

# Biosolids Community Engagement Framework for the Victorian Water Industry

by  
The Biosolids Communications Working Group

## Purpose of this Document

The purpose of this document is to present to the VicWater Board a comprehensive approach to biosolids community engagement and to seek Board support for resourcing the approach through VicWater to take this framework to a fully developed strategy and supporting toolkit.

The draft framework was circulated to the Victorian water industry for comment and these have been incorporated into this final document.

## Background to the Framework

### 1.0 Role of the Community Engagement Working Group

A joint Victorian Water Industry/Government working group was established in 2001 with the mission of advising the Victorian government and the urban water industry on sustainable management of biosolids based on triple bottom line principles. The outcome was the report “Moving towards Sustainable Biosolids Management” which was launched in September 2002.

Action 5 of the Moving Towards Sustainable Biosolids Management report states:

Develop a framework for community consultation / awareness of biosolids management programs.

*Reason – a high degree of public acceptance is essential for biosolids projects. Experience in NSW and overseas has shown there is a high level of goodwill towards the concept of beneficial use provided procedures for managing risks are in place, the procedures are transparent and the community is well informed*

The issue of communications and public engagement with management of biosolids was considered to be critical in protecting the water industry’s interests and to ensure the appropriate management practices are understood and accepted by all stakeholders and the general public.

Consequently, a Biosolids Communications Working Group was established and comprises:

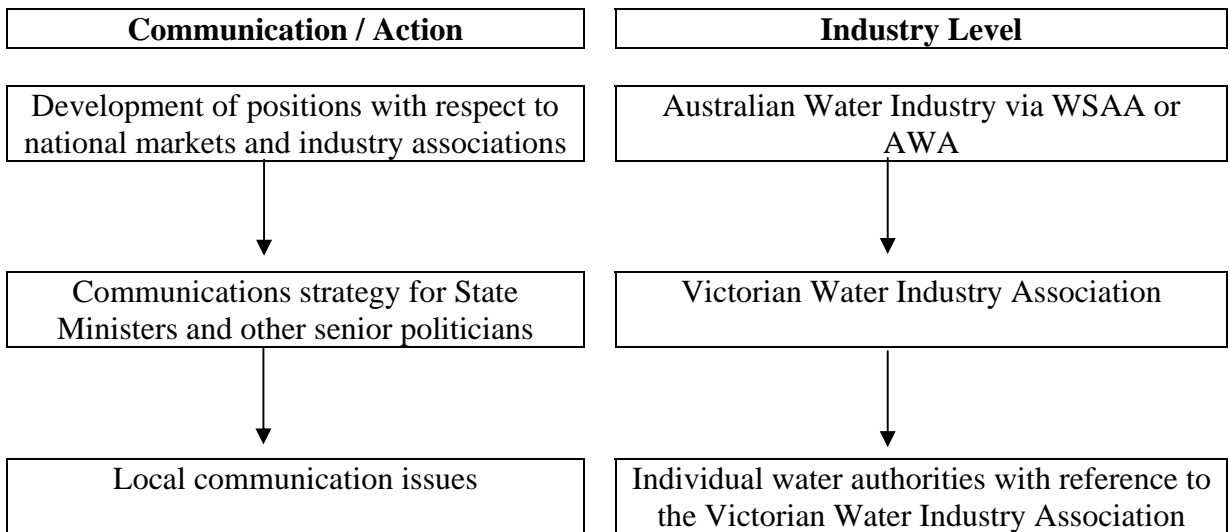
- Allen Gale, Goulburn Valley Water – Chair
- Janice Dart, Barwon Water
- Russell Worland, South West Water
- Carolyn Stanford, Coliban Water
- Kerrie Grenfell, Yarra Valley Water
- John Hussey/Caroline Hegarty, South East Water
- Sam Costello/Hamish Reid, EPA
- David Gregory of Melbourne Water joined the group in 2004.

The goal for the Biosolids Communications Working Group is:

*“To develop a communications framework and toolkit for the sustainable use of biosolids (including a recommended strategic approach) for water authorities to adopt.*

## 2.0 Framework Outline

The framework is based on an overarching hierarchy of different levels within the Australian water industry needing to address communications to various stakeholders. A brief outline of the hierarchy is:



Two points need to be emphasised about the work undertaken by the Communications Working Group:

- The working group has prepared a **framework** for individual water authority communications strategy, not all the details or information required for the strategy. It will be the responsibility of each authority to develop local specific information as required, with guidance from the framework.
- Development of the communication information for Australian Industry and Victorian Water Industry Association communications will need to be developed by others.

A draft framework for water authority communications, along with a number of “tool box” documents have been drafted, including:

- Key messages and likely spokespeople;
- Frequently asked questions about biosolids;
- Case studies and positive messages;
- Links to recommended websites.
- Customer survey – initial questions on biosolids.

### 3.0 Required Actions by VicWater

The attached Biosolids Community Engagement Framework is submitted to the VicWater Board for adoption. Issues to consider in resolving adoption are:

- A fully developed strategy and detailed supporting toolkit is likely to need an FTE for about six months, with in kind assistance from water authority practitioners in developing case studies etc. A lot of the relevant information is currently being developed, or has been developed by individual water authorities, which needs to be coordinated and consolidated.
- Once the fully developed strategy and supporting toolkit is in place there will be a need for maintenance of the system. However, labour requirements will be significantly reduced.

In view of biosolids community engagement being a national issue, and there currently being no established public engagement program, it is proposed that the following framework be adopted nationally. The most suitable vehicle for the national approach is the Water Services Association of Australia (WSAA). Although WSAA does not represent all water authorities it captures the greater majority and it should be possible to extend links to the smaller authorities. A significant advantage of a national approach is the spreading of the costs whilst ensuring a more coordinated approach. I propose to submit a project for resourcing by WSAA as part of WSAA's 2005/06 budget.

A national biosolids coordination group has been established under the auspices of the Australian Water Association's Biosolids Special Interest Group banner. This group currently comprises more than 200 AWA Members in AWA's Biosolids Special Interest Group along with other interested and committed individuals who are not members of AWA. This group should continue to provide a service to individuals and to provide the conference and education roles that AWA has done extremely well via the biennial Biosolids Specialty Conferences, the "Water" magazine and newsletters.

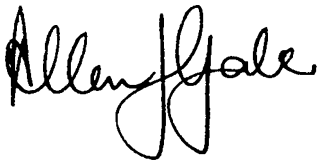
A possible model for Australia to work on is the National Biosolids Partnership (NBP) in the USA ([www.biosolids.org](http://www.biosolids.org)). The NBP receives a couple of million dollars support from the Federal government in addition to significant support from the USA water industry. The NBP provides a central repository for information related to biosolids. In addition it is driving a national Environmental Management System for biosolids to provide a quality assurance to the community that the water industry is managing biosolids in a sustainable, safe and responsible manner. One possibility that warrants exploration is for a national Australian biosolids organisation to be a partner in the NBP. Preliminary discussions with NBP officers indicated an interest in this approach.

Thus, it is proposed that, if VicWater agrees to the concept of further development of this framework, the possibility of a national group be explored with both WSAA and AWA.

#### 4.0 Recommendation

It is recommended that the VicWater Board:

- Adopts the attached Biosolids Community Engagement Framework as a template for developing a comprehensive, coordinated approach to public perceptions across the Victorian water industry.
- Resolves to support the allocation of one person for six months to work in VicWater to develop the strategy and toolkit from the current framework stage to fully implemented.



Allen J Gale  
CHAIR, BIOSOLIDS COMMUNITY ENGAGEMENT WORKING GROUP

27 October 2004

Biosolids Community  
Engagement Framework

*by*

Victorian Water Industry  
Biosolids Community Engagement  
Working Group

**FINAL**

October, 2004

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## Section 1 – Communications Strategy Framework

### 1.0 Introduction

Communication of beneficial use of biosolids needs to be targeted in a clear and timely manner to internal and external groups in order to maximise its benefits. The success of any biosolids programme is heavily reliant on the surrounding community having confidence that human health and the environment will be protected and therefore accepting the use of biosolids. The most important aspect of the implementation of such a programme is engagement and education of the community. This requires planning, a partnership approach and an ongoing commitment on the part of the water business and other stakeholders.

The following *Communications Framework* (which forms part of the associated *Tool Kit*) has been designed for local water businesses to use as a basis to develop a specific and localised framework. It is by no means mandatory or intended to be prescriptive. The wide variety of projects and communities water businesses will come across means that one single model will not be appropriate to all.

The *Tool Kit* also includes sample questions and answers, sample survey questions for possible use in customer satisfaction surveys, a guideline for identifying spokespeople and case studies to draw from. Please note however, that your business will need to devise a community consultation program to ensure your stakeholders and target audiences' needs are addressed. This framework highlights the key components that should be considered when devising a communications and consultation programme for beneficial use of biosolids.

It is recommended as a starting point, water businesses commence community education regarding biosolids *now*, using existing communications (ie what it is, how it's produced, and the benefits of recycling), to familiarise communities with the issue. This may include incorporating information on beneficial use of biosolids in displays for public events; adding a component to your school education program; including articles in customer publications and adding a page to your internet site.

### 2.0 Framework Components

This framework is divided into the following components:

#### **Community Consultation**

- Reference guide

#### **Communications**

- Research and evaluation
- SWOT analysis
- Target audiences (primary and secondary)
- Communications objectives
- Key messages
- Communications mix.

## **2.1 Consultation**

To ensure successful implementation of a biosolids beneficial use programme in your area, it is vital community consultation is undertaken from the outset and prior to decisions being taken to pre-empt the outcome of the programme. Not only does this promote open dialogue within your community, but it also allows for an open and transparent process and the opportunity to address community needs and concerns from the inception of the project.

See the end of this document for further references.

## **2.2 Communications**

### **2.2.1 Research and Evaluation**

Community attitudes and perceptions regarding biosolids recycling need to be benchmarked in your local area as early as possible, as well as an ongoing monitoring program to track any shifts in perception and to determine any emerging issues as recycling progresses. This may consist of adding a range of questions to your existing customer satisfaction monitor, or undertaking focus groups in the affected areas (refer to the sample questions in the *Tool Kit*). This understanding of local community views is critical for ensuring the consultation program addresses community needs.

### **2.2.2 SWOT Analysis**

As every application of biosolids is different it is important to give consideration to the strengths, weaknesses, opportunities and threats (“SWOT Analysis”) particular to your programme. This should be undertaken initially, as part of the development and implementation of a biosolids communication program.

### **2.2.3 Target Audiences**

The next step is to identify your target audience (your SWOT Analysis may assist you in this). A sample of some key primary and secondary groups are listed below.

#### **Primary**

- Staff and contractors
- Community – surrounding area and the nearest urban community (at both the process plant, at the point of use), including local environmental groups and school programmes
- Community – along the transportation routes
- Stakeholders and regulators, including local, State Government, (DHS, DSE, EPA), local Member of Parliament (& opposition member)
- Potential recycling markets (eg farmers).

#### **Secondary**

- Water industry.



#### 2.2.4 Communication Objectives

The strategy needs to establish objectives that are specific, measurable and time-based. This will assist with your implementation and evaluation.

Some samples include:

- To engage target audiences (eg the community) in an open consultation process (from the early stages of the project, and for its duration) to determine issues, concerns and attitudes;
- To raise awareness of the benefits and issues regarding biosolids recycling (in your area) amongst target audiences;
- To communicate the details of the biosolids recycling project (in your local area) and its proposed end use.

#### 2.2.5 Key Messages

Once the target audiences have been defined and communication objectives set for each, you will need to then consider tailoring key messages for each of these audiences. The Communications Matrix over the page may be a useful tool in matching the above.

Seven broad key messages that every communications program should include and the water industry should repeat at every opportunity are:

- *This recycling program will allow us to use biosolids in a sustainable way that is acceptable to the community.*
- *Biosolids and recycled water are the two products of the sewage treatment process. Beneficial recycling of biosolids is desirable and achievable.*
- *Biosolids are a nutrient rich fertiliser and soil conditioner suitable for agriculture, forestry and land rehabilitation.*
- *Returning biosolids to the environment is beneficial because it completes a natural nutrient cycle.*
- *Biosolids contain valuable energy sources and are an alternative to fossil fuels.*
- *Regulations and quality controls are in place to ensure that biosolids are fit for purpose.*
- *Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.*

### 2.2.6 Communications Mix

The communications mix (ie range of communications tools) will depend on the audiences relevant to your biosolids application. The following matrix details some possible target audiences and related objectives, key messages, and communication tools, which you may like to use as a basis for your own activities.

Audience	Objective	Key message/s	Communication Tool/s	Evaluation Tool
Staff & Contractors	To raise awareness of the benefits and issues regarding beneficial use of biosolids	<ul style="list-style-type: none"> <li>• This recycling program will allow us to use biosolids in a sustainable way that is acceptable to the community.</li> <li>• Biosolids and recycled water are the two products of the sewage treatment process. Beneficial recycling of biosolids is desirable and achievable.</li> <li>• Biosolids are a nutrient rich fertiliser and soil conditioner suitable for agriculture, forestry and land rehabilitation.</li> <li>• Returning biosolids to the environment is beneficial because it completes a natural nutrient cycle.</li> <li>• Biosolids contain valuable energy sources and are an alternative to fossil fuels.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> </ul>	Eg. Intranet, staff newsletter, information sessions, Q&As for Customer Contact Centre	Information regarding project status, issues and definitions regarding biosolids recycling in your area published in staff newsletter, intranet and Customer Contact Centre training session completed.
Community – process plant	To raise awareness of the benefits and issues regarding beneficial use of biosolids To communicate the beneficial use of biosolids in your local area and detail its proposed end use.	<ul style="list-style-type: none"> <li>• This recycling program will allow us to use biosolids in a sustainable way that is acceptable to the community.</li> <li>• Biosolids and recycled water are the two products of the sewage treatment process. Beneficial recycling of biosolids is desirable and achievable.</li> <li>• Biosolids are a nutrient rich fertiliser and soil conditioner suitable for agriculture, forestry and land rehabilitation.</li> <li>• Returning biosolids to the environment is beneficial because it completes a natural nutrient cycle.</li> <li>• Biosolids contain valuable energy sources and are an alternative to fossil fuels.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> <li>• Details of the preferred option(s) in this community.</li> <li>• Community input and ownership required.</li> </ul>	<p><b>NB Community Engagement Strategy needed.</b></p> <p>Resulting tools may include - Community Reference Group, Community Meeting, direct mail, internet.</p>	<p>Regular attendance to community meetings</p> <p>Focus groups reveal high level of understanding of issues and positive perceptions of biosolids recycling.</p>

Biosolids Community Engagement Framework

Audience	Objective	Key message/s	Communication Tool/s	Evaluation Tool
Community – point of end use	<p>To raise awareness of the benefits and issues regarding beneficial use of biosolids</p> <p>To communicate the beneficial use of biosolids in your local area and detail its proposed end use.</p>	<ul style="list-style-type: none"> <li>• This recycling program will allow us to use biosolids in a sustainable way that is acceptable to the community.</li> <li>• Biosolids and recycled water are the two products of the sewage treatment process. Beneficial recycling of biosolids is desirable and achievable.</li> <li>• Biosolids are a nutrient rich fertiliser and soil conditioner suitable for agriculture, forestry and land rehabilitation.</li> <li>• Returning biosolids to the environment is beneficial because it completes a natural nutrient cycle.</li> <li>• Biosolids contain valuable energy sources and are an alternative to fossil fuels.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> <li>• Application of biosolids to land is safe for the community because it is carried out strictly in accordance with EPA guidelines.</li> <li>• Details of the preferred option(s) in this community.</li> <li>• Community input and ownership required.</li> </ul>	<p>Community Engagement Strategy needed</p> <p>- Community Reference Group, Community Meeting, direct mail</p>	<p>Regular attendance to community meetings</p>

Biosolids Community Engagement Framework

Audience	Objective	Key message/s	Communication Tool/s	Evaluation Tool
Stakeholders/regulators – local government	<ul style="list-style-type: none"> <li>• To engage stakeholders in an open consultation process for the duration of the project, to determine issues, concerns and attitudes</li> <li>• To raise awareness of the benefits and issues regarding beneficial use of biosolids.</li> <li>• To communicate the beneficial use of biosolids and detail its proposed end use.</li> </ul>	<ul style="list-style-type: none"> <li>• Details of the preferred option(s) in this community.</li> <li>• Community input and ownership sought.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> </ul>	Face-to-face meetings, media articles	Regular updates appear on their website and/or publications. Ongoing dialogue achieved.
Stakeholders/regulators – state government (DHS, DSE, EPA)	<ul style="list-style-type: none"> <li>• To engage stakeholders in an open consultation process (for the duration of the project to determine issues, concerns and attitudes</li> <li>• To raise awareness of the benefits and issues regarding beneficial use of biosolids.</li> </ul>	<ul style="list-style-type: none"> <li>• Details of the preferred option(s) in this community.</li> <li>• Community input and ownership sought.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> </ul>	Briefings	Ongoing dialogue achieved.

Biosolids Community Engagement Framework

Audience	Objective	Key message/s	Communication Tool/s	Evaluation Tool
Stakeholders/regulators – local MP & opp.	<ul style="list-style-type: none"> <li>• To engage stakeholders in an open consultation process for the duration of the project to determine issues, concerns and attitudes</li> <li>• To raise awareness of the benefits and issues regarding beneficial use of biosolids.</li> <li>• To communicate the beneficial use of biosolids and detail its proposed end use.</li> </ul>	<ul style="list-style-type: none"> <li>• Details of the preferred option(s) in this community.</li> <li>• Community input and ownership sought.</li> <li>• This recycling program will allow us to use biosolids in a sustainable way that is acceptable to the community.</li> <li>• Biosolids and recycled water are the two products of the sewage treatment process. Beneficial recycling of biosolids is desirable and achievable.</li> <li>• Biosolids are a nutrient rich fertiliser and soil conditioner suitable for agriculture, forestry and land rehabilitation.</li> <li>• Returning biosolids to the environment is beneficial because it completes a natural nutrient cycle.</li> <li>• Biosolids contain valuable energy sources and are an alternative to fossil fuels.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> </ul>	Briefings	Ongoing dialogue achieved.

Biosolids Community Engagement Framework

Audience	Objective	Key message/s	Communication Tool/s	Evaluation Tool
Potential Recycling Markets (eg farmers)	<ul style="list-style-type: none"> <li>• To engage potential beneficial use markets in an open consultation process for the duration of the project, to determine issues, concerns and attitudes</li> <li>• To raise awareness of the benefits and issues regarding beneficial use of biosolids (in specific market areas).</li> </ul>	<ul style="list-style-type: none"> <li>• Technical information regarding the quality of product and appropriate applications.</li> <li>• Demonstrate the benefits of recycled biosolids (economic and environmental benefits).</li> <li>• Details of the preferred option(s) in this community.</li> <li>• Community input and ownership sought.</li> <li>• Potential end-users need to be aware of their responsibilities with respect to the application of biosolids.</li> <li>• This recycling program will allow us to use biosolids in a sustainable way that is acceptable to the community.</li> <li>• Biosolids and recycled water are the two products of the sewage treatment process. Beneficial recycling of biosolids is desirable and achievable.</li> <li>• Biosolids are a nutrient rich fertiliser and soil conditioner suitable for agriculture, forestry and land rehabilitation.</li> <li>• Returning biosolids to the environment is beneficial because it completes a natural nutrient cycle.</li> <li>• Biosolids contain valuable energy sources and are an alternative to fossil fuels.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> </ul>	Articles, one-on-one meetings, briefings, demonstrations sites and trial sites	Ongoing dialogue achieved

Biosolids Community Engagement Framework

Audience	Objective	Key message/s	Communication Tool/s	Evaluation Tool
Academia and Agricultural Specialists	<ul style="list-style-type: none"> <li>• To raise awareness of the benefits and issues regarding beneficial use of biosolids</li> <li>• To communicate the beneficial use of biosolids and detail its proposed end use.</li> </ul>	<ul style="list-style-type: none"> <li>• Technical information regarding the quality of product and appropriate applications.</li> <li>• Demonstrate the benefits of recycled biosolids (economic and environmental benefits).</li> <li>• This recycling program will allow us to use biosolids in a sustainable way that is acceptable to the community.</li> <li>• Biosolids and recycled water are the two products of the sewage treatment process. Beneficial recycling of biosolids is desirable and achievable.</li> <li>• Biosolids are a nutrient rich fertiliser and soil conditioner suitable for agriculture, forestry and land rehabilitation.</li> <li>• Returning biosolids to the environment is beneficial because it completes a natural nutrient cycle.</li> <li>• Biosolids contain valuable energy sources and are an alternative to fossil fuels.</li> <li>• Regulations and quality controls are in place to ensure that biosolids are fit for purpose.</li> <li>• Biosolids recycling has a long track record of satisfactory performance in Australia and overseas.</li> </ul>	Briefings, lectures and workshops, papers, demonstration and trial sites.	Ongoing dialogue achieved.

### 3.0 Further References

If you require further information regarding communications and appropriate methods of community consultation refer to the following references:

**Department of Premier and Cabinet** <http://www.commstoolkit.dpc.vic.gov.au/>

**VicWater Community Consultation Framework**

Working Together: A Guide to Consultation for Victorian Water Businesses 2002 (available for purchase on [www.vicwater.org.au](http://www.vicwater.org.au))

**Victorian Local Governance Association**, Consultation and Engagement Resource ([www.vlgaconsultation.org.au](http://www.vlgaconsultation.org.au))

**International Association for Public Participation** ([www.iap2.org](http://www.iap2.org))



## Section 2 – Delivering the Key Messages

The purpose of this document is to define the key messages that need to be delivered at various stages of biosolids management programs, along with the most appropriate spokespeople to deliver the messages. The following are most important:

1. The spokespeople need to be seen as honest and impartial by the community;
2. Engagement with the various audiences needs to commence early in a program and definitely well before any works commence. It is too late when the target audience has started an outcry;
3. Different levels of spokespeople need to be delivering messages to different audiences (eg. the Australian water industry should be consulting with food and other industry associations' rather than individual water authorities doing this).

Stage of Project	Message to Give	Deliverer	Target Audience(s)
Pre project (ongoing)	The 7 basic messages set out under “Key Messages” in Section 2.2.5	Minister/politicians/regulators/water industry/authorities	<ul style="list-style-type: none"> <li>• politicians</li> <li>• broad community</li> <li>• local government</li> </ul>
Pre project (ongoing)	Agricultural benefits & examples	Primarily water industry with “support” from regulators, Authorities to cover local audiences	<ul style="list-style-type: none"> <li>• primary producers</li> <li>• produce industry associations</li> <li>• Local media</li> </ul>
Project development	Need for investment in sustainable biosolids management in this region (using above messages focussed on the particular region)	Individual water authority (use the most credible person with a communications ability)	<ul style="list-style-type: none"> <li>• regional community in the service area</li> <li>• target councils</li> <li>• target major customers and enlist them (“gatekeepers”)</li> <li>• Local media</li> </ul>
Options Evaluation (pre site and process selection)	<ul style="list-style-type: none"> <li>• We want a sustainable solution</li> <li>• Best solution may involve trials and demonstration sites</li> <li>• Best solution will involve compliance with national standard safeguards</li> <li>• This is an opportunity that can lead to new business activity</li> <li>• Not interested in a quick fix, we want the right fix, and that will take time</li> <li>• Investigating establishment of community monitoring group</li> <li>• Describe the evaluation/decision making process and opportunities to contribute</li> </ul>	Individual water authority with support from regulators (possibly need independent “expert” if in house knowledge and credibility is limited)	As above plus <ul style="list-style-type: none"> <li>• politicians (particularly the local ones),</li> <li>• local environmental groups</li> <li>• similar stakeholders</li> </ul>

<b>Stage of Project</b>	<b>Message to Give</b>	<b>Deliverer</b>	<b>Target Audience(s)</b>
Process selection (need to consider whether the specific authority needs this step)	<ul style="list-style-type: none"> <li>Choice is narrowed to a set of solutions</li> <li>Will test these solutions via trial – reference to working examples</li> </ul>	<ul style="list-style-type: none"> <li>water authority</li> </ul>	<ul style="list-style-type: none"> <li>To all above</li> </ul>
Preferred system	<ul style="list-style-type: none"> <li>Have sustainable model</li> <li>Developing end use clients</li> <li>Locality of processing site(s)</li> <li>Commencing consultation with site owners and immediate neighbours</li> <li>Rolling out full report of evaluations to date for interested party information</li> </ul>	<ul style="list-style-type: none"> <li>water authority</li> <li>regulator to endorse model</li> <li>gatekeepers to endorse</li> </ul>	<ul style="list-style-type: none"> <li>potential end users (who we want to be our gatekeepers)</li> <li>immediate affected neighbours and adjacent community(s)</li> <li>relevant councils</li> <li>Keep others above informed rather than detailed communications</li> </ul>
Site chosen	<ul style="list-style-type: none"> <li>End user support</li> <li>Specific site(s) identified and TBL assessed</li> <li>Special expenditure proposed to comply with regulatory requirements</li> <li>Recognition of immediate neighbour uncertainties</li> <li>Planning approval process</li> <li>Site operations &amp; management controls along with quality control</li> </ul>	<ul style="list-style-type: none"> <li>Water authority</li> <li>regulator to endorse model</li> <li>gatekeepers to endorse</li> </ul>	<ul style="list-style-type: none"> <li>potential end users (who we want to be our gatekeepers)</li> <li>immediate affected neighbours and adjacent community(s)</li> <li>relevant councils</li> <li>Keep others above informed rather than detailed communications</li> </ul>
Establishment of process and applications site(s)	<ul style="list-style-type: none"> <li>Implementation of safeguards</li> <li>Commencing end user trials</li> </ul>	<ul style="list-style-type: none"> <li>Water authority</li> </ul>	<ul style="list-style-type: none"> <li>end users</li> <li>neighbours</li> </ul>
Ongoing fully developed operations	<ul style="list-style-type: none"> <li>Satisfying TBL Outcomes identified previously</li> <li>Meeting regulatory requirements</li> <li>Satisfying user and neighbour expectations</li> <li>Reporting on beneficial outcomes (eg. Improved land performance)</li> </ul>	<ul style="list-style-type: none"> <li>Water authority</li> <li>regulator (confirmation of compliance)</li> <li>end users (value from the product)</li> </ul>	<ul style="list-style-type: none"> <li>All of the above</li> </ul>

### **Section 3 - Frequently Asked Questions (FAQs) about Biosolids**

*The following questions and responses provide general guidance in responding to questions on biosolids, with individual water authorities adding as relevant for that authority's particular circumstances. The intention is that they be placed on a water industry (eg. VicWater) website under a biosolids link*

#### **What are biosolids?**

Biosolids are nutrient-rich organic materials derived from sewage solids (sewage sludge) that have been stabilised, meet specific processing and quality criteria and are suitable for land application.

The term, biosolids, comes from the most common method of its production: the *biological* processing of sewage *solids*.

Some biosolids are land-applied as a liquid, while others are dewatered and have the consistency of soil. Other biosolids products include compost material and pellets.

#### **What is the difference between biosolids and sludge?**

Biosolids are treated sewage sludge. Biosolids are carefully treated and monitored and must be used in accordance with regulatory requirements.

#### **Why do we have biosolids?**

We have biosolids as a result of the sewage treatment process. Sewage treatment technology has made our waters safer for recreation and seafood harvesting. In the mid 20<sup>th</sup> century, many cities were dumping raw sewage directly into the nation's rivers, lakes, and bays. Through regulation, sewage must now be treated, and treatment processes are continuing to be refined and improved. - As the quality of the liquid stream is improved, the quantity of the solids produced is increased. These residual solids are further treated and either recycled as fertiliser, incinerated, buried in a landfill. If the solids meet the regulatory requirements for land application and are recycled, they are biosolids.

#### **How are biosolids made?**

Biosolids are produced primarily from the treatment of sewage. Sewage consists of used water from household activities – such as washing dishes and clothes, taking a shower, flushing the toilet and even cleaning your teeth.

Industry also discharges into the sewerage system. This discharge is regulated and limits set, so that any potentially dangerous compounds are not allowed in the sewer at levels that might cause harm to the environment or people.

During sewage treatment, micro-organisms digest the sewage, completely breaking down the original organic solids discharged into the sewerage system. Excess micro-organisms are removed and their water content reduced, usually by passing through belt filter presses to become biosolids.

Biosolids comprise dead micro-organisms, a small portion of active micro-organisms and any inert solids such as sand which have come down the sewer.

### **Why should I care about biosolids?**

Biosolids are a valuable resource which can be recycled just like glass and aluminium cans. Recycling biosolids provides cost savings to end users while enhancing sustainability. Biosolids can also be used as a renewable alternative fuel.

Everyone contributes directly or indirectly to biosolids. We are all responsible for the generation of sewage. In Victoria, we produce 460,000 million litres of sewage each year – that's 260,000 litres per household. Recycled water and biosolids are the by-products of modern sewage treatment processes.

### **What do biosolids look like?**

Prior to drying, biosolids looks a lot like mud. After drying, they are soil-like in appearance – much like garden mulch or potting mix.

### **What do biosolids smell like?**

Biosolids are an organic material and when managed appropriately will typically have a weak earthy smell. This smell is not unpleasant. However, as with any organic material, if not managed, the natural decay process can produce strong, offensive odours. Therefore, the key focus in biosolids management is ensuring that offensive odours are not generated.

Management practices to avoid offensive odours include stabilisation or drying of the biosolids to stop the natural decay process or incorporating biosolids into topsoil following land application.

### **How are biosolids used?**

There are several possible uses for biosolids, including land application, energy recovery, brick making and potting mix. The most widely used process across Victoria at present involves the return of nutrients and trace elements to soil, such as by land application.

The controlled land application of biosolids completes a natural nutrient cycle in the environment. Land application of biosolids takes place in all Australian states.

### **How are biosolids regulated in Victoria?**

Biosolids are regulated by EPA, using the "Guidelines for Environmental Management Biosolids Land Application" document published in April 2004. The overall objective of the guideline is to maximise the sustainable use of biosolids by documenting good practice for matching biosolids quality with end use activities and minimising any associated risks.

Details of the guidelines and other relevant documents are accessible on EPA's website [www.epa.vic.gov.au](http://www.epa.vic.gov.au).

## How are biosolids classified?

Biosolids are classified in EPA's guidelines. Primarily there are two parameters examined when determining the classification of biosolids: the treatment (microbiological) grading and the contamination grading.

There are three treatment grades (T1, T2, and T3) and two contaminant grades (C1 and C2). All are suitable for use in land application programs, however, the grades are linked to different levels of end use restriction. For example:

- Class T1,C1 – these biosolids are classed as “unrestricted grade” and can be used in a wide range of applications with minimal controls, including food crops consumed raw, dairy and cattle grazing and landscaping without restriction on public access.
- Class T3,C2 - these biosolids have restricted applications, such as processed food crops, sheep grazing and fodder, and landscaping with restrictions on public access.

In general, the higher the classification the higher the processing cost. In determining the most appropriate classification for a specific application it is necessary to balance environmental, social and financial factors.

What are the different forms of biosolids?

The four most common forms of biosolids are:-

- Biosolids cake: Raw sludge is stabilised biologically (most commonly by anaerobic digestion), and the liquid biosolids are dewatered to produce biosolids “cake”. The ‘cake’ varies between 75% and 85% water, with the balance being solids. The cake can be dried even further by air drying. A similar result occurs with lagoon stabilization and air drying.
- Biosolids pellets: raw sludge or biosolids are heated and dried to 95% total solids and then pelletised.
- Lime amended biosolids: raw sludge or biosolids are first dewatered followed by stabilisation with the addition of lime.
- Compost: raw sludge or biosolids are composted, possibly with green waste, to produce a high quality suitable for use in domestic gardens as well as public parks and gardens.

By far the most common form of biosolids in Victoria is cake. There currently are no pelletised or lime stabilized biosolids in Victoria, although there are in other states of Australia.

## Why put biosolids on land?

Biosolids contain organic matter and nutrients which improve crop growth and the quality and structure of soil. They also contain micronutrients such as copper, zinc and iron. Biosolids can reduce the need for fertilisers.

Using biosolids also aids forestry and land rehabilitation at mining sites.

### **Who can apply biosolids to land?**

Land application may be undertaken by a water authority, a contractor engaged by a water authority or a landowner.

Class T1, C1 biosolids can be applied without restriction.

For all other classifications, regardless of who applies the biosolids, land application of biosolids in Victoria is managed under an Environment Improvement Plan (EIP) produced by the generator or applier and endorsed by EPA. The EIP defines procedures and practices that will be followed, as well as the monitoring to be undertaken to ensure sustainable biosolids application. Under the EIP annual reports on operations and monitoring are presented to EPA for review.

### **Are biosolids good for the environment?**

Recycling biosolids is good for the environment, particularly in areas of degraded soils. Organic matter has been recycled by humans for thousands of years to improve soil fertility and productivity.

When properly applied and managed, biosolids can:

- provide essential plant nutrients
- improve soil structure and moisture retention
- add organic matter
- reduce soil erosion.

Biosolids recycling is regulated by EPA Victoria and encouraged by the EPA and the State Government and water authorities. Research and years of recycling experience have demonstrated that properly managed land application of biosolids is beneficial to the environment.

### **What are some of the concerns and risks to land application of biosolids?**

When conducted according to regulations, years of research have shown that land application of biosolids is safe. However, concerns do still remain regarding soil and groundwater contamination from trace elements, toxic chemicals, and potentially harmful disease causing organisms. In response to these concerns, the U.S. EPA conducted a comprehensive risk assessment that evaluated the health risk to the general population as well as to a highly exposed individual. To date, there have been no documented cases of negative impacts to human health when a biosolids program has met all the federal and state requirements. The Australian water industry is undertaking detailed research to confirm whether similar conditions apply in Australia.

In addition to risk assessments, the various Environmental Management Systems and Quality Management Systems that are employed by the water industry, along with compliance with EPA guidelines, provide a further level of risk management.

### **Do biosolids contain heavy metals?**

Yes. Biosolids contain many important trace metals such as nickel, copper, iron, molybdenum, selenium and zinc. These micronutrients are essential for healthy plants and animals.

Other metals like cadmium, mercury and lead, which have little or no value to plants and animals, are also commonly found in small quantities.

EPA' biosolids guidelines define contaminant classifications for heavy metals to ensure sustainable, appropriate uses.

### **Do biosolids contain pollutants?**

Organic compounds, including pesticides, polychlorinated biphenyls (PCB's) and dioxins can be found in some biosolids, but only at very low concentrations. Other compounds commonly used in households such as detergents may be found at higher concentrations. Numerous studies have shown the risks from these compounds in biosolids to be negligible.

EPA biosolids guidelines define contaminant classifications for pollutants to ensure sustainable, appropriate uses.

### **Will the metals and pollutants in biosolids enter the food chain?**

Protecting human health is a cornerstone of EPA Victoria's biosolids guidelines and the guidelines have also been endorsed by the Department of Human Services. These guidelines ensure there is no harmful build-up of metals or pollutants in the soil or in crops.

Many of the trace metals in biosolids are also present in conventional fertilisers and manure. There, too, these substances are non-toxic at the low concentrations and low rates at which they are applied.

### **Will land application of biosolids pollute ground or surface water?**

When applied according to EPA regulations and good farming practices, biosolids will not impact on groundwater or surface water quality.

As with any fertiliser the chief groundwater concerns are nitrogen and phosphorus. Unlike commercial fertilisers, about 85 per cent of the nitrogen in biosolids is present in a slow-release organic form, making biosolids less likely to cause groundwater pollution from the release of nitrates (the mobile form of nitrogen) or phosphates. In addition, EPA guidelines ensure soil pH is taken into account and is managed in establishing the suitability of a site for land application to prevent movement of metals through the soil.

Site selection guidelines from EPA require stormwater controls at the site as well as operating practices to minimise stormwater runoff to extreme events. In addition the application of biosolids will not be undertaken within 48 hours of heavy rain being forecast.

### **Will biosolids make me sick?**

Biosolids are strictly regulated by EPA Victoria to ensure the health and safety of our communities. The guidelines have also been endorsed by the Department of Human Services.

Biosolids are a processed product. One of the most important considerations in the production of biosolids is treatment for the reduction of pathogens.

Biosolids applied in accordance with EPA guidelines to grow crops or graze stock for human consumption presents a negligible risk to the consumer.

### **Is it safe to eat food that has been grown using biosolids?**

Yes. This is one of the major factors considered by EPA in formulating their guidelines. The guidelines also cover the period for restriction of stock access to sites with biosolids applied.

### **Will a land application site next to me impact my property value?**

There is no evidence land values are negatively impacted by the land application of biosolids. On the contrary, the use of biosolids on your neighbour's farmland supports your neighbour's continued success at farming. By contributing to successful farm operations, land application of biosolids supports the economic stability of the farming community.

Successful land reclamation projects using biosolids recycling have raised land values at and around surface mine sites.

### **How is biosolids transported to farms?**

Dry biosolids are generally transported from the drying site to the farm in covered trucks. In the same way commercial fertilisers are transported, biosolids are usually delivered prior to crop planting. Good practice requires cleaning any excess biosolids from the exterior of the vehicle prior to transportation.

### **Are biosolids tested to ensure safety?**

Biosolids must be analysed to ensure they meet the quality standards for land application, as defined in EPA guidelines. These tests include analyses for nutrients, metals and PCBs. The frequency of testing is based on the amount of biosolids generated by the treatment facility. In addition, generators must regularly monitor the treatment process.



**Will I know when biosolids are applied near my property?**

Whenever biosolids of stabilisation grade T2 or T3 are applied to land EPA guidelines require erection of prominent signs to restrict access of the general public and stock to the site until vegetation is fully established and withholding periods have passed. There is no requirement under the EPA guidelines for signage with T1 biosolids. Although not mandatory, authorities will normally consult with their communities prior to undertaking biosolids application.

Who can I contact if I have questions or concerns?

- EPA 9695 2722 or [www.epa.vic.gov.au](http://www.epa.vic.gov.au)
- Your local water authority
- DHS Biosolids Hotline (to be set up)

## GLOSSARY

**Composting** - This is the process in which solid organic materials are decomposed in the presence of oxygen through the action of bacteria and other microorganisms. Dewatered biosolids are mixed with sawdust or wood chips that act as bulking agent by absorbing water and increasing the porosity of the mixture. This mix is then composted and cured for a minimum of six weeks. High temperatures (50 to 55 degrees Centigrade) generated during this process pasteurize the mixture. A peat like product is the end result. Composted biosolids are easier to handle, store and use than liquid and dewatered biosolids.

**Crops** - Crops are plants grown for human or animal consumption and use. Crops used directly for human consumption are those eaten by humans with only superficial washing in water. Crops may be processed for human consumption by many means, most of which reduce the likelihood of contact with or ingestion of pathogens. Food chain crops are those crops ultimately used for food by humans and other animals.

**Dewatering, dewatered biosolids** - A process used to remove water from biosolids producing dewatered biosolids that contain equal to or greater than 15 percent dry solids.

**Disposal** - Method of final disposition that does not provide any beneficial use. Disposal includes landfilling and incineration.

**EIP** - Environmental Improvement Plan. The document prepared in accordance with the requirements of EPA which sets out how biosolids are to be beneficially applied in a sustainable manner.

**EPA** - Environment Protection Authority Victoria. The state agency assigned to administer the state Environment Protection Act and other state environmental laws and regulations.

**Groundwater** - The subsurface water within the zone of saturation. This water moves under the influence of gravity and is, in many instances, a source of well water for domestic and agricultural use.

**Incorporation** - Incorporation means mixing biosolids with the soil. Incorporation includes injection, ploughing, roto-tilling and tandem disc harrowing.

**Leaching** - Leaching refers to the movement of soluble components in solution from the soil by water.

**Land Application** - The beneficial use of biosolids applied to land based upon crop needs and the composition of biosolids.

**Nutrient Management** - Identifying how the major plant nutrients (nitrogen, phosphorus and potassium) are to be annually managed for expected crop production and for the protection of water quality.

**Nutrient Management Plan** - A written site specific plan which describes how the major plant nutrients (nitrogen, phosphorus and potassium) are to be managed, annually. The goal of farm nutrient management planning is to minimize adverse environmental effects, primarily upon water quality, and avoid unnecessary nutrient applications above the point where long run net farm financial returns are optimized.

**Pathogen** - An organism capable of causing a susceptible host to develop a disease or infection.

**Pathogen Reduction** - Decreasing the presence of disease-causing organisms through sewage sludge processing and site management practices.

**Pelletization** - In this process biosolids are first stabilized (see definition), then completely dried and pressed into small pellets. The pellets are then used as fertilizer since they are high in nitrogen.

**Percolation** - The movement (normally downward) of water through and out of the soil. This downward movement accentuates the leaching process.

**Permeability, permeability rate** - The ease of movement of water and/or gases through a soil material.

**Plant Available Nitrogen (PAN)** - Plant available nitrogen is a calculated quantity of nitrogen made available during the growing season after application of biosolids. PAN includes a percentage of the organic nitrogen (20 percent in year 1), a percentage of the ammonium N (depends on pH and incorporation) and all the nitrate nitrogen in the biosolids.

**Porosity** - The porosity of a soil is the percentage of the soil volume not occupied by soil solids.

**Public contact or public use sites** - Land with a potential for use or contact by the public. This includes parks, cemeteries, plant nurseries, turf farms, golf courses, schools, lawns, home gardens, road banks, residential land or other similar areas. It does not include agricultural land.

**Recreation area** - Any area used by the public for recreation. Examples include, but are not limited to, golf courses, parks, campgrounds, picnic grounds, athletic fields, fairgrounds, race tracks and others.

**Routine storage** - The storage of biosolids (for extended periods of time) until the land is in a condition to receive the biosolids.

**Soil** - A natural body synthesized over time from a mixture of inorganic and organic parent materials, now supporting living plants. Soils with depth have natural horizons (layers) that give them their properties. Such properties include texture, colour, structure, and bulk density.

**Soil pH** - An index of the acidity or alkalinity of a suspension of soil in a liquid such as distilled water or dilute salt solution. The index is the logarithmic expression of the activity of H-ions in the liquid surrounding the soil particles. A pH >7.0 is alkaline and <7.0 is acid. A soil pH is not a measure of total acidity in a soil. It is a measure of the acidity or alkalinity of the soil.

**Soil saturation** - The water content of a soil beyond which no more water is absorbed.

**Soil structure** - The arrangement of soil particles into larger particles or clumps. This arrangement modifies the bulk density and porosity of the soil.

**Soil profile** - A two-dimensional view of the soil from the earth's surface down to and including the parent material.

**Stabilisation** - This is the process used to reduce harmful bacteria and odours in biosolids. Typically, stabilisation is accomplished through aerobic (with oxygen) or anaerobic (without oxygen) digestion. Digestion refers to the breakdown of complex organic substances through the action of bacteria and other microorganisms.

**Subsoil** - The part of the soil profile beneath the surface soil that has been altered from its original geologic characteristics. In many instances, it is called a "B horizon."

**Surface runoff** - The portion of rainfall, irrigation water or reclaimed water that does not infiltrate into the soil.

**Surface soil** - Surface soil (A horizon) is the portion of the soil profile at the interface with the earth's atmosphere. It is normally the portion of the profile containing the greatest amount of organic matter.

**Vectors** - Rodents, flies, mosquitoes or other organisms capable of transporting infectious agents.

**Vector Attraction** - The characteristic of sewage sludge that attracts rodents, flies, mosquitoes or other organisms capable of transporting infectious agents.

**Vector Attraction Reduction** - Decreasing the characteristic of sewage sludge that attracts rodent, flies, mosquitoes or other organisms capable of transmitting infectious agents.

## Section 4 - Case Studies and Positive Messages

Case studies and positive messages are important documents that provide supporting background for biosolids management and for organisations undertaking biosolids management. The biosolids process folio listing should include both successes and failures in consultation and outcomes ...and lessons learned. The failures can be used to demonstrate that your application has taken account of the lessons learnt. Provide for frequent update mechanism.

### 4.1 Where do we get the Case Studies?

Examples include:

1. South West Water
2. Barwon Water
3. Coliban Water
4. Portland Coast
5. Sydney Water
6. Water Corporation of WA
7. SA Water
8. USA Examples
9. European Examples – source(s) to be identified

### 4.2 How to Obtain the Information?

- Direct reference to water authorities with both successful and unsuccessful experiences
- National Biosolids Partnership website a starter, also Mike Scharp in Colorado, for USA
- Mike McLaughlin of CSIRO Land & Water
- AWA Biosolids Specialty Conferences
- Use AWA Biosolids SIG for information requests.

## Section 5 - Links to Recommended Websites

General – No need to develop anything too detailed that is new – it is all available now. Just need to link VicWater to AWA.

A significant amount of work has been undertaken internationally and by some of the larger Australian water authorities. The information is readily accessible from the respective websites.

1. Needs to link to regulatory guidelines
2. National Biosolids Partnership- USA ([www.biosolids.org](http://www.biosolids.org)) is the best first point of contact
3. AWA Biosolids Special Interest Group is the best Australian link
4. Need to develop European links
5. Need to identify the Activist sites as well as the good news sites.

## Section 6 – Customer Survey – Initial Questions on Biosolids

The best way to determine the community's views and perceptions on biosolids is to survey the community. At some stage it may be necessary for the industry to conduct an extensive survey, as was done in the USA in 2003, to get an understanding on a wide range of issues.

As a first step, the Working Group is proposing that all Authorities include the following 3 questions in their Annual Customer Survey for 2004-05 as an initial assessment of the awareness and understanding of the general community of biosolids.

1. Have you heard of the term biosolids?  
*(if the answer is yes then the follow up question is what do you think the term means)*

The interviewer will then give a definition of biosolids and then ask the following two questions.

2. How do you feel about recycling biosolids as an agricultural fertiliser (the intention is to rank between 1 and 10 with 1 being lowest and 10 being highest).
3. How do you rate the following fertilisers for agricultural use:
  - Commercial;
  - Biosolids;
  - Animal Manures.

(these would all be ranked 1 to 10, as above)

4. How do you rate the following alternative fuel sources:
  - oil
  - gas
  - brown coal
  - biosolids
  - wind

(these would all be ranked 1 to 10, as above)

The results of these questions should then be consolidated across the water industry to give a perspective of the general understanding of Victorian communities.