

# 100% Onsite Treatment

## Considerations for 100% onsite treatment

### Introduction

The revised Sustainable Neighbourhood's Clause 56 – Residential Subdivisions of the Victoria Planning Provisions came into effect on 6 October 2006. The Clause 56 provisions implement the Neighbourhood Principles set out in Melbourne 2030 - Planning for Sustainable Growth to deliver more sustainable built environments. The objectives contained support and promote walking, cycling, public transport, the neighbourhood street network, integrated water management and subdivision construction site management.

The integrated water management provisions (Clause 56.07 – Integrated Water Management) provide a new and more sustainable basis for managing water in residential subdivisions by conserving potable (drinking) water, providing opportunities for reusing and recycling water for non-drinking purposes and managing the quality as well as quantity of urban run-off.

In particular, the urban run-off management objectives (Clause 56.07-4) address urban stormwater, and will contribute to improved stormwater water quality and assist in achieving the objectives of the State Environment Protection Policy (SEPP) - Waters of Victoria). The standards to be met include performance objectives as set out in the Urban Stormwater Best Practice Environmental Management Guidelines (BPEMG) (see BPEMG section). These standards can be met by incorporating water sensitive urban design (WSUD) elements as part of the drainage system.

WSUD is a sustainable urban water management approach which regards stormwater as a resource. It integrates sustainable water initiatives such as recycled water (wastewater and stormwater), while at the same time protecting and enhancing natural urban waterways. The main goals are water sustainability and environment protection.

### Greenfield and infill development and redevelopment

Clause 56.07-4 applies to all new development, infill development in existing urban areas and redevelopment of existing urban areas. For further information on Clause 56.07-4 click on the 'Related Documents' section of the tool from the homepage.

### Planning zones and overlays

It is useful to consult the planning scheme in which your development is located to determine the regulations around the types of treatment that may or may not be able to be used. For further details on Planning Schemes click here - <http://www.dpcd.vic.gov.au/planning/planningschemes>

### Style of development

Clause 56.07-4 was introduced to direct the creation of distributed water quality treatments as part of all new development, infill development and redevelopment. There are a range of treatment options available, therefore distributed treatments can be constructed as part of new developments in a variety of ways. Choosing the right treatment or combination of treatments for your development is the key to achieving the water quality treatment performance objectives.

Typical styles of development to which 100% on-site treatment apply are as follows:

- Small developments of less than 10 lots with individual private ownership
- Unit or townhouse developments with a body corporate over shared assets
- Staged subdivisions of 10 or more lots in large Greenfield estates in urban growth corridors

The first two styles of development are typical of infill and redevelopment. The third is typical of Greenfield areas. The style of development will primarily dictate the size of the contributing area of runoff that will require treatment and the amount of space available for water quality treatment.

For example, the first two styles of development lend themselves to the installation of rainwater tanks and planter box or small in-ground raingardens whereas larger subdivisions in Greenfield areas can incorporate these treatments on individual lots if desired, plus they allow for the incorporation of swales in the streetscape and larger raingardens in neighbourhood parks.

## Potential location of water quality treatments on site

### *How do I define the 'site'?*

Defining the site depends on the scale of the development. The site can be individual lots or it can be a particular location or locations within a stage of subdivision consisting of multiple lots.

### *Typical locations*

Lot-scale treatments are located in the front or back garden, either in-ground or in planter boxes, fed by flow from downpipes. Swales are typically located in the streetscape and fed by flows from multiple property outlets. Larger raingardens in neighbourhood parks are typically fed by multiple lots from a whole stage of subdivision.

For further details on locating treatments refer to the *Related Documents* and *C56 Resources* sections of the tool.

## Water quality treatment options available

There are a range of options available that can be used individually or in combination depending on the amount of runoff that requires treatment, the space available for siting treatments and the performance objectives that are to be met.

Some examples of the different types of treatment are:

- Permeable paving
- Rainwater tanks
- Small raingardens
- Bioretention systems
- Vegetated swales
- Bioretention swales
- Large raingardens
- Wetlands

For further details on these different treatments types refer to the *Related Documents* and *C56 Resources* sections of the tool.

## Planning considerations

It is useful to plan your water quality treatment as part of your development. This requires the thinking to be done early on. Some key considerations during the planning phase are highlighted below.

### *Who will be the owner of the treatment?*

Given the typical locations of water quality treatments, ownership of the ultimate 'assets' will either be by individual private landowners or by the local government authority. Typically, any treatment situated on individual lots will be in private ownership, whilst anything in the streetscape or neighbourhood parks, for example, will become Council assets.

### ***How much will it cost to construct and maintain?***

Determining the estimated cost of the treatment is important during the planning phase. Cost is informed by the type of treatment, its location, its size, the materials required, site constraints, construction methods and so on.

### ***Who is funding construction and maintenance costs?***

In estate developments that have included distributed water quality treatment; the developer has constructed these assets at their own cost as part of their obligations under clause 56. This is the typical process that occurs in Greenfield areas and where a developer is undertaking a large infill development or large redevelopment project.

In existing urban areas, installing water quality treatments will require retrofitting the existing infrastructure and in this case, it is typically, the asset owner who will pay for the construction and maintenance costs. For example, a private landowner who wishes to install a raingarden on their lot will pay for its construction and maintenance, and often undertake the work themselves. Any works in the streetscape or local/neighbourhood parks to install swales or raingardens will be undertaken by the local government authority.

For further details on planning considerations talk to your local council.

## **Design considerations**

There are a number of guidelines, engineering design manuals, software modeling packages (STORM, MUSIC) and training courses available to assist the development industry, local government and private landowners to design and construct appropriate WSUD technology and meet the BPEM objectives for urban stormwater.

### ***Concept design***

The first stage in the design process is to prepare a concept which typically shows the location, size and type of treatment being proposed. The concept design phase is a useful tool when consulting with various interested parties and seeking in-principle approvals and where required, funding assistance.

### ***Functional and detailed design***

Once the concept design has been prepared and revised as a result of the consultation process, functional/detailed designs are prepared which will be used to guide the ultimate construction of the treatment.

## **Construction considerations**

There are a number of considerations during the construction phase. Key considerations are highlighted below.

### ***Materials***

The materials required will depend on the design of the treatment. For example, smaller lot-scale raingardens can simply involve some excavation in the garden and planting, or the construction of a planter box filled with soil, with flows from one or more downpipes being directed into them. More complex raingardens may have filters of sand and gravel with collector pipes at the base as well as being planted. Swales in the streetscape and larger raingardens in parks can also be simple earthen excavations with plants or more complex with sand and gravel filters.

### ***Construction methods***

The construction method will be determined by the design of the treatment.

### ***Using a contractor***

Local government authorities engage contractors to undertake works on their behalf, if they do not have their own roads and drainage or parks and gardens works crews. Private landowners may choose to do the same and hire a builder or landscape gardener to construct their water quality treatment for them.

### ***Constructing yourself***

Private landowners have the option of undertaking works themselves, such as building a planter box raingarden to capture water from their down pipes, or constructing a raingarden in their front or back garden. Others may choose to contract a landscape gardener or builder to undertake the work for them. The only difference is cost and the decision will depend on how confident the private landowner is in undertaking the work themselves. DIY enthusiasts may well enjoy having a go!

### ***Occupational health and safety***

If you are a private landowner undertaking works yourself, please ensure that you have your health and safety front of mind and that you adhere to the directions of the design plans you are using and any Material Safety Data Sheets for any construction materials you are using. As well as be mindful of lifting and carrying heavy materials. It is always a good idea to work with a helper.

### **Maintenance considerations**

#### ***Simple treatments***

With these treatments, most of the maintenance is checking that plants are alive and growing well, removing weeds and picking up litter that may get blown in.

#### ***Complex treatments***

In addition to the maintenance of simple treatments above, collector pipes may/will need to be flushed out and every few years, all of the filter media (sand and gravel) may/will need to be replaced with fresh material and replanted, or existing plants carefully removed first and replanted.

#### ***Costs***

Maintaining the treatments will involve some degree of cost, whether it is time or a financial cost for replacement materials or plants. Funding may be available to assist with these costs. Local government authorities for example typically factor maintenance costs into their operating budgets.