



6.1 g Cassowary Water Survey October 2009 Ella Bay

Ella Bay Cassowary

Water Survey

October 2009

October 2009 Revision 1

















Introduction

Ella Bay Developments conducted a water survey to map the dry season water availability for cassowaries within and immediately adjacent to the proposed Ella Bay project area and access roads. The survey was undertaken during October 2009 towards the end of the dry season (12th October to 3rd November). The rainfall for the month of October was approximately 28% lower than the Innisfail BOM (Bureau of Meteorology) long term mean, however during the period of the survey the rainfall was above average. The BOM rainfall data, substantiated by the on site weather station recorded for the three days prior to the start of the survey an accumulation of 12 mm rain, and during survey period a total of 80.8 mm of accumulated rain was recorded (refer to appendix 2).

The survey was conducted by Ella Bay Environmental staff with guidance by Peter Buosi from NRA Environmental Consultants. The figure below illustrates the water survey areas reflecting different hydrological and vegetation communities obtained from the regional ecosystem mapping of the areas and local knowledge. Each area was surveyed at various points along transects once during the survey period, and the field information, GPS coordinates and photos were recorded. A summary of results and key photographs are appended and in Map – Ella Bay Cassowary Water Survey Results. A complete data report is available as appendix 1.

Survey Area	Colour	Description
1		Ella Bay fore dune swales
2		East-west creek line
3		Main north-south creek
4		Smaller north-south creek
5		Beach fore dune to north of site
6		Southern edge of Ella Bay Swamp
7		Beach fore dune adjacent fish farm.
8		Beach fore dune adjacent fish farm.
9		Flying Fish Point Reserve
10		Creek into reserve
11		Creek into reserve
12		Creek (Cassowary Ck)
13	n/a	Additional Areas
	White	Regional Ecosystems codes for wetlands or water





GPS4 – Area 6



GPS9 – Area 6



GPS2 – Area 5



GPS6 – Area 1



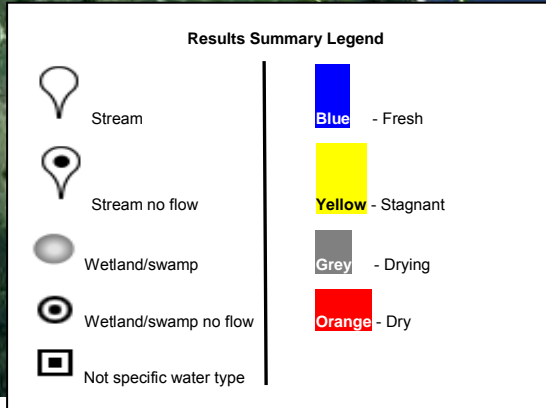
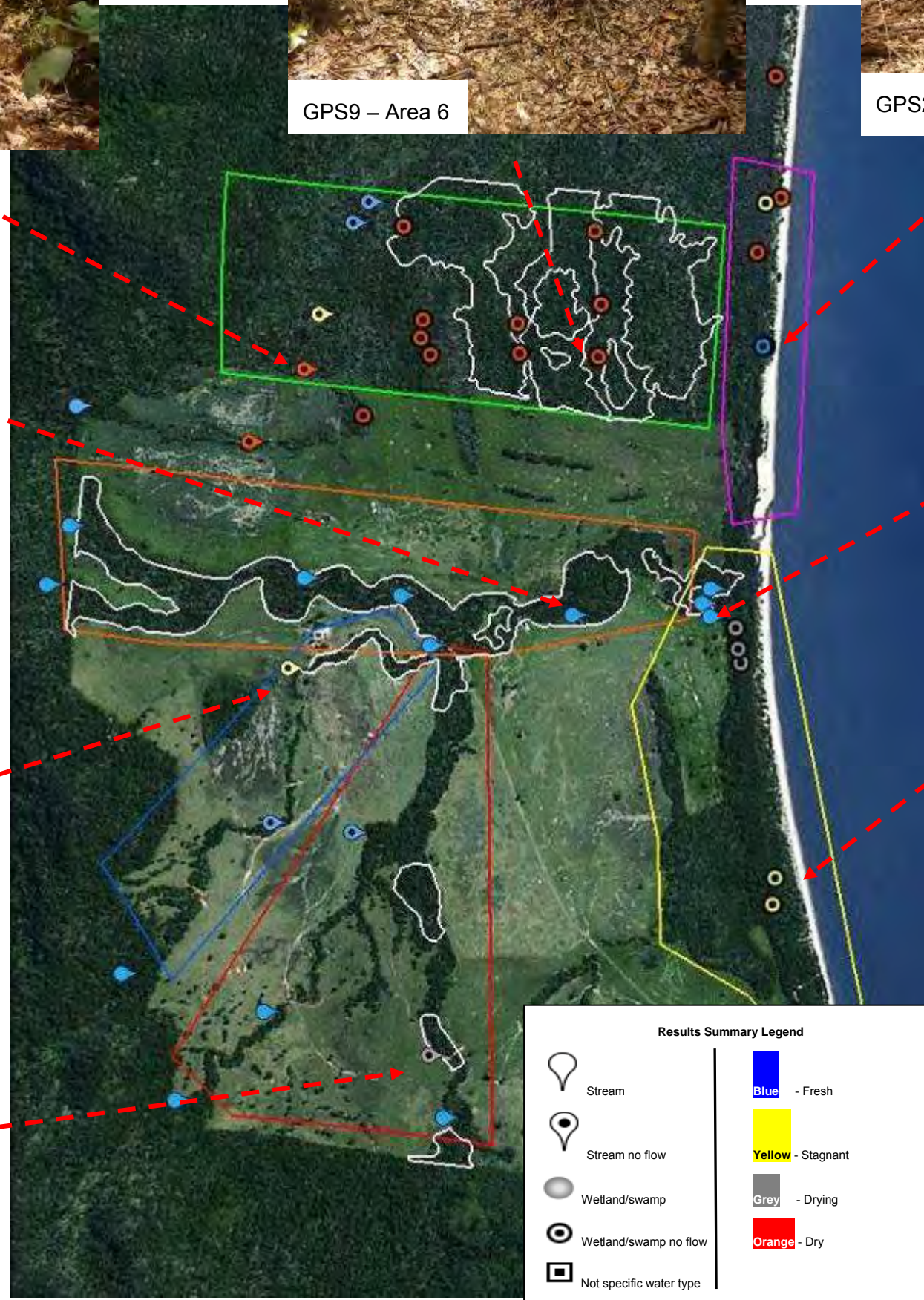
GPS1 – Area 2



GPS1 – Area 4



GPS5 – Area 3



GPS2 – Area 1



GPS1 – Area 12



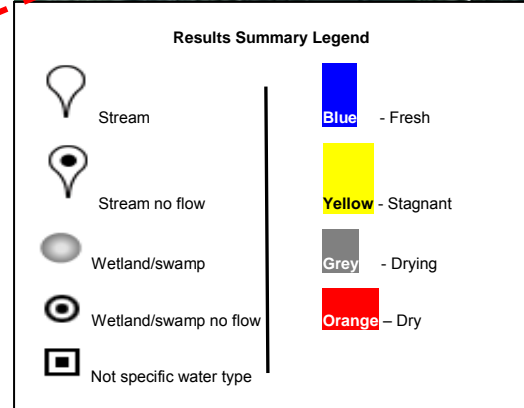
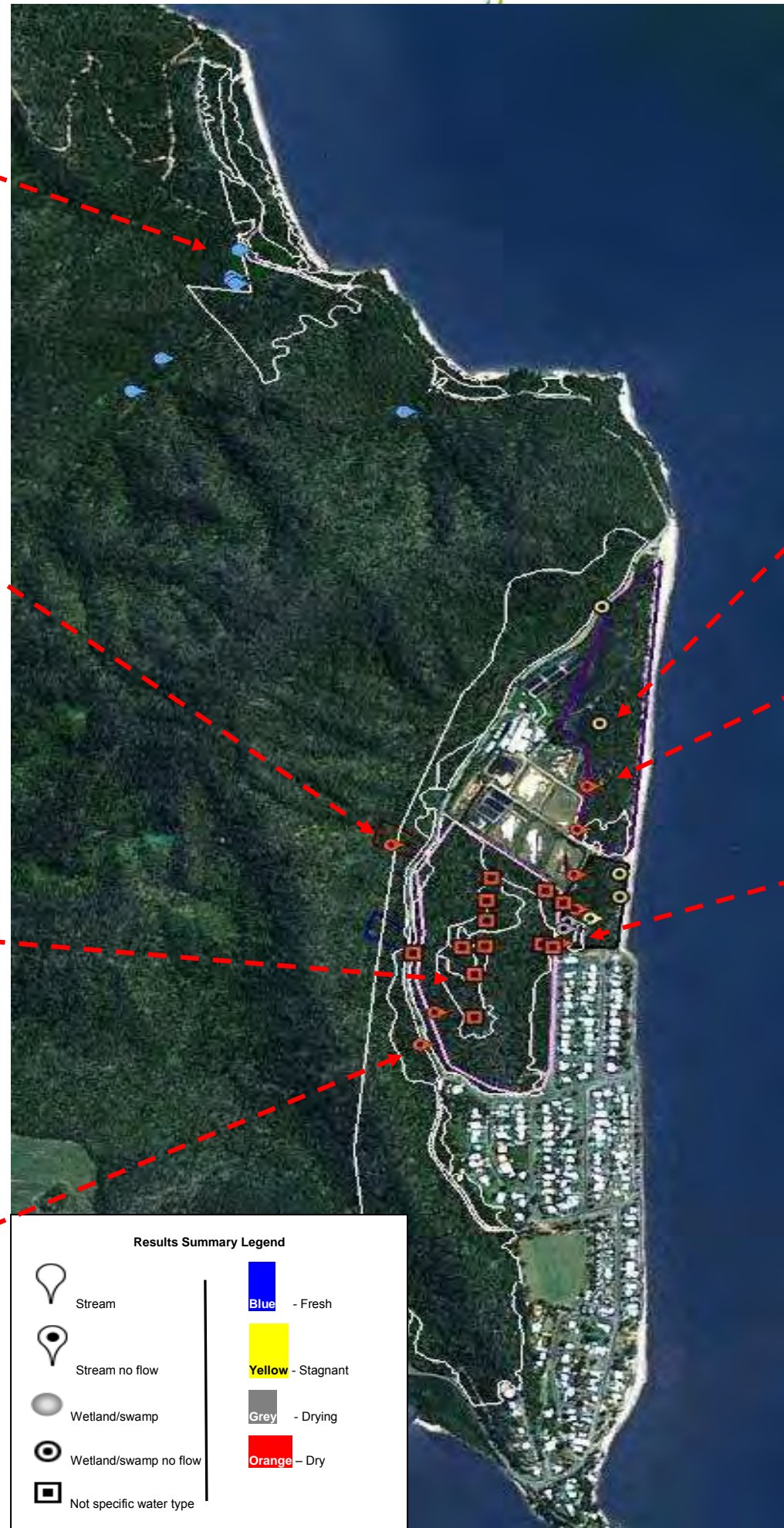
GPS1 – Area 10



GPS – Area 9



GPS – Area 9



GPS3 – Area 7



GPS2 – Area 7



GPS6 – Area 8

Flying Fish Point and Surrounding Areas			
Survey Area	Area Colour	Description	Summary
7		Beach fore dune adjacent fish farm.	Dry creek beds to south of area and some stagnant salt water ponds to north closer to road.
8		Beach fore dune adjacent fish farm.	Dry or drying creek beds. Closer to beach stagnant water wetlands/swamp.
9		Flying Fish Point Reserve	All locations were dry including drains, creek beds and possible streams. No water found.
10		Creek into reserve	Dry creek bed. No water.
11		Creek into reserve	Dry drain into reserve. No Water.
12		Creek (Cassowary Ck)	Freshwater flowing stream.
13	xx	Additional Areas	Frog Creek, freshwater flowing stream.

Ella Bay Cassowary Water Survey

Area Number	1							
Site Number:	1	2	3	4	5	6	7	8
Date:	16/10/2009	16/10/2009	16/10/2009	16/10/2009	16/10/2009	16/10/2009	16/10/2009	16/10/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.46284 146.06418	17.46223 146.06424	17.45724 146.06335	17.45692 146.06328	17.45643 146.06322	17.4562 146.06311	17.45589 146.06291	17.45555 146.06311
Datum:	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84
Photos:	1	1	1	1	1	1	1	
Photo number:	592	591	593	594	595	596	597	
Type of water Source								
Dry								
Drying	x	x	x	x				
Stagnant	x	x			x			
Fresh						x	x	
Stream			x	x		x	x	x
Wetland	x	x	x	x				
Other (describe)	puddle underneath root ball of fallen tree	muddy drying puddle						
Average Dimensions								
Width	1m	3m	3m	3m	3m	4-5m	8m	20m
Length	0.5m	2m	30/50m	30/50m	30/50m	cont	cont	cont
Depth	0.1m	0.1m	2/3m	2/3m	3/5m	1-3m	3-4m	3-6m
Water Flow								
None	x	x	x	x	x	x	x	x
Slight								
Some								
Swift								
Turbidity								
Clear								
Slight				x	x	x	x	x
Turbid								
Opaque	x	x	x					
Substrate (%)								
Bedrock								
Boulder (>256mm)								
Cobble (64-256mm)								
Pebble (16-64mm)								
Gravel (4 - 16 mm)								
Sand (1 - 4 mm)			x	x				x
Silt/Clay (<1 mm)	x	x	x	x	x	x	x	x
Canopy Cover (%)								
In General Area	☉ 60%	☉ 60%	☉ 60%	☉ 60%	☉ 60%	☉ 60%	☉ 60%	☉ 60%
Direct Over Water	● 70%	● 70%	● 70%	● 70%	● 70%	● 70%	● 70%	● 70%
Accessibility of Water Body								
eg. Obstructions, steep or high banks								
Accessible								
Slightly impeded	x	x	x	x	x	x	x	x
Greatly impeded						x	x	
Fauna Activity								
Macropods	x	x	x	x	x	x	x	x
Pigs								
Cassowary								
Other Notes	This co-ordinate marks a small freshwater puddle beneath the root ball of a fallen melaleuca tree. Freshwater. surrounding vegetation includes weeping paperbarks/pond apple.	This pool has almost completely dried up. brackish water. pond apple dominant veg.	This co-ordinate marks the southern most tip of the dunal swale creek, a deep trench which flows north into the east west creek. Saltwater. melaleuca/pond apple/mangroves.	This co-ordinate marks the creek further to the north. Saltwater. mangroves/melaleuca.	Continuation of saltwater creek flowing north, mangroves present, 2m crocodile previously spotted at this location. Saltwater. mangroves/melaleucas.	Brackish water, paperbark, fresh water mangrove, Pond apple, Cottonwood. brackish water. Native gardenia near intersection with east west creek.	North south creek. brackish water. Mangroves, melaleuca, gardenia, lawyer cane, cottonwood.	mouth of east west creek. brackish water. pond apple, gardenia, mangroves, golden orchids.

Ella Bay Cassowary Water Survey

Area Number	2					
Site Number:	1	2	3	4	5	6
Date:	22/10/2009	23/10/2009	23/10/2009	23/10/2009	23/10/2009	23/10/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.45619	17.45421	17.45538	17.45577	17.45692	17.45558
	146.05972	146.04737	146.05313	146.05505	146.05623	146.04684
Datum:	WGS84	WGS84	WGS84	WGS84	WGS84	WGS84
Photos:	1	1	1	1	1	1
Photo number:	598	600	601	602	603	604
Type of water Source						
Dry						
Drying						
Stagnant						
Fresh	x	x	x	x	x	x
Stream	x	x	x	x	x	x
Wetland						
Other (describe)						
Average Dimensions						
Width	2m	1m-4m	1-4m	3m	.3m	1-6m
Length	cont	cont	cont	cont	cont	cont
Depth	10cm	0.1 - 1m	0.1 - 1m	.2m	.1m	1-5m
Water Flow						
None						
Slight				x	x	
Some	x	x	x			x
Swift						
Turbidity						
Clear	x	x	x	x	x	x
Slight						
Turbid						
Opaque						
Substrate (%)						
Bedrock		x				x
Boulder (>256mm)		x				
Cobble (64-256mm)						
Pebble (16-64mm)						
Gravel (4 - 16 mm)				x		
Sand (1 - 4 mm)	x	x	x	x	x	
Silt/Clay (<1 mm)	x				x	
Canopy Cover (%)						
In General Area	60%	65%	65%	70%	50%	70%
Direct Over Water	50%	65%	50%	40%	60%	40%
Accessibility of Water Body						
eg. Obstructions, steep or high banks						
Accessible			x	x	x	
Slightly impeded	x	x				x
Greatly impeded						
Fauna Activity						
Macropods	x		x	x	x	
Pigs						
Cassowary						
Other Notes	fresh water . Melicope. pond apple. matchbox bean.	abundant fresh water. Rainforest. tree ferns. Delarbria. Calamus. native nutmeg.	rainforest. ficus virens. alex palms. blue quandong.	fresh water. Rainforest. bleeding heart . Blackbean. alex palm. Nutmeg. blue quandong.	fresh water mangrove. Cottonwood. white oak. Mango. Candlenut.	near the border of ella bay national park. Rainforest. tree fern. king fern. Acacia. Calamus.

Ella Bay Cassowary Water Survey

Area Number	3				
Site Number:	1	2	3	4	5
Date:	26/10/2009	26/10/2009	26/10/2009	26/10/2009	26/10/2009
Observer Name (s):	AH	AH	AH	AH	AH
Location (co-ordinates):	17.46741	17.46785	17.46128	17.46544	17.46642
	146.05014	146.05666	146.05435	146.05223	146.05630
Datum:	WGS84	WGS84	WGS84	WGS84	WGS84
Photos:	1	1	1	1	1
Photo number:	610	612	608	609	613
Type of water Source					
Dry					
Drying					x
Stagnant					
Fresh	x	x	x	x	x
Stream	x	x	x	x	x
Wetland					
Other (describe)					
Average Dimensions					
Width	1m	1-3m	1-2m	1m	2-3m
Length	cont	cont	pls up to 20m l	cont	cont
Depth	.1m	.5m	.5m	.1m	.3m
Water Flow					
None			x		x
Slight	x	x		x	
Some					
Swift					
Turbidity					
Clear	x	x	x	x	x
Slight					
Turbid					
Opaque					
Substrate (%)					
Bedrock					
Boulder (>256mm)	x				x
Cobble (64-256mm)					
Pebble (16-64mm)					x
Gravel (4 - 16 mm)	x	x			
Sand (1 - 4 mm)		x	x	x	
Silt/Clay (<1 mm)			x	x	
Canopy Cover (%)					
In General Area	● 70%	● 60%	● 80%	● 80%	● 80%
Direct Over Water	● 70%	● 60%	● 60%	● 70%	● 60%
Accessibility of Water Body					
eg. Obstructions, steep or high banks					
Accessible					
Slightly impeded	x	x	x	x	x
Greatly impeded					
Fauna Activity					
Macropods		x	x	x	
Pigs					
Cassowary					
Other Notes	fresh water. Bolwarra. climbing pandan. Calamus. Nutmeg. blue quandong.	fresh water. alex palm. cassowary plum. syzigium sp. Nutmeg.	fresh water. Nutmeg. milky pine. cassowary plum. native olive. red leaf fig.	fresh water. bleeding heart. Liechardt. blue quandong. scented daphne. Pittosporum.	fresh water. alex palm. cassowary plum. umbrella tree. corky bark. Melicope. white oak.

Area Number	4		
Site Number:	1	2	3
Date:	23/10/2009	23/10/2009	23/10/2009
Observer Name (s):	AH	AH	AH
Location (co-ordinates):	17.45748	17.46107	17.46451
	146.05275	146.05235	146.04881
Datum:	WGS84	WGS84	WGS84
Photos:	1	1	1
Photo number:	605	606	607
Type of water Source			
Dry			
Drying	x		
Stagnant	x		
Fresh		x	x
Stream	x	x	x
Wetland			
Other (describe)			
Average Dimensions			
Width	1m	1m	.2m
Length	1m	2m	cont
Depth	.2m	.3m	.2m
Water Flow			
None	x	x	
Slight			x
Some			
Swift			
Turbidity			
Clear			x
Slight		x	
Turbid			
Opaque	x		
Substrate (%)			
Bedrock			x
Boulder (>256mm)			x
Cobble (64-256mm)			
Pebble (16-64mm)			
Gravel (4 - 16 mm)	x		
Sand (1 - 4 mm)	x	x	
Silt/Clay (<1 mm)		x	
Canopy Cover (%)			
In General Area	70%	60%	80%
Direct Over Water	60%	70%	80%
Accessibility of Water Body			
eg. Obstructions, steep or high banks			
Accessible			
Slightly impeded	x	x	x
Greatly impeded			
Fauna Activity			
Macropods	x	x	x
Pigs			
Cassowary			
Other Notes	stagnant water in small pool (fresh). 1m x 1m x .2m. pond apple. scented daphne. Sedge. umbrella cheese tree melicope.	small non flowing puddle. strangler fig. milky pine. tree fern. glory vine. wedlands palm. wire fern.	calmus. tree ferns.

Ella Bay Cassowary Water Survey

Area Number	5					
Site Number:	1	2	3	4	5	6
Date:	28/10/2009	28/10/2009	28/10/2009	28/10/2009	28/10/2009	28/10/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.44988 146.06383	17.44988 146.06390	17.4477 146.06367	17.44655 146.06387	17.44642 146.06425	17.4436 146.06410
Datum:	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84
Photos:	1	1	1	1	1	1
Photo number:	624	616	617/618	619	620	622
Type of water Source						
Dry		x	x		x	x
Drying				x		
Stagnant				x		
Fresh						
Stream	x					
Wetland	x	x	x	x	x	x
Other (describe)		dry swale	dry swale/swamp		Ella Bay national park sign	
Average Dimensions						
Width	5-10m	20m	all due to thick r	2m		
Length	100m+	continuos		3m		
Depth	0.5-3m	dry		0.2m		
Water Flow						
None	x	x	x	x	x	x
Slight						
Some						
Swift						
Turbidity						
Clear						
Slight	x			x		
Turbid						
Opaque						
Substrate (%)						
Bedrock						
Boulder (>256mm)						
Cobble (64-256mm)						
Pebble (16-64mm)						
Gravel (4 - 16 mm)						
Sand (1 - 4 mm)	x	x	x	x	x	x
Silt/Clay (<1 mm)	x	x	x	x		x
Canopy Cover (%)						
In General Area	☉ 50%	☉ 50%	☉ 50%	☉ 50%	☉ 50%	☉ 50%
Direct Over Water	☉ 40%					
Accessibility of Water Body						
eg. Obstructions, steep or high banks						
Accessible					x	
Slightly impeded	x	x	x	x		x
Greatly impeded		x	x	x		
Fauna Activity						
Macropods	x	x	x			
Pigs		x				
Cassowary	x					
Other Notes	Northern extent of water in dunal swale canal running paralell to the beach north of east-west creek mouth. brackish tending fresh water. Cassowary scat noted nearby. mangroves, paperbark, red beech, pond apple, cottonwood.	no water. pig wallows (dry). Pandanus. Gardenia. Pondapple. melaluca quinquinerva. Paperbark.	no water. dry melaluca quiquenerva swamp with an inpenaterable understory of reeds/grasses .	Dry melaluca swamp extremely thick understory of rushes /grasses. Water. small puddle beneath the root ball of a group of fallen paperbark trees.	Sign on beach for arial reference. presumably within the vicinity of the boundary of national park.	Melaluca swamp. mud still holds moisture but no surface water. inpenaterable understory of reeds/rushes.

Ella Bay Cassowary Water Survey

Area Number									
Site Number:	1	2	3	4	5	6	7	8	9
Date:	29/10/2009	29/10/2009	29/10/2009	29/10/2009	29/10/2009	29/10/2009	29/10/2009	29/10/2009	3/11/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.45144 146.04753	17.45223 146.05174	17.45157 146.05402	17.45054 146.05309	17.44991 146.05325	17.44926 146.05345	17.44713 146.05426	17.44664 146.05464	17.45016 146.05978
Datum:	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84
Photos:			1	1	1	1	1	1	1
Photo number:			625	626	627	629	630	631	635
Type of water Source									
Dry		x	x	x					x
Drying					x	x			
Stagnant					x	x			
Fresh	x						x	x	
Stream	x	x	x	x	x	x	x	x	
Wetland			x						x
Other (describe)		dry creek bed	dry palustrine swamp/swale	dry creek bed	drying pool	drying pool	drying pool		dry remnant dunal swale/palustrine swamp
Average Dimensions									
Width	1-2m		50m	3m	3m	3m	1-3m	1-3m	
Length	continuos		continuos	continuos	4m	6m	continuos	continuos	
Depth	0.1m		dry	dry	0.5m	0.5m	0.5-1.5m	0.5-1.5m	
Water Flow									
None		x	x	x	x	x	x	x	x
Slight	x								
Some									
Swift									
Turbidity									
Clear	x								
Slight								x	
Turbid									
Opaque					x	x	x		
Substrate (%)									
Bedrock									
Boulder (>256mm)									
Cobble (64-256mm)									
Pebble (16-64mm)									
Gravel (4 - 16 mm)	x								
Sand (1 - 4 mm)	x	x							
Silt/Clay (<1 mm)	x	x	x	x	x	x	x	x	x
Canopy Cover (%)									
In General Area	● 80%	○ 10%	● 70%	● 70%	● 60%	● 50%	● 50%	● 70%	● 60%
Direct Over Water	● 80%				● 60%	● 60%	● 70%	● 80%	
Accessibility of Water Body									
eg. Obstructions, steep or high banks									
Accessible		x							
Slightly impeded	x		x	x	x	x	x		x
Greatly impeded					x	x	x	x	
Fauna Activity									
Macropods	x	x	x	x		x			
Pigs			x	x	x	x			x
Cassowary					x	x			
Other Notes	fresh water. rainbow fish. Treefern. king fern. Calamus. alexandra palm. Nutmeg.	no water. old culvert at this position. glory vine. liechardt tree. umbrella cheese tree. freshwater mangrove. scented daphne.	no water. dry palustrine swamp/swale. red leaf fig. sedge. pandanus monticola. liechardt tree. alexandra palm. freshwater mangroves.	no water. blue quandong. porcelin fruit. redleaf fig. pond apple. swamp pandanus.	freshwater. water made opaque by pigs/cassowary wallowing. cassowary print small (young adult). alexandra palm. redleaf fig. freshwater mangrove. Nutmeg. porcein fruit. Calamus.	freshwater. freshwater turtles. rainbow fish. alexandra palms. Corkybark. scented daphne. freshwater mangroves. Calamus. cassowary scat (old). seeds spread out and eaten by white-tailed rats.	freshwater. 1m juvenile saltwater crocodile basking on log lept into the water as we approached. alexandra palm. red leaf figs. bird nest ferns. hares foot fern. weevil lilly. laurel sp.	freshwater. freshwater turtles. rainbow fish. river cherry. glory vine. ficus virens. alex palms. Inpenaterable stands of sedges 3-4m tall. beyond this point. Edge of swamp, deeper water?	no water. dry swamp. pond apple. Paperbark. red beech. climbing mangrove fern. Sedge. alexandra palm.

Ella Bay Cassowary Water Survey

Area Number									
Site Number:	10	11	12	13	14	15	16	17	18
Date:	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009	3/11/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.44895 146.05984	17.44725 146.05968	17.45015 146.05566	17.44976 146.05542	17.44934 146.05547	17.44759 146.05487	17.44718 146.05498	17.4501 146.05785	17.44941 146.05780
Datum:	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84
Photos:	1	1	1	1	1	1			
Photo number:	636	639	648	649	650	651			
Type of water Source									
Dry	x	x	x	x	x	x	x	x	x
Drying									
Stagnant									
Fresh									
Stream									
Wetland	x	x	x	x	x	x	x	x	x
Other (describe)	dry palustrine swamp/remnant dunal swale	dry palm swamp/swale	dry palm swamp/swale	dry palm swamp/swale	dry palm swamp/swale	dry palm swamp/swale	dry palm swamp/swale	dry palm swamp/swale	dry palm swamp/swale
Average Dimensions									
Width									
Length									
Depth									
Water Flow									
None	x	x	x	x	x	x	x	x	x
Slight									
Some									
Swift									
Turbidity									
Clear									
Slight									
Turbid									
Opaque									
Substrate (%)									
Bedrock									
Boulder (>256mm)									
Cobble (64-256mm)									
Pebble (16-64mm)									
Gravel (4 - 16 mm)									
Sand (1 - 4 mm)									
Silt/Clay (<1 mm)	x	x	x	x	x	x	x	x	x
Canopy Cover (%)									
In General Area	● 70%	◐ 50%	◐ 50%	◐ 50%	◐ 40%	● 70%	◐ 50%	◐ 60%	◐ 50%
Direct Over Water									
Accessibility of Water Body									
eg. Obstructions, steep or high banks									
Accessible									
Slightly impeded	x	x	x	x	x	x	x	x	x
Greatly impeded		x	x	x	x	x	x	x	x
Fauna Activity									
Macropods	x								
Pigs	x					x			
Cassowary			x	x					
Other Notes	no water. alexandra palms. native gardenia. fish- tail calamus. red beech. Mishocarpus. pandanus monticola. Sedge. Nutmeg. norton's oak.	no water. inpenaterable sedge to the north of this point. alexandra palms. porcein fruit. pond apple. corky bark.	no water. Cassowary scat. (old 1- 2weeks). pandanus monticola. glory vine. syzigium sp.	no water. juvenile cassowary scat. (fresh <1 day) 100% nutmeg. porcein fruit. pond apple. corky bark.	no water. cassowary plum. native gardenia. bledding heart. Sedge. red beech.	no water. Calamus. alexandra palms. plum pine. Blackbean. Candlenut. davison's plum. scotts ginger. milky pine.	no water. Mischocarpus . alexandra palms. fresh water mangrove. Pothos. smith's tamarind. needle berry. native pepper.	no water. wedland's palm. alexandra palms. porcein fruit. swamp pandanus. Cottonwood. Sedge. bird's nest fern.	no water. inpenaterable sedge to the north of this point.

Area Number	7			
Site Number:	1	2	3	4
Date:	14/10/2009	14/10/2009	14/10/2009	13/10/2009
Observer Name (s):	AH	AH	AH	AH
Location (co-ordinates):	17.48666	17.48765	17.48519	17.48252
	146.07625	146.07605	146.07607	146.07610
Datum:	WGS84	WGS84	WGS84	WGS 84
Photos:	1	1	1	1
Photo number:	582	580	581	643
Type of water Source				
Dry	x	x		
Drying				
Stagnant			x	x
Fresh				
Stream				
Wetland			x	x
Other (describe)	dry creek bed	dry creek bed	salt water pond	saltwater pond
Average Dimensions				
Width			10m	10m
Length			20m	20m
Depth			3m	3m
Water Flow				
None	x	x	x	x
Slight				
Some				
Swift				
Turbidity				
Clear				
Slight				x
Turbid				
Opaque			x	
Substrate (%)				
Bedrock				
Boulder (>256mm)				
Cobble (64-256mm)				
Pebble (16-64mm)				
Gravel (4 - 16 mm)				
Sand (1 - 4 mm)	x	x	x	x
Silt/Clay (<1 mm)		x	x	x
Canopy Cover (%)				
In General Area	☉ 60%	☉ 60%	☉ 50%	☉ 50%
Direct Over Water			○ 20%	○ 20%
Accessibility of Water Body				
eg. Obstructions, steep or high banks				
Accessible				x
Slightly impeded	x	x		x
Greatly impeded	x	x	x	
Fauna Activity				
Macropods	x	x	x	x
Pigs				
Cassowary				
Other Notes	Dry creek bed. No water. Within fish farm boundary. Dry vegetation on sand.	Dry creek bed. No water. Within fish farm boundary. Dry dune vegetation. sea almonds casuarinas.	salt water pond. Possibly artificial. inside fish farm boundary. Cottonwood. pond apple. Acacia. white apple. Mango.	salt water pond. Possibly artificial. inside fish farm boundary. Guava. Cottonwood. white cedar. singapore daisy.

Area Number	8								
Site Number:	1	2	3	4	5	6	7	8	9
Date:	14/10/2009	14/10/2009	14/10/2009	14/10/2009	14/10/2009	14/10/2009	14/10/2009	14/10/2009	14/10/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.48969 146.07632	17.48917 146.07649	17.48869 146.07599	17.48864 146.07648	17.49026 146.07556	17.49026 146.07570	17.48993 146.07579	17.48977 146.07587	17.48948 146.07603
Datum:	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84
Photos:	1	1	1	1	1	1	1	1	1
Photo number:	577	576	579	578	571	572	573	574	575
Type of water Source									
Dry			x		x	x			x
Drying							x	x	
Stagnant	x	x		x					
Fresh									
Stream	x		x		x	x	x	x	x
Wetland		x		x					
Other (describe)		dunal swale	dry creek bed		Dry creek bed	dry creek bed	small pool in dry creek bed	start of small estuary	Dry Swale
Average Dimensions									
Width	5m	3m		3m			2m	3m	
Length	20m	50m		50m			1m	20m ?	
Depth	1/2m	1/4m		1-4m			.2m	.2m - 1.5m	
Water Flow									
None	x	x	x	x	x	x	x	x	x
Slight									
Some									
Swift									
Turbidity									
Clear									
Slight	x						x	x	
Turbid									
Opaque		x		x					
Substrate (%)									
Bedrock									
Boulder (>256mm)									
Cobble (64-256mm)									
Pebble (16-64mm)									
Gravel (4 - 16 mm)									
Sand (1 - 4 mm)	x	x	x	x	x	x	x	x	x
Silt/Clay (<1 mm)								x	x
Canopy Cover (%)									
In General Area	☉ 50%	☉ 50%	☉ 60%	☉ 60%	☉ 60%	☉ 60%	☉ 60%	☉ 60%	☉ 60%
Direct Over Water	○ 10%	○ 10%		○ 20%				☉ 40%	☉ 40%
Accessibility of Water Body									
eg. Obstructions, steep or high banks									
Accessible		x							
Slightly impeded	x		x	x	x	x	x	x	x
Greatly impeded	x		x			x	x	x	x
Fauna Activity									
Macropods	x	x		x	x	x	x	x	x
Pigs									
Cassowary									
Other Notes	ocean end of small estuary. mouth of creek. Saltwater.	Southern end of Dunal swale. Saltwater. Debris filled majority of debris driftwood and pumicestone. casuarinas, mangroves	dry creek bed. no water.	Northern end of Dunal swale. Saltwater. Debris filled, majority of debris driftwood and pumicestone. casuarinas, mangroves.	dry creek bed. Melaluca. cotton wood.	Dry creek bed containing storm water pipes from flying fish point. Melaluca. pond apple.	Small pool in dry creek bed - fresh water. Melaluca. pond apple.	Start of small estuary. Melaluca. pond apple. Mangroves.	Dry Swale. Cottonwood. Magrove Fern.

Ella Bay Cassowary Water Survey

Area Number	9						
Site Number:	1	2	3	4	5	6	7
Date:	12/10/2009	12/10/2009	12/10/2009	12/10/2009	12/10/2009	12/10/2009	12/10/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.49095 146.07358	17.49034 146.07333	17.49031 146.07379	17.48972 146.07382	17.48926 146.07382	17.48874 146.07391	17.48903 146.07500
Datum:	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84
Photos:							
Photo number:							
Type of water Source							
Dry	x	x	x	x	x	x	x
Drying							
Stagnant							
Fresh							
Stream							
Wetland							
Other (describe)	lowland rainforest	lowland rainforest	Lowland rainforest	lowland rainforest	lowland rainforest	lowland rainforest	lowland rainforest
Average Dimensions							
Width							
Length							
Depth							
Water Flow							
None	x	x	x	x	X	x	x
Slight							
Some							
Swift							
Turbidity							
Clear							
Slight							
Turbid							
Opaque							
Substrate (%)							
Bedrock							
Boulder (>256mm)							
Cobble (64-256mm)							
Pebble (16-64mm)							
Gravel (4 - 16 mm)							
Sand (1 - 4 mm)	x	x	x	x	x	x	x
Silt/Clay (<1 mm)	x	x	x	x	x	x	x
Canopy Cover (%)							
In General Area	● 70%	● 75%	● 70%	● 60%	● 75%	● 70%	● 70%
Direct Over Water							
Accessibility of Water Body							
eg. Obstructions, steep or high banks							
Accessible							
Slightly impeded	x						
Greatly impeded	x	x	x	x	X	x	x
Fauna Activity							
Macropods	x	x	x			x	x
Pigs		x	x			x	x
Cassowary							
Other Notes	No surface water of any kind was found in this area. however the interior of this forest reserve looks like it would hold water during the wet season. Vegetation includes paper barks, various rainforest trees a stand of licualas and pandanus monticola and some feather palms.	No surface water of any kind was found in this area. however the interior of this forest reserve looks like it would hold water during the wet season. Vegetation includes paper barks, various rainforest trees a stand of licualas and pandanus monticola and some feather palms.	Slight ridge approximately 0.3m higher than surrounding ground surface. No water. lowland rainforest Pandanus monticola dominant. Slight ridge approximately 0.3m higher than surrounding ground surface. No water. lowland rainforest Pandanus monticola dominant.	Lowland Rainforest. no water. licualas, pandanus.	lowland rainforest. no water. Alexander palms, pandanus.	Low land rainforest. no water. padanus, palm, rainforest vegetation.	lowland rainforest. no water. pandanus, cott onwood.

Ella Bay Cassowary Water Survey

Area Number							10	11
Site Number:	8	9	10	11	12	13	1	1
Date:	12/10/2009	12/10/2009	12/10/2009	12/10/2009	12/10/2009	12/10/2009	12/10/2009	5/11/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.48931	17.49033	17.49026	17.49201	17.49185	17.49193	17.488	17.49045
	146.07536	146.07515	146.07494	146.07292	146.07321	146.07333	146.07233	146.07236
Datum:	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS 84	WGS84	WGS 84
Photos:							1	1
Photo number:							557	672
Type of water Source								
Dry	x	x	x	x	x	x	x	x
Drying								
Stagnant								
Fresh								
Stream				x	x		x	
Wetland								
Other (describe)	Dry gully near fish farm	dry drain	Dry drain near end of bitumen rd a	dry creek bed on eastern side of reserve	dry creek bed	lowland rainforest	Dry creek bed	slight drain
Average Dimensions								
Width								
Length								
Depth								
Water Flow								
None	x	x	x	x	x	x	x	x
Slight								
Some								
Swift								
Turbidity								
Clear								
Slight								
Turbid								
Opaque								
Substrate (%)								
Bedrock								
Boulder (>256mm)								
Cobble (64-256mm)								
Pebble (16-64mm)								
Gravel (4 - 16 mm)		x		x			x	
Sand (1 - 4 mm)	x	x	x	x	x	x	x	x
Silt/Clay (<1 mm)	x	x	x		x	x		x
Canopy Cover (%)								
In General Area	● 80%	◐ 50%	○ 20%	● 80%	● 70%	● 70%	● 75%	● 70%
Direct Over Water								
Accessibility of Water Body								
eg. Obstructions, steep or high banks								
Accessible			x					x
Slightly impeded	x	x		x	x	x	x	
Greatly impeded					x	x	x	
Fauna Activity								
Macropods	x	x	x	x	x	x	x	
Pigs								
Cassowary								
Other Notes	more open understory vegetation than interior. no water. appearance of cotton wood, indicating drain runs to or near the coast (completely dry at present). more open understory vegetation than interior. no water. appearance of cotton wood, indicating drain runs to or near the coast (completely dry at	Dry drain intersecting power line reserve. no water. cottonwood, pondapple, weeds.	Dry drain. no water. Weeds and rainforest veg species.	Dry creek bed on eastern side of reserve the direction of flow would be east during the wet season. no water. rainforest veg, weeds.	Dry creek bed on eastern side of reserve the direction of flow would be east during the wet season. no water. rainforest veg, weeds.	Dry creek bed on eastern side of reserve the direction of flow would be east during the wet season. no water. rainforest veg, weeds.	dry creek bed . no water. Rainforest.	no water. almost impossible to see where water would flow. singapore daisy. Rainforest.

Ella Bay Cassowary Water Survey

Area Number	12						13
Site Number:	1	2	3	4	5	6	1
Date:	14/10/2009	14/10/2009	14/10/2009	14/10/2009	14/10/2009	14/10/2009	13/10/2009
Observer Name (s):	AH	AH	AH	AH	AH	AH	AH
Location (co-ordinates):	17.47497 146.06908	17.47507 146.06908	17.47514 146.06917	17.47691 146.06772	17.47768 146.06715	17.47435 146.06921	17.47816 146.07257
Datum:	WGS84	WGS84	WGS84	WGS84	WGS84	WGS84	WGS 84
Photos:	1	1	1	1	1	1	2
Photo number:	585	586	587	588	589	590	558/559
Type of water Source							
Dry							
Drying							
Stagnant							
Fresh							
Stream	x	x	x	x	x	x	x
Wetland							
Other (describe)							
Average Dimensions							
Width	2m	2m	3m	2m	1.5m	8m	1-3m
Length	continuous	continuous	8m	continuous	continuous	10/20m	
Depth	50-1000mm	10-1000mm	1m	0.5m	0.5/1m	0.5-2m	0.1-0.5m
Water Flow							
None							
Slight							
Some	x	x	x	x	x	x	x
Swift							
Turbidity							
Clear	x	x	x	x	x	x	x
Slight							
Turbid							
Opaque							
Substrate (%)							
Bedrock	x	x	x	x	x		x
Boulder (>256mm)	x	x	x	x	x		x
Cobble (64-256mm)	x	x	x	x	x		x
Pebble (16-64mm)	x	x	x	x	x	x	
Gravel (4 - 16 mm)	x	x	x	x	x	x	
Sand (1 - 4 mm)	x	x			x	x	
Silt/Clay (<1 mm)						x	
Canopy Cover (%)							
In General Area	● 75%	● 75%	● 75%	● 75%	● 75%	● 75%	● 80%
Direct Over Water					◐ 25%	◐ 50%	● 80%
Accessibility of Water Body							
eg. Obstructions, steep or high banks							
Accessible	x	x				x	x
Slightly impeded		x	x	x	x		x
Greatly impeded							
Fauna Activity							
Macropods							
Pigs							
Cassowary	x	x					
Other Notes	cassowary creek. Freshwater. Cassowary droppings sited near creek.	Freshwater creek. abundant freshwater. Cassowary droppings sited containing cassowary plum,mangoes.	Clear fresh water pool in creek. Freshwater prawns,rainbow fish and jungle perch sited.	Freshwater creek. abundant freshwater. Long finned eel, rainbow fish, jungle perch sited. Rainforest.	small waterfall. abundant freshwater. Rainforest.	Freshwater lagoon surrounded by Pandanus gemmifer. abundant freshwater. Rainforest. fish sited include scats, juvenile mangrove jack,rainbow fish and jungle perch.	frog creek is a small creek that flows beneath the access road and has a waterfall to the west of the road. fresh water flowing. Rainforest. Nutmeg. variagated fig. black bean. Cordyline.

INNISFAIL

[About this page](#) | [About daily rainfall](#)

[Data file \(csv\)](#) | [Print file \(pdf\)](#)

Site name: INNISFAIL **Site number:** 32025 **Commenced:** 1881
Latitude: 17.52° S **Longitude:** 146.03° E **Elevation:** 10 m **Operational status:** Oper



Key: Units = mm. 12.9 = Not quality controlled. 1 = Part of accumulated total 28Q [Move mouse over rainfall total to view the period of accumulation.](#)

2009 Show in the table Rainfall of ...

2009	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	7.8	65.8	0	0	0	19.8	0	10.4	0	0	3.6	0
2nd	2.8	211.6	0	0	3.2	19.4	0	4.2	0	0	11.0	0
3rd	0	0	0	0	0	2.6	0	9.2	3.2	0	0.6	0
4th	11.2	25.4	1.0	0	6.6	1.8	0	5.4	1.4	0	0	5.2
5th	7.8	54.6	1.4	0	15.6	0.2	0	0	0	0	1.2	0
6th	5.0	202.2	2.4	4.4	16.0	0	0	0	0	0	5.6	0
7th	1.8	160.2	106.6	0.4	46.8	0	0	0.4	0	0	7.2	5.4
8th	0	39.4	5.2	5.0	20.2	0	0	0.4	0	0	7.6	14.6
9th	36.4	5.7	0	66.2	71.2	0	1.0	0	0	11.2	69.2	0
10th	62.4	10.4	0.4	30.2	27.2	0	2.8	1.0	0	0.2	9.0	0
11th	92.8	0.2	6.6	3.8	75.2	0	0	0	0	0.2	31.6	3.4
12th	210.0	14.0	181.8	3.4	15.8	0	0	2.2	0	0	68.8	0
13th	224.6	0	1.8	58.0	19.4	0	5.4	0	0	0	15.2	0
14th	0	9.8	4.8	36.2	6.8	0	0	0	0	0	1.2	0
15th	0	0.2	4.0	33.4	7.7	0	0	0	0.2	0	0	6.6
16th	16.6	3.0	0	0	10.2	0	0	0	2.6	0	0	6.4
17th	3.8	1.1	0	11.2	0.8	0	0	0	1.4	0	0	15.2
18th	0.6	0	0.4	10.2	0	3.6	0	0	2.8	0	0	0.2
19th	32.2	0	50.2	0	0	15.4	0	0.4	2.8	4.0	0	0
20th	3.6	0	6.0	0	0	0	3.6	0.8	0	7.8	0	0
21st	5.8	1.8	0	0	0	0	6.4	0	0	7.0	9.4	0
22nd	0	37.0	4.0	0	0	2.4	2.2	0	0	0.2	16.6	0
23rd	0.2	27.6	1.6	0	0	0	0	0	0	0	0	0
24th	0	109.4	5.4	0	0	0	0	0	0	3.4	0	0
25th	0	14.6	0.6	0	0.6	0	1.0	0	0	0	7.4	0
26th	45.2	1.0	0.2	0	38.6	0	2.2	0	0	0	8.8	0.4
27th	44.8	10.8	0.4	0	32.6	0	0.8	0	0	0	0	4.5
28th	25.2	11.8	41.2	0	10.2	0	0	0	0	15.4	0	9.2
29th	68.2		4.6	0	2.4	0	18.0	0	0	2.6	0	0
30th	27.4		1.2	0	0	0	1.0	0	0	3.6	0.4	1.2
31st	207.0		0		1.4		11.6	0		4.0		23.2
Highest Daily	224.6	211.6	181.8	66.2	75.2	15.4	18.0	10.4	3.2	15.4	69.2	23.2
Monthly Total	1143.2	1013.6	436.8	262.4	422.5	54.2	56.0	34.4	14.4	59.6	280.4	95.5

Annual total for 2009 = 3875.0 mm [View all monthly data](#) [Plot year of daily data](#)

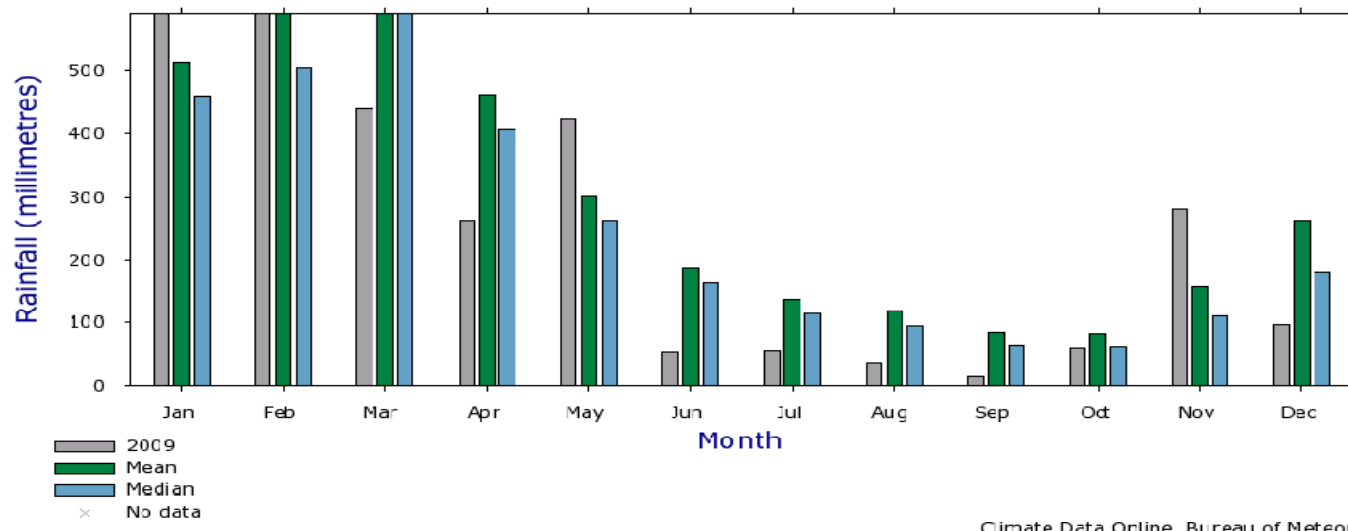
Summary statistics for all years

[Move mouse over highest daily rainfall to view dates.](#)

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean	513.2	588.6	659.1	461.2	300.8	167.5	135.7	117.5	84.8	82.9	153.0	263.4
Median	458.9	503.9	622.9	407.2	263.0	161.5	113.8	94.9	63.3	61.3	103.2	178.1
Highest Daily	631.1	435.1	394.5	520.7	214.1	203.2	92.5	310.0	161.0	342.1	335.2	539.0

[Plot statistics and this year](#)

Innisfail (032025) 2009 rainfall

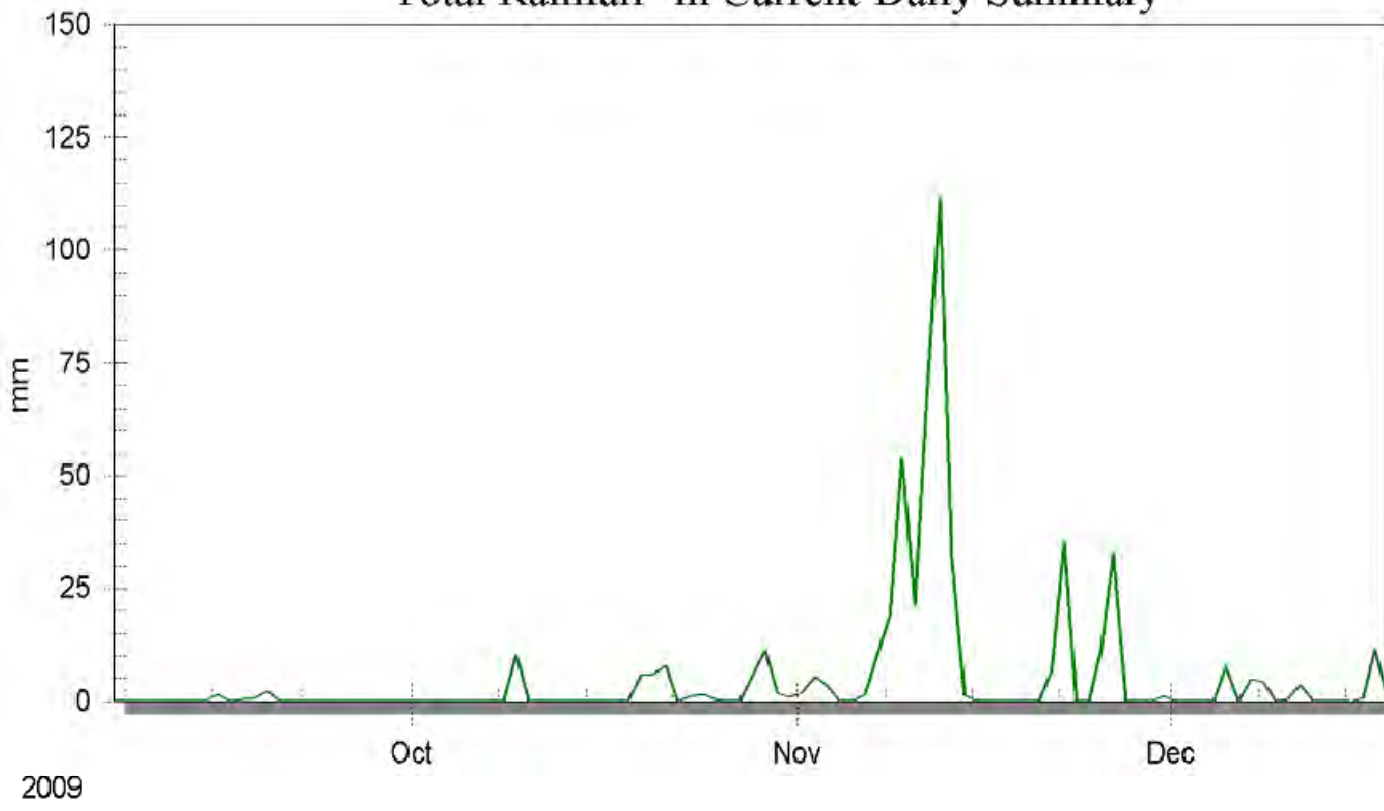


Note: Data may not have completed quality control
 Product Code: DCAC0009

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Source: <http://www.bom.gov.au>

"Total Rainfall" in Current-Daily Summary



Source: Ella Bay Weather Station -17.462351 / 146.058432