Wakefield River Catchment Action Plan

Natural Resources
Northern & Yorke

Government of South Australia

Introduction

The Wakefield 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 report, 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 Wakefield 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 ten years.

The Wakefield catchment

The Wakefield catchment is in the Mid North region of South Australia, approximately 100 kilometres north of Adelaide and covers around 690 square kilometres.

The Wakefield River is one of the three main ephemeral rivers in the Mid North and the catchment is flanked by the catchments of the Broughton River to the north and Light River to the south. The Wakefield River originates near Manoora and flows westerly towards Mintaro before diverting in a southerly direction through Auburn before turning west to flow through Balaklava and into the Port Wakefield estuary. Its major tributaries are the Eyre, Skillogalee, Pine, Rices, Hermitage and Woolshed Flat Creeks.

The most intensive use of groundwater and surface water resources is in the Clare Valley for viticulture. Outside of the Clare Valley water is mainly used for stock and domestic purposes.

The catchment is an ephemeral system characterised by irregular flows and long dry intermediate periods. Rainfall in the Wakefield catchment is heavily influenced by topography. The elevation ranges from sea level to approximately 600 m above sea level in the upper catchment. East of Halbury, the northern Mount Lofty Ranges are the dominant topographic feature and form a series of north-south ridgelines. Mt Horrocks, at 610 m is the highest point in the catchment and defines the headwaters for the Skillogalee and Eyre Creeks. In the coastal flats from Port Wakefield to Balaklava the average annual rainfall is approximately 300 mm. Eastwards from these plains the rainfall increases to 660 mm around Watervale, a region of higher elevation and rainfall that supplies most of the water to the river.

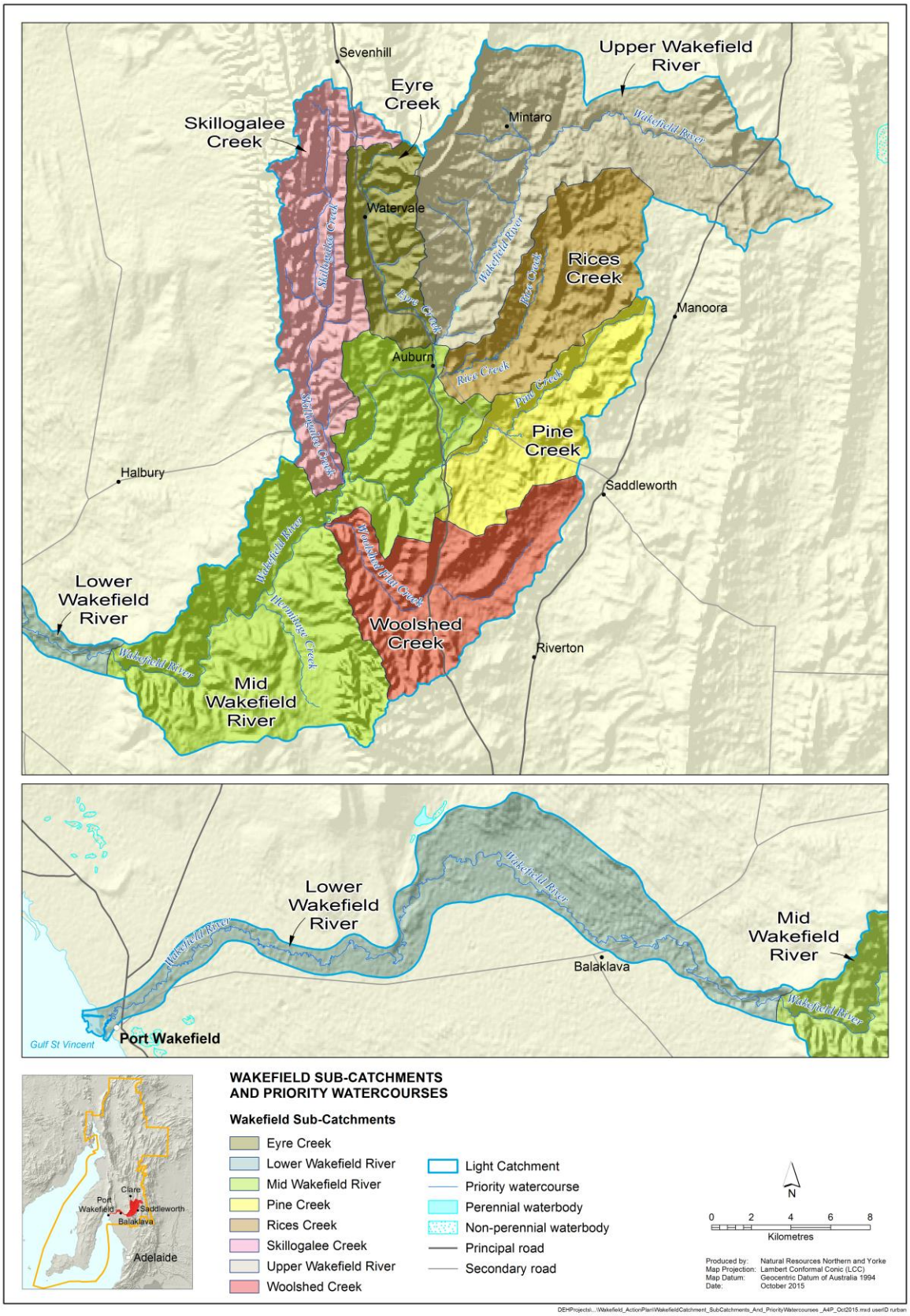
Most of the Wakefield catchment has undergone significant vegetation change since agricultural development. Mallee scrub has been extensively cleared on the coastal and inland plains, as has grassy woodland and grassland vegetation in the ranges. Rabbits, weeds, woodcutting and grazing have degraded remnant native vegetation, particularly the understorey and annual grasses and weeds have replaced most understorey species.

Five types of native watercourse vegetation have been identified in the catchment: riverine forests and woodlands; riverine shrublands; sedgelands; samphire marshes; and submerged aquatic vegetation.

Edited by: Jennifer Munro, Water Officer, Natural Resources Northern and Yorke, 2017.

Photo credits: J Munro, NRNY, PIRSA

The Wakefield catchment is divided into eight sub-catchments



Your say

More than 160 participants provided feedback on watercourse management issues and objectives through a survey (Appendix A) posted to landholders and discussed at community workshops and meetings across the catchment.

River red gums, good agricultural soil, permanent springs and waterbirds were ranked by the community as the highest priority assets for watercourses across the catchment.

The community identified the main concerns as weeds; declining river flow; drying up of spring; and reduction of water table and pool levels. Wild artichoke, boxthorn, onion weed, horehound and silverleaf nightshade were the highest priority weeds.

Not surprisingly, weed control was considered the most important watercourse management objective, followed by protecting remnant vegetation; improving/maintaining areas of good native vegetation; protecting important riverine habitat; and enhancing the natural qualities and characteristics of the river system.

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

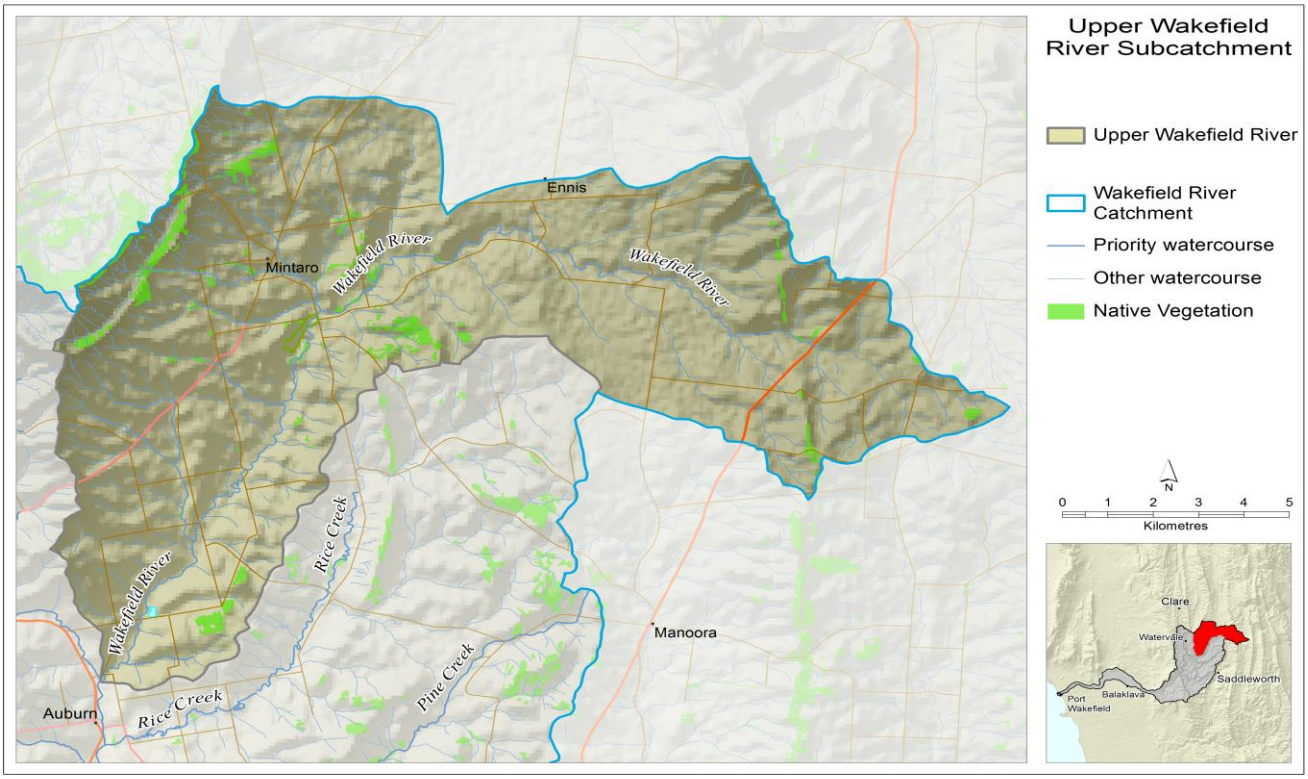
The watercourse management priorities and issues of each individual sub-catchment are presented in the following chapters and will inform the development of the new Northern and Yorke Strategic Plan, currently underway.

Permanent springs are an important part of the Wakefield Catchment

Upper Wakefield River sub-catchment – our natural resources and management priorities

The Upper Wakefield River sub-catchment (144.2 km^2) is at the top of the Wakefield catchment. Cropping and grazing are the dominant land uses within the sub-catchment, with viticulture along the Wakefield River below its confluence with Honeysuckle Creek. The section of the Wakefield River above its confluence with Wookie Creek has a 'chain of ponds' morphology. There is typically a series of well vegetated permanent pools that are connected by small channels.

The Wakefield River, Wookie Creek, Kadlunga Creek and Honeysuckle Creeks are the main watercourses that drain the sub-catchment.



Natural assets identified for protection in the Upper Wakefield River sub-catchment

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Wakefield Catchment in 2000 and include the Wakefield River at Auburn and the Kadlunga Creek at Mintaro and Mt Horrocks.

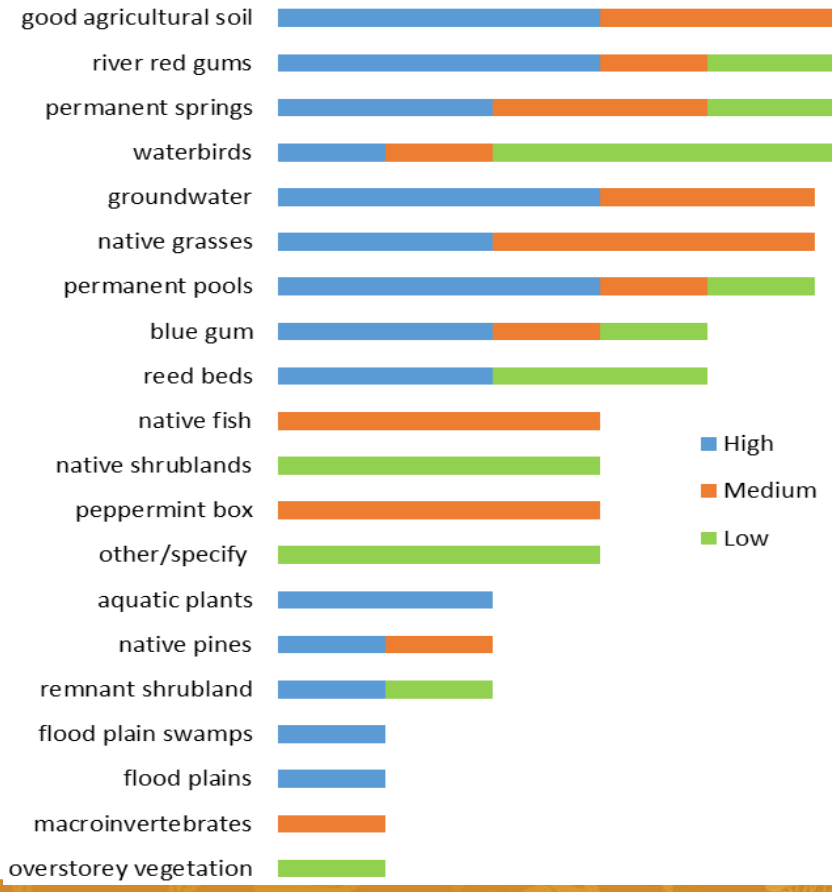
Auburn is an important asset to the Upper Wakefield River sub-catchment

Mt Horrocks is an important asset in the Upper Wakefield River sub-catchment.

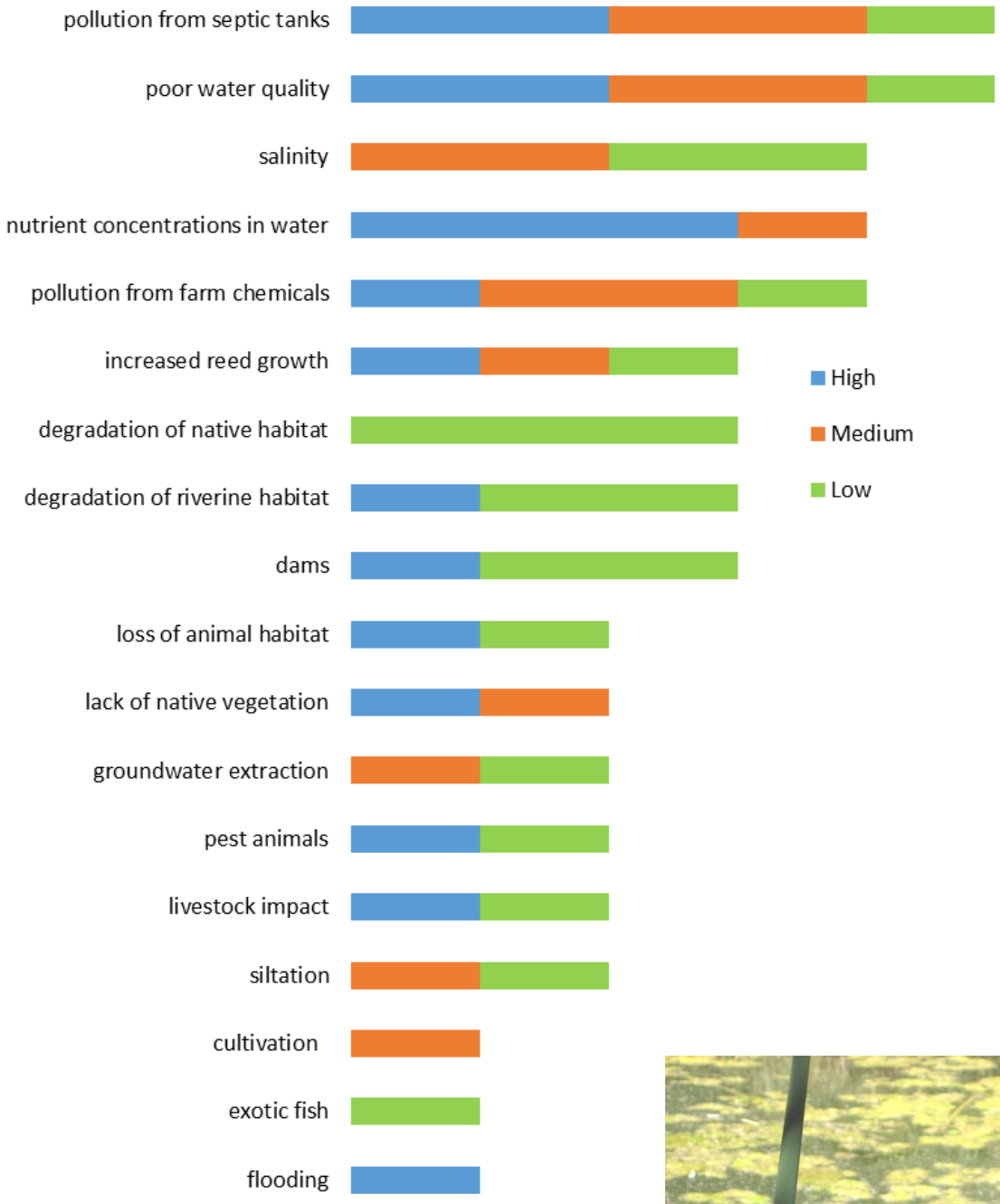
Upper Wakefield RIver					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Auburn	Vegetation condition	X			
Mintaro	Vegetation condition	X			
Mt Horrocks	Vegetation condition		X		

Since 2014, surveys have provided more detail on what the community valued in the sub-catchments and what threats they saw to our natural resources.

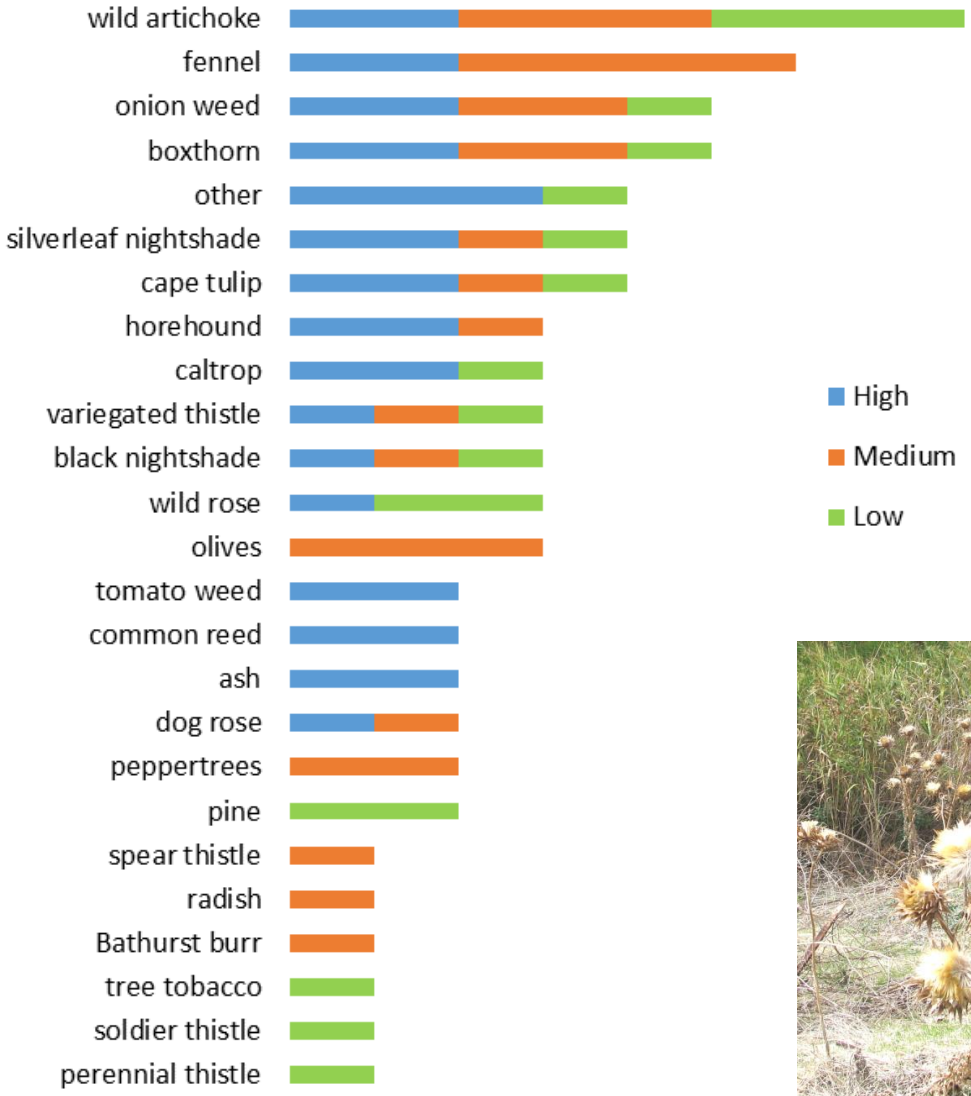
Good agricultural soil, river red gums and permanent springs were seen as the highest priority assets in the sub-catchment.



Pollution from septic tanks, poor water quality and salinity were identified as the biggest threats to watercourses by the community, along with nutrient concentrations in water and pollution from farm chemicals.

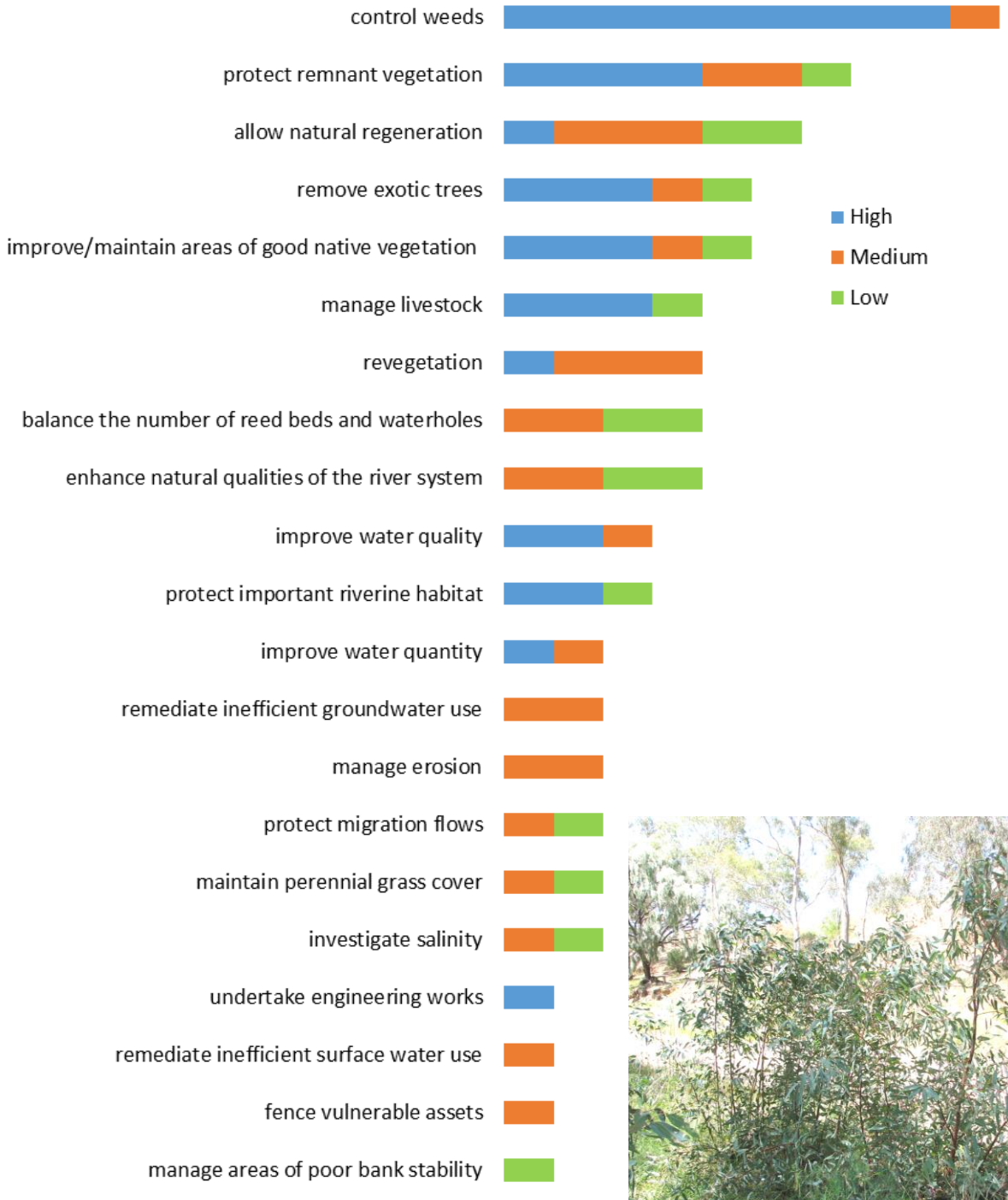


Wild artichoke, fennel, onion weed and boxthorn were identified as the most problematic weeds threatening watercourses. Other weeds not listed in the survey that were identified as a high priority were Phalaris, hawthorn, elm and Scotch thistle.

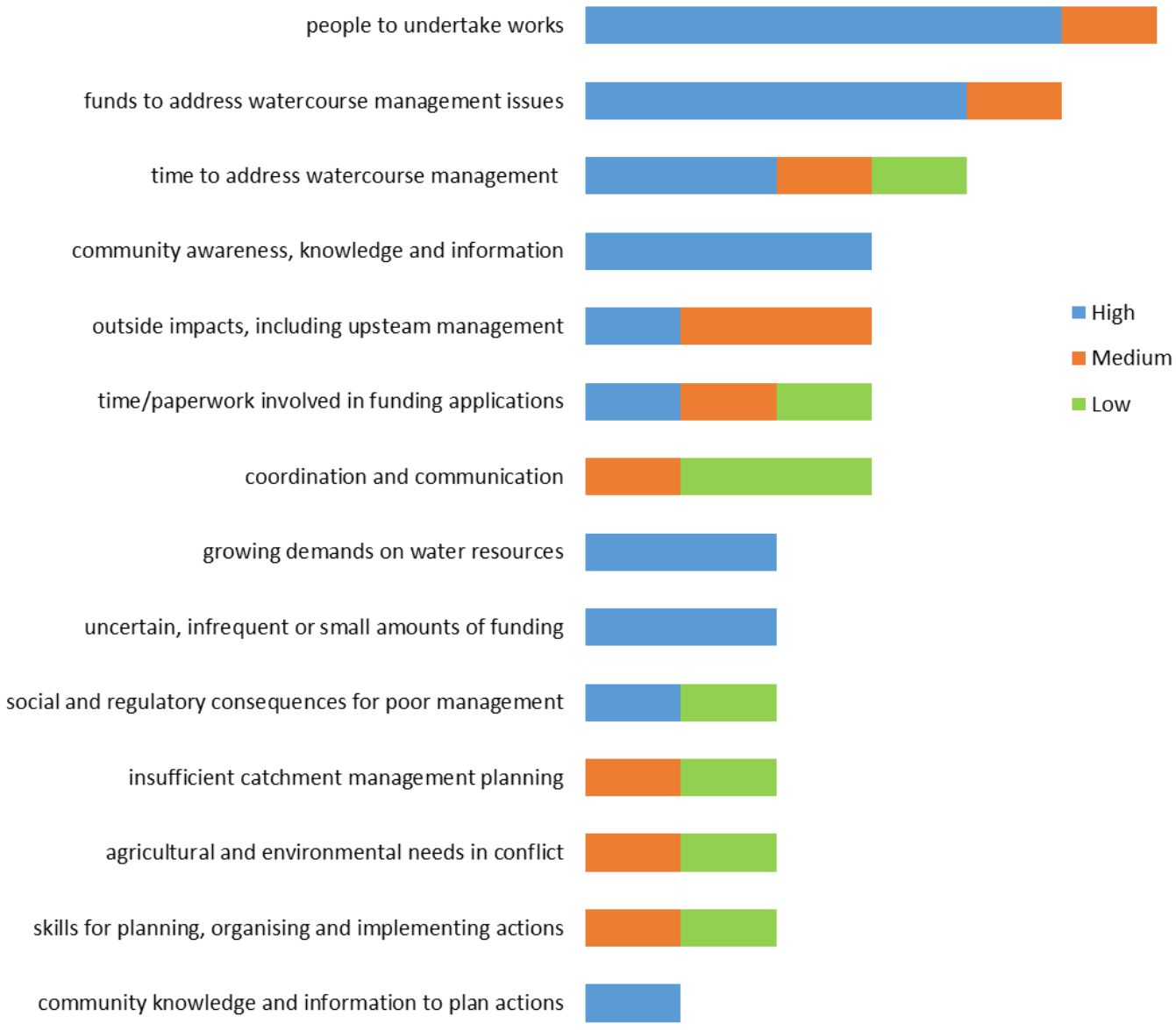


Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchment as well as the barriers that might prevent good management.

Weed control, protecting remnant vegetation and allowing natural regeneration were the highest community priorities for managing river systems in the sub-catchment.



Lack of people to undertake works, lack of funds to address watercourse management issues and lack of time to address watercourse management were seen as the biggest barriers to effective management of watercourses in the Upper Wakefield sub-catchment.



What's next

You can still contribute to our research by completing the survey (closes June 30 2017) or providing comment on our findings to DEWNR.NRNY@sa.gov.au. We've had more than 160 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 area.

Your feedback will now be used to develop a new strategic plan for the Northern and Yorke region.

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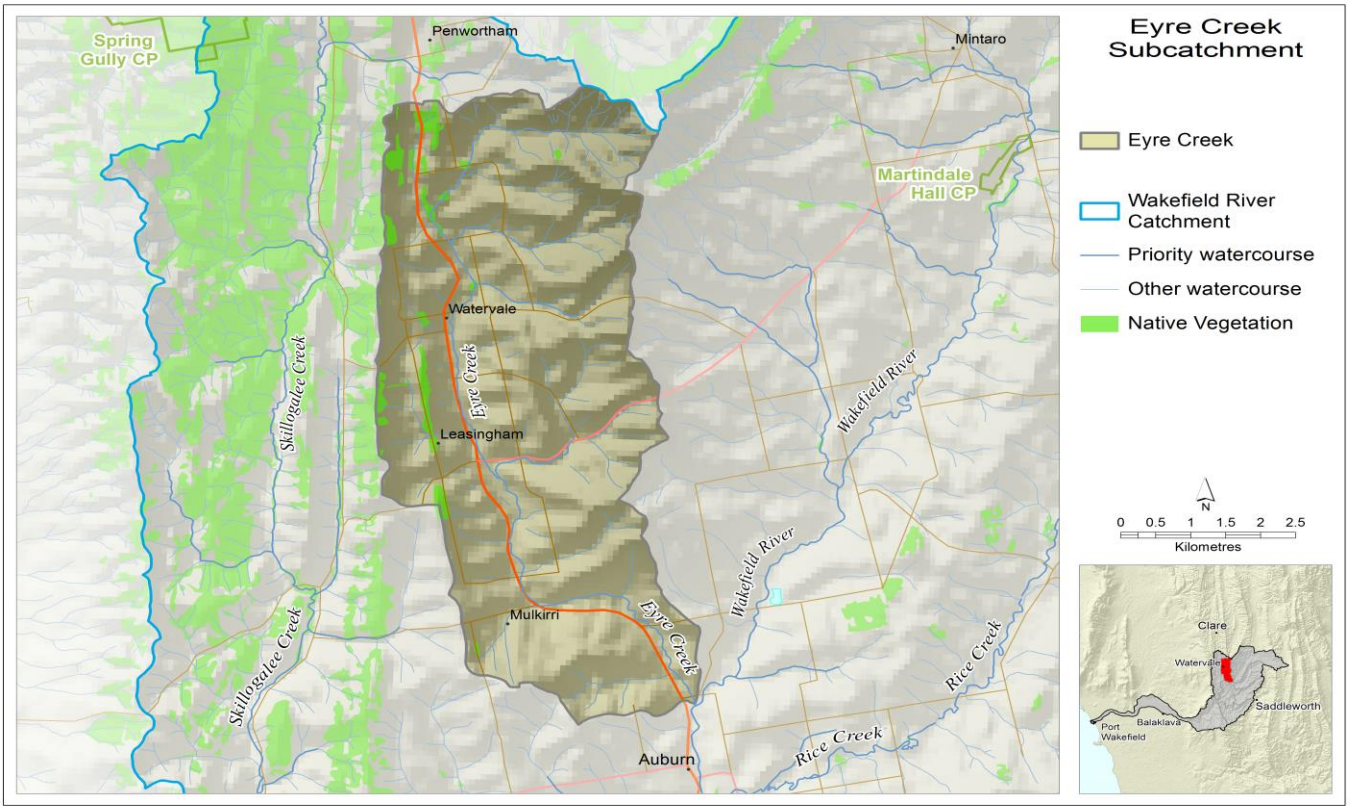
Eyre Creek sub-catchment – our natural resources and management priorities

The Eyre Creek sub-catchment (35.1 km^2) arises in the foothills of Mt Horrocks and flows in a southerly direction through the town of Watervale, joining the main channel of the Wakefield River just north of Auburn. Eyre Creek is an ephemeral stream with several small permanent pools that are groundwater dependent. Grazing, viticulture and rural-residential blocks are the main land uses in the catchment.

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



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

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Wakefield Catchment in 2000 and include river red gums and permanent pools along the Eyre Creek as well as Watervale, Leasingham and Mt Horrocks.

The Eyre Creek at Watervale is an important part of the Eyre Creek sub-catchment.

Eyre Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Watervale	Vegetation condition	X			
Leasingham	Vegetation condition	X			
Mt Horrocks	Vegetation condition		X		
River red gums	Vegetation condition		X		

Since 2014, surveys have provided more detail on what the community valued in the Eyre Creek sub-catchment and what threats they saw to our natural resources.

River red gums, flood out plains and groundwater were seen as the highest priority assets in the sub-catchment.

Declining river flow, pollution from farm chemicals and drying up of springs were identified as the biggest threats to watercourses by the community, followed by pest animals, weeds and nutrient concentrations in water.

Horehound, boxthorn and Phalaris were identified as the most problematic weeds threatening watercourses, followed by wild artichoke, pepper trees and silverleaf nightshade.

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.

Protecting remnant vegetation, protecting important riverine habitat and managing livestock were the highest priorities for managing our river system.

Lack of funds to address watercourse management issues, conflicts between agricultural use and environmental needs and lack of time to address watercourse management were seen as the biggest barriers to effective management of watercourses in the Eyre Creek sub-catchment.

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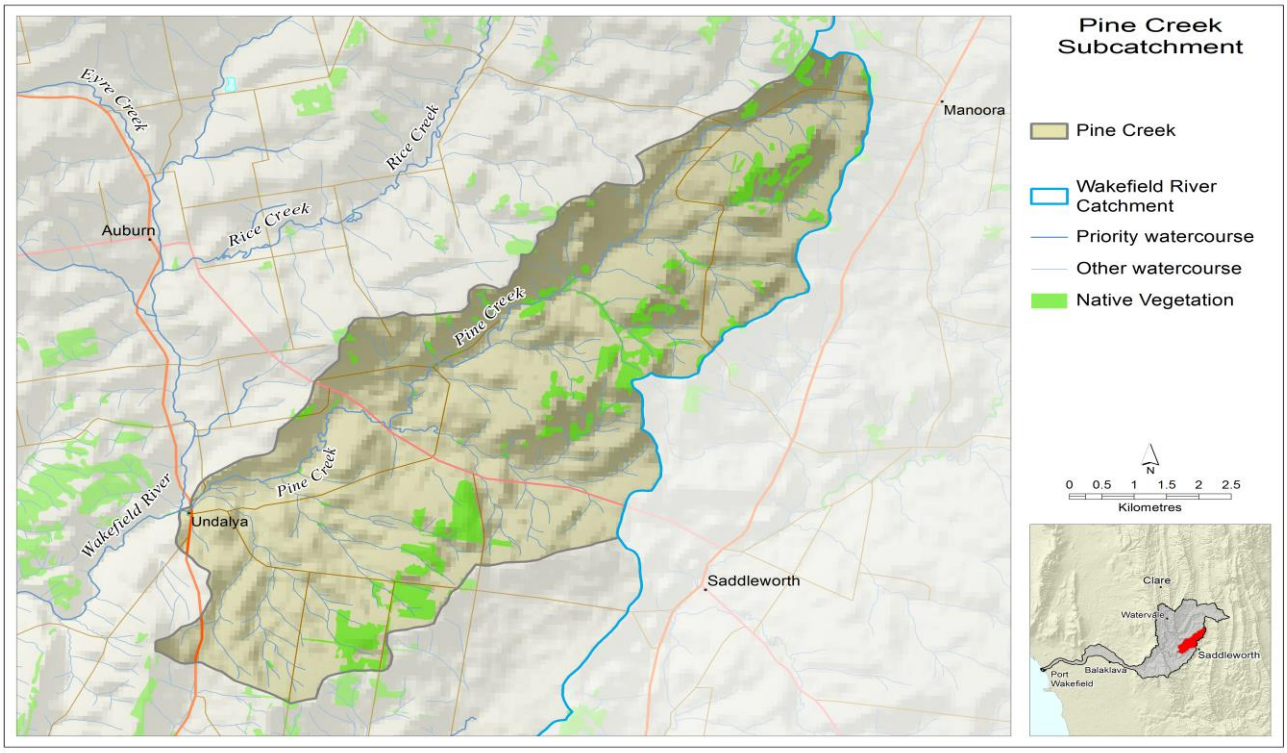
Pine Creek sub-catchment – our natural resources and management priorities

The Pine Creek (52 km^2) sub-catchment encompasses Pine Creek, which connects to the Wakefield River at Undalya. Grazing and cropping are the main land uses in the sub-catchment, with little viticulture development.

Pine Creek is an ephemeral system with some small permanent pools of water that are typically saline. The creek is a dry channel for most of the year, flowing only after heavy rain.

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



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

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Wakefield Catchment in 2000 and include blue gums, peppermint box, permanent pools and Pine Creek Hill.

Blue gums are an important part of the Pine Creek sub-catchment.

Peppermint box are an important part of the Pine Creek sub-catchment.

Pine Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Blue gums	Vegetation condition			X	
Peppermint box	Vegetation condition			X	
Pine Creek Hill	Vegetation condition			X	

Pine Creek Hill is an important part of the Pine Creek sub-catchment.

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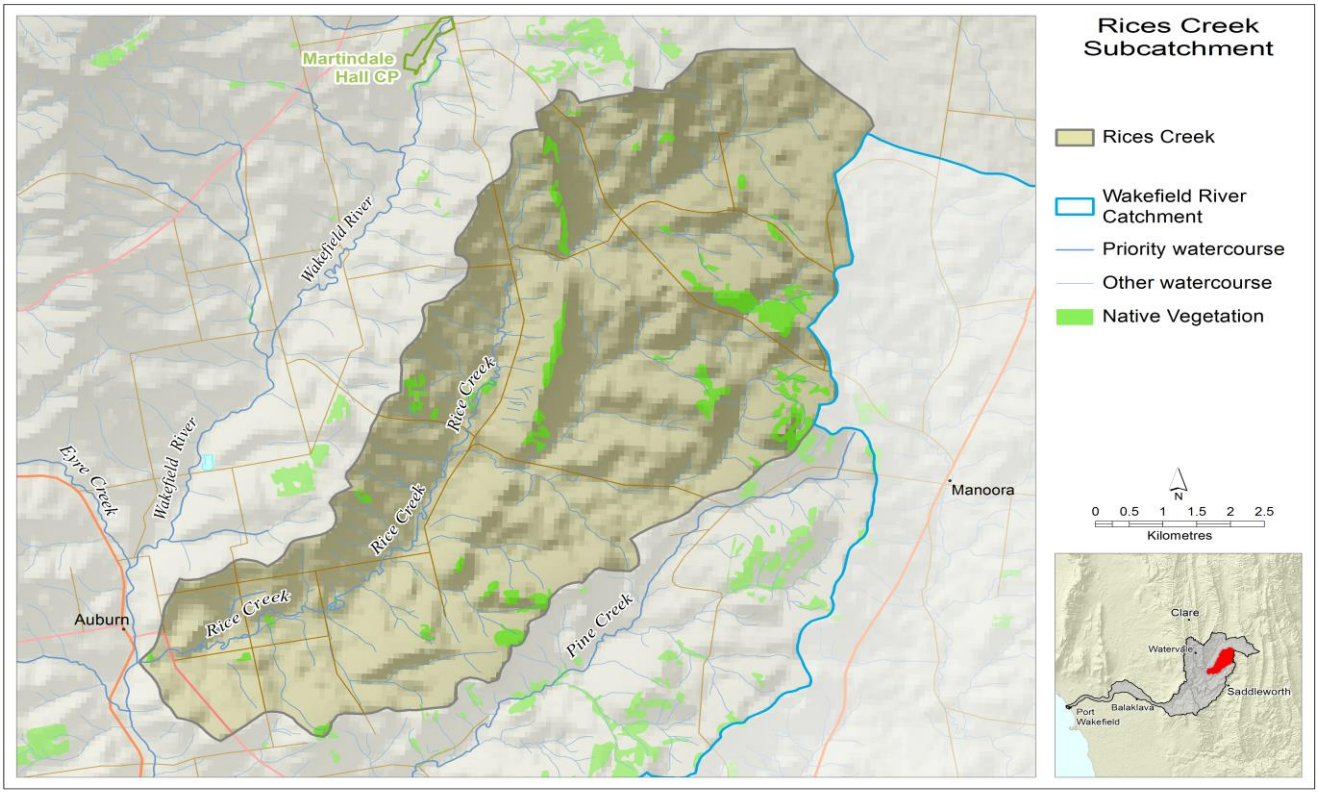
Rices Creek sub-catchment – our natural resources and management priorities

The Rices Creek (61.5 km^2) sub-catchment encompasses Rices Creek, which connects to the Wakefield River at Auburn. Grazing and cropping are the main land uses in the sub-catchment, with little viticulture development.

Rices Creek is an ephemeral system with some small permanent pools of water that are typically saline. The creek is a dry channel for most of the year, flowing only after heavy rain.

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



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

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Wakefield Catchment in 2000 and include peppermint box, river red gums, permanent pools and blue gums.

River red gums are an important part of the Rices Creek sub-catchment.

Peppermint box are an important part of the Rices Creek sub-catchment.

Rices Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Peppermint box	Vegetation condition			X	
River red gums	Vegetation condition			X	
Blue gums	Vegetation condition			X	

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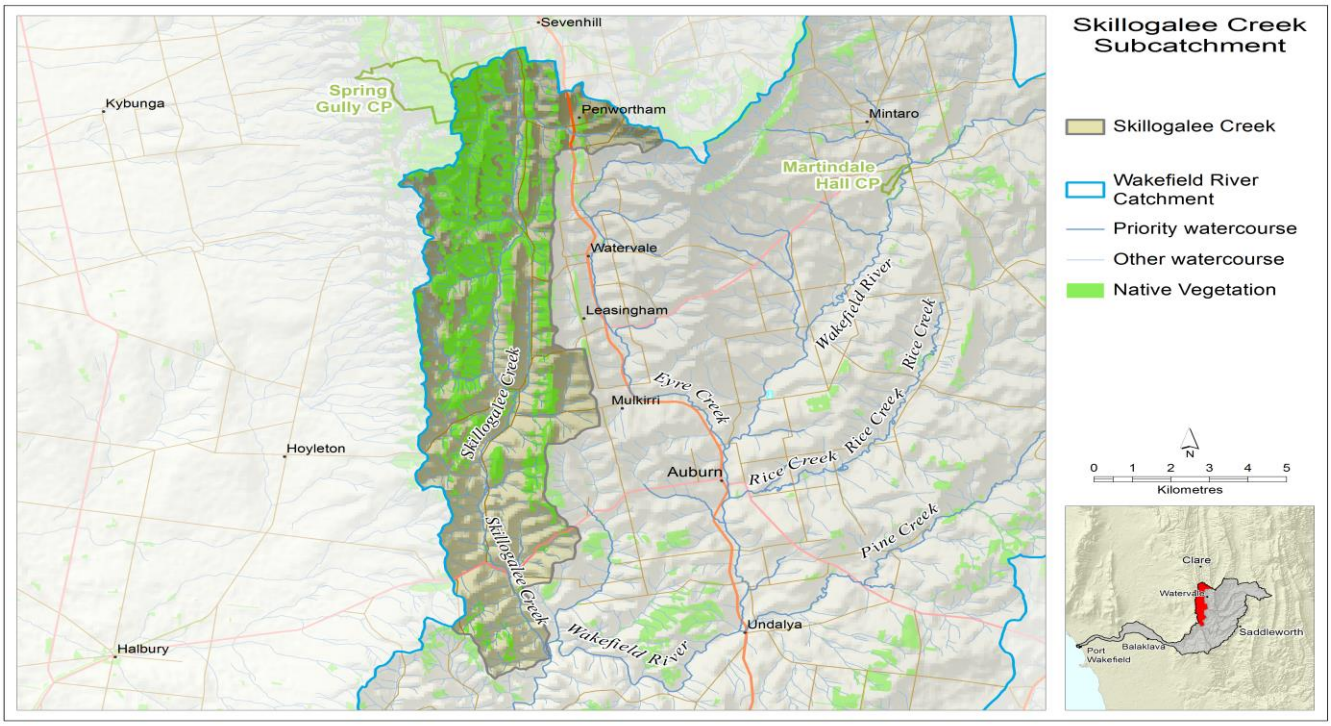
Skillogalee Creek sub-catchment – our natural resources and management priorities

The Skillogalee Creek sub-catchment (67.6 km^2) arises in the western foothills of Mt Horrocks and flows west through Penwortham before changing course and flowing in a southerly direction to its confluence with the main channel of the Wakefield River. Skillogalee Creek is an ephemeral stream with groundwater-fed baseflows downstream of Penwortham and several large, permanent pools below the Auburn-Balaklava Road. Grazing, cropping and viticulture are the main land uses in the sub-catchment.

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



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

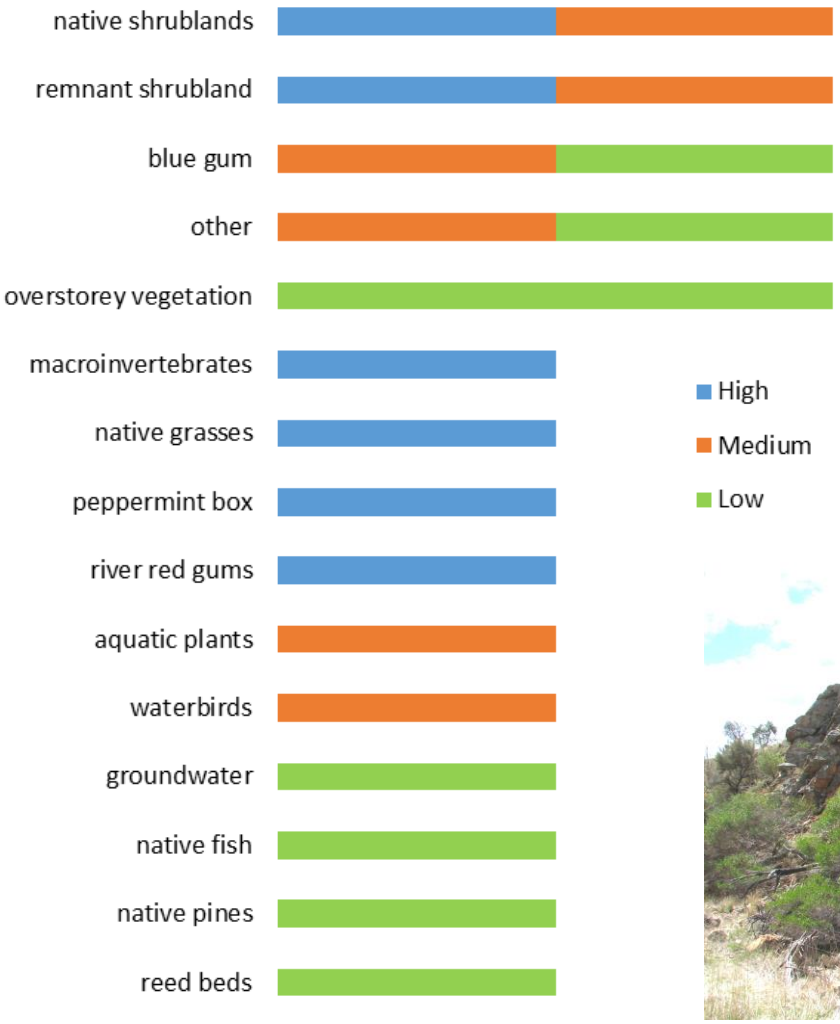
Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Wakefield Catchment in 2000. These assets include Bryans Spring, Mt Oakden, permanent pools, river red gums, Skilly Hills and the Spring Gully Conservation Park.

The Skilly Hills are an important part of the Skillogalee Creek sub-catchment.

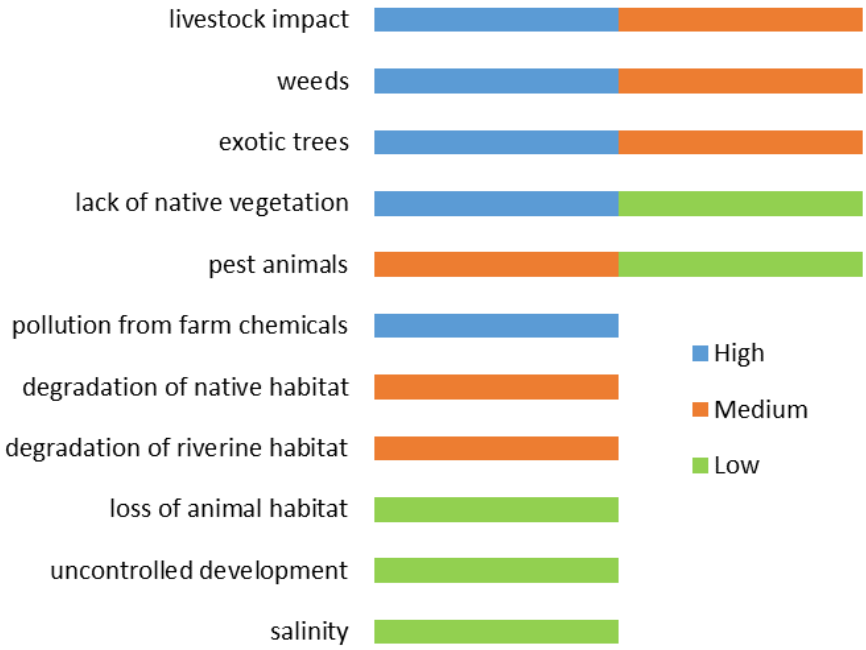
Skillogalee Creek					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Bryans Spring	Habitat condition			?	
Mt Oakden	Vegetation condition			X	
Permanent pools	Habitat condition		X		
River red gums	Vegetation condition			X	
Skilly Hills	Vegetation condition			X	
Spring Gully Cons. Pk	Vegetation condition			X	

Since 2014, surveys have provided more detail on what the community valued in the Skillogalee Creek sub-catchment and what threats they saw to our natural resources.

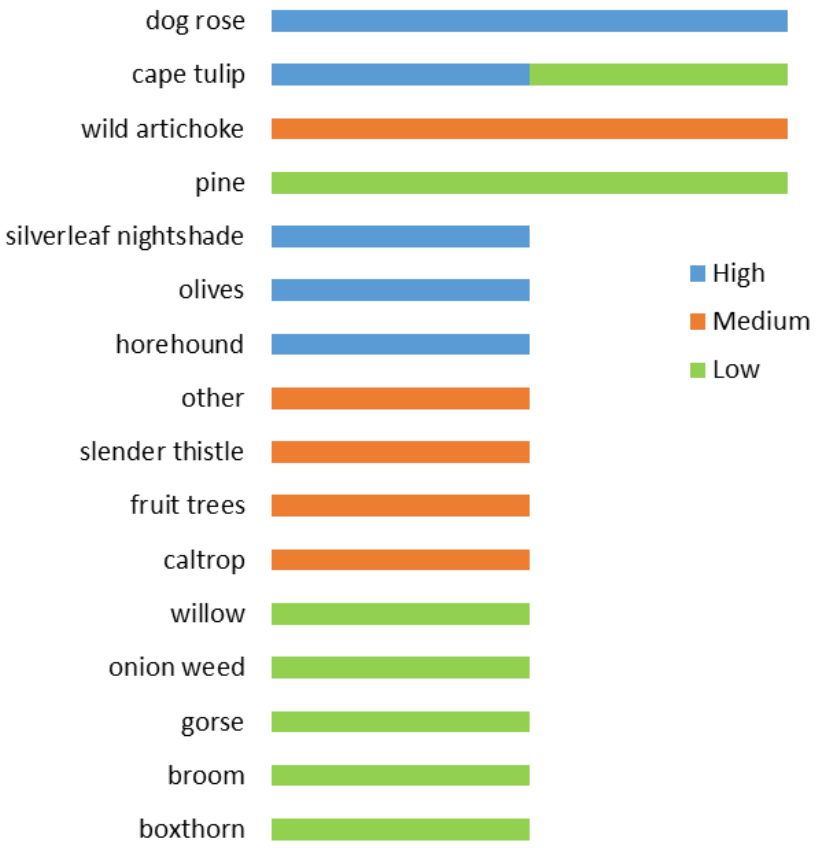
Native shrubland, remnant shrubland and blue gums, were seen as the highest priority assets in the sub-catchment. Other priorities included threatened birds and rare fauna and livestock management.



Livestock impact, weeds, exotic trees and lack of native vegetation were identified as the biggest threats to watercourses by the community.

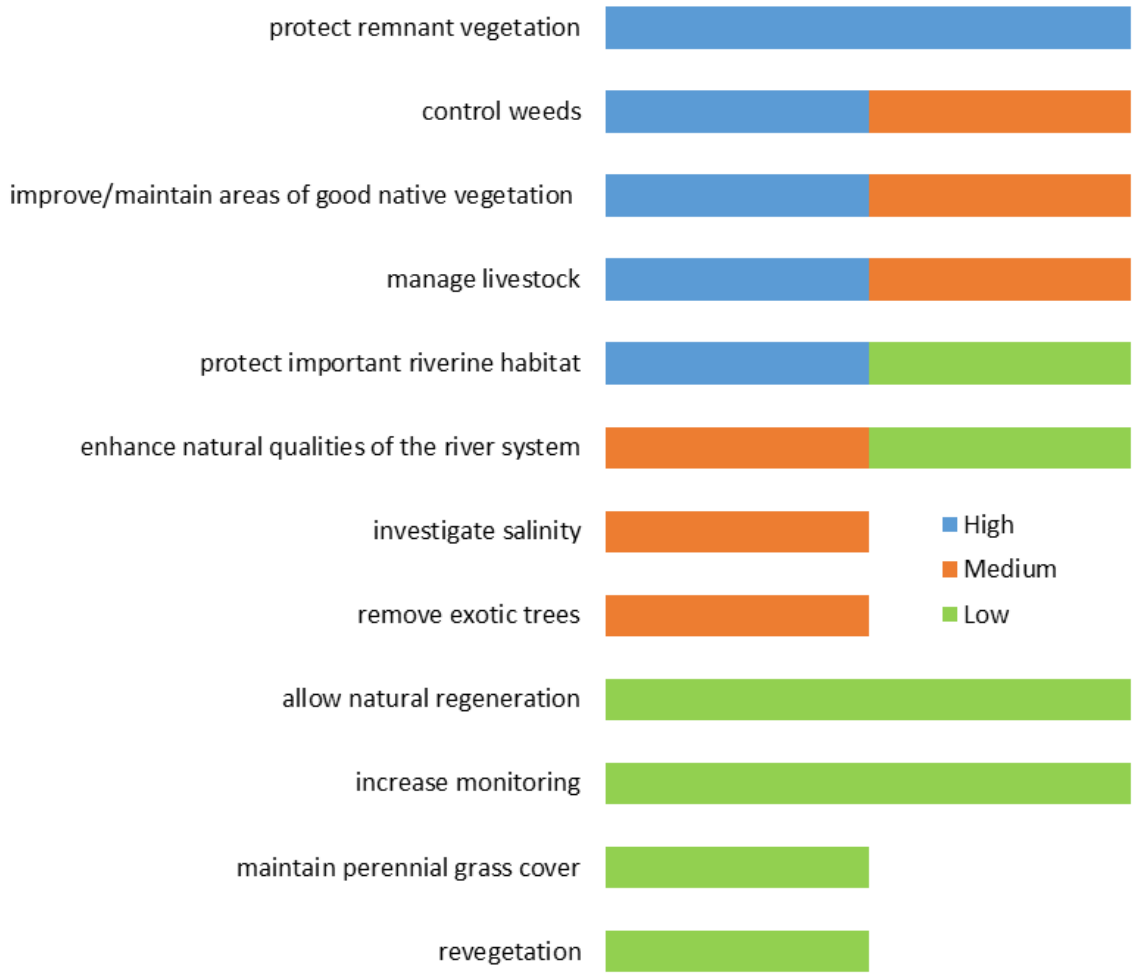


Dog rose, cape tulip, wild artichoke and pine were identified as the most problematic weeds threatening watercourses.

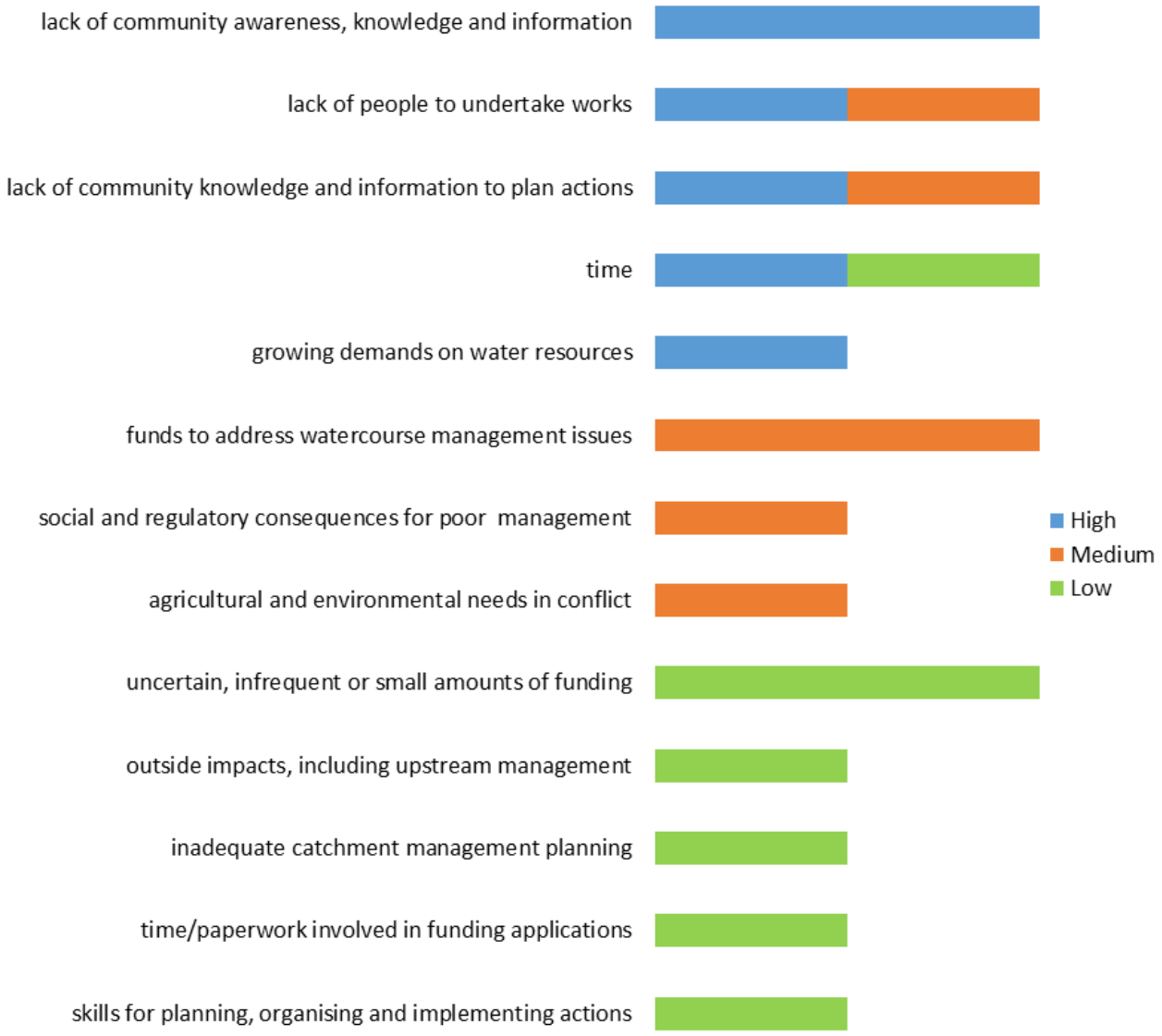


Community members were also given the chance to rate activities they thought would most help to manage rivers and creeks in the sub-catchments as well as the barriers that might prevent good management.

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



Lack of community awareness, knowledge and information; lack of people to undertake works; and lack of community knowledge and information to plan actions were seen as the biggest barriers to effective management of watercourses in the Skillogalee Creek sub-catchment.



Mt Oakden is an important part of the Skillogalee Creek sub-catchment

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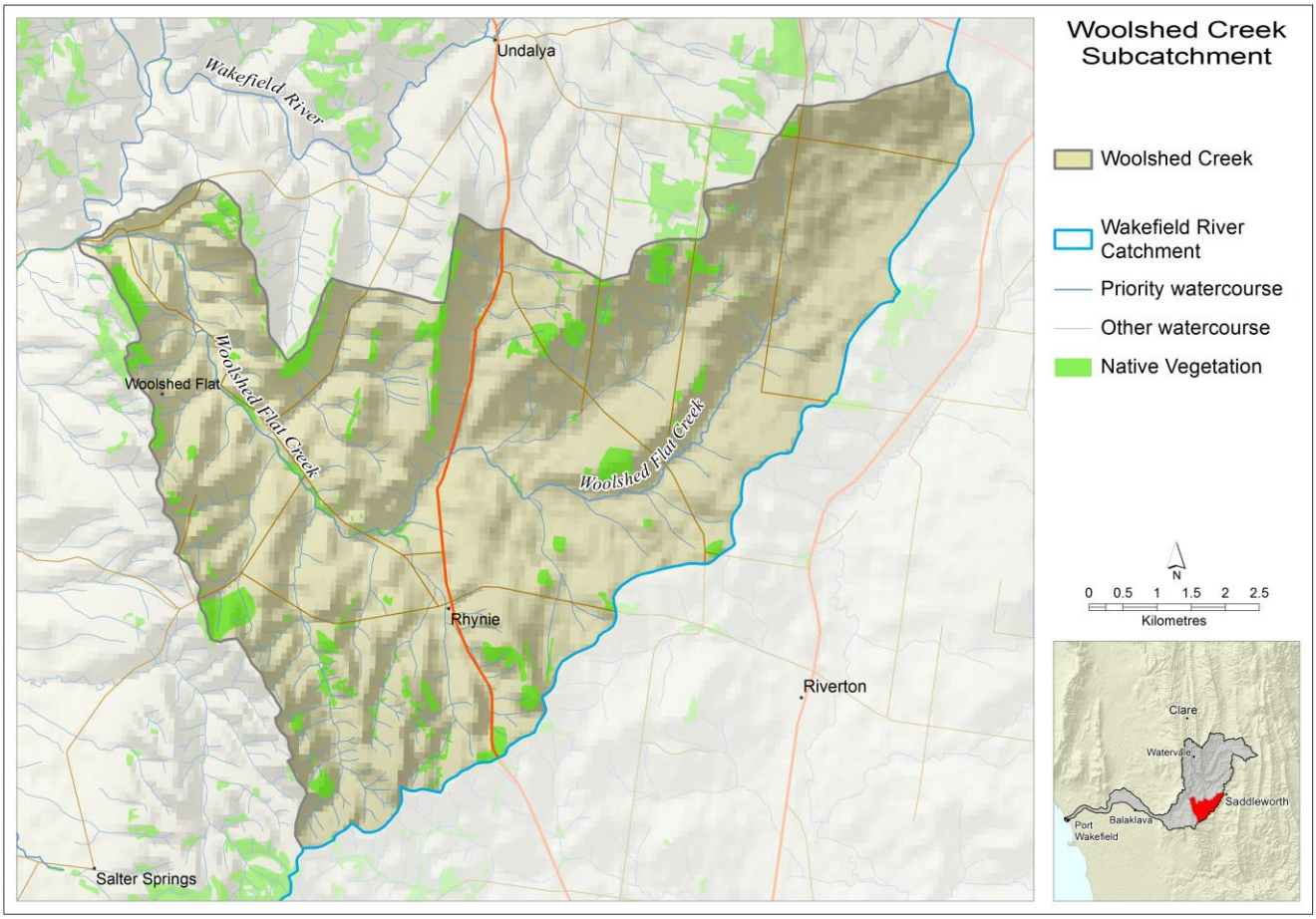
Woolshed Flat Creek and Mid Wakefield River sub-catchments – our natural resources and management priorities

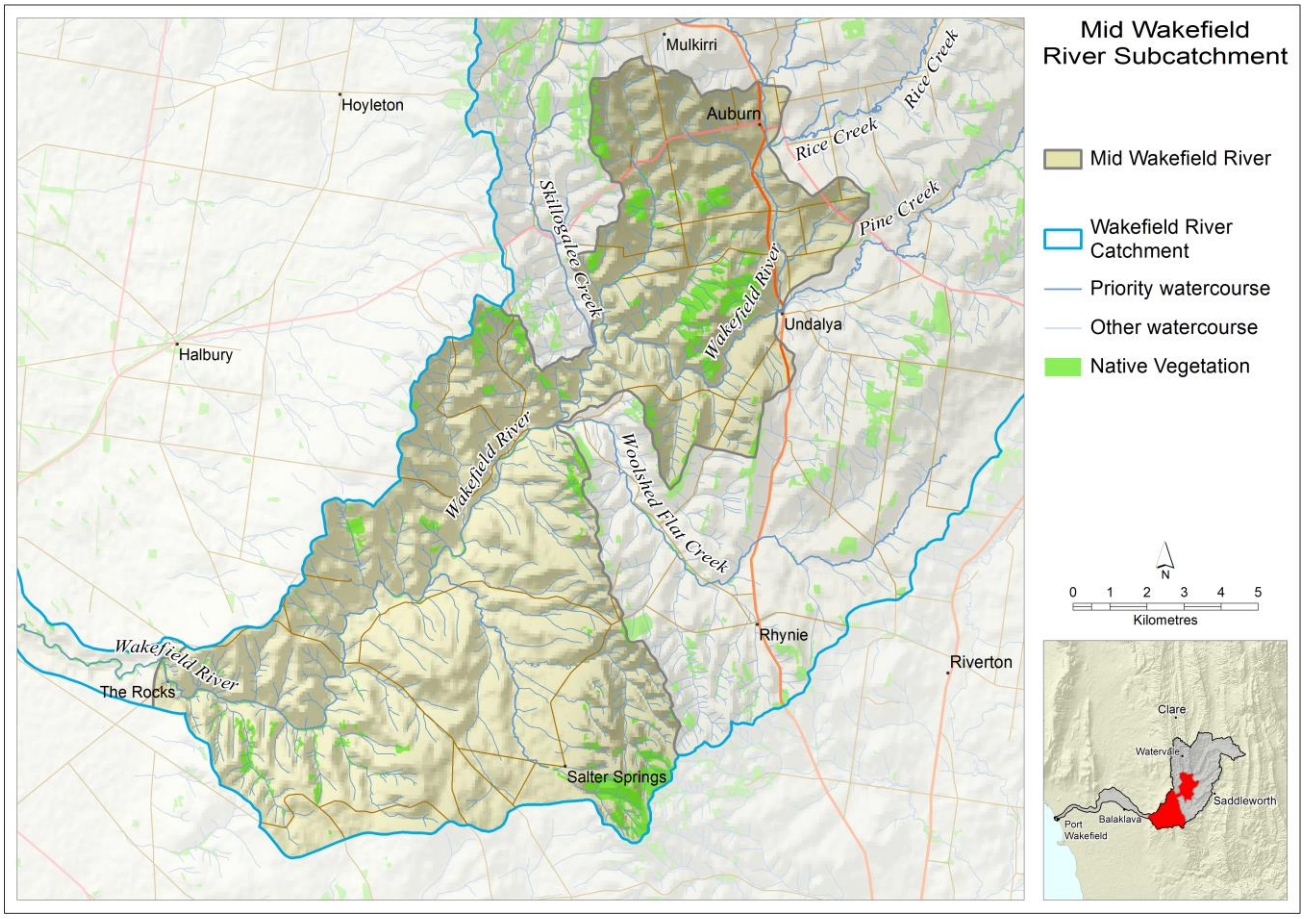
The Woolshed Flat Creek (67.2 km^2) sub-catchment encompasses Woolshed Flat Creek. Woolshed Flat Creek flows into the Wakefield River along the Balaklava-Rhynie Road.

Woolshed Flat Creek is an ephemeral stream with no permanent pools. Cropping is the major land use in the area, with some grazing of livestock also.

Woolshed Flat Creek is the main watercourse in the Woolshed Flat Creek sub-catchment.



The Mid Wakefield River sub-catchment (169.3 km^2) encompasses the main channel of the Wakefield River from Auburn to the Rocks Reserve and Hermitage Creek. The main channel of the Wakefield River has significant groundwater-fed baseflow and permanent pools. Cropping is the major land use in the area, with some grazing of livestock also.



The Wakefield River and Hermitage Creek are the main watercourses in the Mid Wakefield River sub-catchment.

Natural assets identified for protection in the Woolshed Flat Creek and Mid Wakefield River sub-catchments

Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Wakefield Catchment in 2000, including Rhynie on Woolshed Flat Creek and permanent pools and the Rocks Reserve on the Wakefield River.

The Rocks Reserve is an important part of the Mid Wakefield River sub-catchment.

Woolshed Flat Creek and Mid Wakefield River					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
Rhynie	Vegetation condition		X		
Permanent pools	Habitat condition			X	
Rocks Reserve	Vegetation condition		X		

Since 2014, surveys have provided more detail on what the community valued in the Woolshed Flat Creek and Mid Wakefield River sub-catchments and what threats they saw to our natural resources.

River red gums, native fish and waterbirds were seen as a high priority asset in the sub-catchments.

Common Galaxias

Congolli

Drying up of springs, reduction of water table and pool levels and declining river flow were identified as the biggest threats to watercourses by the community.

Wild artichoke, radish and onion weed 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-catchments as well as the barriers that might prevent good management.

Determining current groundwater extractions, maintaining a balance between reed beds and waterholes in the river system and improving water quantity were the highest community priorities for managing our river systems.

Outside impacts, including upstream management impacting on downstream health was seen as the biggest barrier to effective management of watercourses in the Woolshed Flat Creek and Mid Wakefield River sub-catchments.

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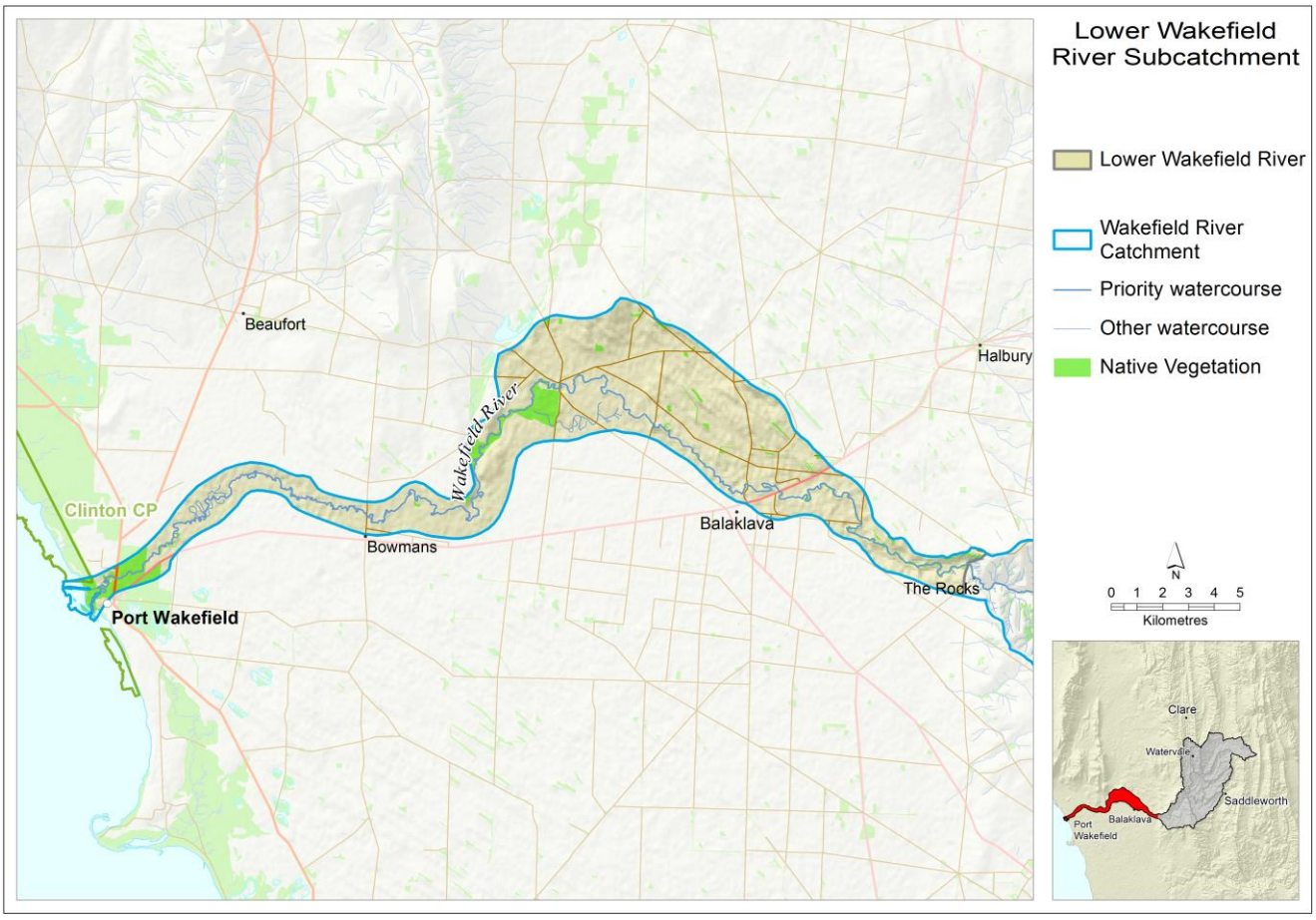
Lower Wakefield River sub-catchment – our natural resources and management priorities

The Lower Wakefield River (96 km^2) sub-catchment encompasses the Wakefield River from the Rocks Reserve to the Port Wakefield estuary. From downstream of the Rocks Reserve to Balaklava a significant proportion of flow disappears into sand and gravel beds.

Grazing and cropping are the main land uses in the catchment.

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



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

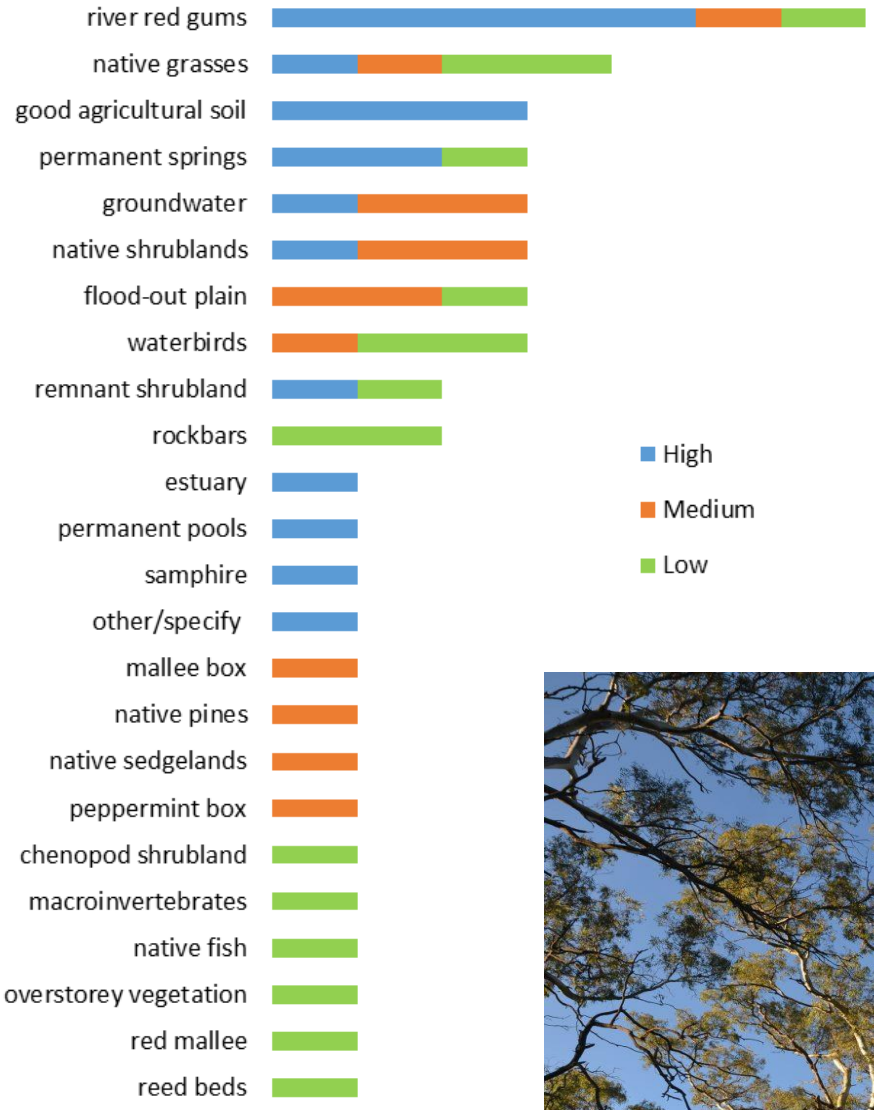
Sub-catchment assets have been identified through the last decade, since the initial River Management Plan for the Wakefield Catchment in 2000, including river red gums, the Lower Wakefield River near Balaklava and Pt Wakefield and the floodplain swamps.

Floodplain swamps in the Lower Wakefield River sub-catchment.

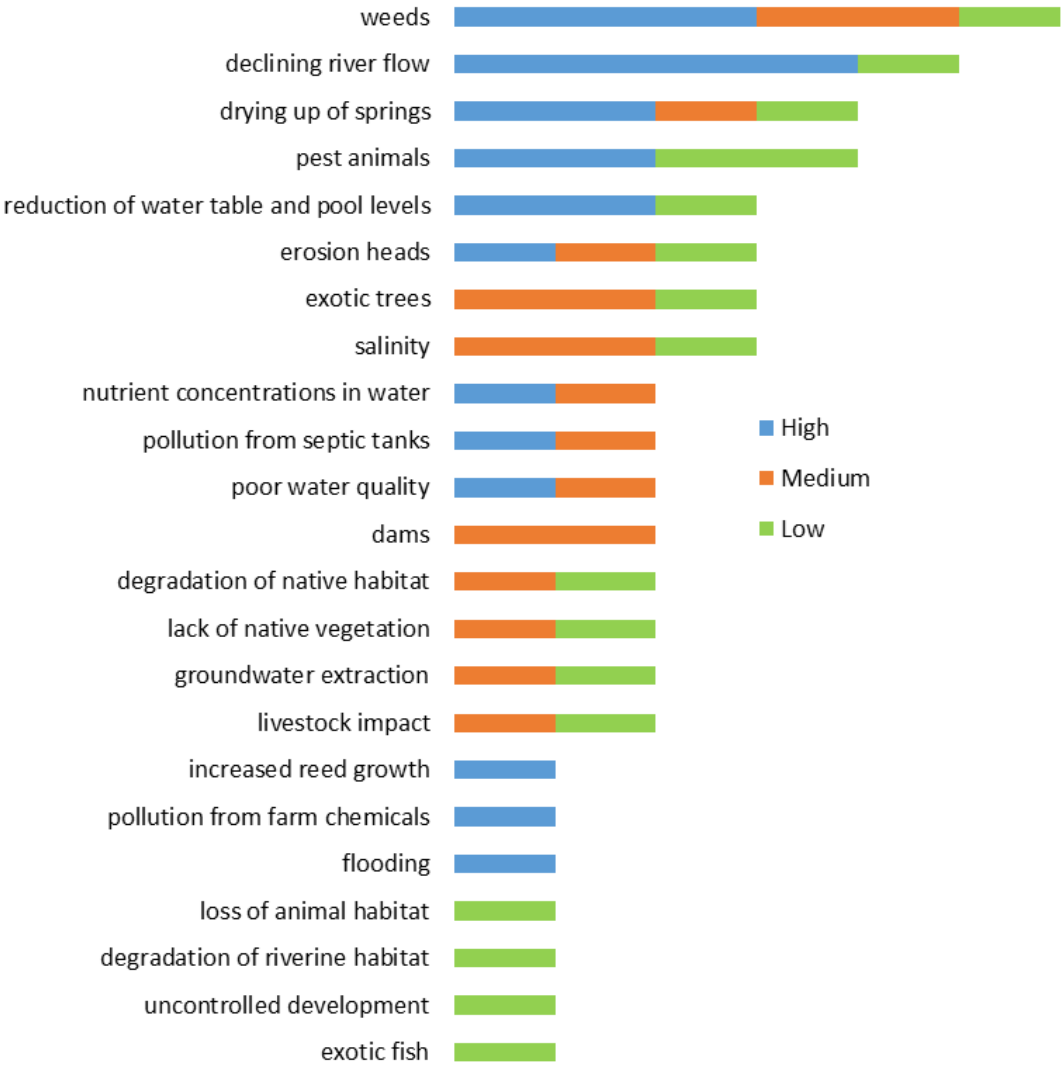
Lower Wakefield River					
Key asset	**Indicator**	**Poor**	**Fair**	**Good**	**Very good**
River red gums	Vegetation condition	X			
Balaklava	Vegetation condition	X			
Floodplain swamps	Vegetation condition		X		
Pt Wakefield	Vegetation condition		X		

Since 2014, surveys have provided more detail on what the community valued in the Lower Wakefield River sub-catchment and what threats they saw to our natural resources.

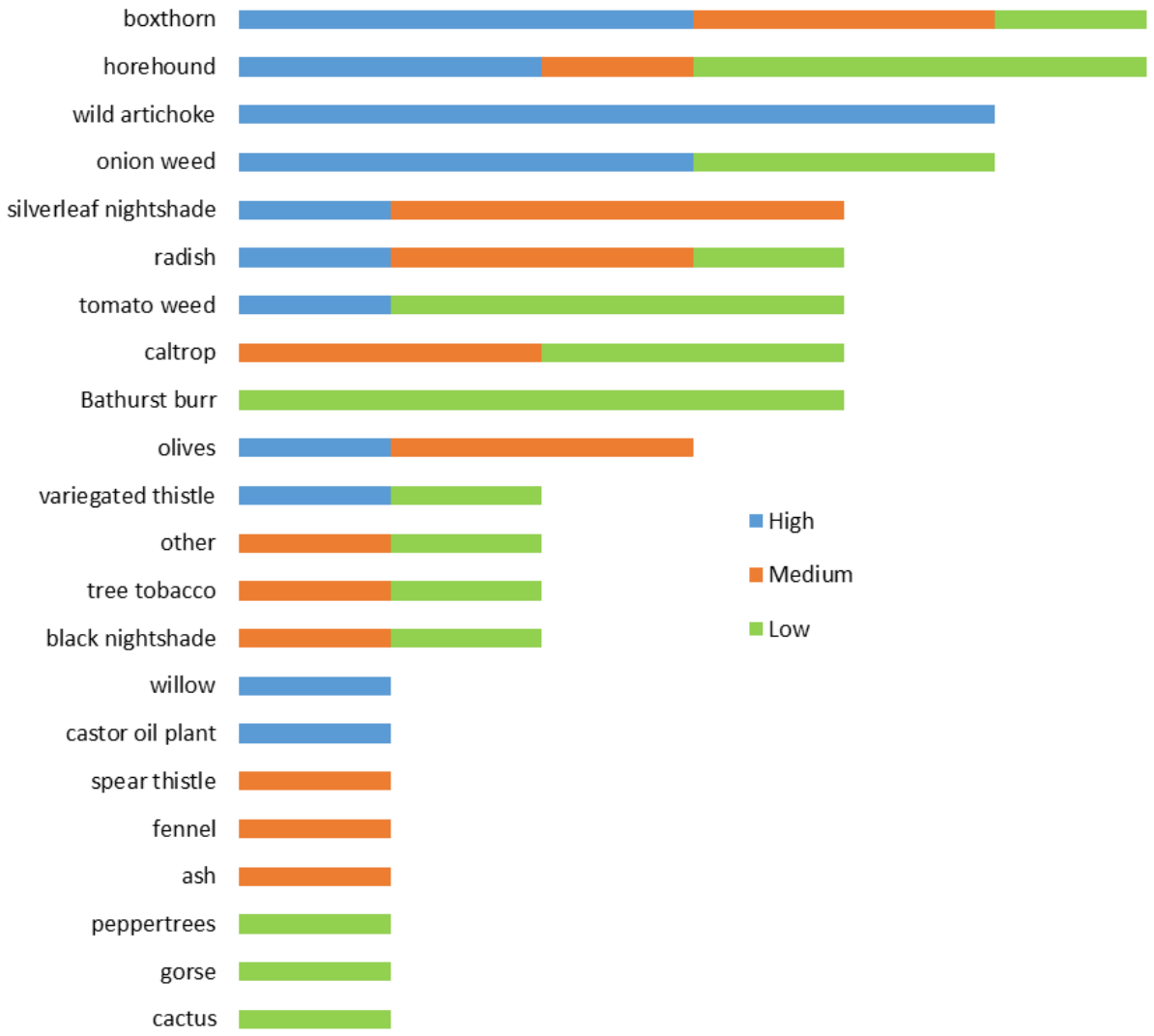
River red gums were seen as the highest priority asset in the sub-catchment followed by native grasses, good agricultural soil and permanent springs.



Weeds, declining river flow, drying up of springs and pest animals were identified as the biggest threats to watercourses by the community.

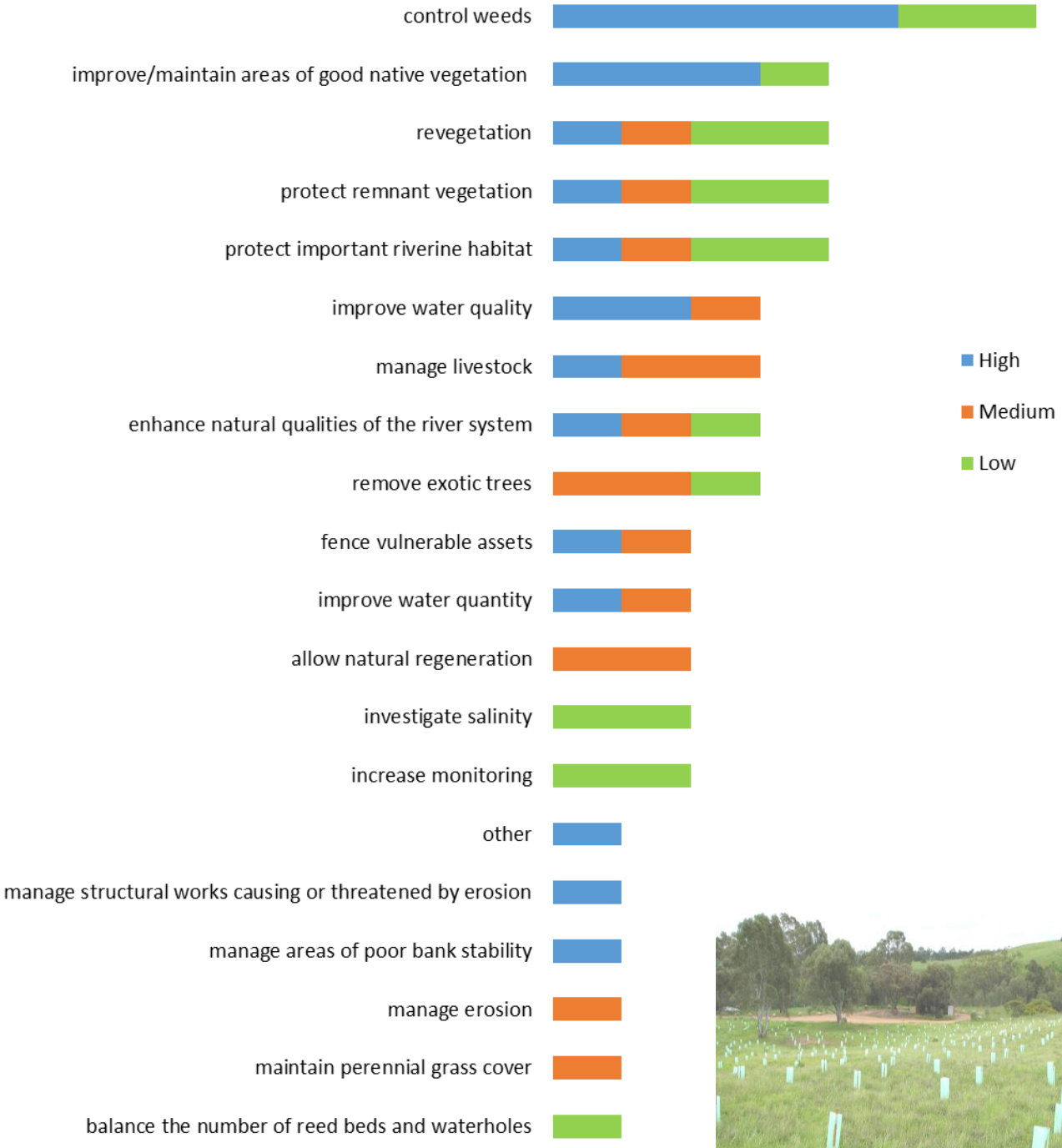


Boxthorn and horehound were identified as the most problematic weeds threatening watercourses, along with wild artichoke, onion weed and silverleaf nightshade.



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.

Weed control, improving/maintaining areas of good native vegetation, revegetating for habitat conservation and erosion control, protecting remnant vegetation and protecting important riverine habitat were the highest community priorities for managing our river systems.



Outside impacts, including upstream management impacting on downstream health; lack of funds to address watercourse management issues and lack of people to undertake works were seen as the biggest barriers to effective management of watercourses in the sub-catchment.

What's next

You can still contribute to our research by completing the survey (closes June 30 2017) or providing comment on our findings to DEWNR.NRNY@sa.gov.au. We've had more than 160 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 area.

Your feedback will now be used to develop a new strategic plan for the Northern and Yorke region.

For more information about water resource management in your catchment contact:

Natural Resources Centre – Clare
155 Main North Rd,
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

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NRM Water Officer
P 0429 362 008

E jennifer.munro@sa.gov.au

http://www.naturalresources.sa.gov.au/northernandyorke/home