



## **CITY OF COCKBURN**

### **GUIDE TO THE PROVISION OF STORMWATER SOAKWELLS IN SANDY SOILS AT THE LOW POINT OF A DRAINAGE CATCHMENT NOT EXCEEDING 10,000M<sup>2</sup>**

#### **NOTES:**

- A. The Guide shall not be used for any other purposes except the disposal of stormwater on a single residential/ commercial/ industrial site.
- B. If a catchment area exceeds 10,000m<sup>2</sup>, the stormwater drainage sump shall be designed in accordance with "Australian Rainfall and Runoff", the Institution of Engineers, Australia 1987 and/or any reputable drainage calculation program that is satisfactory to the City of Cockburn such as the "PCSump" software program, by Main Roads Western Australia.
- C. Regular removal of debris and silting material from soakwells at an interval not more than 3 years is required. This statement must be included in all drainage management plans submitted to council for approval.

#### **DESIGN PROCEDURE:**

1. Define stormwater drainage catchments within the property boundaries and mark them on a drawing preferably at a scale of 1:200, showing the existing and proposed contour levels, buildings and car parks.
2. Calculate the impervious area (e.g. rooftops, bitumen/concrete/brick paving or hardstanding areas including car parks) of each drainage catchment as defined above.
3. Use the City of Cockburn's empirical formula, namely:

$$V = A \div 80$$

Where **A** is the impervious area of a catchment measured in square metres; m<sup>2</sup>

And **V** is the required soakage volume of that catchment measured in cubic metres; m<sup>3</sup>

4. Decide what type and size of soakwells are to be installed; for example 1800mm diameter and 1800 mm deep.
5. The required number of soakwells can be calculated as follows:

$$N = \frac{1000 \times V}{S}$$

Where N is the number of soakwells.

And S is the volume of a single soakwell

Notes:

1. The number of soakwells is always rounded up to the nearest whole number.
2. Where **N** is greater than 1, all soakwells within the catchment shall be linked together by drainage pipes, the diameter of which shall not be less than 100mm.

**Example:**

The rooftop area is 15.24m x 36.50m = 556m<sup>2</sup>

The required soakage volume is 556 ÷ 80 = 6.95m<sup>3</sup>

Select 1200mm diameter x 1200mm deep soakwells

Table 1 shows that this soakwell has a volume of 1357 litres

The required number of soakwells is 6.95 x 1000 / 1357 = 5

**TABLE 1: SOAKWELL VOLUME IN LITRES**

		Diameter of Soakwell in Millimetres							
		300	600	900	1200	1500	1800	2100	2400
Diameter of Soakwell in Millimetres	300	21	85	191	339	530	763	1039	1357
	600	42	170	382	679	1060	1527	2078	2714
	900	64	254	573	1018	1590	2290	3117	4072
	1200	85	339	763	1357	2121	3054	4156	5429
	1500	106	424	954	1696	2651	3817	5195	6786
	1800	127	509	1145	2036	3181	4580	6234	8143
	2100	148	594	1336	2375	3711	5344	7274	9500
	2400	170	679	1527	2714	4241	6107	8313	10857