



# South Pine River Shoreline Erosion Management Plan: Stage 1 Assessment

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# South Pine River Shoreline Erosion Management Plan: Stage 1 Assessment

Prepared for: Moreton Bay Regional Council

Prepared by: BMT WBM Pty Ltd (Member of the BMT group of companies)

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## Document Control Sheet

<p>BMT WBM Pty Ltd Level 8, 200 Creek Street Brisbane Qld 4000 Australia PO Box 203, Spring Hill 4004</p> <p>Tel: +61 7 3831 6744 Fax: + 61 7 3832 3627</p> <p>ABN 54 010 830 421</p> <p><a href="http://www.bmtwbm.com.au">www.bmtwbm.com.au</a></p>	<b>Document:</b>	R.B20079.001.03.Stage_1.docx
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	<b>Project Manager:</b>	Matthew Barnes / Richard Sharpe
	<b>Author:</b>	Chris Huxley and Jeremy Visser
	<b>Client:</b>	Moreton Bay Regional Council
	<b>Client Contact:</b>	Peter Marsh
	<b>Client Reference:</b>	
<p><b>Synopsis:</b> This report documents the findings of the South Pine River Shoreline Erosion Management Plan: Stage 1 Assessment. The report outlines legislation, regulation and policies that require consideration in the development of the shoreline erosion management plan. The report also summarises the findings of a geomorphic assessment for the tidal reaches of the South Pine River.</p>		

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## Executive Summary

# Executive Summary

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The lower reach of the South Pine River bounds the North Brisbane suburb of Strathpine on its western bank (within the jurisdiction of Moreton Bay Regional Council) and the suburb of Bald Hills on its eastern bank (within the jurisdiction of Brisbane City Council). It drains into the Pine River at the confluence between the North and South Pine Rivers, relatively close to the Pine River entrance at Morton Bay. The lower reach of the South Pine River is tidally influenced and predisposed to active geomorphological processes.

In some locations, bank erosion threatens public and private assets on the river banks. Moreton Bay Regional Council is committed to managing its waterways and increasing the health and resilience of waterways and coastal areas. Considered management is required to ensure social, ecological and economic values are protected, maintained and where possible enhanced. This document presents the first stage of a high level management strategy – the South Pine River Shoreline Erosion Management Plan (SPRSEMP) – aimed at managing the risk of bank erosion along the tidal reach of the South Pine River.

This study is framed by a legislative framework that is discussed in detail in Section 2 of this report. The legislative framework includes both environmental and development statutory instruments imposed by Local Government, State Government and the Commonwealth Government.

The legislation, regulations and policies included in this framework are current as at the time of writing. Further consideration will need to be given to planning and legislative requirements when implementing options promoted in this study. The content of this report is not considered a comprehensive list of all applicable statutory instruments but rather a starting point for determining considerations at the time of approval and implementation of a preferred management strategy.

Sections 3, 4 and 5 of this report address geomorphic processes, causes of erosion, and methodologies for calculating current and future erosion risks relevant to the study area. A range of fluvial processes assessments is provided and is intended to guide Council's shoreline management decisions. The assessment methods include:

- Review of general physical process which influence bank erosion.
- A review of previous relevant studies.
- Analysis of historical data including:
  - Recorded Historic flood events;
  - Historical photography; and
  - Survey Data.
- Numerical modelling of contemporary fluvial processes, including:
  - Continuous erosion processes, occurring under tidal/low flow condition;
  - Episodic or event based erosion processes, predominantly associated with catchment flood events; and
  - Climate change and sea level rise considerations.

With consideration to shoreline erosion management, the assessments show that:

## Executive Summary

- Existing private and public assets are presently well within an estimated calculated erosion prone area. Many of these areas are currently not protected by terminal structures and therefore may be at risk due to future riverbank erosion. Ongoing protection of these assets throughout the planning period will require strategic management and adaptation to potentially changing environments. As such, management solutions focusing on varying timescales (short and long term) should be considered as part of the Stage 2 assessment. Consideration should also be given to exclude siting new infrastructure within the identified erosion prone area.
- Riverbank erosion associated short term episodic events presents immediate risk to a number of public and private lots throughout the study area. This will be addressed as part of Stage 2 of the SPRSEMP and management options will be developed for Council's consideration. Greatest erosion pressures are present within the river reaches upstream of Harvey Street. Numerous reaches upstream of this location are currently actively meandering within this upper reach of the Lower South Pine River.

Sections 6 reviews typical erosion management options to be considered when developing riverbank erosion management strategies. There are two basic strategic approaches for dealing with shoreline erosion problems, namely:

- Undertake works to hold or improve the present shoreline alignment, thereby preventing future recession of the river banks; or
- Allow the shoreline to recede in such a way that the natural processes would maintain the river bank characteristics and amenity, but at the expense of existing land and infrastructure.

The report presents numerous alternative shoreline erosion management options within these two categories, including:

- Planning provisions.
- No Action.
- Property acquisition.
- Prevention of erosion through use of methods such as:
  - Riparian Zone Rehabilitation;
  - Concrete Revetment;
  - Rock or Interlocking Concrete Block Revetment;
  - Sand Bag Revetment; and
  - Boat Operation Restrictions.

In practice, the most appropriate management strategy typically combines a suite of options. Further consideration of these management options will be considered on a reach basis as part of the Stage 2 SPRSEMP study.

The summary of the fundamental shoreline processes affecting the study area provided in this report should be used as a starting point for fluvial erosion management decision making. More detailed assessments of, for example, bank stabilisation response to a preferred management strategy may be required as part of an approvals process.

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## Introduction

# 1 Introduction

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The tidal reaches of the South Pine River are subject to various geomorphic processes including bank erosion, channel widening and channel migration. Estuarine channels are dynamic systems which evolve over time, balancing the forces associated with catchment and tidal inflows interacting with sediment inflows, catchment geology and the types and extents of vegetation within a catchment.

Currently, the South Pine River is actively eroding its channel in some locations, threatening public and private assets and degrading the condition of the river.

The objective of the South Pine River Shoreline Erosion Management Plan (SPRSEMP) is to provide Moreton Bay Regional Council (MBRC) with strategic direction for the sustainable management of the lower South Pine River.

The SPRSEMP has the following objectives:

- (1) Provide an assessment of the vulnerability/risk of the community/infrastructure/sensitive ecology to geomorphic changes in the tidal reach and prioritise management strategies based on physical, social and environmental aspects.
- (2) Provide guidance on procedures, constraints and specific strategies for dealing with current and future geomorphic changes in the tidal reach.
- (3) Provide a prioritised program to implement possible protection works.
- (4) Ensure that any strategy developed complies with applicable legislation and any required works identified is capable of gaining the necessary approvals and any subsidy offered by applicable Subsidy Schemes administered by State government agencies.

The SPRSEMP has been divided into two 'Stages'. This report documents the findings of the Stage 1 assessment. The Stage 1 assessment includes:

- (1) Review of legislative and planning constraints;
- (2) Assessment of the geomorphic processes which influence erosion trends within the tidal reaches of the South Pine River;
- (3) Assessment of erosion risk; and
- (4) Generic management options.

The Stage 2 portion of the study includes assessment and recommendation of management options for the South Pine River, including recommendations and prioritisation based on a quadruple bottom line model, material sources, costs and proposed capital and operational works project scopes.

The extent of this study is limited to the tidal reaches of the South Pine River, shown in Figure 1-1. The upstream limit is located approximately 200m upstream of the North Coast Railway crossing. From here the river divides the suburbs of Bald Hills (presided over by Brisbane City Council) on its eastern bank and Strathpine (presided over by Moreton Bay Regional Council) on its western bank

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as it meanders for approximately 8.5km towards its confluence with the North Pine River. The Pine River flows for a further 7km before draining into Moreton Bay.

### 1.1 Technical Working Group

A Technical Working Group (TWG) was established to assist in the development of the SPSEMP. The TWG meets to discuss and provide feedback on the project and includes representatives from:

- Queensland Department of Environment and Heritage Protection (DEHP);
- Queensland Department of Natural Resources and Mines (DNRM);
- Queensland Department of National Parks, Recreation, Sport and Racing (DNPRSR);
- Queensland Department of Agriculture, Fisheries and Forestry (DAFF);
- Maritime Safety Queensland (MSQ); and
- Moreton Bay Regional Council (MBRC).

An inaugural meeting was held at the MBRC Administration Building on Wednesday, 13 March 2013 with subsequent meeting to be held approximately quarterly.

### 1.2 Moreton Bay Regional Council Values

Moreton Bay Regional Council's (MBRC's) mission statement is outlined in the Moreton Bay Regional Council Corporate Plan 2012-2017:

*"Our mission: We will serve the community to create a region of opportunity and a vibrant lifestyle, while focusing on excellence and sustainability."*

The community outcomes and targets listed in the Moreton Bay Region Community Plan 2011-2021 aim to guide MBRC's future strategic direction and approach to the delivery of services, achieving the overarching mission statement.

MBRC are committed to managing its waterways, increasing the health and resilience of waterways and coastal areas:

*"Waterways are important, not only because of the intrinsic values of their diverse aquatic ecosystems, but also for their role in providing water as a commodity."*

*Waterways also provide many recreational uses. In order to maintain these values and uses, we need to protect our streams and to maintain or enhance them to the best possible condition (or best possible ecological health).*

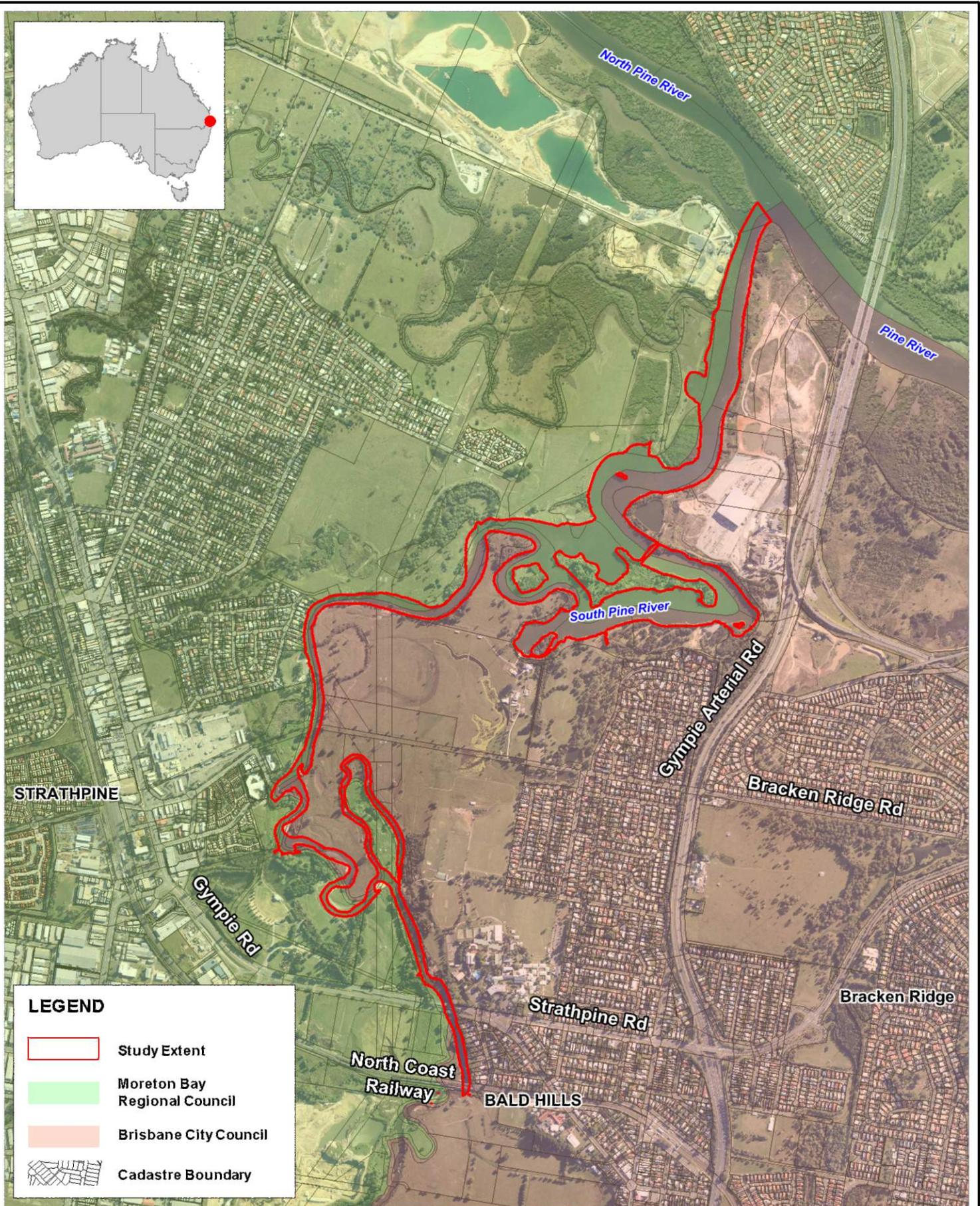
*Moreton Bay Regional Council is committed to improve the region's environment, including streams, foreshores and coastal areas. As the region continues to experience high population growth, the pressure on our waterways will also increase.*

*Past and future landuse activities, including residential, industrial, commercial and agricultural landuse, adversely affect water quality and waterway health.*

*Concerted management and action by government, community and industry can prevent, reduce or reverse the decline in waterway health." (MBRC website, 1/6/2013).*

## Introduction

The SPRSEMP will form an important information source, assisting MBRC to meet their defined waterway health/resilience targets.



Title:  
**South Pine River Shoreline Erosion Management Plan  
 Study Extent**

Figure:  
**1-1**

Rev:  
**A**

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