



Nursery & Garden Industry
Queensland

“We engaged a number of experts in planning the new growing area. This gave us access to a range of advice with the aim of giving us the best outcome. A site survey was recommended and helped in planning irrigation and drainage works”
Chris Sturt



Kingfisher Wholesale Nursery

Best Management Practice Growing Area Construction

Kingfisher Wholesale Nursery is located at Clagiraba in the Gold Coast hinterland, and is owned and operated by Chris and Jodie Sturt along with a staff of four. Kingfisher Wholesale Nursery is a specialist grower of new release PBR and Trademarked plants, as well as general landscape lines supplying both the retail and landscape sectors.

propagation house, and a mixture of shade and full sun growing areas, with the growing areas covering approximately 4600 m². Irrigation water is sourced from the Coomera River, and is of variable but generally good quality. All irrigation water is disinfested using sodium hypochlorite.

The nursery site has a range of topography from relatively flat close to the river, rising to the front entrance on a steep hill. The production facilities comprise a

Chris and Jodie purchased the nursery in January 2010. Shortly afterwards a local flood event in 2010 caused major damage to the nursery, with large losses of stock and damage to infrastructure. A



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Kingfisher Wholesale Nursery BMP Growing Area Construction



“ Due to two major flood events it was decided to redevelop an existing growing area on the slope above the nursery to eliminate the chance of further flood damage ”

Chris Sturt

second larger flood event in 2013 from Cyclone Oswald resulted in the loss of 70% of the stock, with all propagation and production areas severely affected. A third major flood event caused by ex-tropical cyclone Debbie resulted in crop losses of 95% and major infrastructure damage. After the third event Chris and Jodie fast tracked their plans to move the nursery growing areas to an area above the flood heights they had experienced.

To help fund the development of the new area the flood damage to the existing growing areas was repaired, and these areas were bought back into production. It was also decided the development of the new growing area was to be staged so it could be funded from cash flow.

Chris and Jodie decided one of the criteria for the new growing area was that it needed meet Best Management Practice to ensure the efficiency of the growing facilities, and minimise the costs of production. The first step in planning was to gather information and opinions on what would be the best way to develop the new area. Information was sourced from industry technical officers, earthmoving contractors, irrigation suppliers and installers, surveyors, as well other nursery owners and Chris and Jodie’s own experience.

Before starting works a survey was conducted on the area, with this information used for irrigation, drainage and growing area design. It was also considered this information would prove valuable in the future if local council approval were required for additional works.

The area to be developed had been growing beds previously, and consisted of a number of terraces cut into the hillside. To be able to work this area more efficiently it was formed into a single flat area. This meant the drainage water from outside the area could be intercepted, reducing the size of drainage required on the growing area itself. The most efficient way of completing the earthworks was to be complete them at one time. This ensured drainage from the site could be controlled and damage from water flows minimised during the development of the new area.

Kingfisher Wholesale Nursery BMP Growing Area Construction



Kingfisher Wholesale Nursery had been involved in the Rural Water Use Efficiency Irrigation Futures (RWUE-IF) project, and as part of this project had an Irrigation Drainage and Energy Management Plan (IDEMP) developed for the site. For the new development the information in the IDEMP provided data on likely irrigation and storm water runoff. Information on constructing growing beds to BMP was also provided.

During the planning stages an earthmoving contractor was engaged and gave advice on earthworks and drainage, suggesting a drain be installed around the perimeter of the area to capture and carry away water from upslope, with the slope across the levelled area carrying water away from the growing areas.



The area was divided into three growing beds so these could be completed as individual units to spread the cost of construction over time. Each bed was 15 metres wide, but varied in length due to the irregular shape of the growing area. The dimensions of the growing beds were such that sprinklers could be installed on a uniform 5 x 5 metre spacing across the area. There are a range of sprinklers that work efficiently at this spacing, and a 5 metre spacing gives a good compromise between the number of risers required, installation expense and the efficiency obtained.



Each bed was separated from the adjacent bed by a 3 metre wide road, and a collection drain was dug alongside each of the growing beds. The drain was initially planned to be an open drain but it was decided to fill this with 40 mm screenings to create a rubble drain to reduce OH&S risks. While this reduced the capacity of the drain to carry water, the 1 metre fall across the pad, the double lines of socked Ag-pipe and lining of the drain enabled the drain to still carry the required volumes of water.

A herringbone pattern of sub-surface drainage wasn't installed, but as the greatest distance



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drainage water has to travel to reach a drain was 7.5 metres the risk of damage to the growing bed was minimal. The growing bed itself was constructed by levelling the bed and removing rocks before overlaying the bed area with a custom cut dam liner to create an impervious barrier between the soil and the growing bed.

A 100 mm depth of 40 mm gravel was placed on the liner and the gravel layer covered with a geotextile fabric to reduce sediment build-up in the gravel, and provide a cushion between the gravel and weedmat to extend the life of the weedmat laid over the top of the geotextile. This method of growing bed construction met the requirements for BMP when growing plants directly on the weedmat, but to make it easier to work on the crop and provide better airflow around the plants benches were installed. Construction of the growing beds to this standard creates a better working environment and allows the efficient collection of drainage water for future re-use or disposal.

While Chris and Jodie are still in the process of developing the new growing area, they have already seen an improvement in plant growth and quality. They've found the area much easier to manage than the older growing areas, and with the relocation to the new area are looking forward to not having to worry about flood events in the future.

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