

## Drainage Strategy for Garden Street.

The extension of Garden Street between Harpenden Street and Southern River Road will result in a key arterial road serving both regional and local traffic in the Southern River area. The proposed road reservation for Garden Street was recently endorsed via a Metropolitan Regional Scheme (MRS) Amendment administered by the Western Australian Planning Commission. The section of the road corridor between Harpenden Street and Balfour Street is located within the Holmes Street bush land area. Garden Street will eventually be extended to Tonkin Highway to align with the programmed transport planning for the Southern River development area.

Traffic: Main Roads Western Australia's traffic model forecasts anticipate a traffic volume of 20,000 vehicles between Warton Road and Balfour Street by 2031.

Proposed works:

The City of Gosnells is proposing to commence Stage 1 of the project in 2017/18. This would involve construction of a dual carriageway between Harpenden Street and Balfour Street. As per the adopted MRS road corridor, the Road alignment of Stage 1 will traverse the Holmes Street Bushland North.

The following information provides an overview of the City's proposed water management strategy for the new road, aimed at mimicking pre-development on-site rainfall recharge regimes by treating and infiltrating rainfall collected by the road section within the site as far as is possible. There will be no direct discharge of flows up to the 1 year ARI event without first receiving treatment and the strategy ensures a reduction in the peaks and 'flashiness' of flows from the road catchment.

Water Management Strategy: (refers to Strategy plan E90-16-013)

The road consists of two 8.5 wide asphalt sealed carriageways with a crossfall of 3% falling towards the road verges on either side.

Approximately 600m of the road section is bordering the bushland area. Here the City proposes to install special WSUD features to mimic pre-development conditions and to improve water quality from the road environment.

Specifically, about 400m of the subject road section will be constructed with fill, which provides an opportunity to implement both natural and structural WSUD source control measures to improve the quality of the rainfall run-off in this road section, as follows:

1. The carriageway will be designed without kerbing so that surface runoff will not result in unnecessary concentration of flows that could otherwise lead to erosion issues. See typical cross section plan E90-16-014
2. Filter drains will be constructed on the verge side of each road shoulder to capture potential pollutants during a first flush rain event.
3. Fill batters of the road will be revegetated with selected native plants and together with natural erosion control that will be implemented during the establishment phase; this will assist in maintaining a distributed sheet flow during more severe weather events into the future. It is expected that the planted vegetation will aid in long term water quality treatment at source.
4. In identified roaming pathways, fauna fencing will be constructed as part of the road construction, along the road reserve boundary, that will direct animals towards the two fauna crossings. A sediment screen will be attached to the bottom

third of the fence and maintained by the City to trap gross litter and any sediment both during and after road construction.

Approximately 200m of the road section will be located within the bushland area and this section will need to be cut for construction. That is removal of existing soil and vegetation. For this road section the City proposes the following drainage treatment:

1. Cut batters will be revegetated with selected native planting and fauna fencing will also be installed.
2. The carriageway will be kerbed and drained. Off-line soakage pits will be installed to capture low flow events and to infiltrate road runoff into the ground wherever possible. This will enable stormwater storage and promote infiltration, hence reducing stormwater runoff volumes and velocities downstream and allowing pollutants to be trapped. A high level overflow pipe may be required to connect the soakage pits to the existing stormwater drainage system in order to provide flood protection for the catchment. These overflows will then be re-directed to the existing Balfour Street drain. Outfall locations will be developed in accordance with the Department of Water and established best practice guidelines.
3. All required subsurface drains will be constructed so as to not interfere with groundwater in the area. However, major flows (overland flow in excess of a 1 in 5 year event) will continue to flow overland to the bushland. Overflow locations will be appropriately constructed with endemic vegetation-stabilised aprons to reduce the erosion risk even during these rare rainfall events.