

**Urban Development Institute of Australia
Queensland
2010**

Project Submission

**Award 13 - Excellence in Environmentally Sustainable
Development - Land Based**

Project Name	Smithfield Village
Site Description	Lot Numbers: 4 on RP748727 of 20.84ha; 142 on NR7158 of 10.3ha; 456 on SP106713 of 105.2ha; and Lot 6 on RP894527 of 38.44ha. These lots front to Reed Road Trinity Park, and O'Brien and McGregor Roads, Smithfield
Project Address	Reed, McGregor, O'Brien and Dunne Road, Smithfield
Office Address	2 Selwyn Circuit, 'Smithfield Village' Trinity Park QLD
Project Size	174ha, incorporating 1300 residential lots, mixed land use, open space recreation and environmental parks
Project Status	38 Stages with Stage 1-11 complete or substantially complete, 1 to 8 are now largely built out and occupied
Project Manager	Satterley Property Group
Entrant	Satterley Property Group
Owner	Marlin Coast Land Company Pty Ltd
Contact Name	Mr Adam Gowlett
Position	State Manager, Queensland
Phone	(07) 4057 6633/ 0418911418
Key Consultants and Contractors	Brazier Motti Aurecon Cardno MNLA Kenfrost (1987) Pty Ltd Landscape Development 20/20 Group SPA Consulting Golders



Introduction:

Satterley Property Group (Satterley) is Western Australia's largest and most awarded residential land developer. Satterley has a land bank of over 36,000 lots, producing around 3,000 lots per annum and with more than 20 active projects in three states.

Smithfield Village is integrating a new community into a well established and well serviced existing community. Smithfield Village will be one of Cairns' largest Masterplanned communities creating 1300 lots over its 10 year life.

From an environmental perspective, Smithfield Village has established the first bio-retention basins in a wet tropics environment where storm water is organically treated prior to discharging into the Great Barrier Reef Marine Park. Satterley's work in this regard is creating a body of knowledge that currently does not exist.

Introducing reticulated recycled water (Third Pipe or Purple Pipe system) some years in advance of Council's upgraded treatment plants delivering A+ recycled water means that around 1200 households will contribute to an estimated 130m litre water saving per annum.

Challenging Councils planning scheme has delivered a Masterplan based on a modified grid layout, affording residents the greatest opportunity to be less car dependant. Smithfield Village is readily located within walking distance of primary, secondary schools and JCU University, not to mention medical and day care facilities, local and regional shopping and local employment. Queensland Transport has secured a transport corridor adjoining the estate for a future busway.

By maintaining sensible building covenants, delivering optic fibre to the home, delivering soil reports and flat level lots and by leading the market with free fencing and front landscaping, Smithfield Village is Cairns fastest growing new community. Our dedicated Community Development Officer is responsible for welcoming new residents, undertaking community based events, producing regular newsletters, providing a conduit for residents issues and ideas. Satterley is delivering Cairns premier new community through providing a range of cutting edge technical solutions complemented with old fashioned customer focus, at a level of affordability that would only normally be reserved for the exclusive few.

Smithfield Village is setting new benchmarks within the region and delivering better urban design outcomes for residents, better infrastructure and environmental outcomes for Council, and is typical of Satterley's development philosophy, and that of the UDIA.

Environmental Criteria:

Environmental Context.

Smithfield Village is located on the fringe of the Barron Delta Flood Plain, bounded by existing residential areas and Captain Cook Highway to the north and west, residential zoned rural lands and Cattana Wetlands to the South, and the Half Moon Creek Declared Fish Habitat Area.

The entire eastern boundary is adjacent to the Trinity Inlet/Marlin Coast Marine Park which now forms part of the Great Barrier Reef Coast Marine Park. In fact, at a number of locations on our easternmost boundary, the DNRW and EPA had mapped as being within the tidal surge. Within walking distance of Smithfield Village are the World Heritage listed Wet Tropic Rainforests.

As the most down stream developable area of the upstream catchment, Smithfield Village is also the receiving area for in excess of 30ha of off site storm water from the surrounding existing developed areas¹.

The bulk of the site has been used for sugar cane cultivation and was therefore cleared and disturbed². In particular, large portions of the remaining vegetation on Lot 456 is re-growth and highly disturbed³.

¹ Cardno – Smithfield Village Stormwater Quality Management Plan 2006 –pp 1

² Brazier Motti – Development Assessment – Smithfield Waters 2005 pp2

³ Cardno – Ecological Constraints Analysis Report – Smithfield Village 2007 pp4-7

Extensive work has been required to be undertaken to overcome the challenges on what, at face value, appears to be a simple and unconstrained site. These challenges include the sensitive nature of the adjoining land and our location in the wet tropics, the highly disturbed, flat nature of the site and the off site constraints.

Planning Context:

Predominantly designed based upon a modified grid road network, this was a challenge for Council and Queensland Streets. Incorporating lineal open spaces creates a unique opportunity for both maintaining vegetation and wildlife corridors and creating an urban environment that gives most residents a direct relationship to Public Open Spaces. These corridors will also form a strategic and integral part of the overall drainage network and the stormwater treatment train.

With this urban design comes a significant number of 'esplanade' roads. After extensive negotiations with Council, Smithfield Village has achieved flush edged roads with swale drainage and hopes to continue this WSUD method as such as possible within the estate. Even after this, we were unable to convince Council of the merits of a single cross fall road design that would have eliminated a significant amount of stormwater infrastructure, but that is a challenge we continue to pursue.

Ecological Context:

The site contains 10 distinct vegetation communities not including the existing farmland. These communities range from eucalypt and acacia dominated open forest, through to Broadleaf Paperbark and Screw Palm dominated closed forest. Additionally, one species listed as *Vulnerable* pursuant to the Commonwealth's EPBC Act and Queensland's NC Act, *Myrmecodia beccarii* or 'Ant Plant' has been identified and will be preserved with significant buffers from development⁴.

In addition to these communities, there are existing substantially disturbed drainage channels through the site, overland drainage paths, a freshwater wetland, tidal fringes and Cattana Wetlands.

Fauna surveys have identified a large population of wallabies, along with the limited potential for a range of other bird, mammals, reptiles and amphibians, albeit limited by the highly disturbed nature of the site⁵

With the assistance and input of both Cardno and Aurecon, Brazier Motti were able to develop a Master Plan for the development of the site that not only produced a satisfactory yield, but also preserved the bulk of the existing remnant vegetation and provided a lineal open space network sufficient to create a habitat link the full length of the site and a number of transectional corridors through the site⁶.

None of this would have been possible without the extensive negotiations all three consultants have undertaken with all levels of government to be able to generate solutions for the site. This was particularly difficult where cross-jurisdictional issues arose. As an example, there was a need to demonstrate to both EPA and DNR that the mapped location of the highest astronomical tide (HAT) was clearly far outside the western most extent of marine vegetation. Without this result, acknowledging the actual HAT, substantial development land would have been lost and the ability to achieve some of the positive outcomes for the site would have been jeopardized.

Environmental Context:

The site is positioned on the edge of the Barron Delta Floodplain; and as such the earthworks model had to be run through Cairns Regional Council's MIKE 21 two dimensional hydraulic flood modelling process – developed and operated by Aurecon's Brisbane Hydraulics Group. Close work within Aurecon resulted in an optimised designed that avoided impacting adversely upon adjoining developed areas, and in some cases, reducing the potential magnitude of some of the downstream inundation in a 100 Year ARI flood event.

Satterley has designed all of the home sites to grade up from the road reserve to provide an elevated outlook. This further assists with potential flood immunity. While the lowest level provides 100 Year ARI immunity, the building

⁴ Cardno – Ecological Constraints Analysis Report – Smithfield Village 2007 pp4-9

⁵ Cardno – Ecological Constraints Analysis Report – Smithfield Village 2007 pp10-12

⁶ Brazier Motti - Development Application Report – Smithfield Village 2007 pp12-15

pad level typically provides an average of 300mm additional clearance, which equates to a substantially larger flood event.

Innovation and unique features:

First Wet Tropics Bio-retention basins:

Smithfield Village has developed and installed Cairns first Bio-retention basins. While commonplace in drier parts of Australia, these are the first installed in the wet tropics.

With an annual rainfall of over 2,000mm, the volumes and intensity of the storm events in the tropics; the construction of these bio-retention basins is helping provide a benchmark for all future stormwater management practices in Cairns.

Due to the location of the site (the downstream end of the catchment), basins have not been designed to detain run-off from large rainfall events as this would contribute to increasing the peak flow and could result in upstream impacts. Stormwater run-off is directed through a system of pipes and manholes with overflow weirs that allow the first flush flows to pass through to Gross Pollutant Traps (GPT) before entering the bio-retention basin.

The first GPT installed is the largest installed in Cairns. A Rocla CleansAll CL1200 GPT was used; at nearly 6m long and almost 5m deep, it had to be constructed in Brisbane and transported to Cairns!

Smithfield Village was awarded Engineering Project of the Year 2007 Cairns for its work in this regard. The first Bio-retention basins cover over 1 hectare and resulted in the removal of in excess of 30,000m³ of fill. The second bio-retention basin was constructed during the 2008 development program and around 3 more will be required. With the future rehabilitation of Chainman's Creek and creation of manmade creeks in the lineal open spaces, Satterley is committed to ensuring our stormwater treatment train is of the highest standards.

The Bio-retention basins have been developed to emulate natural wetlands and in excess of 10,000 plants were installed. As these Bio-retention basins were a first, the Satterley have agreed to undertake a 2 year maintenance responsibility for them. At handover to Council, Satterley will include an Operation and Maintenance Manual that has been specifically developed for this piece of infrastructure.

MNLA Landscape Architects and Landscape Developments, our landscape contractors have spent considerable time designing, specifying, establishing and grooming these manmade wetlands. The process has revealed interesting results on the success or otherwise of various plant species. Ongoing water quality monitoring by Cardno, and now with Arup completing a research grant on the function of the bio retention basins, it is helping to create a body of knowledge that will assist Council and the local development industry to create even better Bio-retention basins in the future, and do so in a more cost effective and timely manner.

Purple Pipe:

Smithfield Village has commenced servicing the bulk of the estate with 'third pipe' infrastructure. As around 1200 homes will ultimately be connected to the system, it is one of, if not the largest regional implementation of such a scheme in Australia. Ultimately the purple pipe system will save around 130m litres of water per annum, not to mention making good use of a resource Council is spending \$190m to upgrade that would have otherwise gone out to sea.

The provision of recycled water will save future home owners approximately \$8,000 on the cost of building their new home in meeting new State Government water savings targets by avoiding the need to install 'plumbed in' rainwater tanks.

Additionally, as part of our Masterplan for the provision of open space, an irrigation 'ring main' has been installed during the construction of stages 1-4. Changing the open space and road reserve watering to a non-potable source will be as simple as disconnecting and reconnecting water meters.

WSUD:

While an ongoing challenge, Satterley has tried to demonstrate the values of implementing WSUD principles to Council. Stage 5 saw the first flush edge/swale drained section of road installed adjacent to the new bio-retention basin. While difficult, Satterley believes meeting the ongoing challenge will be worth it for the community, environment and Council, and will keep seeking to implement similar arrangements wherever possible within the project.

Optic Fibre to the Home:

Smithfield Village was Cairns first Telstra Smart Community. In partnering with Telstra, all residents have optic fibre to their home, providing far superior high speed internet solutions. Free to air Digital TV is also broadcast over optic fibre, resulting in no need for TV antennas.

Infrastructure cost savings:

Aurecon demonstrated a saving of 25% in manholes alone in the construction of sewers in the road reserve. While the saving in construction costs is a benefit to the developer and purchaser, the savings on infrastructure will reduce Council running costs and also provides benefits in terms of removing easement constraints within the property and reduces possibilities for infiltration.

While sewers in road reserves are not unique in Australia, it is for CairnsWater, whose policy still required sewers to be contained in the rear of properties.

Vacuum Sewer:

Due to the very flat nature of the site and high water tables, Aurecon sought permission to use vacuum sewer at the outset of the project; a process that was rejected by CairnsWater.

Ongoing negotiations and demonstration of our commitment to continuous improvement have resulted in a renewed interest by CairnsWater, with vacuum sewer installed from Stage 9. Vacuum sewer is installed in small pipes at shallow depths and only one pump station will be required to service the remainder of the estate, rather than 4 traditional gravity stations. The quality of the sewerage delivered to the wastewater treatment plant is very high due to the high speed agitation and aeration that occurs during its transport. It is expected that the reduced treatment costs would more than offset any increase in operation and running costs.

Marketing:

In a first for Cairns, every lot sold and built on within 18 months from settlement is provided with uniform boundary fencing and front landscaping.

In a market of around 1400-1800 lots per annum⁷ where the project needed to achieve sales of around 10% of the Cairns market to be successful, the project has proved its position with over 300 lots sold since sales commenced in February 2007.

Community Creation and Integration:

Community Development:

The Satterley is dedicated to the integration of Smithfield Village into the local community and sees it as essential that we embrace our neighbours. With a dedicated team of community development staff, it is a philosophy of Satterley for every project. Our dedicated Community Development Officer is responsible for welcoming new residents, undertaking community based events, producing regular newsletters, providing a conduit for residents issues and ideas. The construction of a purpose built sales home for use by the wider community further demonstrates our commitment to the wider community.

Heritage:

The original Smithfield had a short and colourful history. In identifying road names for the estate, it became apparent that the residents of far north Queensland have a strong connection to their local history. During research into Smithfield, a local resource was identified outlining the history of lost towns of Far North Queensland. The book

⁷ HTW Valuers 'Cairnswatch' report – various through out 2006-2008

Angor to Zillmanton⁸ became the resource and all the streets named after lost towns. To compliment these names, a host of new street name suffixes were presented to Council for their consideration. This little challenge resulted in more than a dozen new street suffixes previously not permitted in the Cairns City. Every resident is given a copy of the book as part of their 'welcome' gift at one of our quarterly 'new residents welcome evenings'. Every resident is given a copy of the book as part of their 'welcome' gift at one of our quarterly 'new residents welcome evenings'. Most street signposts have a little story on the origin of the street name, hopefully this will help to make residents feel connected and also to encourage them to get out into the community and explore it!



⁸ Colin Hooper – *Angor To Zillmanton* Bolton Inprint 4th edition, 2002