

AUSTRALIA & NEW ZEALAND BIOSOLIDS PARTNERSHIP (ANZBP) SURVEY 2013

PREPARED FOR POLLUTION SOLUTIONS & DESIGN

March 2020



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REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	30/5/2013	Biosolid Survey Report	C Schofield			
2	18/3/2020	Update	M Tan			
Original Report issued 30 May 2013 by MWH (now Stantec)						

Pollution Solutions & Design

Australia & New Zealand Biosolids Partnership (ANZBP) Survey 2013

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1. Introduction

The Australian and New Zealand Biosolids partnership commissioned this national survey to identify the main features of biosolids management.

Biosolids are defined by the 2003 NZWWA "Guidelines for the Safe Application of Biosolids to Land in New Zealand" as sewage sludges (or mixtures) that have been treated and/or stabilised to the extent that they are able to be safely and beneficially applied to land.

This survey catalogues the following primary parameters:

- Biosolids production
- Biosolids end use
- Biosolids stabilisation grade
- Biosolids primary stabilisation process
- Biosolids dewatering process

The results of this survey are presented on a national basis.

March 2020 update: Pie charts in this report were updated to present data on a dry tonne biosolids basis in addition to the number of WWTP with a technology, process or classification.

2. Method

The approach used to determine the biosolids production in New Zealand was to survey plants serving populations of over 25,000 people or 5ML/day. These criteria capture approximately 70% of New Zealand's population.

All classifications are made on the basis of tonnes of production.

3. Classifications

To enable relatively simple analysis and presentation of the data each area of information, such as end use, was classified into a number of broad groupings. These groupings are discussed below.

3.1 Production

Production is presented in terms of tonnes of dry biosolids.

3.2 End Use

The following classifications were used for end use:

- Agriculture – for biosolids applied to land for its fertiliser value without value added processing.
- Composting – for biosolids processed through a composting facility and used for landscaping or other horticultural use.
- Forestry – for biosolids applied to plantation forests to aid tree growth
- Landfill – for biosolids disposed to landfill, including monofill
- Ocean Discharge – for WWTP where solids are disposed of to the ocean. These solids are not defined as biosolids and no biosolids mass is associated with these WWTP.

- Stockpile – for biosolids stored, pending future planning, processing or use.
- Land Rehabilitation – for biosolids used in the rehabilitation of land including mine rehabilitation
- Unspecified

3.3 Stabilisation Grade

Stabilisation grade was classified on the basis of and A, B, or C grading. This grading was adopted in light of the broad variation in nomenclature for stabilisation across Australia and New Zealand. The equivalent gradings are shown in the table below. WWTP that do not produce biosolids (such as those with Ocean Discharge) are not included.

Classification	NZ
A	A
B	B
C	Unstabilised

3.4 Stabilisation Process

Classification of the stabilisation process was made on a basis of the primary stabilisation process following the sewage treatment process, the following stabilisation categories were used:

- Anaerobic Digestion (including mesophilic digestion)
- Thermophilic Digestion
- Incineration
- Lagoon (used for biosolids storage in liquid form)
- Thermal Drying
- Composting (including vermicasting)
- Long term storage (of dewatered biosolids)
- Lime stabilisation
- Agitated air drying
- None

WWTP that do not produce biosolids (such as those with Ocean Discharge) are not included.

3.5 Dewatering Process

Classification of the dewatering process was made on the basis of the following categories:

- Belt Press
- Centrifuge
- Drying beds or lagoon
- None

WWTP that do not produce biosolids (such as those with Ocean Discharge) are not included.

4. Results

4.1 Production

The total biosolids production of New Zealand identified in the survey is approximately 74,000 tonnes per year of dry solids. The solids content of the dewatered biosolid ranges from 15% to 96%, with an average of 28%. Approximately 310,000 tonnes of dewatered biosolid is produced per year.

This is an increase from the previously surveyed production of 250,000 to 300,000 tonnes per year.

4.2 End Use

The end use of biosolids in New Zealand is presented below:

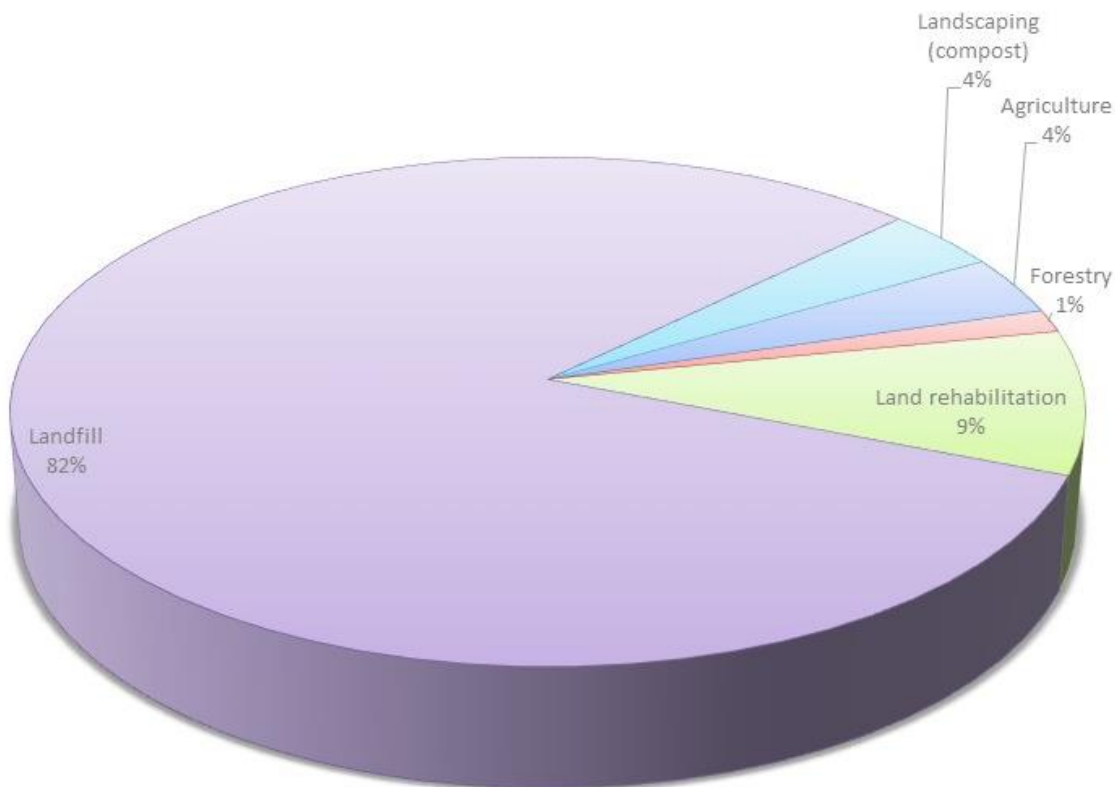


Figure 4-1 Biosolids end use (Mass Basis)

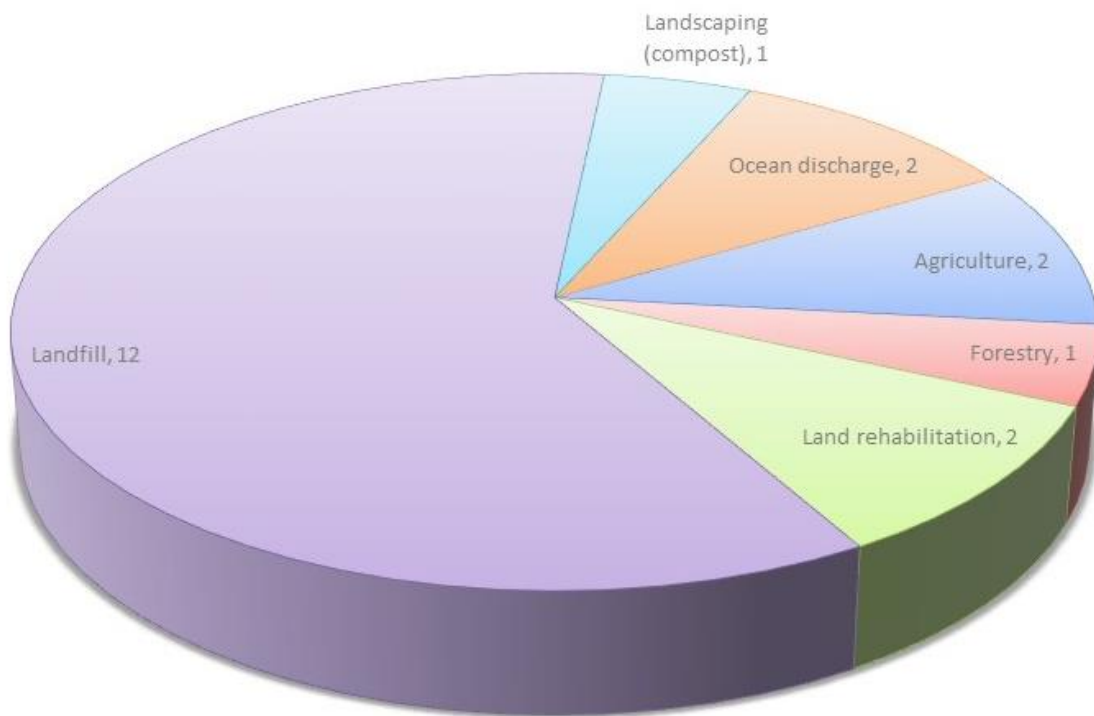


Figure 4-2 Biosolids end use (Number of WWTP Basis)

In 2013 the total percentage of biosolids sent to landfill was 82% from 12 of the 20 WWTP. For each of the other end use categories only one or two WWTP contributing the remaining 18% of biosolids. It should be noted that, by the definition of biosolids used in this report, there is no mass associated with the two ocean discharges this is a change in methodology from the 2010 report. The landfill/monofill mass percentage did not change significantly from 2010 to 2013.

4.3 Stabilisation Grade

The stabilisation grade of biosolids in New Zealand is presented below:

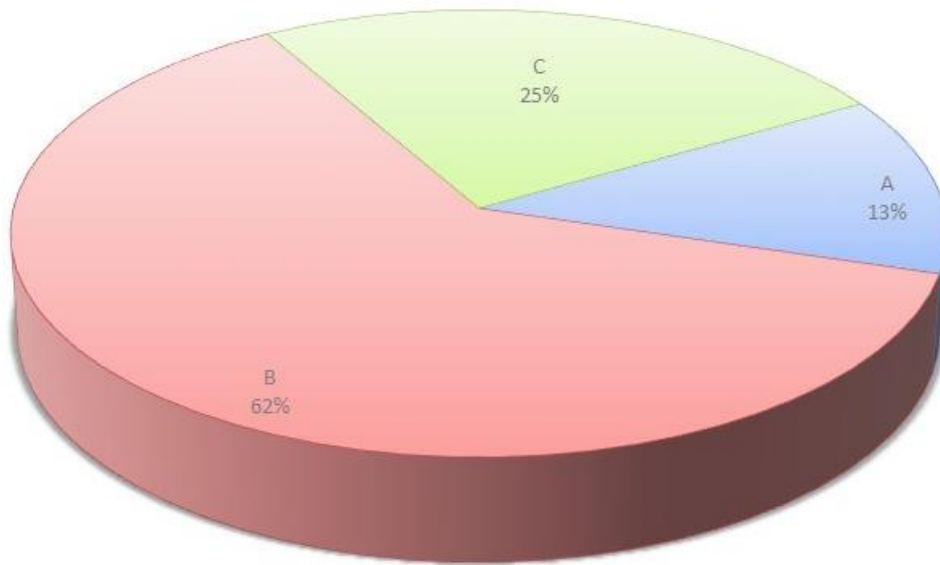


Figure 4-3 Biosolids Stabilisation Grade (Mass Basis)

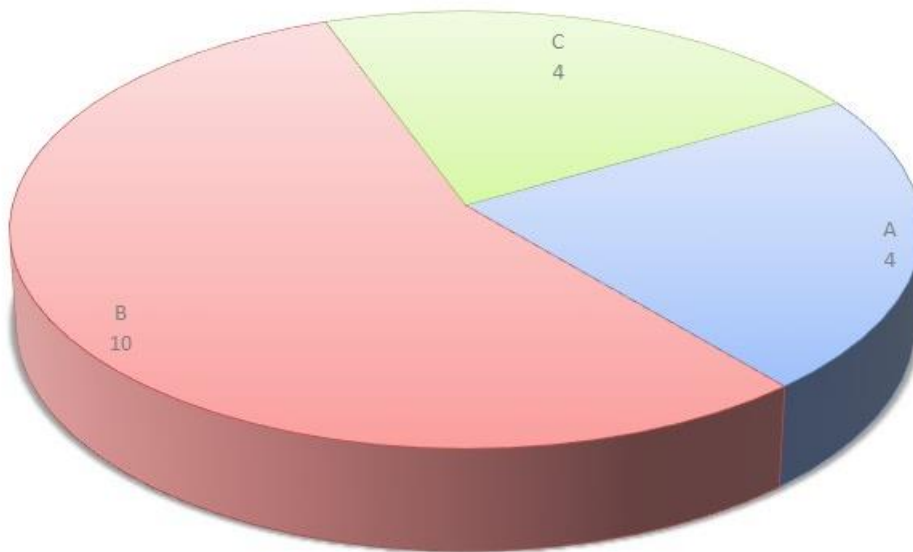


Figure 4-4 Biosolids Stabilisation Grade (Number of WWTP Basis)

The stabilisation grade of biosolids was found to be predominantly (62%) Grade B from half of all the WWTP surveyed. Only 13% of biosolids were categorised as Class A. Categorisation for WWTP with no biosolids production (ocean discharge) was not applicable. There appears to have been a reclassification of some of the 2010 WWTP sites as the number of Grade B have dropped from 13 to 10.

4.4 Stabilisation Process

The stabilisation process used for biosolids in New Zealand is presented below:

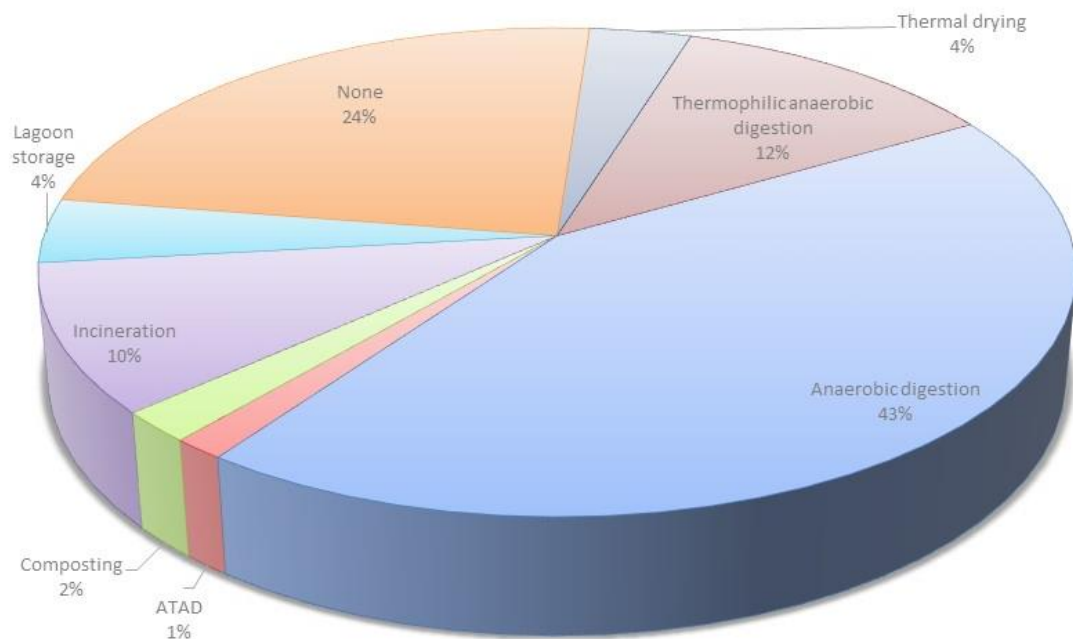


Figure 4-5 Biosolids Stabilisation Process (Mass Basis)

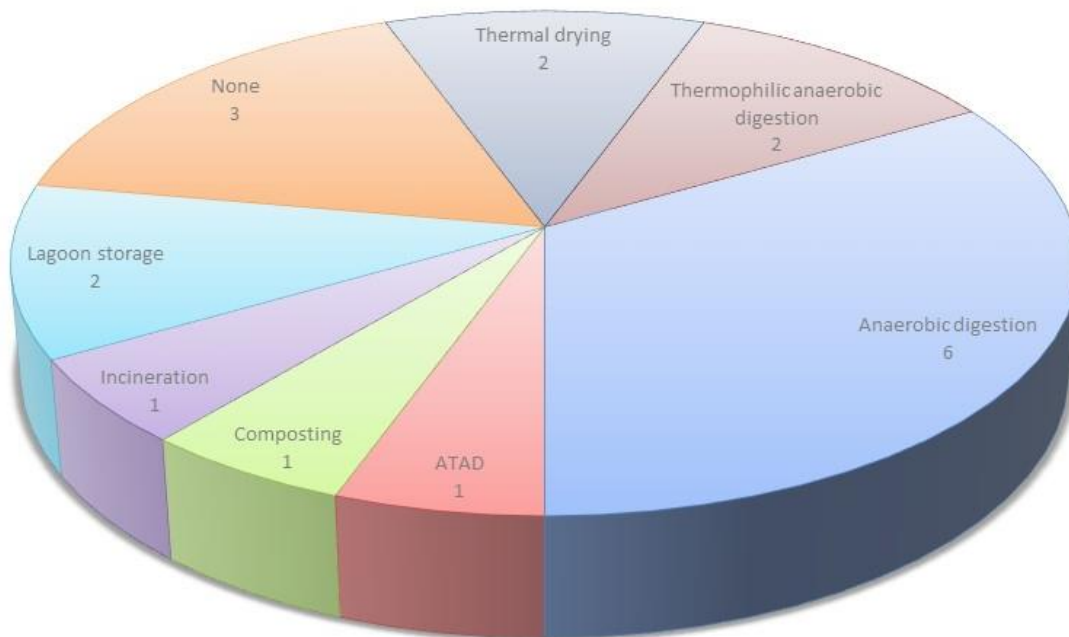


Figure 4-6 Biosolids Stabilisation Process (Number of WWTP Basis)

Over half of all biosolids surveyed were digested anaerobically (including thermophilic and lagoon storage) this is a reduction from the 2010 survey where the equivalent proportion was 80%. This can be partially attributed to a reduction in WWTP with anaerobic digestion from 11 sites to 8 (includes thermophilic).

4.5 Dewatering Process

The dewatering process used for biosolids in New Zealand is presented below:

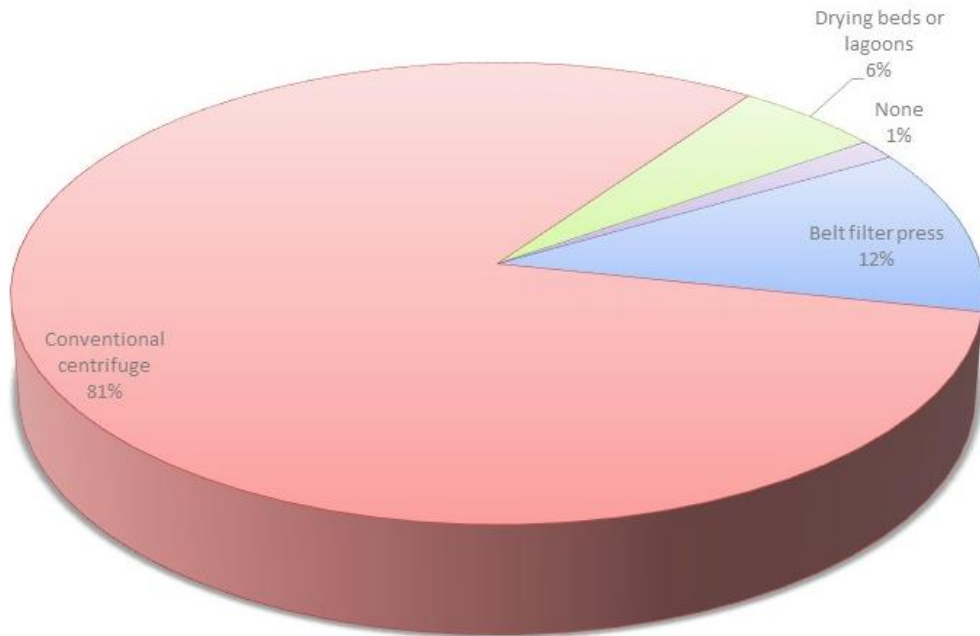


Figure 4-7 Biosolids Dewatering Process (Mass Basis)

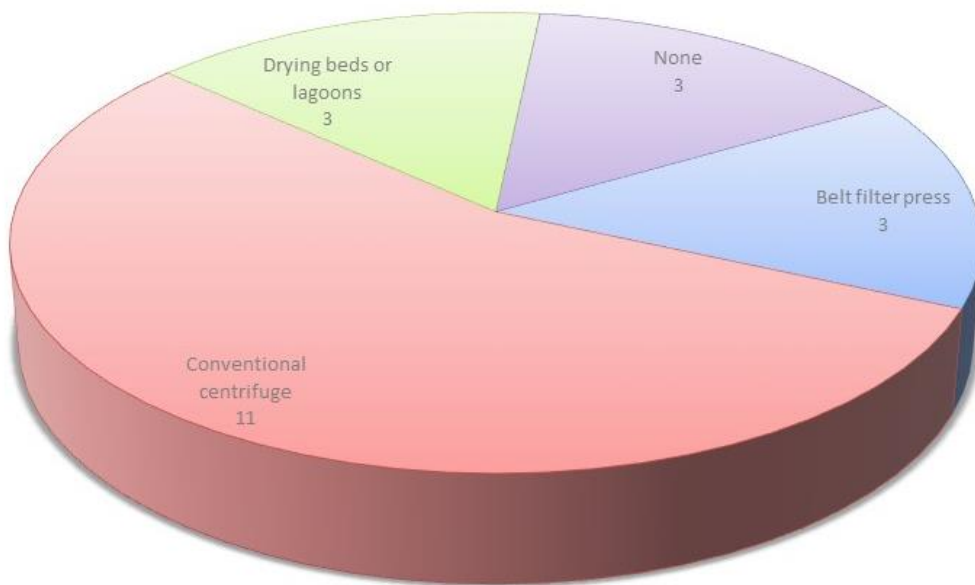


Figure 4-8 Biosolids Dewatering Process (Number of WWTP Basis)

Changes in the biosolids dewatering process between the 2010 and 2013 surveys are caused by:

- Reclassification of some sites from centrifuge to drying beds or lagoons or belt filter press.
- Change of how the survey considers trickling filter solids that are discharged to ocean/sea.

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