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Floodplain management

Floodplains continue to be under pressure for more intensive uses despite the significant flood risk. This pressure is increasing as desirable undeveloped land becomes scarce. This Water Facts describes the principles for good floodplain management and explains the roles of government agencies.

Severe floods do not occur frequently in this State so the extent of flooding and its consequences are usually soon forgotten. However, when flooding does occur, the resulting damage to property can be quite considerable (see Water Facts 13, Flooding in Western Australia).

In recognising the need to contain and lessen potential flood damage, the former Public Works Department in 1975 commenced floodplain mapping of major rivers throughout the State to provide planning bodies and local government with strategies for ensuring sound development on floodplains. This advisory service was continued by the former Water Authority between 1985 and 1996. Since then the service has been provided by the Water and Rivers Commission.

The floodplain management program has been providing a non-structural means of protecting future development from major flooding. Floodplain management strategies are an essential part of an integrated catchment management approach to development on floodplains and provide a high degree of flood protection.

Effective floodplain management requires co-operation and co-ordination between all three levels of government.

Principles of floodplain management

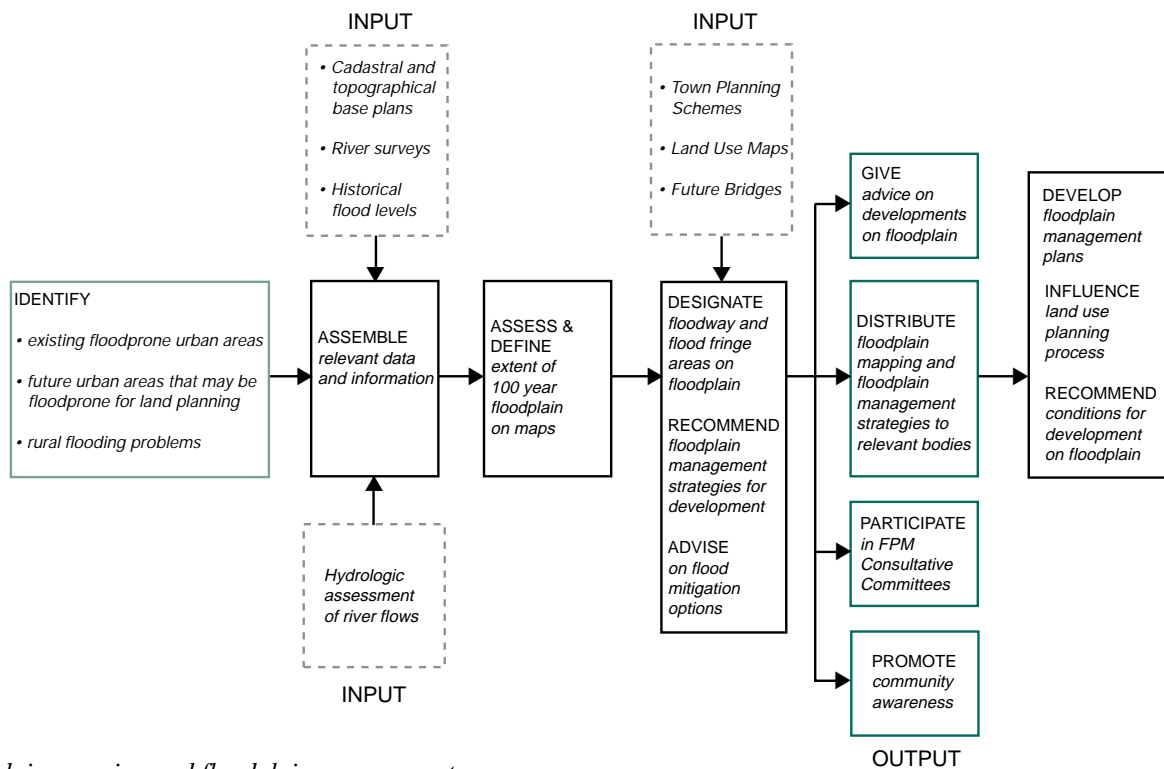
Floodplains should be managed for the benefit of the whole community so that the risk and damages are minimised and environmental values are protected. Sound floodplain management should:

- ensure land use minimises flood risk and damage costs;
- ensure all three levels of government and the local community accept their responsibilities in floodplain management;
- ensure appropriate floodplain mitigation measures minimise damage and are acceptable to the local community;
- promote the use of **non-structural*** rather than **structural**** mitigation measures where possible;
- ensure floodplain management measures have beneficial economic, social and environmental outcomes; and
- provide flood forecasting and warning systems and emergency management arrangements to help minimise the impact of flooding.

* **Non-structural measures** aim at reducing or avoiding the susceptibility of new developments to flood damage as well as reducing the impact of flooding on existing developments. They include land use and building controls, acquisition of land and relocation, effective flood forecasting and flood warning, creating public awareness and flood insurance.

** **Structural measures** physically modify the natural behaviour of flooding and are designed to reduce the frequency or impact of flooding on existing developments. They include levee banks, channel improvements, river diversions, retarding basins and flood mitigation dams.





Floodplain mapping and floodplain management process.

Terms commonly used in floodplain management

Average recurrence interval (ARI)

A statistical estimate of the average period in years between the occurrence of a flood of a given size or larger. The ARI of a flood event gives no indication of when a flood of that size will occur again.

100 year ARI flood

A flood having an average recurrence interval (ARI) of 100 years. This flood has a 1% chance of occurring in any one year and has a 50% chance of being experienced at least once in a person's life time. The 100 year ARI flood has been generally adopted in Australia and overseas as the basis for floodplain management planning.

Floodplain

The portion of a river valley next to the river channel which is covered with water when the river overflows its banks during major river flows. The term also applies to land adjacent to estuaries which is subject to inundation during flooding.

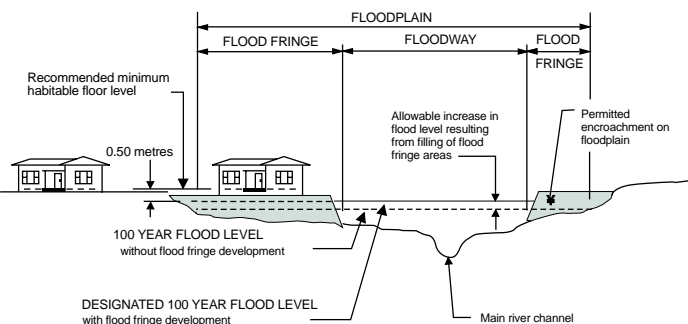
Floodway

The river channel and a portion of the floodplain which forms the main flow path for floodwaters once the main channel has overflowed. If the floodway is even partially blocked then upstream flood levels may be raised and thereby affect areas which may not have been previously

affected. Development in floodways is to be avoided wherever possible.

Flood fringe

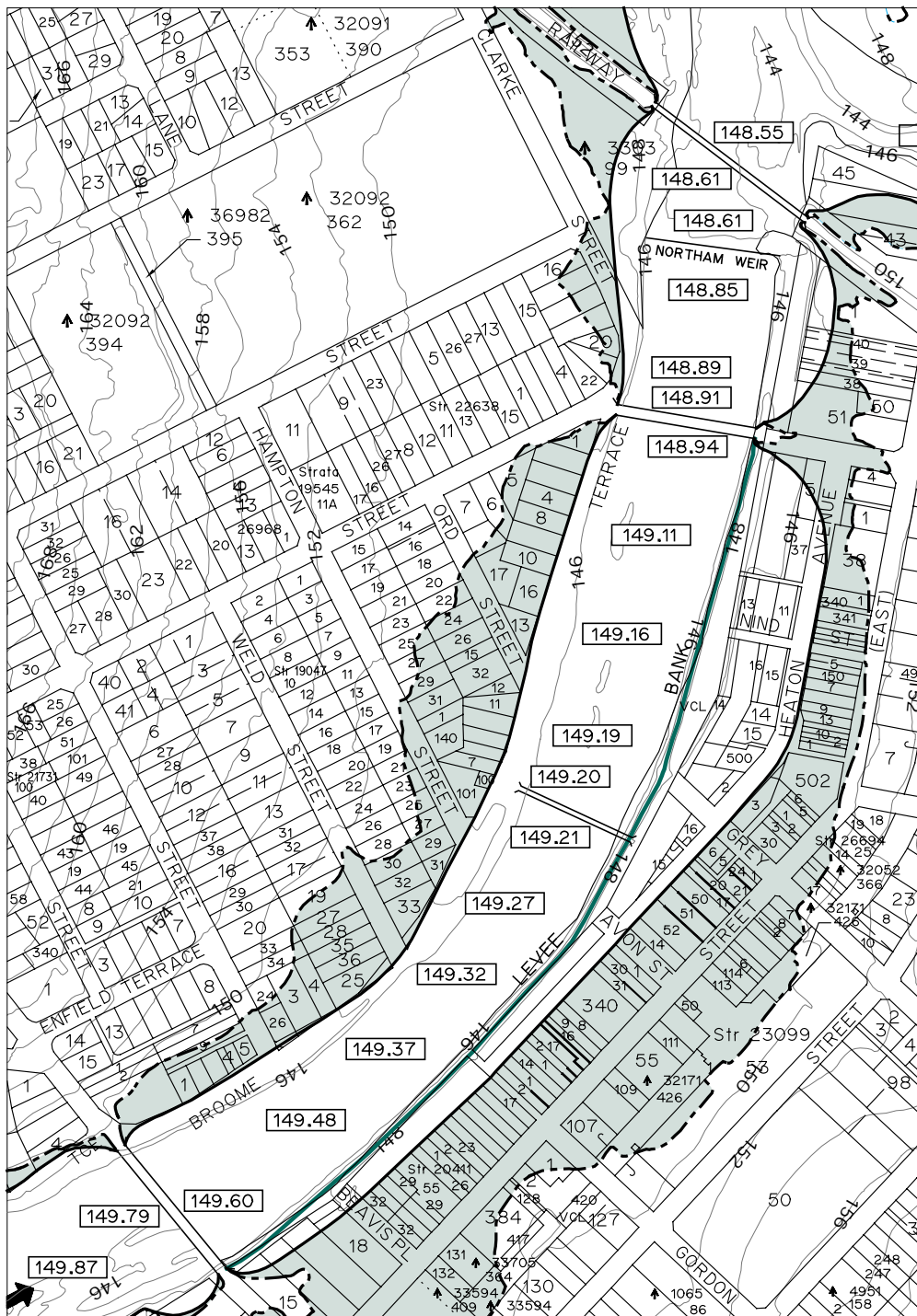
The area of the floodplain, outside of the floodway, which is affected by flooding but where development could be permitted provided appropriate measures are taken. These areas are generally covered by still or very slow moving waters during a 100 year ARI flood.



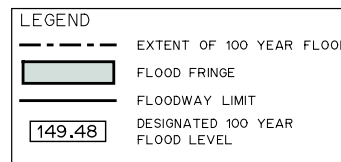
Typical recommended floodplain management strategy.

- Development (i.e. filling, building, etc) that is located within the flood fringe is considered acceptable with respect to major river flooding. However, a minimum habitable floor level of 0.50 metre above the adjacent 100 year flood level is recommended to ensure adequate flood protection.
- Development (i.e. filling, building, etc) that is located within the floodway and is considered obstructive to major river flows is not acceptable as it will increase flood levels upstream.





Floodplain mapping of the Avon River through Northam.



Roles and responsibilities

Commonwealth Government

The Commonwealth Government has a general responsibility for the economic and social well being of the nation. The Commonwealth Government's role is to:

- encourage the development of effective long-term strategies for development on floodplains at a national level, provide financial assistance in the form of natural disaster relief payments when there is significant flood damage and disruption;

- provide flood forecasting and warning services; and
- develop, co-ordinate and support effective national emergency management arrangements.

Commonwealth financial assistance has been made available for floodplain management studies and the construction of flood mitigation works. This assistance is aimed at reducing the economic and social costs of flooding by encouraging local and regional acceptance of responsibilities for floodplain management.



State Government

The primary role of State Government is to develop appropriate standards and strategic approaches for floodplain management and to ensure that they are applied in a co-ordinated and integrated fashion across the State. This role involves the provision of expert technical support by the Water and Rivers Commission, land planning through the Ministry for Planning and provision of effective flood emergency management and planning through the State Emergency Service.

• Water and Rivers Commission

The Water and Rivers Commission is the State Government's lead agency in floodplain mapping and providing floodplain management advice. In accordance with the *Water and Rivers Commission Act 1995* the Commission's function is to "develop plans for and provide advice on flood management".

The Commission provides advice on development of floodplains with the object of promoting the wise use of floodplains while minimising flood risk and damage. In particular, its role is to:

- collect and analyse flood data;
- prepare floodplain maps of existing and future urban areas which are floodprone;
- provide advice to the Ministry for Planning, Local Government and other agencies on flooding and recommend guidelines for sound development on floodplains; and
- assist in flood forecasting in association with the Bureau of Meteorology for the issuing of flood warnings.

The Commission, as a central advisory service for floodplain management, provides consistent minimum standards of flood protection throughout the State and provides impartial advice with regard to proposed development.

• Ministry for Planning

The Ministry for Planning and the Western Australian Planning Commission are responsible for developing, reviewing, and implementing the land use planning system. The Ministry for Planning is responsible for advising the Western Australian Planning Commission on land use planning and policy matters. This is achieved through the preparation and review of Region Schemes, Corridor Plans, Town Planning Schemes and Scheme amendments and the development of planning policies.

• State Emergency Service

The State Emergency Service (SES) is the Lead Combat Authority in emergency management and planning for floods. It is responsible for the preparation of the State Flood Strategy, Regional and Local Flood Emergency Plans. Effective local flood emergency planning requires close co-operation between SES, Local Government and Water and Rivers Commission.

Local Government

The principal role of Local Government in floodplain management is the implementation of floodplain management strategies. This is achieved by land and development controls through statutory planning and by various building regulations.

Councils are encouraged to incorporate floodplain management strategies and guidelines into their Town Planning Schemes or into a Council Policy Statement. Local Government should also actively promote and sustain flood awareness at the community level and make a significant contribution to flood emergency management and planning.

For more information contact



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