

WA Biosolids Program



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Background

- **Water Corporation 108 WWTP**

- 14 Metro
 - 94 regional

- **Metro**

- **Biosolids Cake**

- Stabilisation by mesophilic anaerobic digestion
 - Woodman Point WWTP **130** MGD
 - Beenyup WWTP **120** MGD

- **LAB**

- Stabilisation by Lime Treatment
 - Subiaco WWTP **60** MGD

- **Regional**

- 78 oxidation pond processes
 - 16 Activated sludge processes (IDEA)



Regulation

- **W A Guideline**

*Western Australian guidelines for biosolids management
(Dec 2012)*

- Living document to include further research and best practice management.

- **EP Act (WA) 1984**

- **Health Act**



Security through diversity

- Focus is on diversifying i.e. compost/ agriculture/ forestry and ensuring viability in each market.
- Multiply options reduce exposure to market loss
- Ensure market security through "end user" contracts and/or agreements.



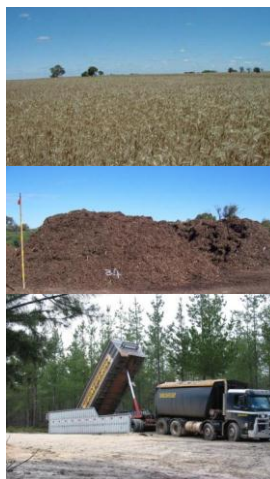
Current markets

Perth

- Agriculture
 - 11500 dry t
- Compost
 - 4050 dry t
- Forestry
 - 2600 wet t

Regional

- Compost
 - 3000 dry t



approximate volumes



Odour

Treatment Plants

- Sludge treatment works ducted to odour control systems
 - multi-stage chemical scrubbers. (caustic scrubber + Odour-guards)
 - biological scrubbing facility upstream of the chemical scrubbers.
 - stack for discharge of treated gases from the scrubbers.

Transport

- Currently investigating other vessels / modes of transport (LAB).
- Distance to outlet



Odour unit and stack



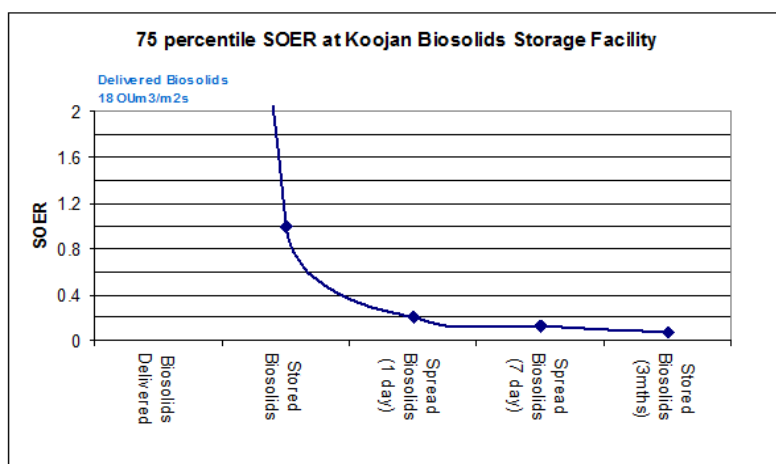
Odour

- **Land application**

- Distance to residence / towns
- Minimise on site storage
- Incorporation
- Wash vehicles after loading and unloading
- Inform local community



Biosolids storage facility - odour



Odour survey results

- The 75 percentile odour emission rates
- Ausplume model
- Winds measured on the site

- Stored
 - Modelling from data -noticeable odour extending for 400 m to 500 m.
 - Field survey confirmed sampling - odour detected maximum of 400 m

- Land applied
 - modelling from data noticeable odour extending for 250 m to 350 m.
 - Field survey confirmed sampling - odour detected for maximum of 350 m from the spreading operations



Biosolids odour reduction project

- no significant differences between the sludge and the biosolids in terms of the types of compounds present
 - biosolids contained much greater quantities of the odorous sulphur compounds (DMS, DMDS and DMTS) than the sludge samples.
- oxidation ditch sludge (WWTP 3 and WWTP 4)
 - higher concentrations of the volatile sulphur compounds (DMS, DMDS and DMTS) and OVACs indole and skatole
- odour panel assessments supported by the analysis of the biosolids by HS SPME-GC-MS that:
 - the aged biosolids sample was least odorous with an earthy/musty/mouldy odour.
 - WWTP 3 as most odorous with a faecal/septic odour
- follow up analysis ~ one month later showed
 - an increase in the number of panellists detecting a strong faecal odour from WWTP 1 and WWTP 2 which was not detected in the initial assessment. These observations were consistent with the detection of significant concentrations of indole and skatole by HS SPME-GC-MS.
- Chemical addition trials of alum addition to digested sludge prior to dewatering will be conducted in early April 2013.



