Broughton River Catchment Action Plan

Natural Resources
Northern & Yorke

Government of South Australia

Introduction

The Broughton River Catchment Action Plan (CAP) draws together information and feedback from a wide range of community members and summarises the most important features of the catchment and the issues that we face in managing them. This summary will be used to inform the strategic direction of Natural Resources Management (NRM) in the catchment and align with other planning and natural resource management actions occurring across the Northern and Yorke region.

In the decade since the previous River Management Plan, there has been a substantial shift in community knowledge, expectations and attitudes towards environmental and natural resources management issues. Natural Resources Northern and Yorke has worked with the community, natural resource management experts, scientists, government agencies, local government and non-government organisations to develop this plan and capture these changing attitudes. This collaboration has helped to ensure that the CAP reflects the priorities of a wide range of community and stakeholders, including investors such as the South Australian and Australian Governments.

The CAP is not intended to encompass every possible issue or action, but to identify the high priority actions without which some of our most important assets will collapse. The Broughton River CAP provides a strategic way forward – a plan of action – for the community who will be managing the Catchment's natural resources over the next decade and beyond.

The Broughton River catchment

The Broughton River catchment located approximately 130 kilometres north of Adelaide is the major drainage system of the district, covering around 5761 square kilometres. Two distinct landscape features control the catchment's drainage system and influence channel form and watercourse behaviour – the hills and valleys of the Southern Flinders Ranges and Northern Mount Lofty Ranges; and the flat coastal plain. The Broughton River catchment boasts some uniquely undisturbed sites that are home to animals not found anywhere else in the catchment.

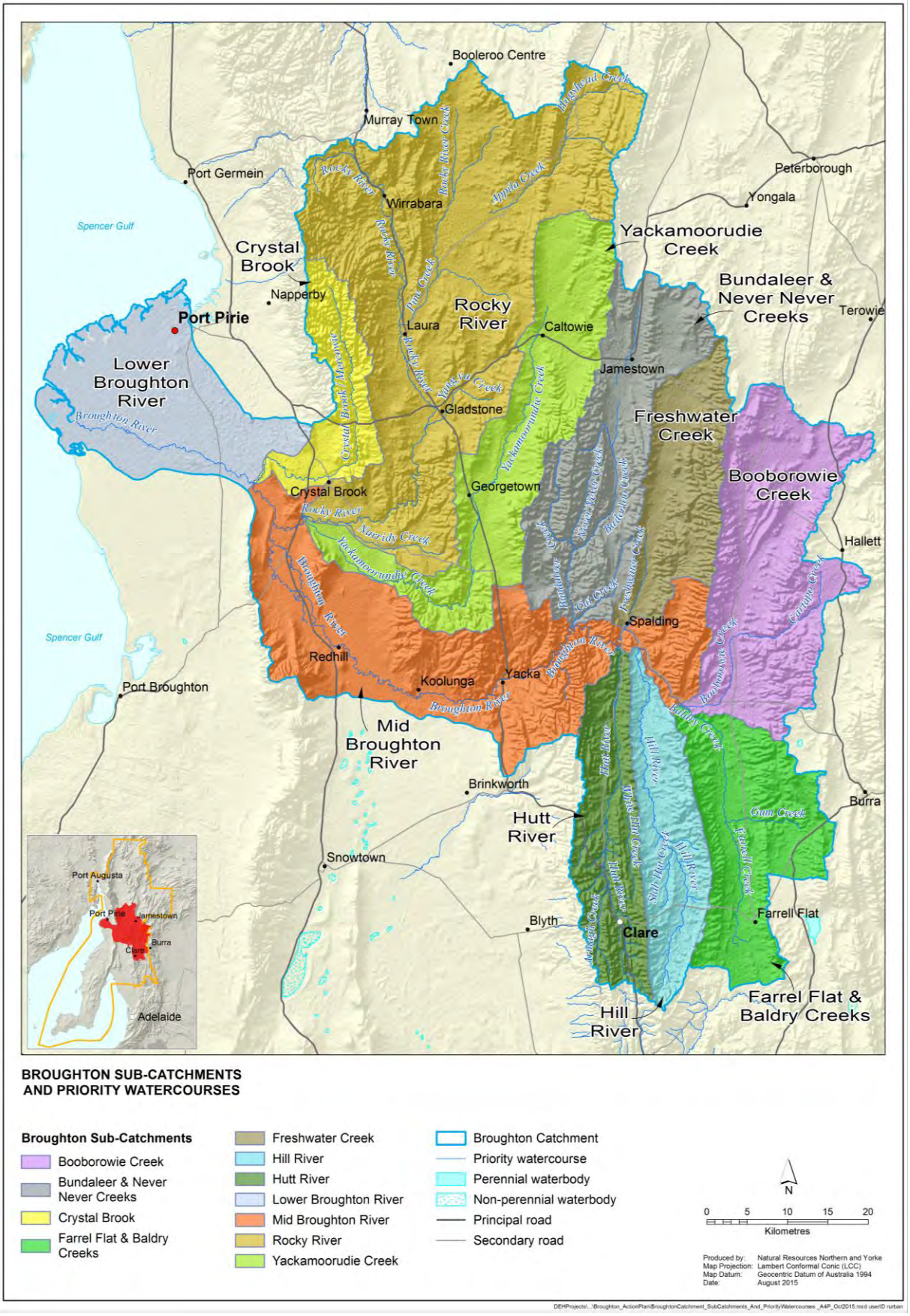
Broughton River is the main watercourse in the catchment and begins at the junction of Yakilo Creek and Hill River and flows in a westerly direction past the towns of Yacka, Koolunga and Redhill before discharging to the sea in the Spencer Gulf at Port Davis. The main tributaries include Hutt River, Hill River, Booborowie Creek, Freshwater Creek, Bundaleer Creek, Yackamoorundie Creek, Rocky River and Crystal Brook.

Cropping and grazing are the dominant land uses across the catchment, although viticulture is a major land use in the higher rainfall area of the Clare Valley. Forestry, lucerne cropping, water reservoirs, conservation and dairying are also land uses in the area.

The Broughton River catchment is located in a semi-arid climatic zone and watercourses experience a highly variable flow regime. The native plants and animals in the catchment are generally tolerant of a range of environmental conditions. The river system includes ephemeral channels and continuously flowing streams, along with groundwater dependent permanent pools. These permanent pools and baseflow along the river's main channel are vital to maintain healthy and diverse aquatic plants and animals.

Seven types of native watercourse vegetation communities have been identified in the catchment: riverine forests and woodlands; riverine shrublands; lignum swamps; mangrove forests and samphire marshes; sedgelands; reedbeds; and submerged aquatic vegetation.

The Broughton River catchment is divided into 11 sub-catchments



BROUGHTON SUB-CATCHMENTS AND PRIORITY WATERCOURSES

Broughton Sub-Catchments

- Booborowie Creek
- Bundaleer & Never Never Creeks
- Crystal Brook
- Farrel Flat & Baldry Creeks
- Freshwater Creek
- Hill River
- Hutt River
- Lower Broughton River
- Mid Broughton River
- Rocky River
- Yackamoorudie Creek

- Broughton Catchment
- Priority watercourse
- Perennial waterbody
- Non-perennial waterbody
- Principal road
- Secondary road

N

0 5 10 15 20

Kilometres

Produced by: Natural Resources Northern and Yorke
Map Projection: Lambert Conformal Conic (LCC)
Map Datum: Geocentric Datum of Australia 1994
Date: August 2015

DEHProjects\...\Broughton_ActionPlan\BroughtonCatchment_SubCatchments_And_PriorityWatercourses_A4P_Oct2015.mxd userID rurban

Your say

More than 100 participants provided feedback on watercourse management issues and objectives through a survey (Appendix A) posted to landholders and discussed at community workshops and meetings in the catchment.

Permanent springs, good agricultural soil, permanent pools and river red gums were consistently identified by the community as an important feature of watercourses across the catchment.

The community identified the main concerns as weeds, decreasing water levels in rivers, springs and groundwater in general, pollution and salinity. Horehound, Wild Artichoke, Boxthorn, African Rue and Caltrop were the highest priority weeds.

Not surprisingly, weed control; managing livestock; and regeneration, revegetation and protection of native vegetation were the most important watercourse management objectives.

The main barriers to managing these watercourse issues were rated by survey respondents and included lack of funds; outside impacts, including upstream management impacting on downstream health; lack of funds; lack of people to undertake works; and a lack of community awareness and information.

The watercourse management priorities and issues of each individual sub-catchment are presented in the following chapters and will inform the development of the new Northern and Yorke Strategic Plan, currently underway.

Permanent springs are an important part of the Broughton River catchment.

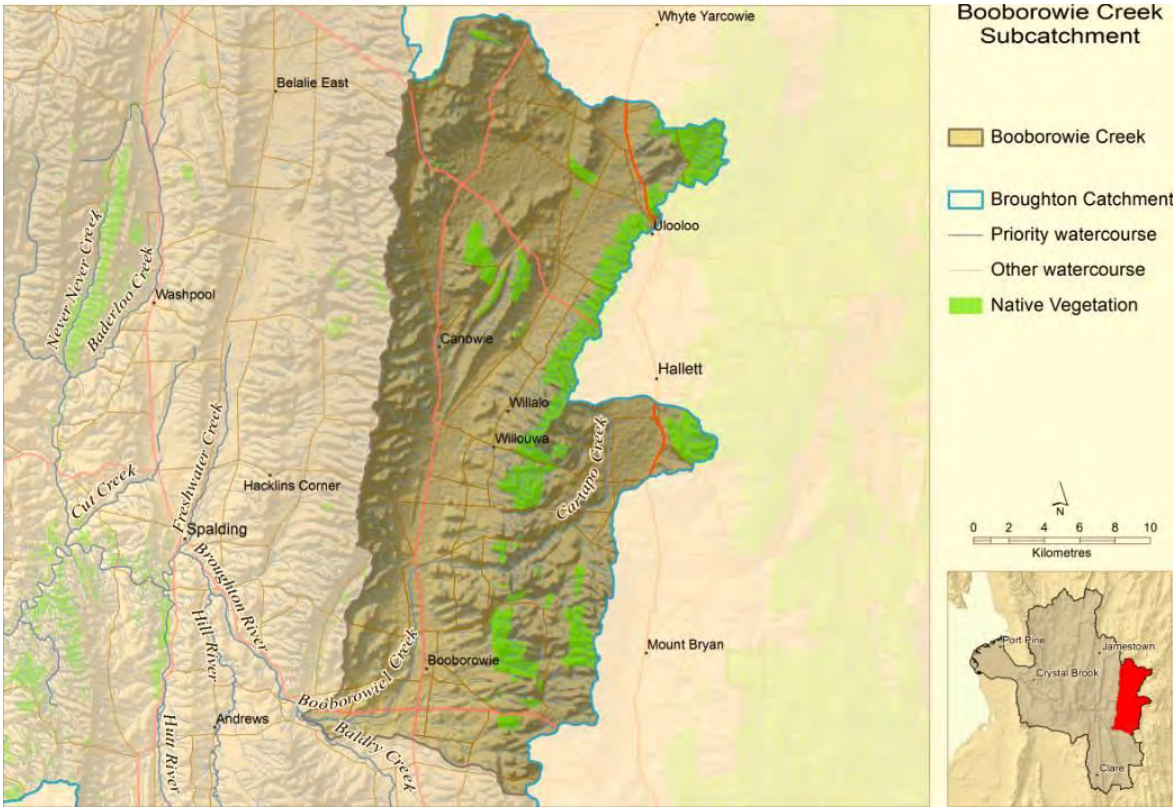
Edited by: Jennifer Munro, Water Officer, Natural Resources Northern and Yorke, 2016.

Photo credits: J Munro; A Brown; A Jensen; PIRSA; NRNY; Bowman Park; E Sommerville; Mangrove Watch;

Booborowie Creek sub-catchment – our natural resources and management priorities

The Booborowie Creek sub-catchment (575 km^2) lies in the easternmost section of the Broughton River catchment, with the Booborowie Creek flowing south. Watercourses within the sub-catchment run through cropping and grazing land. Booborowie Creek is an ephemeral watercourse with large cultivated sections that are difficult to distinguish from the surrounding agricultural landscape.

Booborowie Creek and Cartapo Creek are the main watercourses in the Booborowie Creek sub-catchment.



Natural assets identified for protection in the Booborowie Creek sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including permanent pools, samphire, sedgelands, *Maireana* spp, chenopod shrublands, river red gums and the Camel Hump and Brown Hill ranges.

The Camel Hump and Brown Hill ranges are an important part of the Booborowie Creek sub-catchment.

Booborowie Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Camel Hump & Brown Hill Ranges	Vegetation condition	x			
Maireana	Vegetation condition	x			
Sedgelands	Vegetation condition		x		
Cartapo Creek – permanent pools	Health and condition	x			
River red gums	Vegetation condition		x		
Waltons Palace Creek – permanent pools		x			

In 2014-15, a survey provided more details on what the community valued in the Booborowie Creek sub-catchment and the Farrel Flat and Baldry Creeks sub-catchment, and what threats they saw to our natural resources.

River red gums were seen as a medium priority asset in the sub-catchments followed by good agricultural soil and groundwater.

Flooding, a reduction in pool and water table levels and weeds were identified as the biggest threats to watercourses by the community.

Hoary cress and Horehound were identified as the most problematic weeds threatening watercourses, along with African rue and Perennial thistle.

Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchments as well as the barriers that might prevent good management.

Managing livestock, maintaining perennial vegetation and allowing natural regeneration were the highest community priorities for managing our river systems.

Allowing natural regeneration

A lack of people to implement works, time and paperwork needed to apply for funding and a lack of community awareness and information were seen as the biggest barriers to effective management of watercourses in the Booborowie Creek sub-catchment and Farrel Flat and Baldry Creeks sub-catchment.

What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

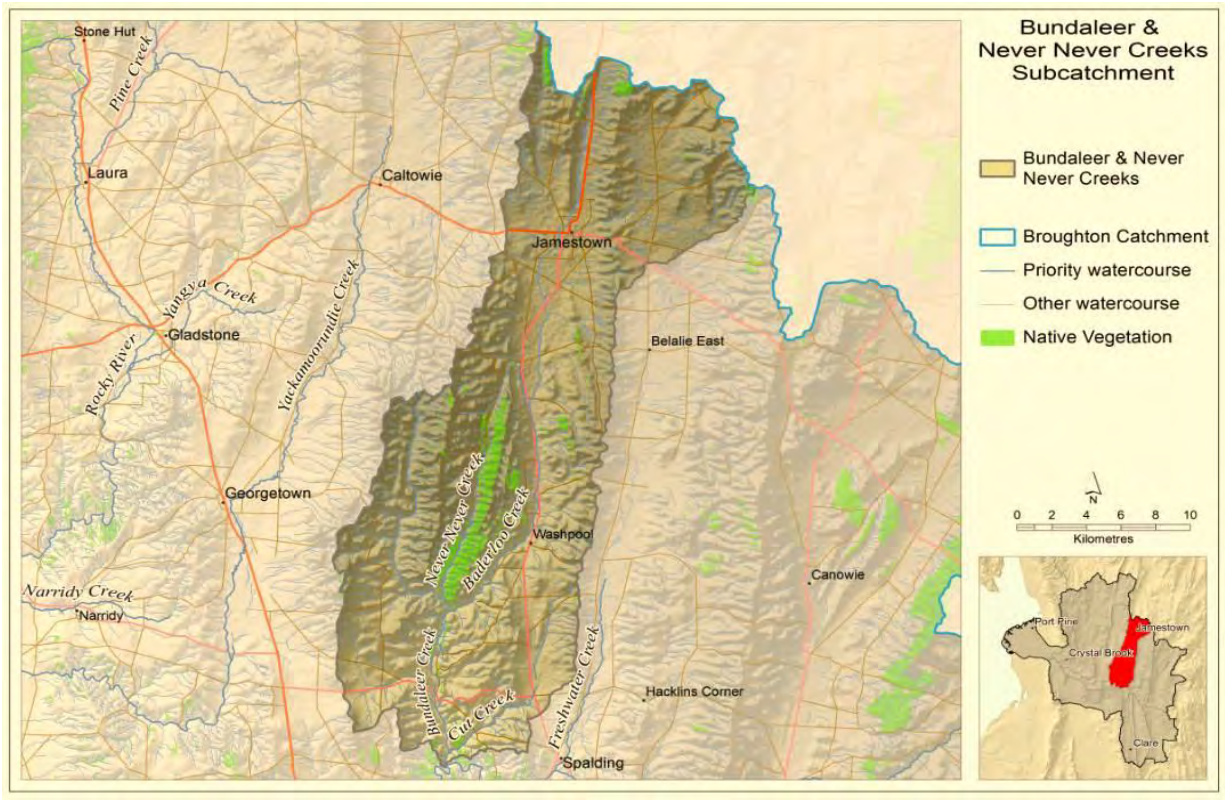
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Bundaleer and Never Never Creeks sub-catchment – our natural resources and management priorities

The Bundaleer and Never Never Creeks sub-catchment (499 km^2) is in the northern centre of the Broughton River catchment. Cropping and grazing are the dominant land uses within the sub-catchment, with urban development in Jamestown. Bundaleer and Baderloo Creeks originate in the northern Mt Lofty Ranges and flow south towards the Broughton River

Bundaleer, Never Never, and Baderloo Creeks are the main watercourses in the sub-catchment.



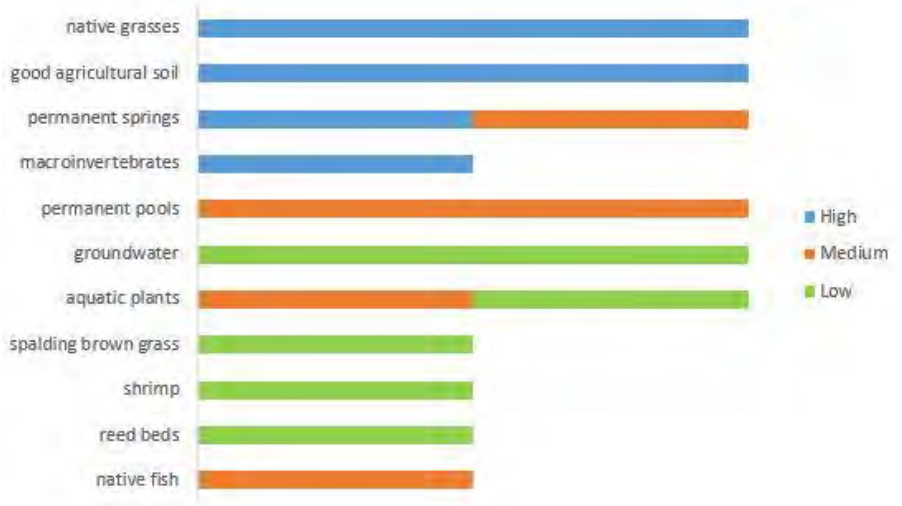
Natural assets identified for protection in the Bundaleer and Never Never Creeks and the Freshwater Creek sub-catchments

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including permanent pools, sedgelands, macroinvertebrates, the Bundaleer forest and reservoir, and Jamestown township. Survey respondents from the Bundaleer and Never Never Creeks sub-catchment and Freshwater Creek sub-catchment ranked assets in order of priority with river red gums and native grasses the highest priorities.

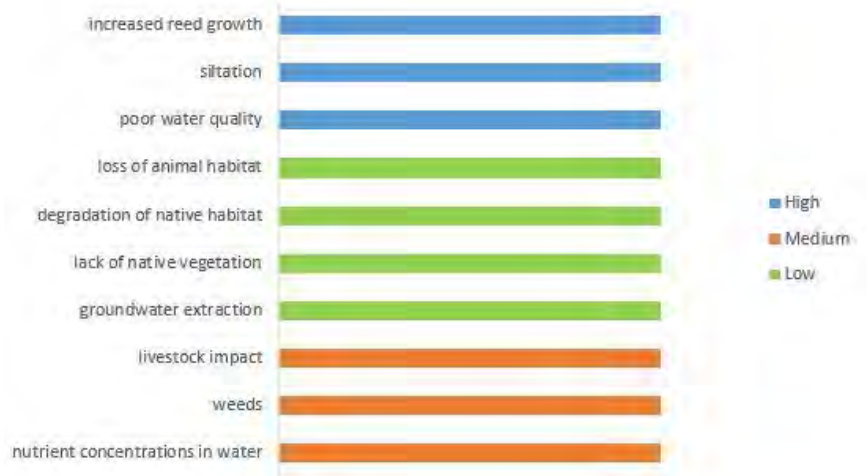
The Bundaleer reservoir is an important asset in the sub-catchment.

Bundaleer & Never Never Creeks					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Jamestown – Belalie Creek	Health and condition		x		
Baderloo Creek – Bundaleer Forest	Vegetation condition	x			
Baderloo Creek – permanent pools	Health and condition	x			
Baderloo Creek - sedgelands	Vegetation condition		x		
Bundaleer Creek – permanent pools	Health and condition		x		
Bundaleer Reservoir	Health and condition			x	
Macroinvertebrates	Diversity		x		
Never Never Creek – Blue gums	Tree health			x	
Never Never Creek - shrubland	Vegetation condition			x	

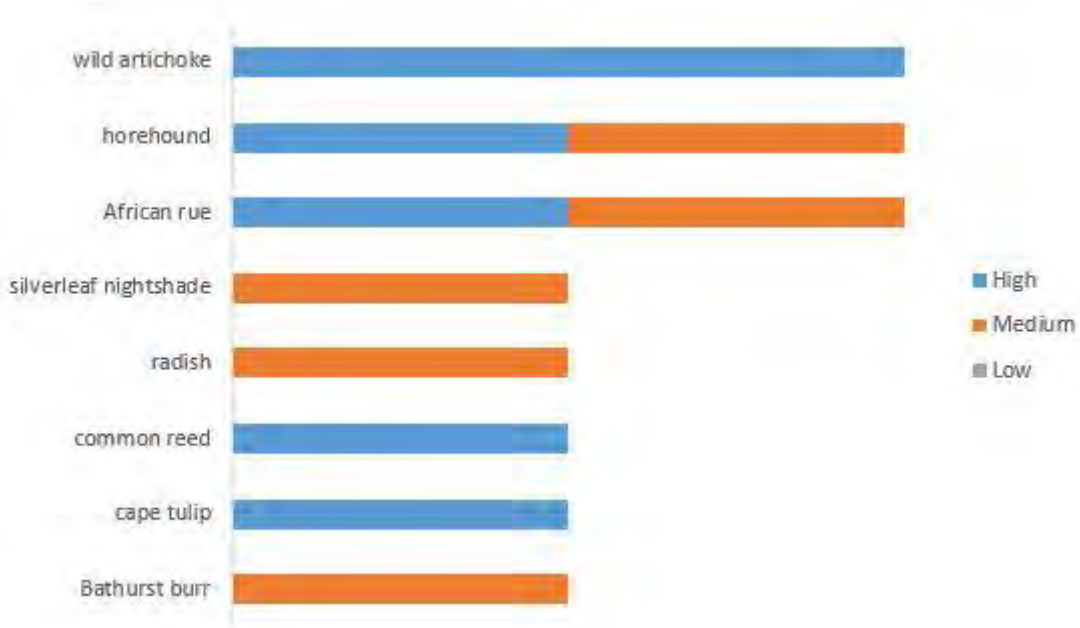
In 2014-15, a survey provided more details on what the community valued in the Freshwater Creek sub-catchment and the Bundaleer and Never Never Creeks sub-catchments and what threats they saw to our natural resources.



Increased reed growth, siltation and poor water quality were identified as the biggest threats to watercourses by the community.

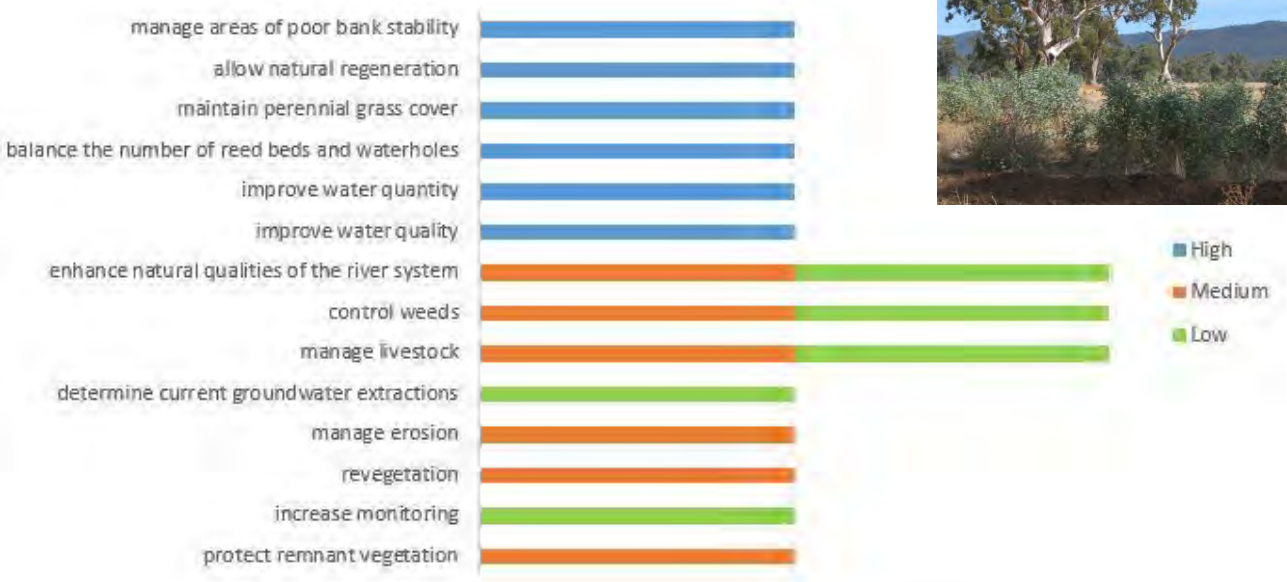


Wild artichoke, Horehound, African rue, and Cape tulip were identified as the most problematic weeds threatening watercourses.

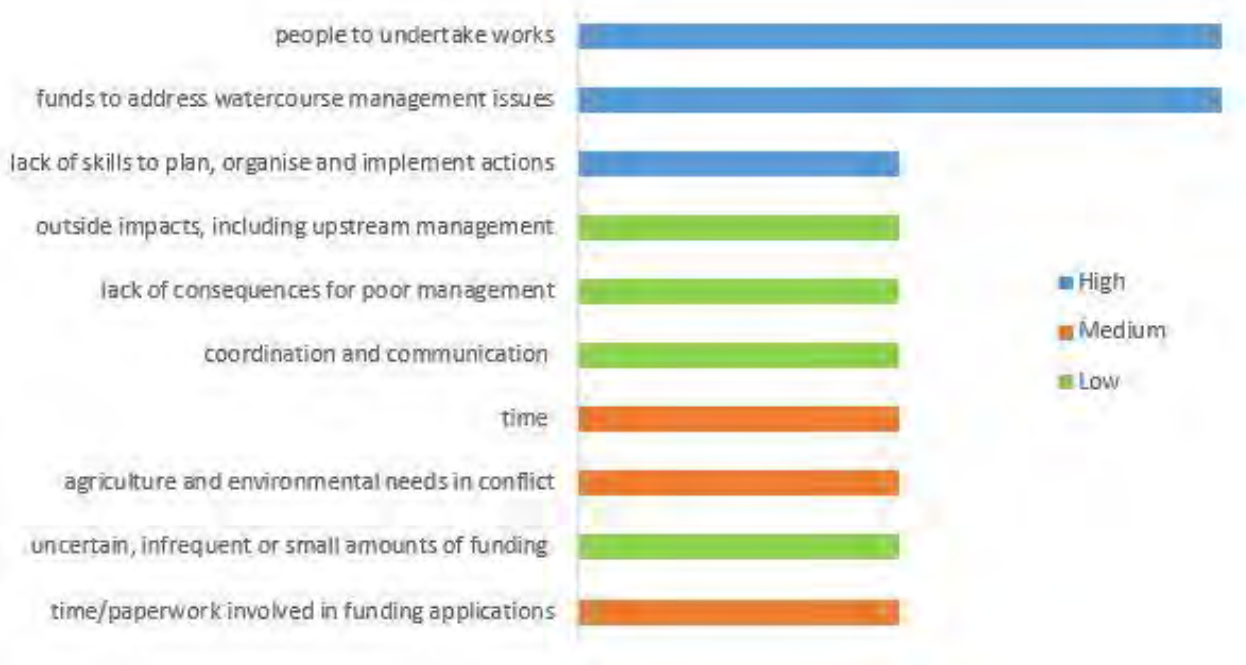


Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Enhancing the natural qualities and characteristics of the river system, allowing natural regeneration, controlling weeds and revegetating to conserve habitat were the highest community priorities for managing our river systems.



Upstream management impacting on downstream health, lack of funds and a lack of community awareness were seen as the biggest barriers to effective management of watercourses in the Bundaleer and Never Never Creeks sub-catchment and the Freshwater Creek sub-catchment.



What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

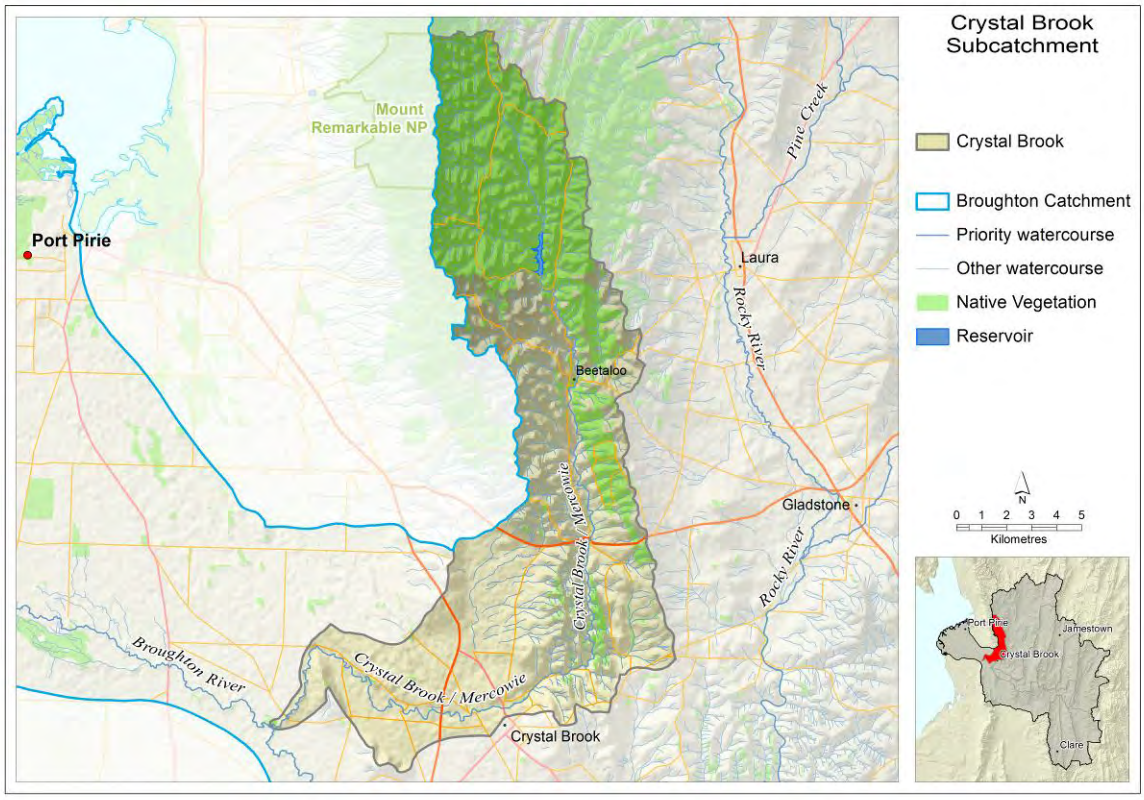
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Crystal Brook Creek sub-catchment – our natural resources and management priorities

Crystal Brook Creek sub-catchment (190 km^2) is located in the northwest region of the Broughton River catchment. Grazing and cropping are the dominant land uses with urban development in Crystal Brook. The Crystal Brook Creek flows south before turning sharply west to flow into the Broughton River.

Crystal Brook Creek and Broughton River are the main watercourses in the sub-catchment.



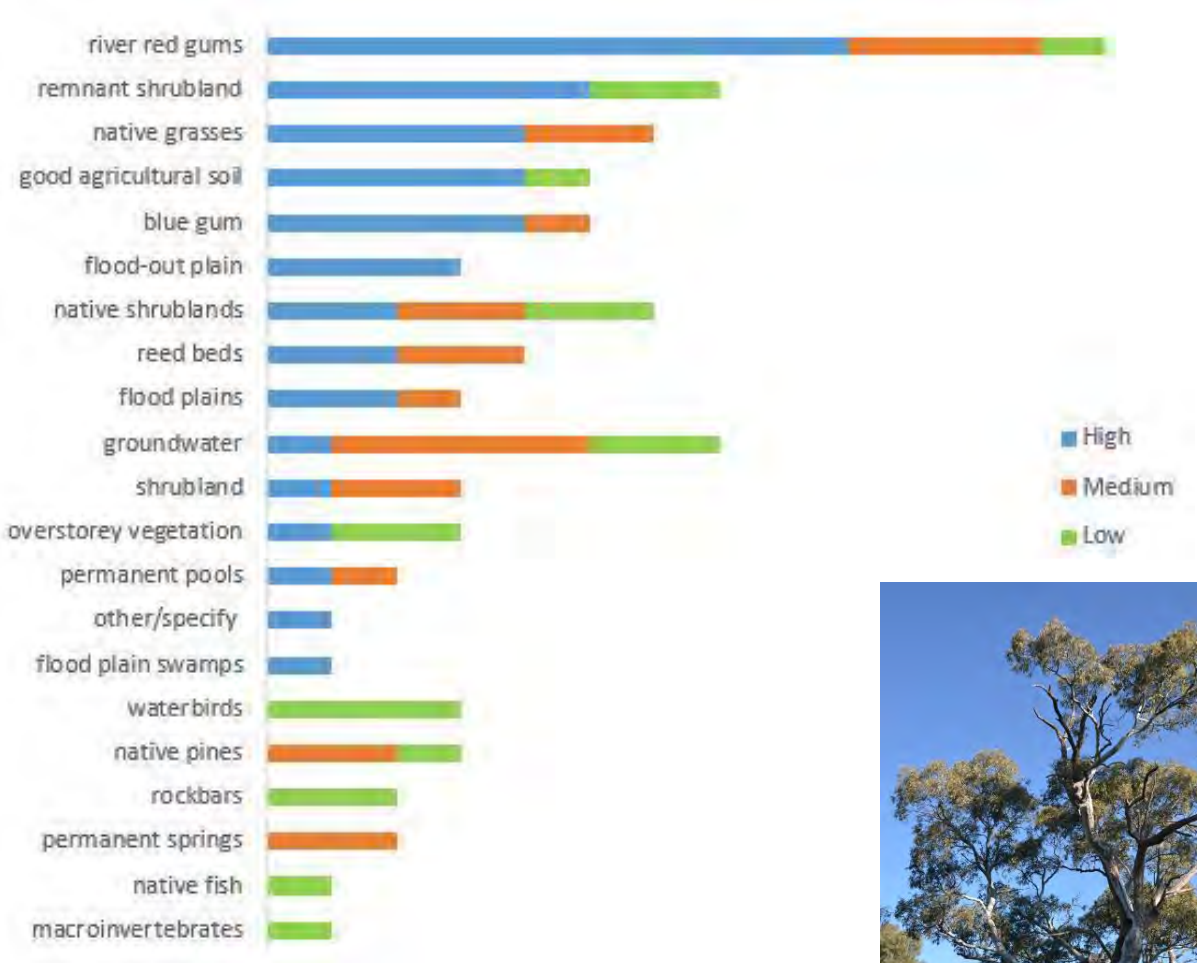
Natural assets identified for protection in the Crystal Brook Creek sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including Beetaloo reservoir, Bowman Park, Crystal Brook township, macroinvertebrates, Mary Springs, and river red gums

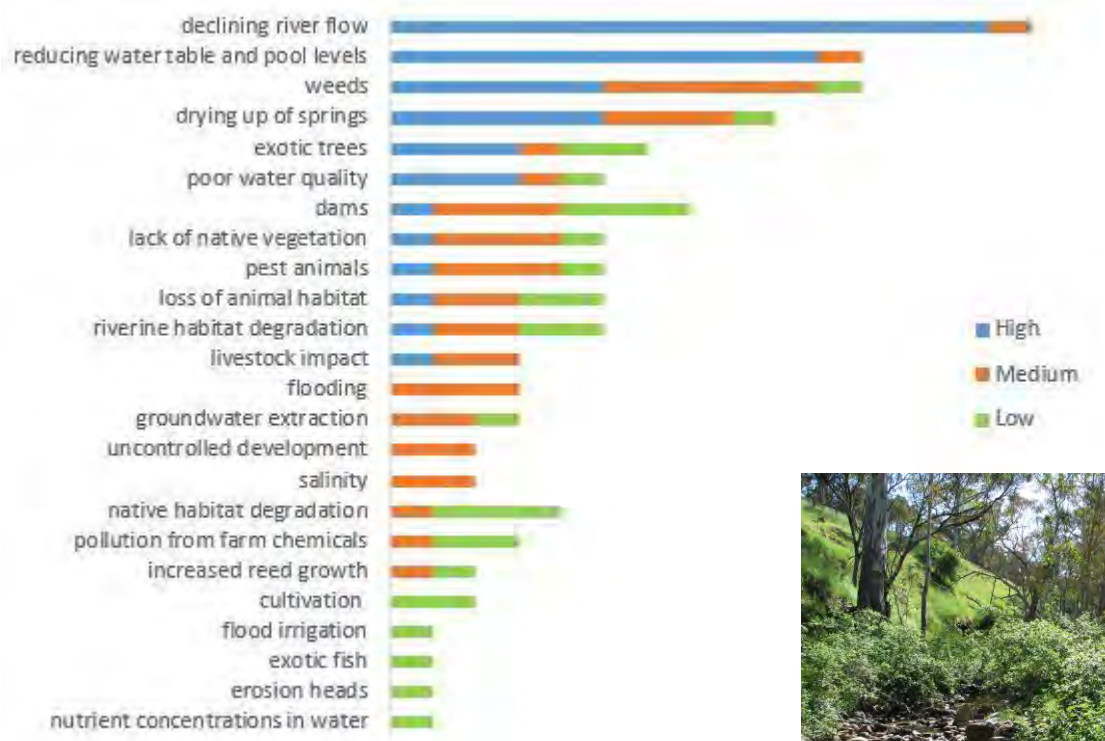
Bowman Park is an important feature of the Crystal Brook Creek sub-catchment.

Crystal Brook Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Beetaloo Reservoir	Health and condition			x	
Bowman Park	Vegetation condition		x		
Crystal Brook	Health and condition		x		
Macroinvertebrates	Diversity		x		
Mary Springs	Health and condition			x	
Permanent pools	Health and condition		x		
River red gums	Tree health		x		

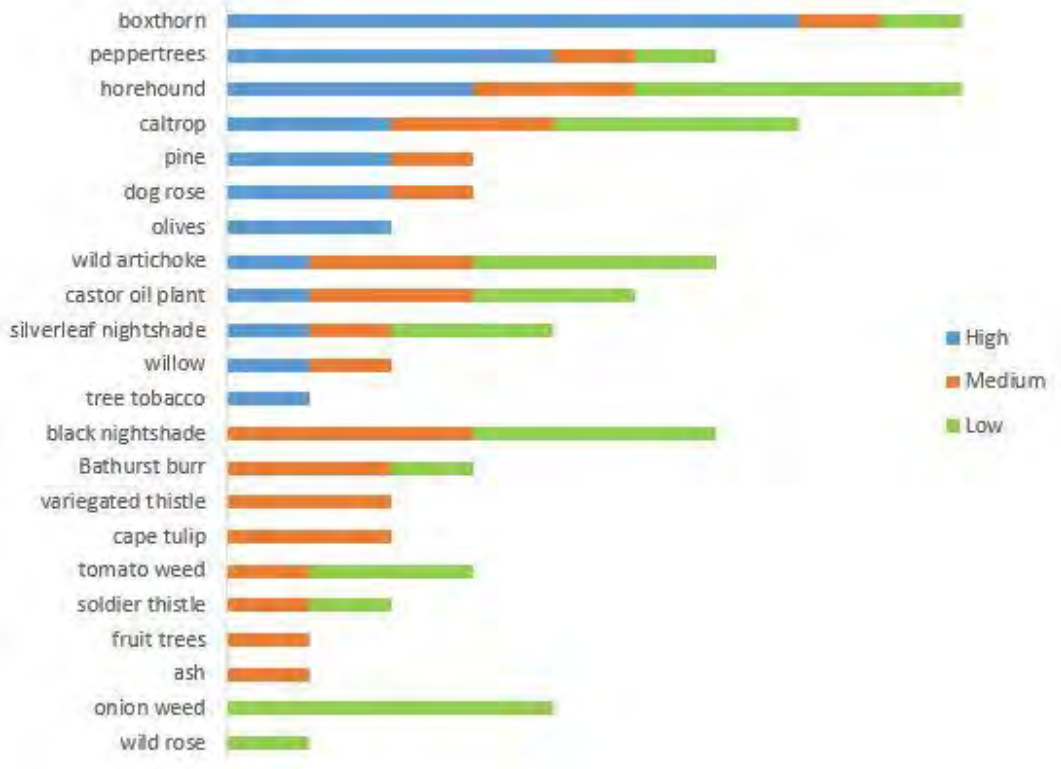
In 2014-15, a survey provided more details on what the community valued in the sub-catchment and what threats they saw to our natural resources.



Declining river flow, reducing water table levels and weeds were identified as the biggest threats to watercourses by the community.

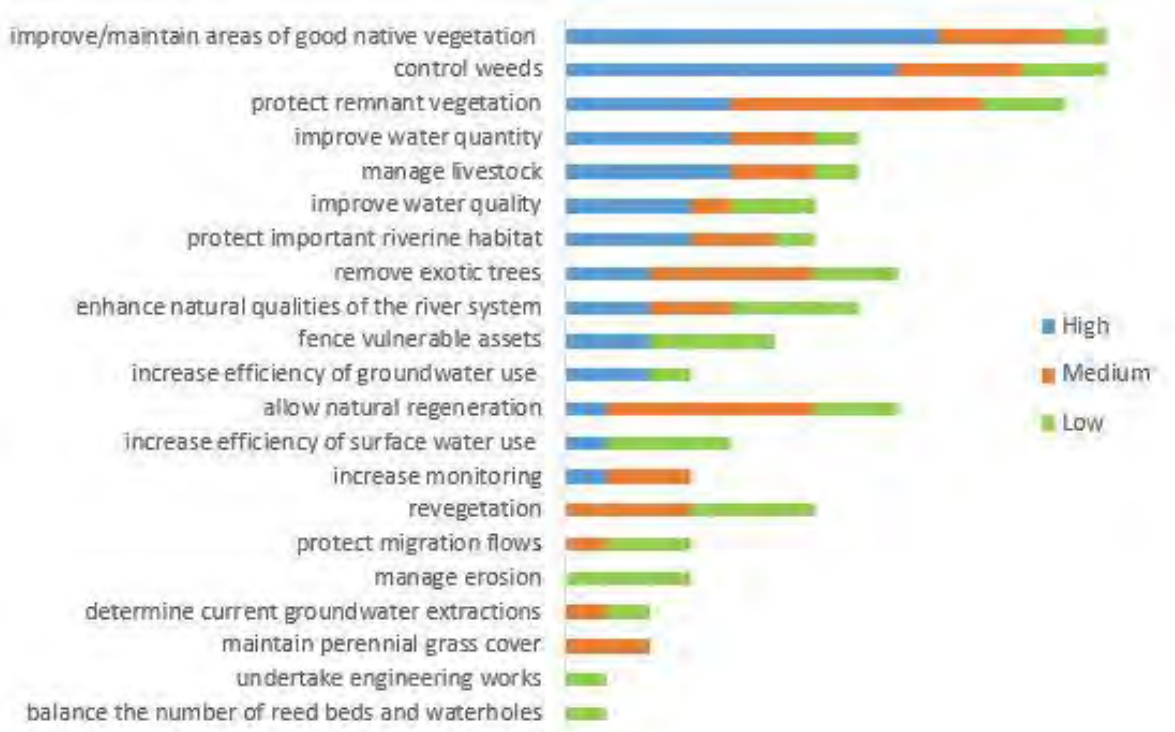


Boxthorn, Peppertrees and Horehound were identified as the most problematic weeds threatening watercourses.



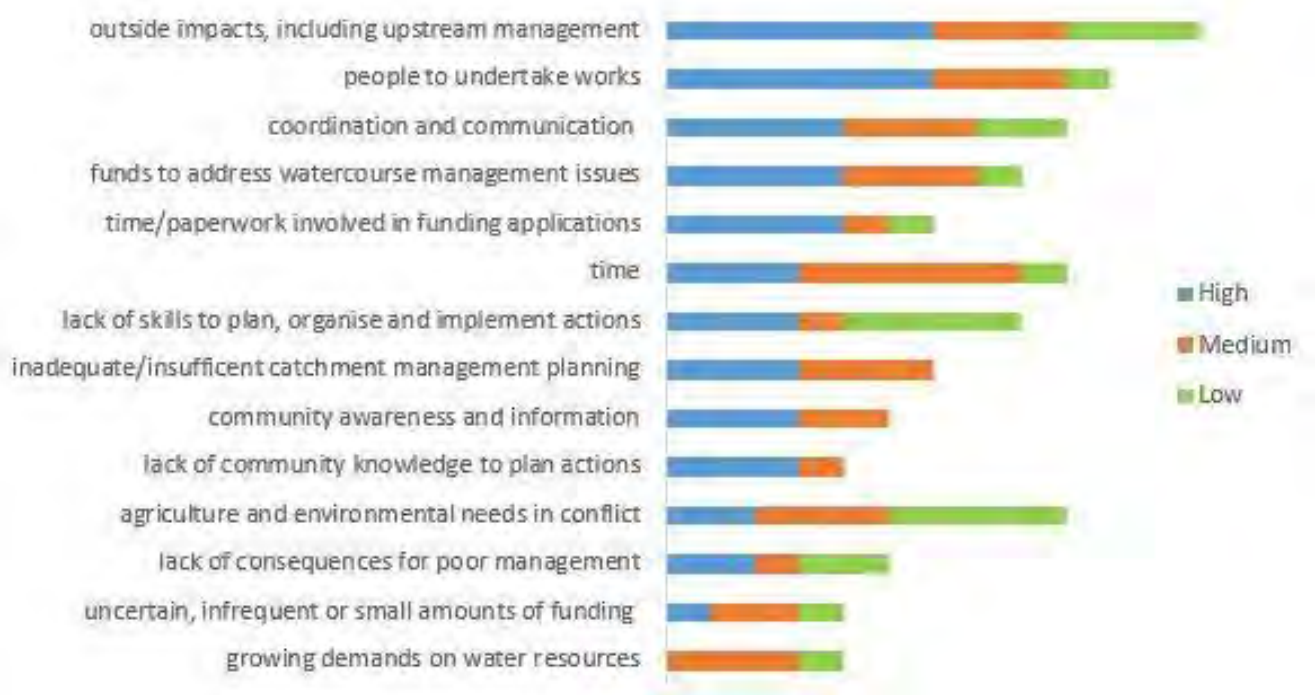
Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Improving/maintaining areas of good native vegetation, controlling weeds and protecting remnant vegetation were the highest community priorities for managing our river systems.



Protecting remnant vegetation

Outside impacts, lack of people to undertake works and coordination and communication were seen as the biggest barriers to effective management of watercourses in the Crystal Brook Creek sub-catchment.



What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

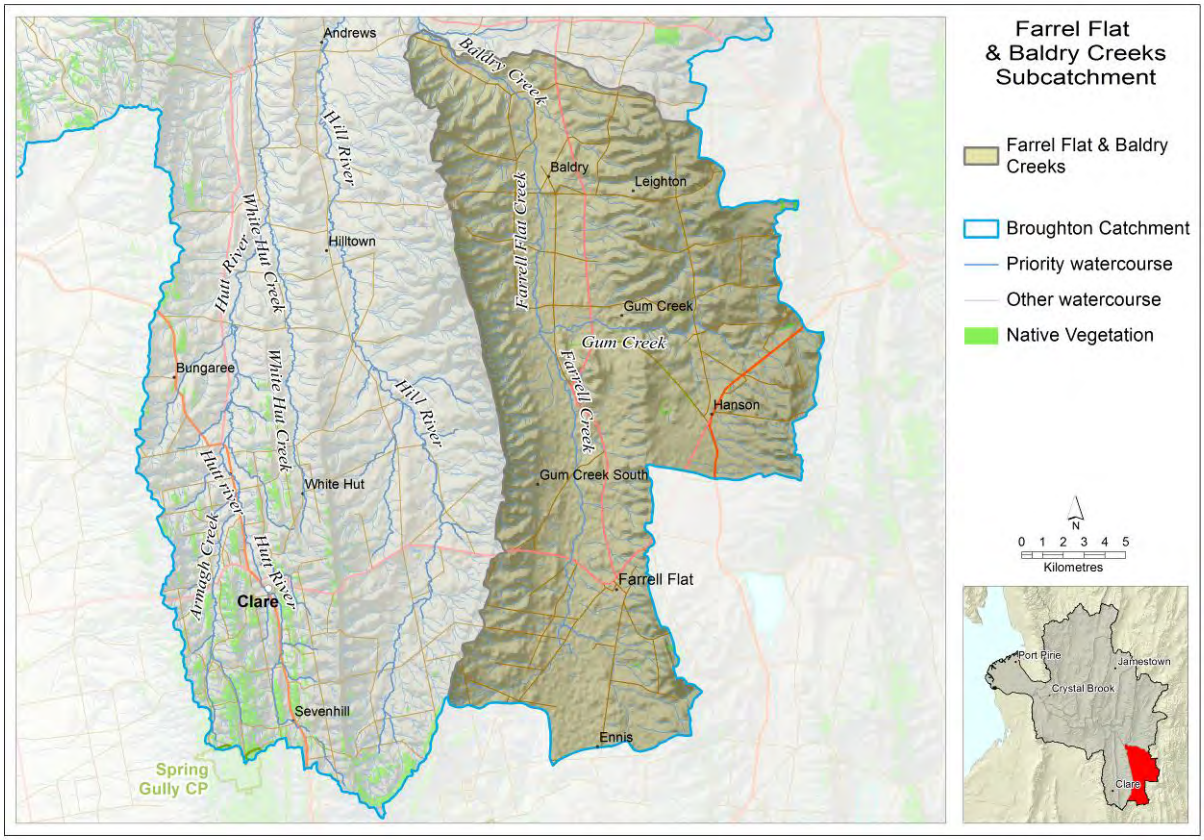
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Farrel Flat and Baldry Creeks sub-catchment – our natural resources and management priorities

The Farrel Flat and Baldry Creeks sub-catchment (394 km^2) is located in the south-eastern region of the Broughton River catchment. Watercourses in the sub-catchment run through cropping and grazing land.

Baldry Creek and Farrel Flat Creek are the main watercourses in the sub-catchment.



Natural assets identified for protection in the Farrel Flat and Baldry Creeks sub-catchment and Booborowie Creek sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including permanent pools, sedgelands and Spalding Blown Grass.

Spalding Blown Grass is an important feature of the Farrel Flat and Baldry Creeks sub-catchment and Booborowie Creek sub-catchment.

Farrel Flat & Baldry Creeks					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Baldry Creek – permanent pools	Health and condition	x			
Baldry Creek - samphire	Vegetation condition		x		
Baldry Creek - sedgelands	Vegetation condition		x		
Yakilo Creek - sedgelands	Vegetation condition		x		
Yakilo Creek – Spalding Blown Grass	Vegetation condition		x		

Sedgelands are an important asset in the sub-catchment

In 2014-15, a survey provided more details on what the community valued in the sub-catchments and what threats they saw to our natural resources.

Flooding, a reduction in pool and water table levels and weeds were identified as the biggest threats to watercourses by the community.

Flooding was identified as a big threat to watercourses

Hoary cress and Horehound were identified as the most problematic weeds threatening watercourses, along with African rue and Perennial thistle.

African rue was identified as a problem weed threatening watercourses

Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Managing livestock, maintaining perennial vegetation and allowing natural regeneration were the highest community priorities for managing our river systems.

Allowing natural regeneration

A lack of people to implement works, time and paperwork needed to apply for funding and a lack of community awareness and information were seen as the biggest barriers to effective management of watercourses in the Booborowie Creek sub-catchment and Farrel Flat and Baldry Creeks sub-catchment.

What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

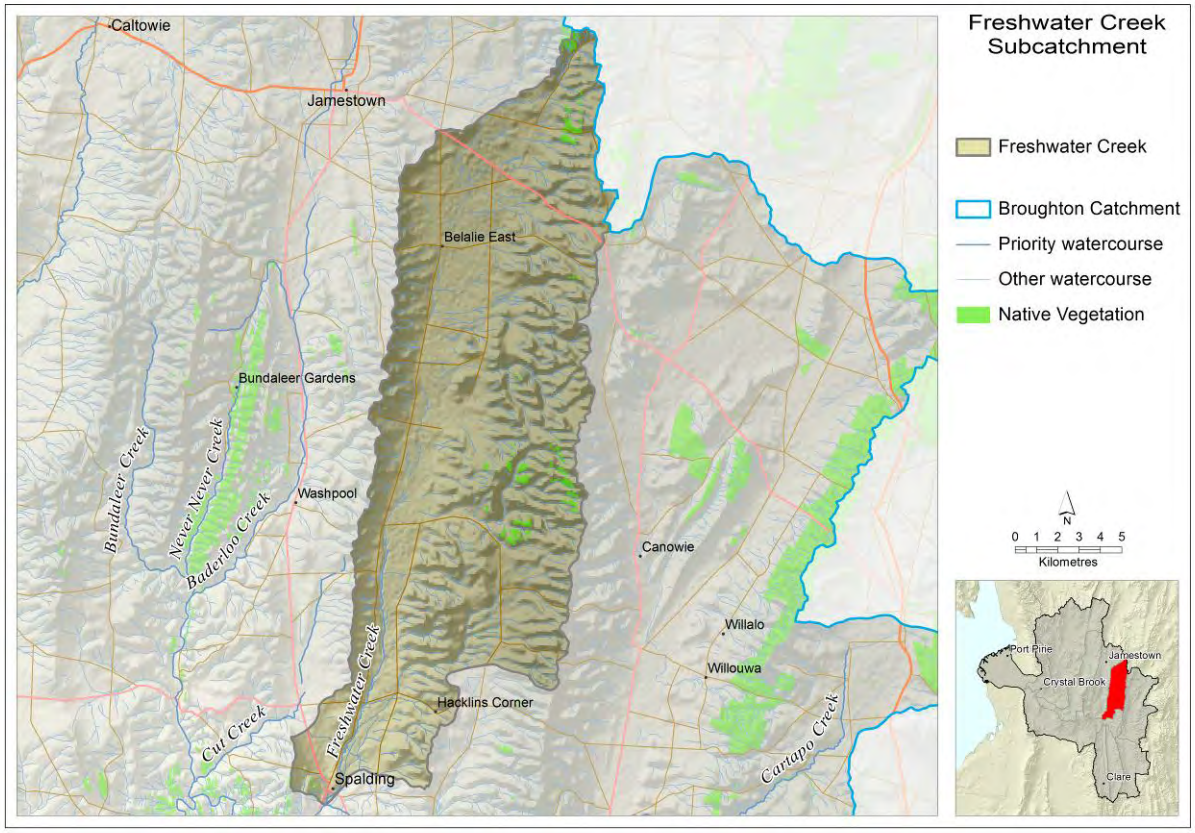
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Freshwater Creek sub-catchment – our natural resources and management priorities

The Freshwater Creek sub-catchment (293 km^2) is located in the eastern region of the Broughton River catchment. Cropping and grazing are the dominant land uses within the sub-catchment with urban development at Spalding. Freshwater Creek is the main watercourse in the sub-catchment and it flows south, following the folding pattern of the ranges.

Freshwater Creek is the main watercourse in the sub-catchment.



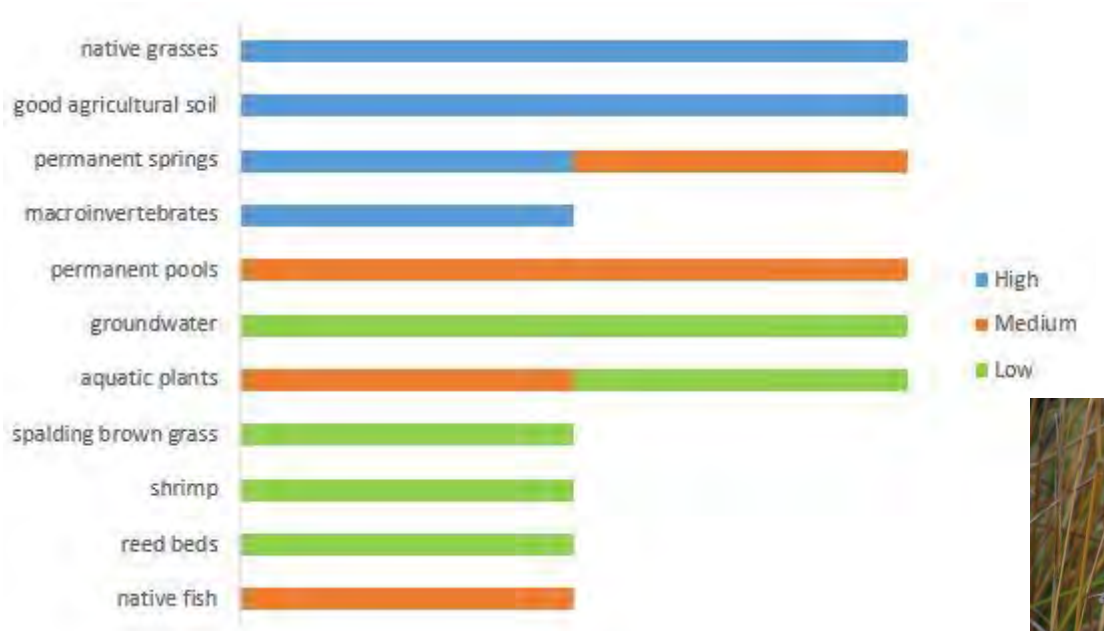
Natural assets identified for protection in the Freshwater Creek sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including permanent pools, sedgelands and Spalding township.

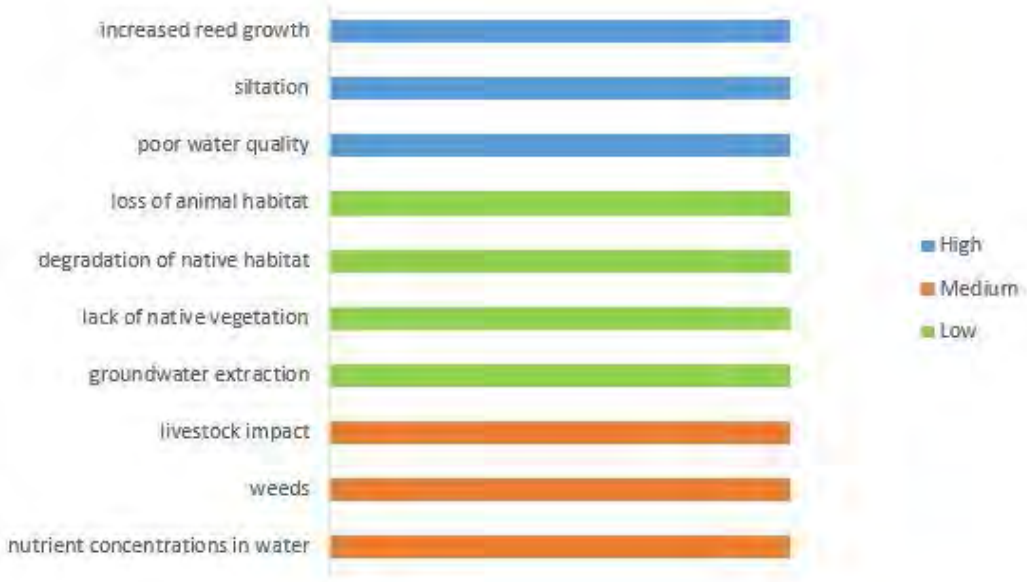
Spalding is an important asset in the Freshwater Creek sub-catchment.

Freshwater Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Permanent pools	Health and condition		x		
Sedgelands	Vegetation condition		x		
Spalding	Stormwater management		x		

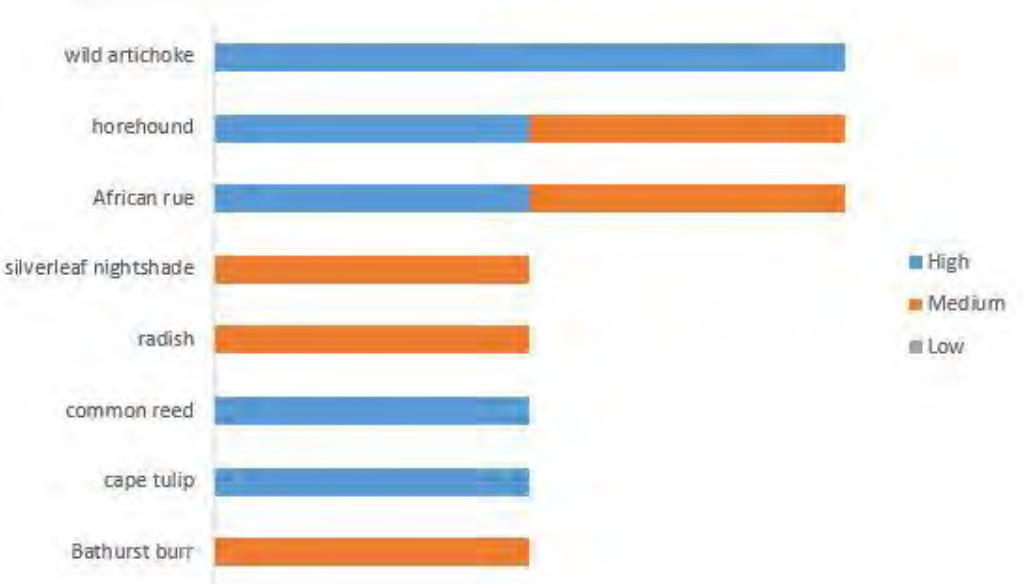
In 2014-15, a survey provided more details on what the community valued in the Freshwater Creek sub-catchment and the Bundaleer and Never Never Creeks sub-catchment and what threats they saw to our natural resources.



Increased reed growth, siltation and poor water quality were identified as the biggest threats to watercourses by the community.



Wild artichoke, Horehound, African rue, and Cape tulip were identified as the most problematic weeds threatening watercourses.



Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Enhancing the natural qualities and characteristics of the river system, allowing natural regeneration, controlling weeds and revegetating to conserve habitat were the highest community priorities for managing our river systems.

Upstream management impacting on downstream health, lack of funds and a lack of community awareness were seen as the biggest barriers to effective management of watercourses in the Freshwater Creek sub-catchment and the Bundaleer and Never Never Creeks sub-catchment.

What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

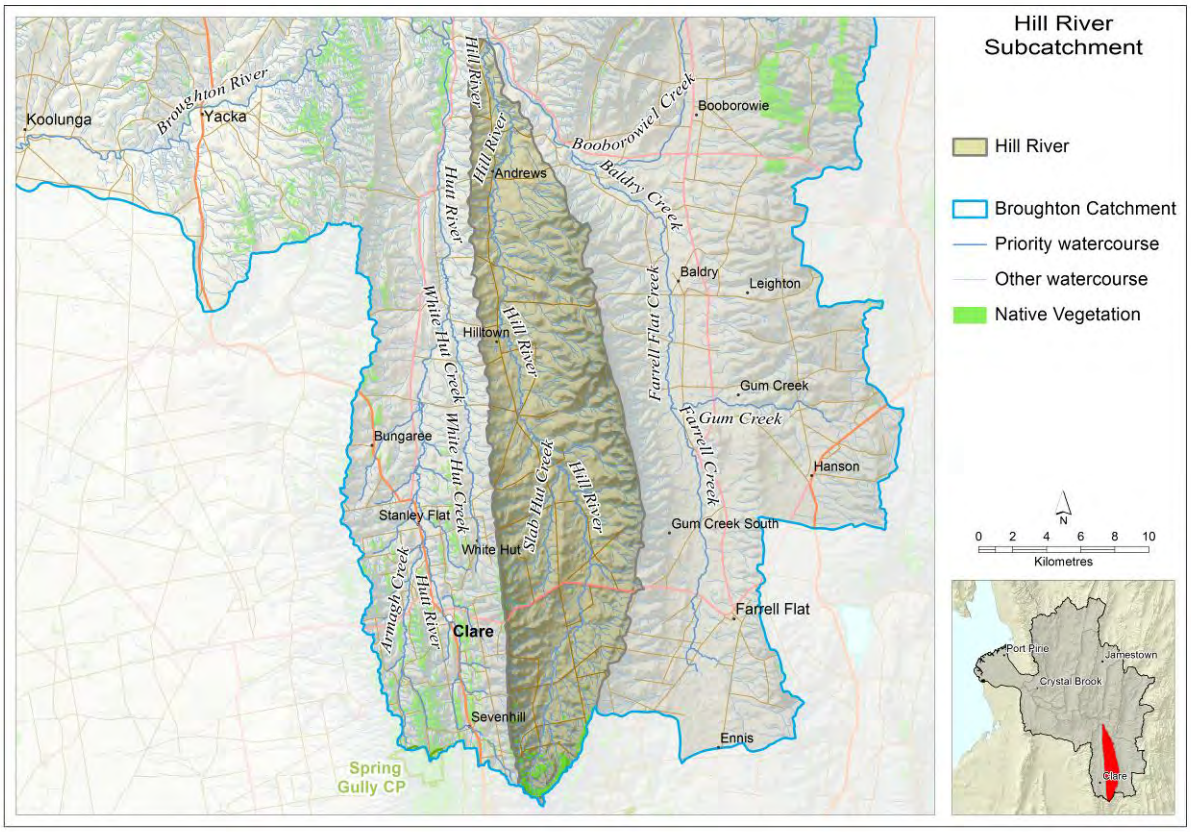
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Hill River sub-catchment – our natural resources and management priorities

The Hill River sub-catchment (269 km^2) is located in the southern region of the Broughton River catchment. Most of the sub-catchment is used for cropping and grazing, with some viticulture along the upper reaches of Hill River. The Hill River flows north and joins Yakilo Creek to form the origin of the Broughton River.

Hill River and Slab Hut Creek are the main watercourses in the sub-catchment.



Natural assets identified for protection in the Hill River sub-catchment

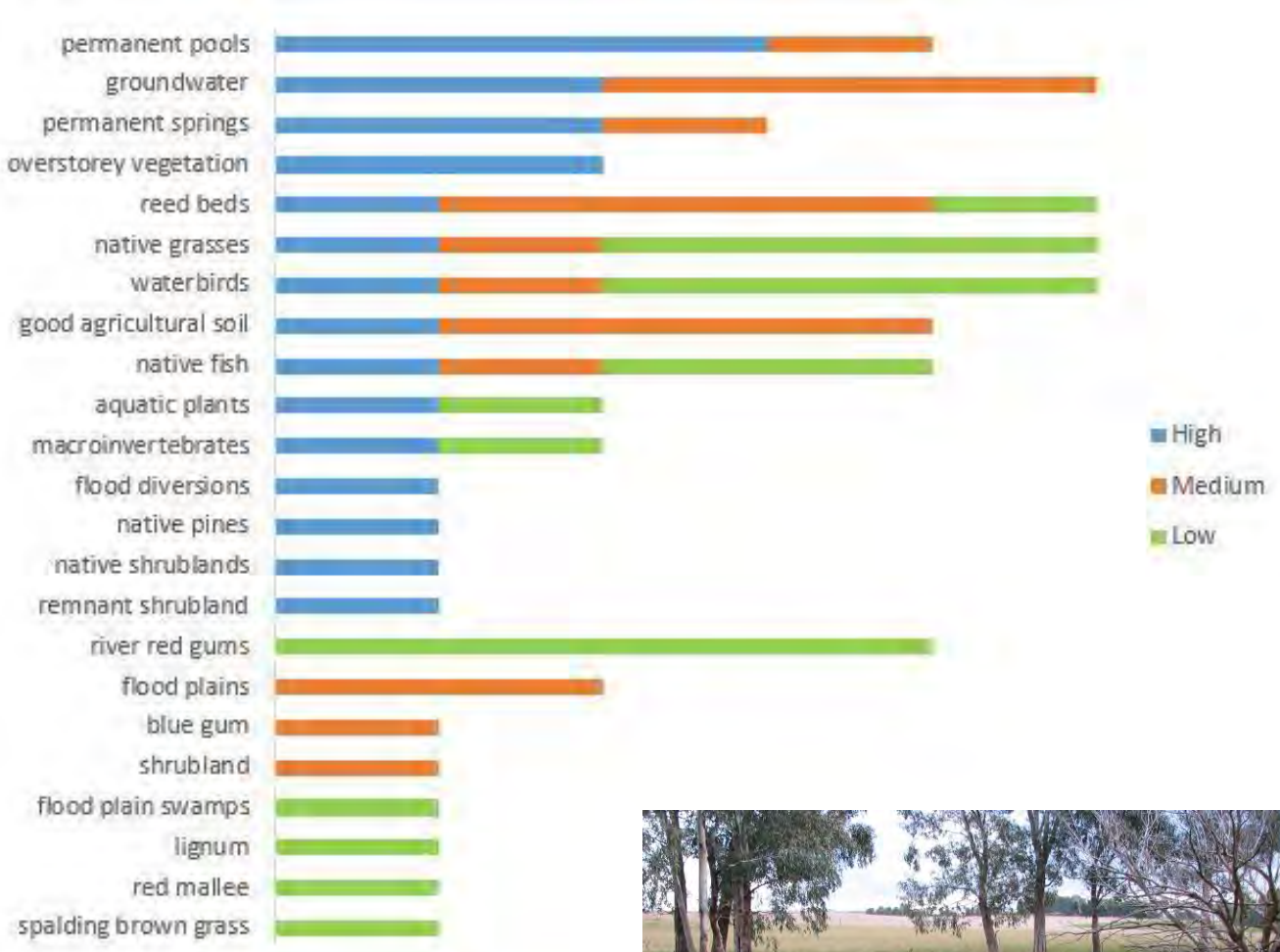
Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including lignum, macroinvertebrates, and permanent pools.

Lignum is an important asset in the sub-catchment.

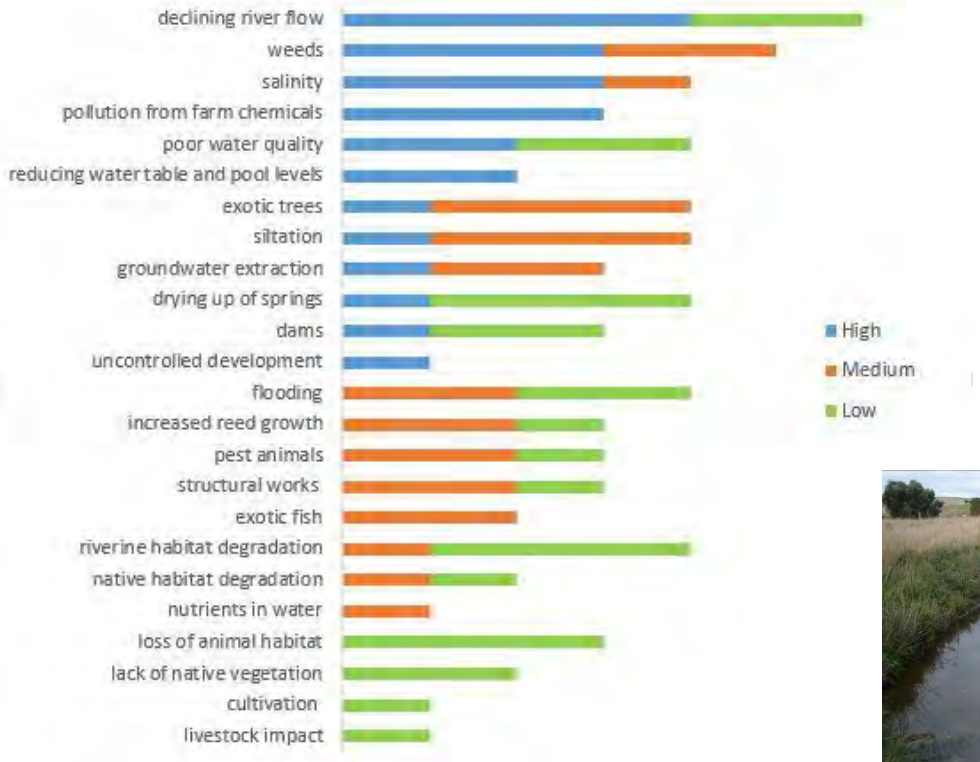
Hill River					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Lignum	Vegetation condition		x		
Macroinvertebrates	Diversity		x		
Permanent pools	Health and condition		x		

In 2014-15, a survey provided more details on what the community valued in the Hill River and Hutt River sub-catchments and what threats they saw to our natural resources.

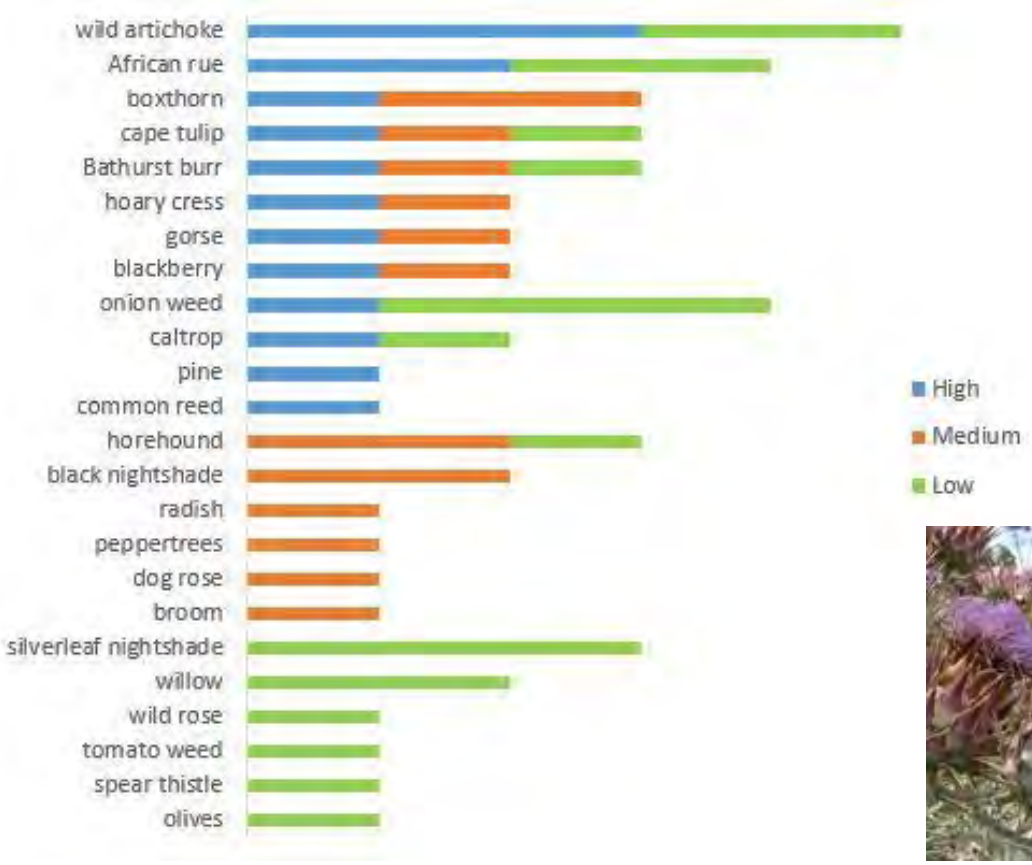
Permanent pools, groundwater, permanent springs and overstorey vegetation were valued most highly by the community.



Declining river flow, weeds, salinity and pollution from farm chemicals were seen as the biggest threats to watercourses.

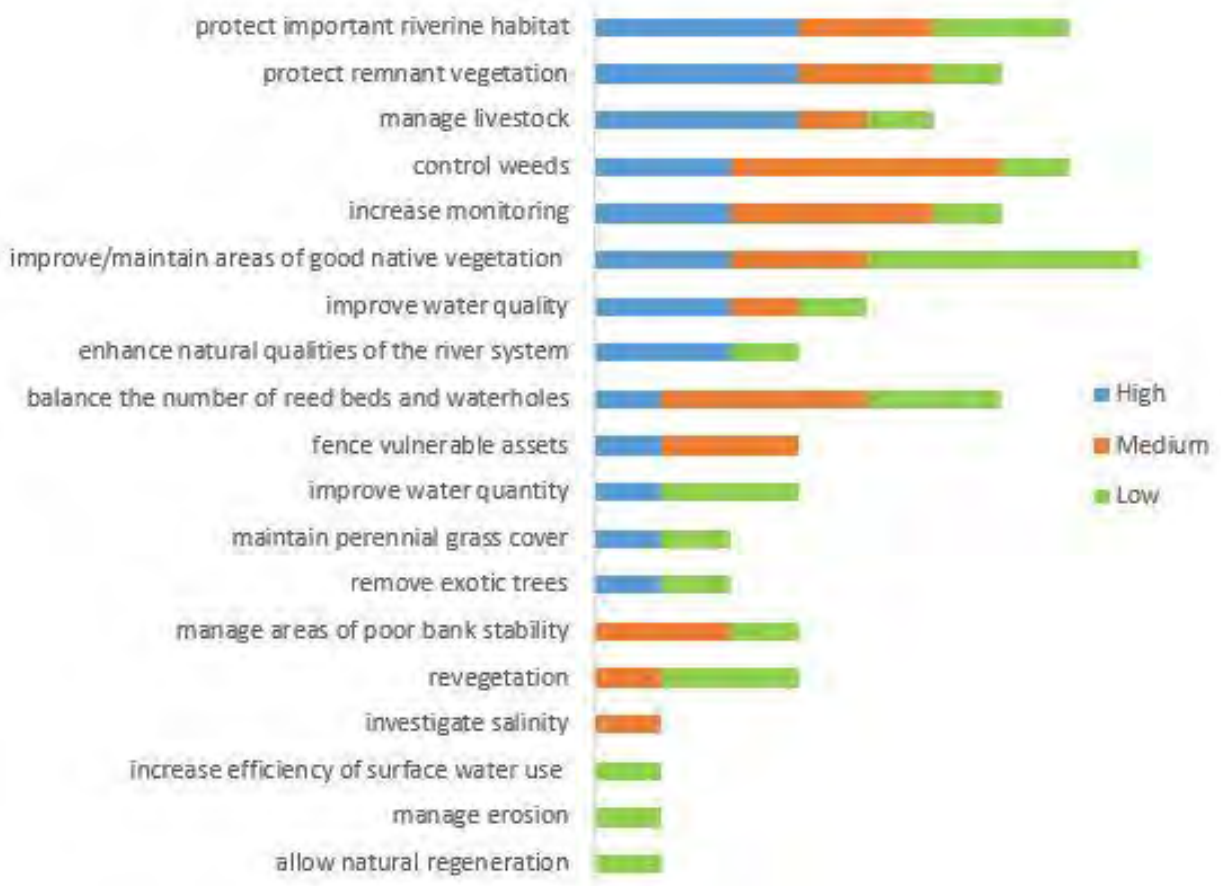


Wild artichoke and African rue were identified as the highest priority weeds

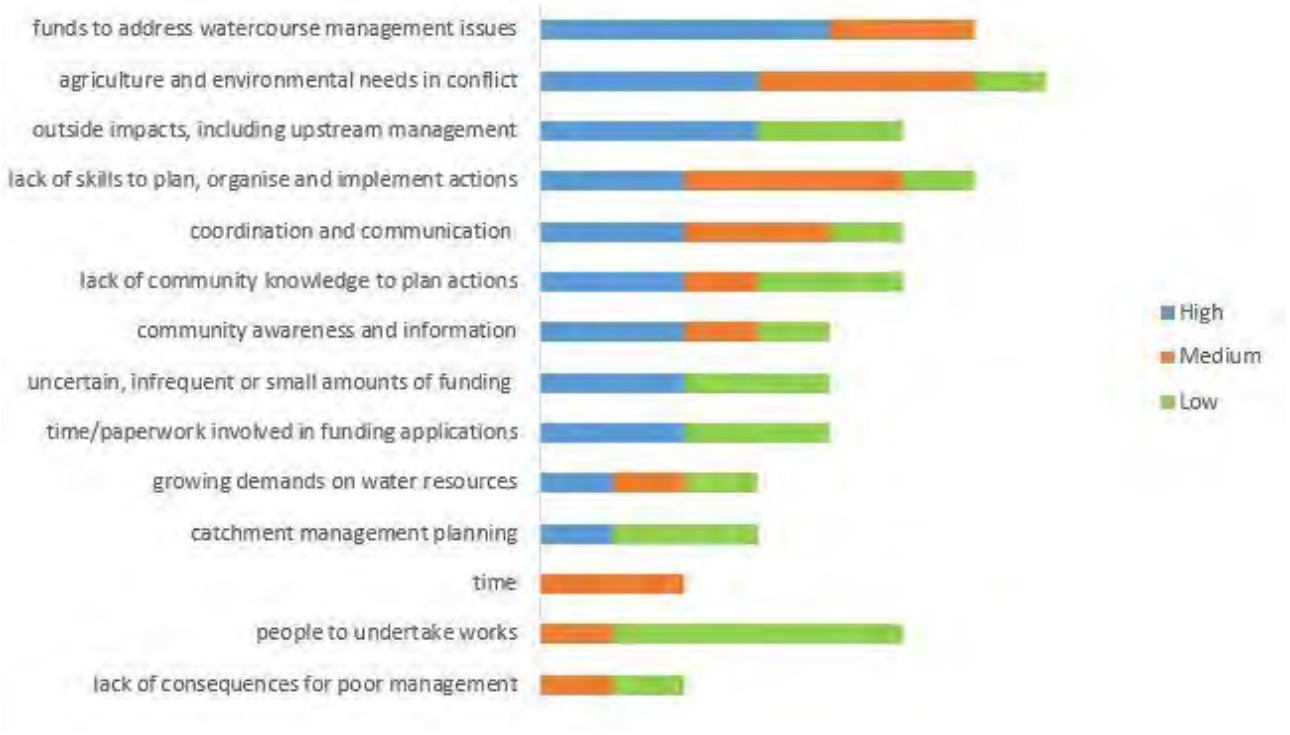


Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Protecting riverine habitat and remnant vegetation as well as managing livestock were the highest priority watercourse management objectives



Lack of funds, outside impacts and conflicting agricultural and environmental needs were identified as the main barriers to watercourse management.



What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

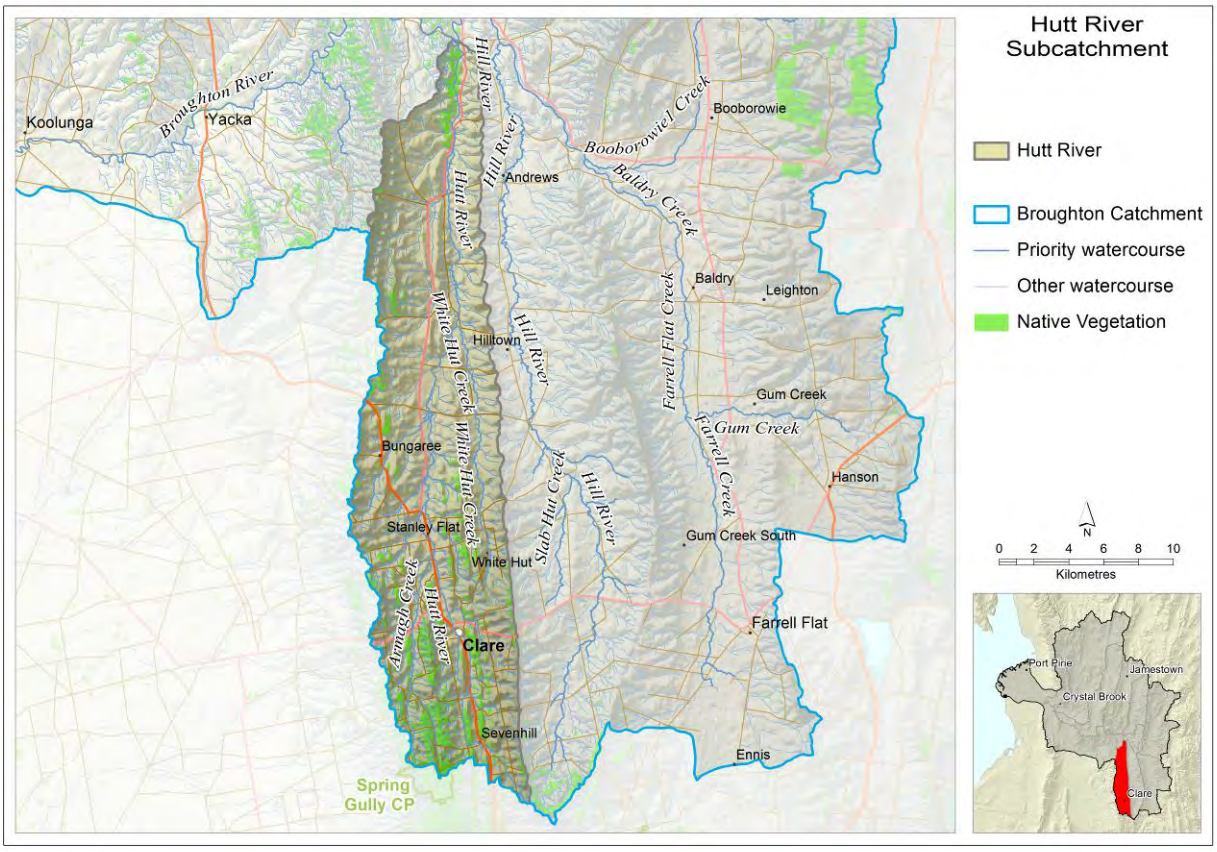
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Hutt River sub-catchment – our natural resources and management priorities

The Hutt River sub-catchment (285 km^2) is located in the southern region of the Broughton River catchment. The Hutt River flows north along a valley originating south of Clare. Viticulture is a major land use along the Hutt River along with urban development at Clare. The remainder of the sub-catchment is used for cropping and grazing.

Hutt River, White Hut Creek and Armagh Creek are the main watercourses in the sub-catchment.



Natural assets identified for protection in the Hutt River sub-catchment

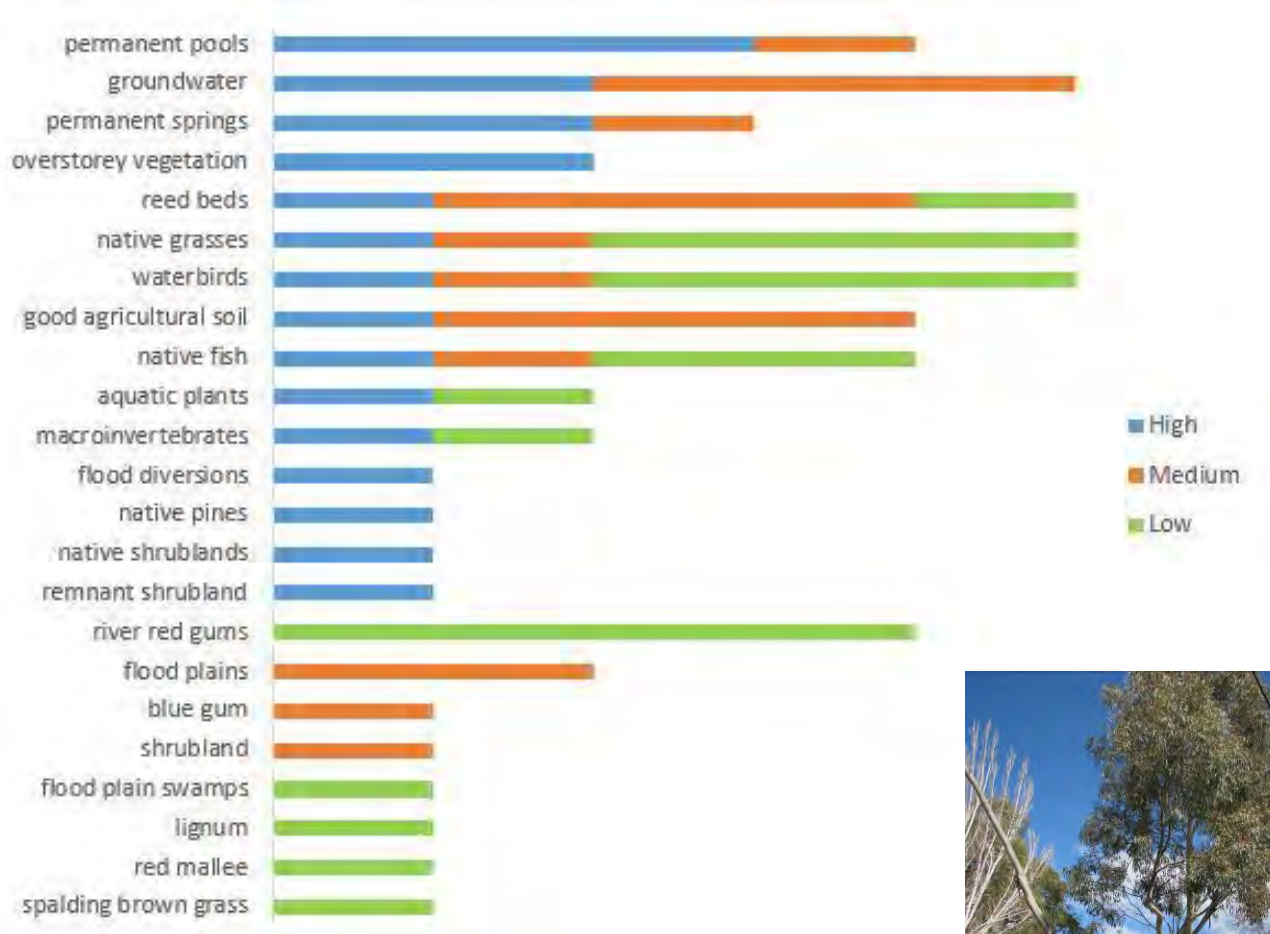
Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including blue gum and peppermint box woodlands, native fish, permanent pools, sedgelands and macroinvertebrates.

Peppermint box woodlands are an important feature of the Hutt River sub-catchment.

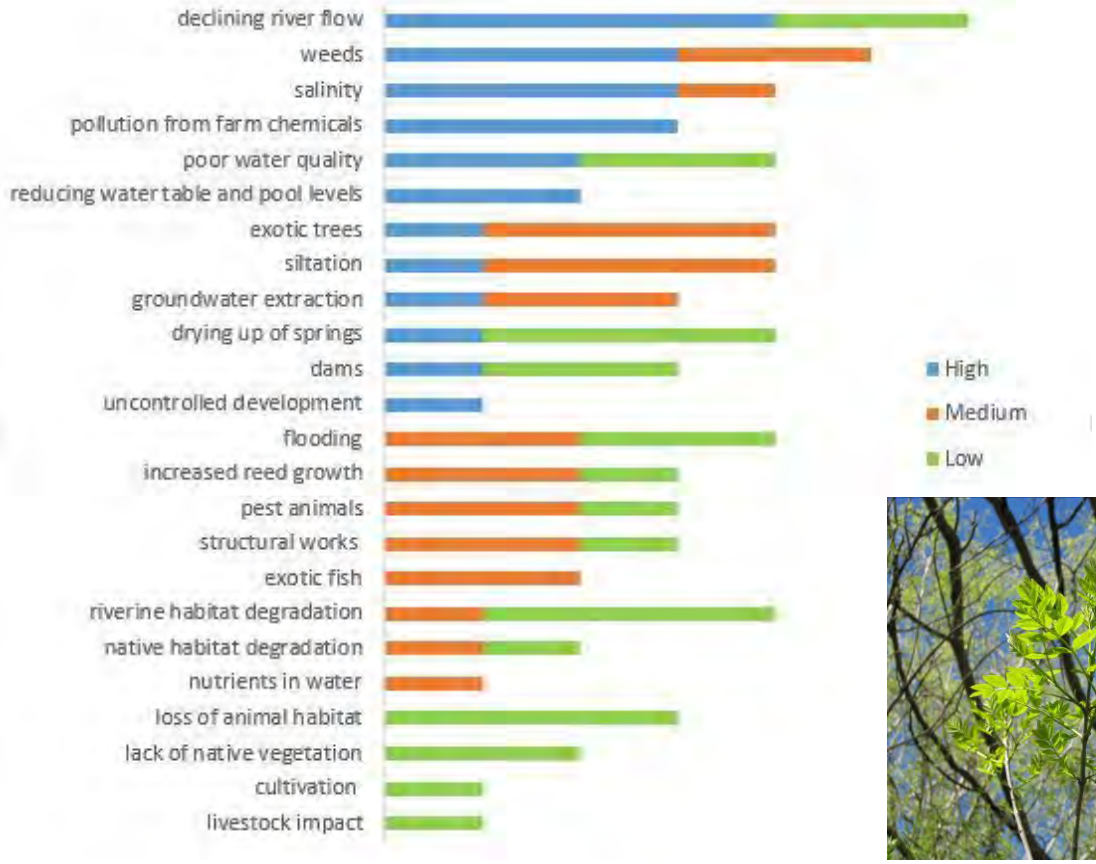
Hutt River					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Peppermint box woodlands and Blue gums	Vegetation condition		x		
Macroinvertebrates	Diversity		x		
Native fish	Diversity and abundance		x		
Permanent pools	Health and condition		x		
Sedgelands	Vegetation condition		x		

In 2014-15, a survey provided more details on what the community valued in the Hutt River and Hill River sub-catchments and what threats they saw to our natural resources.

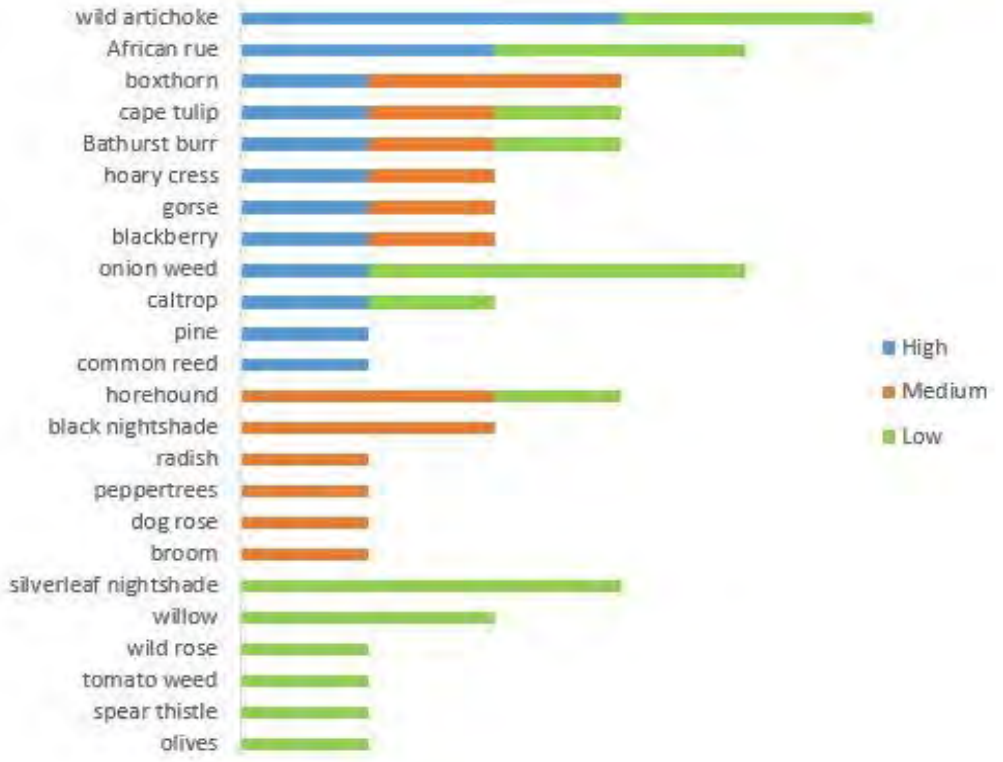
Permanent pools, groundwater, permanent springs and overstorey vegetation were valued most highly by the community.



Declining river flow, weeds, salinity and pollution from farm chemicals were seen as the biggest threats to watercourses.

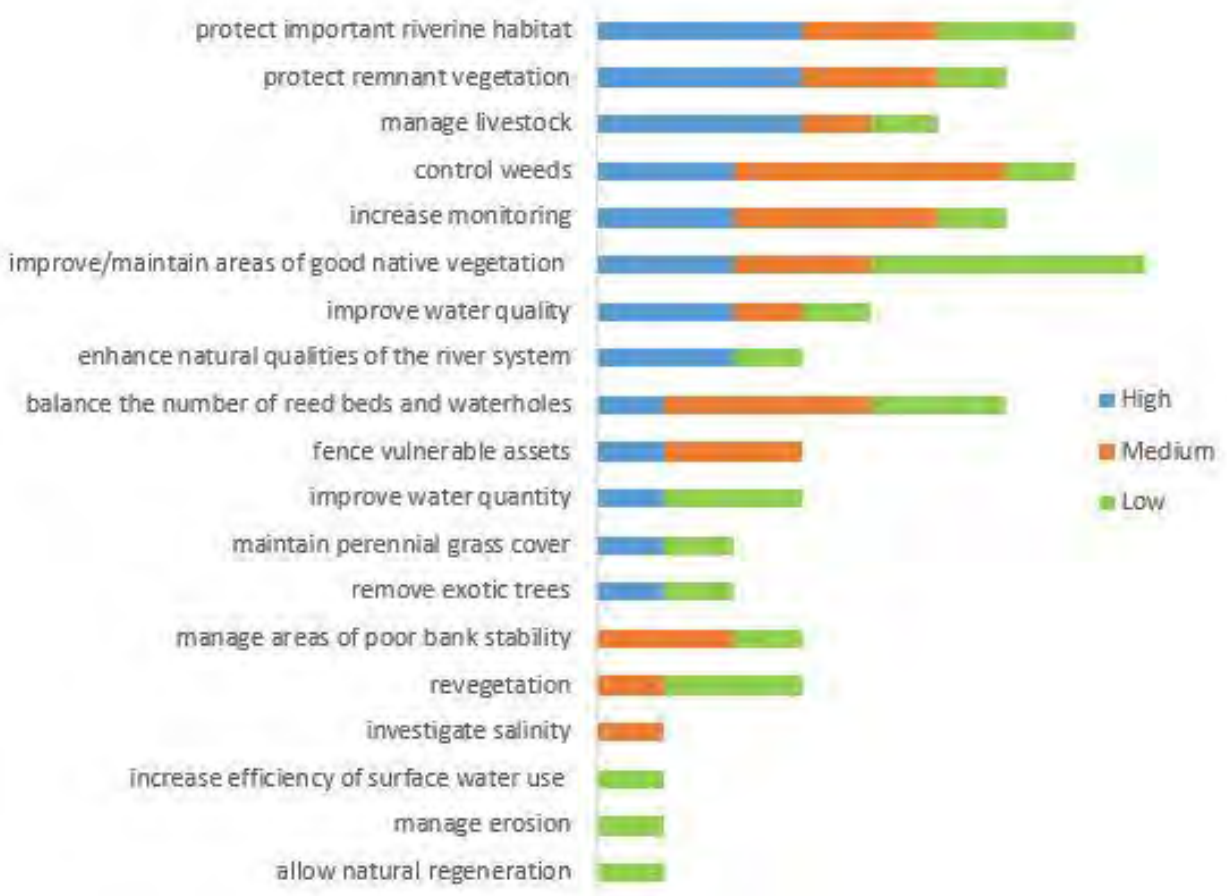


Wild artichoke and African rue were identified as the highest priority weeds



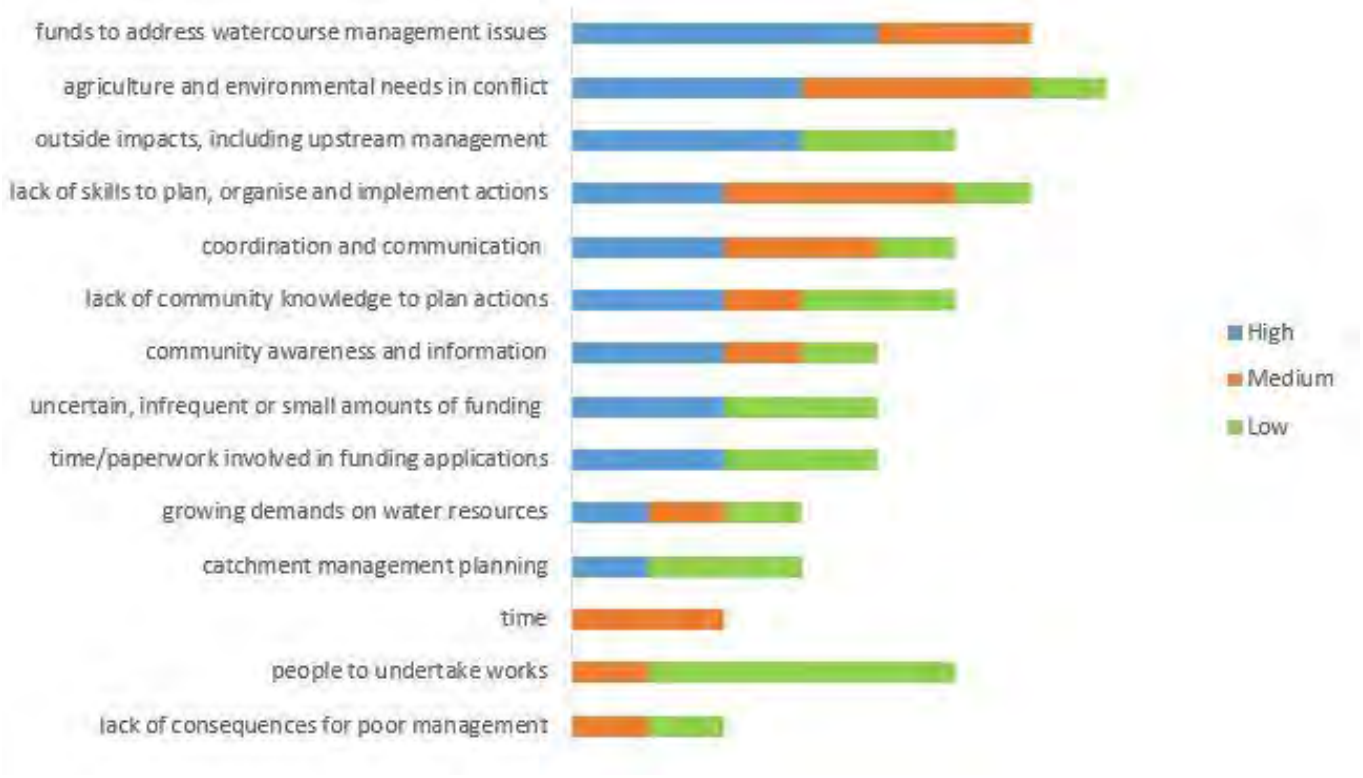
Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Protecting riverine habitat and remnant vegetation as well as managing livestock were the highest priority watercourse management objectives



Protecting important riverine habitat

Lack of funds, outside impacts and conflicting agricultural and environmental needs were identified as the main barriers to watercourse management.



What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

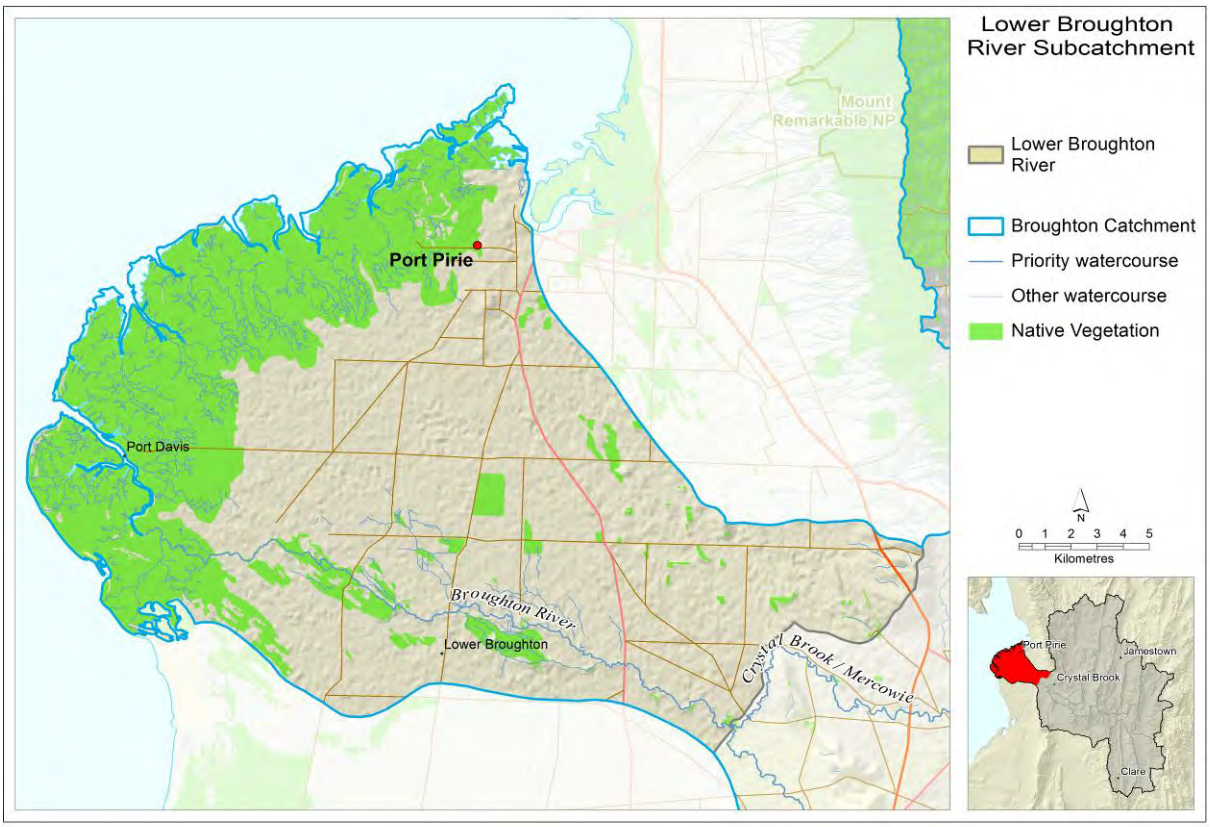
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Lower Broughton River sub-catchment – our natural resources and management priorities

The Lower Broughton River sub-catchment (450 km^2) is located in the western-most region of the Broughton River catchment. The Broughton River is the main watercourse and it flows west, entering the Spencer Gulf at Port Davis. Cropping and grazing are the main land uses in this sub-catchment.

The Broughton River is the main watercourse in the Lower Broughton River sub-catchment.



Natural assets identified for protection in the Lower Broughton River sub-catchment

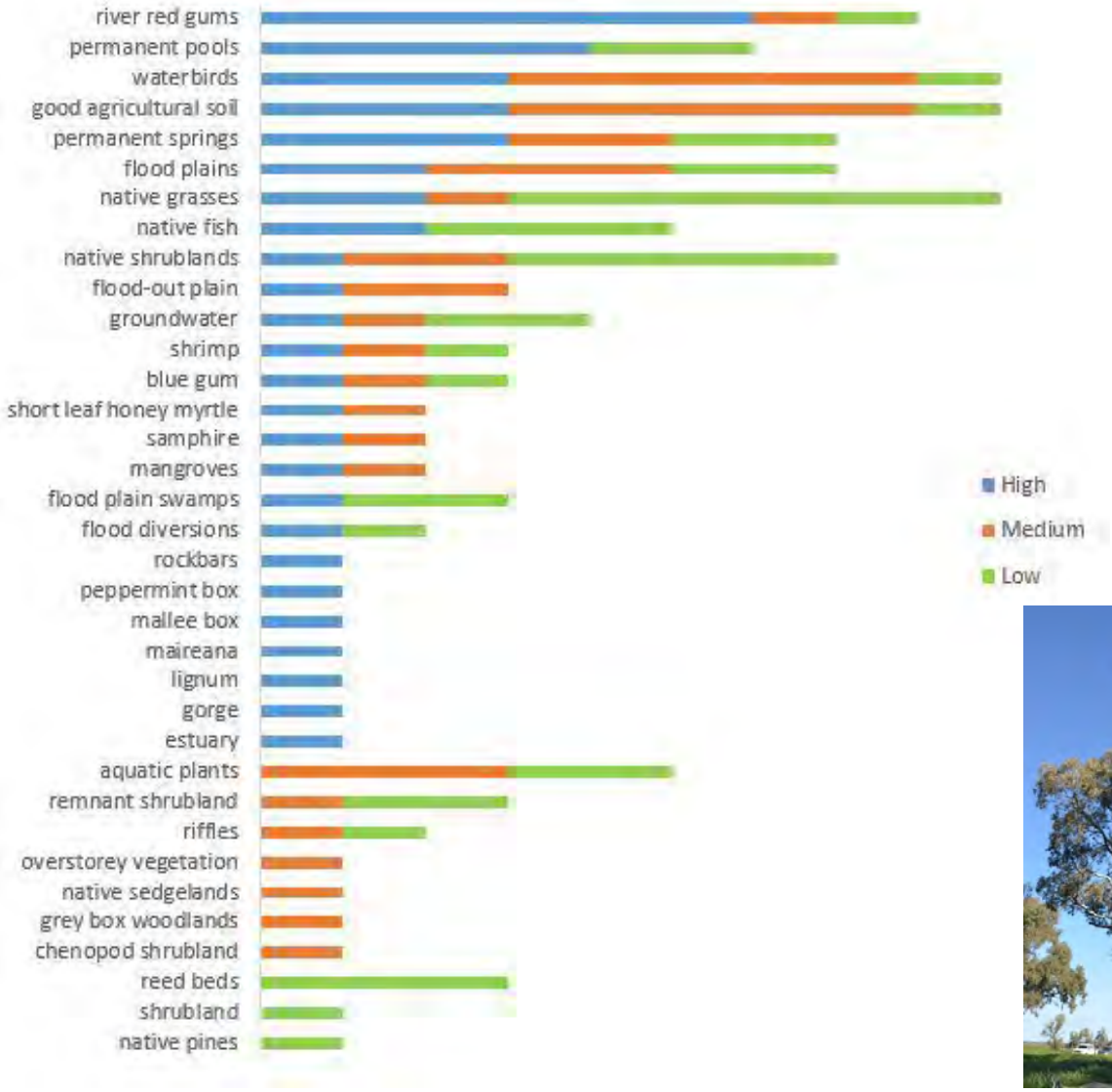
Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including lignum and samphire, macroinvertebrates, mangroves, native fish, permanent pools, river red gums, and the estuary.

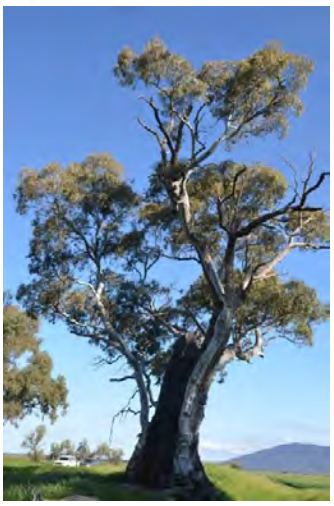
Mangroves are a key feature of the sub-catchment

Lower Broughton River					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Lignum and samphire	Vegetation condition		x		
River red gums	Tree health			x	
Estuary	Health and condition			x	
Mangroves	Vegetation condition			x	
Native fish	Diversity and abundance		x		
Permanent pools	Health and condition		x		
Macroinvertebrates	Diversity		x		

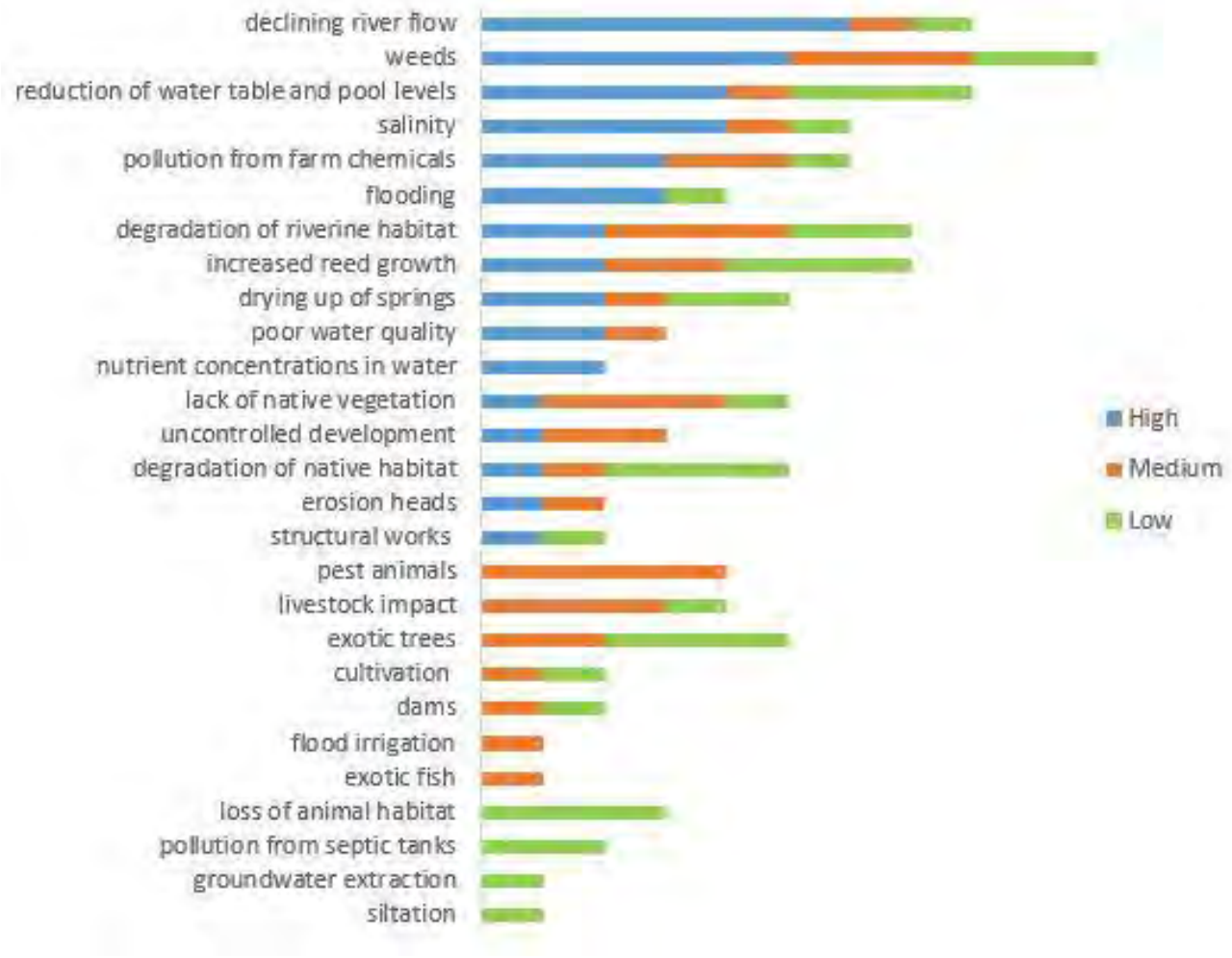
In 2014-15, a survey provided more details on what the community valued in the Lower Broughton River and the Mid-Broughton River sub-catchments, and what threats they saw to our natural resources.

River red gums, permanent pools and springs, water birds and good agricultural soil were valued most highly by the community.



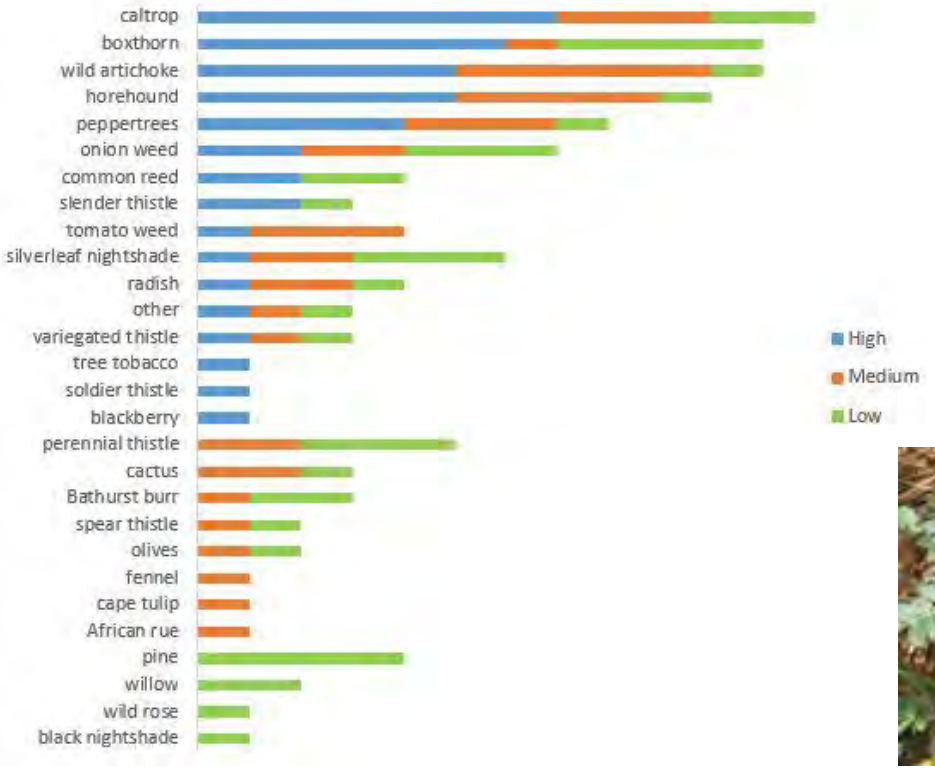


Declining river flow, weeds, salinity and pollution from farm chemicals were seen as the biggest threats to watercourses.



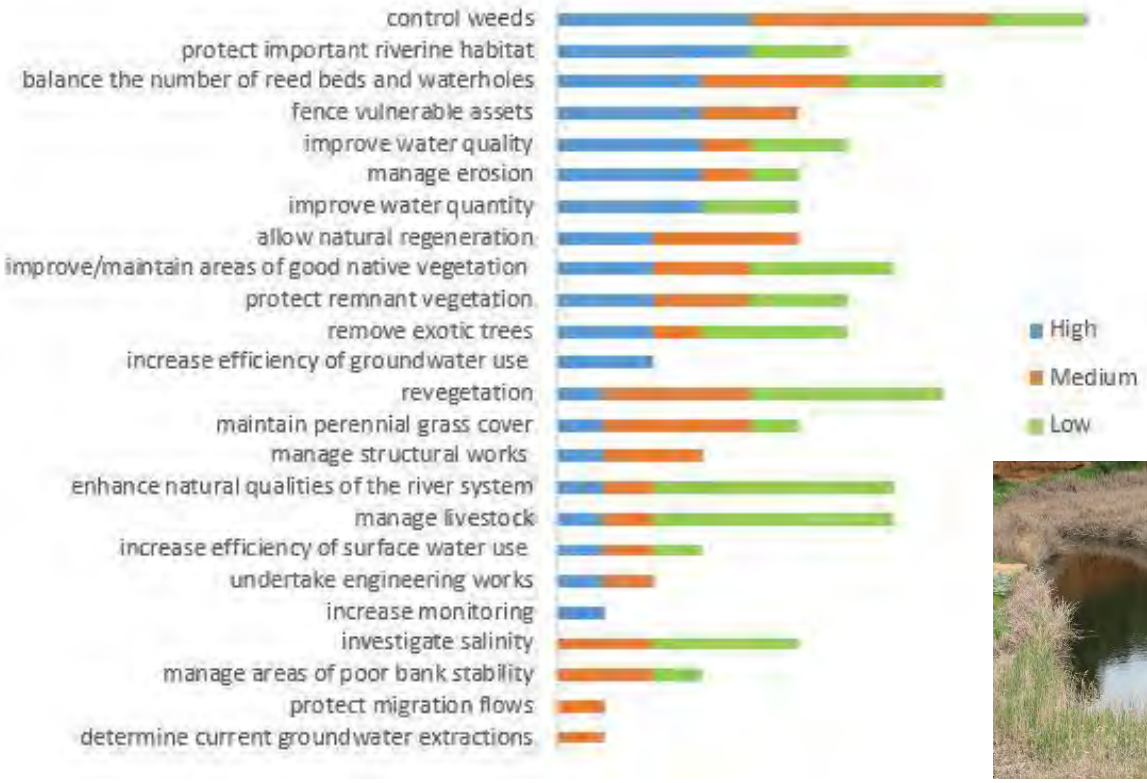
Declining river flow

Caltrop, Boxthorn, Wild artichoke and Horehound were identified as the highest priority weeds



Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Controlling weeds and balancing the number of reed beds and waterholes were the highest priority watercourse management objectives



Lack of community knowledge to plan actions, funds, outside impacts and community awareness and information were identified as the main barriers to watercourse management.

What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

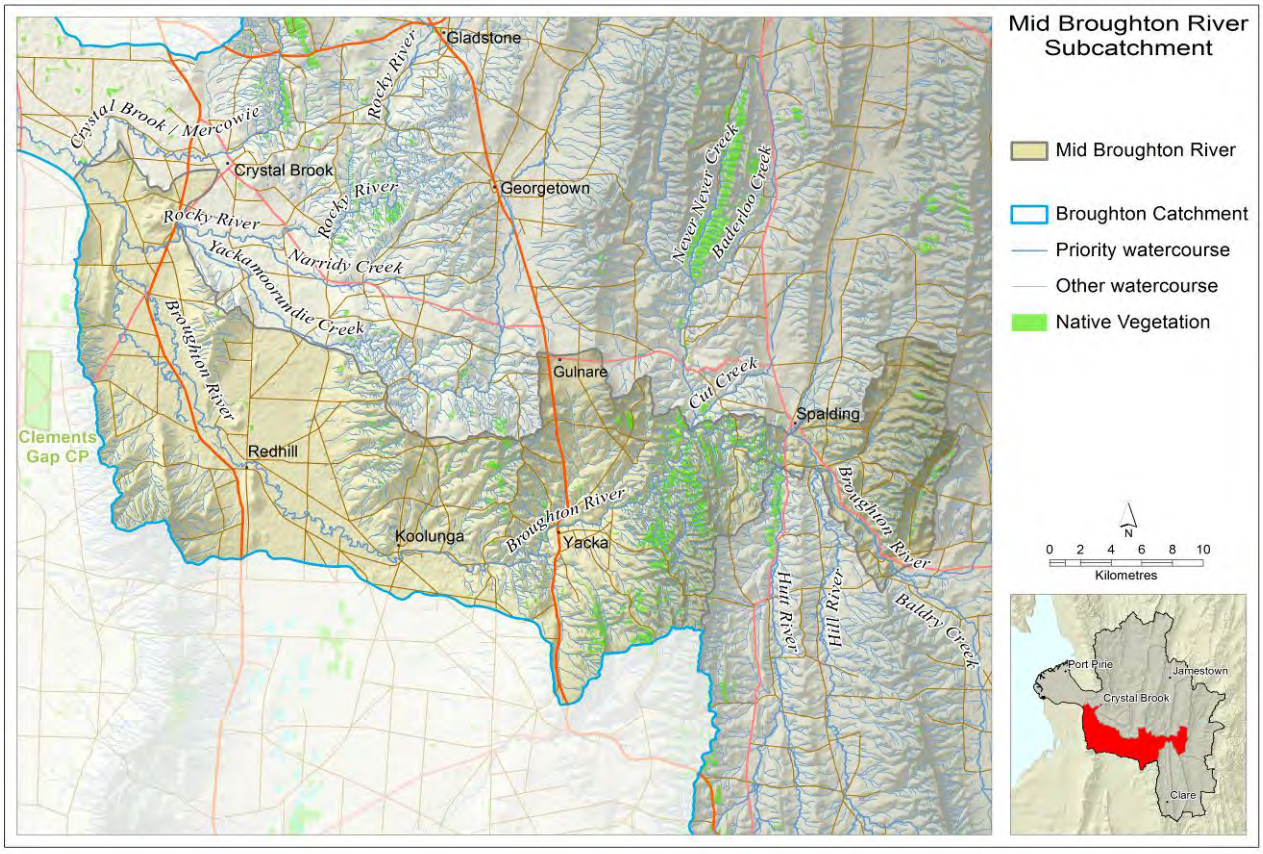
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Mid Broughton River sub-catchment – our natural resources and management priorities

The Mid Broughton River sub-catchment (816 km^2) is located on the south-western side of the Broughton River catchment. The Broughton River flows westerly across the sub-catchment through the townships of Yacka, Koolunga and Redhill. Cropping and grazing are the main land uses in this sub-catchment.

The Broughton River is the main watercourse in the sub-catchment.



Natural assets identified for protection in the Mid Broughton River sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including floodplains, native sedgelands and shrublands, permanent pools, river red gums, the Yackamoorundie Range and the Mooroola gauging station.

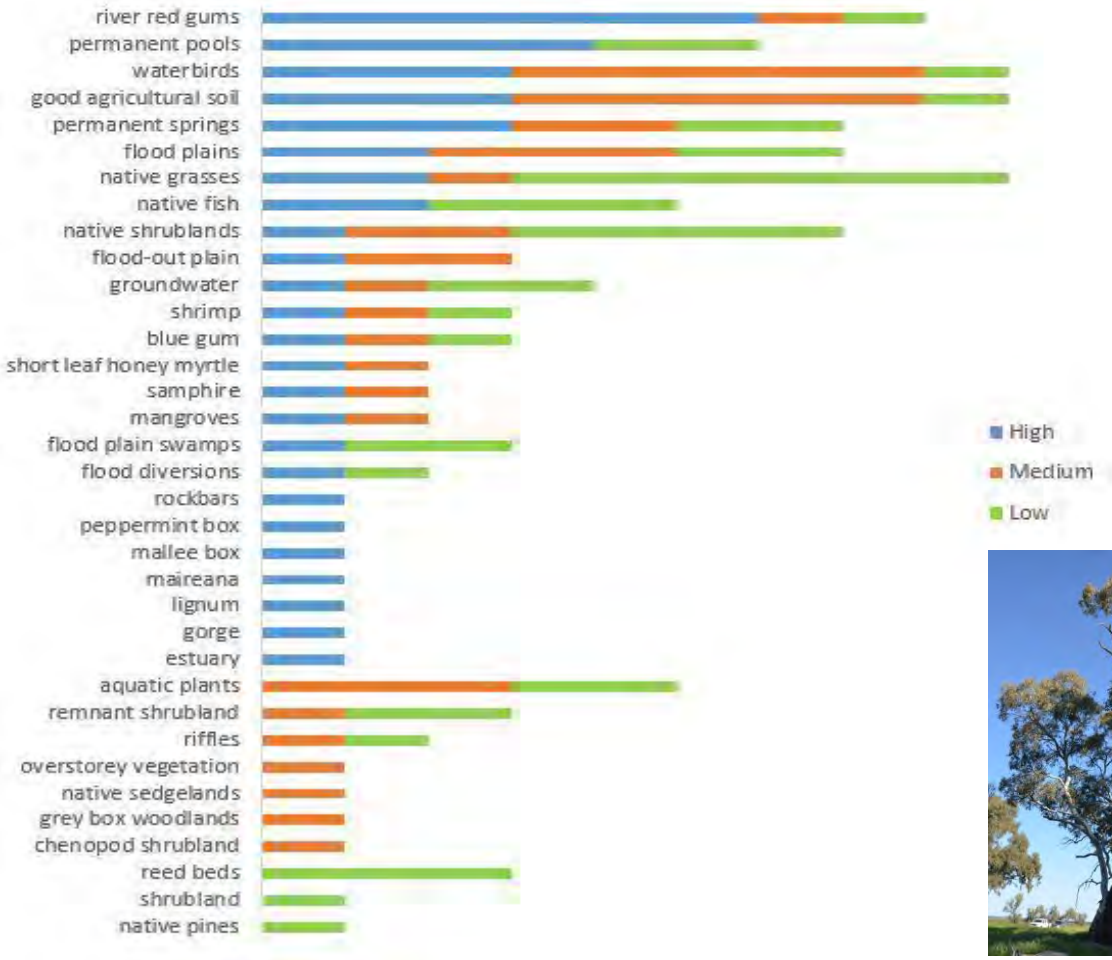
The Yackamoorundie Range is an important feature of the Mid Broughton River sub-catchment.

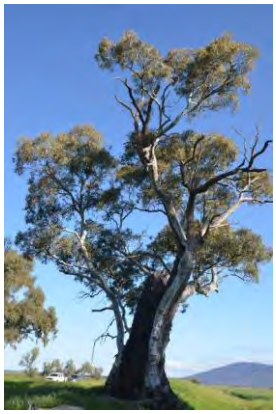
The Mooroola gauging station is a key feature of the sub-catchment.

Mid Broughton River					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Yackamoorundie Range	Vegetation condition			x	
River red gums	Tree health			x	
Permanent pools	Health and condition		x		
Shrublands	Vegetation condition		x		
Sedgelands	Vegetation condition		x		
Mooroola gauging station	Health and condition			x	
Deep Creek – chenopod shrubland	Vegetation condition	x			
Floodplains	Health and condition	x			

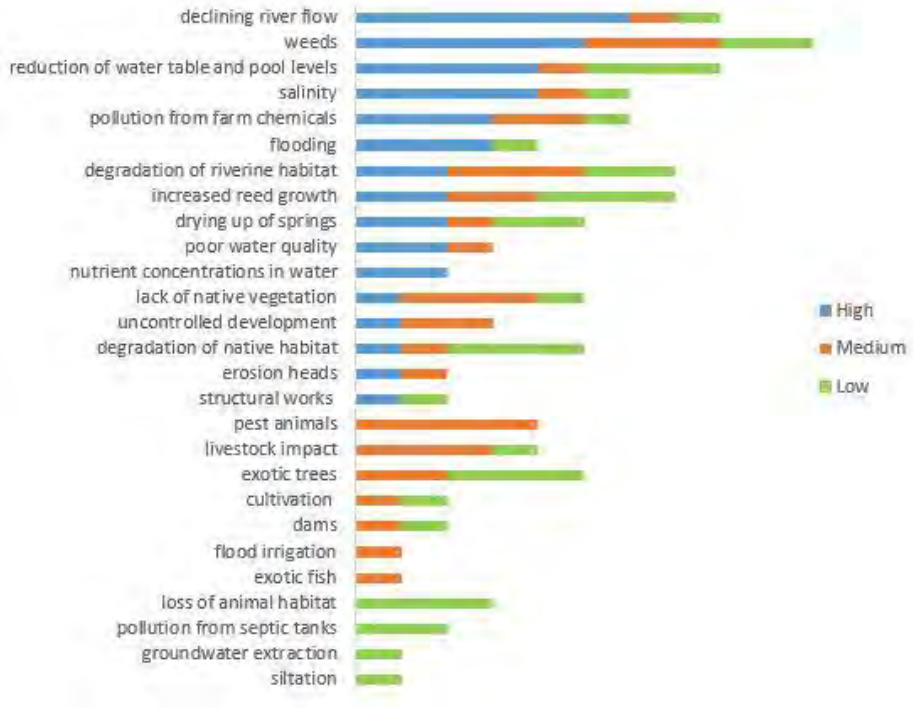
In 2014-15, a survey provided more details on what the community valued in the Mid Broughton River and Lower Broughton River sub-catchments, and what threats they saw to our natural resources.

River red gums, permanent pools and springs, water birds and good agricultural soil were valued most highly by the community.

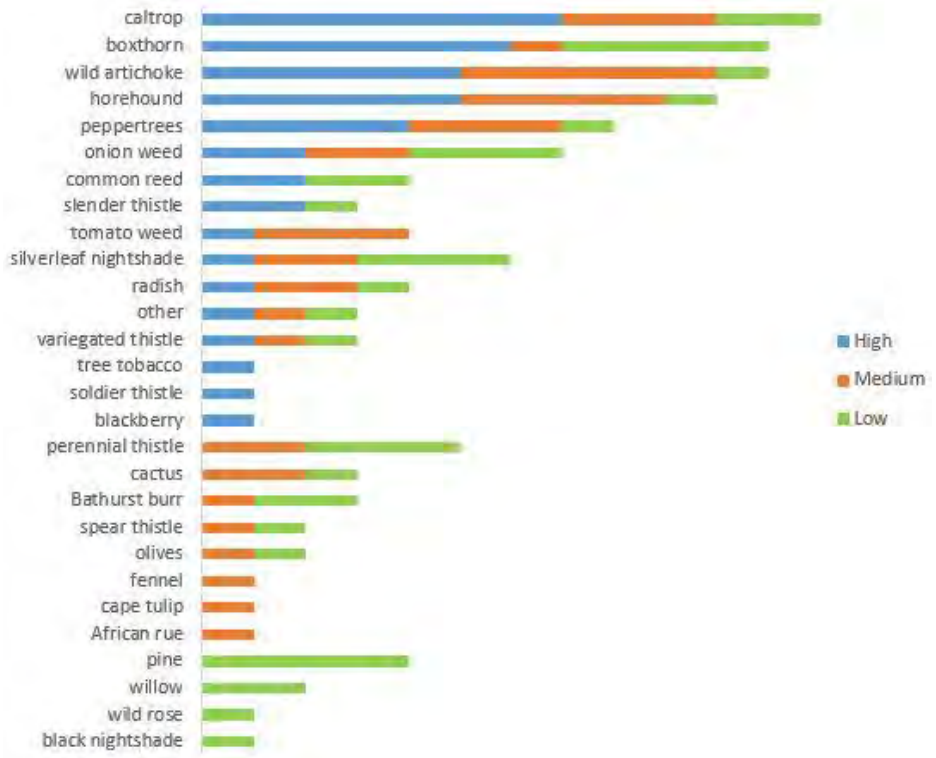




Declining river flow, weeds, salinity and pollution from farm chemicals were seen as the biggest threats to watercourses.



Caltrop, Boxthorn, Wild artichoke and Horehound were identified as the highest priority weeds



Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Controlling weeds and balancing the number of reed beds and waterholes were the highest priority watercourse management objectives

Lack of community knowledge to plan actions, funds, outside impacts and community awareness and information were identified as the main barriers to watercourse management.

What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

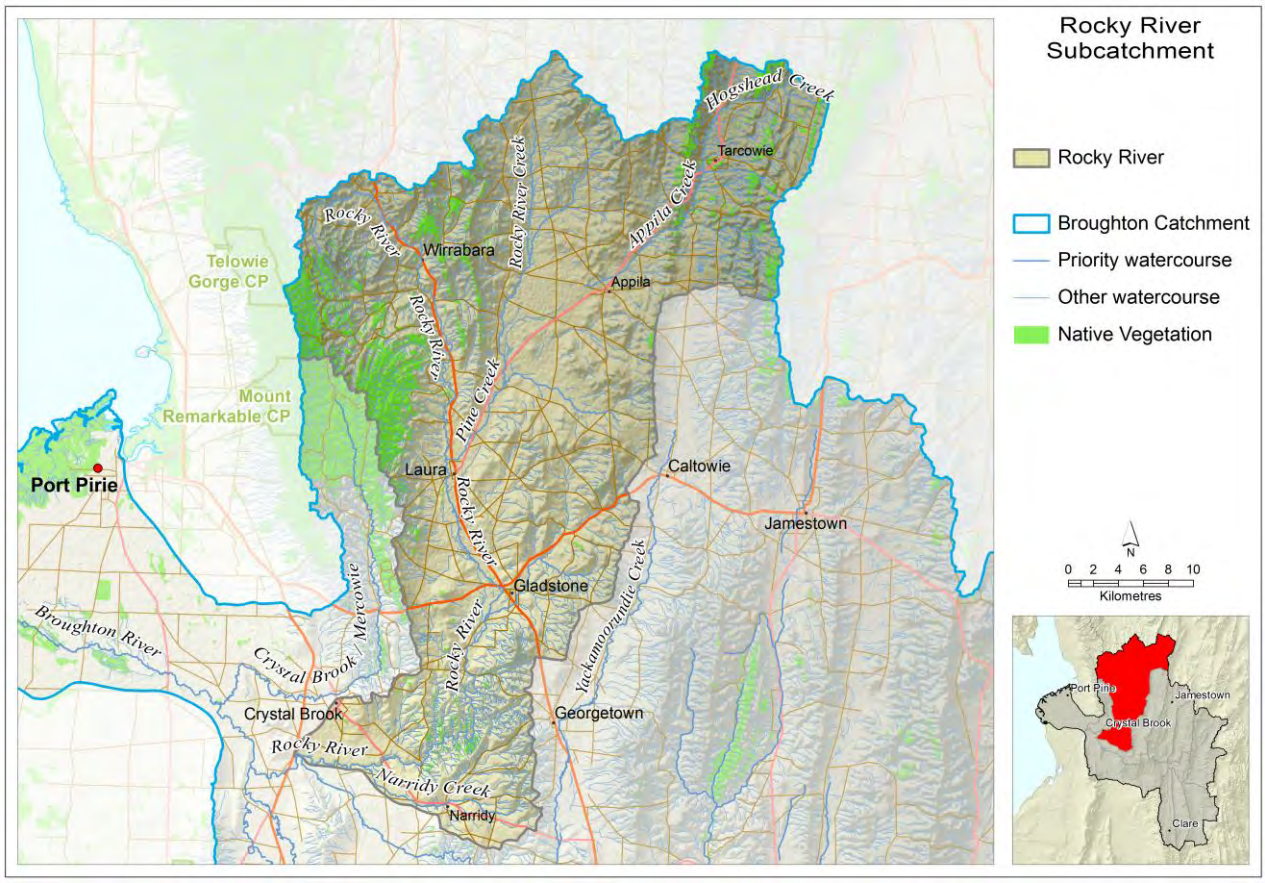
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Rocky River sub-catchment – our natural resources and management priorities

The Rocky River sub-catchment (1351 km^2) is located in the north of the Broughton River catchment. The Rocky River flows south from the Southern Flinders Ranges near Wirrabara to join the Broughton River south of Crystal Brook. Cropping and grazing are the main land uses in the sub-catchment.

Rocky River, Appila Creek, Pine Creek and Narridy Creek are the main watercourses in the sub-catchment.



Natural assets identified for protection in the Rocky River sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including river red gums, permanent pools, Wirrabara township, Wirrabara forest, Appila Springs, macroinvertebrates, and peppermint box.

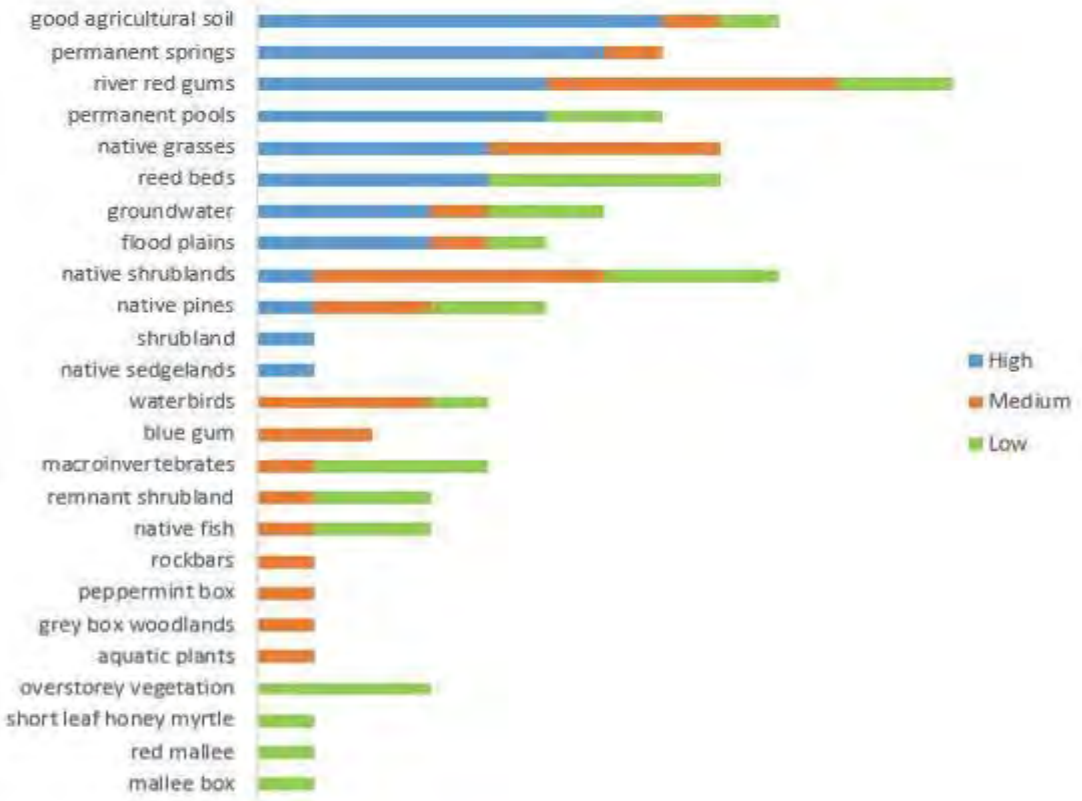
Permanent pools are an important part of the Rocky River sub-catchment.

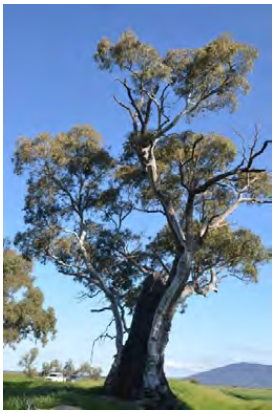
The township of Wirrabara is an important asset in the Rocky River sub-catchment.

Rocky River					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Appila Creek - Peppermint box	Tree health		x		
Appila Springs	Health and condition		x		
Pine Creek – remnant shrubland	Vegetation condition		x		
River red gums	Tree health			x	
Macroinvertebrates	Diversity		x		
Permanent pools	Health and condition		x		
Wirrabara	Health and condition		x		
Wirrabara Forest	Tree health			x	
Pisant Creek – native pines	Tree health		x		
Pisant Creek – Mallee box	Tree health		x		
Pisant Creek – permanent springs	Health and condition		x		
Pisant Creek – Red mallee	Tree health	x			
Gladstone	Health and condition	x			
Laura	Health and condition		x		
Native fish	Diversity and abundance		x		
Sedgelands	Vegetation condition		x		
Rocky River gorge	Health and condition			x	
Thredgold's Crossing gauging station	Health and condition		x		

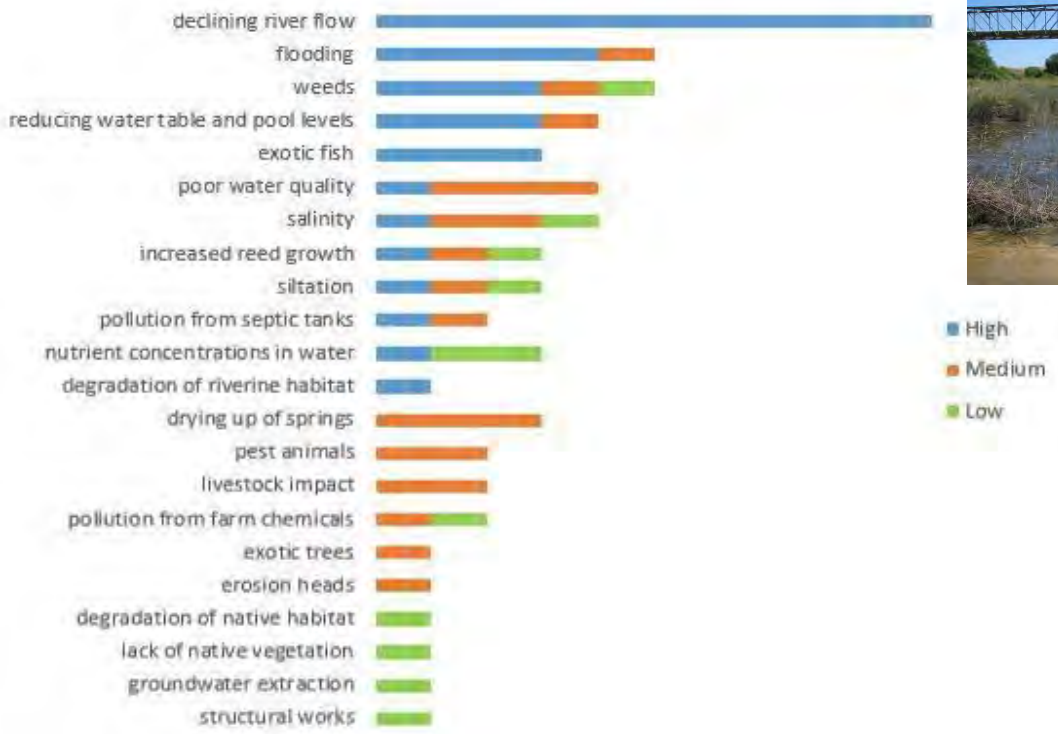
In 2014-15, a survey provided more details on what the community valued in the sub-catchment and what threats they saw to our natural resources.

Good agricultural soil, river red gums, native grasses, and permanent springs were valued most highly by the community.

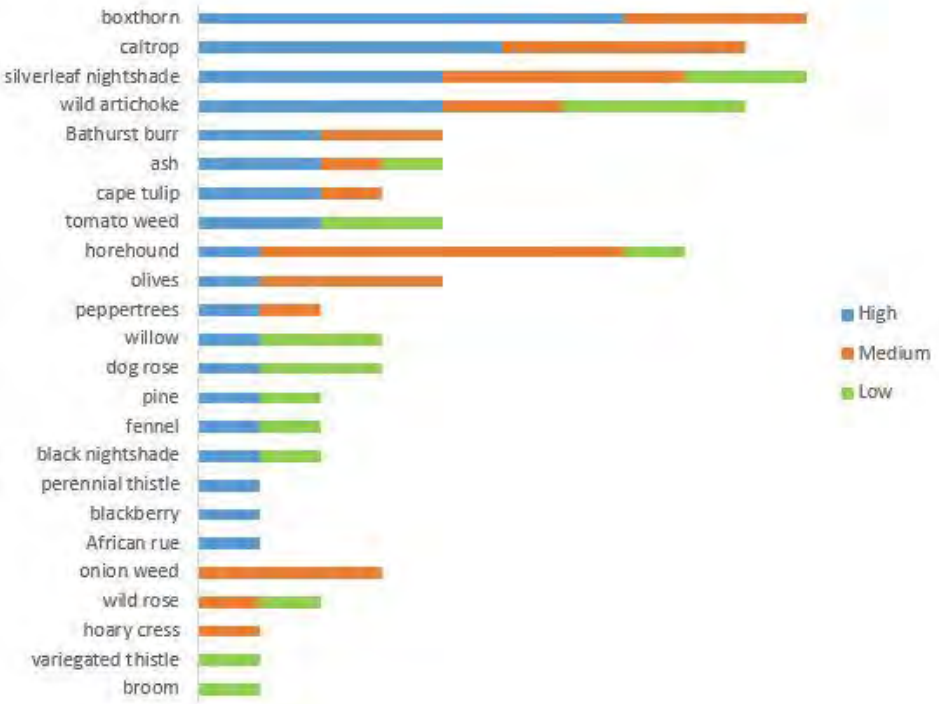




Declining river flow, reducing water table and pool levels, weeds and flooding were identified by the community as the biggest threats to watercourses.

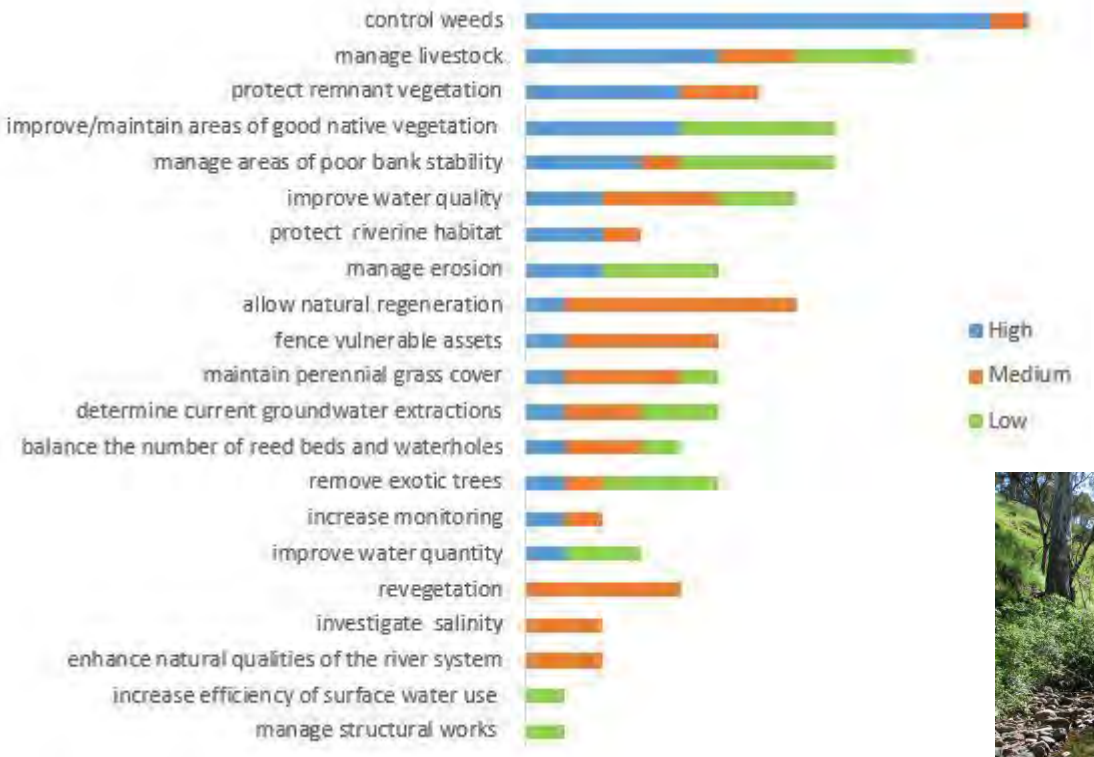


Boxthorn, Caltrop and Silver-leaf nightshade were identified as the most problematic weeds threatening watercourses.

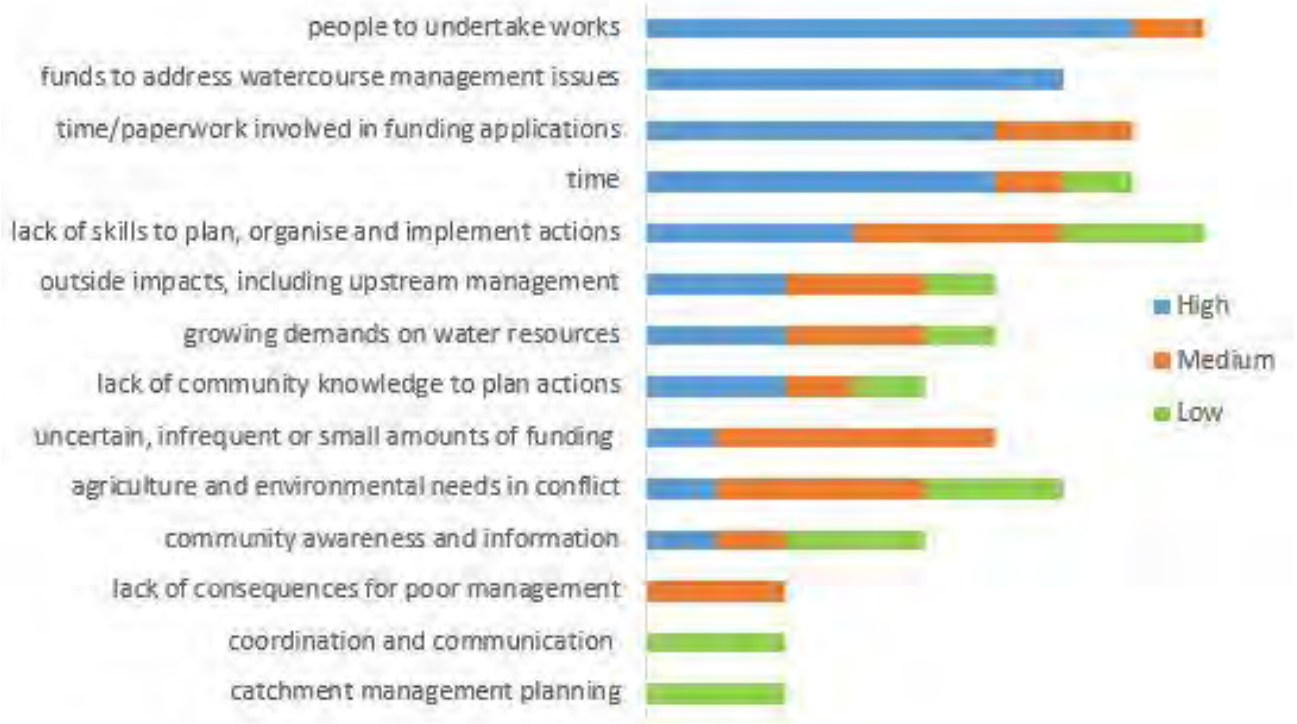


Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Controlling weeds, managing livestock and protecting remnant vegetation were the highest community priorities for managing our river systems.



Finding people to undertake works, funding and time were seen as the biggest barriers to effective management of watercourses in the Rocky River sub-catchment.



What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

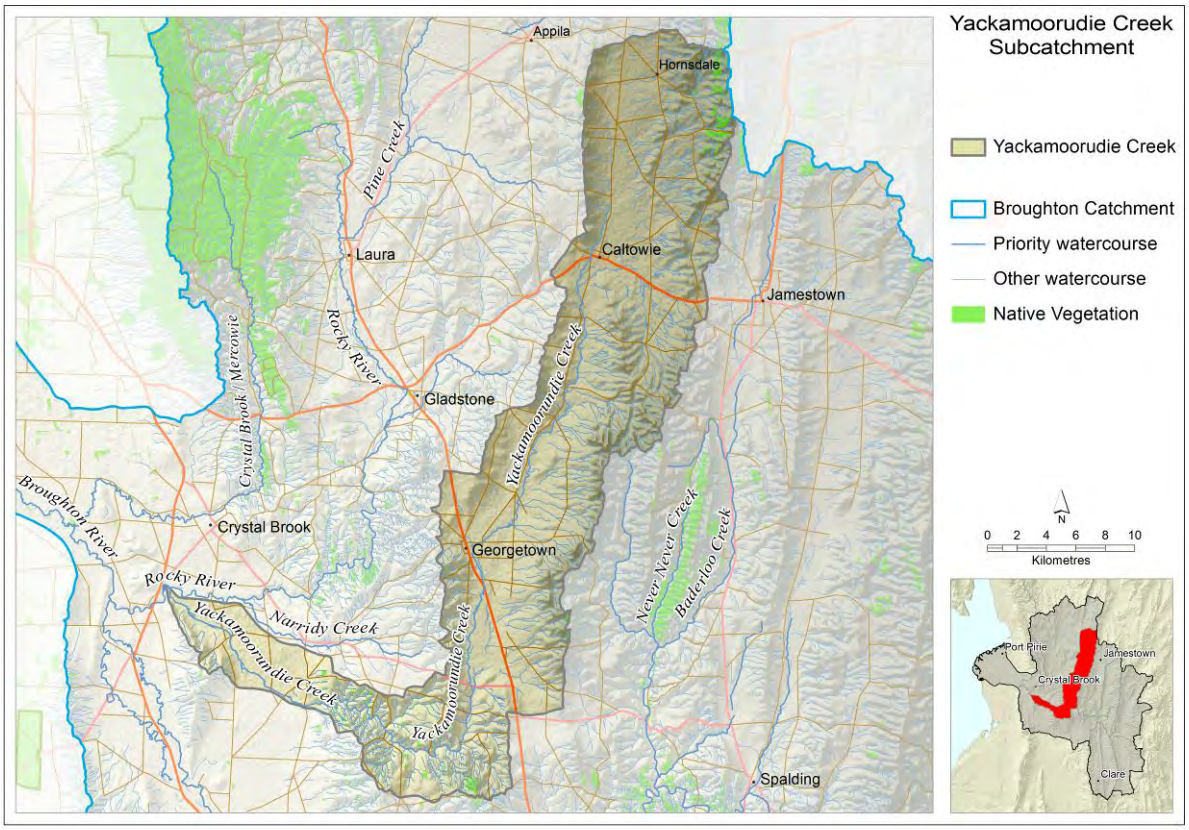
Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Yackamoorundie Creek sub-catchment – our natural resources and management priorities

The Yackamoorundie Creek sub-catchment (557 km^2) is located in the centre of the Broughton River catchment. Grazing and cropping are the dominant land uses in the sub-catchment, and there is also urban development within the townships of Caltowie and Georgetown. Yackamoorundie Creek flows south before turning sharply west through a gorge and joining the Broughton River.

Yackamoorundie Creek is the main watercourse in the sub-catchment.



Natural assets identified for protection in the Yackamoorundie Creek sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Broughton Catchment in 2004, including permanent pools, sedgelands, blue gums, shrublands, and river red gums.

Shrublands are a central feature of the sub-catchment.

Yackamoorundie Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Permanent pools	Health and condition		x		
River red gums	Tree health			x	
Shrublands	Vegetation condition		x		
Sedgelands	Vegetation condition		x		

In 2014-15, a survey provided more details on what the community valued in the sub-catchment and what threats they saw to our natural resources.

River red gums, native grasses and good agricultural soil were seen as a high priority in the sub-catchment.

A reduction in pool and water table levels, weeds and erosion heads were identified as the biggest threats to watercourses by the community.

Silver-leaf nightshade and Boxthorn were identified as the most problematic weeds threatening watercourses.

Silver-leaf nightshade was identified as a problem weed threatening watercourses

Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchments as well as the barriers that might prevent good management.

Controlling weeds, managing erosion and managing areas of poor bank stability were the highest community priorities for managing our river systems.

Conflicts between agricultural and environmental needs along with a lack of, or uncertainty around, funds were seen as the biggest barriers to effective management of watercourses.

What's next

You can still contribute to our research by providing comment on our findings using the contact information below. We've had more than 100 participants so far and would like your support to get as much feedback as possible from the people who live, work and play in the Broughton River catchment area.

Your feedback will be used to help develop a new Strategic Plan for the Northern and Yorke region.

For more information please contact:

Natural Resources Centre – Clare
Unit 2/17 Lennon Street,
Clare SA 5453
Email: DEWNR.NRNY@sa.gov.au

Ph: (08) 8841 3400
Hours: Monday-Friday, 9am-5pm

Appendix A
Community Survey

Four Rivers Survey

SETTING THE PRIORITIES FOR ACTION IN THE SOUTHERN FLINDERS AND NORTHERN MT LOFTY RANGES CATCHMENTS

The Four Rivers Project is currently developing catchment action plans for the four catchments within the Southern Flinders and Northern Mt Lofty Ranges. We're reviewing information collected from the community 10–15 years ago when the last river management plans were developed, and we'd like your help to find out if this information is still accurate.

We've identified a list of watercourse assets, threats to these assets and management actions that could be used to address them. We would like your feedback to see if these are still relevant, which issues are most important and if there are any new issues we need to address.

Your local knowledge and understanding of the river is an invaluable source of information and we would appreciate your input and time in completing this survey. We will use the information collected to help guide the development of catchment action plans and prioritise on-ground works in the region. Thank you for your ongoing support.

Name (optional) _____ **Email** (optional) _____

Landholder: □ town □ farm □ other_____

What is the closest river or creek to your property? _____-

Which catchment and sub-catchment is your property located in? Please tick.

Broughton

- □ Hutt and Hill Rivers
- □ Booborowie & Baldry Creeks
- □ Freshwater & Bundaleer Creeks
- □ Yackamoorundie Creek
- □ Rocky River
- □ Crystal Brook Creek
- □ Lower & Mid Broughton River

Wakefield

- □ Upper Wakefield River
- □ Eyre Creek
- □ Pine & Rices Creeks
- □ Skillogalee Creek
- □ Hermitage & Woolshed Flat creeks
- □ Lower Wakefield River

Light

- □ Upper Light
- □ Mid Light
- □ Lower Light
- □ Gilbert

Willochra

- □ Beautiful Valley & Spring Creeks
- □ Wild Dog, Booleroo & Old Booleroo Creeks
- □ Mt Brown Creeks
- □ Amyton & Coonatto Creeks
- □ Pichi Richi & Mt Arden Creeks
- □ Wallaby & Boolcunda Creeks
- □ Kanyaka & Willochra Creeks

Within your sub-catchment, rate your 10 most important assets from 1 to 10, where 1 is the most important.

- ☐ other_____
- ☐ aquatic plants
- ☐ blue gum
- ☐ chenopod shrubland
- ☐ estuary
- ☐ flood diversions
- ☐ flood plain swamps
- ☐ flood plains
- ☐ flood-out plain
- ☐ good agricultural soil
- ☐ gorge
- ☐ grey box woodlands
- ☐ groundwater
- ☐ lignum
- ☐ macroinvertebrates
- ☐ maireana
- ☐ mallee box
- ☐ mangroves
- ☐ native fish
- ☐ native grasses
- ☐ native pines
- ☐ native sedgelands
- ☐ native shrublands
- ☐ overstorey vegetation
- ☐ peppermint box
- ☐ permanent pools
- ☐ permanent springs
- ☐ red mallee
- ☐ reed beds
- ☐ remnant shrubland
- ☐ riffles
- ☐ river red gums
- ☐ rockbars
- ☐ samphire
- ☐ short leaf honey myrtle
- ☐ shrimp
- ☐ shrubland
- ☐ spalding brown grass
- ☐ waterbirds
- ☐ white box woodlands
- ☐ other_____
- ☐ other_____

Within your sub-catchment, rate your 10 main threats to watercourses from 1 to 10, where 1 is the most important.

- ☐ other_____
- ☐ declining river flow
- ☐ flooding
- ☐ reduction of water table and pool levels
- ☐ poor water quality
- ☐ pollution from septic tanks
- ☐ pollution from farm chemicals
- ☐ nutrient concentrations in water
- ☐ drying up of springs
- ☐ salinity
- ☐ siltation
- ☐ structural works causing or threatened by erosion
- ☐ erosion heads
- ☐ exotic trees
- ☐ weeds
- ☐ livestock impact
- ☐ pest animals
- ☐ exotic fish
- ☐ groundwater extraction
- ☐ uncontrolled development
- ☐ dams
- ☐ lack of native vegetation
- ☐ degradation of riverine habitat
- ☐ degradation of native habitat
- ☐ loss of animal habitat
- ☐ increased reed growth
- ☐ cultivation of riparian land and watercourses
- ☐ flood irrigation
- ☐ other _____

If you identified weeds or exotic trees as a threat, please rate your top 10 weeds from 1 to 10, where 1 is the most important.

- ☐ other_____
- ☐ African rue
- ☐ ash
- ☐ Bathurst burr
- ☐ black nightshade
- ☐ blackberry
- ☐ boxthorn
- ☐ broom
- ☐ cactus
- ☐ caltrop
- ☐ cape tulip
- ☐ castor oil plant
- ☐ common reed
- ☐ dog rose
- ☐ fennel
- ☐ fruit trees
- ☐ gorse
- ☐ hoary cress
- ☐ horehound
- ☐ olives
- ☐ onion weed
- ☐ peppertrees
- ☐ perennial thistle
- ☐ pine
- ☐ radish
- ☐ silverleaf nightshade
- ☐ slender thistle
- ☐ soldier thistle
- ☐ spear thistle
- ☐ tomato weed
- ☐ tree tobacco
- ☐ variegated thistle
- ☐ wild artichoke
- ☐ wild rose
- ☐ willow
- ☐ other_____
- ☐ other_____

Within your sub-catchment, rate your 10 most important watercourse management objectives from 1 to 10, where 1 is the most important.

- ☐ other _____
- ☐ protect important riverine habitat
- ☐ manage livestock
- ☐ improve/maintain areas of good native vegetation
- ☐ protect remnant vegetation
- ☐ control weeds
- ☐ increase monitoring
- ☐ revegetate for habitat conservation and erosion control
- ☐ improve water quality
- ☐ enhance natural qualities and characteristics of the river system
- ☐ improve water quantity
- ☐ maintain a balance between reed beds and waterholes in the river system
- ☐ remove exotic trees
- ☐ undertake engineering works
- ☐ investigate dryland, groundwater and surface water salinity
- ☐ maintain perennial grass cover
- ☐ fence vulnerable assets
- ☐ allow natural regeneration
- ☐ manage areas of poor bank stability
- ☐ manage erosion
- ☐ manage structural works causing or threatened by erosion
- ☐ remediate inefficient groundwater use practices
- ☐ remediate inefficient surface water use practices
- ☐ determine current groundwater extractions
- ☐ protect migration flows
- ☐ other _____

Within your sub-catchment, rate your 10 main barriers to managing watercourse issues from 1 to 10, where 1 is the biggest barrier.

- ☐ other_____
- ☐ lack of community awareness, knowledge and information
- ☐ lack of community knowledge and information to plan actions
- ☐ lack of necessary skills for planning, organising and implementing actions
- ☐ lack of funds to address watercourse management issues
- ☐ lack of people to undertake works
- ☐ amount of time and paperwork involved in funding applications
- ☐ uncertainty, infrequency or small size of funding available
- ☐ growing demands on water resources
- ☐ conflicts between agricultural use and environmental needs
- ☐ lack of time to address watercourse management
- ☐ inadequate/insufficent amount and scale of catchment management planning
- ☐ lack of coordination and communication between organisations and individuals involved in water resource management
- ☐ lack of social and regulatory consequences for poor watercourse management
- ☐ outside impacts, including upstream management impacting on downstream health
- ☐ other_____

Thank you for your input on sub-catchment management priorities.

Now, please think about the priorities for the *catchment* as a whole.

At a catchment scale, identify the top three actions that you would like to see taken within your catchment.

1._____

_____

2._____

_____

3._____

_____

Please provide any other input on watercourse priorities that you believe will help in planning and prioritisation. _____

_____

_____

_____

Any other comments

_____

_____

_____

Thank you for participating in the Four Rivers survey.

For more information

Jennifer Munro

NRM Water Officer
P 0429 362 008

E jennifer.munro@sa.gov.au

www.nynrm.sa.gov.au