



Human Use Environmental Values



for the Black and Ross River Basins Water Quality Improvement Plan (WQIP)



Australian Government

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**Australian Government****Document disclaimer statement**

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1. Introduction

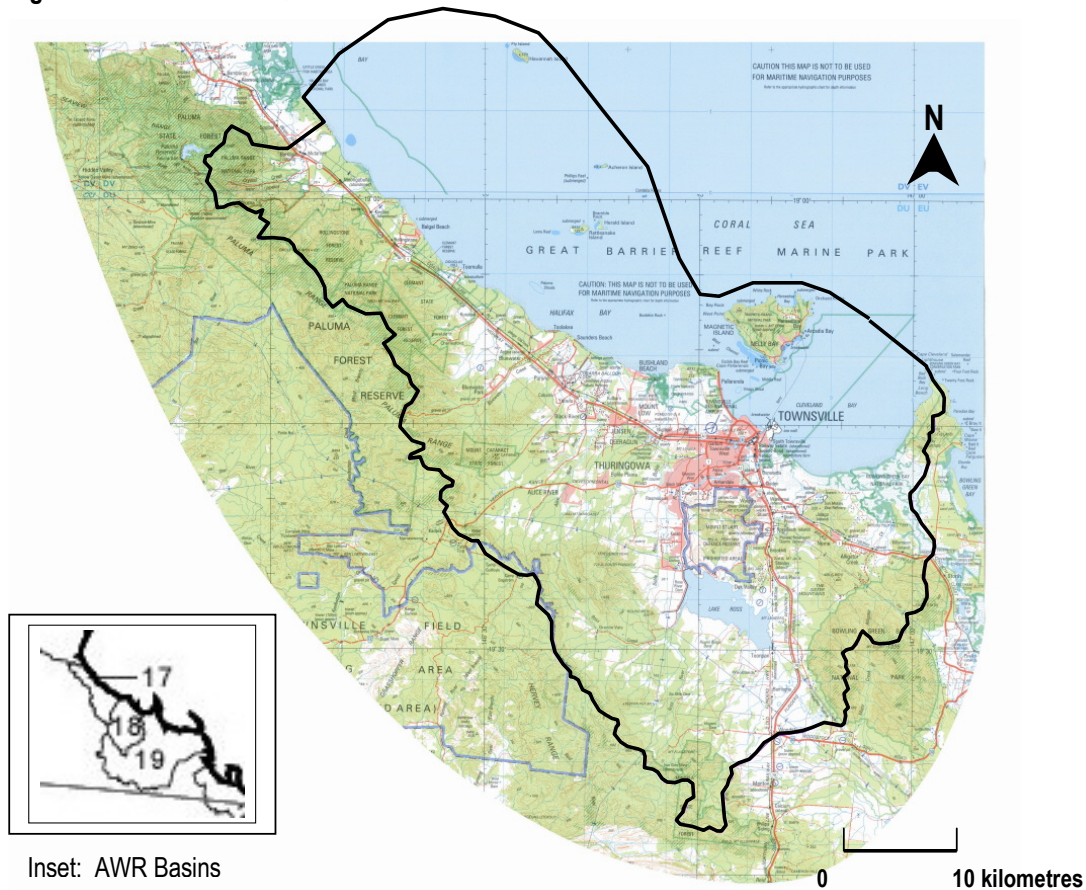
1.1 Background

Creek to Coral is the manager of the Coastal Catchments Initiative (CCI) project for the Black and Ross River Basins and along with its many partners is responsible for the preparation of a Water Quality Improvement Plan (WQIP).

1.2 Black and Ross Basins WQIP Area

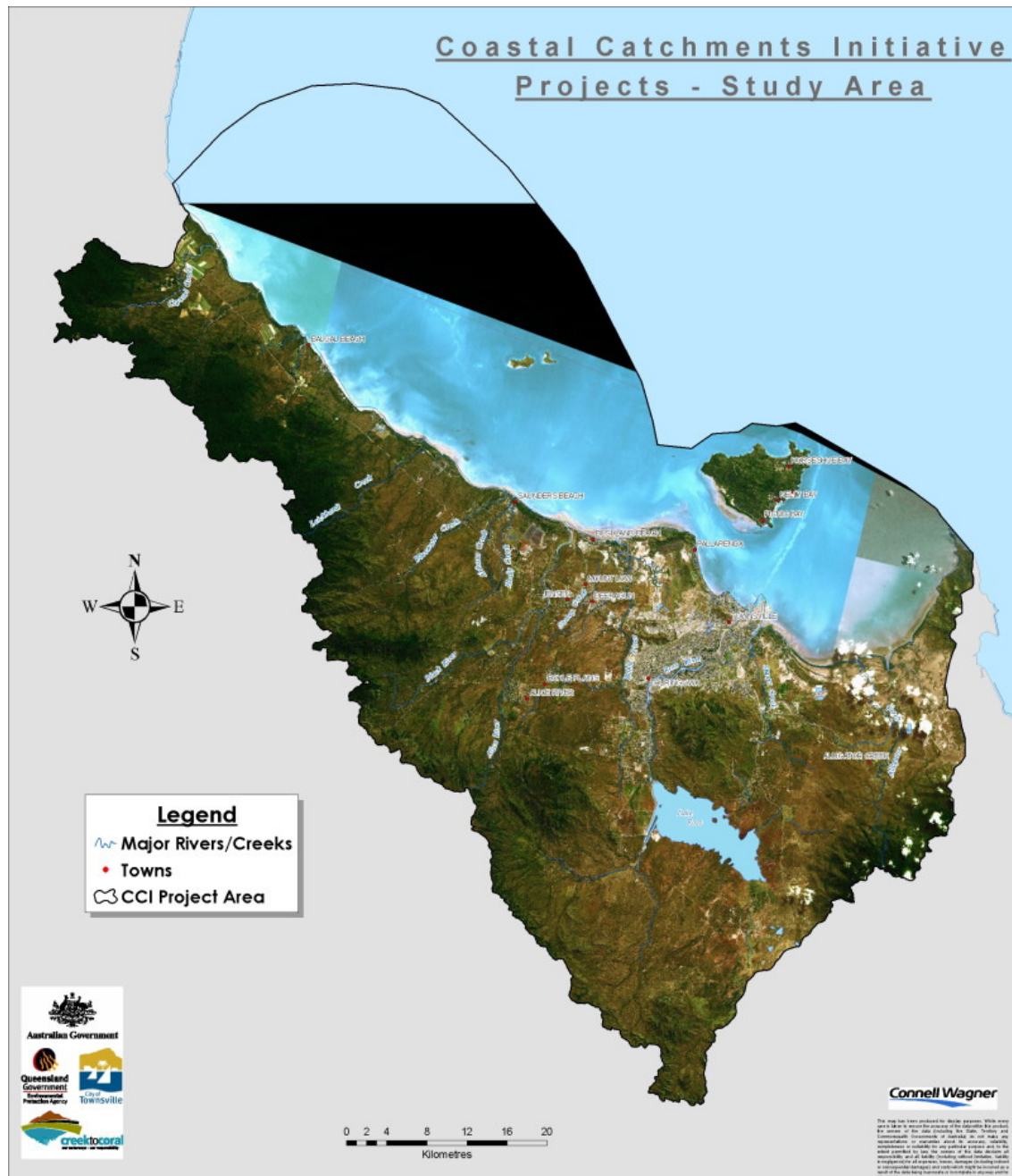
The Black/Ross WQIP area covers most waterways within the Townsville City local government area with the exception of the Reid River and Major Creek catchments, which are part of the Haughton River Basin. The WQIP area includes the Black River (No. 17) and Ross River (No. 18) Australian Water Resource Council (AWR) Basins and a small part of the Haughton River Basin (No. 19), where the waterways flow to Cleveland Bay. It also includes Magnetic Island, as well as the coastal and marine waters of Cleveland Bay and Halifax Bay (see Figure 1-1 and Figure 1-2).

Figure 1-1 Black/Ross WQIP Area



Note: The marine area is an approximation only. Information that relates to adjacent areas will be acknowledged and included in the report and passed onto the relevant organisation e.g. BDT NRM.

Figure 1-2 Study Area with SPOT Imagery



Note: SPOT imagery supplied by BDT NRM

1.3 Functional Units

The Black/Ross WQIP area has been further divided into 10 sub basins (see Figure 1-3) and 47 catchments and sub catchments. These divisions have been established to assist with condition assessment, monitoring, modelling and reporting. For the purposes of identifying Environmental Values the waterways associated with the catchments and sub-catchments have been identified and, where appropriate, sub-divided into functional units e.g. upland and lowland freshwater and estuarine. Coastal and marine areas have also been divided into functional units (see Figure 1-3).

Figure 1-3 Black Ross WQIP Area with Sub Basins and Catchments

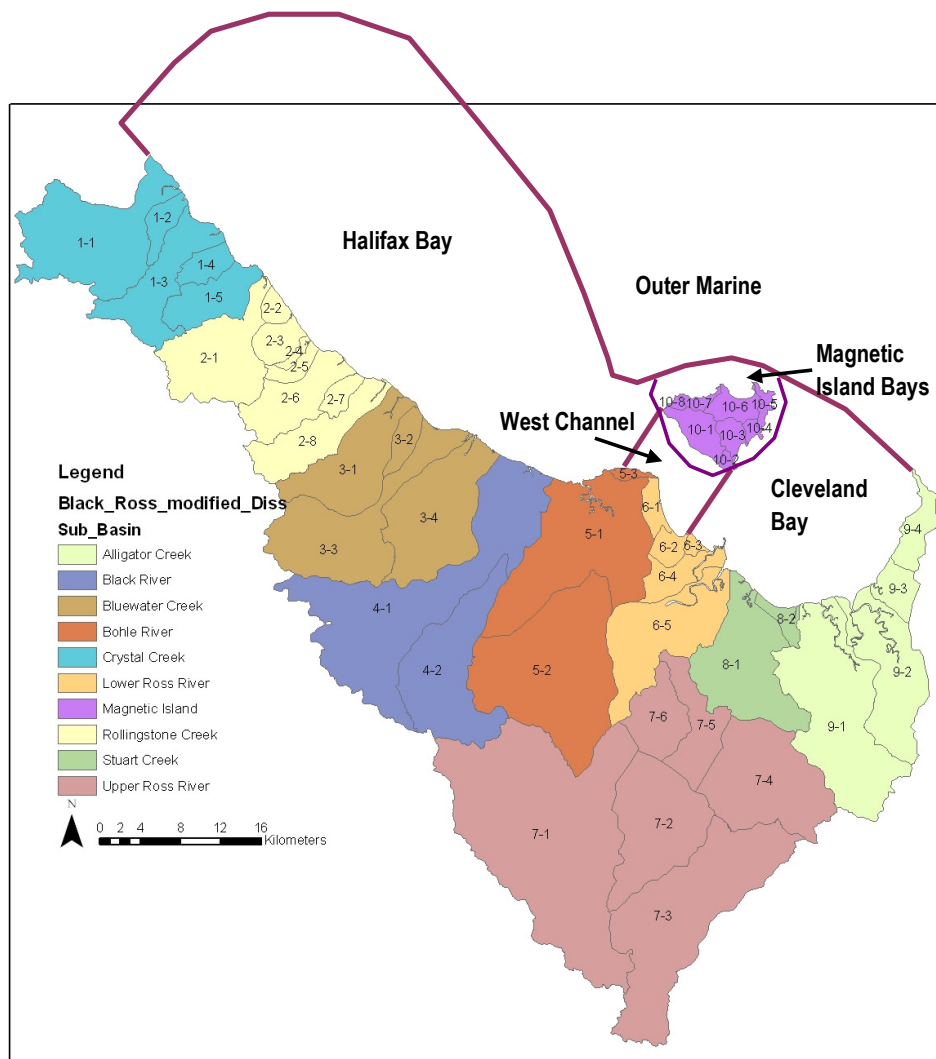


Table 1-1 Sub Basins and Main Waterways

No.	Sub Basin	Main Waterways
1	Crystal Creek	Crystal Creek, Lorna Creek, Ollera Creek, Scrubby Creek, Hencamp Creek
2	Rollingstone Creek	Rollingstone Creek, Surveyors Creek, Saltwater Creek, Leichhardt Creek
3	Bluewater Creek	Sleeperlog Creek, Deep Creek, Bluewater Creek
4	Black River	Black River, Alice River
5	Bohle River	Bohle River, Saunders Creek, Stoney Creek
6	Ross River (lower)	Pallarenda, Esplanade, Ross Creek, Ross River
7	Ross River (upper)	Ross River, Sachs Creek, Toonpan Lagoon
8	Stuart Creek	Stuart Creek, Sandfly Creek
9	Alligator Creek	Alligator Creek, Crocodile Creek
10	Magnetic Island	Gustav Creek, Petersen Creek, Gorge Creek, Endeavour Creek, Retreat Creek

2. *Human Use Environmental Values*

2.1 National Water Quality Management Strategy

The National Water Quality Management Strategy (NWQMS) provides the framework for Queensland's Water Quality Guidelines, the Environmental Protection (Water) Policy 1997 (Water EPP), and components of the Water Quality Improvement Plans (WQIP) being prepared as an action of the Reef Water Quality Protection Plan (Reef Plan). The NWQMS promotes the sustainable management of water resources with one of the key tools being a process for determining environmental values (uses) of waterways and corresponding water quality objectives (targets) for the various water bodies in the WQIP study area. Actions are then developed to meet the water quality objectives set for the water bodies. The first part of the process is to determine the Environmental Values of waterways and water bodies.

2.2 Definitions and Terminology

Definitions from the NWQMS are included in Appendix A.

2.3 Determining Human Use

Human Use Environmental Values have been identified for the Black and Ross River Basins WQIP area from a number of sources including a questionnaire sent out to selected stakeholders. This document provides the results of the survey and initial results of the overall study. The interim results were used to develop an Information Paper and maps for discussion at stakeholder consultation workshops held in July 2008.

2.4 Survey Results

Creek to Coral received twelve responses to the survey. The results have been collated and have been used as the starting point to determine human uses of the waterways and waterbodies in the Black Ross WQIP area. The results of the survey are provided in Appendix B. Information on human use from other sources is provided in the following sections ordered by human use category.

2.5 Study Results

In a separate desktop study a variety of public domain information sources were used to collate human use information. In some cases individuals were also consulted to clarify or source information. Information sources used in the study are listed in Appendix C.

2.6 Water Extraction

Water extraction licence information has been provided by the Department of Natural Resources and Water. This information has been used to collate human uses for the waterways in the vicinity of the licenced property based on the purpose noted for the extraction licence and land use mapping (see Figure 2-1 and Figure 2-2). Data was provided with Lot on Plan information and this was used to produce a map showing the clusters of extraction areas. Summary information from the surface water extraction information along with maps is included in Appendix D.












2.7 Summary Results

The combined results from the survey, study and extraction data have been summarised in Table 2-1, Table 2-2 and Table 2-3. The information was then translated to draft human use environmental values maps for discussion at the stakeholder workshops (see Figure 2-3 and Figure 2-4). The results of the interim, step between the table and the maps, i.e. attaching human use symbols to individual waterways and waterbodies, is provided in Appendix E.

2.8 Stakeholder Workshops

The draft results of the stakeholder workshops are included in Appendix F.

Table 2-1 Human Use Summary Freshwater

Waterway/ body											
Black River Basin											
Crystal Creek	E				SX	SX	SX	SX	YE		S
Little Crystal Creek	E										
Bullocky Toms Creek	E										
Ethel Creek	E										
Lorna Creek											S
Ollera Ck	E				S	S	S	S			S
Scrubby Creek											S
Hencamp Ck	E	E									S
Rollingstone Ck	E	E			SX	SX	SX	SX	E		S
Surveyors Creek	E										S
Wild Boar Creek											S
Station Creek					S		S				S
Saltwater Creek				EX	S		S				S
Cassowary Creek					S		S				S
Leichhardt Creek	E				S		S				S
Christmas Creek					S		S				S
Sleeper Log Creek	E	E			S		S		E		S
Two Mile Creek					S		S				S
Bluewater Creek	E	E			SX	S	SX	S	E		S
Althaus Creek		E			S	S	SX	S			S
Deep Creek	E	E			S		S				S
Healy Creek					S		S				S
Black River	E				SX	SX	SX	SX	E	E	SX
Alick Creek (Black R trib.)	E	E									
Log Creek (Black R trib.)	E										
Scrubby Creek					S		S				S
Alice River											S
Canal Creek (Alice R trib)	E								E		
Ross River Basin											
Stoney Creek											S
Saunders Creek											SX
Little Bohle River											S
Middle Bohle Creek											S
Bohle River					SX	SX	SX	SX			SX ⁴
Louisa Creek							S	S			SX ⁴
Town Common					S		S	SX			S
Ross River (below the Dam)						SX	SX	SX			SX ⁴
Ross River (Black Weir)	E				SX	X	SX	SX	Y		X ⁴
Ross River (Gleasons Weir)					SX		SX	SX			X ⁴
Ross River (Aplins Weir)					SX	X	SX	SX			X ⁴
Ross River (below Aplins)					SX		SX	SX			X ⁴
University Creek								S			S
Ross Creek					SX		SX	SX			
Stuart Creek	E				S		S	S	E		
Sandfly Creek					S		S				SX ⁴

Waterway/body											
Alligator Creek	E	E			SX	SX	SX	SX	E		S
Whites Creek		X									
Slippery Rocks Creek											
Killymoon Creek											
Crocodile Creek					S		S				
Round Mountain Creek											
Lagoon Creek											
Plum Tee Creek											
Central Ck (aka Ross Ck)											
Sandy Creek											
Spring Creek											
Deep Creek											
Leichhardt Creek											
Cattle Creek					X	X					
Ross River											
Six Mile Creek											
Jimmys Lagoon											
Four Mile Creek /Flagstone Creek											
Lansdowne Creek	E										
One Mile Ck/Spring Ck/											
Toonpan Lagoon	E										
Antill Plains Creek											
Sachs Creek	E					X		X	E		
Blacksoil Gully											
Lake Ross (Ross Dam)					PR ¹		PR ²	PR ³	EY		
Magnetic Island											
Retreat Creek					S	S	S	S			S
Chinamans Gully					S	S	S	S			S
Duck Creek					S	S	S	S			S
Ned Lee Creek					S	S	S	S			S
Butler Creek (Picnic Bay)								S			
Gustav Ck					S	S	S	S			S
Petersen Creek						S	S	S			S
Gorge Creek						S	S	S			
Endeavour Creek						S	S	S			

Notes: S indicates the responses to the survey as the information source. Y indicates other sources.

X indicates the Human Use study results and:

PR indicates that a permit is required and specifically:

1: Eel harvesting occurring on Lake Ross

2: Permit to Townsville Waterskiing Club to allow access for its members to water-ski on Lake Ross. Must meet strict policy guidelines before entering lake.

3: Permit to 'Lake Ross Tours' to conduct tours on Lake Ross

Sources of Cultural and Spiritual information:

4: Cultural information given by Michelle Bird of the Northern Archaeology Consultancies.








5: Cultural information obtained from GBRMPA

(Reference sources from the Human Use study are provided in Appendix C)

E indicates information was inferred from Surface Water Extraction Licence data supplied by DNRW (see Appendix D). Where Drinking is indicated the information relates to domestic supply.






Yellow shading indicates no human uses identified for the waterway

Table 2-2 Human Use Summary Estuaries

Waterway/ body							
Black River Basin							
Crystal Creek							
Lorna Creek							
Ollera Ck		S	S	S	S		
Scrubby Creek							
Hencamp Ck							
Rollingstone Ck			SX	SX	SX		
Surveyors Creek							
Wild Boar Creek							
Station Creek							
Saltwater Creek							
Cassowary Creek							
Leichhardt Creek							
Christmas Creek							
Sleeper Log Creek							
Two Mile Creek							
Bluewater Creek					X		
Deep Creek							
Healy Creek							
Black River		SX	SX	SX	SX		
Toomulla (Saltwater Creek)	X						
Ross River Basin							
Bohle River		SX		SX	SX		
Town Common		S		S	S		
Ross River		SX		SX	SX	X	X ⁴
Ross Creek		SX		SX	SX	X	X ⁴
Stuart Creek							
Sandfly Creek							
Alligator Creek		SX		SX	SX		
Crocodile Creek		S		S	S		
Cocoa Creek		S		S	S		
Magnetic Island							
Retreat Creek							X ⁵
Chinamans Gully							X ⁵
Duck Creek							X ⁵
Ned Lee Creek							X ⁵
Butler Creek (Picnic Bay)							X ⁵
Gustav Creek							X ⁵
Petersen Creek							X ⁵
Gorge Creek							X ⁵
Endeavour Creek							X ⁵
Nelly Bay Harbour		S	S	S	S		X ⁵

Notes: See Table 2-3 notes

Table 2-3 Human Use Summary Coastal and Marine

Coastal and Marine Area					
Beach at Ollera Creek mouth		S	S	S	S
Rollingstone Beach				X	
Toomula	SX	S	S	SX	
Toolakea	SX	S	S	SX	
Balgol	SX	S	S	S	
Saunders Beach	SX	S	S	SX	
Bushland Beach	SX	S	S	SX	
Shelley Beach	S	S	S	S	
Pallarenda	S	S	S	SX	
Rowes Bay			S	SX	
Kissing Point	S	S	S	S	
Strand Beach	SX	SX	SX	SX	
Breakwalls/Ross Creek	SX		S	SX	
Cleveland Bay	S	S	S	SX	X ⁴
Cape Cleveland	SX	SX	SX	SX	
Magnetic Island					
Young Bay	S	S	S	S	X ⁵
Bolger Bay	S	S	S	S	X ⁵
Cockle Bay	S	S	S	S	X ⁵
Picnic Bay	SX	S	SX	SX	X ⁵
Nelly Bay	S	S	SX	SX	X ⁵
Geoffrey Bay	S	SX	S	SX	X ⁵
Alma Bay	S	S	S	SX	X ⁵
Arthur Bay	S	S	S	S	X ⁵
Florence Bay	S	S	S	S	X ⁵
Radical Bay	S	S	SX	S	X ⁵
Balding Bay	S	S	SX	S	X ⁵
Horseshoe Bay	S	SX	SX	SX	X ⁵
Five Beach Bay	S	S	S	S	X ⁵
Rollingstone Bay	S	S	S	S	X ⁵
Orchard Rocks	S	S	S	S	X ⁵

Notes: S indicates the responses to the survey as the information source. Y indicates other sources.

X indicates the Human Use study results and:

Sources of Cultural and Spiritual information:

⁴: Cultural information given by Michelle Bird of the Northern Archaeology Consultancies.

⁵: Cultural information obtained from GBRMPA

(Reference sources from the Human Use study are provided in Appendix C)

Yellow shading indicates no human uses identified for the waterway

Figure 2-1 Land Use in the Black Ross WQIP Area

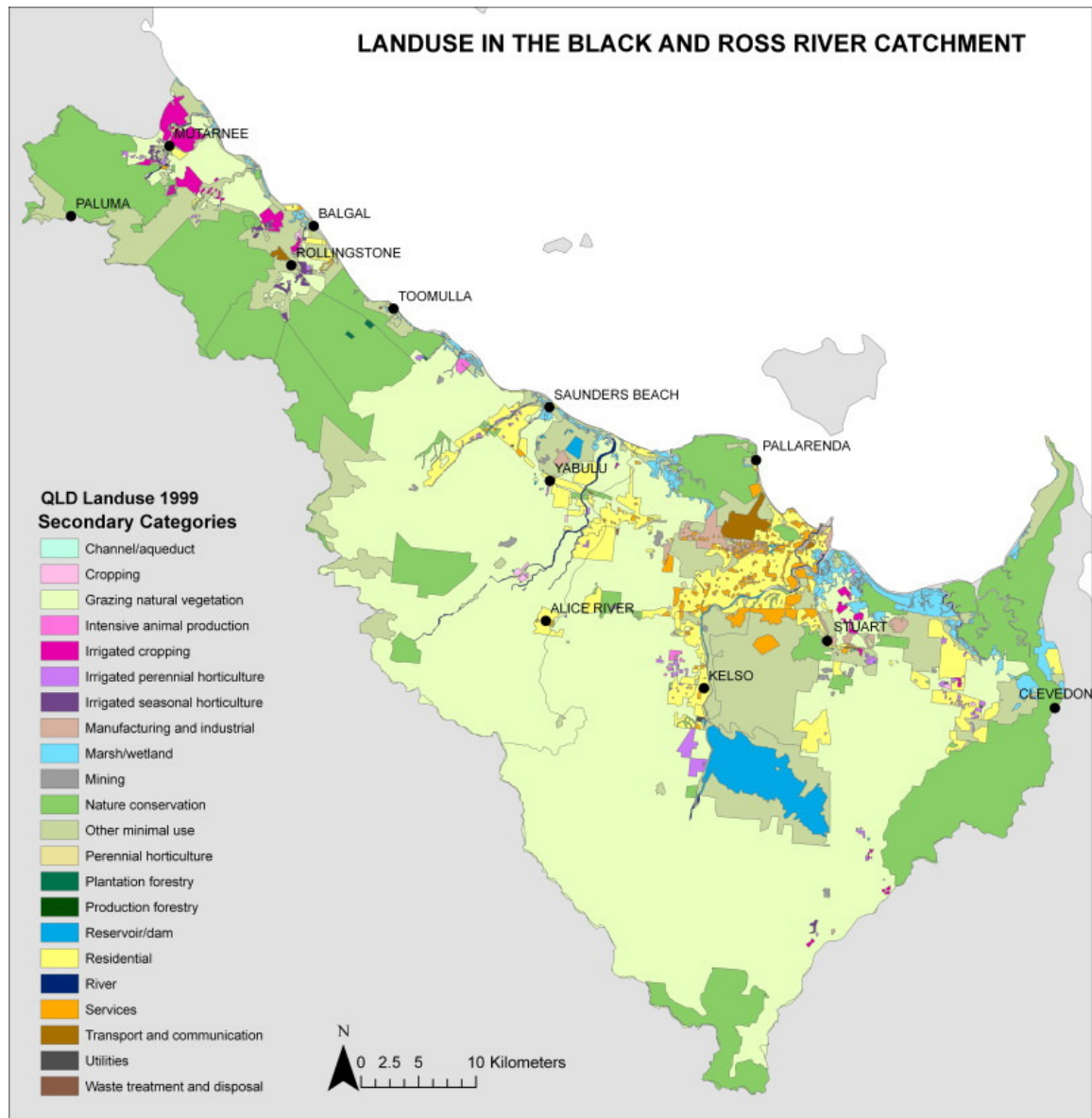
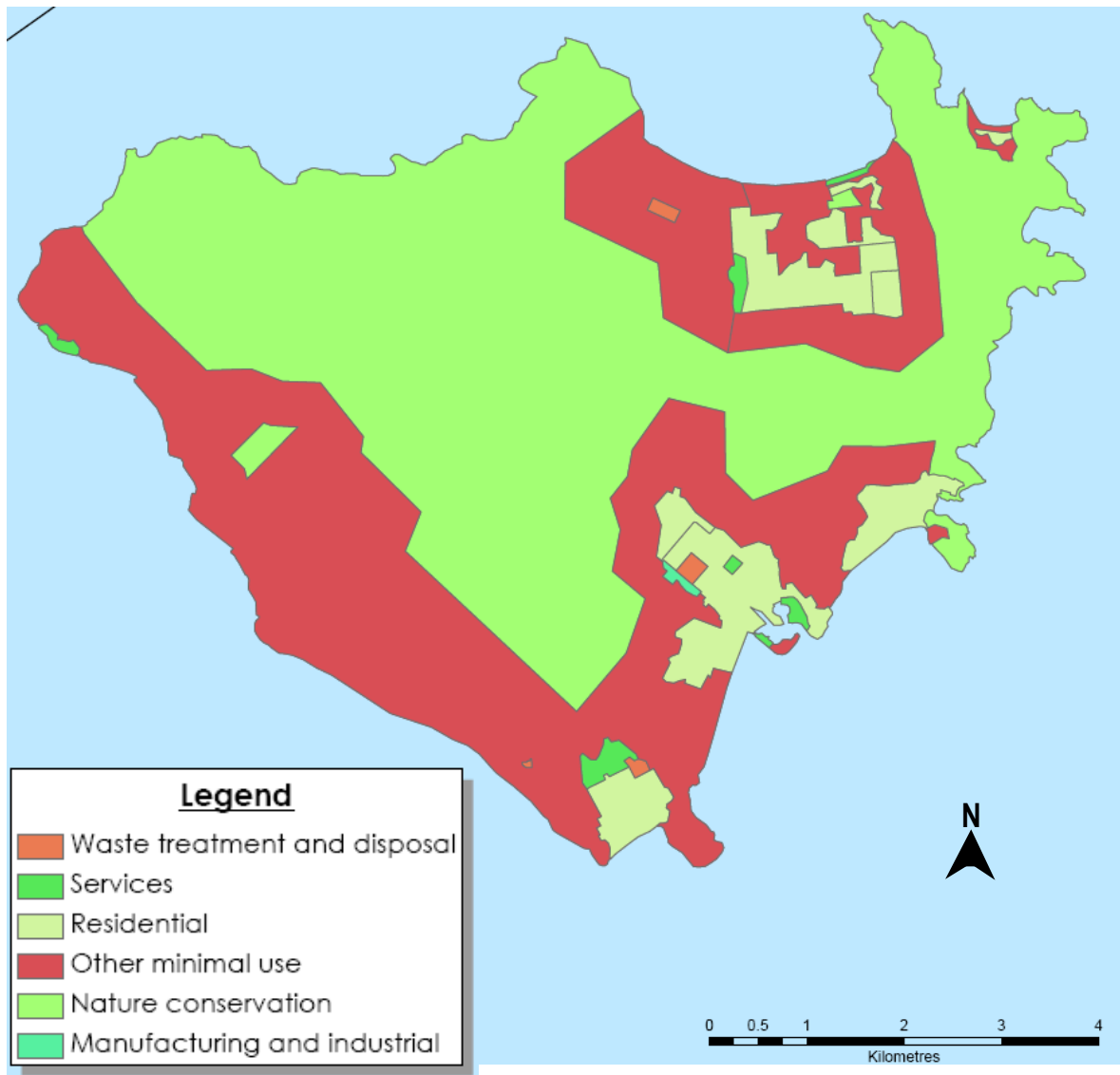


Figure 2-2 Magnetic Island Land Use















Note: Magnetic Island landuse 2005 was prepared specifically for the WQIP using BDT NRM SPOT imagery and Townsville City Council aerial photographs and precinct data

Appendix A

NWQMS Extracts

Environmental Values are defined as:

EV symbol	Symbol	Interpretation
	Aquatic Ecosystems	<p>Supporting pristine or modified Aquatic Ecosystems. There are three Levels of Protection:</p> <p>High conservation/ecological value systems (HCV or HEV). They are often found within national parks, conservation reserves or inaccessible locations. Targets for these systems aim to maintain no discernable change from this natural condition.</p> <p>Slightly to moderately disturbed systems (SMD). These systems have undergone some changes but are not considered so degraded as to be highly disturbed.</p> <p>Highly disturbed systems (HD). These are degraded systems likely to have lower levels of naturalness. These systems may still retain some ecological or conservation values that require protecting. Targets for these systems are likely to be less stringent and may be aimed at remediation and recovery or retaining a functional but highly modified ecosystem that supports other environmental values also assigned to it.</p> <p>See further details in EPA (2005) for each level of protection.</p>
	Irrigation	Irrigating crops such as sugar cane, lucerne, etc
	Stock watering	
	Farm use	Water for farm use such as in fruit packing or milking sheds, etc
	Aquaculture	Water for aquaculture such as barramundi or red claw farming
	Human consumption	Human consumption of wild or stocked fish or crustaceans
	Primary recreation	Primary recreation with direct contact with water such as swimming or snorkelling
	Secondary recreation	Secondary recreation with indirect contact with water such as boating, canoeing or sailing
	Visual appreciation	Visual appreciation with no contact with water such as picnicking, bushwalking, sightseeing
	Drinking	Raw drinking water supplies for human consumption
	Industrial	Water for industrial use such as power generation, manufacturing plants
	Cultural & Spiritual	Cultural and spiritual values including the cultural values of traditional owners

Human Use EVs are all of these except for Aquatic Ecosystems.

Appendix B

Survey Results

How do you use and value Townsville's waterways?

Survey results

Twelve responses were received and these have been used to compile the following human use results tables.

Notes:

Yellow shading indicates there was no indication of human use (from the survey) for those waterways.











Red shading indicates those human uses are not applicable to the estuarine and coastal areas.











Numbers indicate the number of responses for that human use for the associated waterway.

Cultural and spiritual human use will be added to the main human use table for summary purposes rather than remaining separate.

The lack of human use for areas above the Ross River Dam may not be a true indication of the situation rather a matter of not having accessed the people that use these areas.

[illegible]











NORTHERN (Rural) AREA											
Waterway	Waterway code	Irrigation 	Farm supply 	Stock watering 	Aquaculture  e.g. barramundi, red claw farm	Human consumer  e.g. of wild or stocked fish, shellfish	Primary recreation  Fully immersed in water eg swimming, snorkelling	Secondary recreation  Possibly splashed with water, e.g. sailing, fishing	Visual appreciation  No contact with water, e.g. picnic, bush walking	Drinking water 	Industrial use 
ESTUARIES											
Ollera Creek	3					1	1	1	1		
Rollingstone Creek	6						1	1	1		
Black River	20					2	1	2	2		
COASTAL/MARINE WATERS											
Beach at Ollera Ck mouth							1	1	1		
Bushland Beach						1	1	2	2		
Saunders Beach						1	1	1	1		
Toomula						1	1	1	1		
Toolakea						1	1	1	1		
Balgai						1	1	1	1		











Waterway	Waterway code	Irrigation  e.g. cane irrigation	Farm supply  e.g. fruit packing, milking sheds	Stock watering  e.g. cattle	Aquaculture  e.g. barramundi, red claw farm	Human consumer  e.g. of wild or stocked fish, shellfish	Primary recreation  Fully immersed in water eg swimming, snorkelling	Secondary recreation  Possibly splashed with water, e.g. sailing, fishing	Visual appreciation  No contact with water, e.g. picnic, bush walking	Drinking water  Raw water supplies taken from river for drinking	Industrial use  e.g. power generation, manufacturing
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CENTRAL (Urban) AREA

FRESHWATERS (listed North to South)

Stoney Creek	23										
Saunders Creek	24										
Little Bohle River	25										
Middle Bohle Creek	26										
Bohle River	27					1	1	3	2		
Louisa Creek	28							1	2		
Town Common	29					1		2	2		
Ross River (below the Dam)	30						1	1	2		
Ross R - Black Weir	31					1		2	2	1	
Ross R - Gleasons Weir	32					1		2	2		
Ross R - Aplins Weir	33					1		2	2		
Ross R below Aplins	34					1		4	2		
University Creek	35								1		
Ross Creek	36					1		2	2		
Stuart Creek	37					1		2	2		
Sandfly Creek	38					1		1			

CENTRAL (Urban) AREA											
Waterway	Waterway code	Irrigation 	Farm supply 	Stock watering 	Aquaculture  e.g. barramundi, red claw farm	Human consumer  e.g. of wild or stocked fish, shellfish	Primary recreation  Fully immersed in water eg swimming, snorkelling	Secondary recreation  Possibly splashed with water, e.g. sailing, fishing	Visual appreciation  No contact with water, e.g. picnic, bush walking	Drinking water 	Industrial use 
ESTUARIES											
Bohle River	27					2		2	2		
Town Common	29					1		1	1		
Ross River	34					1		2	1		
Ross Creek	36					1		2	1		
COASTAL/MARINE WATERS											
Cleveland Bay						1	1	3	1		
Strand beach						1	2	3	2		
Palleranda						1	2	3	2		
Rowes Bay								1			
Shelley Beach						1	1	1	1		
Kissing Point						1	1	1	1		
Breakwalls/Ross Creek						1		1	1		

Waterway	Waterway code	Irrigation  e.g. cane irrigation	Farm supply  e.g. fruit packing, milking sheds	Stock watering  e.g. cattle	Aquaculture  e.g. barramundi, red claw farm	Human consumer  e.g. of wild or stocked fish, shellfish	Primary recreation  Fully immersed in water eg swimming, snorkelling	Secondary recreation  Possibly splashed with water, e.g. sailing, fishing	Visual appreciation  No contact with water, e.g. picnic, bush walking	Drinking water  Raw water supplies taken from river for drinking	Industrial use  e.g. power generation, manufacturing
SOUTHERN (Rural) AREA											
FRESHWATERS (East of Stuart Creek)											
Whites Creek	39										
Slippery Rocks Creek	40										
Alligator Creek	41					1	2	3	3		
Killymoon Creek	42										
Crocodile Creek	43					1		2			
ESTUARIES											
Alligator Ck	41					2		2	2		
Cocoa	43					1		1	1		
Crocodile						1		1	1		
COASTAL/MARINE WATERS											
Cape Cleveland						1	1	1	1		

Waterway	Waterway code	Irrigation  e.g. cane irrigation	Farm supply  e.g. fruit packing, milking sheds	Stock watering  e.g. cattle	Aquaculture  e.g. barramundi, red claw farm	Human consumer  e.g. of wild or stocked fish, shellfish	Primary recreation  Fully immersed in water eg swimming, snorkelling	Secondary recreation  Possibly splashed with water, e.g. sailing, fishing	Visual appreciation  No contact with water, e.g. picnic, bush walking	Drinking water  Raw water supplies taken from river for drinking	Industrial use  e.g. power generation, manufacturing
MAGNETIC ISLAND											
FRESHWATERS											
Retreat Creek	62					1	1	2	3		
Chinamans Gully	63					1	1	2	3		
Duck Creek	64					1	1	2	3		
Ned Lee Creek	65					1	2	1	3		
Unnamed (draining to Picnic Bay)	66								3		
Gustav Ck	67					2	2	4	6		
Petersen Creek	68						2	4	5		
Gorge Creek	69						1	3	4		
Endeavour Creek	70						1	2	5		
Ephemeral through 41 Mirimar Cr.								1	1		
Creek (unnamed that feeds the Lagoon at the habitat reserve in Nelly Bay)								1	1		

MAGNETIC ISLAND

[illegible]

ESTUARIES

Nelly Bay Harbour						1	1	1	1		
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COASTAL/MARINE WATERS

[illegible]

Appendix C

Information Sources

Additional information sources used to compile Human Use table

Information Source	Water body	Activity
Crystal Creek Caravan Park	Crystal Creek	Primary (swimming), Secondary (boating), Human Consumption, Visual
Creek 2 Coral pamphlet	Ross Lake	Visual
Riverway Website	Ross River (Black Weir)	Secondary (boating), Human Consumption, Visual
The Townsville Dolphins Website	Cleveland Bay	Secondary (boating)
Rosshaven Marine	Ross Creek Estuary & Ross River Estuary	Secondary (boating), Industrial
Blueys Horse riding Ranch	Horseshoe Bay	Primary (Swimming both horse and human)
Townsville Slipway Boatsales	Ross Creek Estuary	Secondary (boating), Industrial
Townsville Yacht & Boat brokerage	Breakwater Marina	Secondary (boating), Industrial
Breakwater Marina Townsville	Breakwater Marina	Secondary (boating), Visual
Environmental Protection Agency	Cape Cleveland & Cleveland Bay	Visual
Magnetic Island Recreation Centre	Picnic Bay	Primary (swimming), Visual
Queensland Transport	Ross River, Picnic Bay, Nelly Harbour, Horseshoe Bay, Ross Creek, Cleveland Bay, Pallarenda, Rollingstone Ck, Althaus Ck, Bohle River, Black Weir	Secondary (boating)
	Picnic Bay, Ross Creek	Visual
Jason Scaf (Zingspace)	Townsville Common, The Strand, Bushland Beach,	Visual
	The Strand, Ross Creek Breakwater, Ross River Estuary	Human Consumption
	Arcadia Bay, Magnetic Island	Primary, Visual
Larry Corbett (Zingspace)	Whites Creek	Stock watering
Water & Wastewater - TCC	Ross River (Black, Aplins, Gleesons)	Secondary (boating)
U Beaut Barra Charters	Cleveland Bay	Secondary (boating)
Townsville Waterski Club	Ross Lake & Black Weir	Secondary & Primary
Jason Coe (member of Townsville Skindiving Club)	Cattle Ck, Cape Cleveland, Rattlesnake Is, Magnetic Is, (outside Green zones)	Primary & Human Consumption
Townsville Sportsfishing Club	Alligator Cr	Human Consumption
Townsville Cruising Yacht Club	Cleveland Bay, Ross Creek	Boating
Townsville & JCU Rowing Club	Ross River (between Gleeson & Aplins)	Boating
Townsville Triathlon Club	Ross River (Aplins Weir)	Primary (swimming)
Libby Guest – TCC	Ross River (Black Weir)	Visual
Queenslandholidays.com.au	Alligator Cr	Visual
Thuringowa Council (2003)	Rollingstone Cr, Bluewater Cr, Loam Island, Corveth's Lagoon.	Visual
Townsville Barrafishing	Ross River (Black Weir)	Human Consumption (Fish stocking)
Sunferries	Cleveland Bay, Ross Ck, Nelly Bay	Secondary
Soe-townsville.org	Sach's Cr	Primary, Visual
Sports Fish Australia	Barratta Cr	Secondary, Human Consumption, Visual

	Bohle River, Cleveland Bay	Primary, Human Consumption
Thuringowa Council Tourist Brochures	Balgol Beach, Rollingstone Ck	Primary, Visual, Human Consumption
Balgol Beach Holiday Units	Balgol Beach	Visual
Rainforest Inn Paluma	Little Crystal Ck,	Primary, Visual
Thuringowa Council	Lake Ross, Crystal Ck	Visual
	Loam Island, Saunders Beach, Toomulla Beach	Visual, Secondary, Human Consumption
	Balgol Beach	Visual, Secondary, Primary, Human Consumption
	Rollingstone Ck, Crystal Ck,	Visual, Primary
	Toolakea Beach, Bushland Beach	Visual, Human Consumption
GBRMPA	Magnetic Island	Primary, Cultural, Visual
	Ross River	Visual
	Horseshoe Bay, Picnic Bay	Secondary, Primary
	Alma Bay	Primary
	Nelly Bay	Secondary, Visual
Townsville Enterprises Ltd	Little Crystal Ck, Crystal Creek	Primary
QPWS	Bohle River	Visual
Red Baron Sea Planes	Breakwater Marina	Secondary, Visual
Fantasea	Ross Creek, Cleveland Bay, Nelly Harbour	Secondary
Surf Lifesaving QLD	The Strand, Horseshoe Bay	Primary
Magnetic Island Sea Kayaks	Horseshoe Bay, Balding Bay, Radical Bay	Secondary
Coral Sea Skydivers	The Strand	Visual
Ross River Parkway	Ross River (Black Weir to Bicentennial Park)	Visual
Reef Eco-tours	Magnetic Island Reefs	Visual, Primary
Rollingstone Beach Caravan Resort	Rollingstone Beach	Visual
Tropic Sail	Cape Cleveland, Magnetic Island	Secondary, Visual
Rob Hunt (Water & Wastewater)	Paluma Lake	Secondary, Primary, Human Consumption, Cultural (European cultural values)
	Ross Lake	Human Consumption (harvesting of eels continues), Primary (waterskiing), and Visual (charter boat tours)
	Ross River	Cultural (Significant cultural values)
	Ross River weirs, Rollingstone, Crustal Ck, Bluewater Ck, Alligator Ck	Primary
	Saltwater Ck	Aquaculture (Prawn farm may be at either Alligator or Crocodile Creek)
Michelle Bird (Northern Archaeology Consultancies Pty Ltd)	Ross River, Stoney Ck, Bohle River, Louisa Ck, Sandfly Ck	Significant aboriginal cultural values
	Ross River	Part of a major dreaming track and myth cycle

	Cleveland Bay	Part of the myth cycle, archaeological evidence found.
Andrea Phillot (Canoeist / Kayaker)	Bohle River, Ross River, Cleveland Bay	Secondary
Beyond Harvest	Toomulla Beach	Aquaculture
Townsville Region Bird Observers Club	Rollingstone Ck estuary, Bluewater Ck estuary, Bohle River estuary, Black River estuary, Saunders Beach, Toolakea Beach, Toomulla Beach, Bohle River estuary, Cape Pallarenda, Shelly Beach, Ross Creek/Breakwater, Cleveland Bay, Ross River estuary, Horseshoe Lagoon & Bay, Nelly Bay, Picnic Bay, Arcadia Bay, Bolger Bay, Rowes Bay	Visual

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Appendix D

Water Extraction Licence Information

Surface Water Entitlements by Authorisation Number (Source: DNRW)

Authorisation No	Nominal Yearly Entitlement (ha)	Nominal Yearly Entitlement (ML)	Purpose
01834A			Irrigation
02370A	8		Irrigation
03753A	4.4		Irrigation
05434A	20		Irrigation
06303A			Irrigation
07826A	6		Domestic Supply, Irrigation, Stock
100757			Irrigation, Stock
100968		0.8	Domestic Supply
101338		0.8	Domestic Supply
101663		500	Waterharvesting
101841	1.75		Irrigation
102728		15	Town Water Supply
103354	3		Irrigation
103355	1		Irrigation
104547		1.5	Domestic Supply, Stock
10546A			Conserve Water
11170A	20		Irrigation
11171A	20		Irrigation
12179A	8		Irrigation
12453A	8		Irrigation
12469A	28		Irrigation
14343A	10		Irrigation
15454A	2		Domestic Supply, Irrigation
15506A	24		Irrigation
16386A	5		Irrigation
171690		0.75	Domestic Supply
172048			Improve Stream
172237		0.75	Domestic Supply
172238		0.75	Domestic Supply
180642		5	Commercial
181142	25		Irrigation
181328		0.75	Domestic Supply
181383		0.75	Domestic Supply
181889	9.5		Irrigation, Domestic Supply, Stock
182007	10.5		Irrigation
18207A	31		Irrigation
18990A	4		Irrigation
25181WA	8		Irrigation
27808A	24		Irrigation
28165A	24		Irrigation
28818A	30		Irrigation
28819A			Irrigation
28820A			Irrigation
29556A	60		Irrigation

30519A	16		Irrigation
30674A	24		Irrigation
30877A	8		Irrigation
31036A	16		Irrigation
31257A	20		Irrigation
31445A	22		Irrigation
31446A	22		Irrigation
31447A	22		Irrigation
31463A	2.13		Irrigation
31526A	4		Irrigation
31566A	25		Irrigation, Stock
31608A	3		Domestic Supply, Irrigation
31714A	12		Irrigation
31857A	2.7		Irrigation
32439A			Irrigation
32499A			Conserve Water
32500A			Conserve Water
32869A	8		Irrigation
32910A	14		Irrigation
33306WA	2		Irrigation, Stock
33441A	1		Irrigation
35197WA	1		Irrigation
35672A	50		Irrigation, Waterharvesting
35755WA	10		Irrigation
36700A	2		Irrigation
36758A	6		Domestic Supply, Irrigation
36913A	7		Irrigation
36914A			Irrigation
37265A	12		Irrigation
37267A	20		Irrigation
37499A	8		Irrigation, Stock
37500A			Irrigation, Stock
38303A	3		Irrigation
38410A	2		Irrigation
39551WA	8		Irrigation
400874			Waterharvesting
401128		400	Agriculture
401623		0.75	Domestic Supply
40378A	1		Irrigation
404470		24	Irrigation
405039		5	Irrigation
406480		21,571	Any Purpose
406483		75,000	Any Purpose
40802A	20		Irrigation
41429A	50		Irrigation
42616A	1		Irrigation
42636A	6		Irrigation

42647A	10		Irrigation, Waterharvesting
42648A			Industrial
42676A	20		Irrigation
42690A	15		Irrigation, Waterharvesting
42691A			Irrigation
42700A	20		Irrigation, Waterharvesting
42720A	5		Irrigation
42748A			Irrigation
42753A	30		Irrigation
45002A	0.5		Domestic Supply, Irrigation, Stock
45013A	1		Irrigation
45018A			Obstruct Tidal Water
45031A	1.87		Domestic Supply, Irrigation
45032A	20		Domestic Supply, Irrigation
45033A			Domestic Supply, Irrigation
45041A			Irrigation
45042A			Irrigation
45043A			Conserve Water
45044A			Conserve Water
45054A	12		Irrigation
45055A			Waterharvesting
45056A	12		Irrigation
45057A			Waterharvesting
45069A			Aquaculture
45070A			Aquaculture
45090A	2		Irrigation
45114A			Irrigation, Waterharvesting
45125A	6		Irrigation
45129A	30		Waterharvesting
45130A	11.2		Irrigation
45164A	0.7		Domestic Supply, Irrigation
45165A	1.5		Irrigation
45169A	16		Irrigation
45176A		1.5	Domestic Supply
45178A			Conserve Water
48905A			Conserve Water
48926A		0.75	Domestic Supply, Stock
48931A		0.75	Domestic Supply
48941A	24		Irrigation
48986A	5.6		Irrigation
49025A	6.4		Irrigation, Waterharvesting
49046A	1		Irrigation, Stock
49063A			Waterharvesting
49096A		28	Stock Intensive
52402A			Irrigation
52421A	14		Irrigation
52464A		2	Irrigation, Domestic Supply

52492A		0.75	Irrigation
52502A	6		Irrigation
52506A	4		Irrigation, Stock
52507A			Irrigation, Stock
52514A	1.2		Irrigation
52516A	26		Irrigation
52518A	74		Irrigation
52521A			Conserve Water
52522A			Conserve Water
52523A			Conserve Water
52524A	6		Irrigation
52525A	20		Irrigation
52526A	26		Irrigation
52530A		1	Irrigation
52532A	2		Irrigation
52537A	40		Irrigation
52545A		0.75	Domestic Supply, Irrigation
52548A			Irrigation
52550A		1	Irrigation
52554A			Conserve Water
52568A	0.7		Irrigation
52588A	6		Irrigation
54913A	40		Irrigation, Waterharvesting
54921AA	2		Domestic Supply, Irrigation, Stock
54947WA			Stock, Waterharvesting, Conserve Water
54970AA	0.4		Irrigation
54971AA	0.4		Irrigation
54973AA	0.8		Irrigation
54989WA	0.5		Irrigation
54994WA	0.9		Domestic Supply, Irrigation
55029A			Conserve Water
55030A	0.25		Irrigation
55097A	1.5		Domestic Supply, Irrigation
57213A			Domestic Supply
57254A			Waterharvesting
57271A		1.5	Domestic Supply
57278A		1.5	Domestic Supply
57317A	1		Irrigation
57318A	7		Domestic Supply, Irrigation, Stock
57319A	2		Irrigation, Stock
57356A		0.75	Domestic Supply
57403A		0.8	Domestic Supply
57410A		0.8	Domestic Supply
58152A	5		Irrigation, Waterharvesting
58155A		1.8	Aquaculture
58163A	3.5		Irrigation
96547A	2.2		Irrigation

96548A	0.8		Irrigation
96623A		0.8	Domestic Supply
96633A		0.8	Domestic Supply
96652A		0.8	Domestic Supply
96737A	1		Irrigation

Surface Water Entitlements Summary by Purpose

No. Licences	Purpose	Ha/annum	ML/annum	Number	%
1	Agriculture [1] (Saltwater Creek)		400	1	100%
1	Any Purpose [1] (Ross Dam bulk water supply)		75,000	1	100%
1	Commercial [1]		5	1	100%
19	Domestic Supply [18] (Sachs Creek)		16.1	18/19	95%
10	Domestic Supply, Irrigation [8] [1] (Canal Creek)	35.97	0.75	9/10	90%
4	Domestic Supply, Irrigation, Stock [4]	15.5		4	100%
2	Domestic Supply, Stock [2]		2.25	2	100%
1	Industrial (QNI Black River 12.2 AMTD)				0
102	Irrigation [87] [5]	1093.53	31.75	92/102	90%
1	Irrigation, Domestic Supply [1]		2	1	100%
1	Irrigation, Domestic Supply, Stock [1]	9.5		1	100%
9	Irrigation, Stock [6] (Hencamp, Deep, Alick)	42		6/9	67%
7	Irrigation, Waterharvesting [7]	146.4		7	100%
1	Stock Intensive [1]		28	1	100%
1	Stock, Waterharvesting, Conserve Water (Althaus Creek)				0
3	Waterharvesting [1] [1]	30	500	2/3	67%
164	Totals	1372.9	75985.85	156	
163	Total less bulk water supply	1372.9	985.85	155	
	Conversion for ML	10,983	986		

Note: Number in [brackets] indicates the number of licences used to calculate the entitlement totals i.e. not all licences had an entitlement attached in the data provided. Waterway name in brackets indicates the location of the licence without allocation details

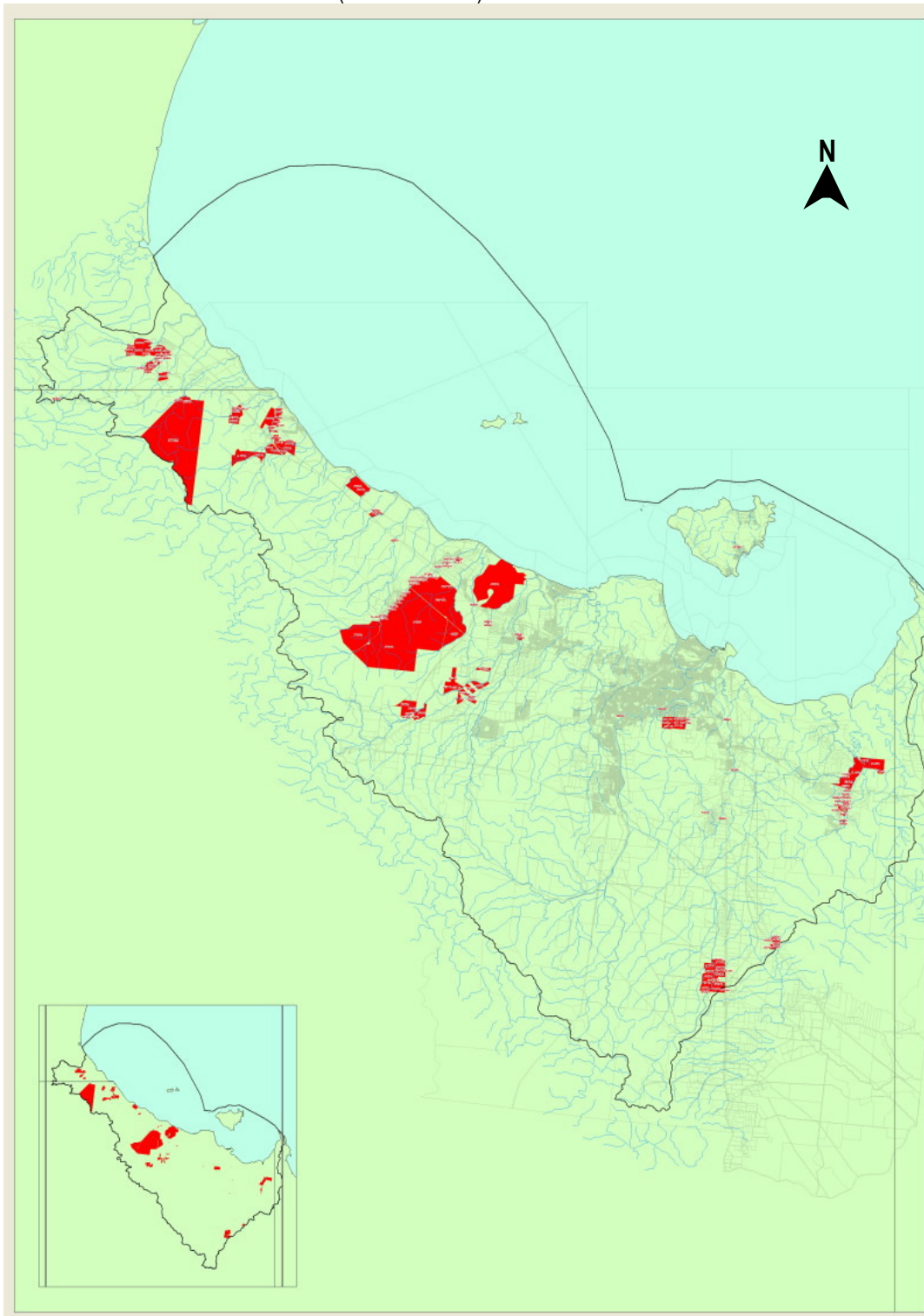
Yellow shading indicates no allocation data (or not associated with an allocation – check with DNRW Ayr).

Conversion rate used for nominal allocation of ML per hectare 8ML/hectare (1372.9 ha = 10983.2 ML) 11969.05 (DNRW advise that “A mathematical formula is used based on cropping, rainfall and other variables, however the Haughton/Burdekin Basins have been given a uniform volumetric equivalent with the introduction of the Water Resource Burdekin Basin Plan 2007 sub section 75. That equation is 8ML/ha.”)

Estimate for the 16 allocations not accounted for.

163 – 16 = 147 licences account for ~11,970 ML/annum. Average of 81.4 ML per licence. Extrapolate the average to number of licences = 13,270 ML per annum allocated across the study area (not including Ross Dam bulk allocation i.e. 75,000 ML/annum).

Surface Water Extraction Entitlements (Source: DNRW)



Map note: Map prepared by Connell Wagner using recent DCDB information Date: 12 August 2008)

Source file: WaterExtractionLicences_SurfaceWater_20080812small

Note: Water extraction licence numbers and location checked on high resolution pdf

Source file: WaterExtractionLicences_Surfacewater_20080812

Appendix E

Human Use by Waterway/body

1 Magnetic Island

Freshwaters



Butler Creek



Gustav Creek



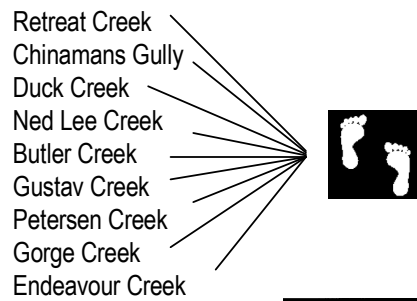
Petersen Creek



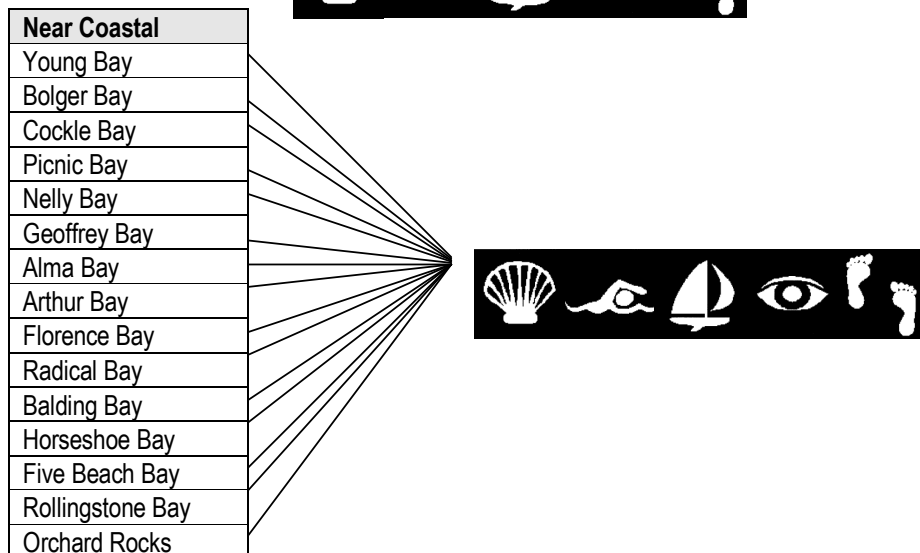
Gorge Creek
Endeavour Creek



Estuaries



Nelly Bay Harbour



Black River Basin

2 Rural (North)

Freshwater

Crystal Creek



Lorna Creek



Ollera Creek



Scrubby Creek



Hencamp Creek



Rollingstone Creek



Surveyors Creek
Wild Boar Creek



Station Creek



Saltwater Creek



Cassowary Creek



Leichhardt Creek



Christmas Creek



Sleeper Log Creek



Two Mile Creek



Bluewater Creek



Althaus Creek



Deep Creek



Healy Creek



Black River



Scrubby Creek



Alice River



Estuary

Ollera Creek



Rollingstone Creek



Black River



Coastal and Marine Area

Beach at Ollera Creek mouth



Rollingstone Beach



Toomula	
Toolakea	
Balgai	
Saunders Beach	
Bushland Beach	



Ross River Basin

2 Rural (Upper Ross River – Ross Dam catchment)

Cattle Creek



Ross River atd



Lansdowne Creek



Toonpan Lagoon



Sachs Creek



Lake Ross



3 Urban and rural residential

Freshwater

Estuary

Bohle River



Louisa Creek



Town Common



Ross River btd



Black Weir



Gleesons Weir



Aplins Weir



Ross River bAp



University Creek



Ross Creek



Stuart Creek



Sandfly Creek



Alligator Creek



Crocodile Creek



Cocoa Creek

Coastal/Marine

Shelley Beach
Pallarenda



Rowes Bay



Kissing Point
Strand Beach



Breakwalls/Ross Ck



Cleveland Bay



Cape Cleveland



Appendix F

Draft Stakeholder Workshop Results

Black / Ross Water Quality Improvement Plan (WQIP)

Results from the Magnetic Island Workshop – Tuesday 22 July 2008 (Arcadia)

Human Uses and Values of Waterways

Explanation

The following table shows the results of a workshop to identify human uses/values i.e. Environmental Values (EVs), for specific waterways (freshwater and estuaries) on Magnetic Island and the adjacent coastal and marine waters. The different human uses/values are shown across the top of the table (e.g. irrigation, stock watering, etc) with the results for each waterway included in the associated row.

The workshop proceeded through each row in the table with workshop facilitators recording waterway uses/values for waters listed in the left hand column of the table as nominated and agreed by workshop attendees. As a minimum human uses/values were identified for all rows with grey shading. Where there were similarities between waterways the human use/values were identified for a grouping of waterways with any exceptions to the human use/values noted for particular waterways.

Where any known future uses/values were identified these were also recorded. The Magnetic Island workshop did not identify any future uses so the identified uses/values apply to both now and the future.












The level/importance of use was recorded as follows:












- H** – High importance/use;
- M** – Moderate importance/use;
- L** – Low importance/use;












Where the level of importance/use was undecided two values have been entered separated by a hyphen (-). Workshop attendees discussed the levels of importance of waterway uses/value before these were recorded.

A blank space was left where no waterway use/value was identified.

Columns that have been blacked out means the human uses are not applicable to that water type.

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
Freshwaters											
Magnetic Island											
Retreat Creek	H				L	M	H	H	L		H
Duck Creek	L					M	H	H	L		
Chinamans Gully						L					H
Ned Lee Creek						H	H	H	L		H
Butler Ck (Picnic Bay)					L		L	M			H
Picnic Bay west creek					L		L	M			H
Gustav Creek (developed)					L	M	M - H	M - H			H
Gustav Creek (undeveloped)					L	L	H	H			H
Hoyer Creek (Nelly Bay)						L	L	H			H
North Nelly Bay creek							L	H			H
Petersen Creek (undevelop)					L	M - H	H	H			H
Petersen Creek (developed)						M - H	H	H			H
Gorge Creek (undeveloped)					L	M - H	H	H			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
Gorge Creek (developed)					L	L	L	H			H
Endeavour Creek (undev)					L	M - H	H	H			H
Endeavour Creek (develop)						M - H	H	H			H
East Horseshoe Bay creek					L	L	L - M	H			H
Five Beach Bay						M - H	H	H			H
Estuaries											
All					H	L	L	H			H
Butler Creek (Estuary)					L	M	M	H			H
Gustav Creek					L - M	H	H	H			H
East Horseshoe Bay creek					L	L	L	H			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
Near Coastal and Marine Waters											
All near coastal waters					H	M - H	H	H			H
Horseshoe Bay				M	H	H	H	H			H
West Channel					H	H	H	H			H
Cleveland Bay					H	H	H	H			H
Halifax Bay					H	H	H	H			H
Outer Marine					H	H	H	H			H

Black / Ross Water Quality Improvement Plan (WQIP)

Results from the Rural Areas Workshop - Wednesday 23 July 2008 (Bluewater)

Human Uses and Values of Waterways

Explanation

The following table shows the results of a workshop to identify human uses/values i.e. Environmental Values (EVs), for specific waterways (freshwater and estuaries) from Crystal Creek to Black River and the adjacent coastal and marine waters. Also included are the waterways that flow to the Ross Dam i.e. the Ross Dam catchment. The different human uses/values are shown across the top of the table (e.g. irrigation, stock watering, etc) with the results for each waterway included in the associated row.

The workshop proceeded through each row in the table with workshop facilitators recording waterway uses/values for waters listed in the left hand column of the table as nominated and agreed by workshop attendees. As a minimum human uses/values were identified for all rows with grey shading. Where there were similarities between waterways the human use/values were identified for a grouping of waterways with any exceptions to the human use/values noted for particular waterways.

Where any known future uses/values were identified these were also recorded. Unless there are two uses/values recorded separated by a forward slash (/) then the identified uses/values apply to both now and the future.












The level/importance of use was recorded as follows:












- H** – High importance/use;
- M** – Moderate importance/use;
- L** – Low importance/use;
- ?** – Further investigation required












Where the level of importance/use was undecided two values have been entered separated by a hyphen (-). Workshop attendees discussed the levels of importance of waterway uses/value before these were recorded.












A blank space was left where no waterway use/value was identified.












Columns that have been blacked out means the human uses are not applicable to that water type.












Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now /future	Now / future
Freshwaters (Note: Instream storages (dams, weirs and barrages) have been <u>underlined</u>)											
Black River Basin											
Crystal Creek (Undeveloped)						L	L	M - H	H		H
Crystal Creek (Developed)	M	M	H		M	H	L - M	H	H		H
Lorna Creek (Undeveloped)						L	L	L			H
Lorna Creek (Developed)	M	M	H		M	H	L - M	H			H
Ollera Ck (Undeveloped)						L	L	L			H
Ollera Creek (Developed)	M	M	H		M	H	L - M	H			H
Scrubby Ck (Undeveloped)						L	L	L			H
Scrubby Creek (Developed)	M	M	H		M	H	L - M	H			H
Hencamp Ck (Undeveloped)						L	L	L			H
Hencamp Ck (Developed)	M	M	H		M	H	L - M	H			H
Rollingstone Ck (Undeveloped)						L	L	L			H
Rollingstone Ck (Developed)	M	L	H		M	H	L - M	H			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now /future	Now / future
Surveyors Ck						L	L	L			H
Wild Boar Creek						L	L	L			H
Station Creek						L	L	L			H
Saltwater Ck (Undeveloped)						L	L	L			H
Saltwater Creek (Developed)	M	L	H		M	H	M	M			H
Cassowary Ck (Undevelop)						L	L	L			H
Cassowary Ck (Developed)	M	L	H		M	H	L - M	H			H
Leichhardt Ck (Developed)	M	L	H		M	H	M	M	L		H
Christmas Ck (Developed)	L	L	H		M	H	L - M	H			H
Sleeper Log Ck (Developed)	L	L	H		M	H	L - M	H			H
Bluewater Ck (Undeveloped)						L	L	M - H			H
Bluewater Ck (Developed)	M - H	M	H		M	H	H	H			H
Deep Creek (Undeveloped)						L	L	M - H			H
Deep Creek (Developed)	M - H	M	H		L	H	H	H			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now /future	Now / future
Althaus Creek (Undeveloped)						L	L	M - H			H
Althaus Creek (Developed)			H		L	H	H	H			H
Healy Creek				?				?			
Black River (Undeveloped)						L	L	L			H
Black River (Developed)	L		H		L	L					H
Scrubby Ck (Undeveloped)						L	L	L			H
Alice River (Developed)	L		H		L	L					H
Estuaries											
Crystal Creek					H	M	M - H	H			H
Lorna Creek					H	M	M - H	H			H
Ollera Creek					H	M	M - H	H			H
Scrubby Creek					H	M	M - H	H			H
Hencamp Creek					H	M	M - H	H			H
Rollingstone Creek					H	L	H	H			H
Surveyors Creek					H	M	M - H	H			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now /future	Now / future
Wild Boar Creek					H	M	M - H	H			H
Station Creek					H	M	M - H	H			H
Saltwater Creek				H	H	L	H	H			H
Cassowary Creek					L	L	L	L			H
Leichhardt Creek					H	L	H	H			H
Christmas Creek					H	L	H	H			H
Two Mile Creek					H	L	H	H			H
Bluewater Creek					H	L	L	H			H
Deep Creek				?	?	?	H	H			
Healy Creek					H	L	H	H			H
Black River					H	L	M	L			H
Coastal/Marine Waters adjacent to the Black River Basin catchments											
Halifax Bay					H	M - H	H	H			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
Freshwaters											
Ross River Basin (Ross River Dam and upstream)											
Lake Ross (Ross Dam)	L				L	L	L	M	H	M	M
Ross River (FrW)	L		M - H			L	L	L			H
Round Mountain Creek	L		M - H			L	L	L			H
Lagoon Creek	L		M - H			L	L	L			H
Plum Tee Creek	L		M - H			L	L	L			H
Central Creek (also known as Ross Creek)	L		M - H			L	L	L			H
Sandy Creek	L		M - H			L	L	L			H
Spring Creek	L		M - H			L	L	L			H
Deep Creek	L		M - H			L	L	L			H
Leichhardt Creek	L		M - H			L	L	L			H
Cattle Creek	L		M - H			L	L	L			H
Six Mile Creek	L	L	M					L			H
Toonpan Lagoon	L	L	M					L			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
Jimmys Lagoon	L	L	M					L			H
Four Mile Creek /Flagstone Creek	L	L	M					L			H
One Mile Creek/Spring Creek/Lansdowne Creek	L	L	M					L			H
Antill Plains Creek	L	L	M					L			H
Sachs Creek						L	L	M			H
Blacksoil Gully/Mt Stuart						L	L	L			H

Black / Ross Water Quality Improvement Plan (WQIP)

Results from the Urban and Rural Residential Workshop - Thursday 24 July 2008 (Annandale)

Human Uses and Values of Waterways

Explanation

The following table shows the results of a workshop to identify human uses/values i.e. Environmental Values (EVs), for specific waterways (freshwater and estuaries) from Bohle River to Cape Cleveland and the adjacent coastal and marine waters. The different human uses/values are shown across the top of the table (e.g. irrigation, stock watering, etc) with the results for each waterway included in the associated row.

The workshop proceeded through each row in the table with workshop facilitators recording waterway uses/values for waters listed in the left hand column of the table as nominated and agreed by workshop attendees. As a minimum human uses/values were identified for all rows with grey shading. Where there were similarities between waterways the human use/values were identified for a grouping of waterways with any exceptions to the human use/values noted for particular waterways.

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Columns that have been blacked out means the human uses are not applicable to that water type.

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now /future	Now / future
Freshwaters (Note: Instream storages (dams, weirs and barrages) have been <u>underlined</u>)											
Ross River Basin (east)											
Alligator Ck (Undeveloped)	L?					H	H	H	L?		H
Alligator Creek (Developed)	L - M	M	L	?	L - M	L	L - M	L - M	L		H
Whites Creek	L		L		L	L	L - M	L - M			H
Slippery Rocks Creek	L		L		L	L	L - M	L - M			H
Crocodile Creek	L		L		L	L	L - M	L - M	L		H
Killymoon Creek	M		L		L	L	L - M	L - M	L		H
Cape Cleveland						L	L	L			H
Stuart Creek (Mt Stuart ephemeral)	L	L	L			L		L			H
Stuart Creek (ephemeral to estuary i.e. includes pools)	L	L	L		M	L	M	L - M			H
Sandfly Creek			L			L	L	M			H
Ross River Basin (west)											

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now /future	Now / future
Bohle River (above Condon STP)	L	L	L	?	L	L	L	L		?	H
Bohle River (below Condon STP to estuary)	L	L	L		M	M/H	M/H	M/H			H
Little Bohle River	L		L		L	L	L	M			H
Middle Bohle Creek	L		L		L	L	L	M			H
Stoney Creek	L		L		L	L	L	M			H
Saunders Creek	L		L		L	L	L	M			H
Louisa Creek					L		L	L			H
Town Common							L - M	H			H
Pallarenda					H		H	H			H
Ross River Basin (below the Ross River Dam)											
Ross River (below the Dam)	M	L			H	H	H	H			H
<u>Ross River Weir Pools (All)</u>	M				H	H	H	H			H
<u>Ross River (Black Weir)</u>	H				H	H	H	H	H		H
<u>Ross River (Gleasons Weir)</u>	L				H	H	H	H			H
<u>Ross River (Aplins Weir)</u>	L				H	H	H	H			H

Waterway	Irrigation  (eg cane irrigation)	Farm supply  (eg fruit packing, milking sheds)	Stock watering  (eg cattle)	Aquaculture  (eg barramundi, red claw farm)	Human consumer  (eg of wild or stocked fish, shellfish)	Primary recreation  (fully immersed in water eg swimming, snorkelling)	Secondary recreation  (possibly splashed with water, eg sailing, fishing)	Visual appreciation  (no contact with water, eg picnic, bush walking)	Drinking water  (raw water supplies taken from river for drinking)	Industrial use  (eg power generation, manufacturing)	Cultural and spiritual values  (note: additional consultations to occur with Traditional Owners)
	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now / future	Now /future	Now / future
Tributaries from Defence land					L	L	L	L			H
University (Campus) Creek					L	L	L	M			H
Lavarack Barracks Creek with weirs					L	L	L	M			H
Ross Creek and tributaries					H	L	L	H			H
Estuarine Waters											
Alligator and Stuart sub basins				L	H	L	H	H			H
Bohle sub basin (upper)					M		M	L - M			H
Bohle sub basin (lower)					H		H	H			H
Louisa Creek					M		M	M			H
Ross sub basin					H		H	H		?	H
Coastal/Marine Waters adjacent to the Ross River Basin catchments											
All coastal marine					H	H	H	H			H