

STORMWATER DRAINAGE DISPOSAL REQUIREMENTS

For Residential and Non-Commercial Developments

The City of Greater Geraldton requires that all stormwater run-off from multi-unit developments (two until and above) is to be retained on-site by the use of soak wells, infiltration basin, open swales, rain water tanks, or any other form of stormwater storage systems. In addition to these systems, an overland flow path must be designed to cater from major storm events; designating a route for excess stormwater in the situation where the storage system overflows. In a major event, the stormwater flow path must take into consideration buildings of neighbouring properties. The objective is to prevent stormwater flooding into properties with lower floor finish level.

The stormwater storage system must be maintained by the property owner(s) to cater for the designed capacity, as the storage volume will decrease over time for some systems (fines and sediment migration). For some systems, the property owner will have to empty the system at least annually to ensure storage capacity (e.g. rain water tank, underground storage tank).

The formula (below) show the calculations of the required storage volume;

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| <p>Total Impervious Area * in m² x 0.9</p> <div style="background-color: black; color: white; padding: 5px; font-weight: bold; margin: 10px 0;">DIVIDED BY</div> <p>50 for Clayey/Silty or 60 for Sandy subsoil</p> <p>= Storage Volume required in m³</p> <p>* Total Impervious Area (roof's, paving, etc.)</p> |
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The table (below) shows the area drained according to different soak well sizes;

| DIAMETER (mm) | DEPTH (mm) | VOLUME (m ³) | AREA DRAINED PER SOAKWELL | | |
|------------------|---------------|-----------------------------|---------------------------|---------------------|---------------------|
| | | | Ea/60m ² | Ea/50m ² | Landscaping |
| 600 | 600 | 0.17 | 11.3 | 9 | 56 m ² |
| 900 | 900 | 0.57 | 38.0 | 32 | 171 m ² |
| 1200 | 1200 | 1.36 | 91.0 | 77 | 407 m ² |
| 1800 | 600 | 1.53 | 102.0 | 85 | 460 m ² |
| 1800 | 1200 | 3.05 | 205.0 | 170 | 915 m ² |
| 1800 | 1800 | 4.58 | 305.0 | 254 | 1375 m ² |

FOR COMMERCIAL AND INDUSTRIAL DEVELOPMENTS

The City of Greater Geraldton requires that all stormwater is to be retained on-site by the use of soak wells, drainage basins, open swales, or any other form of above and underground stormwater storage systems. Sumps are not allowed unless all other stormwater storage systems are not practical.

In addition to these systems, an overland flow path must be designed to cater for major storm events; designated a route for excess stormwater in the situation where the storage system overflows. In a major event, the stormwater flow path must take into consideration buildings of neighbouring properties.

The stormwater storage system must be maintained by the property owner(s) to cater for the designed capacity, as the storage volume will decrease over time for some systems (fines and sediment migration). Generally above ground systems should be landscaped to increase aesthetical value of the area and encouraging infiltration volume.

The minimum storage volume is calculated based on a 10-year one hour storm event (31mm) as recommended by IPEWEA Guidelines.

The formula (below) shows the calculation of the required storage volume;

$$\begin{aligned} & \text{Total Impervious Area * in m}^2 \times 0.9 \times 0.031 \\ & = \text{Storage Volume required in m}^3 \\ & * \text{Total Impervious Area (roofs, paving, etc.)} \end{aligned}$$