



Department of Water  
Government of Western Australia

*Looking after all our  
water needs*

# Coastal drainage



## Focus

The focus on coastal drainage is to review the fragmented management of drainage issues in coastal areas of the south-west. This predominantly covers drainage within the Mundijong (1), Waroona (2), Harvey (3), Roelands (4), Busselton (5) and Albany (6) drainage districts and Scott River (7) catchment. The key objective is to balance the benefits of drainage for agricultural production and the transition in some areas to urban development with the need to maintain healthy waterways.

The focus has four key components:

- best practice
- planning advice and assessment
- governance
- stakeholder engagement.

## Early years

The first recorded construction of a drainage channel in the south-west of Western Australia was in 1858. Drainage networks expanded rapidly in response to urban and rural developments. During this time of expansion, the ownership, boundaries and legislative frameworks associated with these networks changed to respond to new problems.

The majority of the present-day networks are confined within six drainage districts, as declared under the *Land Drainage Act 1925* (Figure 1). The management and operation of the main channels within these networks are in the hands of the Water Corporation.

Drainage networks have also been established outside the drainage districts, notably the Scott River catchment. These networks have been designed and installed in a random manner with little coordination or integrated planning. Consequently, no single organisation is responsible for the management or operation of these networks.

Although new drainage is being installed in some areas, most networks have been established for a considerable time, and regional stakeholders have been continually dealing with management and operational issues.

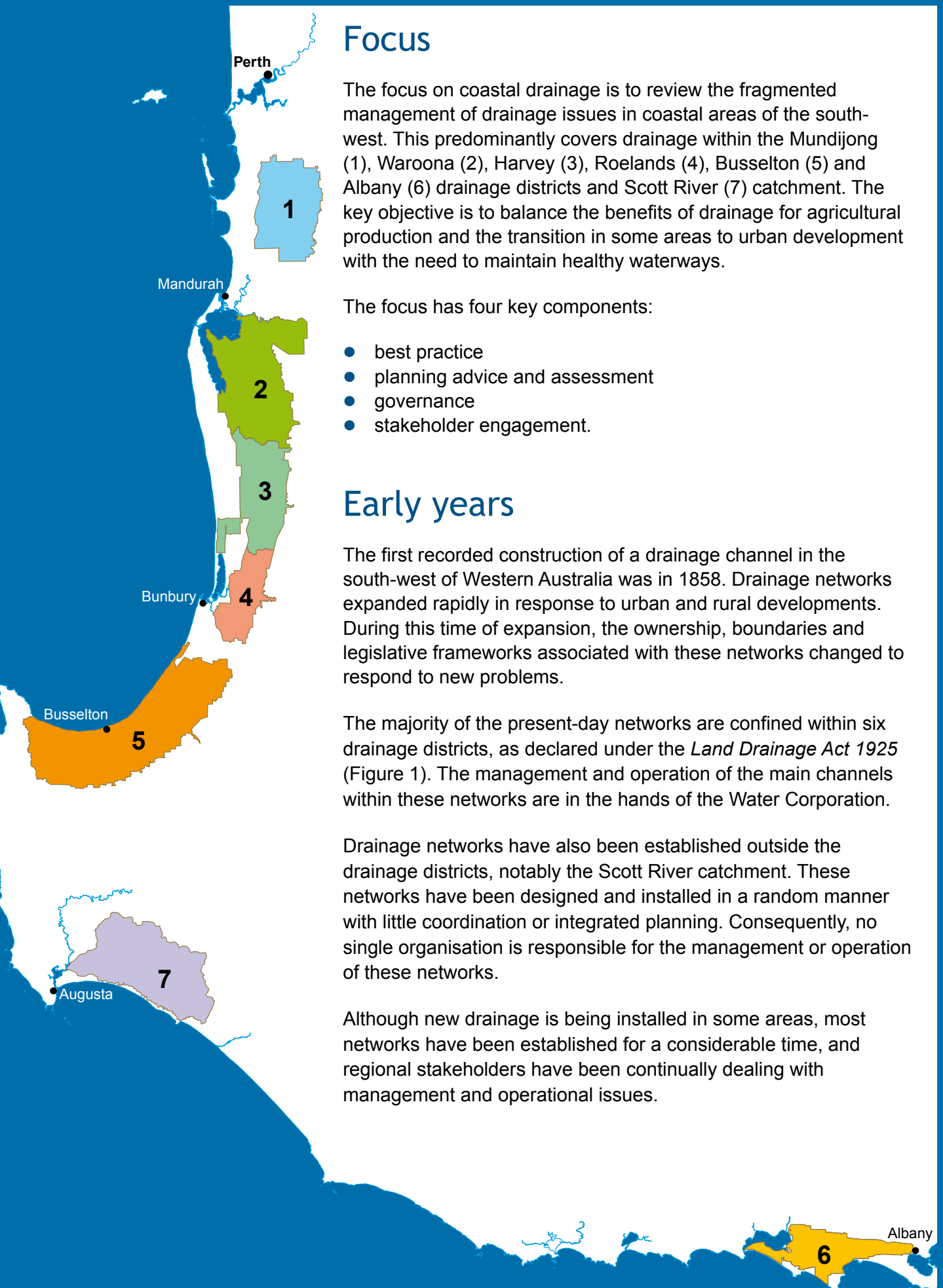


Figure 1 Drainage districts

## Director general's message



Coastal drainage is an important part of the state government's commitment to managing Western Australia's limited water resources. The *State Water Plan 2007* encourages the management and use of water in the landscape,

covering issues such as water quality, climate change and opportunities for water reuse. This also includes drainage water.

Drainage networks on the coast were developed to meet increasing land-use requirements, predominantly agricultural. These industries are a very important part of the state's economy. It

is timely to review our drainage practices and to identify opportunities for modernising our approach to water management in the landscape.

I urge you to become acquainted with our work on coastal drainage and to work with us to better manage water as a valuable resource.

A handwritten signature in black ink, appearing to read 'John Loney'. The signature is fluid and cursive, with a large loop at the end.

John Loney  
Acting director general

### Case study: Best practice trials and assessments

The Peel–Harvey Catchment Council identified the Dirk Brook catchment as a significant source of phosphorus entering the lower Serpentine. This reach was selected for a project to assess the practical implications and cost-effectiveness of best practices for the gazetted drains.

Best practices assessed included stock exclusion, vegetation, meandering, riffles, artificial wetlands and water reuse. The water reuse aspect was viable at this stage because of the involvement of a commercial enterprise.

Two of the key findings from this project are:

- works requiring significant earthworks are unlikely to deliver cost-effective, sizeable gains in water quality unless they create an increase in storage capacity
- simple riffle structures in suitable channel sections can provide a relatively low cost means of increasing the storage capacity within the drainage system.

## Best practice

The current drainage systems were designed and installed to provide a mechanism for controlling the level of seasonal inundation of arable areas throughout the year. The objective was to improve crop and pasture production with associated benefits of preventing salinisation associated with irrigation, reducing agricultural disease and improving machinery/vehicle access.

Best practice is an approach that brings together best science, knowledge and skills that deliver modern technology in a practical way. By implementing best practice we can achieve multiple objectives – including better water quality and opportunities for reuse, and improving landscape amenities – while maintaining a productive agricultural capacity.

### Opportunities

- Review the performance of the existing drainage system.
- Develop best practices and monitoring procedures and guidelines.
- Store all information relating to drainage systems, monitoring data and best practices so it is easily accessible and understandable.



↑ Construction of an offline water reuse storage basin in the Dirk Brook Catchment (Photo: Peel-Harvey Catchment Council)

## Planning advice and assessment

Traditional planning of drainage systems focused on drainage for land use and protection against flooding. As these catchments become urbanised and intensified, the land-use planning system provides an ideal opportunity to implement best practice, particularly in relation to drainage design.

Planning and assessment need to be appropriate to the scale and type of development and its location in the catchment. Planning at a whole-of-catchment level allows the multiple objectives of 'water volume' and 'quality' to be integrated.

### Opportunities

- Review design procedures and maintenance practices for rural drainage.
- Develop a set of environmental health and water-quality indicators for assessment purposes.
- Research and develop a suite of planning and assessment decision tools and procedures.



← Review of Lake Manarup penstocks (floodgate) by members of the drainage management committee (Photo: Department of Water)

## Governance

There is no clear governance structure for drainage on the coastal plains. Although the Water Corporation is responsible for the operation and maintenance of most of the system within the declared drainage districts, ownership and management elsewhere are still fragmented.

There is a clear need for a legislative review to consolidate and reform the law of water resource management to achieve multi-objective outcomes. This review is currently under way.

### Opportunities

- Investigate opportunities for improved governance through the existing legislation and the water law reform process.

## Stakeholder engagement

During 2006–07, meetings were held with local stakeholders at five regional sites. The information gathered at these meetings led to the development of a discussion paper <[www.water.wa.gov.au/stormwateranddrainage](http://www.water.wa.gov.au/stormwateranddrainage)>, and is summarised in this brochure.

Most initiatives to encourage stakeholders to adopt best practices have, to date, been based on educational approaches, with varied success. To improve adoption, other mechanisms that encourage change need to be explored, such as economic benefits, market-based incentives and regulatory measures.

### Opportunities

- Increase our understanding of drivers of behavioural change in relation to drainage best practices.
- Develop and implement a marketing strategy to encourage greater acceptance of best practices.

## Case study: Catchment planning and governance

The Watershed Torbay project began in 2000 to undertake appropriate research and planning so that a whole-of-catchment restoration program could be developed. The key issues considered as part of this work included water quality, algal blooms and management of drainage system.

These works included the establishment of a drainage management committee. Representation included Water Corporation, Department of Water, Department of Environment and Conservation, local residents, local farmers and fishermen. This group undertook work to:

- understand and document the current operation of the drainage system
- identify and document the preferred drainage management outcomes of all relevant stakeholders
- develop an agreed communication protocol for operation of the drainage system

- document a range of catchment-applicable drainage restoration techniques, with a summary of costs and benefits.

The multi-stakeholder committee enabled differing objectives and legislative restrictions to be openly aired and incorporated into the planning process in an attempt to resolve conflicting issues. There were, however, areas that could not be resolved, such as responsibilities relating to flood control in urbanised areas and inflexibility of the 72-hour rule that governs drainage design and management.

One of the successes of this committee was that it developed a catchment model that enabled alternative operating systems to be assessed to enhance the management of the drainage system for multi-purpose objectives.

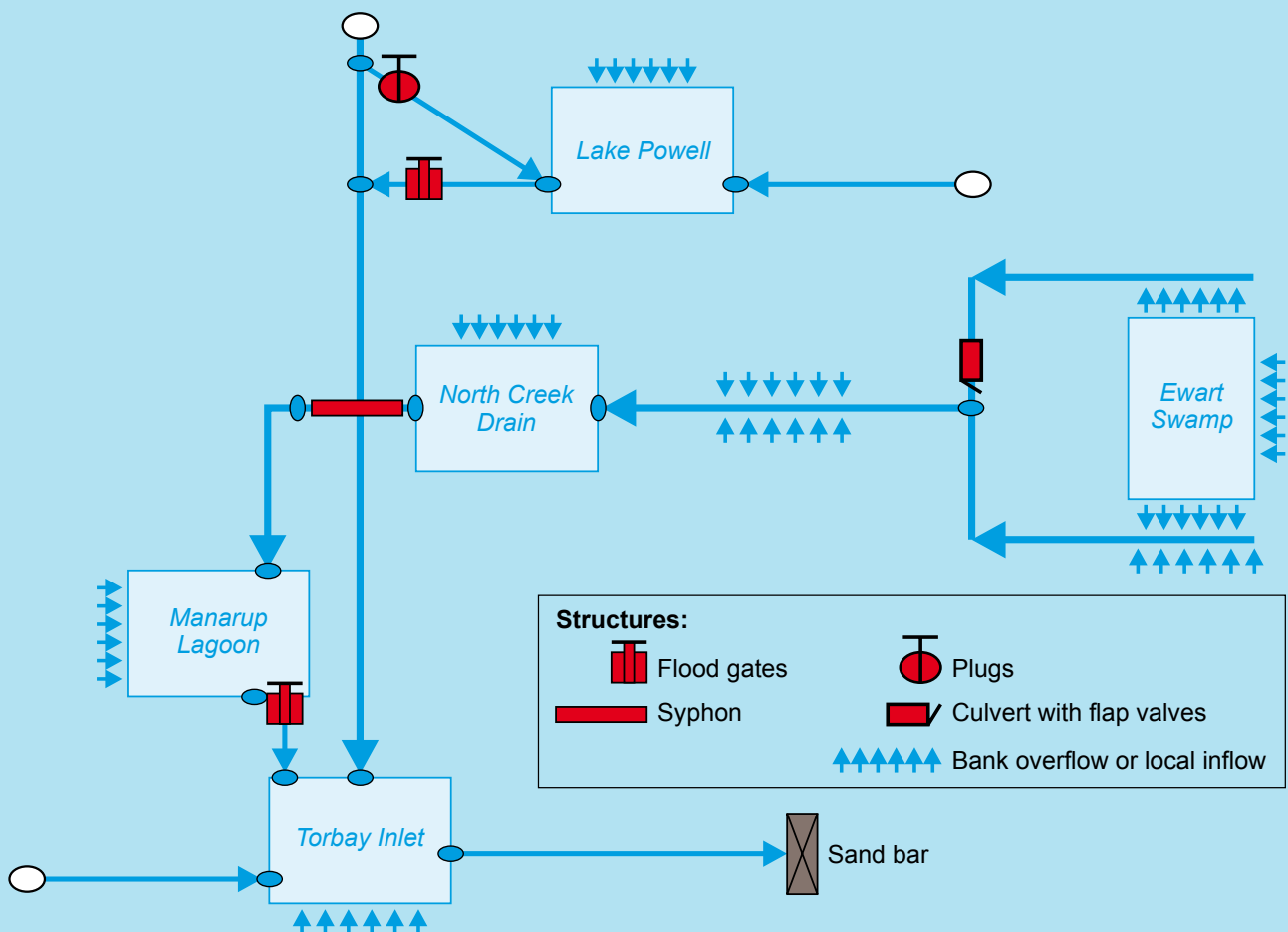


Figure 2 Conceptual flow diagram of Torbay drainage network



Community field trip to demonstrate works undertaken to protect the Vasse-Wonnerup wetlands (Photo: GeoCatch)

## Case study: Stakeholder engagement in drainage reform

The Geographe catchment contains the internationally significant Vasse–Wonnerup wetlands, which flow into Geographe Bay. The local community has a high level of interest in the water quality of these systems.

In 2005 GeoCatch commissioned a report on drainage reform options to reduce nutrient and sediment loads entering these significant water bodies.

This report was tabled at a well-attended public workshop to allow landholders to become familiar with and openly discuss the report.

Discussions included group sessions to review concerns and ideas relating to the content of the report and possible ways of implementing its recommendations.

Involving the public in the early stages improved the community's knowledge of the project objectives. This helped with gaining landholder support when a call was made for viable locations for on-ground works.

## Actions for 2007-08

The following three projects have been identified as priority actions for 2007–08:

- development of agreed processes and guidelines for reviewing and revising existing coastal drainage design manuals and operating and maintenance practices
- assessment and collation of information and data for coastal drainage best practice techniques
- investigation of alternative drainage management frameworks for coastal drainage systems.

## Our drainage program

The *State Water Plan 2007* outlines the state government's commitment to managing Western Australia's water resources. The plan provides an overview of climate, water resources, availability and use, and proposes frameworks to guide the government's and the community's responses to current and future pressures.

The Department of Water has a comprehensive approach to drainage through its drainage program, comprising three components of coastal, Wheatbelt and urban drainage. More information about the Wheatbelt and urban components can be found at [www.water.wa.gov.au](http://www.water.wa.gov.au).

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