

Case Study: ADS N-12 HDPE Pipe

Bridge Replacement: York-Merredin Road – Main Roads WA

Installation date: June 2016

GENERAL PROJECT INFORMATION

- Timber and concrete bridges and culverts are failing in the wheatbelt areas due to highly aggressive soil and water flows.
- Designs for replacement culverts were originally created using reinforced concrete pipe in spite of the fact that “concrete cancer” was a common cause of failure.
- A poor understanding of the more rigorous design process applied to flexible pipe than with RCP and experience with other flexible pipes that did not follow the design standard had created a misperception that plastic pipe could not handle the loads required.
- Education on the benefits of well designed flexible pipe and the external quality controls applied to ADS N-12 necessary to achieve **AASHTO M294** compliance gave Main Roads WA the confidence to take advantage of the strength, resilience and installation of ADS N-12.



DESIGN CONSIDERATIONS

- All pipe designs require **AS 5100.2 – 2004 live loads** as inputs.
- ADS HDPE N12 pipe exceeded these requirements at low cover for a design life in excess of 100 years.
- As with all stormwater applications abrasion from sediment was a major factor, unlike concrete or corrugated metal pipe which can erode to expose structural elements to the environment ADS N-12 pipe is a homogenous material with an abrasion resistance higher than these other materials.



DESIGN STANDARDS

- Materials had to comply with the relevant **Australian design standards and codes AS 2566.1 with the higher AS 5100.2 live loads and construction loads**. Data used for design needed to be independently verifiable.



