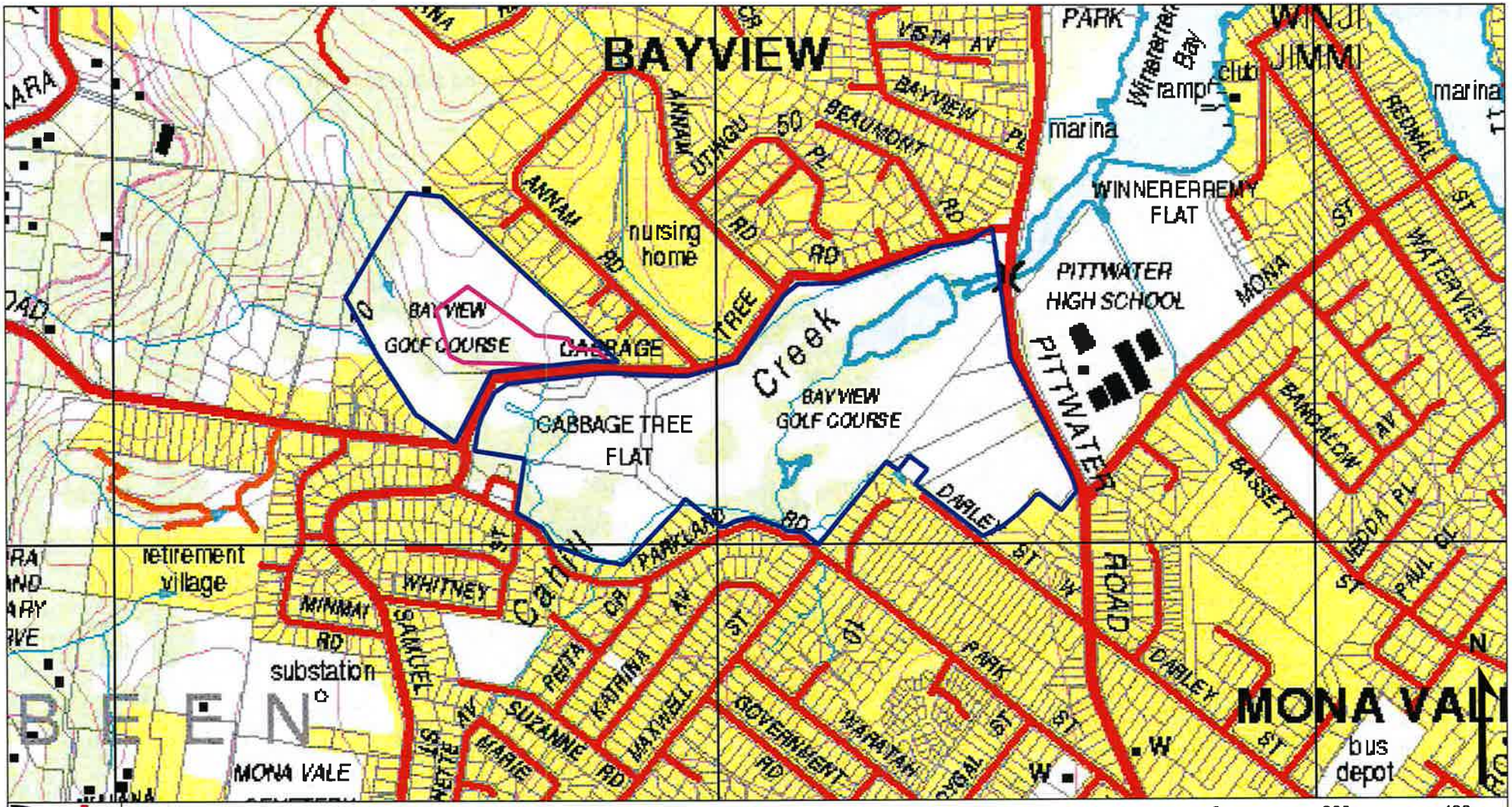


Figure 1a-2
Site boundary overlaid on the Mona Vale
1:25 000 topographic map - close up

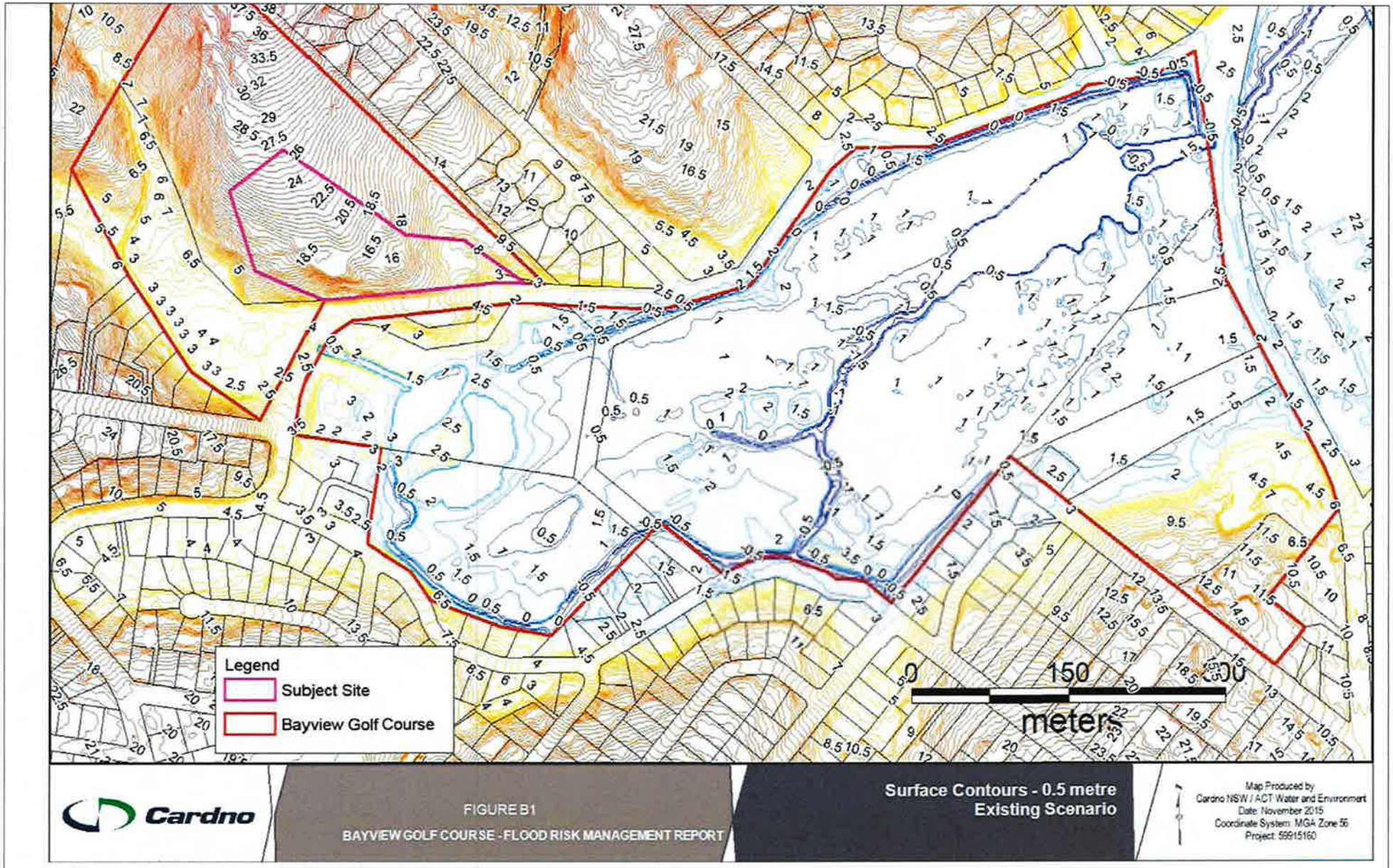


Figure 1a-4.
Existing 0.5 m surface contours (Cardno 2016)

Figure 1b-1.
Site boundary overlaid on the Nearmap aerial photograph dated 5 May 2015, with labelled surroundings

Figure 1b-2.
Site boundary overlaid on the
Nearmap aerial photograph dated 5 May 2015 - close up

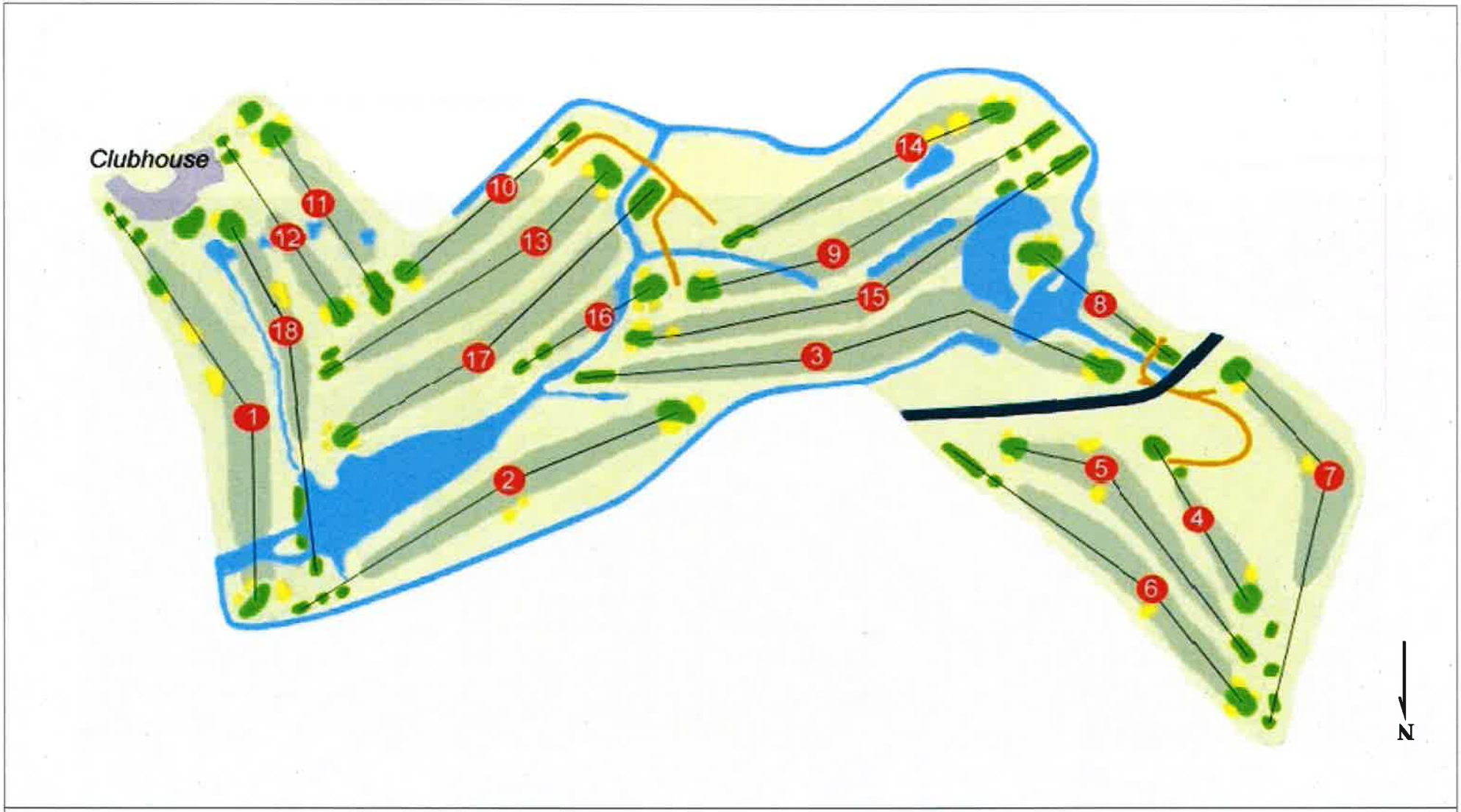


Figure 1b-3.
Existing golf course layout.

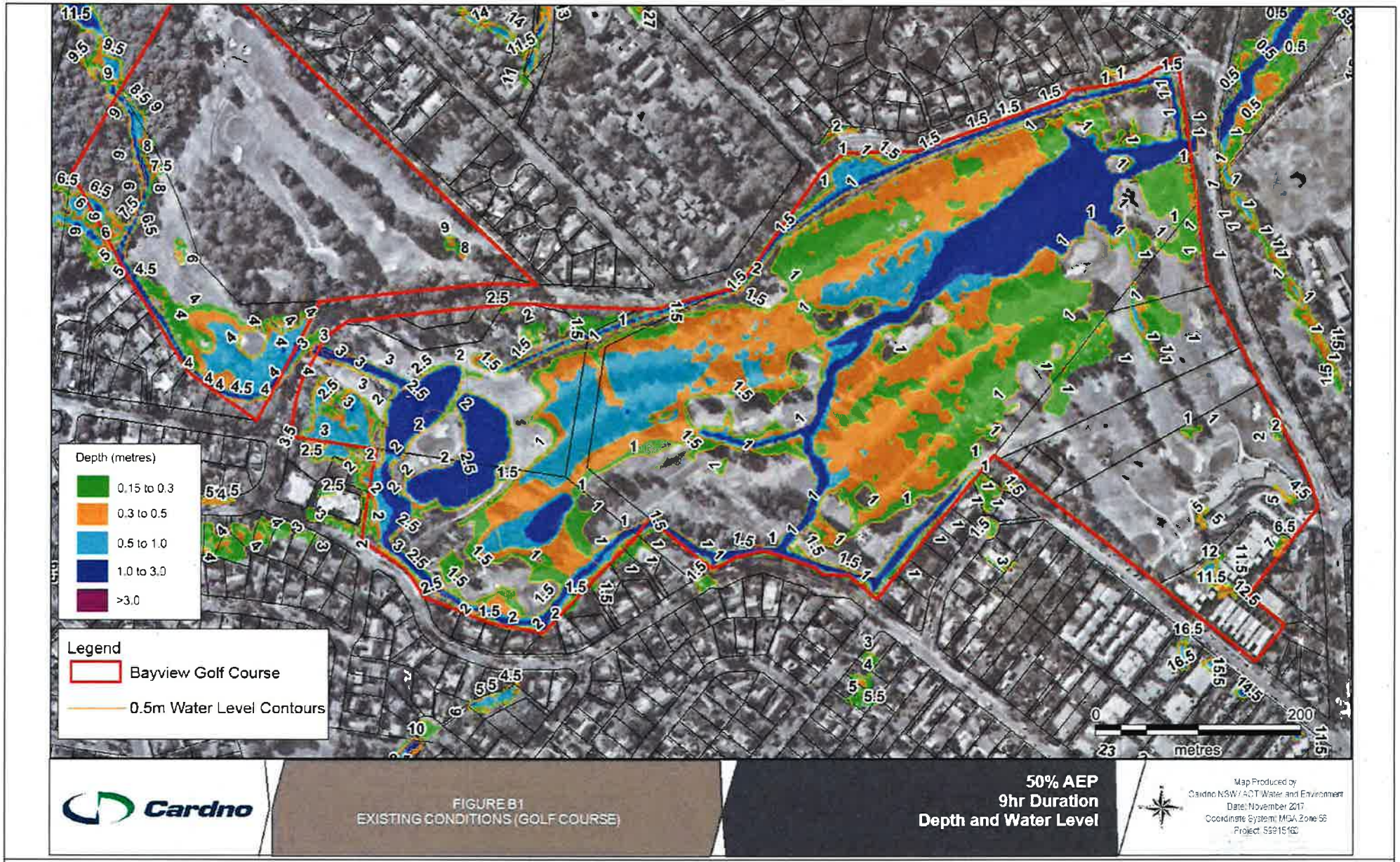


Figure 1c-2
Existing drainage following a 50% AEP storm event (Cardno 2017)

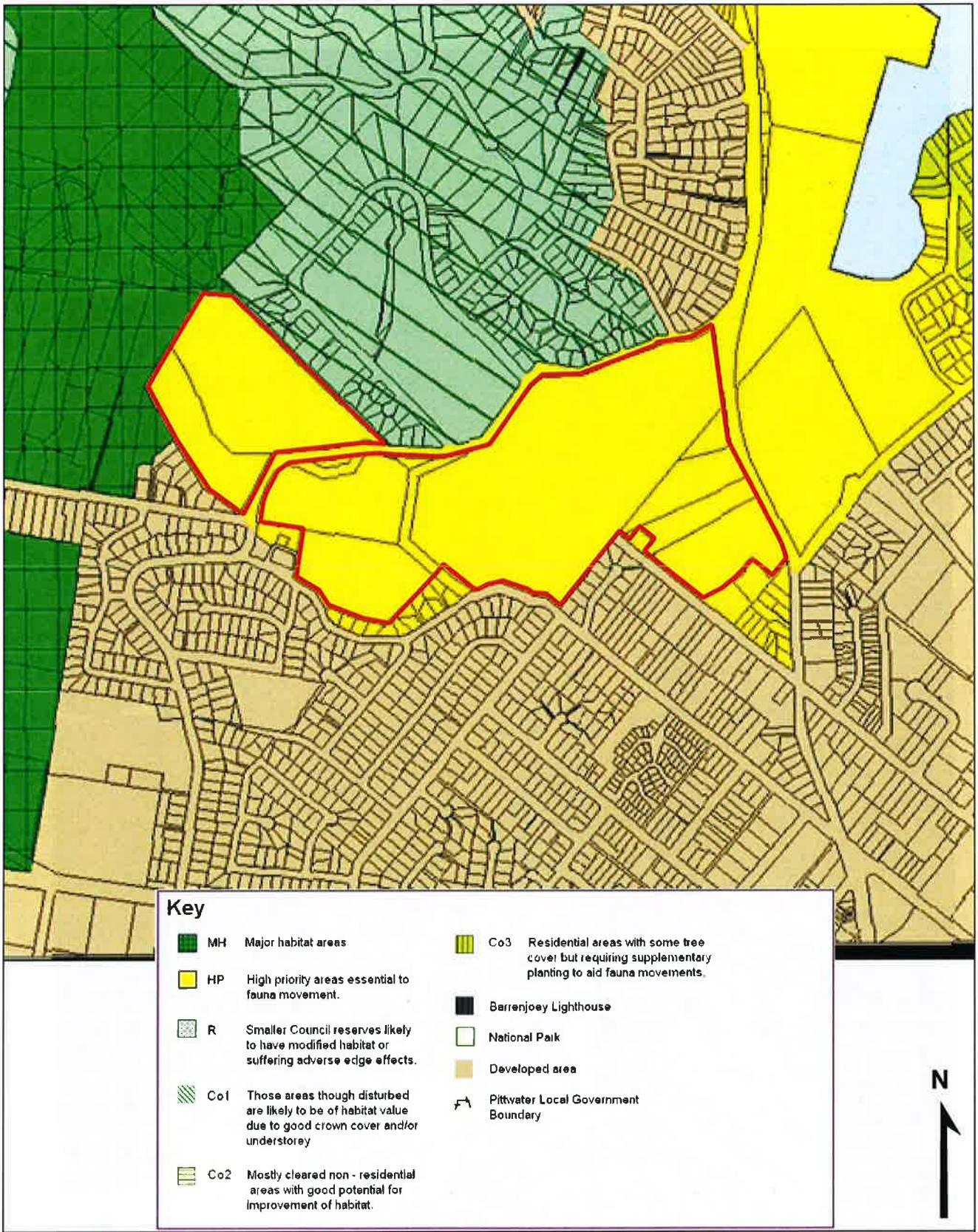


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Figure 2c.
Site boundary overlaid on extract of
Wildlife Corridor Location Map 9 from Pittwater Council

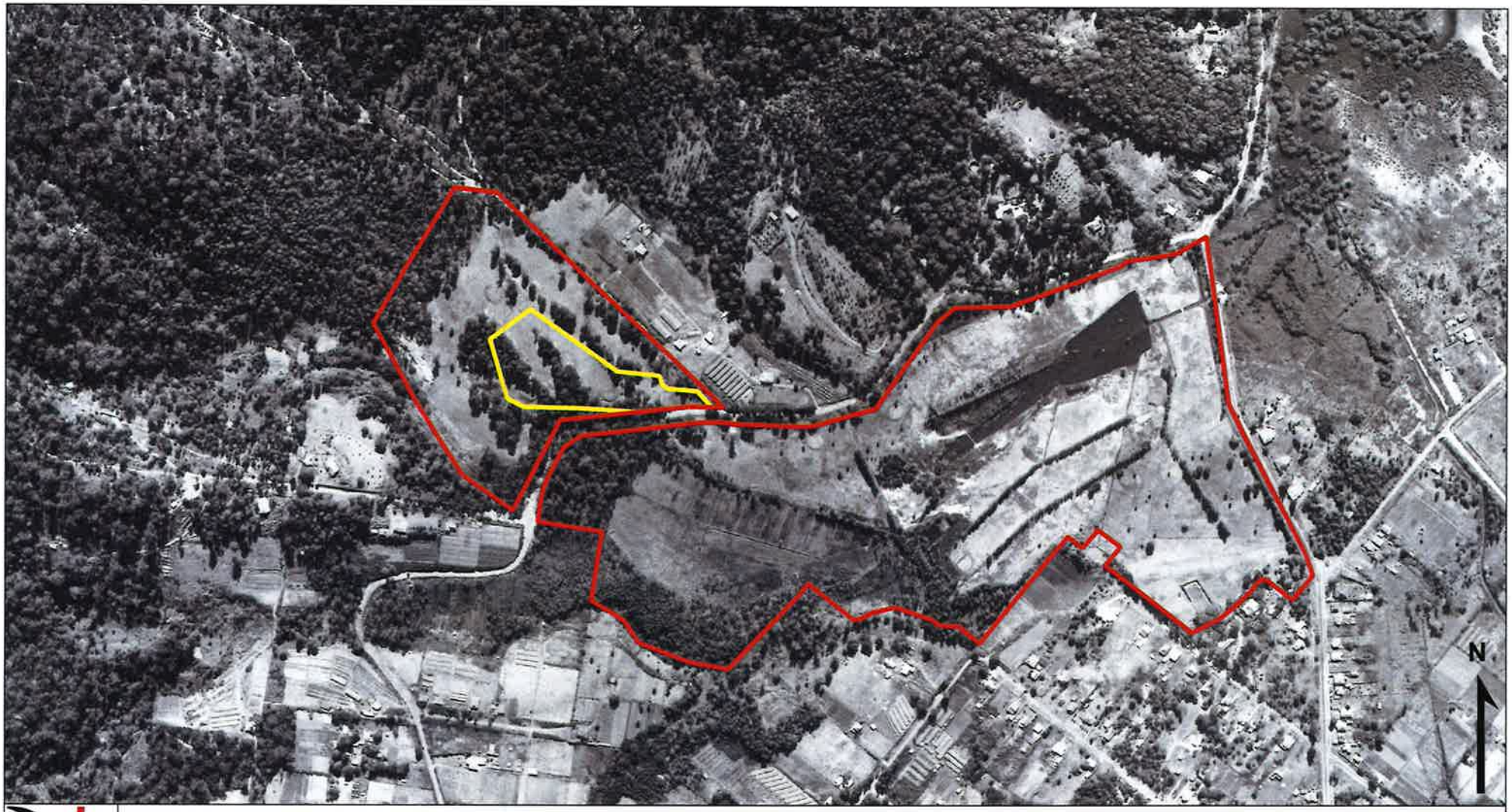


Figure 3-1951.
Site boundary and development site
overlaid on the historic aerial photograph dated 1951

Figure 3-1965.
Site boundary and development site
overlaid on the historic aerial photograph dated 1965

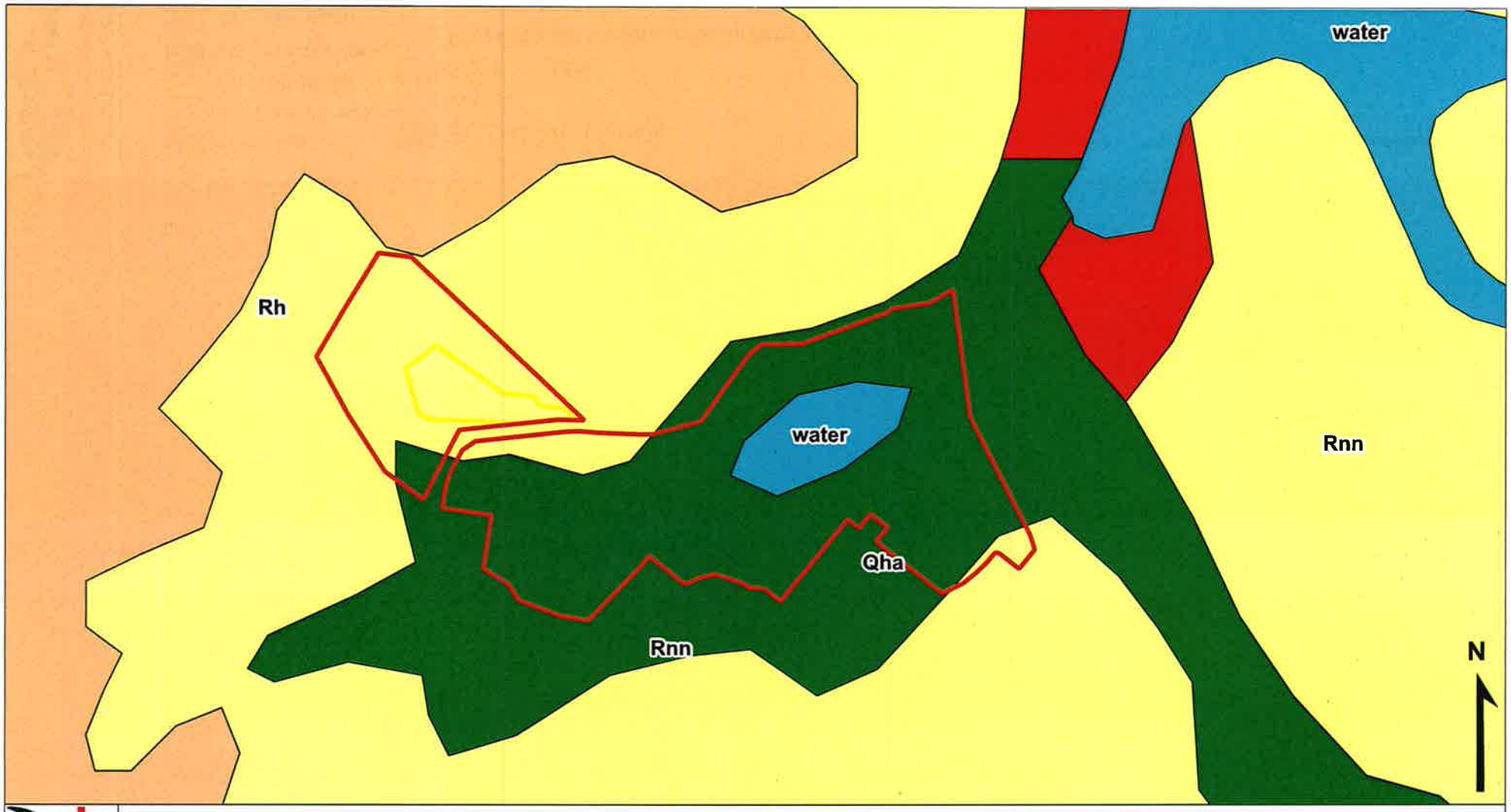


Figure 4a.
Site boundary overlaid on the
1:100 000 Geology map (Herbert 1983)

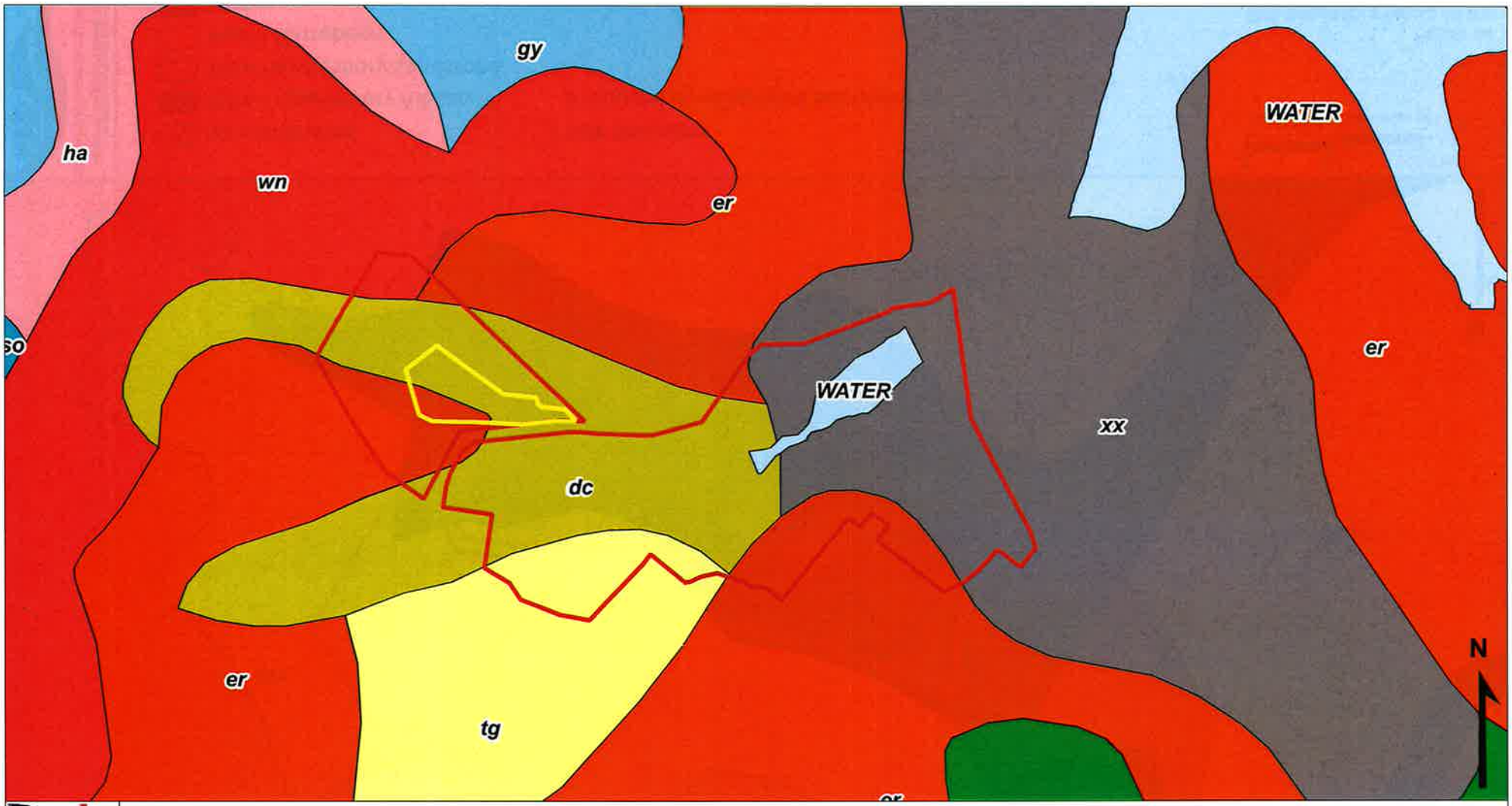


Figure 4b
Site boundary overlaid on the
1:100 000 Soil Landscape map (Chapman et al. 1989)

martens

Key:

Approximate borehole, DCP test and CBR sampling location (MA, 2017)

Approximate borehole and DCP test location (MA, 2014)

Martens & Associates Pty Ltd ABN 85 070 240 890		**Environment | Water | Wastewater | Geotechnical | Civil | Management**	
Drawn:	HN	**GEOTECHNICAL TESTING PLAN AND CROSS SECTION LOCATIONS** **Proposed Seniors Living Development, Cabbage Tree Road, Bayview, NSW** (Source: Nearmap, 2017)	Drawing: **FIGURE 2**
Approved:	RE		
Date:	09.10.2017		Job No: P1706099JR02V01
Scale:	NA		

Figure 4c.1 (Enhanced)
Geotechnical bore hole locations on the proposed development site (Martens Consulting Engineers 2017a)

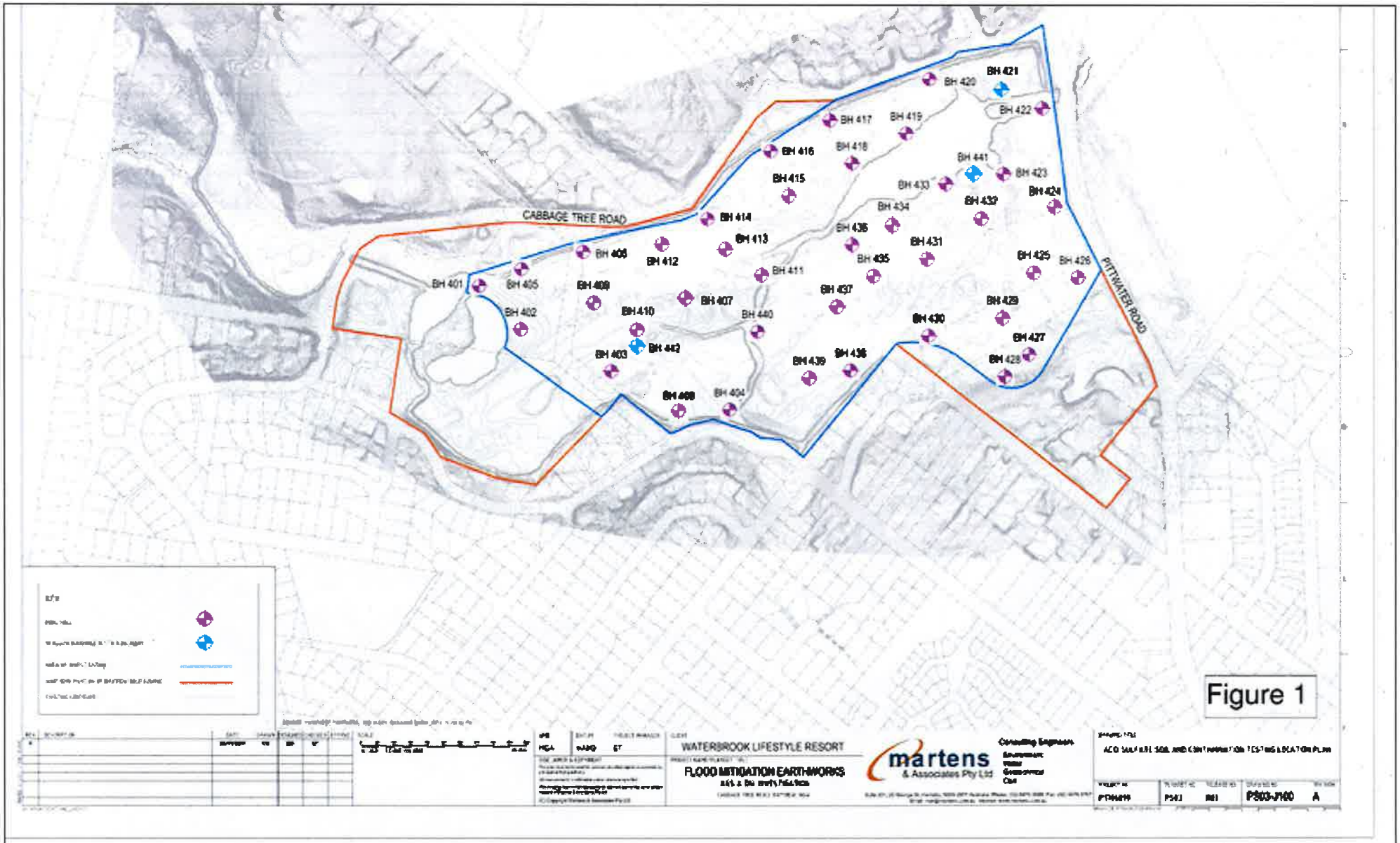


Figure 4c-2.
Geotechnical report bore hole locations on the south of the golf course (Martens Consulting Engineers 2017b)

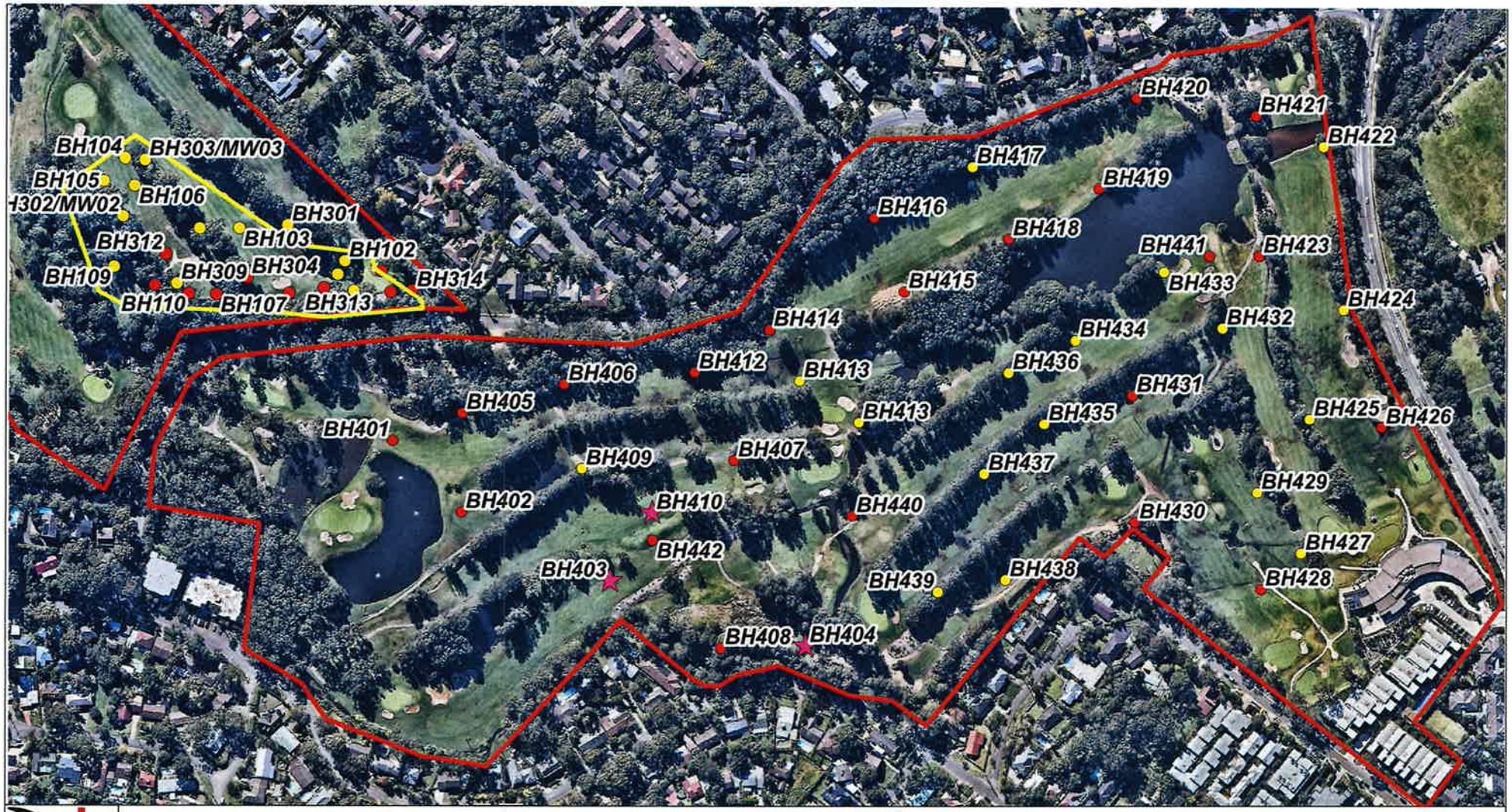
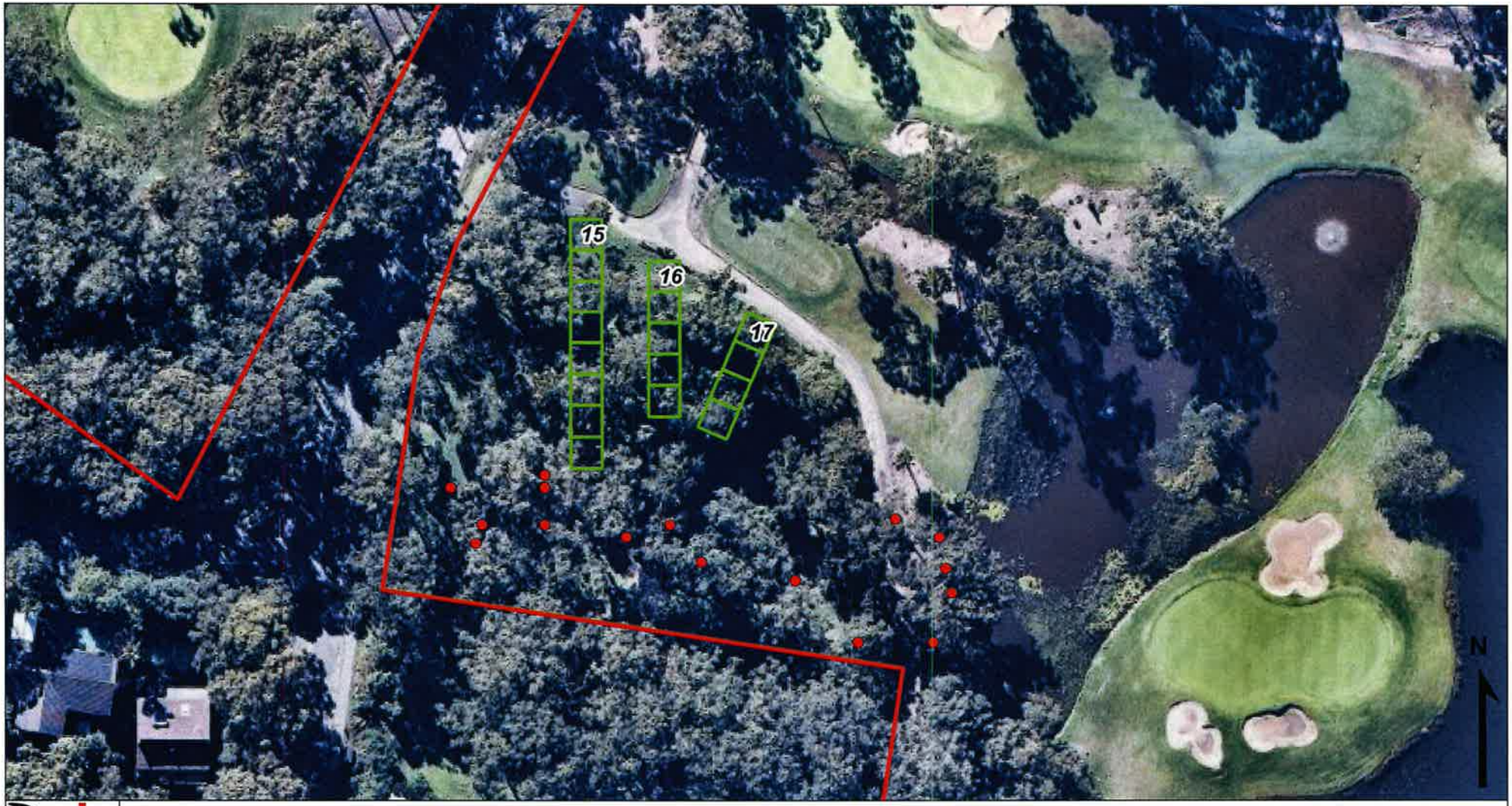


Figure 4c-3.
Geotechnical report bore hole locations with fill and asbestos (Martens Consulting Engineers 2017c)

Figure 6a-1.
Sampling locations overlaid on LPI's aerial imagery dated 2014

Figure 6a-2.
Sampling locations overlaid on LPI's aerial imagery dated 2014 - Close up



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Transects
Site boundary
E.robusta

0 20 40 m

Geocentric Datum of Australia 1994

Figure 6b-1.
Sampling locations (Transects 15 to 17)
and mapping of Eucalyptus robusta to determine
relocations of tee boxes for widening the channel overlaid on
Nearmap aerial photograph dated 5 May 2015 - close up

Figure 6b-2
Sampling locations and mapping of Ecalyptus robusta on proposed widening of channel (Cardno 2017) overlaid LPI's aerial imagery dated 2014

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Water sampling locations

Proposed development boundary

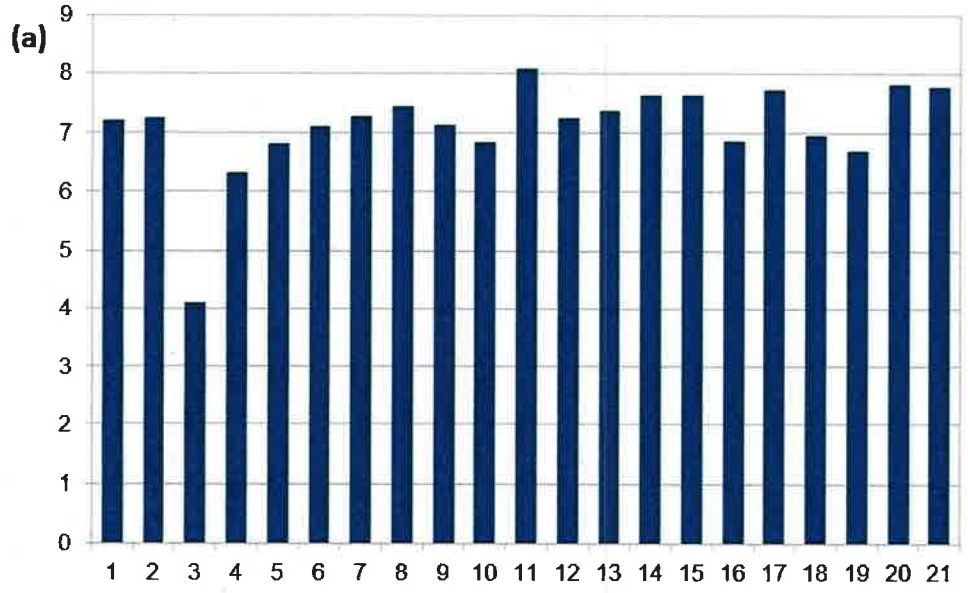
Site boundary

Vegetation surveyed in 10m x 2m plots centered on water sampling locations

0 100 200 m

Geocentric Datum of Australia 1994

Figure 6d-1.
Water sampling and vegetation survey locations along drainage lines



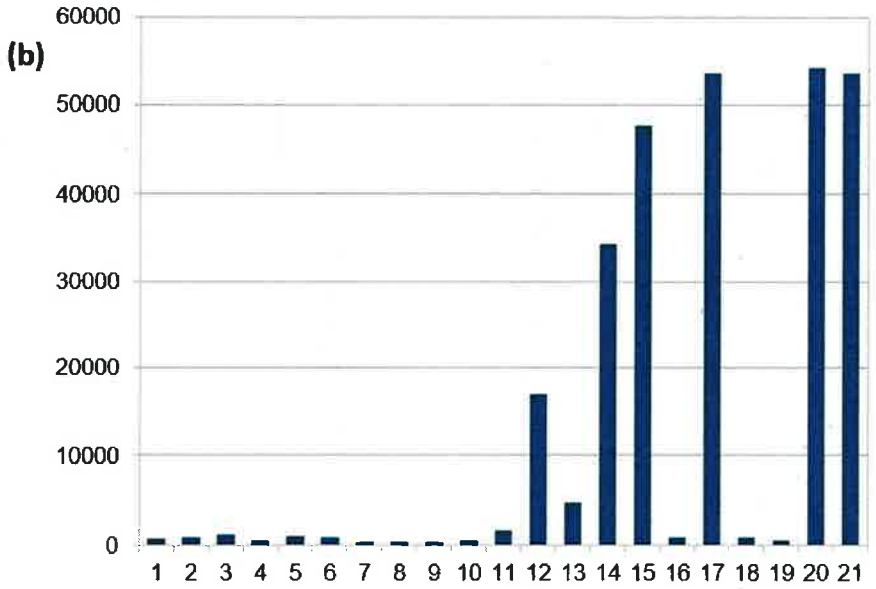


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Figure 6d-2.
(a) pH; and (b) conductivity, recorded at 21 sampling locations

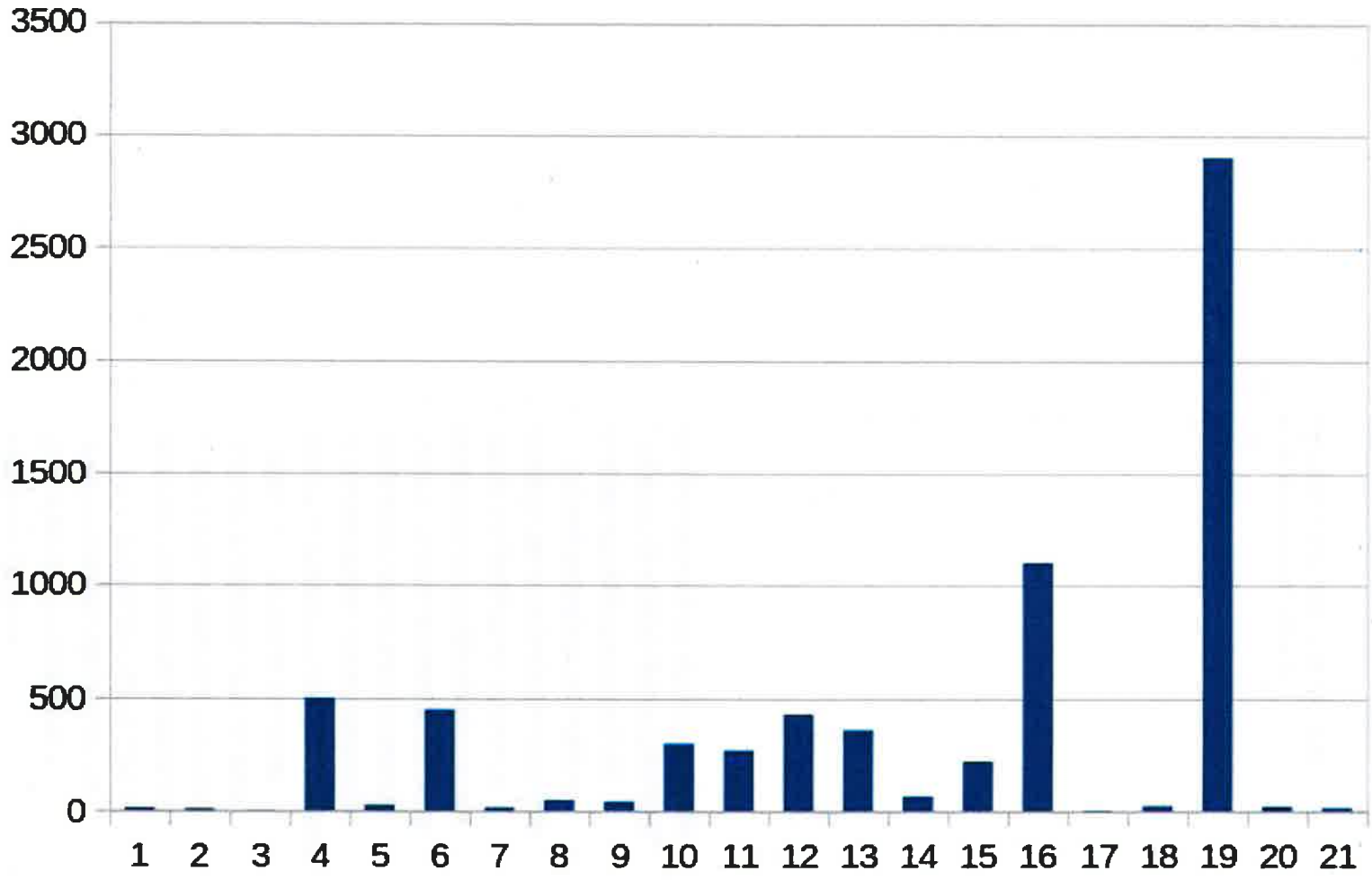

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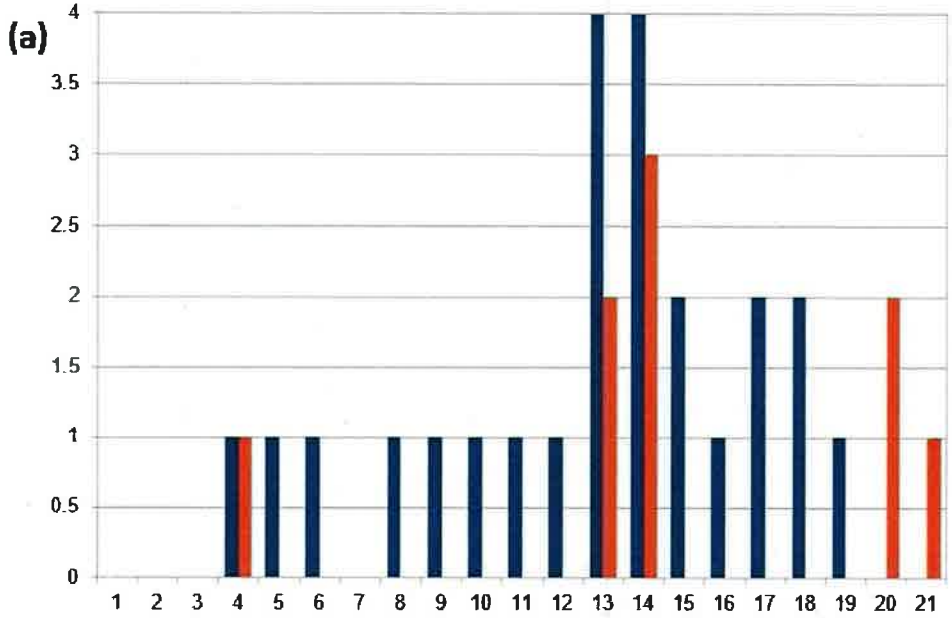
Figure 6d-3.
(a) *E. coli* (CFU) recorded at 21 sampling locations



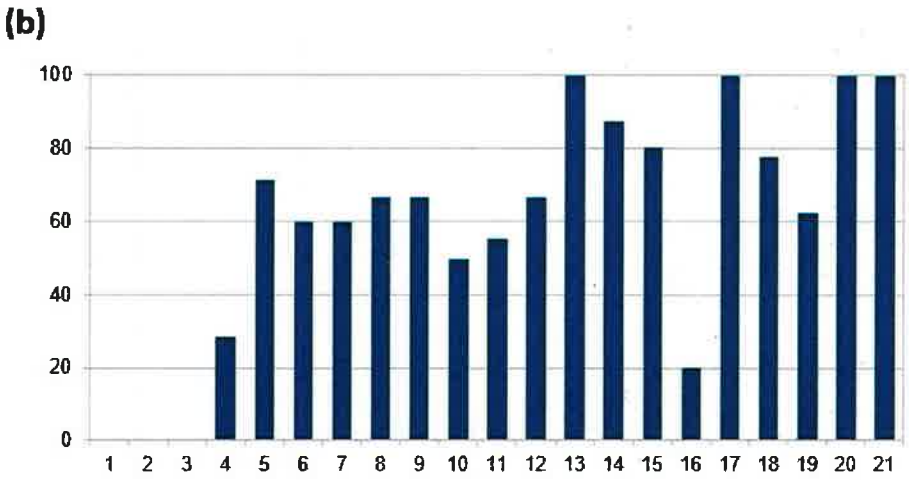


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Figure 6d-4.
(a) Number of obligate brackish (blue) and saline species (orange) recorded at each sampling location; and
(b) Percentage of brackish/saline species of all native species recorded at each sampling location

Figure 7a.
Master Plan for the golf course upgrade (GNP Golf Design 2017)

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Site boundary
Proposed development area

Patch number and areas in Appendix 6

0 50 100 m

Geocentric Datum of Australia 1994

Wet sclerophyll forest with rainforest understorey and eucalypt canopy (1.71 ha)
Modified fairway vegetation (mainly row planted Casuarina glauca on low lying land) (approx. 2300 linear m)
Modified fairway vegetation on higher land (0.71 ha)
Coastal floodplain ecosystems (2.4 ha)

Figure 7b.
Vegetation patches on golf course overlaid on the Nearmap aerial photograph dated 16 October 2015

Tables (from Clements *et al.* 2017)

Table 1A. Species recorded in the quadrats in Transects 1 to 8

Notes: 1. Asterisk (*) before botanical name signifies exotic species. Hash symbol (#) signifies a non-local native, planted or naturalised

2. Families are grouped under headings 1. Pteridophytes, 2. Gymnosperms, 3. Dicotyledons, 4. Monocotyledons. One or more of these plant groups may be absent from this site

3. Values in columns except in T1 and T2 are estimated cover percentages. The nominal value 0.1 was recorded for covers of a small fraction of 1%. Covers over 7% were rounded to multiples of 5.

4. In columns under T1 and T2 (surveyed in 2014) 'X' indicates presence only

5. Quadrats were 10 m x 10 m, except in T3, in which they were 5 m x 5 m

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats										T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Pteridophytes																																						
Adiantaceae																																						
Adiantum aethiopicum																																						1
Adiantum hispidulum																					.1	1																1
Aspleniaceae																																						
Asplenium australasicum																										1												
Asplenium sp.																																						
Blechnaceae																																						
Blechnum cartilagineum																					1	15	1															
Blechnum indicum																																						
Doodia aspera	X	X	X	X																		20	1			2		.1	1	2					2	40	3	5
Cyatheaceae																																						
# Cyathea cooperi								X																														
Davalliaceae																																						
# Nephrolepis cordifolia																																					.1	
Dennstaedtiaceae																																						
Hypolepis muelleri																																						
Pteridium esculentum																																					.1	

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats												T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Dryopteridaceae																																		
Lastreopsis decomposita		X	X	X																	.1	3												2
Polystichum australiense	X	X	X	X																														
Polypodiaceae																																		
Platycerium bifurcatum													2																					
2. Gymnosperms																																		
Pinaceae																																		
* Pinus elliottii																											5			10				
* Pinus radiata																															8			
3. Dicotyledons																																		
Acanthaceae																																		
Avicennia marina																																		
Pseuderanthemum variabile	X																					.1			.1		.1	.1	.1	.1	.1				.1	1	.1	.1
Aceraceae																																		
* Acer negundo						X	X	X																										
Aizoaceae																																		
Tetragonia tetragonioides																				1														
Anacardiaceae																																		
* Harpephyllum caffrum																																		
Apiaceae																																		
Apium prostratum																																		
Centella asiatica								X								.1								1										
* Cyclospermum leptophyllum																																		
* Hydrocotyle bonariensis									.1																									
Hydrocotyle hirta																													.1				.1	
Hydrocotyle peduncularis					X																													
Apocynaceae																																		
* Araujia sericifera					X																.1		1			.1							.1	.1	.1	

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats												T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Marsdenia flavescens		X	X	X																																		
Marsdenia rostrata	X	X	X	X																		.1																
* Nerium oleander																								3	.1	1												
Parsonsia straminea						X					.1	.1		2								2	.1	20	.1		.1		.1						.1		5	5
Tylophora barbata																													.1	.1								
Araliaceae																																						
* Schefflera arboricola																																						
Asteraceae																																						
* Ageratina adenophora																							.1															
* Ageratum houstonianum																																						
* Bidens pilosa							X	X											1			5	1	3	.1			.1	.1	.1					.1		.1	
* Cirsium vulgare																				1																		
* Conyza sumatrensis																																						
Cotula australis					X															.1												2						
* Crassocephalum crepidioides																			1			.1							.1									
* Galinsoga parviflora																				2																		
* Gamochaeta coarctata																	.1												.1							.1		
* Hypochaeris radicata									2																		1	1			1				1			.1
* Soliva sessilis																											.1		.1		1	2	1					
* Sonchus oleraceus																			.1																			
* Taraxacum officinale																				2	.1																	
Basellaceae																																						
* Anredera cordifolia									.1	.1													5	1	1													
Bignoniaceae																																						
* Jacaranda mimosifolia																																				2		
Pandorea pandorana			X																							.1			.1	.1							
Brassicaceae																																						
* Cardamine hirsuta																	.1			1								.1							.1	.1		
* Lepidium bonariense																																						
Caryophyllaceae																																						
* Cerastium glomeratum																	.1											.1	.1		.1							

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats												T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
* Polycarpon tetraphyllum																																						
* Stellaria media																			.1	1											.1	.1		.1				
Casuarinaceae																																						
Allocasuarina littoralis																															5							
Allocasuarina torulosa		X	X																		5		5		5	5								5	10	3	
# Casuarina cunninghamiana																																						
Casuarina glauca									5			5	10		10		8	15																				
Celastraceae																																						
Denhamia silvestris			X																																.1			
Chenopodiaceae																																						
Sarcocornia quinqueflora																																						
Convolvulaceae																																						
Dichondra sp. A					X												.1	.1	.1	1	.1		.1					5	.1	1		1						
* Ipomoea indica									40	40	.1	.1																										
Cunoniaceae																																						
Callicoma serratifolia																																						
Ceratopetalum apetalum																																						
Dilleniaceae																																						
Hibbertia dentata																																						
Ebenaceae																																						
Diospyros australis			X																																		
Elaeocarpaceae																																						
Elaeocarpus reticulatus																					1			3														
Ericaceae Styphelioideae																																						
Trochocarpa laurina																								1														2
Euphorbiaceae																																						
* Acalypha australis																				30																		
Breynia oblongifolia			X				X															1		1											2	5	1	1
Claoxylon australe		X																																				

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats												T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Euphorbia dallachyana																																						
* Euphorbia peplus																	.1			.1																		
Glochidion ferdinandi					X	X	X	X												5			4		4	30			8						10	3		35
Homalanthus populifolius	X							X											.1				.1															
* Ricinus communis									2	2																												
* Triadica sebifera																																						
Eupomatiaceae																																						
Eupomatia laurina	X		X	X																	3	3																
Fabaceae Caesalpinioideae																																						
* Senna pendula var. glabrata		X								.1											.1	1		5	1										1	.1	.1
Fabaceae Faboideae																																						
Desmodium gunnii																																					.1	
* Erythrina x sykesii																																						
Glycine clandestina																								.1						.1							.1	
* Medicago polymorpha																											.1											
* Trifolium repens									.1																						.1		1	3				
Fabaceae Mimosoideae																																						
Acacia implexa																																			5		2	
Acacia parramattensis																																						
Fumariaceae																																						
* Fumaria sp.																			1																			
Geraniaceae																																						
Geranium homeanum																			.1	5		.1	.1	1	.1												
Geranium solanderi									.1	.1																												
Lamiaceae																																						
Clerodendrum tomentosum	X			X																				1	.1									.1		3	
* Plectranthus verticillatus																						.1																
* Stachys arvensis																			.1																			
# Westringia fruticosa																																						

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats												T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Lauraceae																																						
* Cinnamomum camphora																											10											
Cryptocarya glaucescens																					2	1																
Cryptocarya microneura	X	X	X																		30	.1		1	.1	1												.1
Lobeliaceae																																						
Pratia purpurascens							X													1	.1						.1	.1	.1						.1	.1	.1	
Malaceae																																						
* Eriobotrya japonica																																						3
Malvaceae																																						
* Lagunaria patersonia											10	40	40	70	50	15	5	5					3	3		1												
* Modiola caroliniana																	.1	1	.1	1																		
* Sida rhombifolia																				1	1		1	5	1													
Meliaceae																																						
Synoum glandulosum		X	X	X																	2	30		3														
Menispermaceae																																						
Sarcopetalum harveyanum		X		X																	.1	2		1											.1	1	.1	.1
Stephania japonica	X																				.1														.1	1	.1	.1
Monimiaceae																																						
Wilkiea huegeliana	X	X	X	X																	15	15	2			1												
Moraceae																																						
Ficus coronata								X																														
Ficus rubiginosa																					.1																	
Myrsinaceae																																						
Myrsine variabilis																						.1			2					.1								
Myrtaceae																																						
Acmena smithii	X	X	X	X																	1	15	4	15	1												10	25
Angophora floribunda	X	X	X	X															10			10	10	5	5	10		5	10	3	10	15			5		3	
Backhousia myrtifolia	X	X																												25								
# Callistemon viminalis																																						

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats										T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Eucalyptus paniculata				X															30					30	2	10	5		10		10	25	45		20		2	
Eucalyptus robusta						X	X	X	20																										7			
Eucalyptus scias																																						
Eucalyptus umbra																														.1								
# Melaleuca bracteata cv.																																						
Melaleuca quinquenervia																							5															
Syncarpia glomulifera								X														15	5		2					5					5	10	20
Nandinaceae																																						
* Nandina domestica																																					.1	
Ochnaceae																																						
* Ochna serrulata	X	X	X	X																	1	2		1						.1				3	5	5	
Oleaceae																																						
* Ligustrum lucidum																																						10
* Ligustrum sinense																																					.1	
Notelaea longifolia	X	X	X				X														1	2	1	2	1	2			.1					.1		1	2
Onagraceae																																						
* Ludwigia longifolia																																						
* Ludwigia peruviana																																						
Oxalidaceae																																						
* Oxalis corniculata										.1																												
* Oxalis debilis var. corymbosa																			.1	.1					.1													
Oxalis exilis					X																.1						.1	.1	.1	.1		1			.1	.1	.1	.1
* Oxalis latifolia									.1																													
Passifloraceae																																						
* Passiflora edulis								X																														
Passiflora herbertiana																														.1								
Pittosporaceae																																						
Pittosporum multiflorum																					1	5																
Pittosporum revolutum		X	X																			1	1	2											.1		.1	
Pittosporum undulatum	X	X	X																			5	3		5										8	5		

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats										T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Plantaginaceae																																						
* Plantago lanceolata																				1							.1	.1		.1								
* Plantago major																																						
Polygalaceae																																						
* Polygala virgata																																						
Polygonaceae																																						
* Acetosa sagittata																			.1																			
Persicaria hydropiper								X																														
Rumex brownii										.1																												
* Rumex crispus																																						
Proteaceae																																						
Banksia integrifolia																																						
Persoonia linearis																																						
Ranunculaceae																																						
* Ranunculus repens																																						
Rhamnaceae																																						
Alphitonia excelsa						X																														2		
Rosaceae																																						
* Duchesnea indica																	2																					
* Rubus laudatus																																						
Rubus moluccanus var. trilobus																										2												
Rubiaceae																																						
Cyclophyllum longipetalum																							.1	5														
Gynochthodes jasminoides	X	X	X	X																																1		
Opercularia sp.																												.1										
Pomax umbellata																																						
Rutaceae																																						
Acronychia oblongifolia	X	X	X	X																																		

Botanical name	Percent cover in quadrats																																	
	T1 quadrats				T2 quadrats				T3 quadrats										T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Sapindaceae																																						
* Cardiospermum grandiflorum									10														1															
Cupaniopsis anacardioides																					.1	.1	.1	1	.1		.1											
Guioa semiglauca	X	X	X	X																								15	.1									
Sapotaceae																																						
Planchonella australis	X																																					
Scrophulariaceae																																						
* Veronica arvensis																																						
Solanaceae																																						
Solanum americanum								X												.1																	
* Solanum chenopodioides																																						
Sterculiaceae																																						
# Brachychiton acerifolius					X																			2	2												
Theaceae																																						
* Camellia sasanqua cv.					X																																	
Tropaeolaceae																																						
* Tropaeolum majus																			5	2																		
Ulmaceae																																						
Trema tomentosa var. aspera																																				1		
Urticaceae																																						
* Parietaria judaica																																						
Verbenaceae																																						
* Lantana camara	X	X	X	X			X		90	60	10										5	3	5	15	1	10									2	1		
* Verbena bonariensis																																						
Violaceae																																						
Viola banksii															.1																							
Vitaceae																																						
Cayratia clematidea								X											.1	.1	.1				1	.1									1	1	1	1
Cissus antarctica	X	X	X	X		X	X													1	5		5	5	10		1	1	.1						.1	2	5	20

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats												T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Cissus hypoglauca		X																							1	10												
4. Monocotyledons																																						
Agavaceae																																						
* Agave attenuata																																						
Alliaceae																																						
* Agapanthus praecox																																						
* Nothoscordum gracile																				1																		
Amaryllidaceae																																						
* Clivia miniata							X																															
* Hippeastrum cv.																						1																
Anthericaceae																																						
* Chlorophytum comosum																									5	5												
Araceae																																						
Gymnostachys anceps		X	X	X																	.1	1	1	1			.1		1	.1					1	1	1
Arecaceae																																						
# Archontophoenix cunninghamiana	X																		.1																		
Livistona australis	X	X	X	X		X	X				5	15		5	15							15	1	.1	1	5	.1			.1					50	50	10	10
* Phoenix canariensis												2																										
* Syagrus romanzoffiana																			.1		1																.1	
Asparagaceae																																						
* Asparagus aethiopicus				X															3	1	.1		2	20	1	5		.1	.1						.1	2	1	
* Asparagus asparagoides											.1	.1																										
* Asparagus falcatus						X																																
* Asparagus plumosus																																					.1	
Asteliaceae																																						
* Cordyline australis Purpurea						X																																
# Cordyline petiolaris		X																																				
Commelinaceae																																						
Commelina cyanea					X		X												10	3	.1				.1											1	.1	

Botanical name	Percent cover in quadrats																																	
	T1 quadrats				T2 quadrats				T3 quadrats												T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
* Tradescantia fluminensis					X	X	X	X	.1	.1	.1	.1	4	30	15	1						1			30		.1	2									1			
* Tradescantia zebrina																																						
Cyperaceae																																						
Carex breviculmis																														.1								
Carex appressa							X																															
Carex gaudichaudiana																																						
Carex inversa																										.1												
Cyperus brevifolius																																						
* Cyperus eragrostis																	.1			2																		
Cyperus gracilis																																						
Ficinia nodosa																																						
Gahnia clarkei	X										5	15																										
Lepidosperma elatius																										3	1											
Dioscoreaceae																																						
Dioscorea transversa	X	X	X	X																	1	2		2						.1					.1	1		1
Iridaceae																																						
* Aristea ecklonii																																						
* Crocosmia x crocosmiiflora																																						
* Freesia leichtlinii																																						
* Romulea rosea																															2	1						
Juncaceae																																						
Juncus usitatus																																						
Liliaceae																																						
* Lilium formosanum																																.1						
Lomandraceae																																						
Lomandra longifolia	X	X	X	X																						1					1	.1	.1		.1	1	2	
Philesiaceae																																						
Eustrephus latifolius	X	X	X	X																	.1	1	.1	1	.1	1	.1			.1	.1							
Geitonoplesium cymosum	X	X	X																		.1		.1		.1	.1	.1			.1				.1	.1	.1	.1

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats										T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Phormiaceae																																						
Dianella caerulea		X	X																										.1						.1	1		
Poaceae																																						
* Agrostis sp.																																						
* Agrostis stolonifera					X												2																					
* Arundo donax																																						
* Axonopus fissifolius																											1	5		.1	1							
* Bromus catharticus																				.1													10	2				
Cymbopogon refractus																																						
Cynodon dactylon					X				5	.1														3									1						
* Ehrharta erecta																	2	1	1	20		1	1	5	.1	15	.1	5	2	2	2	20			1	2	1	1
* Eleusine indica									.1																													
Entolasia marginata	X																														.1							
Imperata cylindrica																																						
* Lolium perenne																																						
Microlaena stipoides										.1							.1										5	20		1								
Oplismenus aemulus																	.1				.1		.1			.1	.1	5							.1			
Oplismenus imbecillis	X			X																	.1	1							.1	1					.1	1	1	
* Paspalum dilatatum									.1															1														
* Paspalum urvillei																																						
* Pennisetum clandestinum									80	80	1										.1											2	80	90				
Poa affinis																																						
* Poa annua					X													1													30	30						
* Setaria palmifolia								X													10	10							.1	1								
* Setaria parviflora																																						
* Sporobolus africanus																																	1					
* Stenotaphrum secundatum																		1																				
Themeda triandra																																						
Smilacaceae																																						
Smilax australis	X	X	X	X															.1		1	2		3	1	2				.1								
Smilax glyciphylla		X	X	X																		1	2	2	.1											.1		

Botanical name	Percent cover in quadrats																															
	T1 quadrats				T2 quadrats				T3 quadrats										T4 quadrats				T5 quadrats				T6 quadrats				T7 quadrats				T8 quadrats			
	1	2	3	4	1	2	3	4	1	2	3	4	5	6	7	8	9	10	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Strelitziaceae																																						
* Strelitzia nicolai		X																			5	1	5		3	3			1						15	5		10
Uvulariaceae																																						
Schelhammera undulata	X			X																							.1											

Table 1B. Species recorded in the quadrats in Transects 9 to 14 and in Spot locations A to T

Notes: 1. Asterisk (*) before botanical name signifies exotic species. Hash symbol (#) signifies a non-local native, planted or naturalised

2. Families are grouped under headings 1. Pteridophytes, 2. Gymnosperms, 3. Dicotyledons, 4. Monocotyledons. One or more of these plant groups may be absent from this site

3. Values in quadrats columns are estimated cover percentages. The nominal value 0.1 was recorded for covers of a small fraction of 1%. Covers over 7% were rounded to multiples of 5.

4. In columns under Spot locations an 'X' indicates presence only, except in Spot location O, where percent cover was recorded. There was no Spot location G.

5. Transects T9 to T14 were 40 m x 10 m, each consisting of four 10 m x 10 m quadrats.

Botanical name	Percent cover in quadrats																						Presence in spot locations																				
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
1. Pteridophytes																																												
Adiantaceae																																												
Adiantum aethiopicum																																												
Adiantum hispidulum																																												
Aspleniaceae																																												
Asplenium australasicum			.1																																									
Asplenium sp.																									X																				
Blechnaceae																																												
Blechnum cartilagineum																																												
Blechnum indicum																										X																			
Doodia aspera		2	2	3														1			1	2	1	3	X																			
Telmatoblechnum indicum																																												
Cyatheaceae																																												
# Cyathea cooperi																									X																				
Davalliaceae																																												
# Nephrolepis cordifolia																																												
Dennstaedtiaceae																																												
Hypolepis muelleri																										X																			
Pteridium esculentum	.1											.1														X																			

Botanical name	Percent cover in quadrats																				Presence in spot locations																							
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																								
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Dryopteridaceae																																												
Lastreopsis decomposita																																												
Polystichum australiense																																												
Polypodiaceae																																												
Platycerium bifurcatum																																												
2. Gymnosperms																																												
Pinaceae																																												
* Pinus elliottii																			15				5																						
* Pinus radiata																																												
3. Dicotyledons																																												
Acanthaceae																																												
Avicennia marina																											X		X															
Pseuderanthemum variabile			.1														.1		.1		.1																							
Aceraceae																																												
* Acer negundo																																												
Aizoaceae																																												
Tetragonia tetragonioides																																												
Amaranthaceae																																												
* Amaranthus viridis																																												
Anacardiaceae																																												
* Harpephyllum caffrum																											X																	
Apiaceae																																												
Apium prostratum																												X																
Centella asiatica											.1																																	
* Cyclospermum leptophyllum																									X																			
Apocynaceae																																												
* Araujia sericifera	1		1		.1		.1			.1																X																	

Botanical name	Percent cover in quadrats																								Presence in spot locations																							
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Marsdenia flavescens																																															
Marsdenia rostrata																																															
* Nerium oleander																																															
Parsonsia straminea		10	15	5	5				.1			10					.1	2	10	.1			.1			X																					
Tylophora barbata																	.1	1						.1																							
Araliaceae																																															
* Hydrocotyle bonariensis	1	.1																							X			X																		
Hydrocotyle hirta				.1					1								.1	1	.1																											
Hydrocotyle peduncularis																																															
* Schefflera arboricola							2																																								
Asteraceae																																															
* Ageratina adenophora																									X																					
* Ageratum houstonianum																									X																					
* Bidens pilosa	2	1	.1	.1	1	1	1	1			.1									.1	.1		.1		X																					
* Cirsium vulgare	.1		.1																																											
* Conyza sumatrensis	.1	.1						.1						.1																																
Cotula australis				.1						.1				.1	.1																															
* Crassocephalum crepidioides	.1	.1	.1					1																	X																					
* Facelis retusa																																															
* Galinsoga parviflora																									X																					
* Gamochaeta coarctata										.1																																				
* Gamochaeta sp.																																															
* Hypochaeris radicata																	.1				2	1	.1	1																					
* Soliva anthemifolia																																															
* Soliva sessilis	.1	1	.1						.1	1		10	1	1	.1	1	1	1	1	3																			2						
* Sonchus oleraceus								.1			.1	1			.1										X			X																		
* Taraxacum officinale									.1		.1		.1					.1	.1	.1	.1																								
Youngia japonica																																															
Basellaceae																																															
* Anredera cordifolia				2		2	1																																							
Bignoniaceae																																															
* Jacaranda mimosifolia																																															

Botanical name	Percent cover in quadrats																				Presence in spot locations																									
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																									
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Pandorea pandorana																	1																												
Brassicaceae																																													
* Cardamine hirsuta	.1								.1																																				
* Lepidium bonariense																1																												
Caprifoliaceae																																													
* Lonicera japonica																																													
Caryophyllaceae																																													
* Cerastium glomeratum		.1								1						1																												
* Polycarpon tetraphyllum													.1			.1	.1																												
* Stellaria media	.1	.1	1			.1			.1				1	1	.1	2	1	3	.1	3																								
Casuarinaceae																																													
Allocasuarina littoralis																																													
Allocasuarina torulosa				3																		3																						
# Casuarina cunninghamiana																																	X											
Casuarina glauca																											X	X																	
Celastraceae																																													
Denhamia silvestris																				2																									
Chenopodiaceae																																													
Sarcocornia quinqueflora																														X														
Convolvulaceae																																													
Dichondra sp. A	.1		.1									1	.1				.1		.1			1		.1																				
* Ipomoea cairica																																													
* Ipomoea indica																																													
Cunoniaceae																																													
Callicoma serratifolia																										X																			
Ceratopetalum apetalum																										X																		
Dilleniaceae																																													
Hibbertia dentata												1																																	

Botanical name	Percent cover in quadrats																				Presence in spot locations																					
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Ebenaceae																																											
Diospyros australis																																										
Elaeocarpaceae																																										
Elaeocarpus reticulatus																																										
Ericaceae Styphelioideae																																										
Trochocarpa laurina																																										
Euphorbiaceae																																										
* Acalypha australis																									X																		
Breynia oblongifolia				1																		.1		.1		X																	
Claoxylon australe																																											
Euphorbia dallachyana																											X																
* Euphorbia peplus						.1		1																																			
Glochidion ferdinandi	9		5		10	30			5	3	5									2	.1				X	X																	
Homalanthus populifolius																																											
* Ricinus communis																																											
* Triadica sebifera																										X																	
Eupomatiaceae																																											
Eupomatia laurina				2																																							
Fabaceae Caesalpinioideae																																											
* Senna pendula var. glabrata	5		1	.1																							X																
Fabaceae Faboideae																																											
Desmodium gunnii																	.1																											
* Erythrina x sykesii																																											
Glycine clandestina															.1					.1		.1		.1																				
* Medicago polymorpha																																											
* Trifolium repens									.1	2	5	3	1		1																													
Fabaceae Mimosoideae																																											
Acacia implexa																																											
Acacia parramattensis										2																																	

Botanical name	Percent cover in quadrats																				Presence in spot locations																					
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Fumariaceae																																											
* Fumaria sp.																									X																		
Geraniaceae																																										
Geranium homeanum	.1	.1							.1		.1	.1																															
Geranium solanderi																																										
Lamiaceae																																										
Clerodendrum tomentosum				.1						3								2		.1		3		.1																			
* Plectranthus verticillatus																																										
* Stachys arvensis																									X																		
# Westringia fruticosa																												X														
Lauraceae																																										
* Cinnamomum camphora		3																									X															
Cryptocarya glaucescens																																										
Cryptocarya microneura	.1																																									
Lobeliaceae																																										
Pratia purpurascens									.1			1					.1						.1	.1																			
Malaceae																																										
* Eriobotrya japonica																																										
Malvaceae																																										
* Lagunaria patersonia							3																				X															
* Modiola caroliniana	.1								.1		.1							1																									
* Sida rhombifolia		.1							.1		.1										.1	1	.1																			
Meliaceae																																										
Synoum glandulosum																																										
Menispermaceae																																										
Sarcopetalum harveyanum																																										
Stephania japonica		1																																								
Monimiaceae																																										
Wilkiea huegeliana		3	4	1																																						

Botanical name	Percent cover in quadrats																																							
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats				Presence in spot locations																
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Moraceae																																										
Ficus coronata																																										
Ficus rubiginosa																																										
Myrsinaceae																																										
Myrsine variabilis				1								5						15				.1		.1																			
Myrtaceae																																										
Acmena smithii			3	10																																						
Angophora floribunda		15		10	5	20	15				15	35				50	.1	40	5	30	10	8	5	15										X	X			X		X		
Backhousia myrtifolia																							.1																			
# Callistemon viminalis																																										
Eucalyptus paniculata	5			20	10			30	20				30	30	30		25			15	20	30								X							X		X		X
Eucalyptus robusta					5			10																	X	X	X															
Eucalyptus scias																						10								X			X								
Eucalyptus umbra										25	10	10		10					15	25											X			X							
# Melaleuca bracteata cv.																											X														
Melaleuca quinquenervia																																		X								
Syncarpia glomulifera					10	10				15					15									10												X						
Nandinaceae																																										
* Nandina domestica																																										
Ochnaceae																																										
* Ochna serrulata			4																		.1	.1	.1																			
Oleaceae																																										
* Ligustrum lucidum	8	15			10																																					
* Ligustrum sinense																																										
Notelaea longifolia		1	1						.1		1	3					1		.1		.1																				
Onagraceae																																										
* Ludwigia longifolia																									X																
* Ludwigia peruviana																									X																
* Oenothera sp.																																										

Botanical name	Percent cover in quadrats																				Presence in spot locations																						
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Oxalidaceae																																											
* Oxalis debilis var. corymbosa	.1				.1				.1																																		
Oxalis exilis											.1	.1	.1	1	1	1	.1	.1		.1		.1	.1	.1	X		X																
* Oxalis latifolia				.1							.1																																
Oxalis sp. (native)																																											
Passifloraceae																																											
* Passiflora edulis																																											
Passiflora herbertiana																																											
Pittosporaceae																																											
Pittosporum multiflorum		1	2	2																																						
Pittosporum revolutum			1	1																2																						
Pittosporum undulatum		2	.1	1	10																																					
Plantaginaceae																																											
* Plantago lanceolata											.1						.1	.1	.1			.1	.1		X																		
* Plantago major																											X																
Polygalaceae																																											
* Polygala virgata												1																														
Polygonaceae																																											
* Acetosa sagittata	1										.1																																
Persicaria hydropiper																											X																
Persicaria strigosa																																											
Rumex brownii																																											
* Rumex crispus																									X																		
Primulaceae																																											
* Lysimachia arvensis																																											
Proteaceae																																											
Banksia integrifolia																												X															
Persoonia linearis											2																																
Ranunculaceae																																											
* Ranunculus repens										.1																																	

Botanical name	Percent cover in quadrats																				Presence in spot locations																					
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Rhamnaceae																																											
Alphitonia excelsa																																											
Rosaceae																																											
* Duchesnea indica	1																										X																
* Rubus laudatus	.1																																										
Rubus moluccanus var. trilobus																																											
Rubiaceae																																											
Cyclophyllum longipetalum			11	50																																							
Gynochthodes jasminoides																																											
Opercularia sp.																																											
Pomax umbellata																																											
Rutaceae																																											
Acronychia oblongifolia																																											
Sapindaceae																																											
* Cardiospermum grandiflorum																																											
Cupaniopsis anacardioides	.1																																										
Guioa semiglauca	.1					40																																					
Sapotaceae																																											
Planchonella australis																																											
Scrophulariaceae																																											
* Veronica arvensis									.1								.1																										
* Veronica persica																																											
Solanaceae																																											
Solanum americanum	.1																								X																		
* Solanum chenopodioides																																											
* Solanum mauritianum																																											
Sterculiaceae																																											
# Brachychiton acerifolius																																											

Botanical name	Percent cover in quadrats																				Presence in spot locations																					
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Theaceae																																											
* Camellia sasanqua cv.																																											
Tropaeolaceae																																											
* Tropaeolum majus																																											
Ulmaceae																																											
* Celtis sinensis																																											
Trema tomentosa var. aspera																																											
Urticaceae																																											
* Parietaria judaica																											X	X															
Verbenaceae																																											
* Lantana camara		25	1	3																																						
* Verbena bonariensis																									X																		
Violaceae																																											
Viola banksii																			.1																								
Vitaceae																																											
Cayratia clematidea	.1	1	.1			1			1																																		
Cissus antarctica		15	10																						X																		
Cissus hypoglauca			10	3					1																																		
4. Monocotyledons																																											
Agavaceae																																											
* Agave attenuata												2																															
Alliaceae																																											
* Agapanthus praecox						5		10																																		
* Nothoscordum gracile												1																X														
Amaryllidaceae																																											
* Clivia miniata						5		20																																		
* Hippeastrum cv.																																											

Botanical name	Percent cover in quadrats																				Presence in spot locations																					
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Anthericaceae																																											
* Chlorophytum comosum																																										
Araceae																																										
Gymnostachys anceps		2		1																	.1			.1																		
* Zantedeschia aethiopica																																										
Arecaceae																																										
# Archontophoenix alexandrae																																										
# Archontophoenix cunninghamiana	3						7																																			
Livistona australis			10	30		2	8	40	1									15				1	.1		X	X	X	X														
* Phoenix canariensis						1																																				
* Syagrus romanzoffiana							5																																			
Asparagaceae																																										
* Asparagus aethiopicus	2	3	1	2	5				1		.1	1						.1				.1					X																
* Asparagus asparagoides																																										
* Asparagus falcatus																																										
* Asparagus plumosus																																										
Asteliaceae																																										
* Cordyline australis Purpurea																																										
# Cordyline petiolaris																																										
Commelinaceae																																										
Commelina cyanea	.1		.1	1		.1			.1		.1																X															
* Tradescantia fluminensis				15																					X																
* Tradescantia zebrina					5																																					
Cyperaceae																																										
Baumea articulata																																										
Carex breviculmis												.1										.1																				
Carex appressa																																										
Carex brunnea																																										
Carex gaudichaudiana																									X																
Carex inversa																																										

Botanical name	Percent cover in quadrats																				Presence in spot locations																					
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
Cyperus brevifolius																												X															
* Cyperus eragrostis																																											
Cyperus gracilis															.1																												
* Cyperus rotundus																																											
Ficinia nodosa																									X			X															
Fimbristylis dichotoma																																											
Gahnia clarkei																																											
Isolepis hookeriana																																											
Lepidosperma elatius			.1																																								
Dioscoreaceae																																											
Dioscorea transversa																					.1	.1	.1	.1																				
Iridaceae																																											
* Aristea ecklonii																												X															
* Crocosmia x crocosmiiflora																				.1																								
* Freesia leichtlinii																	.1		.1		.1																							
* Romulea rosea															.1	1	1	.1	1	.1	.1	1	2	1																				
Juncaceae																																											
Juncus usitatus																												X															
Liliaceae																																											
* Lilium formosanum																																											
Lomandraceae																																											
Lomandra longifolia														2			.1		.1	3	.1	.1		1				X															
Philesiaceae																																											
Eustrephus latifolius				.1	1				.1		.1						.1					.1																					
Geitonoplesium cymosum		.1	1	.1								.1						1		.1	.1		.1	.1																			
Phormiaceae																																											
Dianella caerulea			.1							.1				2							.1	.1																					
Poaceae																																											
* Agrostis sp.		5																																									
* Agrostis stolonifera																																											

Botanical name	Percent cover in quadrats																								Presence in spot locations																							
	T9 quadrats				T10 quadrats				T11 quadrats				T12 quadrats				T13 quadrats				T14 quadrats																															
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	A	B	C	D	E	F	H	I	J	K	L	M	N	O	P	Q	R	S	T
* Arundo donax																									X																						
* Axonopus fissifolius																	4																														
* Bromus catharticus									30	15	25		.1		.1	10		3																														
* Cenchrus clandestinus		1										5	1	20	40	30	10		5	40		3																90								
Cymbopogon refractus																											X																				
Cynodon dactylon									1	3	2				1	5	3										X	X																		
* Ehrharta erecta	5	2	1	1	1	4	1	3	1	2	2						3	1	2	1		2		3			X																		
* Eleusine indica													.1	2	.1		.1																														
Entolasia marginata																																														
Imperata cylindrica																					.1																									
* Lolium perenne		1																																											
Microlaena stipoides																	5		5			5																								
Oplismenus aemulus	1	1	1									5						2		.1			.1																							
Oplismenus imbecillis																																														
* Paspalum dilatatum										1		2										2																								
* Paspalum urvillei									.1																																				
Phragmites australis																																														
Poa affinis																							.1	3																						
* Poa annua									30	30	35	20	35	40	30	25	1	10	1	30																		2								
* Setaria palmifolia					1	4																			X																				
* Setaria parviflora																									X																				
* Sporobolus africanus										1											.1	1																							
* Stenotaphrum secundatum																		1				5	5																							
Themeda triandra																												X																		
Smilacaceae																																														
Smilax australis		2		1																	.1																								
Smilax glyciphylla		3	2	3																		.1																								
Strelitziaceae																																														
* Strelitzia nicolai		15	2	1		1		2																	X																				
Uvulariaceae																																														
Schelhammera undulata																						.1		.1																						

Table 1C. Species recorded in the quadrats in Transects 15 to 17

Notes: 1. Asterisk (*) before botanical name signifies exotic species. Hash symbol (#) signifies a non-local native, planted or naturalised.

2. Families are grouped under headings 1. Pteridophytes, 2. Gymnosperms, 3. Dicotyledons, 4. Monocotyledons. One or more of these plant groups may be absent from this site.

3. Values in columns are estimated cover percentages. The nominal value 0.1 was recorded for covers of a small fraction of 1%. Covers over 7% were rounded to multiples of 5.

5. Quadrats were 5 m x 5 m.

Botanical name	Percent cover in quadrats																
	T15 quadrats								T16 quadrats					T17 quadrats			
	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4
1. Pteridophytes																	
Blechnaceae																	
Telmatoblechnum indicum						10	10	5				3	30		.1	1	5
Dennstaedtiaceae																	
Hypolepis muelleri				2	10		10									.1	1
3. Dicotyledons																	
Amaranthaceae																	
* Amaranthus viridis									.1	.1							
Apiaceae																	
* Cyclospermum leptophyllum	1	.1							.1								
Apocynaceae																	
Parsonsia straminea												1					
Araliaceae																	
* Hydrocotyle bonariensis	3	3	15	20	3				5	15	15					.1	
Asteraceae																	
* Cirsium vulgare			1														
* Conyza sumatrensis	.1	.1		1					.1								
Cotula australis	1																
* Crassocephalum crepidioides			.1											.1			
* Facelis retusa	1																
* Gamochaeta coarctata	.1								.1								

Botanical name	Percent cover in quadrats																
	T15 quadrats								T16 quadrats					T17 quadrats			
	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4
* Gamochaeta sp.		.1															
* Soliva anthemifolia			.1	.1					.1								
* Sonchus oleraceus									.1								
Youngia japonica									.1								
Caprifoliaceae																	
* Lonicera japonica						2	2					.1	.1			.1	10
Caryophyllaceae																	
* Cerastium glomeratum			.1							.1							
* Polycarpon tetraphyllum			.1	.1													
* Stellaria media									1	2							
Convolvulaceae																	
Dichondra sp. A									5	.1							
* Ipomoea cairica				5	10		10	30	2	50	70	.1		30	10	15	10
* Ipomoea indica						1							2	10	1		
Cunoniaceae																	
Callicoma serratifolia												2	15				
Euphorbiaceae																	
* Euphorbia peplus									.1	.1							
Glochidion ferdinandi					5	1				40	50		.1			.1	
Fabaceae Faboideae																	
* Trifolium repens		.1	.1														
Malvaceae																	
* Modiola caroliniana	10	.1	.1							1							
Moraceae																	
Ficus coronata												2	20	5	20	30	20
Myrtaceae																	
Acmena smithii													1				25
Eucalyptus paniculata				20													
Eucalyptus robusta			5		15			5			10	5					10
Ochnaceae																	
* Ochna serrulata																.1	

Botanical name	Percent cover in quadrats																
	T15 quadrats								T16 quadrats					T17 quadrats			
	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4
Onagraceae																	
* Oenothera sp.									.1								
Oxalidaceae																	
Oxalis sp. (native)	1	.1	.1														
Polygonaceae																	
Persicaria strigosa											.1			2	30	30	20
Primulaceae																	
* Lysimachia arvensis	.1																
Rosaceae																	
* Duchesnea indica	5	1							.1								
Rubiaceae																	
Gynochthodes jasminoides															1		
Sapindaceae																	
Cupaniopsis anacardioides					.1				.1							.1	
Scrophulariaceae																	
* Veronica arvensis	5	1	1						1	.1							
* Veronica persica										.1							
Solanaceae																	
Solanum americanum	.1								.1								
* Solanum mauritianum										1							
Ulmaceae																	
* Celtis sinensis														40			
Verbenaceae																	
* Lantana camara										2							
4. Monocotyledons																	
Araceae																	
* Zantedeschia aethiopica											1						
Arecaceae																	
# Archontophoenix alexandrae																	.1

Botanical name	Percent cover in quadrats																	
	T15 quadrats								T16 quadrats					T17 quadrats				
	1	2	3	4	5	6	7	8	1	2	3	4	5	1	2	3	4	
Livistona australis	50					30	10	5			70	80	10	50	35	50	10	
Asparagaceae																		
* Asparagus falcatus						1												
Commelinaceae																		
Commelina cyanea									.1									
Cyperaceae																		
Baumea articulata				1														
Carex brunnea																2		
Carex inversa		.1																
Cyperus brevifolius			.1		.1													
* Cyperus eragrostis			.1	10	.1													
* Cyperus rotundus									.1									
Fimbristylis dichotoma				.1														
Gahnia clarkei				25	50	50	50	70					20				20	
Isolepis hookeriana			.1	1														
Poaceae																		
* Axonopus fissifolius				.1														
* Bromus catharticus	10	1							1	5								
* Cenchrus clandestinus	70	75	70	5					50	25								
Cynodon dactylon	5	4	20						5	15								
* Ehrharta erecta										.1								
Imperata cylindrica											2	2	1					
* Lolium perenne	2								.1									
Phragmites australis															.1			
* Poa annua	1	2	1	3														
* Setaria palmifolia														15				
Smilacaceae																		
Smilax glyciphylla												10						

Table 1D. Species recorded in 10 m x 2 m quadrats centered on the water sampling locations

* Exotic # Non-local native

	Botanical name	Non-saline	Brackish	Saline mangrove / saltmarsh	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W21
	Acacia elata	x						x																	
*	Acer negundo						x	x																	
*	Acetosa sagittata						x																		
	Aegiceras corniculatum			x														x						x	
*	Ageratina adenophora																			x					
	Allocasuarina torulosa	x				x																			
	Alternanthera denticulata	x	x						x	x	x		x												
	Amyema cambagei		x														x								
	Angophora floribunda	x				x																			
*	Anredera cordifolia																x								
	Apium prostratum		x														x	x			x				
*	Araujia sericifera													x					x						
#	Archontophoenix cunninghamiana	x						x																	
*	Arundo donax								x																
*	Asparagus aethiopicus						x	x											x						
*	Asparagus plumosus				x		x																		
*	Aster subulatus									x							x								
	Avicennia marina subsp. australasica			x														x	x					x	x
	Bacopa monnieri	x	x										x		x										
	Baumea articulata	x	x																			x	x		
	Baumea juncea		x							x															
*	Bidens pilosa					x			x																
	Blechnum neohollandicum (Doodia aspera)	x			x	x																			
*	Briza maxima							x																	
*	Bromus catharticus								x							x	x								
	Callicoma serratifolia	x				x	x																		
#	Callistemon viminalis	x															x								
	Carex appressa	x	x							x												x			
	Carex brunnea	x				x																			
	Casuarina glauca		x									x	x	x	x	x	x	x	x	x	x	x			
*	Cenchrus clandestinus (Pennisetum clandestinum)															x	x				x	x	x		
	Centella asiatica	x										x													

	Botanical name	Non-saline	Brackish	Saline mangrove / saltmarsh	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W21
	Ceratopetalum apetalum	x			x	x	x																		
*	Cestrum nocturnum						x																		
*	Cirsium vulgare																x								
	Cissus antarctica	x				x	x	x																	
	Cissus hypoglauca	x			x	x	x																		
	Commelina cyanea	x							x		x				x										
*	Conyza sumatrensis							x				x	x				x		x		x		x		
	Cotula australis	x					x																		
*	Crocosmia x crocosmiiflora							x																	
#	Cyathea cooperi	x				x	x	x																	
*	Cyclospermum leptophyllum										x	x						x	x		x				
	Cycnogeton procerum (Triglochin procera)	x							x																
	Cynodon dactylon	x	x					x			x	x	x	x					x		x		x		
	Cyperus brevifolius	x									x											x	x		
*	Cyperus eragrostis																						x		
*	Dietes grandiflora									x															
	Dioscorea transversa	x			x																				
*	Ehrharta erecta						x									x			x	x					
	Eucalyptus robusta	x								x				x											
	Euphorbia drummondii	x	x																		x				
	Eupomatia laurina	x				x																			
	Ficus coronata	x						x							x										
#	Ficus macrophylla	x																			x				
	Gahnia clarkei	x								x															
*	Gamochaeta antillana																		x						
*	Gamochaeta coarctata											x	x								x		x		
	Geranium homeanum	x																		x					
	Glochidion ferdinandi	x					x			x															
	Guioa semiglauca	x			x																				
	Gymnostachys anceps	x			x																				
	Gynochthodes jasminoides (Morinda jasminoides)	x			x	x																			
	Histiopteris incisa	x												x											
*	Hydrocotyle bonariensis								x		x	x	x												
*	Ipomoea cairica								x																

	Botanical name	Non-saline	Brackish	Saline mangrove / saltmarsh	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W21
	Isolepis hookeriana	x													x										
•	Juncus articulatus								x			x													
•	Juncus cognatus												x												
	Juncus kraussii			x				x									x								
	Juncus usitatus	x											x		x							x	x		
	Lachnagrostis filiformis		x												x							x			
•	Lagunaria patersonia																		x	x					
•	Lantana camara							x																	
•	Leucaena leucocephala							x																	
•	Ligustrum sinense						x																		
	Livistona australis	x			x	x	x	x	x										x	x			x		
	Lobelia anceps		x													x									
•	Lolium perenne															x									
	Lomandra longifolia	x						x																	
•	Ludwigia longifolia										x														
	Ludwigia peploides subsp. montevidensis	x	x?						x	x	x	x		x				x							
•	Ludwigia peruviana								x		x		x	x											
•	Lysimachia arvensis								x						x										
	Melaleuca styphelioides	x	x												x										
	Microlaena stipoides	x																		x					
•	Modiola caroliniana											x	x		x	x									
•	Myriophyllum aquaticum													x											
	Notelaea longifolia	x			x																				
•	Nymphaea capensis																					x			
•	Ochna serrulata						x	x																	
	Oplismenus aemulus	x				x														x					
	Oplismenus imbecillis	x				x																			
	Oxalis exilis	x										x						x							
•	Parietaria judaica															x		x		x					
	Parsonsia straminea	x								x															
•	Paspalum dilatatum										x	x													
	Paspalum vaginatum		x						x													x	x		
	Persicaria decipiens	x	x							x		x										x	x		
•	Phoenix canariensis																		x						
	Phragmites australis	x	x							x					x										

	Botanical name	Non-saline	Brackish	Saline mangrove / saltmarsh	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W21
*	Pinus elliottii							x																	
	Pittosporum undulatum	x					x																		
*	Plantago lanceolata												x										x		
*	Plantago major																	x							
*	Polycarpon tetraphyllum																				x				
*	Polypogon monspeliensis															x									
	Pseuderanthemum variabile	x			x																				
	Pteris tremula	x												x											
*	Rumex crispus									x															
*	Sagittaria platyphylla								x																
	Samolus repens		x	x													x	x							
	Schoenoplectus validus	x	x						x													x	x		
*	Selaginella kraussiana					x																			
*	Senecio madagascariensis									x															
*	Senna pendula var. glabrata					x	x	x		x															
*	Setaria palmifolia								x	x						x									
*	Sida rhombifolia							x							x										
*	Solanum nigrum																x								
*	Sonchus oleraceus																				x				
*	Stachys arvensis													x											
*	Stenotaphrum secundatum														x			x		x					
	Stephania japonica var. discolor	x					x																		
*	Strelitzia reginae									x															
	Syncarpia glomulifera	x			x																				
	Synoum glandulosum	x			x		x																		
	Tetragonia tetragonioides		x															x	x						
*	Tradescantia fluminensis					x	x											x		x					
*	Trifolium repens								x																
	Typha orientalis	x											x												
*	Verbena bonariensis													x											
*	Veronica arvensis												x												
	Viola banksii	x			x	x																			
*	Viola odorata																	x		x					
	Wilkiea huegeliana	x			x		x																		
	Youngia japonica	x														x									

Table 4
Implication table for the Vegetation Management Plan

Management objectives

1. Increase Environmental Awareness
2. Assess rehabilitation assets onsite
3. Re-establish the natural landform in the between fairway Conservation Areas
4. Minimise risks of nutrient and sediment input, introduced pathogens and weed invasion
5. Minimise risk to native fauna during earthworks
6. Re-use of native vegetation and weed assets
7. Implement primary, secondary and maintenance weed removal
8. Maintain and/or re-establish the local flora
9. Enhance fauna habitat
10. Implement monitoring, maintenance, reporting and corrective action requests as required
11. Setting targets

Management Objectives for	Targets	Actions	Time frame	Responsibility
1 to 11	Appoint Environmental Manager.	Appoint an Environmental Manager (EM) with at least 5 years experience restoring degraded sites, including using large earthmoving equipment.	Prior to commencement of works.	The client.
1, 10	Adequate induction documentation and environmental signs.	Prepare induction document to be signed by all persons entering the site.	Prior to construction works.	Construction Manager and Environmental Manager.
1, 2, 10				

Management Objectives for	Targets	Actions	Time frame	Responsibility
1, 4, 10	All personnel entering the site inducted.	Induct all persons entering the site, explain the issues and sign the induction form, including: - Contact details; - "Restricted Areas" (between fairway Conservation Areas); - Cleanliness and risk of spread of weeds and pathogens; and - Fauna related issues, especially the Powerful Owl.	Prior to and during the construction phase.	Construction Manager in consultation with Environmental Manager.
1, 4, 10	Personnel remain aware of Environmental significance issues on the site.	Conduct regular tool box talks at which: - Personnel are reminded of the conservation importance of surface water runoff, groundwater, rocks, soils and local native vegetation; - Induction material listed above is reviewed; and - Current issues and any expected new issues are discussed.	Weekly or as specified by the Construction Manager and/or Environmental Manager during the construction phase.	Construction Manager in consultation with Environmental Manager.
4, 10	All vehicles and machinery cleaned and inspected in first 2 weeks of construction.	Clean and inspect all machinery and vehicles prior to entry and/or re-entry of the site. Document the cleanliness of vehicles entering the site (records and photographs) and include within the early monitoring report.	Before entry of equipment to the site.	Environmental Manager in consultation with Construction Manager.
4, 10	Ongoing cleanliness of personnel.	Clothing and shoes must be clean at the beginning of each day.	During construction phase, cleanliness of personnel onsite.	Construction Manager and Environmental Manager.
1, 10	All new residents provided with Environmental Awareness Kit.	Produce and provide all new residents and golf course players with an Environmental Awareness Kit in which the habitat of native fauna, especially Powerful Owl, and native flora are featured prominently.	Post the construction phase.	Golf Club/Body Corporate/Client in consultation with Environmental Manager.
2, 10	Identify the rehabilitation resources from waste associated with the proposed development.	Review volume and quality of: - Sandstone to be and being excavated; - Clay and clean insitu soils; and - Seed, upper branches and logs from local native trees being removed.	Prior to and during the construction phase.	Construction Manager and Environmental Manager.

Management Objectives for	Targets	Actions	Time frame	Responsibility
		Check their availability for re-use in the onsite Conservation Areas.		
2, 10	Confirm the extent of pre-development flow of groundwater to vegetation downslope of the proposed village. This pre-existing groundwater flow is to be maintained.	Review the logs to determine the pre-development flow of groundwater (if any) to vegetation downslope of the proposed village. Review the planning and implementation to maintain pre-existing flow of groundwater.	Prior to and during the construction phase.	Hydro-engineer in consultation with Construction Manager for the village and Environmental Manager.
3, 10	Identified on both plan and on the site, the area with known or potential fill containing anthropological material, dumping and cut drains.	As fairways are being progressively upgraded, the between fairway area is to be searched for dumpings, soil mounds and cut drains. Locations are to be provided to the Construction Manager.	Prior to commencement of earthworks on the fairway.	Environmental Manager in consultation with Golf Course Superintendent, Construction Manager.
3, 10	Identified on both plan and on the site, the area with known or potential acid sulfate soils.	As fairways are being progressively upgraded, the occurrence of acid sulfate in planned areas being lowered for proposed waterways are to be confirmed. Locations are to be provided to the Construction Manager.	Prior to commencement and during earthworks on the fairway.	Environmental Manager in consultation with Golf Course Superintendent, Construction Manager.
1, 4, 10	Minimise risk of pathogen movement.	Check areas prior to clearing of weeds and/or native vegetation, the existing plant growth appears health. Areas with unhealthy growth are to be treated as having potential pathogen present .	Prior to commencement and during earthworks on the fairway.	Environmental Manager in consultation with Golf Course Superintendent, Construction Manager.
1, 4, 10	Minimise risk of weed propagules, nutrient enriched water and sediment flow in the Conservation Area.	Weedy areas immediately upstream of the Conservation Area being reconstructed are to be contained using bunds and/or sediment control fencing, as required.	Staging during construction of Conservation Areas.	Environmental Manager in consultation with Golf Course Superintendent, Construction Manager.
1, 4, 10	To reduce nutrient build up in the roughs and to meet the expectation of golf players.	The rough should be mown (with a catcher) at least once per year. The mown grass from the catcher is to be composted for nutrient re-use on fairways.	Post construction of fairways and roughs.	Golf Course Superintendent in consultation with Environmental Manager.

Management Objectives for	Targets	Actions	Time frame	Responsibility
1, 2, 4, 6, 7, 10	Re-use of weeds growing in the Conservation Areas.	Using onsite equipment remove dense stands of weeds from Conservation Areas adjoining fairways for re-use of organic additives to fairways soils, where practicable.	During earthworks on the fairway.	Environmental Manager in consultation with Golf Course Superintendent, Construction Manager.
2, 4, 6, 8, 9, 10	Re-use of native plant material growing on oils being lowered.	Using onsite equipment remove native plant material growing on areas being modified. Seed and upper branches are to be used in the Conservation Area. Trunks are either spread in Conservation Areas as sediment and erosion control or for fauna habitat, or re-used in the proposed village, where practicable.	During earthworks on the fairway.	Environmental Manager and Construction Manager.
4, 6, 10	Sediment control measures in place adjoining the Conservation Area. Security fencing installed as required.	Install sediment control measures constructed from windrows of plant material collected from the site (preferably seed-bearing). If insufficient plant material for windrows, then use biodegradable low nutrient materials such as timber-staked jute fencing (hay bale not to be used). The use of cut branches increases the potential natural native colonisation in the Conservation Area.	Prior to commencement of earthworks on the fairway.	Construction Manager in consultation with Environmental Manager.
5, 10	Reduce risk to fauna and habitat.	As fairways are being progressively upgraded, the trees, dense stands of weeds and puddles in the between fairway Conservation Area are to be searched for the presence of fauna.	Immediately prior to commencement and during earthworks in Conservation Area.	Fauna consultant in consultation with Environmental Manager
5,10	Protect fauna and habitat.	Fauna expert needs to advise on the careful removal of fauna. The fauna expert may require that clearing be delayed to allow for completion of nesting and breeding requirements of the fauna species. Fauna reports are to be included in the monitoring reports.	Prior to commencement of progressive earthworks in Conservation Area.	Environmental Manager, fauna expert in consultation with Environmental Manager, as required.
2, 7, 9	Re-establish ground levels and re-use/re-cycling of removed material.	Removal of dumpings using the onsite equipment where practical. Re-use/re-cycling of removed material, as appropriate.	Prior to and during earthworks on the fairway	Construction Manager in consultation with Environmental Manager.
3, 5, 6, 9, 10	Weed control of any weed material used as organic additives on fairways.	Check that the weeds commonly occurring on the mounds and dumpings are readily controlled by herbicide commonly used on golf fairways.	Prior to construction works.	Environmental Manager in consultation with Construction Manager.
3, 5, 7, 8, 9, 10	Re-use of plant material.	Native plant material is to be cleared from mounds and dumpings.	Prior to and during earthworks on the fairway.	Construction Manager in consultation with

Management Objectives for	Targets	Actions	Time frame	Responsibility
		For construction works it is to be used in Conservation Areas as windrows, for direct seeding, brush matting, where practicable. The exotic plant material is to be cleared from mounds and dumpings. For construction works it is to be used in fairways as organic additions, as appropriate. Removals are to be undertaken using the onsite equipment, where practical.		Environmental Manager.
2, 6, 8, 9, 10	Collection and propagation of local native species, especially from any native plant material being cleared.	Collection of local native seed onsite for direct seeding and propagation for use in the Conservation Areas. Propagate local native plants from seeds and cuttings and grow as tubestock, as required.	Prior and during to the construction phase(s).	Specialist seed collector(s) and propagator(s) in consultation with the Environmental Manager and Construction Manager.
4, 8, 10	Use local native grass species on the golf fairways and roughs.	Check grass orders and deliveries for the golf fairways and roughs to ensure native species have been selected.	Prior to use on golf fairways and roughs.	Golf Superintendent, Environmental Manager and Construction Manager.
4, 8, 10	Soil prepared to minimise erosion and maximise native species germination and establishment, as required.	Deep rip and/or rotary hoe soils in Conservation Areas, as required by the Environmental Manager.	As soon as areas re-contoured to final landform.	Environmental Manager in consultation with Construction Manager.
4, 8, 9, 10	Avoid nutrient enrichment from adjoining urban areas by dense local native plantings and avoid loss of views from adjoining properties due to tree	Plant heights and species selection are to be discussed with the adjoining residents. Details of consultation with existing adjoining residents to be included in monitoring report(s).	Prior to plant orders for Conservation Area adjoining residential properties.	Environmental Manager, Golf Course Superintendent, in consultation with adjoining land owners.

Management Objectives for	Targets	Actions	Time frame	Responsibility
	plantings.			
2, 4, 8, 10	Establish dense native plant cover on the batter to minimise erosion risk	Re-use of native material, soil preparation, direct seeding and planting as required.	As soon as earthworks and soil preparation are completed.	Environmental Manager.
2, 7, 8, 10	Remove 95% of primary weed cover in Conservation Areas.	Photograph weed cover prior to removal. Physically remove the surface layer of weeds associated with fill, using excavation machinery. Remove the weed material to fairways under construction as organic additive, where practical. Photograph/ monitor the areas post weed removal.	Progressively during fairway construction.	Construction Manager in consultation with Environmental Manager.
2, 4, 6, 8, 9, 10	Staged re-establishment local native flora within the Conservation Area.	As native material becomes available from mounds or any clearing of native vegetation, the rehabilitation assets (topsoil, plant material) are to be re-used in the Conservation Area, as directed by the Environmental Manager.	During progressive conservation work between fairways.	Environmental Manager.
8, 10	Propagate at least 1000 tubestock of local native trees and shrubs for use on adjoining fairways.	Collect seed from trees / shrubs growing onsite. Propagate as tubestock a mix of the local native tree and shrubs species.	Prior to and during the construction phase.	Specialist seed collector and nursery propagator(s) in consultation with the Environmental Manager.
10, 11	Monitoring, corrective actions requests issued and implemented.	Checking, monitoring, reporting. Updating targets. Forward reports to the client for distribution to the appropriate government departments and/or Certifier.	During the construction phase and the monitoring phase.	Environmental Manager in consultation with the Construction Manager.
10, 11	Monitoring from fixed transects and photographs from fixed points.	Set up monitoring transects and fixed photographic points, used to determine whether germination and establishment is occurring. The fixed photographic monitoring points are located at approximately 100 m intervals on the fairways' edges. Photographs are taken looking toward the	Prior to commencement of the works and during the monitoring period.	Environmental Manager.

Management Objectives for	Targets	Actions	Time frame	Responsibility
		centre of the Conservation Areas and along the swales. Record data from baseline transects in the between fairway Conservation Areas. The fixed monitoring transects are at right angles to the fairways in the Conservation Areas. Record the presence / absence of species and percent projected foliage cover within quadrats.		
1 to 11	All rehabilitation works are monitored and reported regularly. Monitoring, maintenance, reporting and corrective action requests.	Monitor all rehabilitation works and prepare reports detailing the progress and success of revegetation and rehabilitation works. Include in reports: - Details of rainfall; - Fauna sightings; - Works done; - Photographic record of works done; - Further works required; - Photographs from the fixed monitoring points; - Data on vegetation structure and species composition recorded from fixed transects; and - Check that water management is fully operational. Use the monitoring reports to assess the success of the conservation works. Discuss results of the monitoring with the Construction Manager. Forward reports to the client for distribution to the appropriate government departments and/or Certifier.	Month 1, month 3, month 6, then yearly.	Environmental Manager and Construction Manager.
1 to 10	Maintenance, corrective	Address any issues that arise through the monitoring	Month 1, month 3, month 6	Environmental Manager

Management Objectives for	Targets	Actions	Time frame	Responsibility
	actions are carried out as required. Maintenance and corrective actions are documented.	process and implement corrective actions. Document outcomes of implementation in the next monitoring report.	then yearly. Completion of the monitoring period is contingent upon achieving the targets.	and Construction Manager.

Appendices (from Clements *et al.* 2017)

Appendix 2 – Summary table of Martens Consulting Geotechnical report 2017a & 2017c

Appendix 2 - Summary table of Martens Consulting Engineers Geotechnical report 2017a & 2017c

Table 1 - Summary of bore logs from Martens Consulting Engineers (2017a)
Note: The soil types are categorised as fill, alluvium, topsoil

Bore hole	Location	Recordings
101	Raised tee	0-0.1m Organic silt - FILL 0.1-3.2m Sandy Clay - FILL 3.2-5.8 m Silty Clay ≥ 5.8m Sandstone
102	Existing fairway	0-0.3m Clayey Sand - Topsoil 0.3-1.6m Clay, Sandy Clay ≥ 1.6m Sandstone
103	Existing fairway	0-0.4m Silty Clay - Topsoil 0.4-0.8m Clay with Sand ≥ 0.8m Sandstone
104	Existing fairway	0-0.4m Silty sand - Topsoil 0.4-1.1m Clay with Sand ≥ 1.1m Sandstone
105	Edge of existing fairway	0-0.2m Silty Sand - Topsoil 0.2-1.5m Clay with Sand ≥ 1.5m Sandstone
106	Existing fairway	0-0.6m Silty Sand - Topsoil 0.6-0.9m Clay with Sand ≥ 0.9m Sandstone
107	Existing fairway in raised area	0-0.4m Sand - Topsoil 0.4-1.5m Clay - FILL 1.5-5m Silty Sand - FILL 5.0-5.2m clay ≥ 5.2 Sandstone
108	Existing fairway in raised area	0-0.4m Silty Sand - Topsoil 0.4-0.6m Clay - FILL 0.6-0.9m Sandstone -FILL ≥ 0.9m Sandstone
109	Between fairway vegetation	0-0.6m Silty Sand - Topsoil 0.6-1.1m Clay with Sand ≥ 0.6m Sandstone
110	Existing fairway in raised area	0-0.15 Sand – Topsoil 0.15 - 0.6m Silty Sand – FILL 0.6 -1.1m Clay 1.1-1.6m Sandstone 1.6-5.5m Sandstone
301	Existing fairway	0-0.7m Sandy Silt - Topsoil 0.7-1.1m Sandy Clay 1.1-1.6m Silty Clay ≥1.6m Sandstone
302 MW02	Between fairway vegetation	0-0.15 Silt - Topsoil 0.15-1.2m Silty Clay ≥1.2 Sandstone
303 MW03	Between fairway vegetation	0-0.3m Silt - Topsoil 0.3-0.7m Silty Clay

Bore hole	Location	Recordings
		0.7-2.6m Sandstone
304	Edge of existing fairway	0-0.3m Sandy Silt – FILL 0.3-0.6m Silt - Topsoil 0.6-1.1m Clayey Sand ≥ 1.1m Sandstone
305 MW05	Between fairway vegetation	0-0.2m Silt -Topsoil 0.2-0.6m Silty sand - Topsoil 0.6-2.8m Sand Stone ≥ 2.8m Sandstone
306	Edge of sand bunker	0-0.25m - Silty Sand and Sandy Clay – FILL 0.25-1.1m Clay (mottled red/grey) 1.1-2m Clay 2-2.8m Silty Clay
307	Existing fairway	0-0.2m Silty Sand -Topsoil 0.2-1.1m Clayey Sand
308	Raised land	0-0.75m Silty Sand – FILL 0.75-1.2m Clayey Sand – FILL 1.2-2.5m Sandstone
309	Edge of existing fairway	0-0.35m Silt – Topsoil 0.35-0.5m Silty Clay
311	Between fairway vegetation	0-0.4m Silt – FILL 0.4-0.65m -Silt -Topsoil 0.65-0.8m Clay
312	Raised area ??	0-0.3m Silty Sand - FILL 0.3-1.2m Silty Clay – FILL 1.2-1.65m Clay 1.65-3.7m clayey Sand
313	Existing fairway	0-0.3m Silty Sand – Topsoil 0.3-1.1m Clayey Sand 1.1-4.5m Sandstone
314	Raised land	0-0.4m Silty Sand – FILL 0.4-0.6m Sand – FILL 0.6-1m Sand – FILL 1-1.5m Clayey Sand – FILL 1.5-2.3m Sandy Clay 2.3-2.5m Clay

Table 2 - Summary of bore log data from Martens Consulting Engineers (2017c)
Note: The soil types are categorised as fill, alluvium, topsoil

Bore hole	Location	Recordings
401	Edge of western pond	0-0.6m Silty Clay – FILL 0.6-0.9m Silt - Alluvium 0.9-1.5m Sand 1.5-1.9m Silt 1.9-2.5m Sand
402	Edge of western pond	0-0.2m Clay – FILL 0.2-0.9m Sand – FILL 0.9-1.5m Sand - Alluvium 1.5-2.5m Sandy Clay - Residual
403	Edge of fairway	0-1.4m Sand – FILL (trace bark, fabric) 1.4-1.5m Sand - Alluvium 1.5-2m Sand
404	Edge of southern channel	0-1.4m Silty Clay – FILL (trace styrofoam) 1.4-2.5m Clayey Silt - Alluvium
405	Vegetation between fairway and Cabbage Tree road	0-1.1m Clay – FILL 1.1-1.3m – Silt - Alluvium 1.3-2.5m Sand
406	Vegetation between fairway and Cabbage Tree road	0-0.1m Silty Clay – FILL 0.1-0.4m Silt - Alluvium 0.4-1.7m Sand 1.7-2.5m Clayey Sand
407	Vegetation between fairways	0-0.3m Silty Sand – FILL (trace shell) 0.3-0.8m Clayey Silt - Alluvium 0.8-1.5m Sand
408	Raised land	0-0.7m Sand – FILL (trace sandstone gravels) 0.7-1.1m Sand – FILL 1.1-2.5m Sand FILL
409	Vegetation btween fairways	0-0.4m Silt - Alluvium 0.4-1m Sandy Silt 1-2.5m Sand
410	Fairway	0-0.65 Sandy Clay – FILL (trace Plastic) 0.65-1.5m Sandy Clay – FILL (trace bark, metal wire) 1.5-2m Sand - Alluvium
411	Between channel and golf green	0-0.35m Sand – FILL 0.35-0.5m Silty Clay - Alluvium 0.5-1.1m Sand 1.1-1.5m Sand
412	Fairways	0-0.2m Clayey Sand – FILL 0.2-0.4m Clayey Silt - Alluvium 0.4-1.3m Sand 1.3-1.5m Sand

Bore hole	Location	Recordings
413	Raised slope of golf green	0-0.3m Silt – Topsoil 0.3-0.9m Sand - Alluvium 0.9-1.3m Sand 1.3-2m Sand
414	Vegetation beside golf green	0-0.4m Sand – FILL 0.4-1.1m Clay – FILL (trace sandstone gravels) 1.1-1.8m Clayey silt - Alluvium 1.8-2.3m Sand 2.3-2.5m Sand
415	Fairway	0-0.6m Clay -FILL (trace plastic, tile) 0.06-0.3m Clayey silt - Alluvium 0.3-1m Sand 1-1.5m Sand
416	Vegetation between fairway and Cabbage Tree road	0-0.25m Silt – FILL (trace shell) 0.25-0.35m Clayey silt - Alluvium 0.35-0.95m Sand 0.95-2.5m Sand
417	Vegetation between fairway and Cabbage Tree Road	0-0.5 Sandy Silt - Alluvium 0.5-0.8m Silty Clay 0.8-1.5m Silt
418	Beside Cahill Creek	0-0.1m Clay – FILL 0.1-0.2m Silt – FILL (trace sand, shell) 0.2-0.3m Silt - Alluvium 0.3-0.5m Sand 0.5-1.5m Sand 1.5-2m Sand
419	Beside Cahill Creek	0-0.3m Sand – FILL (trace sandstone gravels) 0.3-0.6m Sand – FILL 0.6-0.7m Clayey silt - Alluvium 0.7-1m Sand 1-2m Clayey silt
420	Vegetation between fairway and Cabbage Tree Road	0-1.2m Sand – FILL 1.2-1.5m Silty Clay - Alluvium 1.5-1.8m Sand 1.8-2.1m Silt 2.1-2.5m Sand
421	Northern side of channel into Pittwater	0-0.2m Sand – FILL
422	Southern side of channel into Pittwater	0-0.25M Sand – FILL 0.25-1.5m Clayey Silt - Alluvium 1.5-2m Sand
423	Beside Cahill Creek	0-0.15m Sand – FILL 0.15-0.25m Silty Clay - Alluvium

Bore hole	Location	Recordings
		0.25-1m Sand 1-1.5m Sand
424	Vegetation between fairway and Pittwater Road	0-0.7m Sand - Alluvium 0.7-1m Sand 1-1.5m Sand
425	Vegetation between fairway	0-0.8m Sand - Alluvium 0.8-1.5m Sand 1.5-2.5m Sand
426	Fairway	0-0.2m Clayey Sand- FILL 0.2-1.6m Sand - Alluvium 1.6-2.5m Sand
427	Vegetation between fairways	0-1m Sand - Alluvium 1-1.5m Sand
428	Fairway	0-0.4m Clay -FILL 0.4-0.7m Sand - Alluvium 0.7-1.5m Clay - Residual soil
429	Fairway	0-0.2m Silt - Alluvium 0.2-0.9m Sand 0.9-1.45m Sand 1.45-2.5m Sand
430	Raised land	0-0.35 Sand – FILL 0.35-0.6 Clayey Silt - Alluvium 0.6-1.5m Sand
431	Fairway	0-0.3m Silt – FILL 0.3-0.8m Sand - Alluvium 0.8-2m Sand
432	Vegetation between fairways	0-1.1m Sand - Alluvium 1.1-1.5m Sand
433	Between golf green and Cahill Creek	0-0.5m Silty Sand – Topsoil 0.5-2.5m Clayey Sand - Alluvium
434	Vegetation between fairways	0-0.25 Clay - Residual soil 0.25-1.5m Sand
435	Vegetation between fairways	0-0.1m Silty Sand – Topsoil 0.1-0.5m Sand - Alluvium 0.5-0.9m Sand 0.9-2.5m Sand
436	Vegetation between fairways	0-0.2m Silty Sand – Topsoil 0.2-0.45m Sand - Alluvium 0.45-0.8m Sand 0.8-1m Sand 1-2.5m Sand
437	Vegetation between	0-0.2m Silt – Topsoil 0.2-0.4m Sand - Alluvium

Bore hole	Location	Recordings
	fairways	0.4-1.2m Sand 1.2-2.5m Sand
438	Fairways	0-0.7m Silty Sand – Topsoil 0.7-1.2m Sand - Alluvium 1.2-1.5m Sand
439	Vegetation between fairways	0-0.6m Silt – Topsoil 0.6-0.9m Sand - Alluvium 0.9-1.6m Clayey Sand 1.6-3m Sand
440	Fairway	0-0.2m Sandy Silt – FILL (trace plasitc) 0.2-0.4m Clay - Alluvium 0.4-0.7m Sand 0.7-1.2m Sand 1.2-2.5m Sand
441	Raised land	0-0.2m Silty sand – FILL
442	Raised land	0-0.1m Silty Sand – FILL

Appendix 4 – Summary of species composition at sampling locations

Table A1. Summary of species composition at sampling locations

Sampling location	Total number of species recorded	Number of native species	Number of exotic species recorded	Number of non-local native species	% native species to total number of species recorded
Transect					
1	54	47	5	2	87
1-1	33	30	2	1	91
1-2	36	31	4	1	86
1-3	34	32	2	0	94
1-4	29	26	3	0	90
2	38	23	13	2	61
2-1	13	7	5	1	54
2-2	10	6	4	0	60
2-3	14	9	5	0	64
2-4	15	9	5	1	60
3	42	15	27	0	36
3-1	16	4	12	0	25
3-2	12	4	8	0	33
3-3	10	4	6	0	40
3-4	9	4	5	0	44
3-5	4	2	2	0	50
3-6	4	2	2	0	50
3-7	5	3	2	0	60
3-8	3	1	2	0	33
3-9	14	4	10	0	29
3-10	6	2	4	0	33
4	84	49	34	1	58
4-1	21	8	12	1	38
4-2	27	10	17	0	37
4-3	44	30	14	0	68
4-4	40	31	9	0	77
5	68	49	18	1	72
5-1	37	25	12	0	68
5-2	38	27	10	1	71
5-3	28	24	13	1	63
5-4	29	20	9	0	69
6	54	36	18	0	67
6-1	23	14	9	0	61
6-2	23	13	10	0	57
6-3	31	22	9	0	71
6-4	28	21	7	0	75
7	24	10	14	0	42
7-1	14	5	9	0	36
7-2	10	5	5	0	50

Sampling location	Total number of species recorded	Number of native species	Number of exotic species recorded	Number of non-local native species	% native species to total number of species recorded
7-3	7	2	5	0	29
7-4	4	0	4	0	0
8	65	45	19	1	69
8-1	41	29	12	0	71
8-2	32	24	8	0	75
8-3	40	29	10	1	72
8-4	28	22	6	0	79
9	73	42	30	1	58
9-1	31	12	18	1	39
9-2	33	16	17	0	49
9-3	35	23	12	0	66
9-4	34	25	9	0	74
10	34	12	21	1	35
10-1	16	8	8	0	50
10-2	17	7	10	0	41
10-3	10	2	7	1	20
10-4	12	3	9	0	25
11	59	30	29	0	51
11-1	27	13	14	0	48
11-2	19	8	11	0	42
11-3	24	11	13	0	46
11-4	24	14	10	0	58
12	26	12	14	0	46
12-1	12	3	9	0	25
12-2	12	6	6	0	50
12-3	16	7	9	0	44
12-4	12	3	9	0	25
13	48	28	20	0	58
13-1	29	16	13	0	55
13-2	22	11	11	0	50
13-3	20	10	10	0	50
13-4	21	13	8	0	62
14	50	34	16	0	68
14-1	22	14	8	0	64
14-2	30	19	11	0	63
14-3	19	11	8	0	58
14-4	21	17	4	0	81
15	42	16	26	0	38
15-1	18	5	13	0	28
15-2	14	3	11	0	21

Sampling location	Total number of species recorded	Number of native species	Number of exotic species recorded	Number of non-local native species	% native species to total number of species recorded
15-3	17	5	12	0	29
15-4	15	6	9	0	40
15-5	9	6	3	0	67
15-6	7	4	3	0	57
15-7	6	4	2	0	67
15-8	5	4	1	0	80
16	42	16	26	0	38
16-1	23	6	17	0	26
16-2	17	3	14	0	18
16-3	8	5	3	0	63
16-4	11	9	2	0	82
16-5	10	8	2	0	80
17	22	13	8	1	59
17-1	8	3	5	0	38
17-2	8	6	2	0	75
17-3	12	8	4	0	67
17-4	11	8	2	1	73
Spot locations					
A	32	11	21		34
B	13	10	3		77
C	15	7	8		47
D	20	13	5	2	65
E	1	1			
F	2	2			
H	2	2			
I	1	1			
J	1	1			
K	1	1			
L	3	3			
M	1	1			
N	1	1			
O (fairway)	3	0	3		
P	1	1			
Q	1	1			
R	1	1			
S	1	1			
T	1	1			
Total	**244**	**125**	**110**	**9**	**51**

Table A2. Species composition at water sampling locations W1 to W21

Sampliing locations	Total number of species recorded	Number of native species recorded	Number of exotic species recorded	Number of non-local native species recorded	% native species to total number of species recorded
W1	15	15	0	0	100
W2	19	14	4	1	74
W3	22	11	10	1	50
W4	20	7	11	2	35
W5	18	6	12	0	33
W6	17	10	7	0	59
W7	10	5	5	0	50
W8	13	6	7	0	46
W9	14	6	8	0	43
W10	11	6	5	0	55
W11	13	9	4	0	69
W12	11	3	8	0	27
W13	13	5	7	1	38
W14	14	8	6	0	57
W15	13	5	8	0	38
W16	12	5	7	0	42
W17	11	4	6	1	36
W18	11	9	2	0	82
W19	13	8	5	0	62
W20	2	2	0	0	100
W21	1	1	0	0	100

Appendix 6 – *E. coli*, pH and conductivity – Report (ALS Environmental)

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1729150**	Page	: 1 of 7
Client	: **ANNE CLEMENTS & ASSOCIATES**	Laboratory	: Environmental Division Sydney
Contact	: ANNE CLEMENTS	Contact	: Customer Services ES
Address	: PO BOX 1623 North Sydney, NSW Office 2, 3 harbourview Crescent Milsons Point NSW 2061 2059	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: 02 9955 9733	Telephone	: +61-2-8784 8555
Project	: ----	Date Samples Received	: 20-Nov-2017 15:00
Order number	: ----	Date Analysis Commenced	: 20-Nov-2017
C-O-C number	: ----	Issue Date	: 23-Nov-2017 14:28
Sampler	: ----		
Site	: ----		
Quote number	: SYBQ/488/16		
No. of samples received	: 21		
No. of samples analysed	: 21		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Tony DeSouza	Senior Microbiologist	Sydney Microbiology, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- MF = membrane filtration
- CFU = colony forming unit
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- Membrane filtration results for MW006 for Nos. 7,8,10,18 and 19 are reported as an estimate (~) due to the presence of many non-target organism colonies that may have inhibited the growth of the target organisms on the filter membrane. It may be informative to record this fact.
- MW006 is ALS's internal code and is equivalent to AS4276.7.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	1	2	3	4	5
				Client sampling date / time	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**ES1729150-001**	**ES1729150-002**	**ES1729150-003**	**ES1729150-004**	**ES1729150-005**
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	—	0.01	pH Unit		**7.20**	**7.25**	**4.11**	**6.32**	**6.83**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	—	1	µS/cm		**707**	**745**	**1160**	**548**	**918**
MW006: Faecal Coliforms & E.coli by MF									
Escherichia coli	—	1	CFU/100mL		**12**	**~8**	**~1**	**500**	**24**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	6	7	8	9	10
				Client sampling date / time	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00
Compound	*CAS Number*	*LOR*	*Unit*		**ES1729150-006**	**ES1729150-007**	**ES1729150-008**	**ES1729150-009**	**ES1729150-010**
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	—	0.01	pH Unit		**7.11**	**7.28**	**7.43**	**7.14**	**6.86**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	—	1	µS/cm		**852**	**414**	**400**	**385**	**479**
MW006: Faecal Coliforms & E.coli by MF									
Escherichia coli	—	1	CFU/100mL		**450**	**~15**	**~48**	**~43**	**~300**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	11	12	13	14	15
			Client sampling date / time	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00
Compound	CAS Number	LOR	Unit	ES1729150-011	ES1729150-012	ES1729150-013	ES1729150-014	ES1729150-015
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	—	0.01	pH Unit	8.09	7.24	7.36	7.63	7.64
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	—	1	µS/cm	1610	17000	4770	34300	47700
MW006: Faecal Coliforms & E.coli by MF								
Escherichia coli	—	1	CFU/100mL	270	430	360	66	220

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	16	17	18	19	20
				Client sampling date / time	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00	17-Nov-2017 00:00
Compound	CAS Number	LOR	Unit		ES1729150-016	ES1729150-017	ES1729150-018	ES1729150-019	ES1729150-020
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	---	0.01	pH Unit		6.88	7.73	6.96	6.70	7.82
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	---	1	µS/cm		874	53600	765	468	54100
MW006: Faecal Coliforms & E.coli by MF									
Escherichia coli	---	1	CFU/100mL		1100	~3	~22	~2900	20

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	21	----	----	----	----
				Client sampling date / time	17-Nov-2017 00:00	—	—	—	—
Compound	*CAS Number*	*LOR*	*Unit*		ES1729150-021	------	------	-------	-------
					Result	—	—	—	—
EA005P: pH by PC Titrator									
pH Value	—	0.01	pH Unit		7.78	---	---	---	---
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	—	1	µS/cm		53500	---	---	---	---
MW006: Faecal Coliforms & E.coli by MF									
Escherichia coli	—	1	CFU/100mL		14	---	---	---	---

Appendix 8 – Bat survey report by Dr Glen Hoye of Fly-by-Night

Glenn Hoye
Fly By Night Bat Surveys Pty Ltd
PO Box 271
BELMONT NSW 2280
Tel. (02) 4947 7794

to:

Anne Clements
Anne Clements & Associates Pty Ltd
Office 2/3 Harbourview Crescent
MILSONS POINT NSW 2061
Tel. (02) 9955 9733

3rd December 2017

Dear Anne

Following are the results of harp trapping and echolocation call detection of microbats at the Bayview Golf Course in the vicinity of the proposed seniors living facility. Do not hesitate to give me a call if you have any queries. It is worth noting that females of all three microbat species captured were lactating, indicating the presence of maternity roosts within the vicinity of the Golf Course. Another notable result was the recording of relatively high number of passes of the Large–eared Pied Bat (*Chalinolobus dwyeri*). Roosts of this species may be present in sandstone caves in escarpment areas within 10 kilometres of the site.

The Southern Myotis(*Myotis macropus*) was recorded along the riparian area to the west of the proposed seniors complex. This species should not be significantly impacted by the proposed development if several measures are taken. Artificial lighting on the exterior of the complex should be subdued and directed so that it lights only areas such as pathways where it is required. This will minimise imacts to prey populations of the Southern Myotis, Large-eared Pied Bat (*Chalinolobus dwyeri*), Eastern Falsistrelle (*Falsitrellus tasmaniensis*), Little Bent-wing Bat (*Miniopterus australis*) and Eastern Freetail Bat (*Micronomus norfolkensis*). These threatened microbat species were recorded from echolocation call within the area encompassing the proposed seniors facility. While Gould's Long-eared Bat (*Nyctophilus gouldi*) and the Little Forest Bat (*Vespadelus vulturnus*) are not listed as threatened, the site supports breeding colonies of both species. Trees within the footprint of the seniors facility should be checked for potential roosts of any of the above species that utilise tree hollows dor diurnal roosts. Clearing of the trees outside the period when these species are breeding or in torpor will assist in minimising the level of impact.

Harp Trap Capture Results

Site	Date	Location	Grid E	Grid N	*Nyctophilus gouldi*			*Vespadelus vulturnus*			*Myotis macropus*			Total Trapped
					M	F	T	M	F	T	M	F	T	
H1	15/11/2017	Rainforest along creek.	341451	6273443	0	2	2	0	2	3	0	2	2	7
H2	15/11/2017	Remnant trees in golf course.	341592	6273359	0	1	1	0	0	0	0	0	0	1
H1	16/11/2017	Rainforest along creek.	341451	6273443	0	0	0	0	0	0	0	1	1	1
H3	16/11/2017	Remnant trees in golf course.	341730	6273318	0	1	1	0	0	0	0	0	0	1

Echolocation Call Detection Results

Site	Date	Grid E	Grid N	A.au	M.no	M.ri	C.dw	C.go	F.ta	M.au	M.oc	M.ma	N.sp	S.or	V.vu	Total Passes
D1	15/11/2017	341452	6273442		P(3)	C	C(1)	C	P(6)	Po(3)	C(15)	P(2)	C	Po	C	185
D2	15/11/2017	341592	6273359		P(2)	C	C(2)	C		C(2)	Po(2)		Po			67
D3	15/11/2017	341613	6273313			C	C(6)	C			P(4)		C		C	71
D4	15/11/2017	341582	6273406		C(5)	C	C(21)	C		C(1)	C(4)		C	Po	C	130
D5	16/11/2017	341668	6273377	C		C		Po					C		C	78
D6	16/11/2017	341780	6273316	C	P(2)	C	C(5)	C		C(5)	C(4)		C		C	288
D7	16/11/2017	341686	6273306	P		C	C(1)	C		P(2)	Po(2)		C			82
D8	16/11/2017	341571	6273297	P	P(2)	C	C(17)	C	Po(1)	Po(1)	C(26)	Po(1)	C	Po		190

Species

A.au	Gould's Wattled Bat	*Chalinolobus gouldii*
M.ri	Eastern Freetail Bat	*Mormopterus ridei*
C.go	Gould's Wattled Bat	*Chalinolobus gouldii*
F.ta	Eastern Falsistrelle*	*Falsistrellus tasmaniensis*
M.oc	Eastern Bent-wing Bat*	*Miniopterus oceanensis*
S.or	Eastern Broad-nosed Bat	*Scotorepens orion*
*	Listed as Vulnerable on Schedule 2 of the TSC Act 1995	

M.no	East Coast Freetail Bat*	*Micronomus norfolkensis*
M.oc	Eastern Bent-wing Bat*	*Miniopterus oceanensis*
C.dw	Large-eared Pied Bat*	*Chalinolobus dwyeri*
M.au	Little Bent-wing Bat*	*Miniopterus australis*
M.ma	Southern Myotis*	*Myotis macropus*
V.vu	Little Forest Bat	*Vespadelus vulturnus*

Confidence of Identification

C Confident P Probable Po Possible

regards

Glenn Hoye

December 2017

Fly By Night Bat Surveys Pty Ltd