

Land application in agriculture – Cereal <i>(Enter name of biosolids case study above)</i>	
Organisation Managing Case Study	Water Corporation WA
Key Contact Details	
Name	Nancy Penney
Position	Biosolids Specialist
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Phone	08 9420 2957
Location of case study	
Biosolids Produced at <i>(Location, suburb/region/nearest town, State)</i>	Woodman Point Wastewater Treatment Plant (WWTP), Munster, Perth WA
Biosolids Used at <i>(Location, suburb/region/nearest town, State)</i>	Gillingarra, Shire of Moora located approximately 20 south of the Moora township.

Technical Aspects		
Year Case Study Operation Commenced	2004/05	
Ultimate Use of Biosolids	Direct land application for production of dryland cereal crops	
How were the biosolids managed before this?	Mostly composted or stockpiled on site (pre 1997)	
Quantities of biosolids produced		
Dry Solids (t/yr)	6253	
Moisture Content of Final Product (%ds)	17.5%	
Quality and Classification <i>(Western Australian Guidelines for direct Land Application of Biosolids and Biosolids Products, 2002)</i>		
Parameter	Quality	Classification
Heavy Metals		
Zinc	866 mg/kg dw	Grade C2
Copper	1349 mg/kg dw	Grade C2
Cadmium	2.0 mg/kg dw	Grade C1
Arsenic	2.5 mg/kg dw	Grade C1
Chromium (total)	64 mg/kg dw	Grade C1
Lead	61 mg/kg dw	Grade C1
Mercury	2.2 mg/kg dw	Grade C2
Nickel	43 mg/kg dw	Grade C1
Selenium	5.0 mg/kg dw	Grade C2
Microbial		
E Coli	1.68E+06	Grade P3
Other/s		

Dioxins / Furans	< 10 pg/g	NA	
Restrictions on Use Due to Quality			
<ol style="list-style-type: none"> 1. direct application to horticulture and application for root crops 2. direct application for unrestricted ie public contact areas 3. bagging of product 			
Treatment Summary			
Stabilisation	Mesophilic anaerobic digestion		
Dewatering	Mechanical centrifuge		
Further Processing	None		
Cartage	Transported in truck and trailer combination units with roll on tarpaulins and bolt locked tailgates. Loads approximately 38-40 wet tonne. Distance from Woodman Point WWTP to application site is 190km.		
Spreading or Application	Knight side spreader model 8030 Bunning Lowlander range manure spreader model 150HD		
Costs and income from biosolids management			
Components	Supplier/Processor		End User
	Cost (A\$/dt)	Income (A\$/dt)	Cost (A\$/dt)
Processing			
Storage			
Cartage			
Spreading			
Biosolids monitoring			
Total			
Comments			
<p><i>Note all Supplier/Processor components could be a cost or income. eg biosolids managed through land filled could be a cost, but biosolids applied to land might provide income to the supply and be a cost to the end user. If</i></p>			
Environmental Management Requirements			
Environment Improvement Plan (EIP)	<p>The Water Corporation supply a Review of Environmental Factor (REF) to the regulators and local government for approval and licensing the proposed application. The REF identifies environmental aspects for the proposed application site and surrounding area. The REF includes the biosolids quality, the nutrient values, intended use, tonnes required and application rate. Detailed explanations or justifications must be included if working outside the guideline recommendation ie phosphorus loadings.</p>		
Monitoring	<p>Biosolids produced are monitored weekly for metal, pH ,% total solids and pathogens. Nutrients are added monthly and organics added three-monthly.</p> <p>The grid recommended by NSW (this needs explaining) is used for soil sampling where biosolids have been applied, with samples taken at 0-10, 10-30 and 30-60cm (90cm if possible). Soils are analysed for all guideline parameters, nutrients, and typical agricultural parameters</p>		

Reporting	Apart from the REFs (what is this?) biosolids production, distribution use and locations, quality and the treatment process performance are summarised annually and reported to the Department of Environment and Department of Health.
Key Technical Learnings from Production and Use of Biosolids	
1. None	

Community Engagement		
Key Community Perception Issues		
Issue	How Addressed	
Appearance of Biosolids	Although we have been asked to dry the biosolids for better handling and ability to use own machinery, the appearance has not been a large issue in WA	
Odours	To date the only odour issues have been during transport whereby we investigate the potential cause and notify the community.	
Fear of Contamination	Hold presentations at trial sites and have academics present the data. Be available for one on one correspondence and communications	
Not in my Back Yard (NIMBY) Syndrome	We haven't yet struck this issue for land application	
Fly Breeding	Continue research and improve the management of biosolids such as minimising on site storage to 7 days	
Other	Update Water Corporation biosolids website regular to include latest information	
Availability / supply	Being seen to be fair and supply product to wider community.	
Stakeholders and Engagement Methodology		
Stakeholder (Individual or group)	Engagement Methodology	Outcome
Federal		
State		
Regional		
Local	Water Corporation and academics have held several community information sessions to gauge community response and respond to concerns. Also provides a forum for ideas to improve current process.	Support by regulators. Ability to address concerns rather than by Chinese whisper. Gaining community support for land application program.

	Update website regular to include latest information	Being seen to be open and transparent
	An independent telephone survey conducted in the biosolids application localities (301 individuals randomly surveyed)	Strong support for the use of biosolids in general at 60%, with 25% opposing it and 15% with no opinion.

Costs for Community Engagement

Period of Engagement	2 year +
Costs for Community Engagement (A\$) <i>(Over the period above)</i>	NA

Key Learnings from Community Engagement

1. Don't assume everyone is happy just because you don't hear from them.
2. Have scientific or valid evidence to back your argument.
3. One meeting will not solve all problems or address everyone's concerns.
4. You will never get 100% support, 80% is acceptable.

Testimonials of Biosolids Users

Name	Gary Manning
Why Used	Broad Acre Farming
Testimonial	<p>Gary Manning Yerecoin WA 27th march 2006</p> <p>I would like to take this opportunity to let you know that we have been applying biosolids annually for 8 years, and in that time I have found biosolids has greatly improved our soil structure. We have also seen an improvement in water holding capacity, nutrients levels and the micro organisms, resulting in a much healthier soil. The nutrient levels on gravel soils with high reactive iron soils have also improved. Upon one application of biosolids we have maintain a higher level of production for several years. The growing of Canola after biosolids application has had the best resulting yield and fits in well with our crop rotations. Biosolids have a long term sustainable use for broad acre farming in our area. We have been farming in the Victoria Plain area for 30 years and we see biosolids as being an integral part of our part of our farming system, well into the future.</p>
Name	
Why Used	
Testimonial	

Photos

No.	Photo Description
1	





Mr Manning examining the root of wheat crop 3 months after seeding. Biosolids were applied to the lower poor performing regions of this paddock, which has resulted in the whole paddock producing an even yield. Soils have high gravel content and pH around 5 – 5.5

2



Increased wheat yield 2nd year after biosolids applied. Production increase estimated to be 0.5 tonne with 60% addition of typical commercial fertilisers applied.

<p>3</p>		
<p>4</p>		
<p>5</p>		
<p><i>Note: Please provide several photos of the case study. These could include the treatment process to the beneficial uses. Number photographs and insert a description for each in the matching numbers below. Digital photos are preferred using the highest quality or resolution possible</i></p>		

Approval to use case study on ABP website

WWTP Authority

I, the undersigned, approve the use the biosolids management system operated by ___Water Corporation___(insert company name) to be used as part of a case study for the Australasian Biosolids Partnership Website (www.biosolids.com.au). I also acknowledge that I have the authority in the company inserted above to make such an approval.

Print name: Nancy Penney	
Signature:	
Date: _30_/_03/2006	
Phone: 08 9420 2957	Email nancy.penney@watercoporation.com.au
User Authority I, the undersigned, approve the use of my experience with biosolids to be used as a case study for the Australasian Biosolids Partnership Website (www.biosolids.com.au).	
Print name: Nancy Penney	
Signature:	
Date: _30_/03/2006	
Phone: 08 9420 2957	Email: nancy.penney@watecoporation.com.au