

WASTEWATER INLET WORKS STRUCTURAL CONDITION ASSESSMENTS - LESSONS LEARNED

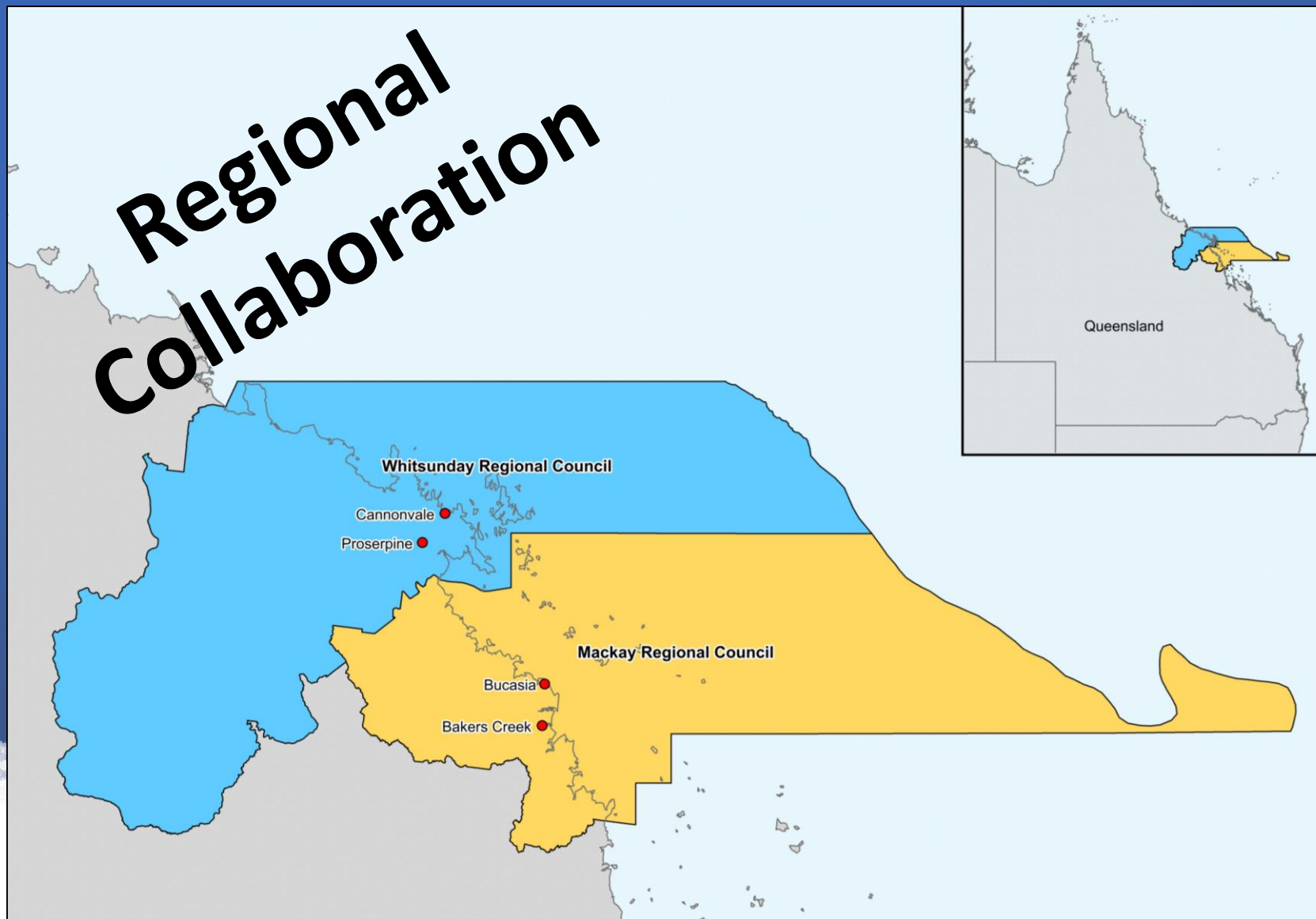
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Whitsunday Water

International Public Works Conference (IPWC) 2019 – Hobart TAS



Regional Collaboration



WIM Alliance



Queensland
Water Regional Alliance Program





- 4,000 EP
- Design ADWF: 1.0 ML/d
- Current ADWF: 1.0 ML/d
- Activated sludge, single SBR, media filtration
- Discharge to Proserpine River

Proserpine Sewage Treatment Plant (STP)



- 25,000 EP
- Design ADWF: 6.25 ML/d
- Current ADWF: 3.0 ML/d
- Activated sludge, MBR (2 bioreactors, 4 trains)
- Discharge to Pioneer Bay Coral Sea

Cannonvale STP



- 97,000 EP
- Design ADWF: 22.3 ML/d
- Design PWWF: 111.5 ML/d
- Current ADWF Range: 12.9-19.9 ML/d
- Activated sludge (4 SBR), tertiary filtration, disinfection to recycled water, UV
- Rainfall trigger discharge to Baker's Creek

Mackay South Water Recycling Facility (MSWRF)



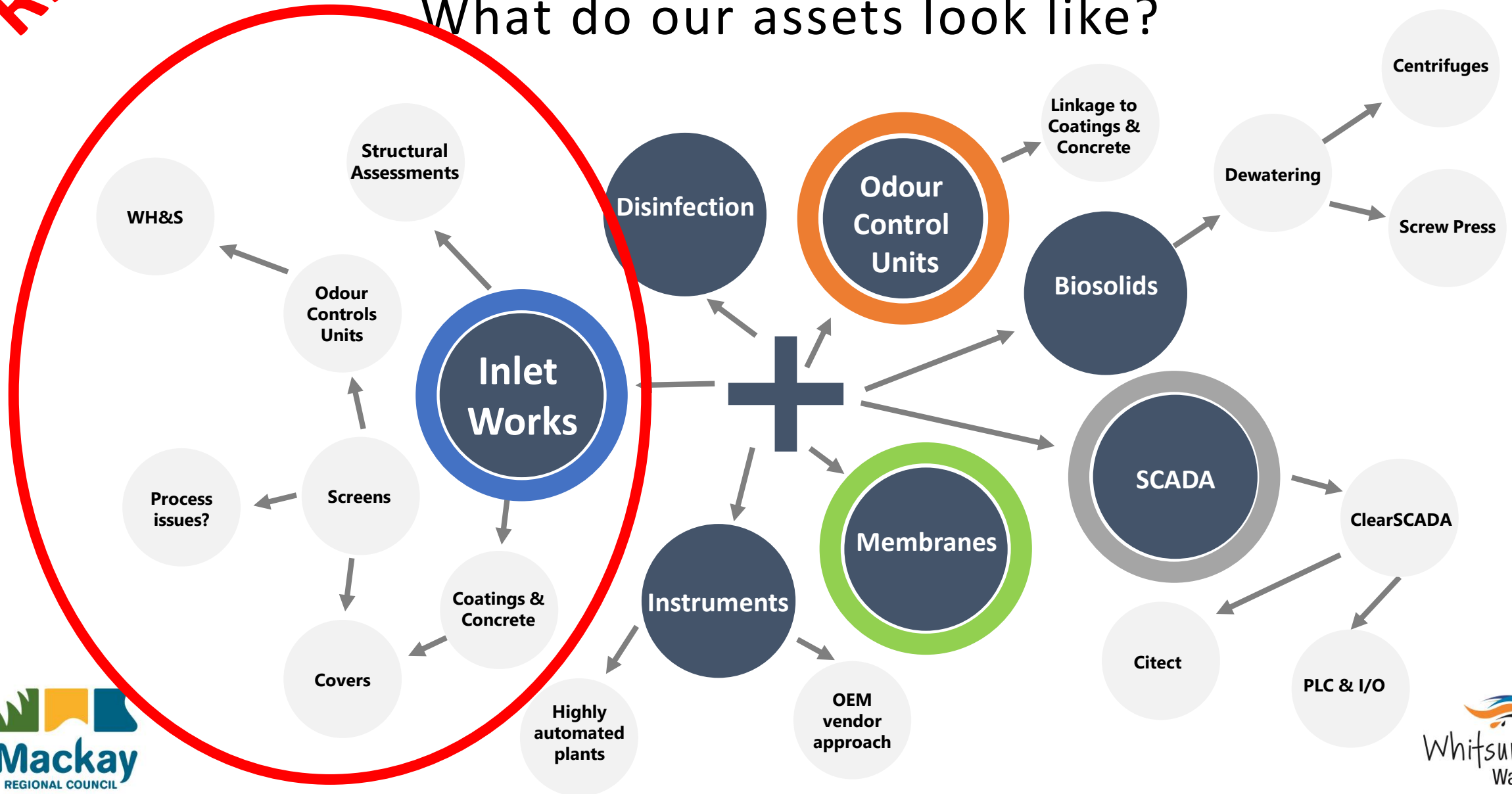
- 21,300 EP
- Design ADWF: 4.90 ML/d
- Current ADWF: 2.9-3.7 ML/d
- Activated sludge (2 SBR), disc filtration, disinfection, UV
- Tidal discharge to Reliance Creek

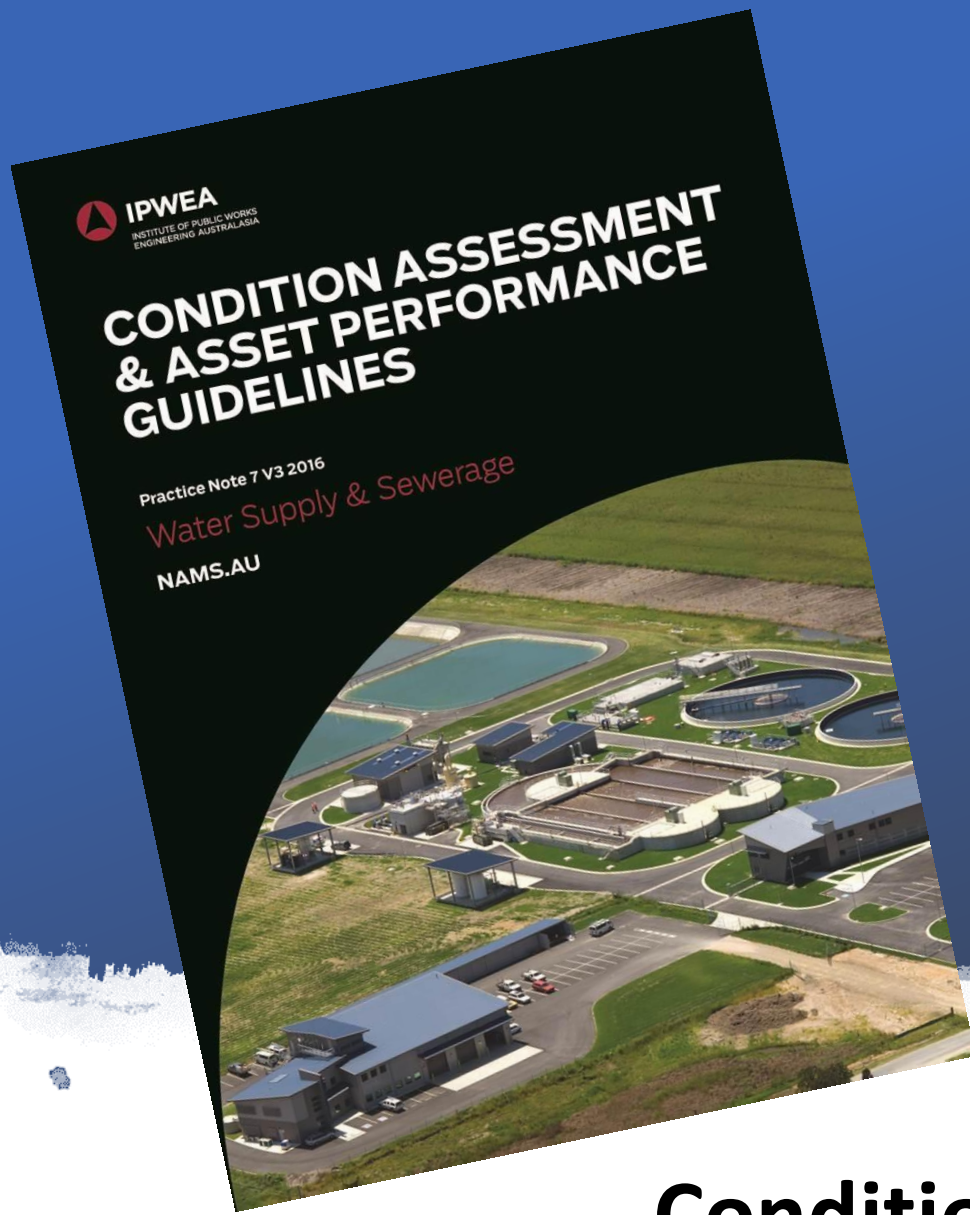
Mackay North Water Recycling Facility (MNWRF)

RISK

Condition Assessments

What do our assets look like?





- Technical report
- Remedial scope of work
- +/- 30% cost estimate
- High level remedial works schedule

Condition Assessments

Bypassing inlet works?

- Workplace health & safety
- Environmental compliance
- Process risk





1. Inlet Works
2. Bioselector & Bioreactor (x2)
3. Old Inlet Works
4. Old Bypass Balance Tank
5. General Purpose Pump Station



1. Inlet Works
2. Bioselector & Bioreactor (x2)
3. Old Inlet Works
4. Old Bypass Balance Tank
5. General Purpose Pump Station



Cannonvale STP Inlet Works Structural Condition Assessment





1. Inlet Works
2. General Purpose Pump Station
3. Bioselector & Bioreactor (x2)
4. Old Inlet Works
5. Old Bypass Balance Tank



1. Inlet Works
2. General Purpose Pump Station
3. Sequence Batch Reactors (SBRs, x2)

MNWRF

Decommissioned drying
beds & old pump station

MNWRF Inlet Works Structural Condition Assessment



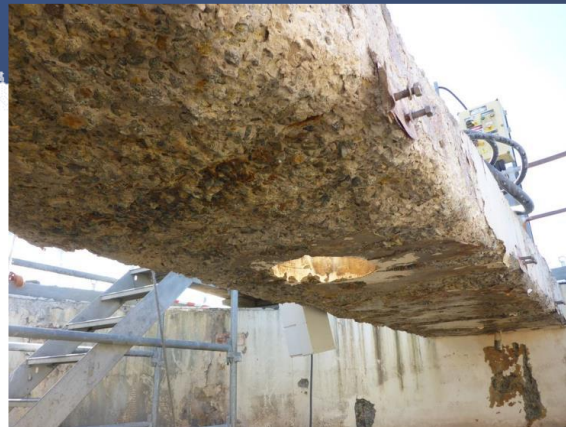


1. Inlet Works
2. General Purpose Pump Station
3. Sequence Batch Reactors (SBRs, x4)



1. Inlet Works
2. General Purpose Pump Station
3. Sequence Batch Reactors (SBRs, x4)

MSWRF Inlet Works Structural Condition Assessment



COMMON FINDINGS

Linkage to odour control?

01

**Concrete
deterioration
& friability**

02

**Protective
coating
damage &
delamination**

03

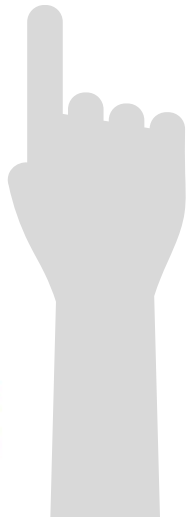
**Installation
issues**

04

**Hydrogen
sulphide
attack**

05

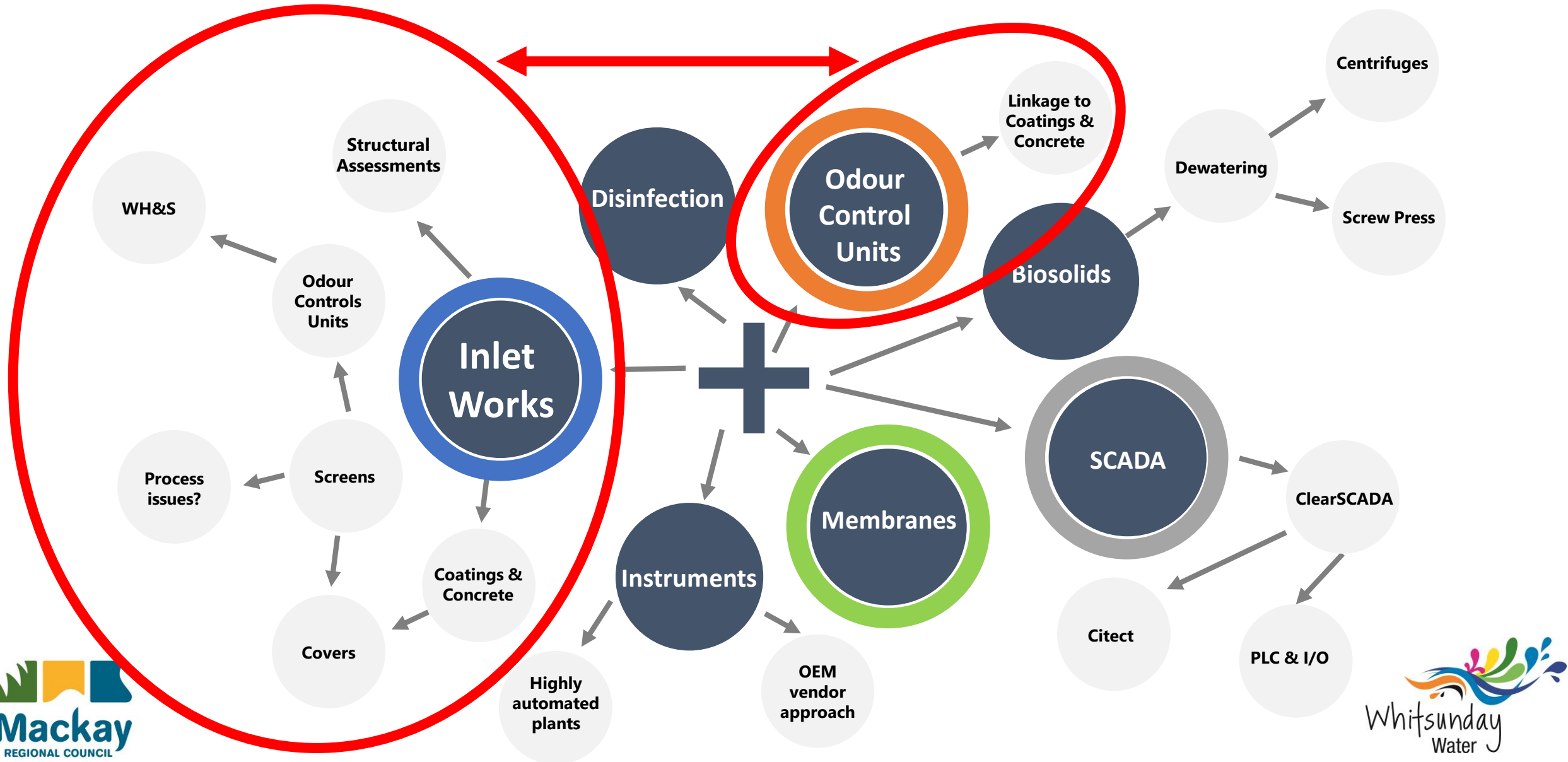
**Odour control
covers**



Plant Area	Estimated Date of Construction	Condition Rating Score (0-5)
Cannonvale STP inlet works	2014	3 (fair or moderate, maintenance required)
Cannonvale STP bioselectors & bioreactors	2014	2 (very good, requiring normal / routine maintenance)
Proserpine STP inlet works & bioselectors	2013	2 (very good, requiring normal / routine maintenance)
MNWRF inlet works	2008	4 (poor, requiring renewal or significant remedial works)
MNWRF GPPS	Refurbished 2008	3 (fair or moderate, maintenance required)
MSWRF inlet works	2008	4 (poor, requiring renewal or significant remedial works)
MSWRF GPPS	Refurbished 2008	3 (fair or moderate, maintenance required)

Condition Rating Scores

CLOSING THE LOOP





Odour Control Units



Odour Control Units

LESSONS LEARNED

01

**Regional
Collaboration**

02

**Importance
of Odour
Control**

03

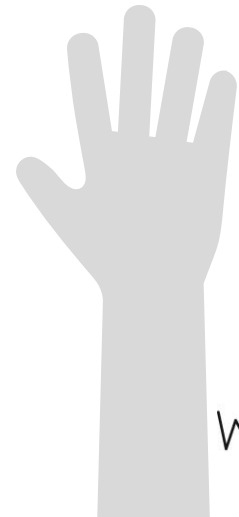
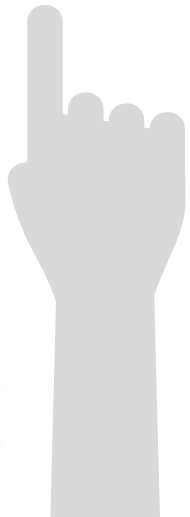
**Workplace
Health &
Safety**

04

**Design
Improvements**

05

**Asset Life &
Condition
Assessments**



Whitsunday Water:

- Jason Raiteri (Director Engineering Services)
- Troy Pettiford (Chief Operating Officer, Whitsunday Water)
- Peter Stapleton (Treatment Operations Manager)
- All Whitsunday Water & WRC staff involved in this project

Mackay Regional Council:

- Jason Devitt (Director, Engineering & Commercial Infrastructure Services)
- Nicole Davis (Chief Operating Officer, Water & Waste)
- Stuart Boyd (Manager, Water Treatment)
- All MRC personnel involved in this project

- QWRAP, Queensland Government, qldwater, LGAQ

- Gary Edwards @ DGH Engineering (Planning & Project Delivery)
- Nilesh Prasad, Stuart Bailey, Michael Mckeown, Scott Downer @ Jacobs (Structural)
 - Ian Evanson, Glen Hadiardja, Dominic Gibbs, Anh Ho @ Stantec (Odour Control)
 - Contract Manager, Denis Baker @ CEENA

Acknowledgements



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Questions?