

Submission to  
Water New Zealand

**Good Practice Guide for Beneficial Use  
of Organic Waste Products on Land**

2017

**Auckland Council joint submission with Watercare on the Beneficial Use of Organic Waste Products on Land – Water New Zealand Good Practice Guide (draft for public comment)**

This is **Auckland Council's** joint submission with **Watercare** on the Beneficial Use of Organic Waste Products on Land – Water New Zealand Good Practice Guide (draft for public comment).

1. The address for service is Daniel Yallop, Senior Waste Specialist (Organics), Auckland Council, Private Bag 92300, Victoria Street West, Auckland 1142.
2. This submission has been approved by Ian Stupple, General Manager for Waste Solutions.
3. Auckland Council, jointly with Watercare Ltd, makes comment in response to the guidelines released by Water New Zealand.
4. The submission will be submitted for retrospective approval by the Auckland Council Local Government Environmental and Communities Committee at April's meeting following permission from the committee chair, Councillor Hulse.

# Executive Summary

## **Auckland Council and Watercare Services Ltd:**

- 1)** Endorse the Guide and welcomes its positive intent in supporting the beneficial reuse of organic materials. Through the submission process, the following overarching discussion points have been raised:
  - I.** The intent of the Guide
  - II.** National Environmental Standards (NESCS) – achieving balance between soil additive and potential contaminants
  - III.** National fertiliser standard and exception from the NES
  - IV.** The use of nitrogen loading by as proxy for soil management
  - V.** Any requirements must consider the impact on cost of land application
  - VI.** Stock exclusions
  - VII.** NZS4454, composting and metal concentrations
  - VIII.** Thermal hydrolysis to be included as an approved technology
  - IX.** Users of the Guide
  - X.** Structure of the Guide.
- 2)** We recommend that additional clarification on these points is required and appropriate remedies sought before the Guide can be fully approved.
- 3)** In addition, specific observations and response to the questions by Water NZ are detailed in Appendices 1 and 2 respectively. These should also be considered before a final draft of the Guide is developed.

# Preface

- 4) The Auckland Council (“Auckland Council”) and Watercare Services Limited (“Watercare”) would like to thank Water New Zealand for the opportunity to make a submission on the Draft Water New Zealand (“Water NZ”) Good Practice Beneficial Use of Organic Waste Products on Land – Volumes 1 and 2 (“the Guide”).
- 5) As this is a joint submission, please also note that where “we” is stated, any associated commentary has combined both Auckland Council’s and Watercare’s comments. Where Auckland Council and Watercare could not achieve full agreement, the respective comments will be stated explicitly.
- 6) Please note that this submission is an Auckland Council Officer’s only submission, and as such, it may not necessarily represent the Auckland Council view as a whole entity.

# Submission Structure

7) This submission is structured as follows through the following sections:

- Introduction
- Discussion points
- Recommendation by Auckland Council and Watercare
- Appendix One - Detailed comments on individual points of the Guide
- Appendix Two - Responses to statements proposed by Water NZ stated in Section 1 of the Guide.

# Auckland Council and Watercare

- 8)** Auckland Council is the local government council for the Auckland region, the largest in Australasia, and is defined by the following:
- A governing body which consists of the Auckland Mayor and 20 elected members
  - 21 local boards consisting of locally elected members who deal with local matters
  - The Auckland Council Organisation (provides services and expert advice to elected members)
  - 6 Council Controlled Organisations (CCO) that are responsible for the delivery of significant services or activities on behalf of Auckland Council (of which Watercare is one)
  - The Independent Māori Statutory Board (IMSB), whose role is to ensure that there is a voice for Māori in the governance of Auckland and to assist the council with making informed decisions and meeting its statutory obligations in relation to the Treaty of Waitangi
  - Independent advisory boards whose role is to identify and communicate the interests and preferences of specific groups of Aucklanders to the Council.
- 9)** Watercare Services Limited (“Watercare”) is New Zealand's largest provider of water and wastewater services. Watercare is a Council Controlled Organisation under the Local Government Act 2002 and is wholly owned by Auckland Council. Watercare is a company registered under the Companies Act 1993.
- 10)** Watercare provides integrated water and wastewater services to approximately 1.4 million people in Auckland. Watercare collects, treats and distributes drinking water from 11 dams, 26 bores and springs, and four river sources. The wastewater network collects, treats and disposes of wastewater at 18 treatment plants and includes 7,900 km of sewers. As a CCO under the Local Government Act 2002, and a substantive council-controlled organisation under the Local Government (Auckland Council) Amendment Act 2009 ("Auckland Act"), Watercare has certain obligations. For example, Watercare must achieve its shareholder's objectives as specified in the statement of intent, be a good employer, and exhibit a sense of social and environmental responsibility (Local Government Act 2002, s.58).
- 11)** Watercare is also required to manage its operations efficiently with a view to keeping overall costs of water supply and wastewater services to its customers (collectively) at minimum levels, consistent with effective conduct of the undertakings and maintenance of long-term integrity of the assets. Watercare must not pay a dividend. Watercare must also give effect to relevant aspects of the Council's long term plan, and act consistently with other plans of the Council.

# Background

- 12) The Water New Zealand Guidelines have the potential to actively contribute to the achievement of Auckland Council's Waste Minimisation and Low Carbon Plans. Approximately 30% of all waste sent to landfill in Auckland is organic. Up to 50% of household waste is organic and could be redirected for beneficial reuse. In addition, the beneficial reuse of these products helps improve the quality of soils, which reduces the reliance on GHG-intensive synthetic fertilizers for agriculture and farming.
- 13) Watercare is the largest producer of biosolids in New Zealand and produces over 130,000 wet tonnes per annum. It is seeking more sustainable and environmentally beneficial options for the management of its organic wastes and consequently, has a particular interest in the development of this Guide.
- 14) We want to note the following regarding organic products as part of this submission:
  - a) They can contain **heavy metals**. At low loading rates, they can have no detrimental effects. However, Auckland Council would like to note that at increased loading rates or frequency of loading, the heavy metals can accumulate and cause effects both on land and via runoff to waterways.
  - b) They contain **nutrients, which are highly beneficial** at appropriate loading rates, but can have contaminants that cause detrimental effects at increased loading rates.
  - c) They contain **organic material**, which is **highly beneficial** to soil structure and soil health, supporting the sustainable management of plants, agriculture and livestock.

# Introduction

## Strategic Context

- 15)** The Guide is of strategic importance to Auckland Council, Watercare and the region as a whole. The correct use and implementation of the Guide can contribute to a lasting, sustainable, legacy of organic waste management.
- 16)** The organic wastes stated in the Guide can improve the fertility and productivity of soils. Potentially, they have both rural and urban applications including supplying nutrients for vegetation and providing soil enhancement. Some of these products can also be used for land reclamation, stabilisation projects and in drainage systems.
- 17)** Using organic waste appropriately for these purposes reduces the reliance of mining virgin material and other carbon-intensive activities, as well as finding sustainable and environmentally beneficial outcomes for organic materials that are currently viewed as waste. Therefore, this has the potential to contribute positively to both Council's Waste Management Minimisation and Low Carbon Plans.
- 18)** Furthermore, through the Guide, we believe there can be alignment with international standards and best practice in managing organic waste, which should encourage more beneficial reuse of these products. For instance, only 30% of biosolids are beneficially reused in New Zealand. By comparison, 60% are reused in the United States and 70% in the United Kingdom.
- 19)** In New Zealand, some fertilizers have high levels of contaminants, such as cadmium, but are still applied to land.
- 20)** However, there is a public relations issue with organic products, particularly biosolids, which often hinders their use due to negative public perception or regulations, even though they may be low in contaminants.
- 21)** Auckland Council and Watercare believe that this should be noted in the Guide and the publication process.



## Structure of the Guide

- 22)** The overall purpose of the Guide is to assist producers, appliers of these products, and consent authorities to understand and benefit from applying good quality organic material to land.
- 23)** More specifically, the Guide aims to:
  - a.** Safeguard the life-supporting capacity of soils
  - b.** Protect public health and environment
  - c.** Minimise risks to the economy and industry
  - d.** Close the loop on the nutrient cycle and find a suitable end market for organic products
  - e.** Develop a consistent approach to regulating the application of organic waste materials to land
  - f.** Highlight the risks and benefits associated with the management and application of these products.
- 24)** The Guide is divided into two sections; Volume 1 summarises the proposed practical guidance for the use of organic waste products and Volume 2 is the technical manual supporting this. Water New Zealand has asked for comments on both volumes and a number of considerations contained within the document.
- 25)** According to the Guide, organic waste products include:
  - a.** Household organic wastes (food waste, green waste)
  - b.** Paper and cardboard
  - c.** Primary sector related organic wastes, e.g. agricultural wastes, meat works wastes
  - d.** Manure
  - e.** Sewage sludge
  - f.** Pulp and paper waste
  - g.** Biodegradable nappies and sanitary items.

# Discussion

- 26) This section highlights the key submission points following a review by both Auckland Council and Watercare.

## The intent of the Guide

- 27) We support the intent of the Guide to achieve sustainable outcomes from the nutrient and organic value that organic products provide. We agree with the pragmatic and enabling approach that has been undertaken in the development of the proposed guidelines. We believe that this approach is a positive step forward from the current 2003 guidelines and overall, the Guide highlights good management practices of the application of organic waste products to land.
- 28) One such example is specifically determining application rates for agriculture on the basis of nitrogen content and soil/crop requirements. This approach recognizes the agronomic value of organic materials and the benefit these can have on enhancing soil physical properties when compared with reliance on chemical fertilisers.
- 29) The removal of the measurement of dioxins is another such example of the Guide's positive intent. Dioxins were certainly an issue when the previous guidelines were released in 2003. Emissions to air were banned in 2004 and consequently, do not pose the environmental threat that they once did. Removing their measurement will reduce cost and time for the users of organic waste products.
- 30) The Guide has established realistic loading rates and workable metal concentrations without compromising the environment. We believe that the reason beneficial reuse in New Zealand is significantly lower than in the United States, United Kingdom and Europe is due largely to the constraining metal limits prescribed in the 2003 guidelines. This revised Guide may enable beneficial reuse, consistent with international best practice.

## National Environmental Standards (NES) and environmental standards set out in the proposed Auckland Unitary Plan – achieving balance between beneficial reuse and potential risks of contaminants

- 31) We acknowledge that there is a balance to be met when applying organic waste products to land. The added value of the organic product should be managed through environmental regulations to control the risks associated with the contaminants they contain. There are also environmental benefits to be considered such as a reduction in the use of mined fertiliser and the beneficial reuse of organic waste that would otherwise be placed in landfills.
- 32) Fundamentally, the Guide's limits are set as safeguards and not targets. If reached, they provide a barrier to ensure that contamination does not take place regardless of achieving environmental benefits elsewhere e.g. landfill diversion or reducing mined fertiliser.

- 33) The NES for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS) has been in place since 2012 and has been reviewed recently by MfE (Ministry for Environment) with a view to improving its effectiveness.
- 34) We note that there is a discrepancy when comparing the standards stated in the Guide to the Permitted Activity (PA) criteria set out in the Contaminated Land Rules of the Auckland Unitary Plan: Operative in Part (AUP [OP]). The limits set out in Table 5-5 of the Guide propose that higher concentrations of contaminants than those set out in the AUP (OP) may be applied to land via organic wastes.
- 35) Although the Contaminated Land Rules of the AUP (OP) do not apply to production land, the residual effects of the application of products containing elevated concentrations of trace elements do need to be considered in the context of potential discharges of contaminants to land and water, and relevant consenting requirements following the change of land use in the future, if applicable.
- 36) In the event that land use changes in the future, the contamination status of the site will need to be assessed against the PA criteria of the AUP (OP) to determine whether any controls are required to mitigate adverse effects on the receiving environment.
- 37) If the contamination status of the site is found to exceed the PA criteria, long-term management of the site may be required. A long-term contaminant discharge consent may also be required. A short-term discharge consent may be required for future land-disturbance activities on site. If the contamination status of the site exceeds the natural background levels, restrictions may be applicable to the disposal of such soils at 'cleanfill' sites, should it be required.
- 38) We that suggest that further details be included in the Guide regarding application and how this addresses the discrepancy between the NESCS and the limits proposed. For instance, explain how using a loading rate based on nitrogen loading can manage the general risk profile of applying organic waste products to land.
- 39) Alongside this, any discrepancy should be explained and contextualised in terms of the intended public health versus soil health, as well as the idea that beneficial reuse of organic products is based on the application of a very limited (2 mm depth) of product to land. On the other hand, contaminated land definition applies to the complete soil structure.
- 40) We welcome further information and a definitive answer to be included in the Guide by Water NZ.

### **How the Guide relates to NESCS standards and the NZS fertilizer standards**

- 41) We acknowledge that the NESCS does not apply to production land until that land changes land use.
- 42) However, to ensure the public can have confidence in the Guide, a clear explanation is required as to how the Guide relates to the NES and the NZS Fertiliser Standards. The logic

of how or why the NESCS does not apply to NZS Fertilizer Standards needs to be made clear.

## **The use of nitrogen loading (N-limits) as proxy for soil management**

- 43)** We understand and agree with the rationale behind this. It is certainly a pragmatic and enabling approach to facilitate the beneficial reuse of organic waste products. Importantly, however, the Guide requires further inclusion of the scientific information to comprehensively support N-limits as the primary land application control across the diverse group of products now included in the proposed guideline (compared to the 2003 Biosolids Guidelines).
- 44)** We believe that the 'story' of goals, sustainability, and the logic of linking nitrogen loading to metal loading needs to be transparent. The Guide may need a section to demonstrate how the guidelines were formed and provide confidence to the public and regulators. This will also require some scientific/statistical analysis to be included.
- 45)** For example, most pulp and paper mill sludge and other paper-type organic wastes have limited nitrogen content. Therefore, the premise of the guidelines that a nitrogen loading limit provides adequate protection, will need to be further demonstrated in this Guide and this may require presenting a relationship or ratio to define products within a band for which the nitrogen loading rate is appropriate.
- 46)** Similarly, some organic wastes have contaminants other than metals that pose challenges to protection of the environment or animal health. For example, dairy processing whey can have excessive quantities of salts; and some paper or cardboard products have fungicides used in the glues that have the potential to be problematic.
- 47)** Additional information should be included on how to initially identify contaminants of potential concern during validation testing and also clearly specify the contaminants of concern, where known, for the most common organic wastes. (where nitrogen is not the limiting factor for application)

## **Impact on the cost of land application**

- 48)** The Guide must consider cost and practical workings. For example, Watercare is required by statute to be a minimum cost provider, and while sustainability outcomes are considered, the economics of different scenarios are a significant influence on decision making. This would be the same for providers across New Zealand. This includes any requirements for soil monitoring, biosolids monitoring, leachate containment, obtaining resource consents, soil monitoring, leachate control, and 6 month stock rotation

## **NZS4454 composting standards and metal concentrations**

- 49)** The Compost Standard NZS 4454:2005 is a key standard underpinning safe and beneficial use of organic materials. It makes direct reference to the 2003 Biosolids Guidelines, specifically the contaminant limits for soil and products that can be applied to soil.

- 50)** It therefore follows that because the new proposed guideline will supersede the 2003 Biosolids Guidelines, this does not undermine the relevance, effectiveness and continued use of Compost Standard NZS 4454 (2005).
- 51)** Compost Standard NZS 4454 covers organic material applied to soil that includes composts and compost blends used as a complete soil substitute (e.g. a garden mix). NZS 4454 compliant composts are distributed to both the agricultural and urban market where they are utilised as a soil substitute product, which is typically sold in bags and bulk to the home garden market but not to the agriculture sector.
- 52)** The proposed draft guideline for soil limits is focused only on agricultural soils. This presents a problem for the continued relevance and use of the NZS 4454 Standard, which covers both agricultural and urban soils.
- 53)** Auckland Council believes the problem would be resolved if the proposed guidelines adopt the following approach:
- a) **Agricultural soils** – continue with the current approach (detailed in the Guide), basing application rates on agronomic nitrogen loading in combination with product contaminant limits.
  - b) **Urban soils** – adopt the same soil limits and product Grade A (up to 2012) for metals presented in Table 4.2 of the 2003 Guidelines until a workable limit by Water NZ can be agreed:

**Table 1 – Table 4.2 from the 2003 Biosolids Application to Land Guidelines Soil Limits**

Parameter	Soil limit or ceiling concentration for products used as soil replacements (mg/kg dry weight)	Grade A max. concentration (mg/kg dry weight)
Arsenic	20	20
Cadmium	1	3
Chromium	600	600
Copper	100	300
Lead	300	300
Mercury	1	2
Nickel	60	60
Zinc	300	600

- 54)** It is also noted by Auckland Council that current zinc concentrations for urban waterways are higher than desired for ecosystem health, and application of further zinc load could contribute to this issue changes in this could contribute to this issue. Auckland Council would welcome further input from Water NZ on this matter.

- 55) However, the basis for adopting the same soil limits and product Grade A limits is also supported by the natural levels found in materials that should be able to be safely applied to land as demonstrated by Table 2.

**Table 2 – Metal Concentrations in Organic Products**

Product	As	Cd	Cr	Cu	Ni	Pb	Zn
Green & food waste	14	1.1	30	56	37	100	280
Chicken manure	26	0.06	23	43	6	6	295
Pig manure	1	0.06	2	49	2	2	580
Horse manure	3	0.02	6	13	3	8	87
Sheep pellets	3	0.10	9	22	4	17	140
Mushroom compost	36	0.08	8	94	6	10	270
Biosolids Guidelines (soil limits post 2012)	20	1.0	600	100	60	300	300
Proposed limits for urban soils in proposed guidelines.	60	12-17	390	150 270 360		1300	200 (sensitive soil) 240 (typical soil) 270 (tolerant soil)
Proposed limits for agricultural soils in proposed guidelines.	20	1.5-3.1	300	130 150 190		530	130 (sensitive soil) 190 (typical soil) 265 (tolerant soil)

\* (Taken from <https://iris.scinfo.org.nz/layer/470-pbc-predicted-background-soil-concentrations-new-zealand/>)

## Thermal hydrolysis to be included as an approved technology

- 56) Thermal hydrolysis is a well-established technology demonstrated to provide a sterile pathogen free biosolids product and we suggest it should be included in Tables 5-2 and 5-3.

## Stock exclusions

- 57) We recommend that the time period between biosolids application and stock access or harvest be reviewed. A 6-month exclusion period differs from regulations used in other countries (generally a 30-day exclusion period). A 6-month exclusion time is unnecessarily

prohibitive and would not fit into current farming practices where a type B biosolids could otherwise be utilised.

## **Users of the Guide**

- 58)** We believe that the Guide should facilitate the use and application of organic waste products to land. It should be focused on the user and should be easy to understand, written with the users in mind. For example, a flow chart following administrative and practical steps should be presented, enabling a lay person to see the complexity (or simplicity) of the process from product to land application.
- 59)** This should include, as necessary, the desktop and on-site checks and analysis that need to be undertaken, which approvals (e.g. land access for collecting soil samples) are required, as well as anticipated regulatory checks and contractual agreements.
- 60)** Finally, management and application of products are key factors which have only been addressed in a limited fashion by the Guide. There is a particular focus on metals when there should be further detail on how the products are managed and applied. Having a more practical focus would make the guide more 'user friendly' and potentially, facilitate greater user of organic waste products.

## **Format and structure of the Guide**

- 61)** We acknowledge that although the Guide is at draft stage, the structure could be clearer. There is merit in having both practical and technical volumes, but they must be structured and contain all relevant content to ensure that they are user-friendly. Rather than reference material through hyperlinks, it would be more beneficial to include all relevant material in the Guide, even if appended. Also the links between the two volumes are not clear and need to be better defined in order for the overall Guide to work and achieve its objectives.
- 62)** It should also be noted it may be difficult to incorporate all organic wastes into this guideline in its current format. Additional sections or a separate volume may need to be added to address specific organic waste characteristics and recommendations for management. The Guide is very 'biosolids' focused and this should be broadened effectively to all include relevant organic wastes in order to better reflect the intent of the Guide.
- 63)** Although Volume 2 is referenced, this section should include an introductory section explaining the primary contaminants of environmental and public health concern from Volume 1 that will be covered. The current format goes directly into managing risks to human health and the environment without first identifying the common contaminants of concern (BOD, nitrogen, phosphorus, pathogens, metals, organic compounds, salts) and the risks they pose. The idea of emerging contaminants has not been introduced, while testing is included with specific limits contained within the Guide.
- 64)** For the benefit of reader and potential users, it would be beneficial to include further detail in the guidelines' executive summary highlighting how the guidelines have been developed

(including timeframes) and when they are likely to be published. This will enable the reader to gain a better understanding of the Guide.



# Recommendation

## **Auckland Council and Watercare Ltd:**

- 65)** Endorses the Guide and welcomes its positive intent in supporting the beneficial reuse of organic materials. Through the submission process, the following overarching discussion points have been raised:
- I.** The intent of the Guide
  - II.** National Environmental Standards (NESCS) – achieving balance between soil additive and potential contaminants
  - III.** National fertiliser standard and exception from the NES
  - IV.** The use of nitrogen loading by as proxy for soil management
  - V.** Any requirements must consider the impact on cost of land application
  - VI.** Stock exclusions
  - VII.** NZS4454, composting and metal concentrations
  - VIII.** Thermal hydrolysis to be included as an approved technology
  - IX.** Users of the Guide
  - X.** Structure of the Guide.
- 66)** We recommend that additional clarification on these points is required and appropriate remedies sought before the Guide can be fully approved.
- 67)** In addition, specific observations and response to the questions by Water NZ are detailed in Appendices 1 and 2 respectively. These should also be considered before a final draft of the Guide is developed.

# Committee Comments and Sign Off

2. Co-ordinated by Daniel Yallop, Senior Waste Specialist, Waste Solutions, Auckland Council. All enquiries must be directed to him as the addresser for the submission:

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3. Approved by Ian Stupple – General Manager, Waste Solutions, Auckland Council

4. ....

5. **Committee Comments – (retrospectively approval by the Local Government Environmental Meeting for April)**

6. Sign off by the Auckland Council Environment and Community I Committee

7. ....

# Appendix One – Further comments on the Guide

This next section highlights verbatim comments from Auckland Council relating to the Guide. The comments have been categorised into areas where possible or otherwise detailed in a general area.

## **Nutrient Management Plan**

We believe the nutrient management plan needs to be expanded to include applications to non-agricultural land, including forestry sites, horticultural land, reclamation sites and particularly, urban soils. At the moment, the Guide does not acknowledge this and therefore there is a gap for management of the organic wastes for non-agricultural uses.

## **Transportation and Storage**

Auckland Council notes that organic wastes, including manure, biosolids and composts, have a high biochemical oxygen demand (BOD) and generally high concentrations of phosphorus and nitrogen. Depending on the level of treatment provided, they may also contain pathogens. The most important transport mechanism from storage piles to surface water for pathogens, BOD and phosphorus, is runoff. Therefore, siting and storage standards should apply to all organic wastes, regardless of their pathogen content or contaminant grade in order to provide adequate protection of surface water.

Similarly, and as indicated in the Guide, Auckland Council would like to highlight and note that long-term storage of organic products can have impacts on groundwater quality due to leaching of contaminants such as nitrate nitrogen if not designed, managed or sited appropriately. However, the Guide provides only general recommendations for long-term storage. Additional detailed information is needed in the Guide on the minimum acceptable specifications for storage (including liner requirements and leachate management) to address the potential risks to groundwater quality.

Auckland Council also believes the definition of bulk use requires further clarification. It is unclear whether the 50 m<sup>3</sup> used in the definition is for a one-time application, per year, per site, etc. The following definition is suggested to differentiate between materials that are used bulk applied or distributed as retail products: “an organic product that is not sold or given away in a bag or other container for application”.

We also note that any further specifications should be in line with current practice for fertilizers and other soil amendments to ensure that these guidelines remain enabling for agricultural and farming use. Organics products do not pose any greater risks than these products.

## **Application and management**

We would like to highlight that the Guide suggests that nitrogen loading rates will be based on total nitrogen content for productive land; when used to “rebuild degraded soil” or “refurbish contaminated land”, the nitrogen application rate would be based on mineral nitrogen. While the concept proposed is understood (a higher loading would be allowed for reclamation type application), the Guide needs to provide more detail about how this would be applied in practice. Further clarification is required for the “rebuild” or “refurbish” uses. The Guide currently has a nitrogen per hectare loading rate limit, but is unclear whether this is a lifetime limit or if applications can be repeated in the future. Further information in the Guide is required to make the intent clear.

In addition, there is a need to include the maximum allowable application rate for “rebuild” and “refurbish” uses for organic products. Research on this topic is available and should form the basis for the maximum tonne/hectare application rates allowed in addition to the nitrogen loading limits.

The Guide should clearly specify “total nitrogen” wherever this is the standard for application rates. Currently, the guide uses the term “nitrogen” rather than “total nitrogen”. Related to this is the need to further clarify how “mineral N” will be calculated for the user. Does it include all nitrogen that would become available in year one following the application due to organic nitrogen mineralisation? Predicted mineralisation rates for biosolids are readily available to provide this information, however may be limited for some other types of organic wastes.

Specific site and soil criteria should be included in the Guide that provides the user of the Guide the ability to determine whether a site is suitable for application of their organic products. While some specific criteria are included, they are generally presented as considerations. A more prescriptive approach would make the Guide easier to use and promote best practice. It is of particular importance to include site/soil criteria that are needed to provide adequate treatment and/or retention of contaminants (e.g. pathogens, metals, phosphorus, etc.) in the soil. For example, the Guide should clearly specify the minimum soil pH, separation to surface water, slope restrictions, minimum depth to the seasonally high water table, minimum water holding capacity in the root zone (reflection of soil texture), and specific separation distances to environmental receptors.

Surface disposal site referenced in Table 5-3 is not needed, since this is not a beneficial use and not discussed in other parts of the Guide. Surface disposal sites are a form of disposal regulated under USEPA 503 regulations.

Auckland Council would like to comment that the guidelines provide detailed assessments of pathogens, metals and some organic compounds, whereas they include only limited information on nitrogen and phosphorus. These contaminants are arguably more important in terms of environmental risk and more information is

needed on these risks. There is a lack of information in the guidelines on the availability of these nutrients to plants and how this may affect their fate in the environment and limit their benefits. It could also go further to evaluate the transport mechanisms of the major contaminants nitrogen and phosphorus. For example, very limited information was provided on the risk of phosphorus accumulation in soil and its potential to impact surface water via runoff,.

## **Soil Sampling**

The standards for soil sampling need to clearly specify the required standard depth for sample collection (i.e. a 200 mm).

The soil sampling regime proposed is unclear and requires further detail for comment. There are also inconsistencies between Volume 1 and 2. The recommendations should be reviewed in terms of the number of samples required and the parameters to be analysed.

Auckland Council has noted that the soil parameters tested should also include available phosphorus and soluble salts. It is common for phosphorus and sodium to accumulate in soils and because of their potential effects on water quality and soil health, require regular monitoring. In some organic wastes, potassium concentrations can also result in its accumulation in the soil with potential stock health or soil health issues. It is recommended that more information be included in the Guide related to monitoring of these parameters.

Section 6.8 indicates that soil should be tested for E. coli. It is not clear why this is recommended. The site restrictions and exclusion periods have been shown to be adequately protective for pathogen management. This type of testing of the soil would not provide useful information for managing risks of pathogen exposure.

## **Other**

Verification and routine monitoring should be based on the volume of biosolids generated, since the more biosolids generated, the greater the need to determine its variability over time.

It is unclear why failure of up to 3 samples is allowed during verification sampling (Table 2.6).

Methods for vector attraction reduction should include injection into the soil as a method for meeting VAR requirements since some organic wastes are applied to the land in liquid form. Suggest wording as:

*“Injected below the soil surface and no significant amount of material shall be visible on the soil surface within 1 hour”.*

This wording is taken from the USEPA 503 rules.

Auckland Council would also like to state that injection is also good as a management practice on sites where established vegetation is present or where slopes greater than 6% are present. In some cases, it is a better management practice than incorporation, since incorporation results in more disturbance of the soil and increases the risk of runoff or erosion.

Auckland Council would also like to state that the pathogen reduction and VAR requirements mirror those of the USEPA 503 standards for treatment, however there are a few instances where the wording differs slightly and can have impacts on the treatment method. For example: The VAR standard for increasing the pH to 12 is stated in the USEPA 503 rules as:

*“The pH of the sewage sludge shall be raised to 12 or higher by alkali addition and without the addition of more alkali shall remain at 12 or higher for 2 hours and then at 11.5 or higher for an additional 22 hours”*

While the technical specification is similar in the guidance, it has omitted the wording that makes it clear that adequate alkali must be added during the initial stage and no more alkali can be added to achieve the standard. It is recommended that all of the pathogen and VAR standards be reviewed to ensure they are worded as intended to reflect the original standards they were taken from.

We would also like to highlight that Figure 2-2 does not have all of the pathways explained in the text and should be edited.

## **Appendix Two - Answer to considerations and questions provided in the Guide.**

1. Below are the considerations **(in bold)** that Water NZ has asked for a feedback on. Auckland Council and Watercare responses are below the relevant consideration.
2. **No longer limited to biosolids; includes other organic waste materials, particularly from animals;**
3. Auckland Council and Watercare Ltd agree with the inclusion of other organic waste materials. However, it is noted that more information on non-biosolids application and management needs to be included in the guide.
4. **A simpler grading system; no change to pathogen grading requirements but only a minimum compliance level for contaminant grading;**
5. Auckland Council and Watercare Ltd agree with the simpler grading system but acknowledge this will be a decision for Water NZ to make.
6. **Metal contaminant limits are the 2003 Biosolids Guidelines 'b' grade limits and are used as a minimum product quality criteria**
7. Auckland Council would like to comment that the metal concentration limits proposed for Type 1 products are less than, or the same, as those used in the USEPA 503 rules for "pollutant concentrations". However, the USEPA 503 rules also have other controls on pollutant loading for biosolids that do not meet the "pollutant concentrations" (Type 2 in the Guide) that should be considered by Water New Zealand to make the guidelines more robust. These include the use of cumulative pollutant loading rates (calculated) and annual pollutant loading rates.
8. Auckland Council would like to comment that by not including soil concentration limits for specific contaminants in the Guide for Type 2 products, local councils will need to evaluate the need for, and assign limits for, any discharge consent granted for a Type 2 product. The lack of soil limits in the Guide could result in a lack of consistency across the country for management of Type 2 products. Auckland Council recommends that the 2003 soil concentration limits be brought into the Guide if a decision on updated soil limits cannot be agreed on by the working group.
9. Auckland Council believes that Water NZ should also consider that soil limits should be specified for contaminants that can impact metal availability, soil health or surface/groundwater quality. For example, a soil pH (minimum of 5.5 to reduce metal availability on agricultural land), soluble salts (maximum of 4 mmhos/cm) and soil phosphorus limits (limit of 200 g/m<sup>3</sup> olson or bray P when close to surface water) are used in other country's regulations. Actual limits or recommendations for limits within the Guide should be considered further for inclusion by the working group.

- 10. Only measure organic contaminants, not historical banned substances e.g. Dioxins;**
11. Auckland Council agrees in principle with this point but specific known organic wastes where dioxins are an issue should have a separate management strategy. To Auckland Council's knowledge this is not stated in the guide.
- 12. Organic contaminant limits are related to existing EU guidance. There is limited New Zealand supporting data;**
13. We understand the challenge behind this.
- 14. Exclude soil specification as this is dealt with by other guidance;**
15. Either including the reference or link to the other guidelines or include them in this document.
- 16. No mass application limits;**
17. Auckland Council and Watercare Ltd agree with no mass application limits, however, with caveats discussed in this submission.
- 18. Nitrogen limits are used as the primary land application control; assessments have shown this to be an effective means of limiting contaminant applications for good quality products;**
19. Auckland Council and Watercare understand the rationale behind this but further information needs to be included in the document to support its function as the primary land application control and the relationship between TN and metals.



## Some Questions to Consider

In addition to any other comments please consider the following questions (not in priority order):

**20. Should the word 'waste' be included in the title and descriptive text? Should it just refer to 'Organic Products' or 'Organic Materials'?**

21. Auckland Council and Watercare believe the use of the word 'waste' unnecessarily gives a negative impression at a time when there is a desire from both central and local government including Ministry for the Environment to see organic materials diverted from landfill and beneficially used as a resource.

22. Auckland Council and Watercare acknowledge that there is argument to label materials that fall outside the scope of the proposed guideline / Compost Standard NZ4454 to be referred to as 'waste'. However, these should not determine how we view and label the significant volume of organic materials that is currently being recycled and beneficially used in New Zealand

**23. Should the proposed 'Type' 1A, 1B etc be used or revert back to the previous Aa, Ab etc. nomenclature used in the 2003 Biosolids Guidelines?**

24. In our opinion the Type 1A, 1B should be used to differentiate between the current guidelines rather than the Aa, Ab, ratings in the 2003 guidelines.

**25. Should measurement of emerging organic contaminant (EOCs) limits be mandatory for all biosolids applied to land so that a New Zealand database can be established more quickly, giving a greater ability for evidence based review?**

26. A national database for emerging contaminants is a good idea but may not be practicable. A case study or an engagement exercise led by Water NZ or by the Ministry for the Environment involving relevant stakeholders could be a good way to establish what should be undertaken for EOCs.

**27. Volume 1 The Guide is intended to give practical guidance. Is the information clear enough, in the correct format, split adequately between background/supporting information (Technical Manual) and the Guide? How could it be improved?**

28. The guidelines should be a standalone document with any information brought forward from the 2003 guidelines included rather than referenced. Furthermore, we suggest that the technical manual needs significant changes in order to include the up-to-date information that is largely represented in the appendices, hyperlinks, etc.

**29. Are there any concerns over the proposed changes? What are they?**

30. There are a number of concerns outlined in the discussion section of this submission.

**31. What positive or negative impacts will the proposed changes have on your business?**

32. As highlighted in the introduction, the proposed changes support some of the outcomes of Auckland Council and Watercare Ltd, specific in the areas of low carbon and waste minimisation. It is viewed by both parties as largely positive.

**33. Are the changes to the guidelines able to be aligned with current regional and district plans?**

34. Yes, it is possible, as discussed earlier in the document.

**35. Is using the NES for Assessing and Managing Contaminants in Soil to Protect Human Health, April 2012 an acceptable means of protecting human health in the urban environment? If not, what do you suggest as an alternative?**

36. Auckland Council would comment that in terms of protecting human health in an urban environment, the Soil Contaminant Standards established in the document are considered to be robust and generally consistent with other international human health standards and guidelines. The requirement to undertake both preliminary and detailed site investigations at key trigger points which is set out in the NESCS has undoubtedly improved our understanding of contamination issues and supported local government in their functions for managing contaminated land under Sections 30 and 31 of the Resource Management Act.