

# Vehicle Parking Area Development

## 1. Application

This development type applies to the development and use of land for vehicle parking purposes.



*Bioretention planters in a large car park. Car park runoff is directed into garden beds with underdrainage (and overflow points) to clean and slow runoff. Runoff enters garden bed via breaks in the curb (see bottom right of garden).*

## 2. Objectives

- Integrate natural and/or existing site topographical features into the vehicle parking area design.
- Minimise capital and maintenance costs.
- Maximise opportunity to direct stormwater runoff into the ground or waterbody (where safe, compatible and appropriate to the function of the area or waterbody).
- Maintain availability of water during restrictions
- Make more efficient use of water
- Assist maintenance of garden / landscaping
- Reduce flood risk
- Prevent erosion
- Improve water quality
- Improved vehicle parking facility aesthetics.



### 3. Common Techniques

*The following techniques are commonly used in water sensitive design strategies for vehicle parking area development. They are described in more detail in the relevant practice note.*

<b>Technique</b>	<b>Practice Note Reference</b>
Rainwater tanks	Practice Note No.1
Infiltration Devices	Practice Note No.2
Paving	Practice Note No.3
Landscaping	Practice Note No.4
Drainage Design	Practice Note No.5
Wastewater reuse	Practice Note No.6
Rain gardens and Bioretention systems	Practice Note No.7
Vegetated swales and buffers	Practice Note No.8
Stormwater Ponds	Practice Note No.10
Wetland design, construction and maintenance	Practice Note No.11

### 4. Site strategy

Vehicle parking areas can be large generators of polluted stormwater run-off. Creative design options minimise the extent of impervious surfaces in parking areas and subsequent impacts on downstream waterbodies.

Gently sloping grassed areas or recessed basins can be incorporated in vehicle parking areas. These may be used to pond water to allow filtration of pollutants and the deposition of sediment. This is commonly accomplished by incorporating specifically designed or modified inlet structures that permit the temporary storage of stormwater.

Water sensitive vehicle parking areas are best achieved on sites that are relatively flat to gently sloping, with soils suitable for infiltration (eg, sandy soils). It is essential that overflow paths for major storms are identified and that these conform with established standards. It is desirable to incorporate various stormwater processes in the design of vehicle parking storage design.

Any combination of the techniques (i.e., porous paving, filtration/ infiltration devices, landscape practices) listed above can be very effective at achieving the objectives mentioned above. For maximum effectiveness, these measures need to be carefully designed as part of an overall strategy that considers local site conditions.

The figure below shows a sample overall strategy for a water sensitive design vehicle parking area. In addition to the features shown, such vehicle parking areas offer opportunities to:

- Optimise lane widths to maximise the permeable area.
- Integrate design of lanes to maximise scope for retention of existing vegetation and for new plantings.
- Integrate stormwater management and substantial plantings.
- Integrate footpaths and to respond to natural features and stormwater management to create spaces that are easy to maintain and can be irrigated efficiently.
- Include porous paving for laneways and parking spaces.



- Common trenching and closer alignment of services to improve scope for reduced disturbance and trenching to retain existing vegetation and plant new vegetation.

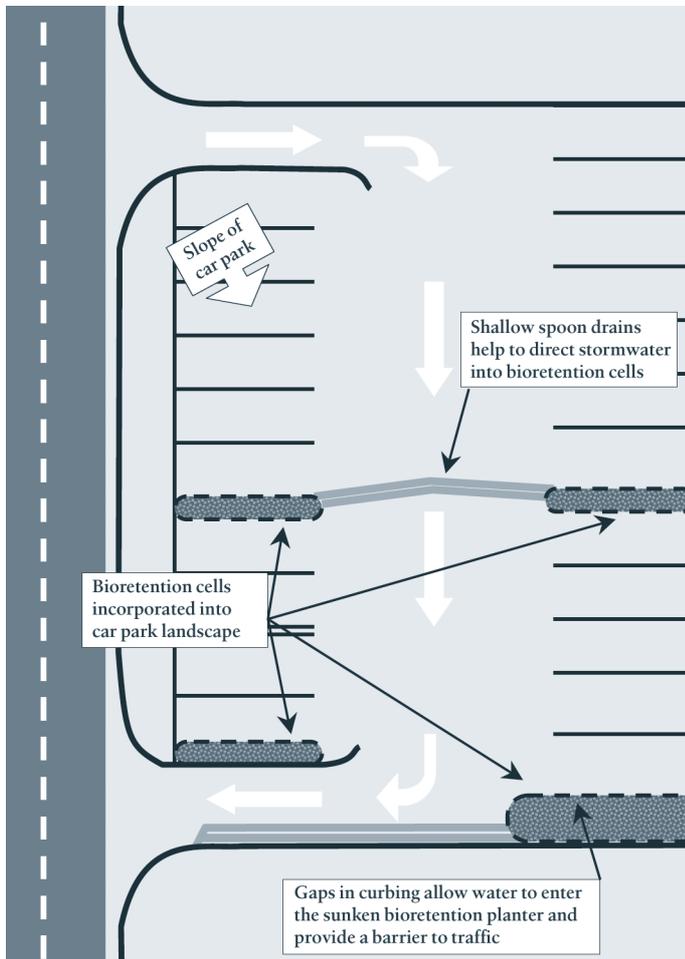
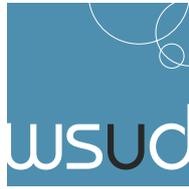


Diagram of car park layout design. Bioretention planters collect and treat all car park runoff. Note design varies little from standard design, however, planters are utilised for stormwater treatment, in turn negating irrigation requirements. [source: Department of Primary Industries and Water]

Example of an overall stormwater strategy for a vehicle parking area development



water sensitive urban design

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