PROOF OF CONCEPT:

Determining the role of a constructed surface-flow treatment wetland system in reducing sugarcane tailwater pollutant inputs to Barratta Creek.

Arwen Rickert, BBIFMAC Inc

Project Aims:

- Demonstrate the feasibility of converting a 2 hectare borrow pit, into a low cost, constructed surface-flow treatment wetland.
- Undertake basic earthworks and rockwork to circulate the water through the system and achieve an optimal residence time of 36 hours.
- Use local wetland plant species to intercept and reduce dissolved inorganic nitrogen (DIN), phosphorus, suspended sediments and selected pesticides.
- Monitor water quality at entry and exit points over a 2 year period to determine the system's effectiveness.
- Deliver training to local stakeholders on the design, plant selection, construction, maintenance, monitoring and evaluation requirements of such systems.

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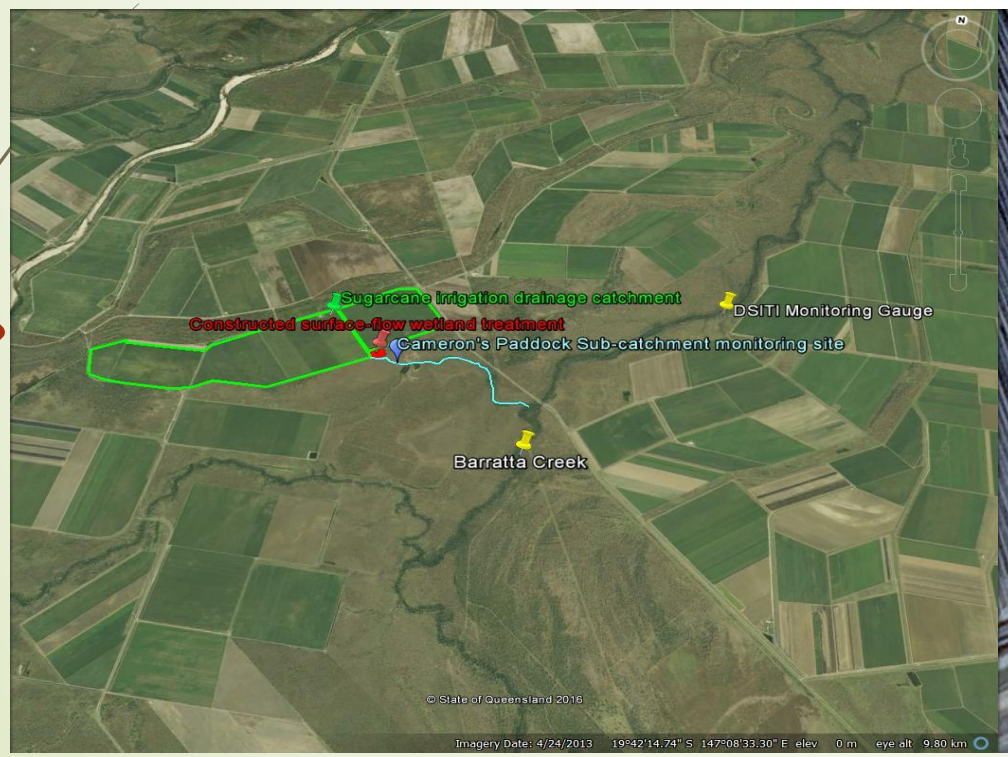
The site:

- The project area is located on SunWater land in the Burdekin River Irrigation Area (BRIA) within the Barratta Creek catchment which flows into Bowling Green Bay.



Getting started:

- Establish a project steering committee
- Engage specialist wetland designer
- Liaise with local landholders
- Collaborate with stakeholders
- Develop a work plan and management plan

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Challenges:

- Constructing in a live system is difficult!
  - The system had to be dried out and Typha biomass removed before works could commence
  - This meant waiting until the dry season to dry out the borrow pit and spray and burn the Typha
  - Bypass channels had to be constructed to divert the irrigation tail water around the system during construction

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The process:

- **Project planning:** Steering committee
- **Aerial spray:** Ryellen Helicopters
- **Typha burn:** Neighbouring landholders
- **Site survey:** Burdekin Shire Council
- **Design:** Australian Wetland Consultants
- **Construction:** Sunwater and Austen Earthmoving
- **Plant supply:** Lower Burdekin Landcare
- **Planting:** Conservation Volunteers Aust.
- **Water quality monitoring:** BBIFMAC

Project planning:

Aerial spray:

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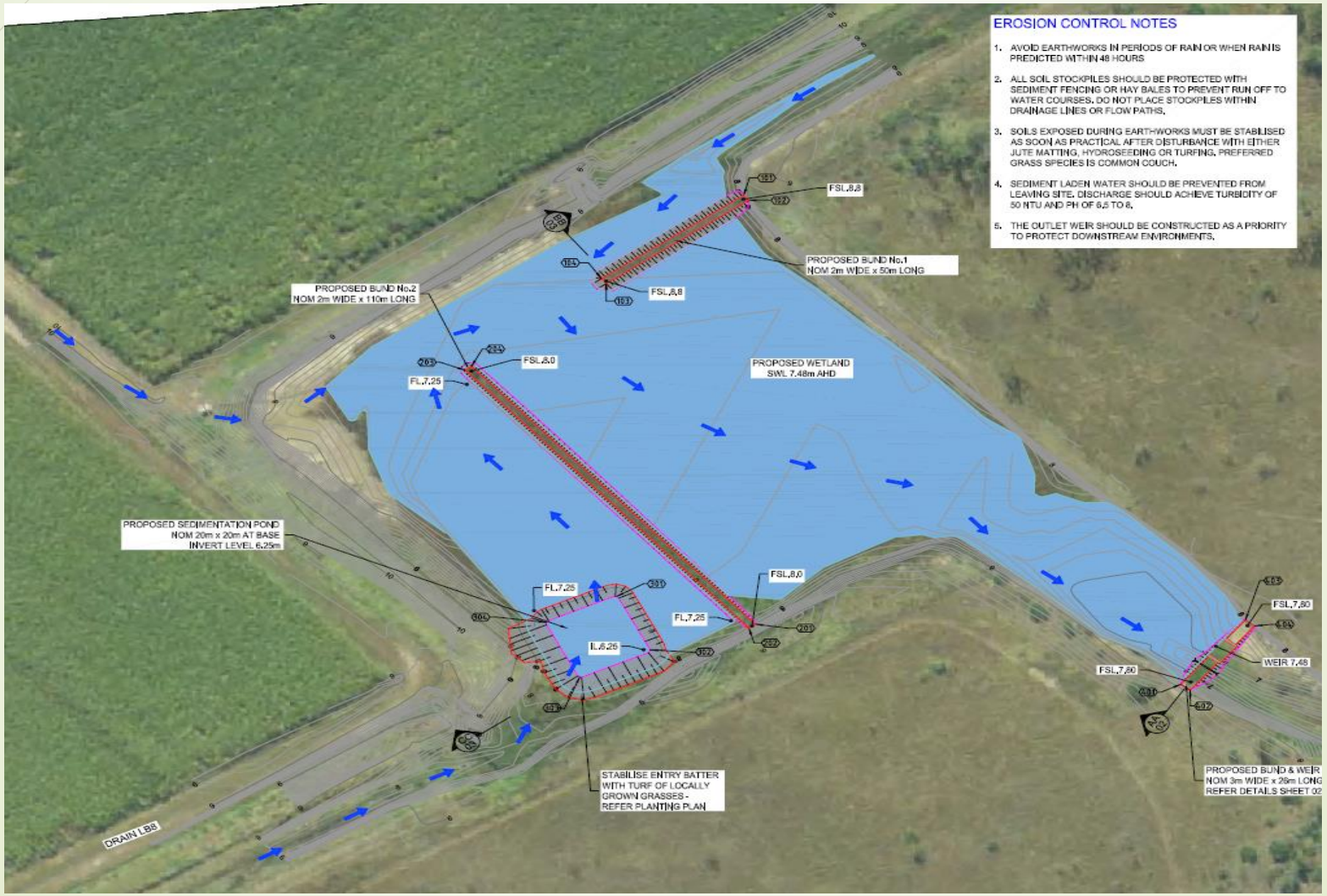
Typha cure-off:

Typha burning:

System design:



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Earthworks:

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Rockwork:

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Planting:

Training:

End result:

Water monitoring:

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Lessons learnt:

- *So far!!*
- Earthworks take longer and cost more money than anticipated
- Have the designer supervise the works
- The project steering committee was a great success in achieving true collaboration and in-kind contributions

Potential risks:

- Weeds outcompete native wetland sedges (Typha spp, Hymenachne, Para Grass)
- Wet season causes damage to berms, outlet etc
- Feral animals destroy wetland plants (e.g. pigs)
- Water backs up into neighbouring farms
- Perceived water table/salinity impacts

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Acknowledgements:

A huge thanks to the project collaborators who all went above and beyond!

- ***DAF*** – in-kind contributions towards project coordination and communications materials
- ***Sunwater*** –in-kind contribution to earthworks and construction supervision
- ***Burdekin Shire Council*** – in-kind contribution of site survey
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- ***Australian Wetland Consulting*** – in-kind contribution of reduced fees on staff time
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