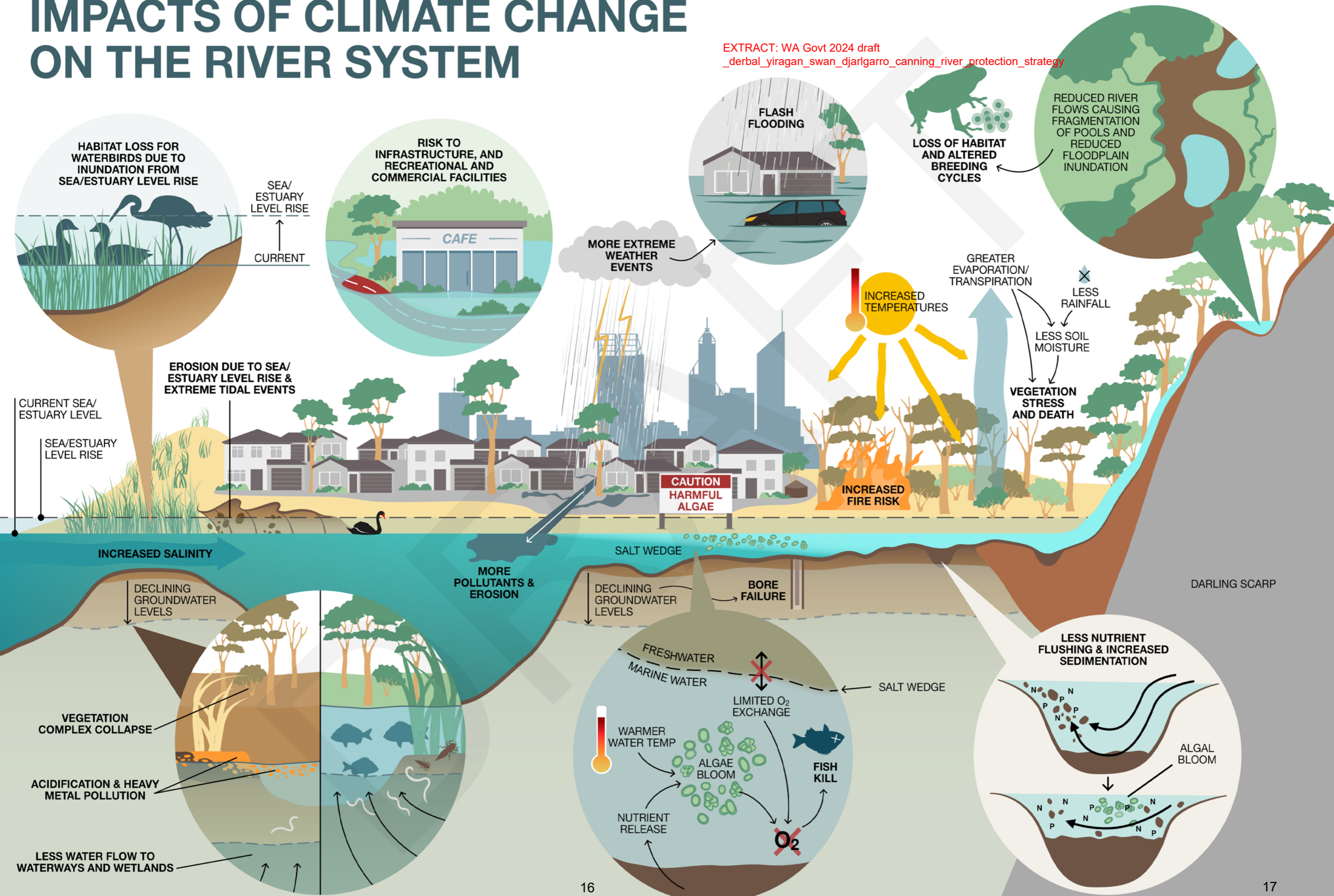
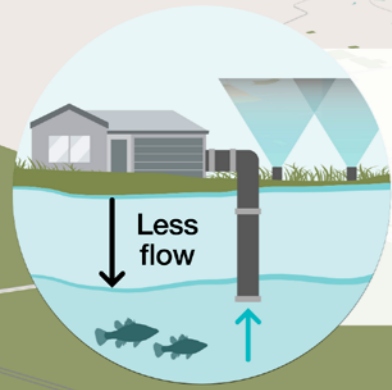


IMPACTS OF CLIMATE CHANGE ON THE RIVER SYSTEM

EXTRACT: WA Govt 2024 draft
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KEY THREATS TO THE RIVER SYSTEM

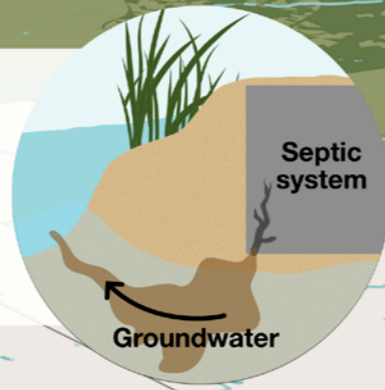


Water abstraction

Water abstraction results in less flow being available to sustain aquatic ecosystems and protect culture and heritage values.

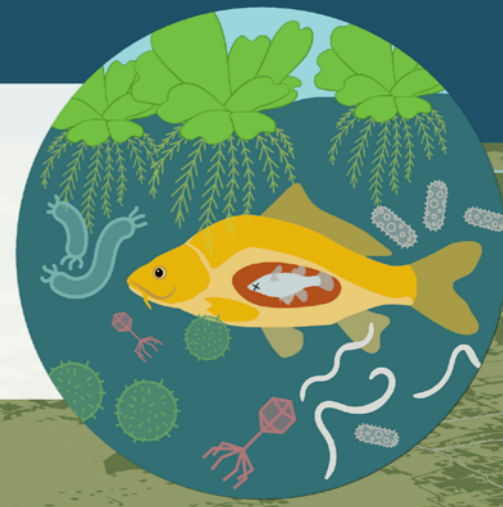
Contaminated water

Contamination can enter waterways through drainage systems and groundwater movement from industrial areas, old landfill sites, leaking storage tanks, uncontrolled fill, wastewater disposal systems and overflow from sewerage pipes and pumping stations.



Weeds, pests, and diseases

Weeds can overrun foreshore areas and riverbanks and clog waterways. Invasive pests like feral fish, foxes, cats, rabbits, and pigs can prey on local animals and plants and harm waterways. Diseases and parasites, such as phytophthora and polyphagous shot-hole borer, can affect plant and animal health.



Wildlife entanglements and ingestion of pollutants

Pollutants that end up in the river system pose a significant risk to wildlife through ingestion or entanglement, such as fishing line entanglements and ingestion of plastics.



Erosion

Erosion as a result of poor land, foreshore, and asset management can lead to increased sedimentation in the rivers. This can interfere with navigation, impact channel migration, cause inundation and destabilise riverbanks.



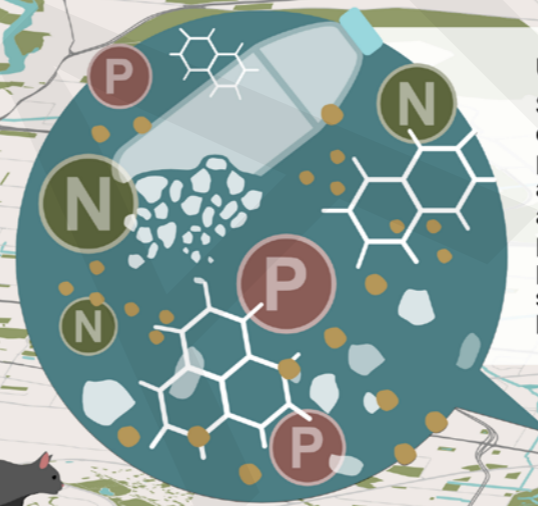
Agriculture

Agriculture can lead to nutrients and other contaminants entering the waterways and wetlands. Livestock access to waterways can degrade riverbanks and foreshore areas and increase turbidity.



Urban drains

Stormwater and groundwater drains are a year-round source of pollutants from industry, agriculture, and residential areas to waterways and wetlands. Pollutants include plastics, litter, pathogens, nutrients, perfluoroalkyl and polyfluoroalkyl substances (PFAS), sediment and hydrocarbons.

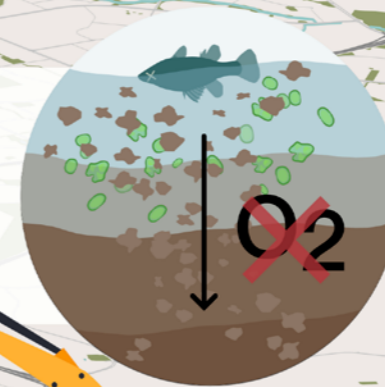


Fertilisers and pesticides

The use of fertilisers and pesticides in urban areas and agricultural lands within the catchment can result in them entering waterways and wetlands, through urban drainage systems and groundwater movement.

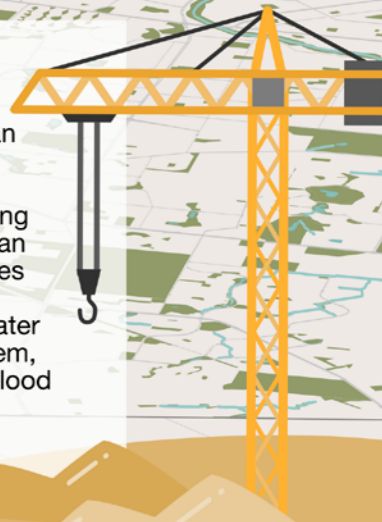
Sediment

Activities like land clearing, stormwater management (drains) and new developments contribute significantly to the sediment load in our waterways and wetlands. This sediment fills river pools and wetlands, damaging crucial habitats, smothering aquatic plants and reducing water quality.



Construction and development

Construction sites can lead to significant sediment and other pollutant loads entering the river system. Urban development increases impervious surfaces, altering the groundwater and stormwater system, which may increase flood risks.



Human disturbance

As more people interact with the rivers and foreshore, risks to wildlife and vegetation increase, such as vehicle wildlife strikes, trampling, and disturbance of habitats. Boating can increase the risk of eroding and damaging foreshores from boat wake and improper storage, while also increasing the risk of chemical pollution through antifoulants, detergents and fuel leaks.

Growing user demand

With population growth, the demand for both recreational and commercial use of the rivers and foreshores is anticipated to increase. Without proper planning, this could potentially affect the health and amenity of the river system.



Vegetation clearing and fire

Leads to biodiversity loss and fragmentation of habitats. This impacts urban greening and cooling efforts and increases the risk of erosion.



LEGISLATION APPLICATION TO THE RIVER SYSTEM

-  **River reserve**
-  **Riverpark**
-  **Development Control Area (DCA)**
-  **Catchment**

Swan and Canning Rivers Management Act 2006

- Ensures the protection of the ecological and community benefits and amenity of the Riverpark.
- Establishes the Swan River Trust as the vesting body for the Swan Canning Riverpark and an advisory body to the Minister for Environment that provides high-level, independent advice on the protection of the River reserve and related developments.
- Defines the boundaries of the River reserve, Riverpark, development control area (DCA) and Swan Canning Catchment.
- Outlines the management responsibilities of the Riverpark, including the granting of leases over the River reserve.
- Ensures joint management of the Riverpark shoreline and enables works to provide protection and erosion control for riverbanks.
- Regulates works, acts and activities that are proposed within the Swan Canning Riverpark and development control area through licences agreements and permits.
- Approves and provides the regulatory framework for development within the Swan Canning development control area.
- Enables the development of strategic documents that establish coordinated management arrangements necessary for the protection and enhancement of the ecological and community benefits and amenity of the Riverpark, such as the River Protection Strategy and Management Programmes.



Biodiversity Conservation Act 2016

- Conserves and protects WA's biodiversity, including native and specially protected species and threatened ecological communities, as well as listing critical habitats for conservation.
- Enables the development of biodiversity management programmes to provide for the conservation, protection and management of native species, ecological communities, and critical habitats.
- Regulates wildlife interactions and disturbance, including establishing separation distances from dolphins.

River reserve (marine fauna)

Threatened Ecological Communities throughout the Riverpark, Swan Canning development control area, Swan Canning Catchment



Climate Change Act (not yet passed)

- Requires government to set greenhouse gas emissions reduction targets, report annually to Parliament about Western Australia's progress against emissions reduction targets and develop policies and plans to support achievement of targets and enhance climate resilience.



Conservation and Land Management Act 1984

- Establishes a body to which the State's Terrestrial Reserves and Marine Parks and Reserves are vested in (Conservation Commission of WA and Marine Parks Commission of WA, respectively).
- Outlines the management responsibilities of the State's Terrestrial and Marine Parks and Reserves, including the access and leasing of land, and allows this land to be jointly managed with Traditional Owners.
- Ensures the development of policies to preserve natural environments of the State, the provision of facilities for the enjoyment of those environments by the community, the promotion of appreciation for plants and animals and natural environments, and ensures the Minister for Environment is advised on these issues.
- Enables management plans for terrestrial parks and reserves to be developed for the Minister for Environment, including guidelines for monitoring the implementation of those plans.

Pelican Point Nature Reserve, Matilda Bay Reserve, Canning River Regional Park, Walyunga National Park, Swan Estuary Marine Park (Alfred Cove, Pelican Point and Milyu)



Contaminated Sites Act 2003

- Regulates the identification, reporting, classification and management of contaminated sites.
- Provides technical advice to land use planning authorities to support the management of acid sulfate soils.

Contaminated sites

Acid Sulfate Soils risk areas



Environmental Protection Act 1986

- Protects the environment through the regulation of single-use plastics, unauthorised discharges or emissions, and responses to serious pollution incidents.
- Regulates the clearing of native vegetation through permits.
- Regulates prescribed premises through works approvals and licences.
- Provides independent advice to Government on environmental matters.
- Enables statutory (Environmental Protection Policies) and non-statutory (State Environmental Protection Policies) policies to protect the environment to be developed.
- Allows environmental impact assessments to be conducted.
- Enables compliance with conditions for Ministerial approvals to be monitored.



Pollution of Waters by Oil and Noxious Substances Act 1987

- Protects the environment from and manages hazards resulting from oil pollution.



Soil and Land Conservation Act 1945

- Prevents and mitigates land and water degradation due to soil erosion, salinity, eutrophication, flooding and the removal or deterioration of natural or introduced vegetation.



Waterways Conservation Act 1976

- Enables the declaration of areas as Management Areas, such as the Avon River Management Area, to ensure the conservation, maintenance and management of those areas.

Avon River Management Area (within the Swan Canning Catchment)



SERVICES, INFRASTRUCTURE & INDUSTRY REGULATION

Australian Maritime Safety Authority Act 1990

- Establishes Australia's national regulatory body for maritime safety that promotes the safety and protection of our marine environment.
- Provides certificates of surveys for domestic commercial vessels.



Jetties Act 1926

- Regulates the use of jetties through licences.



Main Roads Act 1930

- Makes provisions for the construction, maintenance, and supervision of bridges, highways, main roads, secondary roads and other roads, including their shared and cycle paths, to ensure that the road network safely links goods, people and places, facilitates industrial, commercial and business development, and enables efficient access to other modes of transport.
- Outlines the responsibilities for the management of all highways and main roads, including freeways and bridges, as well as roads that are not highways and main roads, including rail bridges.

The State's network of highways and main roads, including shared paths, cycle paths and similar paths that form part of that network over, in or adjacent to the River reserve, Riverpark, Swan Canning development control area or throughout the Swan Canning Catchment. Kwinana Freeway is a prominent example.



Public Transport Authority Act 2003

- Ensures the provision of public transport, including ferries.



Public Health Act 2016 / Health Act 1911

- Provides public health advice on issues potentially affecting water quality such as algal blooms, and contaminated sites.



Shipping and Pilotage Act 1967

- Enables declaration of boat harbours, mooring control areas, ports.



Western Australian Marine Act 1982

- Outlines the responsibilities for marine safety (in conjunction with the Australian Maritime Safety Authority).
- Outlines the responsibilities for coastal and estuarine facilities.
- Regulates the installation, removal and use of private moorings, as well as courtesy, emergency, rental and recreational or commercial moorings, including the administration of mooring licences and the associated waiting list.



Western Australian Tourism Commission Act 1983

- Establishes a Western Australian Tourism Commission responsible for promoting Western Australia as an extraordinary holiday and business event destination.
- Outlines the rules for developing, attracting and promoting major sporting, arts, cultural and business events; and supporting the development of significant tourism infrastructure and projects.
- Enables the WA Tourism Commission to act as an agent for any person engaged in the provision of travel or tourism facilities.
- Enables the provision of grants or loans to any person, local government or authority for the purposes of tourism.



Water Corporations Act 1995

- Establishes corporations with the function of providing water services (water supply, sewerage, irrigation or drainage services).
- Ensures water corporations can manage Western Australia's drinking water supplies to provide a safe, high-quality product that consistently meets Australian Drinking Water Guidelines and other consumer and regulatory standards i.e. treat, store and distribute drinking water, as well as manage wastewater i.e. collect, store, treat and dispose of wastewater.



Water Services Act 2012

- Regulates water service providers through the administration of licences.



RESOURCE MANAGEMENT

Agricultural Produce Commission Act 1988

- Guides the sustainability and profitability of the State's agriculture, food and fibre sectors.
- Encourages appropriate land, irrigation, and fertiliser practices.



Biosecurity and Agricultural Management Act 2007

- Manages biosecurity risks associated with serious noxious weeds in Western Australia, through declared plants policies and regulations and by providing research and technical advice on weed issues (Invasive Species Program).



Fish Resources Management Act 1994

- Controls invasive / noxious fish species.



Metropolitan Water Supply, Sewerage, and Drainage Act 1909

- Protects the State's drinking water resources from contamination.
- Informs the allocation of the State's water resources and ensures there is an adequate supply of surface water and groundwater to meet the needs of the community and the environment, now and in the future.



Mining Act 1978

- Encourages investment in resource exploitation.
- Regulates extractive industries.
- Ensures an equitable and secure titles system for mining, petroleum and geothermal industries.
- Is subject to the Environmental Protection Act 1986 to ensure best environmental management is promoted through environmental regulatory and policy services.

There are several exploration and mining tenements across land in the upper reaches of the Swan and Canning rivers and geothermal resources underlying the Swan Coastal Plain.

Rights in Water and Irrigation Act 1914

- Regulates the taking of surface water and groundwater through licences.



Water Agencies (Powers) Act 1984

- The lead legislation of WA's six water resource management Acts (the other Acts being: Country Areas Water Supply Act 1947, Metropolitan Arterial Drainage Act 1982, Metropolitan Water Supply, Sewerage, and Drainage Act 1909, Rights in Water and Irrigation Act 1914, and the Waterways Conservation Act 1976).
- Provides the framework for the measurement, protection, allocation and regulation of water resources in WA.
- Outlines the management responsibilities of the State's groundwater and surface water resources.
- Regulates the management of waterways, drains and local water bodies.



PLANNING, DEVELOPMENT AND LAND MANAGEMENT

Land Administration Act 1997

- Ensures the care, control and management of the Parks and Recreation reserve and other public reserves as well as enabling those land managers the power to lease, sub-lease or licence that land in line with that reserve purpose.



Local Government Act 1995

- Ensures that community facilities are provided and maintained.
- Enables the management of commercial, residential and industrial premises.
- Enables the creation of local laws that concern public health, such as monitoring or management of human health issues, including noise pollution, water quality in local swimming beaches and mosquito management.



Metropolitan Redevelopment Act 2011

- Enables the Minister (for Lands?) to recommended redevelopment areas to be declared.
- Establishes a state agency with planning, development control, land acquisition and disposal and other redevelopment projects in respect of redevelopment areas.

Elizabeth Quay, Riverside, East Perth Power Station site, Wungong Urban Water project area, and Midland Redevelopment Area (Helena River)



Planning and Development Act 2005

- The lead legislation for land use planning and development in WA.
- Establishes a statutory authority that coordinates planning for future land use (the Western Australian Planning Commission).
- Enables the development and maintenance of State Planning Policies, which provides a policy framework to ensure that planning, land use and development maintain and enhance the health, amenity and landscape values of the river.
- Regulates the way in which communities can be built through developing and implementing policy and strategic plans.
- Ensures strategic planning for urban, rural and regional land use planning and land development matters.
- Supports integrated planning and coordinates the development and delivery of land supply, affordable housing, and infrastructure to ensure well-planned and connected communities, particularly in the regional areas of the State.
- Ensures that public and private land is used appropriately and consistently, including location of industry, commerce, residential services, community facilities and necessary infrastructure.
- Approves planning, subdivision and development applications.
- Administers the Metropolitan Region Improvement Fund that can and is used to acquire land for public purposes, including foreshore reserves and parks, and Bush Forever sites. Land acquired through the fund may be vested with various management authorities, depending on the purposes for which the land was acquired.



CULTURAL HERITAGE

Aboriginal Heritage Act 1972 (WA)

- Improves service delivery and facilitates developing policy and programs that deliver sustainable economic, environmental and social benefits to Aboriginal communities.
- Ensures the public and private sectors and the community are advised on the management of Aboriginal heritage.
- Maintains a Register of Aboriginal Sites.
- Helps Aboriginal families and native title parties access information that may help them in reuniting families or demonstrating their connections to Country.
- Ensures developers undertake engagement with Aboriginal people, including building this into development planning processes where required.

Registered Aboriginal sites and places



Heritage Act 2018

- Establishes the Heritage Council to assess and document places of cultural heritage significance.
- Ensures registered places of cultural heritage significance are preserved.
- Encourages the conservation of places with cultural heritage significance.
- Enables the provision of funding to help with conservation planning and conservation works on Heritage Places.

Heritage places listed in the State Register of Heritage Places

