

Flood Recovery Case Study

Drainage Channel Assists Flood Mitigation



Campbell's Rd Drainage Channel Barambah Creek - Bye South Burnett

The waterlogged area of Campbell's Rd following the January 2013 flooding and prior to commencement of the drainage project

Background

The 2013 Ex-Tropical Cyclone Oswald dumped torrential rain on the catchments throughout the Wide Bay Burnett. This event produced run off rates which were estimated to be in excess of a one in one hundred year flood. The resulting peak flow in the Barambah Creek created damage beyond anything ever experienced before. A particularly troublesome spot was the Campbell's Road cross road drainage area. Years of siltation on the floodplain had slowed the drainage from the Hurdle gully and Fairdale Leafdale gully outfalls. Some changes to the cross road drainage structure also reduced the flow rates of water in the drainage line. This bottleneck caused ponding on significant areas of cropping land which reduced the viability of that land.

The drainage project was designed to work with council to ensure that the water could drain away from the road in a 24 hour period reducing any waterlogging of the surrounding cropping land.

The Site and the Challenges

Historically the drainage line which crosses Campbell's road was a deeply incised waterway with semi-permanent water wholes of some depth. Over a forty year period, the cultivation around the flood plain increased and with increasing area of cultivation and irrigation the waterway gradually silted up. A very low level invert in the road was upgraded with a slightly higher structure after damage caused by a flood event. According to local anecdotes the new structure reduced the rate at which water could drain away under the roadway.

The resulting ponding affected hectares of land due to the now very flat landscape around the road. Local farmers indicated the water would lie for weeks. This was a particular problem if the pipe under the road was blocked by silt or debris. The soil in the area is deep alluvial clay which naturally holds water and dries out very slowly exacerbating the waterlogging problems. With all these issues the site has been a problem for some years and the landholders were very keen to find a solution while the flood recovery process was in progress.



Map showing the drainage project area

The Goal and Methods for Rehabilitation

The community of the Byee floodplain were invited to participate in a floodplain planning exercise which ultimately resulted in a voluntary community plan being developed. The plan highlighted a number of priority projects to action and the Campbell's road project was voted as the first project to be progressed.

The flood recovery process was funded by the State and Federal Government and provided some funds for on ground projects to mitigate future flood damage. The floodplain experts who facilitated the development of the plan provided a recommendation on drainage work being done upstream and downstream of the Campbell's Road cross drainage and a modification to the invert to instate more drainage capacity under the road. In close consultation with the South Burnett Regional Council and the Byee Floodplain Plan Implementation Advisory Group, it was decided to progress with survey and construction of a drain to provide a more active clearance of water during post flood and low flow conditions.



Upstream Prior to Construction



Downstream prior to construction



Upstream after construction

The project work proceeded with a drain being constructed to an average width of 20 metres, an average depth of 0.4 metres and a length of approximately 2 Kilometres through three properties and the road reserve. Construction was completed and the area was revegetated with crops and pasture grasses. The project was blessed with an extended period of dry conditions which allowed earth works to continue long into the normal wet season period. With this favourable weather the project was completed before any irrigation or run of water presented in the drainage line. Landholders took advantage of the construction to do complementary works on their properties which has resulted in a very efficient and productive system which will reduce future waterlogging and provide a model for floodplain drainage construction.

The South Burnett Regional Council have committed budget and time for the inclusion of extra drainage under the current cross road structure on Campbell's road scheduled to be completed in the next dry season.

Results

The project developed with a very strong community input and was closely supervised and scrutinised by the community as a high profile very obvious project in the district. Although there were the usual issues on a construction site the final result has generally exceeded expectations. Since completion there has been a flow through the system and the drainage channel has worked perfectly. Crops growing around the channel are exceptional and the productivity of the area has been lifted considerably.

Author: John Day, Photos by John Day and Google earth

This project is part of the On-farm Productivity and Riparian Recovery Program supporting primary producing areas severely impacted by flooding following Ex-Tropical Cyclone Oswald in 2013 and is funded by the Queensland and Commonwealth Governments through natural disaster relief and recovery arrangements