

- Objectives:** Place
- Outcome:** 2.1 - A diverse, well planned built environment.
- Strategy:** 2.1.1 - Actively engage in the development and promotion of an effective planning framework.

Purpose

The objectives of the policy are as follows:

1. Assist in enhancing the beneficial uses of all watercourses and wetlands in the Shire. In particular, these beneficial uses are their use:
 - i) as a habitat for: locally indigenous fauna, including migratory or threatened species; or locally indigenous flora, including threatened species.
 - ii) for the maintenance of the diversity and abundance of locally indigenous fauna and flora species.
 - iii) to provide a biologically productive and genetically diverse natural environment and maintain ecological processes.
 - iv) to reduce the impact of storm events and flooding.
 - v) to create and enhance recreational opportunities in parts of the Shire of Serpentine Jarrahdale.
 - vi) in helping form the natural, rural landscape and amenity of the Shire.
 - vii) their value and association with Aboriginal spirituality and European heritage.
2. Ensure water sensitive design best management practices are implemented for all new proposals in the Shire.
3. Improve water quality in the Shire and quality of water entering receiving water bodies.
4. Develop a network of multiple use corridors throughout the Shire.

Definitions

‘Best Management Practice’ (BMP) means best management practices as published in former Department of Water’s ‘Stormwater Management Manual for Western Australia’, and ‘Better Urban Water Management’. These documents will be used in conjunction with the Principles for design and assessment of best management practices (ie Section 5 of this policy).

Conservation wetland – see wetland management categories below.

‘constructed wetland’ means “wetland” that has been purposely designed and constructed to meet the objectives of this policy. See definition of wetland below.

‘fringing vegetation’ means native vegetation that:

- i) occurs in or adjacent to; or
- ii) is dependent for its survival upon, a watercourse or protected wetland.

“Multiple use wetland” – see “wetland management categories”

‘native vegetation’ means any locally indigenous plant species or community of plants.



'open drain habitat' means that part of the drain that is permanently or seasonally inundated including the portion vegetated with aquatic vegetation. Its area can be determined (in square metres) from the extent of inundation and aquatic vegetation. Open drain habitat usually provides habitat for aquatic fauna such as water beetles and frogs. In some instances and particularly in rural areas, open drain habitat occurs along roads, but it is generally confined to trunk drainage.

'protected wetland' means a wetland or portion of a wetland protected under the Environmental Protection (Swan Coastal Plan Wetlands) Policy or any wetland mapped as a Conservation Category wetland by Department of Biodiversity, Conservation and Attractions (DBCA). Determination of Conservation Category Wetlands shall be based on vegetation condition and wetland assessment criteria as described in Hill et al 1996 (Wetlands of the Swan Coastal Plain Volume 2A)

Resource Enhancement wetlands – see wetland management categories.

Stormwater management system – all designs and proposals included in a development to achieve the objectives of water sensitive design and this policy **'watercourse'** means -

- a) any river, creek, stream, brook or drain, whether artificially improved or altered or not.
- b) any conduit that wholly or partially diverts a river, creek, stream or brook from its natural course and forms part of that river, creek, stream or brook.
- c) any natural collection of water into, through, or out of which anything referred to in paragraph (a) or (b) flows, whether artificially improved or altered or not

in which water flows or is contained whether permanently, intermittently or occasionally.

Water sensitive design (WSD) – a multi-disciplinary approach to stormwater management based on addressing the multiple objectives of water flow control, water quality improvement, flood protection, nature conservation, and enhancement of recreational, landscape and educational opportunities.

'wetland' - An area of seasonally, intermittently or permanently waterlogged or inundated land, whether natural or otherwise, and includes a lake, swamp, marsh, spring, dampland, tidal flat or estuary' (*Environmental Protection Act 1986*) (EP Act).

'Wetland management categories' – Wetlands in the Shire have been allocated to one of three management categories by the Environmental Protection Authority (EPA) under the 'Environmental Guidance for Planning and Development'. These categories are Conservation, Resource Enhancement and Multiple Use. The categories are based on the natural attributes of the wetland. Where the management category of a wetland is in dispute, DBCA shall be the arbiter.

Background

This policy does not bind the Council in respect of any application for planning approval but the Council will have due regard to the provisions of the policy and the objectives which the policy is designed to achieve before making its determination.

This policy is also intended to:

- i) Assist Council's consideration of structure plans.
- ii) Guide Council's advice to the Western Australian Planning Commission regarding fulfilment of subdivision conditions.



If a provision of this policy is inconsistent with the:

- iii) State Planning Policy 2.1 (Peel-Harvey Coastal Plain Catchment), the State Planning Policy prevails.
- iv) Environmental Protection (Peel Inlet -Harvey Estuary) Policy 1992, the Environmental Protection Policy prevails.
- v) Shire of Serpentine Jarrahdale Local Planning Scheme, the Scheme prevails.

This policy applies to all rezonings, structure plans, local development plans, subdivisions and development proposals and applies throughout the Shire of Serpentine Jarrahdale.

Detailed specifications to help meet the objectives of this policy will be maintained in the Byford District Water Management Strategy and are contained within the 'Stormwater Management Manual for Western Australia' and 'Better Urban Water Management' by the former Department of Water.

Policy

1. Principles for design and assessment of best management practices

Council shall ensure that all development utilises best water sensitive design (WSD) management practice when exercising its decision-making and compliance auditing in respect to rezonings, structure plans, subdivisions or development approvals. The following principles will be used to assess the extent to which a proposal meets best WSD management practice.

The key principles of Water Sensitive Design are:

- i) a whole of catchment approach.
- ii) retention and treatment of water 'at source' and
- iii) use of 'best management practices' in a treatment train approach.

1.1 Catchment based approach to stormwater management

- i) Sub-catchments within the development shall be identified to:
 - a. show surface water flows including peak flow characteristics.
 - b. water related environments and places of significance.
 - c. pollution sources and loads.
 - d. support the proposed design, treatment trains, location of best WSD management practices and Multiple Use Corridors.
- ii) Stormwater management systems shall address stormwater flows entering the development's catchment(s). Developments shall be designed with due regard to proposed land use as reflected in the Local Planning Scheme, Local Planning Strategy and the volumes of water likely to be generated upstream of the development.

1.2 Water resource management is addressed at all catchment levels

All development proposals shall address water quantity and quality at each stage or scale of development. For example, subdivisions shall consider minimisation of runoff at the lot, street and subdivision scales.



- 1.3 Stormwater retention, use and quality treatment shall occur at source or as high as possible in the catchment.

This is a key principle of water sensitive design and applies to all catchment scales from the smallest catchment (eg private residential lot) to the river catchment scale.

- 1.4 Best Water Sensitive Design management practices

Stormwater management systems shall be based on best Water Sensitive Design management practices appropriate to the catchment and natural environment characteristics, type of development, proposed land use and the impact of the proposed drainage approach.

The selection and siting of best WSD management practices shall be based on the individual characteristics of the site, the desired performance objectives, and any impacts of the BMP. BMP's should meet all water sensitive design objectives, be cost effective, attractive and an environmental enhancement. All BMPs will be assessed for their effectiveness in minimising or trapping pollution, especially pollutants in the 'first flush'.

Best WSD management practices are included in the 'Stormwater Management Manual for Western Australia' and 'Better Urban Water Management' by the former Department of Water.

It is recognised that new best WSD management practices will be developed over the life of this policy and shall be assessed as to how well they meet the objectives of this policy.

WSD management practices shall address the provision of habitat for indigenous flora and fauna to achieve Policy objectives a) i, ii and iii.

The design of best WSD management practices shall address public health and safety aspects, including physical safety, fire management and impact on midge and mosquito breeding and numbers.

A general requirement is that "all stormwater be disposed on-site to the extent that 1 in 10 year storm event of 72 hour duration is retained for three to seven days" before disposal off-site. Proponents will be required to demonstrate compliance with the Environmental Protection Authority criteria until such time as DWER or the Environmental Protection Authority develop new criteria.

Wherever possible use should be made of stormwater run-off, especially from hard paved areas. Components of stormwater management should be located so they follow natural contours.

- 1.5 Measures shall be considered to avoid pollution in the first instance

Proposals shall consider how pollution (including nutrients) will be limited from entering the stormwater management system. These are referred to as source control and include such examples as community awareness programs to reduce input of fertilisers and litter traps.



1.6 The stormwater management system adopts a treatment train approach

A treatment train approach is where best WSD management practices are applied in sequence to maximise water quality improvement and achieve other objectives of water sensitive design at the appropriate scale of development.

1.7 Property is protected from flooding or damage by surface water or groundwater

Watercourses and main drains

All development along watercourses, main drains and overland flow paths for the 100 year storm recurrence interval shall have floor levels at least 300mm above the 100 year flood level. Council recommends floor levels to be 500mm above the 100 year level, particularly in areas with heavy soils. If the 100 year flood level is not known building floor levels shall be at least 300 mm above the surrounding road network of the development.

Watercourses and drainage reserves should be of sufficient width to allow for 1:6 batters, appropriate access for maintenance, and the floodway associated with the 100 year event. A minimum reserve width of 30m with an average of 50 m is required to allow for the natural meandering of a watercourse and the flood plain, revegetation, and maintenance accessways or multi-use paths.

Groundwater levels

To protect housing from flooding and rising damp from groundwater, development in areas where the Average Annual Maximum Groundwater Level (AAMGL) is at or within 1.2m of the surface, the importation of fill will be required together with the provision of sub surface drainage, placed at the AAMGL. In areas where the AAMGL is more than 1.2m from the surface, sub-surface drainage may still be required to restrict the rise in groundwater and ensure that adequate separation of building floor slabs from groundwater is achieved. The AAMGL should be determined to the satisfaction of DWER.

1.8 Post development outflows approximate pre-development conditions (ie water level and flow regimes are maintained)

Water flows – watercourses

In order to prevent in-stream erosion, peak flows in watercourses should not exceed pre-development conditions for the particular storm average recurrence interval (eg the peak flow reaching the watercourse from the catchment in a 10 year event should remain the same after development).

Longer duration low-level flows in watercourses to maximise detention times on-site consistent with advice in the former Department of Water's 'Stormwater Management Manual for Western Australia' and 'Better Urban Water Management' are acceptable to enable increased water volumes to be discharged off-site.

Adequate on-site detention is required to ensure this criterion can be met.

Water levels – Protected wetlands

A hydrological study shall be undertaken by the developer/proponent where a proposal includes or is adjacent to protected wetland(s). Hydrological investigations should



determine the level of impact of the development on wetland water levels, and address what measures will be implemented to mitigate against hydrological impacts.

No stormwater shall directly enter to Conservation or Resource Enhancement category wetlands. The interval for overflow from the treatment system to the C or R wetland must be determined through appropriate research and modelling.

Where subsoil drains are used for development abutting protected wetlands, a 100m hydrological buffer between the sub surface drain and the wetland is required to allow the groundwater to assume its natural level adjacent the wetland.

Where protected wetland is likely to be or is a perched wetland, a protective swale is required upstream of the wetland to prevent flooding from groundwater rises, with the depth of the swale being determined based on an assessment of the vegetation around the wetland.

- 1.9 Stormwater management system design shall incorporate natural (ecological) features of watercourses and wetlands and restore or construct them where appropriate. Buffer widths shall be based on the purpose(s) of the buffer, using the best advice.

Buffers to wetlands, watercourses and water sensitive design features

Buffers to wetlands, watercourses and water sensitive features are required to protect the 'water based ecosystem from adjacent land uses, and vice-versa.

In considering the width of buffers Council shall give consideration to the purpose(s) of the buffer and the characteristics of the adjacent land use(s). Council should seek advice from the appropriate State Government agencies when making decisions which affect buffer widths or effectiveness.

Buffers shall be revegetated with native vegetation to reflect original vegetation community types.

Non-native vegetation shall be removed and replaced with native vegetation, except where the non-native vegetation has identified landscape or heritage value.

Buffer zones for significant watercourses, protected wetlands and Multiple Use Corridors shall become reserves vested in Council.

Vegetation protection

Tight controls on the removal of native vegetation exist in Serpentine Jarrahdale, and such controls apply to vegetation associated with wetlands, watercourses and water sensitive design features.

Proposals which require the removal of native vegetation will generally be refused.

Vegetation restoration and revegetation

Where wetland vegetation is absent or in poor condition, then measures are required to restore the vegetation in terms of species diversity, plant numbers and original plant community structure and zonation.

Buffers to wetlands, watercourse and water sensitive design features shall be revegetated with native vegetation to reflect original vegetation community types.

Watercourses should be vegetated with native vegetation for at least 15m either side of the watercourse and maintenance accessway. Watercourses within Multiple Use corridors



should be vegetated with native vegetation for a minimum of 20m either side of the watercourse and maintenance accessway. Where wider buffers to watercourses are required, then wider revegetation areas may be required.

Protected wetlands and Resource Enhancement wetlands should be revegetated consistent with the vegetation types and plant groupings that occur in the wetland (to the outer edge of the damp zone).

Batters and reserve widths are addressed under “Protection of property from flooding” above.

Non-native vegetation shall be removed and replaced with native vegetation, except where the non-native vegetation has identified landscape or heritage value.

Measures shall be implemented by the developer to control erosion until the vegetation has been established.

Biodiversity and fauna habitat

Features that provide fauna habitat and improve water quality shall be incorporated into stormwater management systems, and include:

Native vegetation – particularly sedges and rushes to promote filtering; Pool and riffle sequences to improve aeration and oxygenation; Ponds, pools or stormwater gullies designed as sediment traps; Watercourse profiles that provide a range of fauna habitats.

1.10 Development of a network of Multiple Use Corridors (MUCs)

Multiple Use Corridors are linear reserves which integrate the multiple purposes of water quantity and quality management, nature conservation and ecological function, and recreational and educational opportunities. They form the major spines of the stormwater management and wildlife corridor systems throughout the Shire.

The design of MUC’s will be assessed on:

- a) The treatment train of best WSD management practices;
- b) Management of peak and base flows including flood flows;
- c) Net ability to remove pollutants and reduce movement of pollutants
- d) Their enhancement of local amenity, especially for those developments adjacent to the Corridor; (Development surrounding the MUC should in turn maximise public and private views into the Corridor).
- e) Creation of recreational and educational opportunities.
- f) Net impact on biodiversity and fauna habitat

Public safety and health - The design of best MUCs shall address public health and safety aspects, including physical safety, fire management and impact on midge and mosquito breeding and numbers; and

Provision of access for management.

Multiple Use Corridors shall be developed throughout the Shire on the following watercourses:

- a) all watercourses shaded on the plan marked ‘Major watercourses of Serpentine-Jarrahdale’ attached to this policy; and
- b) watercourses identified as MUCs in the Byford District Structure Plan



- c) watercourses designated as MUC's as part of amendments to the Shire's Local Planning Scheme; and
- d) other watercourses as designated by Council.

Multiple use corridor width will vary according to site specific, bio-physical characteristics. An average width of 100 metres should be vested in public ownership as a minimum, with additional width if needed for recognising floodway characteristics, water sensitive design features (eg constructed wetlands), protection of riparian vegetation, or recreational needs. The 50m should be measured from the edge of the riparian vegetation not from the centreline of the watercourse. Management Plans for MUCs shall form part of Stormwater Management Plans. MUCs should be divided into zones or priority use areas for management purposes and to avoid land use conflicts.

1.11 Maintenance and operating requirements

Proposals shall describe management requirements for the stormwater management system and include estimated costs of maintenance. Maintenance requirements costs are to include costs of specific best WSD management practices throughout the development and total Multiple Use Corridor maintenance.

2. Application to proposals

This policy applies to all rezonings, structure plans, local development plans, subdivisions and development proposals throughout the Shire of Serpentine Jarrahdale.

Council will not consider any application for subdivision in the Byford District Structure Plan Area, without first receiving a Stormwater Management Plan, which demonstrates development, will comply with this Policy and the Byford Urban Stormwater Management Strategy. The Shire may request a Stormwater Management Plan for any other rezonings, structure plans, local development plans, subdivisions and development proposals throughout the Shire of Serpentine Jarrahdale to ensure that development shall comply with this policy.

**References**

Name of Policy	Local Planning Policy 2.4 – Water Sensitive Urban Design Guidelines
Previous Policy	Local Planning Policy 6 – Water Sensitive Design
Date of Adoption and Resolution Number	23 July 2018 - OCM063/07/18 15 May 2023 – OCM100/05/23
Review dates and Resolution Numbers	
Next review date	
Related documents	Acts/Regulations <i>Local Government Act 1995</i> <i>Planning and Development Act 2005</i> <i>Planning and Development (Local Planning Schemes) Regulations 2015</i> Plans/Strategies Strategic Community Plan 2017 - 2027 Policies References Delegations Work Procedures

Note: changes to references may be made without the need to take the Policy to Council for review.



Appendix A. 'Major Watercourses of Serpentine-Jarrahdale'

