

**CPS 6275/3 – Supporting documentation – Details of the proposed variation of the Offset strategy to enhance Black Cockatoo Habitat**

Variation details for the offset

The Revegetation Plan was prepared for Mandurah 2015, under section 3 Current disturbances, and threats. It is noted that the soils are prone to wind and water erosion, and existing factors will need addressing, including soil erosion, drainage, and surface water diversion. It notes that additional drainage may be required to direct drainage away from the area.

As the erosion issues prevent revegetation due to current and future drainage issues, alteration of the offset strategy revegetation size of 3.56 hectares will be required. However, at this stage, the reduced area is not confirmed. The City is currently working across multiple departments to fund and find suitable solutions, which will allow for the rehabilitation of the majority area possible. If possible, restoration of the entire 3.56 hectares will occur. From the environmental team perspective, we hope the solution will conclude with a series of revegetated rain gardens and swales to reduce erosion, dispatch the runoff, and minimise weed material and pollutants entering the reserve. The total current area being affected by erosion and drainage issues is approximately 4500 square meters.

Please see the erosion damage that occurred over the winter period 2021.



*Southern End of the Reserve Drainage Issues.*

**Photos of Drainage Issues Bowl Area- Northern End of the Reserve.**



The drainage will require repair, maintenance and upgrading. As you can see from the images below, multiple drainage points lead into the Reserve. There is a development to the north of the Reserve and a proposed development east of the site. In the case of these new developments, we need to recognise whether there will be further drainage implications.

We are working across sections to identify which scope of works would fall into the drainage maintenance program. There is also the need to plan a capital works program for future drainage infrastructure and budgeting, including the design and implementation of rain gardens and swales.

The drainage is running directly into the Reserve and is the result of poor stormwater management. Water directed into the Reserve consists of rainfall and any substances collected in its flow. During heavy rainfall events, the drainage is causing erosion, undermining tree roots, and damaging vegetation cover, in addition to damaging pathways and transporting weed seeds, weed material and rubbish into the Reserve. Surface water controls and measurements need to be designed and implemented in line with specific targets of retaining all native vegetation, reducing erosion, limiting the amount of rubbish, and weed material being brought into the Reserve.



Current drainage leading into the Reserve.





Map of the proposed bird watering station location.





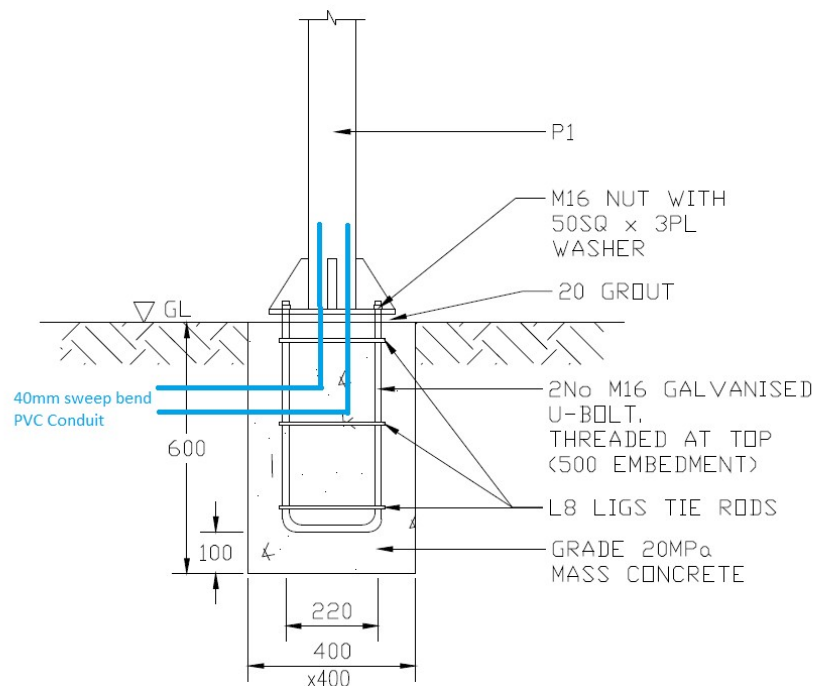
Images of the proposed bird watering station: x 4 metres high



Georgina Wilson



## Installation Guide for Bird Waterers:



- The structure requires at least 0.1 cubic metres of 20MPa Concrete as per drawing 102010.Dwg1 showing details of base plate and rag bolt assembly.
- The rag bolt assembly must be located level at the point of concrete installation to ensure a level base plate and proper function of the Bird Waterer.
- At the point of installation of the concrete a 40mm sweep bend of PVC conduit will be located from the centre of pole and directed from the side to the direction of water source.
- Concrete pour must provide for a 20mm elevation of the base plate above the foundation pour.
- The foundation bolts and washers to be structural galvanised assembly (8.8S)
- Crane the Bird Waterers into position and thread 19 mm poly through conduit. Align and position threads and bolt into position.
- After concrete has been cured, a 20mm grout needs to be installed between concrete foundation and base plate.

**The recommended installation requires, Main's water connection requires a registered plumber to install:**

- 14/9 Valve Box
- Battery operated solenoid valve (e.g., Node, GreenApp)
- Isolation valve and Dual Check Valve (standard irrigation 'cut in' setup)
- Pressure reduction valve (If applicable)



Water flow



Isolation ball valve

Dual Check Valve 25 mm

Timer solenoid valve  
(Battery operated)

Bluetooth activated

19 mm x 1" male poly director