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# SEAHAM WEIR POOL EROSION MANAGEMENT PLAN

**January 2023**

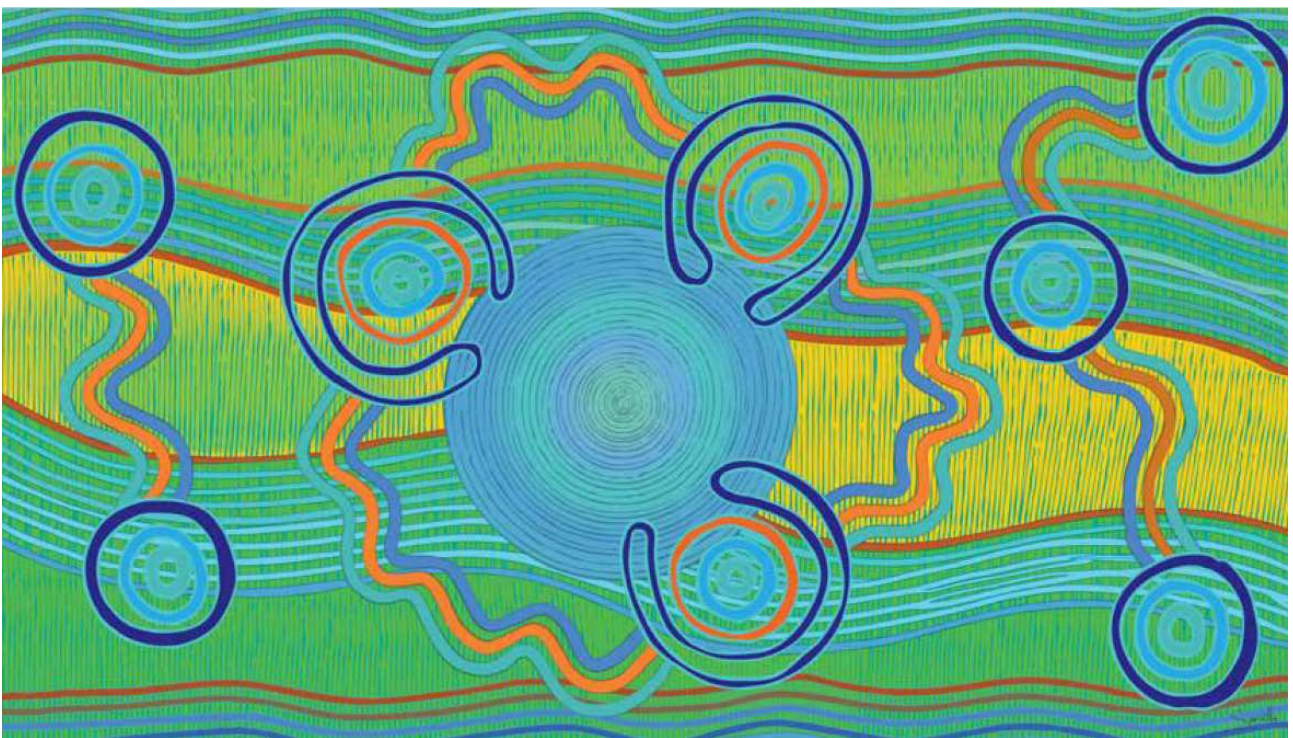
**Final**

This plan was prepared by the Williams River Erosion Management Working Group:

Hunter Water Corporation  
Transport for NSW  
Hunter Local Land Services  
Port Stephens Council  
Dungog Shire Council

### Acknowledgement of Country

*Water from the Williams River flows through the traditional country of the Wonaruah, Worimi and Awabakal peoples. We recognise and respect their cultural heritage, beliefs and continuing relationship with the land and water, and acknowledge and pay respect to Elders past, present and emerging.*



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## INTRODUCTION

The Williams River provides significant benefits to the community and is highly valued by local residents, landholders, visiting tourists and boaters and local businesses that benefit from visitors to the waterway.

The Williams River is separated into two sections by the Seaham Weir:

- The 'Lower Williams River' is the section downstream of the Seaham Weir to Raymond Terrace.
- The 'Upper Williams River' is the section of river upstream of the weir.

The body of water from Seaham Weir to just upstream of Clarence Town is also called the Seaham Weir Pool, which is the focus of this plan.

Water pumped from Seaham Weir Pool is a primary source of drinking water for over half a million people in the Lower Hunter and provides half of the water in Grahamstown Dam on an ongoing basis. Future population growth and the impacts of climate change means the Lower Hunter needs a resilient and reliable drinking water supply from the Williams River to ensure the long-term sustainability of the region. Seaham Weir Pool is also popular for river-based recreation activities.

The results of long-term water quality monitoring in the weir pool show a gradual and continuing deterioration in water quality. Key factors associated with the deterioration in water quality are higher levels of turbidity and nutrient concentrations, which can be attributed to ongoing bank erosion in the weir pool, among other causes such as land use and land management practices in and around the weir pool and elsewhere in the catchment.

Riverbank erosion management is an important issue for the future health and resilience of the Williams River. There are a range of factors that contribute to riverbank erosion in Seaham Weir Pool including natural factors such as flooding and wind waves, wake-generating boating activity, the presence of carp, the loss of stabilising riparian vegetation and land management practices such as vegetation clearing and stock access to the river. The largely static nature of the water level established by the weir is also a contributing factor. Erosion management in the weir pool requires a multi-faceted catchment management approach that takes into account each of these causes.

This plan focusses on erosion management in the weir pool and is a product of scientific studies, government agency staff expertise and, importantly, feedback from landholders, the local community and waterway users.

This plan seeks to balance the long-term viability of this important drinking water source with community interests and recreational and landholder use so everyone can enjoy the river for years to come in a sustainable and responsible manner.



## BACKGROUND AND CONTEXT

The declining water quality in the Williams River has been a focus for Hunter Water for many years. Declining water quality in the river puts the long-term viability of this drinking water source at risk due to excessive nutrient and sediment loads being pumped into Grahamstown Dam.

The *Lower Hunter Water Security Plan* (LHWSP), which was released by the NSW Government in April 2022, aims to support the social, environmental and economic development of the Lower Hunter through the delivery of reliable and resilient water services. A central tenet of the LHWSP is that the Williams River (including the Seaham Weir Pool) will continue to play an important role in supplying drinking water to the Lower Hunter via Grahamstown Dam – the Lower Hunter's largest water source.

The Australian Drinking Water Guidelines (ADWG) states that the most effective and efficient way of assuring drinking water quality and the protection of public health is through the adoption of a preventive management approach that encompasses all steps in the water supply chain, from catchment to consumers. Effective management of our drinking water supplies requires governments, water utilities, land management agencies, landholders and other custodians to work together to implement a range of measures across multiple barriers of protection.

Catchment management and the protection of source water is the first barrier for the protection of water quality. Effectively managing erosion within Seaham Weir Pool will improve the protection of this important drinking water source in line with public health requirements including the ADWG, which advocates that source waters should be protected to the maximum degree practicable. Managing the drinking water supply system in a manner consistent with the ADWG is a requirement of Hunter Water's Operating Licence.

Other stakeholders, including landowners, Landcare groups, local councils and Hunter Local Land Services, also contribute to management of the waterway through their respective management programs and activities.

The Williams River has been the subject of many studies dating back to the 1990s to better understand the impacts of bank erosion and the possible causes. The studies have led to various management actions including the introduction of a boating management plan for the weir pool in 1999, which introduced a number of boating restrictions that are still in place today. Since these boating restrictions were introduced, anecdotal evidence indicates there has been a considerable reduction in power-boating activity in the weir pool.

Below is a timeline of studies, plans and activities focused on the issue of erosion.

### **Late 1990s    Healthy River Commission's enquiry into the Williams River**

Introduction of existing boating restrictions.

### **2012    Assessment of riverbank vulnerability**

Hunter Water engaged the University of NSW's Water Research Laboratory (WRL) to develop a riverbank vulnerability assessment of the Seaham Weir Pool. The assessment helped identify risks to drinking water quality and help inform future catchment programs.



## **2015 Transport for NSW releases Regional Boating Plan for Port Stephens Hunter Region**

(now superseded by the Maritime Infrastructure Plan, 2019)

## **2015 Williams River erosion study and report**

Transport for NSW and Hunter Water engaged the University of NSW's Water Research Laboratory to conduct a survey of the riverbanks of the Williams River using its 'Decision Support System' assessment methodology to provide an objective and systematic assessment of the riverbank condition.

The final report was titled *2015 Riverbank Vulnerability Assessment using a Decision Support System: Seaham Weir Pool and Lower Williams River*.

The recommendations from this report included:

- land-based management activities such as weed removal, native vegetation regeneration, reinforcement of the banks, and stock exclusion
- the introduction of temporary boating restrictions.

## **2016 Community consultation on Williams River erosion study and report**

Transport for NSW placed the final WRL report on public exhibition. A total of 119 submissions were received.

## **2016 Inter-agency working group established**

The NSW Government established an inter-agency working group to review public submissions, and support the development of this plan. A summary of the primary agencies involved is provided in **Appendix A**.

## **2018 Detailed planning and cost estimates commence for bank remediation**

Noting the outcomes of public submissions, NSW Soil Conservation Service (SCS) were engaged to prepare an assessment of erosion management options (remediation work) and cost estimates for Seaham Weir Pool.

## **2022 Community consultation of draft Seaham Weir Pool Erosion Management Plan**

The community and key stakeholders were invited to provide feedback on the draft Seaham Weir Pool Erosion Management Plan. Consultation with landholders about remediation work also starts. The detailed planning, design and cost estimates for bank remediation work will then be updated with consideration of community and stakeholder feedback.

## **2023 Seaham Weir Pool Erosion Management Plan is adopted and implementation begins**

## ENGAGING THE COMMUNITY

Working with the local community, landholders, boaters and other waterway users is essential for the sustainable management of erosion in the long term.

### Feedback from 2016 consultation

In 2016 community feedback was invited on the University of NSW's Water Research Laboratory's 2015 report *Riverbank Vulnerability Assessment using a Decision Support System: Seaham Weir Pool and Lower Williams River* (the WRL study and report).

A total of 119 submissions were received from a range of stakeholders, including local community members, boaters and other recreational users, landholders along the affected river stretches, and owners of businesses dependent on use of the river for recreation.

The feedback confirmed there are strong opposing views about boating restrictions on the weir pool and how the erosion issue could effectively be addressed.

### A snapshot of 2016 feedback

**Diverse views:** There was both support and opposition for further restrictions on boating, noting that in some feedback it was assumed that boating restrictions meant a blanket ban on all types of boating.

**Wakeboarding:** Several submissions from both landholders and boaters pointed to wakeboarding as the primary cause of increased erosion in the weir pool when compared to water-skiing, and called for a ban on wakeboarding and boats over a certain size or weight. There were a number of submissions that supported wakeboarding being allowed to continue on the river.

**Enforcement:** Submissions suggested increased enforcement to target the use of ballast, creating excess wash and other banned activities.

**Economic impacts:** Local community members expressed that any further restrictions on boating would take away the social and economic benefits water sports bring to the local community, particularly for businesses in and around Clarence Town.

**Transfer of erosion issue:** Decisions on boating restrictions need to consider the potential impact of shifting of the erosion to other vulnerable areas as users find alternative waterways for activities.

**Stabilisation work:** Work to stabilise banks to prevent further erosion was suggested by some boaters and landholders. Among landholders who made a submission, there were a range of comments about the actual and perceived role livestock played in riverbank erosion, the positive and negative impacts of fencing and setbacks, and the overall effectiveness of historic remediation work carried out to address the same issue over the years.

**Report methodology and findings:** The scientific findings of the report were accepted in some submissions, and questioned/rejected in others. One submission suggested the period of greatest erosion in some areas had occurred following a decrease in boating activity. Other submissions stated a lack of evidence supporting the link between water quality, erosion and boating.

Another criticism of the report was that it did not adequately focus on other causes of erosion, such as unsustainable land use and floods.

Conversely, advocates for the report's findings urged government agencies to act quickly on all recommendations.



## Feedback from 2022 public exhibition of the Draft Plan

Feedback from public exhibition of the Draft Erosion Management Plan is available in the separate engagement outcomes report. A summary of the engagement outcomes is provided below.

A total of 45 meetings and discussions were held with directly affected landowners in the project area and 23 formal submissions were received.

While the overall sentiment towards the draft Plan and proposed actions in the plan was mixed:

- 86% of respondents agreed that erosion on the riverbank was a concern and supported actions to address erosion
  - 71% supported the actions outlined in the draft Plan
  - An additional 15% agreed that erosion management was required but were not supportive of all actions in the draft Plan
- 35% of respondents highlighted the need to improve boating compliance on the river
- 26% noted that they would like to see the existing boating management plan retained
- 25% called for a ban on high speed/wake generating boating on the river
- 25% of respondents requested further investigations on their property to inform the erosion management masterplan and proposed remediation works not currently captured in the draft Plan
- 16% of respondents noted concerns regarding water quality in the river, with limited confidence that the proposed actions and investment in the delivery if remediation actions would be effective in addressing water quality in the Seaham Weir Pool.

**The overall consultation and engagement outcomes indicated that:**

- **78% were positive or neutral towards the Plan, with:**
  - **45.6% of respondents positive**
  - **32.4% of respondents neutral**
- **22% opposed the draft Plan**

## MANAGEMENT ACTIONS

In response to community feedback, and in consultation with independent experts at the University of NSW's Water Research Laboratory, five management actions have been developed to address riverbank erosion on Seaham Weir Pool over a five-year period commencing in 2023.

It is important to acknowledge these management actions seek to balance the needs of the local community, landholders, boaters, relevant agencies and other waterway users while maintaining Seaham Weir Pool's function as a key drinking water source for the Lower Hunter Region.

Given Seaham Weir Pool's popularity and importance, everyone has the opportunity to play a part in creating a more sustainable future for the waterway through these actions.

## Action 1: Retain existing Boating Management Plan for the Seaham Weir Pool

Transport for NSW's existing boating management plan (the Plan) is retained. This Plan was first introduced in 1999. This Plan permits certain boating activities within designated zones of the weir pool and helps ensure sensitive areas are not adversely impacted by high wave energy generating activities.

This Boating Management Plan can be viewed in **Appendix B**.

By retaining this Plan, two important factors are addressed:

- the social and economic benefits boating brings to the local area, particularly Clarence Town
- the potential transfer of the erosion problem to other local waterways if a ban on wake-generating boating activities in the Seaham Weir Pool was introduced.

During the development of the Seaham Weir Pool Erosion Management Plan, consideration was given to the merits of various management options. Taking into account the above two factors, it was decided that maintaining the current Boating Management Plan and managing vessel activity during remediation works is the preferred approach. The erosion management plan was subsequently developed around this decision.

To maintain the current boating Plan, Hunter Water and Transport for NSW are funding a program of bank remediation works along impacted stretches of the weir pool. This program is described further in Action 2.

While existing boating arrangements will be retained, some additional temporary restrictions are expected to be required during bank remediation works, causing short-term inconvenience to some river users. This is to enable the works to be undertaken safely and effectively, and allow the remediation works to properly establish without being impacted by wave energy from passing boats. Any temporary restrictions will be communicated to landholders, local residents and weir pool users in advance where possible.

### Timeframe:

Ongoing

### Lead:

Transport for NSW

### Key partners:

Hunter Water  
Boating community

## Action 2: Carry out program of remediation work

For erosion to be effectively managed, a combination of engineering work, bank revegetation and changes to land management are required along impacted stretches of the weir pool in collaboration with landowners and relevant stakeholders.

For heavily impacted banks, engineering work may involve constructing one or a combination of treatments along sections of the river to protect and stabilise the banks, such as:

- benching
- log walls
- rock and/or timber fillets
- rock toe protection, and/or
- rock rip-rap or revetment.

Current best practice management requires that soft engineering solutions be used in preference to traditional hard engineering approaches where feasible as they are more accommodating of the natural processes that operate in rivers and are better suited to the project objectives. The solutions employed will depend on the availability of suitable materials and in some cases hybrid solutions may be used.

Engineering work will be accompanied by rehabilitation work on the riverbanks and involve:

- revegetation and weed removal in areas where native vegetation has previously been lost or removed and has contributed to the banks collapsing
- fenced setbacks (where relevant) to reduce pressure from stock on riverbanks, existing vegetation, revegetation area and/or other sensitive areas
- installing alternative off-river stock watering infrastructure in some cases.

**Engineering works will protect impacted riparian zones from wake-generating activity, allowing native vegetation to properly establish and provide ongoing bank stabilisation in the long-term.**

Banks with less severe erosion, or which fall outside of highly impacted boating zones, will require revegetation, weed removal and fenced setbacks for stock management.

Collaboration between private landholders and agencies plays a critical role in the success of this action.

As the lead agency for this program, Hunter Water will work collaboratively with each landholder and relevant agencies (eg. Crown Lands, DPI Fisheries, Dungog Shire Council) to develop property scale remediation plans tailored to the management priorities of each property that take into account specific feedback from landowners, seek permission to carry out work on private property where required and agreement on ongoing maintenance arrangements. The aim of the plans is to facilitate long-term stability of riverbanks based on property scale planning.

In addition to fencing off riparian areas to manage stock as part of this program, Hunter Local Land Services will be available to provide additional advice on sustainable land management and general agricultural productivity if landholders would like to make other improvements to their properties or practices in conjunction with the planned remediation work.

The on-ground work will take place in stages, with the first stage expected to start in 2023.

Work is expected start in the wake boarding zone and Hunter Water boat exclusion zone, followed by water skiing zones, then all other areas. However, this order may change, depending on the needs and limitations of each area.

Once remediation work is complete, Hunter Water will maintain riparian zone vegetation as required for an appropriate period until the vegetation is established (expected to be about two years). Hunter Water will also inspect and maintain bank stabilisation engineering works periodically until the bank is stabilised by vegetation. Hunter Water will discuss the long-term ownership and maintenance of riparian fencing and off-stream watering infrastructure (where installed) with landholders tailored to the individual property and site circumstances and needs, following a 12-month defect rectification period after installation.

A map of proposed remediation zones can be viewed in **Appendix C**.

The ongoing effectiveness of the work will be assessed through a monitoring program, which is described in Action 5.

This program of work is funded by Hunter Water and the NSW Government.

**Timeframe:**

2023 to 2027

**Lead:**

Hunter Water

**Key partners:**

NSW Government (funding)

Transport for NSW

Hunter Local Land Services

Landholders, including Dungog Shire Council



## Examples of bank remediation techniques



*Image 1 - Example of bank revegetation and stock management fencing on the Tweed River in northern NSW*



*Image 2 - Example of log wall on the Hunter River*



*Image 3 - Example of lower bank rock toe protection works on the Clarence River in northern NSW*



*Image 4 - Example of bank toe protection using logs on the Clarence River in northern NSW*



*Image 5 - Example of rock fillets with timber pins on the Bellinger River in northern NSW*



### Action 3: Ongoing boating education and enhanced boating compliance

Community feedback to date has supported the need for additional compliance to enforce boating restrictions.

Education and compliance are essential to regulate boating activities and ensuring that all boaters understand and comply with rules and restrictions for the Seaham Weir Pool.

Importantly, education and compliance will ensure boaters and local residents understand how each of the management actions help address the riverbank erosion issue. This will be particularly important during installation of riverbank remediation works and ongoing management of the river.

Transport for NSW will explore additional options to enhance boating education and compliance activities on the weir pool, including improved education materials about the Boating Management Plan and any temporary changes to the plan. Transport for NSW will also enhance the presence of Boating Education Officers and Boating Safety Officers and provide annual reports to the Working Group on compliance activities.

This action includes the deployment of boating education officers during the boating season.

#### Timeframe:

Ongoing

#### Lead:

Transport for NSW

#### Key partners:

Boaters  
Recreational boating operators  
Local community  
Hunter Water

## Action 4: Monitoring and assessment

Ongoing monitoring is an integral part of effectively managing erosion.

Monitoring will involve checking the condition of banks and adjoining areas to assess the effectiveness of riverbank remediation work and related controls.

This will involve bank surveys before and after the remediation work by Hunter Water, followed by ongoing inspection and maintenance. Engineered bank stabilisation works would be inspected and maintained by Hunter Water periodically or until independent erosion studies confirm that the bank is stabilised by vegetation and after significant flood events. Additional monitoring will include assessment of riparian vegetation condition and stock controls to ensure their effective management.

Hunter Water will continue to monitor water quality in Seaham Weir Pool as part of its long-term routine monitoring program for the drinking water catchments.

It is anticipated that the results from this ongoing monitoring will help to measure the long-term effectiveness of the erosion management controls.

Enhanced monitoring will also be carried out by Transport for NSW to confirm boating numbers and activities on the weir pool as well as compliance with boating rules and the Boating Management Plan.

### Timeframe:

Ongoing

### Lead:

Hunter Water  
Transport for NSW (for boating activities)

## Action 5: Seaham Weir Pool Erosion Management Inter Agency Working Group

Once this Erosion Management Plan is adopted, the existing inter-agency working group will continue to oversee its implementation.

As a number of agencies are either responsible for, or impacted by, various actions within the Plan, the working group will include representatives from Transport for NSW, Hunter Water, Hunter Local Land Services, Port Stephens Council and Dungog Shire Council.

The working group's primary activities will involve:

- meeting regularly to coordinate and monitor implementation of actions within the Plan
- discussing and resolving plan implementation issues and opportunities that emerge
- sharing information with the community and key stakeholders about how the actions within Plan are progressing
- listening to community and stakeholder feedback during the plan's implementation and addressing concerns or issues where feasible.

In the event of a significant flood event, the working group will convene to make recommendations on whether there is a need for any additional temporary management actions or maintenance.

### Timeframe:

2022 to 2027

### Lead:

Hunter Water

### Key partners:

Transport for NSW  
Hunter Local Land Services  
Port Stephens Council  
Dungog Shire Council  
Landholders

## REFERENCES

Healthy Rivers Commission of New South Wales, 1996, *Independent Inquiry into the Williams River, Final Report*

Transport for NSW, *Boating Traffic Management Plan Seaham Weir Pool Williams River*, accessed 9 April 2021

<https://www.rms.nsw.gov.au/documents/maritime/usingwaterways/navigationandcommunication/boating-plans/upper-williams-boating-plan.pdf>

Transport for NSW, 2015, *Regional Boating Plan, Port Stephens – Hunter Region*, accessed 9 April 2021 (superseded by the Maritime Infrastructure Plan 2019-2024)

<https://maritimemanagement.transport.nsw.gov.au/documents/port-stephens-hunter-draft-boating-plan.pdf>

University of NSW Water Research Laboratory, 2003, *Additional Monitoring of Boating Usage, Compliance with Boating Management Plan. Williams River – Seaham Weir Pool, NSW*. Technical Report 2003/16

University of NSW Water Research Laboratory, 2012, *Riverbank Vulnerability Assessment of the Seaham Weir Pool*.

University of NSW Water Research Laboratory, *2015 Riverbank Vulnerability Assessment using a Decision Support System: Seaham Weir Pool and Lower Williams River*, accessed 9 April 2021

<https://www.rms.nsw.gov.au/projects/williams-river/index.html>

## APPENDICES

### Appendix A

#### Summary of primary agencies involvement with the Working Group

**Transport for NSW** leads the strategic direction for maritime issues in NSW and directs initiatives that support the Government's objectives for boating safety, maritime property, promoting sustainability of NSW waterways and waterways management. Transport for NSW is also responsible for maritime policy implementation and delivery and on water education and compliance. Transport of NSW established and initially chaired the working group.

**Hunter Water Corporation** manages Seaham Weir Pool as a primary drinking water source within the Williams River drinking water catchment, with water from the weir pool being transferred into Grahamstown Dam prior to treatment and distribution to the community. Hunter Water is responsible for chairing the working group until the erosion management plan is finalised.

Hunter Water's key interest is to improve and manage water quality in the weir pool and address riverbank erosion which has been identified to impact on water quality. Seaham Weir Pool is part of the gazetted Williams River Catchment Special Area and is subject to the *Hunter Water Regulation 2015* under the *Hunter Water Act 1991*. Hunter Water has jurisdiction in the boating exclusion zone of Williams River immediately upstream of the weir structure.

**Hunter Local Land Services** is responsible for delivering services that add value to local industries, enhance natural resources, protect industries from pests and disease and help communities respond to emergencies like flood, fire and drought.

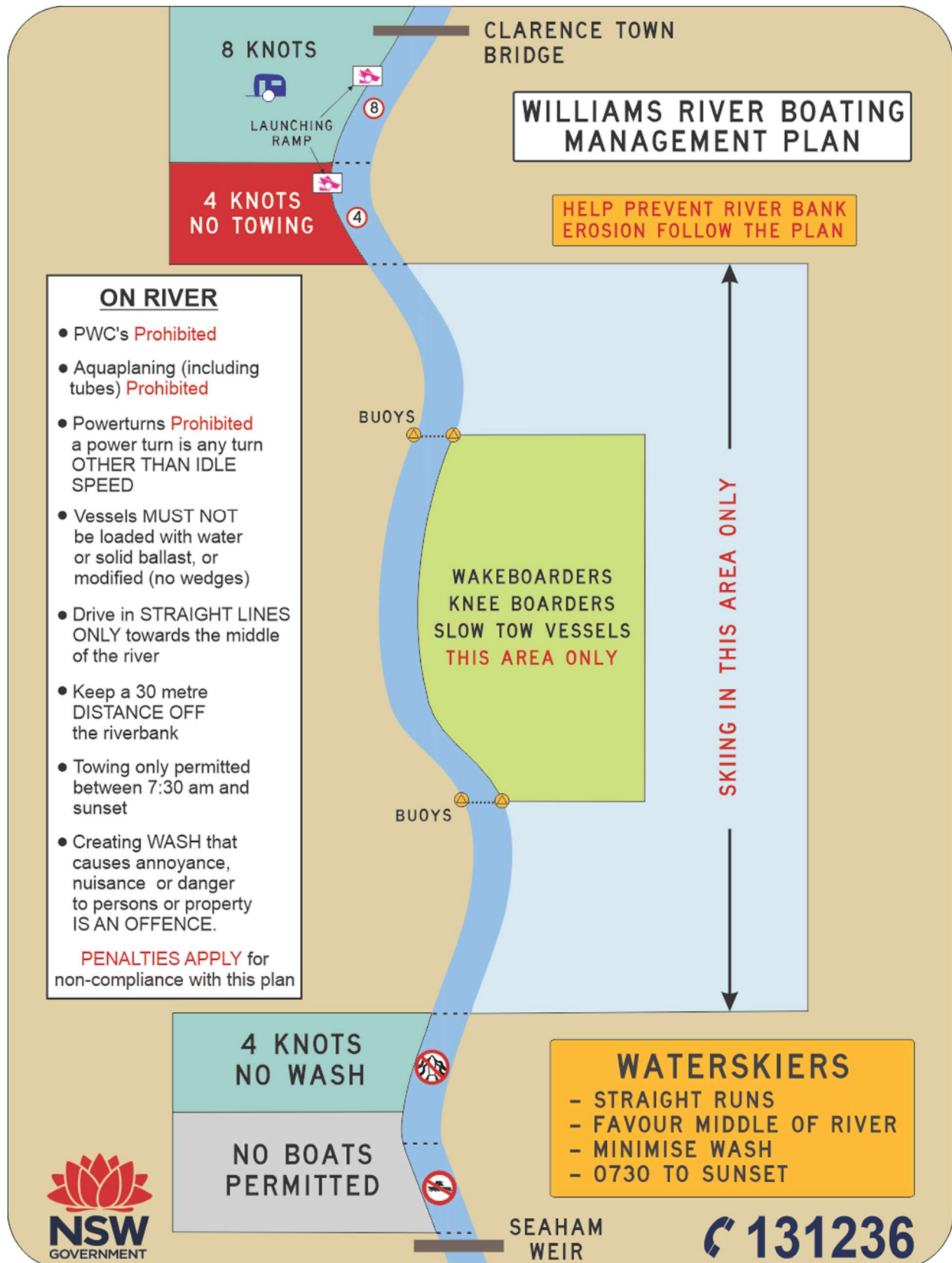
**Dungog Shire Council** administers the Dungog Council Local Government Area which incorporates part of the Seaham Weir Pool.

**Port Stephens Council** administers the Port Stephens Council Local Government Area which incorporates part of the Seaham Weir Pool.

**Other relevant agencies** may participate in the Working Group from time to time as required.

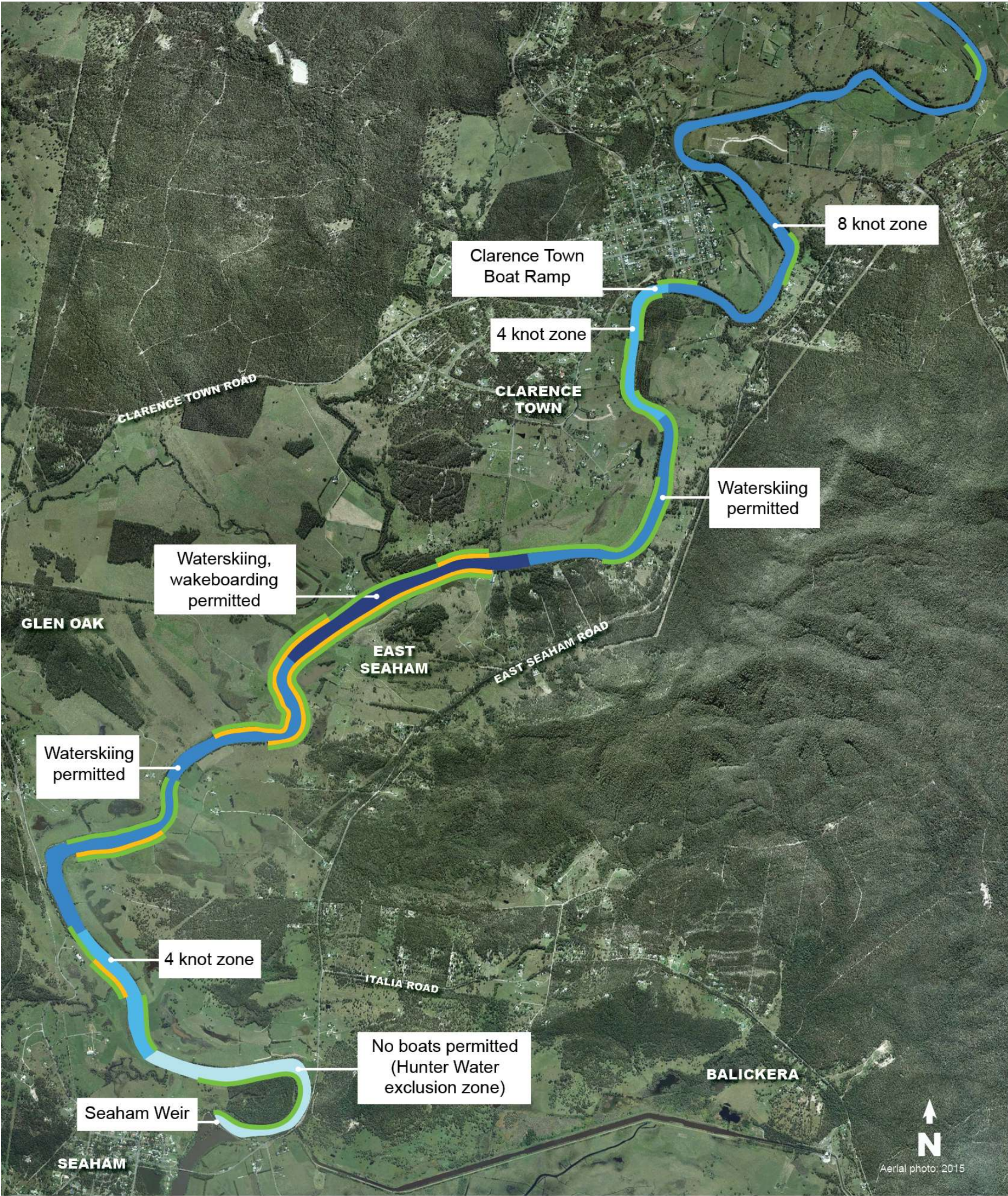
## Appendix B

### Upper Williams River Boating Management Plan – Seaham Weir Pool





Appendix C  
Map of proposed phases for remediation work



Seaham Weir Pool Erosion Management: Priority remediation zones

- Revegetation and weed removal with livestock exclusion
- Rock and/or log bank structures

Many riparian zones along the weir pool not highlighted on this map are also suitable for revegetation, weed removal and livestock exclusion. While not priority zones, we encourage expressions of interest from landholders wishing to improve the sustainability of their land as part of this program.

Remediation zones in this map are approximate and subject futher detailed design and planning.

The Boating Management Plan can be viewed in full at [transport.nsw.gov.au](http://transport.nsw.gov.au)





This plan was prepared by the Williams River Erosion Management Working Group:

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Transport for NSW  
Hunter Local Land Services  
Port Stephens Council  
Dungog Shire Council

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