AUSTRALIA & NEW ZEALAND BIOSOLIDS PARTNERSHIP (ANZBP) SURVEY - 2017

PREPARED FOR POLLUTION SOLUTIONS AND DESIGNS

March 2020

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REVISION SCHEDULE

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			Prepared by	Checked by	Reviewed by	Approved by
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Australia & New Zealand Biosolids Partnership (ANZBP) Survey - 2017

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1. Introduction

The Australia and New Zealand Biosolids Partnership commissioned this national survey of biosolid production from wastewater treatment plants in New Zealand to identify the main features of biosolids management. This survey catalogues the following primary parameters:

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

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

March 2020 update: Pie charts in this report were updated to include the mass 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 5,000m3/day (5ML/day). This criteria captures approximately 70% of New Zealand's population. In total information was provided for 30 WWTPs across New Zealand.

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 the 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 Table 3-1. WWTP that do not produce biosolids (such as those with Ocean Discharge) are not included.

Table 3-1: Stabilisation Gradings

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 64,000 tonnes per year of dry biosolids, which is a decrease on the 77,000 tonnes produced in 2015. This decrease appears to be primarily due to a decrease in the production of dry biosolids from the Wellington Moa Point (80% reduction). The solids content of the dewatered biosolid range from approximately 3% to 96%, with an average of 33%. Approximately 356,000 tonnes of dewatered biosolid is produced per year, which is comparable to the 440,000 tonnes produced in 2015.

4.2 End Use

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

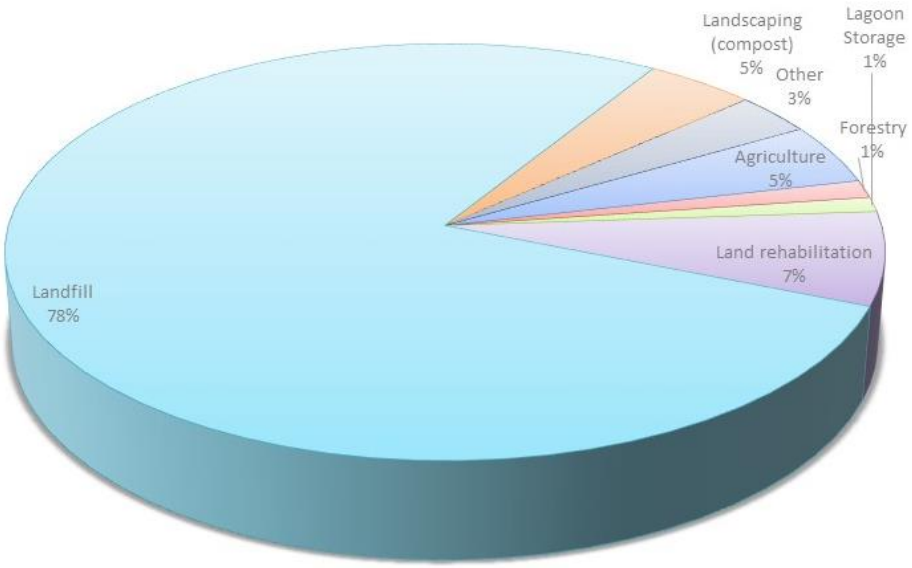

Figure 4-1 Biosolids end use (Mass Basis)

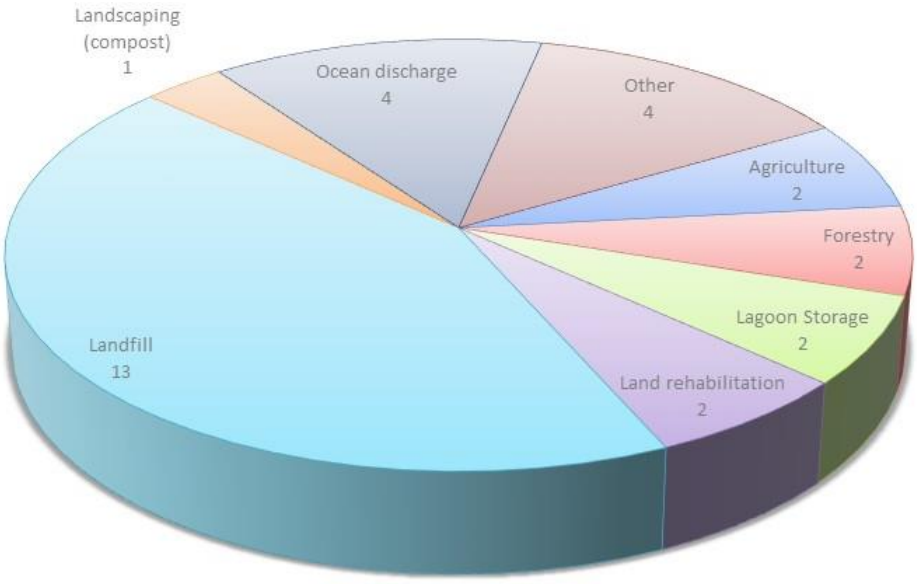

Figure 4-2 Biosolids end use (Number of WWTP Basis)

Between the 2017 and 2015 surveys, biosolids end use remained dominated by landfill (78%). Two WWTP identified that their biosolids were sent to the previously unpopulated lagoon storage category.

4.3 Stabilisation Grade

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

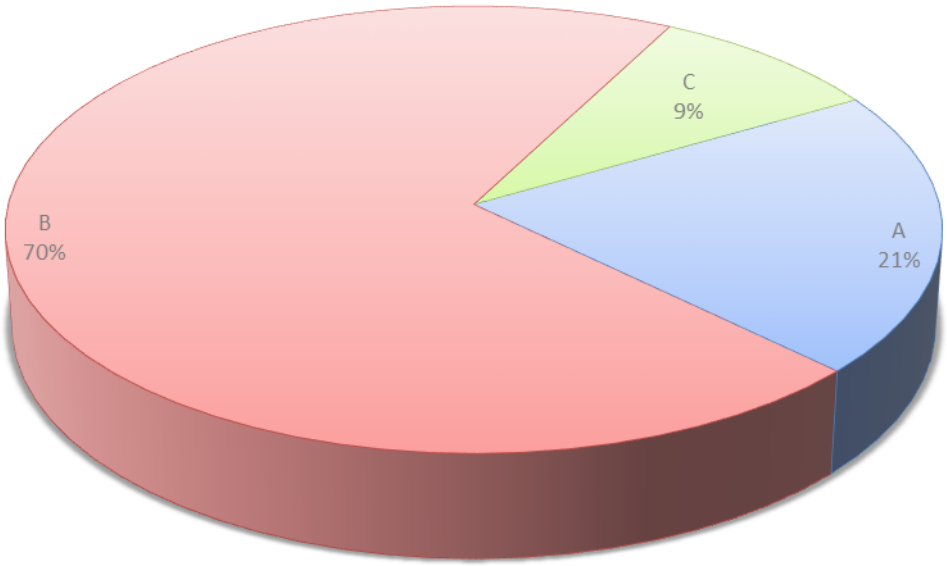

Figure 4-3 Biosolids Stabilisation Grade (Mass Basis)

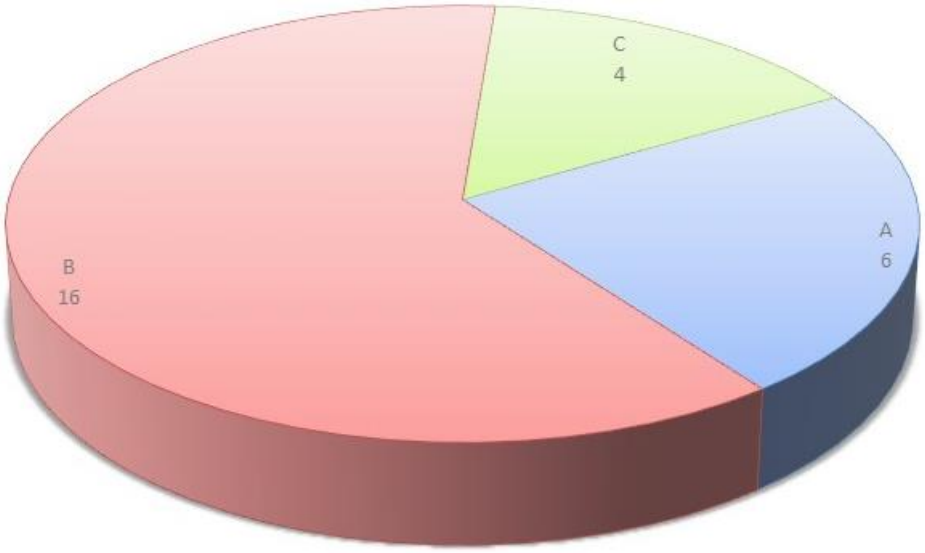

Figure 4-4 Biosolids Stabilisation Grade (Number of WWTP Basis)

The grade of biosolids have generally improved since the 2015 survey with A-grade biosolids increasing to 21% from 15% and B-grade to 70% from 57%. The overall distribution of grades amongst WWTP remained similar.

4.4 Stabilisation Process

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

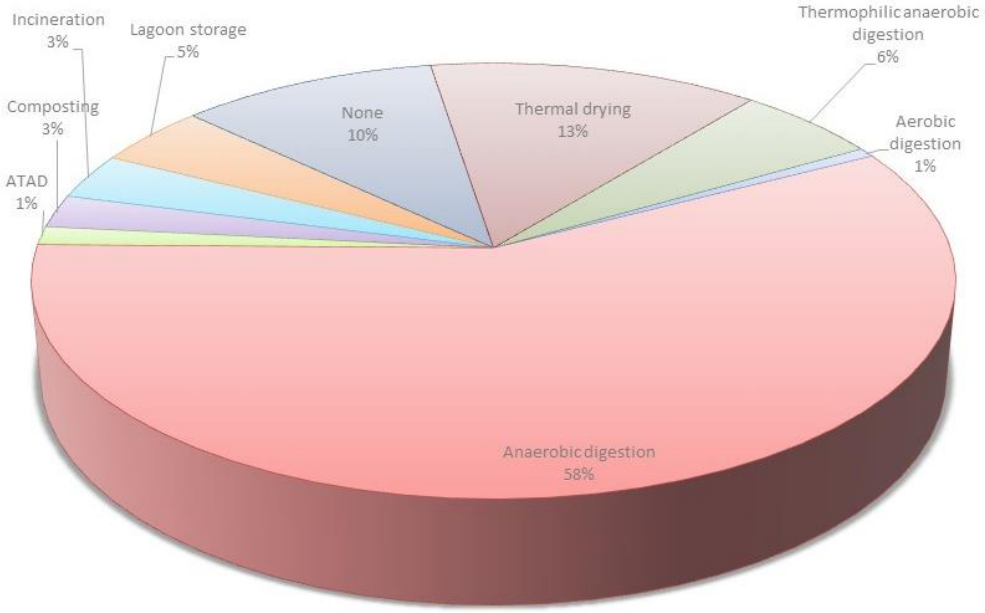

Figure 4-5 Biosolids Stabilisation Process (Mass Basis)

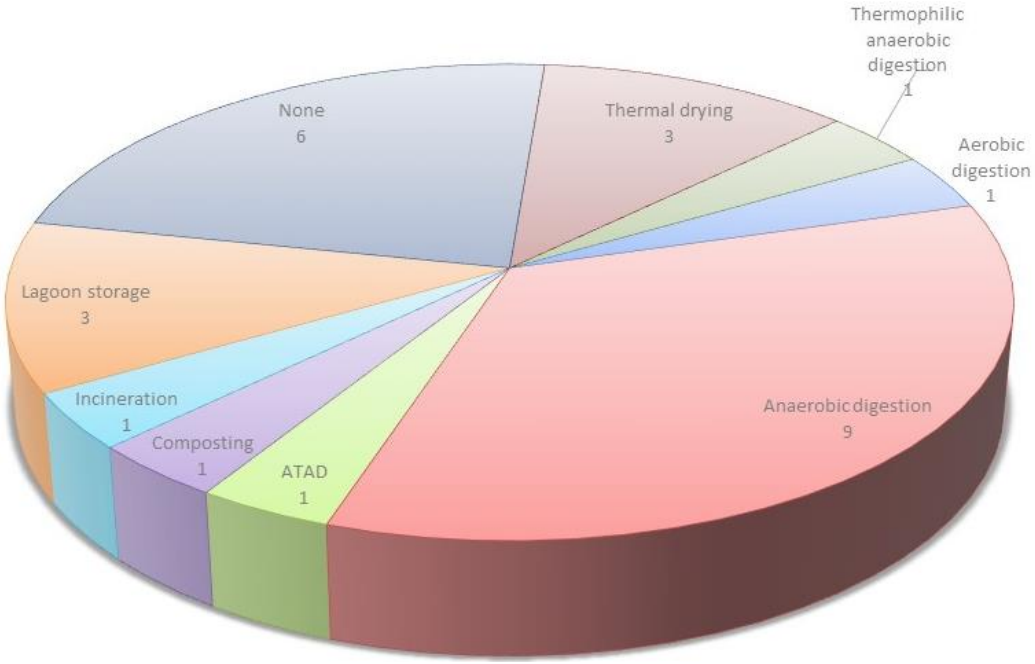

Figure 4-6 Biosolids Stabilisation Process (Number of WWTP Basis)

The percentage of biosolids anaerobically digested increased to 58% of all biosolids in 2017 (from 43%). This is mainly due to the drop in the quantity of solids in that have no stabilisation process: 10% down from 29%. This is despite the number of WWTP with no stabilisation processes has remaining the same.

4.5 Dewatering Process

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

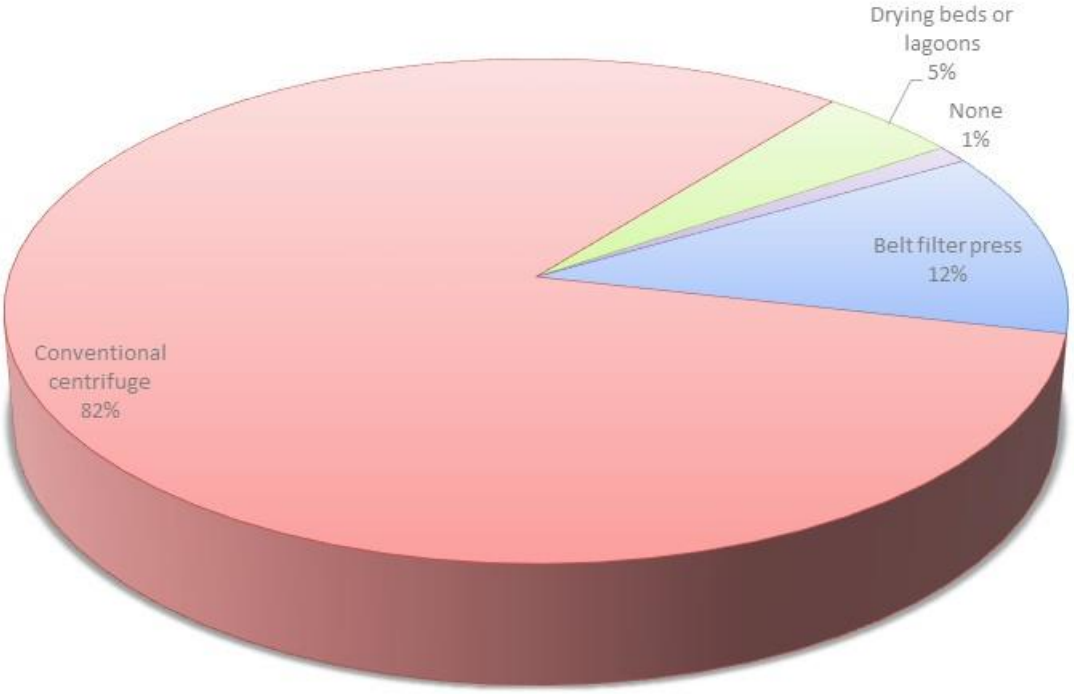

Figure 4-7 Biosolids Dewatering Processes (Mass Basis)

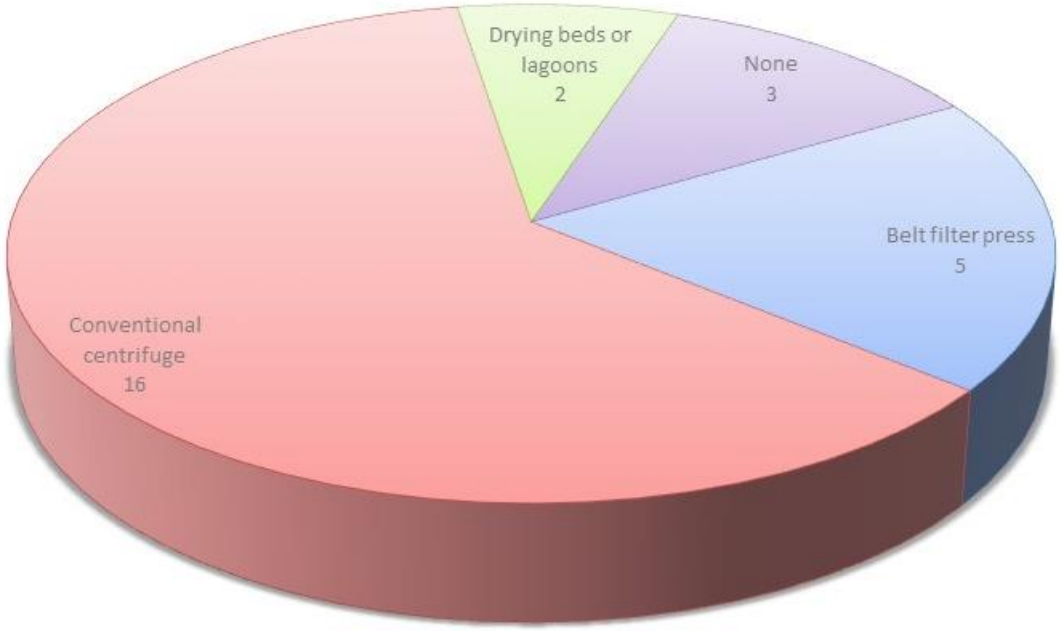

Figure 4-8 Biosolids Dewatering Processes (Number of WWTP Basis)

Dewatering processes had little change from either the 2015 or 2013 surveys and have remained relatively constant over time.

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