



Mountain to Sea

Te Kaunihera-ā-Rohe o Ngāmotu

**NEW PLYMOUTH DISTRICT COUNCIL**

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25 January 2017

Water New Zealand  
Ranchhood Tower  
39 The Terrace  
PO Box 1316  
WELLINGTON 6140

ATTENTION: Nick Walmsley

Dear Nick

**SUBMISSION ON BENEFICIAL USE OF ORGANIC WASTE PRODUCTS ON LAND,  
VOLUME 1 – GUIDE**

New Plymouth District Council has successfully been selling all the biosolids produced at its New Plymouth Wastewater Treatment Plant (NPWWTP) since 2001 following construction and commissioning of a thermal drying plant for processing the sludge produced from the activated sludge process. The 1,200-1,500 tonnes of biosolids produced annually is sold as “Bioboost®” fertiliser under an agreement with the Council distributor Bioboost Limited.

Previous to the thermal dryer installation 8,000 to 9,000 tonnes per year of sludge was applied to land under individual resource consent from 1984 to 2000. The sludge application was considered unsustainable as a long term solution.

The quality of the Bioboost is controlled using the Telarc Q-Base Quality System and covers key elements of the manufacturing process such as product temperature and dryness to meet pathogen and vector attraction reduction requirements for an “A” grade product. It also covers product testing for contaminants and trade waste control, management of any out of specification product, product information such as safety data sheets and application recommendations, labelling requirements under VM&AP legislation, etc. Contaminant levels are all within current Biosolids “a” grade limits except for zinc, copper and nickel which are below the pre 2013 guideline values.

A survey of retail outlets shows a 25kg bag of Bioboost retails for \$26 to \$45 (equivalent to \$1,040 to \$1,800 a tonne) and bulk product at \$180 a tonne spread plus transport charges. Charges for bulk bags lie within these ranges. These prices highlight the realisation of the true value of biosolid products when properly packaged and marketed. When the true value of products is realised users do apply the product at correct agronomic rates. Commercial users carefully compare the agronomic value and price of all products on the market to ensure growing costs are minimised and benefit maximised. In light of the Bioboost® success story New Plymouth District Council wish to make the following submission on the draft guideline.

We would congratulate the Project Management Steering Group on producing these new guidelines which we believe will better enable of the beneficial use of organic waste products, and in particular biosolids, than the current 2003 NZ Biosolids Guidelines.

Section 2.1 and 2.2 of the guideline highlights “What has changed and Questions to Consider”. We comment (*in italics*) on the changes and questions raised in these sections as follows:

### **Section 2.1 - Key Changes Proposed**

Key changes to the 2003 Biosolids Guidelines can be summarised as:

- No longer limited to biosolids; includes other organic waste materials, particularly from animals.

In Section 1.2 Purpose of the Guide it states “The change in scope of this *Guide* from the 2003 NZ Biosolids Guidelines recognises that all wastes of animal origin, whether human or otherwise, contain similar levels of pathogens, trace elements and organic contaminants and therefore pose similar risks to productive soils and society. We should manage those risks in a similar manner.”

*NPDC agrees with this approach as it means all organic products are dealt with in the same manner and would mean a safe use of all products. However the exclusion of manures from the same sampling, analysis and documentation requirements as biosolids (ref section 5.3 Manures vs Biosolid Requirements) would frustrate this goal in our view.*

- A simpler grading system; no change to pathogen grading requirements but only a minimum compliance level for contaminant grading.

*We agree that no change to pathogen reduction requirements be made. NPDC makes submission on vector attraction requirements later in this submission.*

In Section 3.1 Overview of Requirements it states; “Given that nitrogen loading is the primary means of limiting the amount of contaminants applied to land, there need not (theoretically) be a maximum contaminant concentration. However, a maximum contaminant concentration is required for management controls and to reinforce the differentiation between a good quality organic product and an unknown or non-compliant waste material.

*We believe the single compliance level chosen for contaminant grading does recognise that no biosolids in NZ were capable of meeting the post 2013 Biosolid Guideline “a” grade for metals (essentially zinc and copper). This effectively removes a significant roadblock to the beneficial reuse of biosolids. We make a submission, from a risk viewpoint, later in this document on sampling and testing requirements for the contaminants.*

- Metal contaminant limits are the 2003 Biosolids Guidelines ‘b’ grade limits and are used as a minimum product quality criteria.

*We agree with the proposed limits as described in Table 5-5.*

*However, in order to incentivise the continued work, and gains made, in minimising contaminants, such as metals, in biosolids through enforcement of Trade Waste Bylaws we would recommend reduced routine monitoring requirements if contaminant levels are consistently below half the level proposed in Table 5-5. Refer to our submission below on sampling frequencies. Reducing sampling frequencies when contaminant levels are*

*shown to be consistently below half the proposed limits recognises the reduced risk of exceeding the guideline for the particular organic product source and reduces the costs of routine monitoring.*

*This approach of reducing sampling requirements when organic waste product can be proved to be consistently below half the limit is the same approach used in the Drinking Water Standards for New Zealand 2005 (Revision 2008) for priority 2b contaminants which includes contaminants introduced in the raw water. This is a sensible risk based management of contaminants.*

*Refer to comments on sampling later in this submission.*

*If the proposed Organic Waste Guide is adopted as the replacement for the current 2003 NZ Biosolids Guidelines then they will become the defacto "standard" used by Regional Councils to set limits on biosolid application to land. In order to meet the new "standard" biosolid producers will be required to control trade waste discharges to meet the new limits being applied to their biosolid product. To control the contaminants in trade waste discharges, concentration and mass limits are applied to industry to meet the requirement. This is currently the practice by NPDC and has enabled us to significantly reduce metals in our biosolids. As already stated we want to maintain the gains in metals reduction we have achieved. Our proposal to have reduced testing requirements if contaminants are at half or less of maximum limit would provide a justification for a target contaminant level lower than the proposed guideline. In short the limits set in these new guidelines will directly influence the limits set for contaminant discharges by industry.*

- Only measure emerging organic contaminants, not historical banned substances e.g. Dioxins.

*We agree with the recommendation, as stated in the CIRB report "Organic Materials – Organic Contaminant Review (012) that "The organic contaminants listed in Table 4.2 of the NZ guidelines can be considered as obsolete in view of the on-going research findings on the sources and fate of persistent organic pollutants in New Zealand".*

*Fifteen years of monitoring historic banned organic contaminants in our sludge and biosolid fertiliser indicate dropping levels.*

*However we submit the need to routinely monitor emerging contaminants should be based on initial verification screening of these in organic waste products. If they are shown to be not present, or are at very low levels (for example half proposed limits), then ongoing routine monitoring should not be required.*

- Organic contaminant limits are related to existing EU guidance. There is limited New Zealand supporting data.

*NPDC has no comment other than that immediately above regarding routine monitoring requirements.*

- Excludes a soil specification, this is dealt with by other guidance.

*We totally agree with this move. A fertiliser such as NPDC Bioboost® is never used, nor able to be used, as a soil replacement.*

- No mass application limits.

*No NPDC comment.*

- 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.

*This has been the method by which NPDC Bioboost® fertiliser has been applied and it has worked very well in controlling application rates.*

*When an organic product is competing on the market as an alternative to other organic and inorganic fertilisers the NPK value of the product is closely scrutinised by users who want value for the money they spend. Using nitrogen limits as the control is aligned to the commercial reality very well and will result in good control of contaminants. However, this will only work if products are valued appropriately and value is related to perception. This is why the word waste needs to be dropped from this guideline and why organic products should not be given away free of charge.*

- Manure management controls are similar to current good farming practices with additional measurement and documentation encouraged but not mandatory.

*The same can be said for biosolid products needing to be used in accordance with good farming practices.*

## **Section 2.2 - Some Questions to Consider**

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

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

*The word waste should be dropped from the guide as it implies the organic material has no value. Organic material becomes organic products once it has been processed ready for beneficial re-use. The perception of these products is critical in enabling the value within them to be realised. They should never therefore be referred to as waste nor given away free of charge.*

- 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?

*We recommend to retain the A & B grade for pathogens but adopt 1 & 2 grade for contaminants to avoid confusion. The highest grade product would be the A1 grade which has a good ring to it.*

- Should measurement of emerging organic contaminant 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?

*Do all types of organic material contain these emerging contaminants? Initial screening of organic materials for emerging contaminants would be beneficial. The requirement for continued screening should be dropped if contaminants are proved to be only at very low levels or absent.*

- 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?

*The split is adequate but check to ensure Volumes 1 & 2 say the same thing as each other, for example: Tables 5.5 & 6.2 in Volume 1 compared for Table 2.7 in Volume 2 which references dioxin testing but which in volume 1 it is proposed to be discontinued as a historic contaminant.*

- Are there any concerns over the proposed changes? What are they?

*Refer to sections below.*

- What positive or negative impacts will the proposed changes have on your business?

*Overall we would expect that the proposed new guidelines would be more enabling of the beneficial reuse of biosolids.*

- Are the changes to the guidelines able to be aligned with current regional and district plans?

*The guidelines should be sent to regional councils for comment.*

- 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?

*It is hard to see how this legislation can address the potential human health impacts of organic product (biosolid) application in urban environments because:*

- *The relevant activities covered by the NES are set out in Regulations 5(2)- 5(6). These regulations include soils sampling and soil disturbance; however, both of these activities in the context of the NES are most likely to be the responsibility of the end user rather than producers.*
- *Land Covered by NES requirements is set out in Regulations 5(7) – 5(9) and Regulation 6. The NES does apply to rural and urban land use types but is specifically applied only to those areas of land that have historically been used for HAIL activities and is only triggered when there is a change of land use.*
- *Biosolids is expressly excluded from the HAIL activity listed under category G as “waste disposal to land”.*

*Taking the above into account and using Figure 3 of the NES user guide, the NES does not apply for biosolids application to land and cannot therefore address any potential human health concerns..*

*It appears to us that human health is protected under the proposed guidelines by the A/B pathogen grade. If this is referring to inappropriate use of a product as a soil replacement, this would be best managed through product labelling.*

#### **Section 4.4 – Animal Health and Production**

This section states that: - “To reduce the ingestion of contaminants by grazing livestock, human waste derived products (biosolids) should be incorporated into the soil when pastures are re-sown, **and withholding periods are required before allowing grazing animals on biosolids-treated land.** This is not as necessary for animal manures but is still good practice and agricultural guides commonly recommend that animals are not grazed on land or vegetation visibly contaminated with manure.”

*We agree soil incorporation of biosolids is preferable but would submit that other than using quarantine as a method for ensuring pathogen reduction there is no basis for a withholding period for biosolids other than to ensure product is washed off vegetation as is recommended for manures.*

In Section 1.2 it is stated: "The change in scope of this *Guide* from the 2003 NZ Biosolids Guidelines recognises that all wastes of animal origin, whether human or otherwise, contain similar levels of pathogens, trace elements and organic contaminants and therefore pose similar risks to productive soils and society. We should manage those risks in a similar manner."

*Given this statement, then why have a different rule for than manures, as they are also known to contain pathogens and potentially contaminants at the same level as biosolids?*

### **Section 5.1.2.2 - Vector Attraction Reduction (VAR) Methods**

Table 5.3 outlines the proposed vector attraction reduction methods.

*We believe the vector attraction reduction method of "Drying to  $\geq 75\%$  dry solids by weight" is too restrictive in its definition regarding the organic materials suited to this method, namely "stabilised anaerobic and aerobically digested slurry and sludge". We have reviewed this method against the source material it was derived from and found a different definition of suitable organic material. They are:*

A. *Review against EPA source material, US EPA Rule 503*

*(7) The percent solids of sewage sludge that **does not contain unstabilized solids generated in a primary wastewater treatment process** shall be equal to or greater than 75 percent based on the moisture content and total solids prior to mixing with other materials.*

B. *NSW EPA Environmental Guidelines: Use and Disposal of Biosolids Products 1997*  
6. *For biosolids which contain stabilised solids only, the proportion of dry solids shall be at least 75%.*

7. *For biosolids which contain **unstabilised solids generated in a primary wastewater treatment process** the proportion of dry solids shall be at least 90%.*

*Clearly the definition of unstabilised solids from these rules/guidelines is one that contains primary solids generated in a primary wastewater treatment process.*

***From review of these source documents the drying to  $\geq 75\%$  DS is applicable to sewage sludge that does not contain primary solids.** It does not need to be a digested sludge. This needs to be reflected in these guidelines as it adversely affects the potential for using such processes as solar drying of aerobic activated sludge for biosolids production.*

*We therefore submit that in Table 5-3, VAR method of "Drying  $\geq 75\%$  DS", be modified to define stabilised solids as those that do not include unstabilised solids generated in a primary wastewater treatment process.*

### **Section 5.3 - Manures vs Biosolid Requirements**

*We submit that the same rules should apply for all organic products irrespective of source. Manures are stated to be either Type 1B or 2B so clearly present a greater risk than a 1A biosolid.*

## **Section 6.1 - Responsibility for Monitoring**

The section states: “The producer is responsible for conducting any monitoring that relates to production, storage and labelling. The producer should develop a detailed process and product monitoring programme in accordance with this *Guide*.”

*We submit this section is too prescriptive and assumes the producer is the same body as the distributor of the product. We agree with the producer being required to have a monitoring programme for production but as regards storage and labelling; this function could well be undertaken by another party such as a distributor who purchases the product off the producer. In this case we believe the producer’s responsibility should be limited to ensuring the correct information is given to the distributor regarding the product storage and labelling requirements and perhaps an auditing process put in place to review distributor’s practices periodically. This is currently part of the quality system audits undertaken by NPDC for its Bioboost® fertiliser and works very well.*

The section also states: “The holder of the discharge consent, or owner of the land when a consent is not required, is responsible for monitoring in relation to land application activities. Consent holders may contract others to undertake activities for them, including the monitoring, but they themselves will remain ultimately responsible.”

*We submit that should a region wide consent be given for the use of an organic product then the land owners should be responsible for monitoring in relation to land application. This is a similar scenario to not requiring a consent for specific sites.*

## **Section 6.3 - Product Monitoring**

The section states; “The final product should also be sampled just prior to use (or sale) as pathogenic organisms may regrow after treatment has taken place. Producers should inform the analytical laboratory of the need to complete the analysis as quickly as possible.”

*We submit that the assumption that pathogen organisms may regrow after treatment is a huge generalisation and assumes this potential is the same for all treatment processes. For example a heat dried product meeting both the pathogen reduction criteria and vector attraction criteria will not regrow the pathogens unless contaminated by raw sludge or sewage. Provided products are stored appropriately before use this will not happen especially once they leave the treatment facility.*

*It also assumes products are used immediately after production which is not true as for example for product sold to distributors for bulk sale during seasonal demand or for bagging for sale in bagged form through retail outlets.*

*In these instances the point of sale for the producer is when it leaves the treatment plant but final use and sale is by a second or third party. We submit that the final sampling should be when the product is sold by the producer or leaves the treatment facility.*

## **Section 6.5 – Sampling Regimes**

*We submit that the routine sampling requirements for metals and organic contaminants as described in Table 6-2, Contaminant sampling frequencies, are too onerous and will result in excessive testing expenses with little benefit. This is especially so as most production in New Zealand is on a small scale.*

*We recommend that sampling requirements be based on results of initial product verification screening and if the contaminant levels are at half the proposed contaminant limits then the sampling frequency be significantly reduced. This we believe recognises that the risk of*

*exceeding the concentration limit is unlikely if normal concentrations are below half guideline values.*

*It is NPDC experience that frequent monitoring of a small number of contaminants, in our case zinc, copper and nickel, known to be near our product specification limits has been very effective in ensuring any excursions to product specification limits is identified early. Timely action is then able to be initiated to deal with any non-conforming product appropriately and address the cause of the non-conformance.*

*We would submit that the following routine monitoring regime be adopted:*

*a) For metals  $\geq$  half the guideline limits 1 composite/ 2 month.*

*And in this case specific metals whose concentration is known to be variable, and have potential to exceed the guideline limit, should be monitored on a weekly basis using a grab sample.*

*b) For metals  $\leq$  half the guideline limits 1 composite/4 months.*

*c) For organics  $\geq$  half the guideline limits 1 composite/6 months.*

*d) For organics  $\leq$  half the guideline limits 1 composite/12 months.*

Please contact the undersigned if clarification of any the points raised in this submission is required. NPDC would like to represent it's submission at any hearing.

Yours faithfully

Graham Morris  
Optimisation Engineer