Barwon Water Biosolids

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Barwon Water

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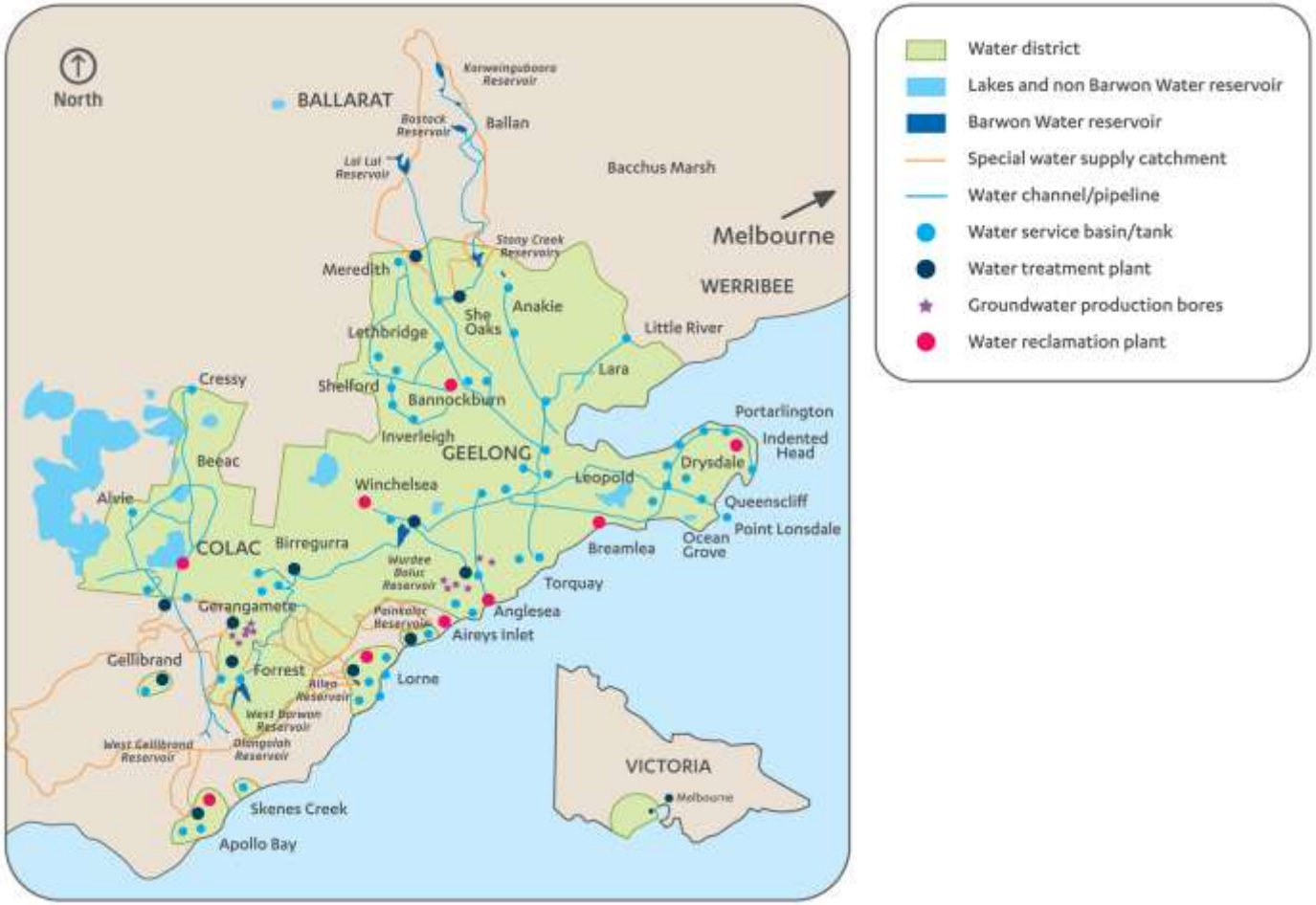
Region Map


North
BALLARAT
Karweingubora Reservoir
Bostock Reservoir
Ballan
Lal Lal Reservoir
Bacchus Marsh
Melbourne
Stony Creek Reservoirs
Meredith
WERRIBEE
She Oaks
Anakie
Lethbridge
Little River
Lara
Cressy
Shelford
Bannockburn
Portarlington
Indented Head
Inverleigh
GEELONG
Drysdale
Beeac
Winchelsea
Leopold
Alvie
Queenscliff
Point Lonsdale
COLAC
Birregurra
Ocean Grove
Breamlea
Wurdee Boluc Reservoir
Torquay
Gerangamete
Pointalac Reservoir
Anglesea
Aireys Inlet
Gellibrand
Forrest
Allen Reservoir
Lorne
West Barwon Reservoir
West Gellibrand Reservoir
Dilwyn Reservoir
VICTORIA
Melbourne
Skenes Creek
Apollo Bay
Water district
Lakes and non Barwon Water reservoir
Barwon Water reservoir
Special water supply catchment
Water channel/pipeline
Water service basin/tank
Water treatment plant
Groundwater production bores
Water reclamation plant

Biosolids Data

- 1996 – 2001 produced 180,000 wet tonnes.
  - Stored at Black Rock WRP in clay lined lagoons
- 2001 – 2012 produced 490,000 wet tonnes
  - Stored at Western Treatment Plant site
- 2004 – 2012 beneficially reused 90,000 product tonnes biosolids (equivalent of 420,000 wet tonnes)
  - Dried at Barwon Water's short term facility at WTP.

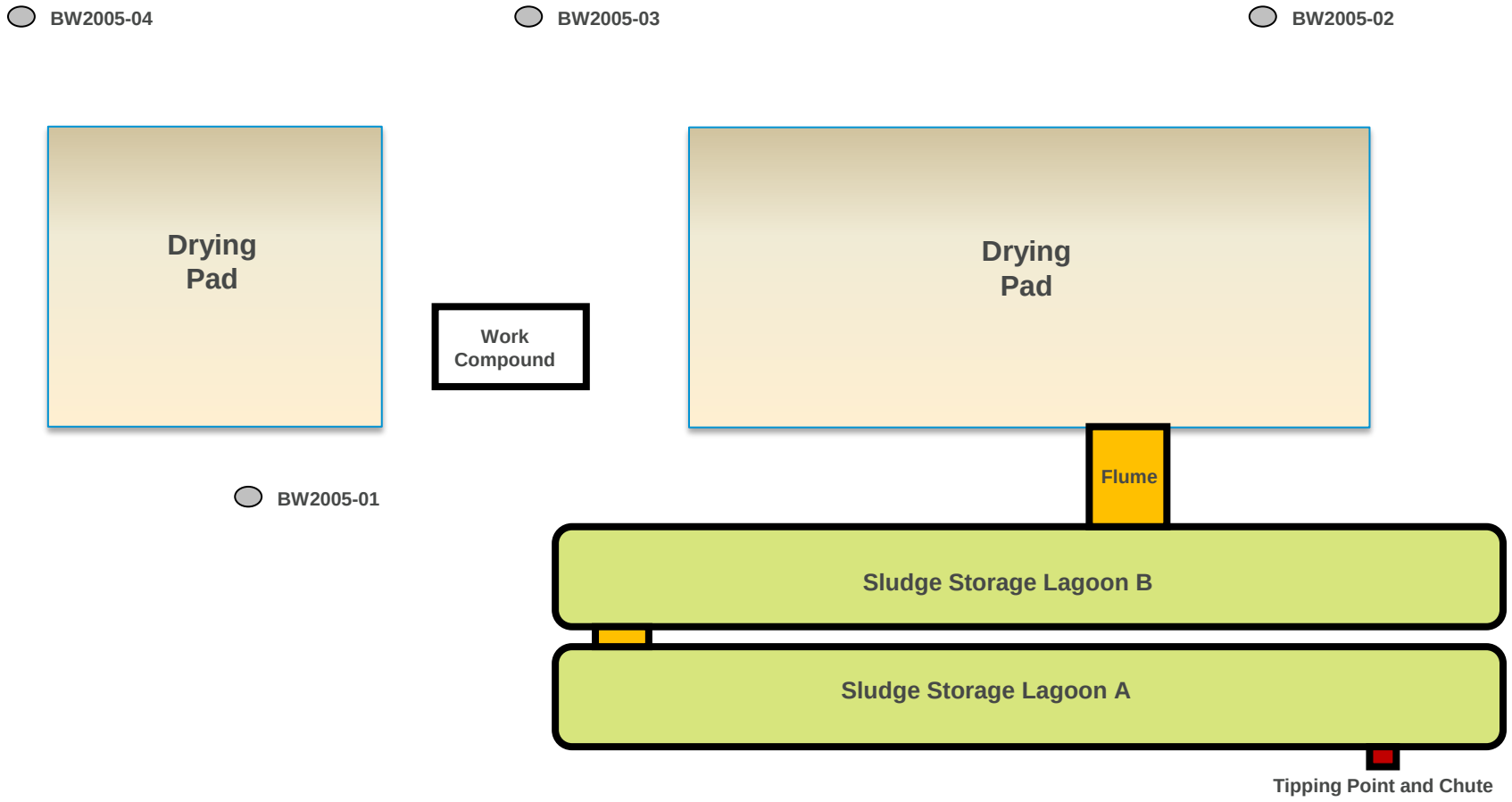
Short Term Biosolids Management Project

Truck delivering biosolids at Sludge Storage Lagoons

Short Term Biosolids Management Project

Sludge Storage Lagoon

Short Term Biosolids Management Project



Short Term Biosolids Management Project

- Sludge stored for minimum 12 months.
- Volatile solids reduced from 80% to 60%
- Odour potential significantly reduced
- Dozer & excavator used to spread and windrow sludge
- Spends about 2 – 3 months on the drying pad.
- Stockpiled and tested at about 70% dry solids

Short Term Biosolids Management Project

Stockpiled biosolids ready for transport

Short Term Management Project

Biosolids being applied to farmland

Short Term Biosolids Management Project

Canola crop produced with the application of biosolids

Long Term Biosolids Management Project

- Barwon Water Biosolids Management Project is the first water infrastructure project successfully procured under the Partnerships Victoria framework.
- Plenary Environment is the sponsor for the design, construction, operation, maintenance and beneficial use for the twenty year contract term.

Barwon Water

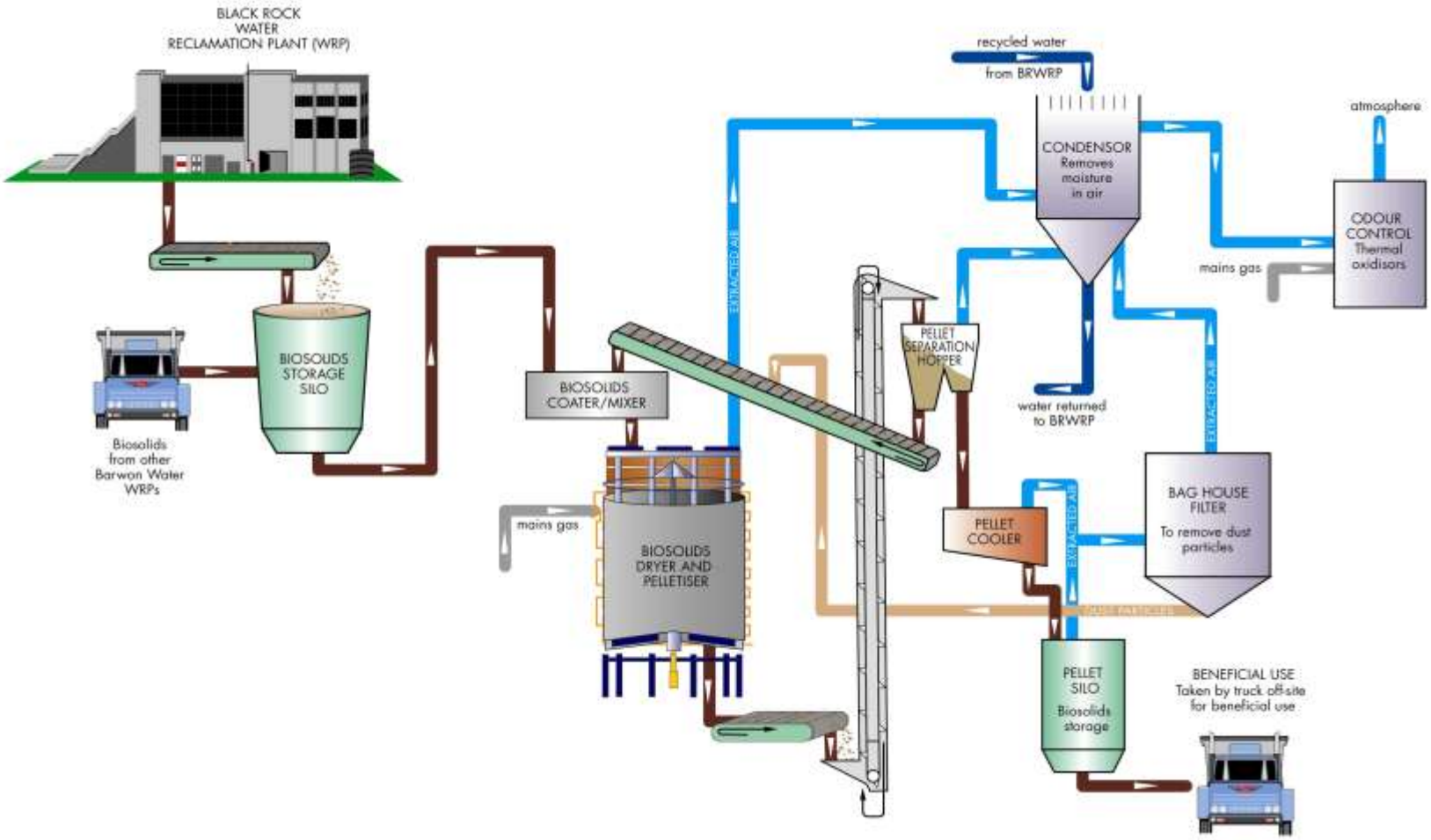
Long Term Biosolids Management Project

Barwon Water

Long Term Biosolids Management Project

Thermal Driers

Process Description



Biosolids Pellets for Blending

Westmere Wheat Trials

Yield 7560 kg/ha sowed with XLPRILL Crop M

Versus

Yield 6658kg/ha sowed using conventional fertilisers using the same amount of nitrogen and phosphorus

- a difference of 912kg/ha means a difference of some $236 bonus per/ha.
- Carbon 38%
- XLPRILL Crop M (12N 12P 6S 1K plus trace elements and carbon)

Biosolids Pellets – Nutrient Availability

Analyte	Total Digestion	3-4 weeks	6-8 weeks	12 weeks	Extraction % of Total
Nitrogen (%)	5.694			3.92	68.84
Phosphorus (%)	3.16	1.36	2.05	2.95	93.35
Potassium (%)	0.956	0.363	0.698	0.88	92.05
Sulphur (%)	1.04	0.097	0.145	0.63	60.58
Calcium (%)	1.35	0.121	0.98	1.30	96.30
Magnesium (%)	0.692	0.181	0.480	0.55	79.48
Sodium (%)	0.491	0.192	0.343	.350	71.28
Carbon (%)	28.58	-	-	-	-
Chloride (%)	-	.41	.47	.45	99.0
Aluminium (ppm)	12184	42.9	4028	6033	0.49
Copper (ppm)	624	0.97	1.10	71.60	11.15
Zinc (ppm)	851	133	386	729	85.66
Manganese (ppm)	314	60.5	209	285	90.76
Iron (ppm)	13357	822	4960	5189	38.84
Cobolt (ppm)	4.77	0.895	1.44	3.17	66.45
Boron (ppm)	47.5	18.9	30.73	40.7	85.68
Molybdenum (ppm)	1.47	0.181	0.44	1.105	75.12

Table 1: Breakdown Analysis of Pelletised Biosolids

Sustainable Operation for the Future

- Barwon Water has invested in a reliable and proven process to ensure biosolids can be beneficially reused in accordance with EPA Guidelines.
- Plant capable of accepting 60,500 tonnes wet biosolids between 12 – 22%.
- Operating life of 20 years.