

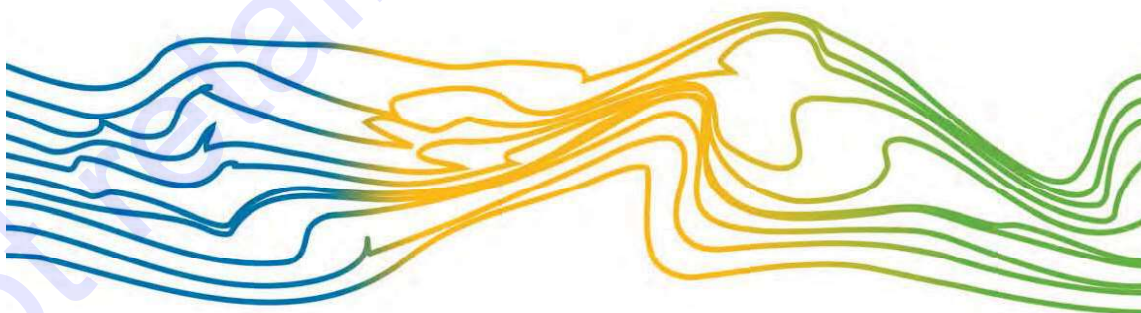


Draft for Consultation

Smith Creek Catchment Stormwater Management Plan

City of Playford and Town of Gawler

15 October 2020





The channel is predominantly a natural open channel with significant weed growth and also includes sections of culverts throughout the reach. The catchment which contributes to the Milne Road Channel is a combination of urban residential development and rural land use from the foothills and is approximately 350ha. It corresponds to major flood flow path 2.

The steep banks of the existing drain are potentially unsafe, subject to collapse and are difficult to maintain.

The Gawler railway line currently creates informal detention to the east of the Milne Road Drain due to capacity restraints in the culverts under the line.

Wallbridge and Gilbert undertook an investigation of options for the Town of Gawler in 2014 in which they present three primary options. Council's preferred option corresponds to Option 1. The option would involve enlarging the existing swales and culverts that form the Milne Road Drain. A low levee may also be needed along Gordon Road to ensure overland flows are directed into the swale. The swale needs to be significantly wider than the current case, requiring property acquisition. Twin sets of box culverts are required at road crossings and also driveway crossovers. Additional land is also required for maintenance access where the swale deviates away from Milne Road (it is assumed maintenance access would be gained direct from Milne Road where the channel alignment follows the road).

5.2.5 F5 – McEvoy Road / Supple Road drainage upgrade

A piped stormwater system is proposed to drain floodwaters ponding upstream of Port Wakefield Road opposite McEvoy Road to discharge into Smith Creek. The new twin set of 900mm diameter RCP pipes would connect to an upgraded culvert under Port Wakefield Road. The pipes would run for a short distance under McEvoy Road and then divert down Supple Road before discharging into Smith Creek. The system will address overtopping of Port Wakefield Road associated with one of the Minor Flow Paths discussed in Section 3, as well as addressing flooding issues along the McEvoy Road alignment to the west. The system is designed to provide a 1 in 100 year level of service, assuming that runoff from the Virginia Growth area that would be received by these culverts would be maintained at pre-development levels.

5.2.6 F6 – Park Road / Carmelo Road drainage upgrade

A new basin, stormwater pipe and swale system are proposed to address risk to properties and overland flows across Old Port Wakefield Road near the Virginia township and along the alignment of Park Road and Carmelo Road all the way to Thompson's Creek. The system extends further to the east to Angle Vale Road so that flood waters east of Virginia can be controlled and directed through the township whilst avoiding flooding. This then also provides the opportunity to protect high value horticulture land and rural residential properties between Angle Vale Road and Virginia.

The recommended drainage system consists of a drainage swale that would formalise an overland flow path extending from Angle Vale Road to the railway near Gawler Road at Virginia. The swale would convey up to 3.6 m³/s flood flows to a new 16 ha, 140 ML basin upstream of the railway to attenuate flows down to 1.2 m³/s. The basin would be formed by an existing bund adjacent the railway and new levees along Gawler Road and an existing property boundary.

New swales and an upgraded culvert under Old Port Wakefield Road would convey flows from the basin outlet to the existing swale adjacent the culturally significant pine trees and Virginia Community Centre tennis courts and discharging to Park Road. The existing drainage along Park Road would be upgraded to a set of 2 x 750 mm RCP pipes that would follow the alignment of the existing 375mm RCP drainage pipe. The pipe would discharge into an upgraded swale along Park Road, upgraded culverts at Port Wakefield / Supple Road, and a new swale along Carmelo Road. The Carmelo Road swale would discharge into Thompsons Creek.



Land acquisition would be required from at least two properties for the basin and swale from the railway to Old Port Wakefield Road. In addition, new crossovers and shifting the carriageway (or alternatively property acquisition) would be required for the new swale along Park Road and Carmelo Road.

5.2.7 F7 – Gawler drainage swale

A new 3.5 km drainage swale is proposed to formalise an existing flood flow path extending from Athol Road, under Angle Vale Road near the Pearsons Road intersection to near the Gawler River. The swale would convey up to 6.5 m³/s of flood flows that are separate from flows that currently or are proposed to enter the Milne Road drainage swale. The swale may require a new outfall at the Gawler River or potentially discharge into the proposed Hillier Wetland (Strategy WQ2). It is envisaged that the swale design could incorporate a series of deeper “billabong” sections to promote infiltration and thereby replenish local shallow groundwater as well as reducing the volume of runoff reaching the Gawler River.

Strategy F7 will provide added benefits in combination with:

- Strategy WQ2 – Hillier Wetland to provide an inlet channel into the proposed wetland to allow water quality improvement
- Strategy E4 – Hillier Wetland – Linkage with Gawler River to provide amenity and recreation benefits.

5.2.8 F8 – Angle Vale drainage swale

A new 1.8 km swale would formalise an existing overland flow path from Angle Vale Road to Port Wakefield Road. The flow path corresponds to a minor flow path identified in the Stage 1 investigations the runs east west, north of Virginia. The swale would convey 3 m³/s towards Buckland Park. New culverts would be required at the railway, Old Pt Wakefield Rd and Pt Wakefield Rd. The swale runs through flood affected areas of private property.

5.2.9 Additional Flood Management Structural Works Beyond SMP Life Cycle

The focus of the structural measures outlined above is to protect people and the highest value land uses within the Smith Creek catchment. This by necessity focussed works around the main flood flow paths across the catchment. Whilst flooding issues are addressed by those works, there remain relatively large areas of the catchment that are not protected by those works. The flood hazards and consequences in these “unprotected areas” are less severe, however this is not to say that they are risk free. These areas support primary industries such as agricultural and horticulture and are located in the northern and western areas of the catchment, outside of built up areas.

In these areas formalising drainage paths through improvements to roadside swales is the structural measure most likely to be effective and most readily implemented once the major management strategies developed in the SMP have been installed. Given the very flat landform of the area it is possible that a series of pump stations may also be required to achieve the desired drainage performance.

A high-level review of the remaining areas of the catchment that would require treatment suggests that could need to be up to 100km of drainage works, which if implemented as a standalone project might require an investment of approximately \$50m. These works could be undertaken as part of transport and other infrastructure works associated with further modernising of land use within the catchment (whilst not necessarily changing land use per se).



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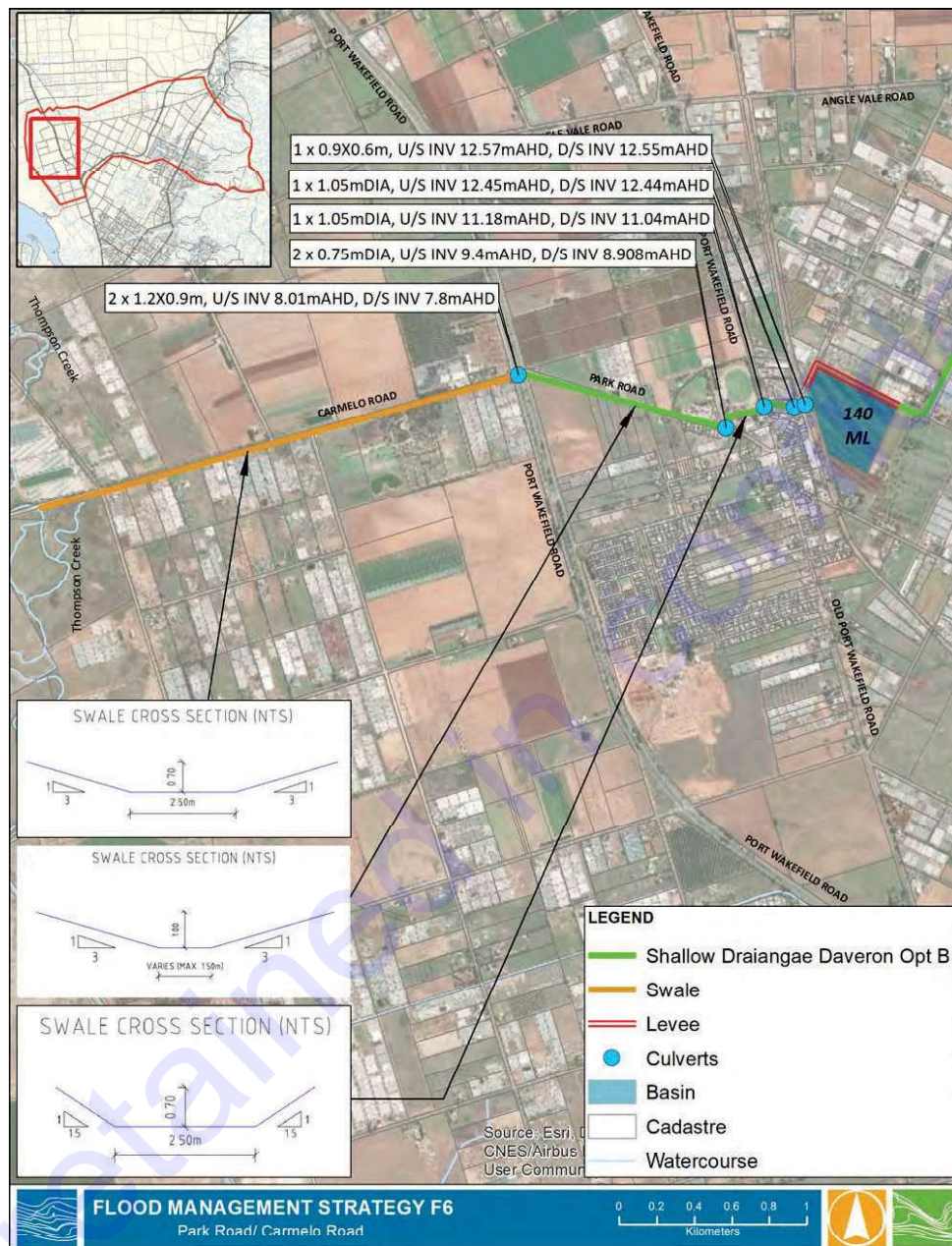


FIGURE 5-7 STRATEGY F6 - PARK ROAD / CARMELO ROAD DRAINAGE UPGRADE AND ANGLE VALE RD TO RAILWAY BASIN – SHEET 1