PUBLIC PARTICIPATION REPORT

for

MOTIVATION FOR THE DEVELOPMENT OF NORMS & STANDARDS FOR THE TREATMENT OF ORGANIC WASTE IN SOUTH AFRICA

In terms of the

National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended & National Environmental Management: Waste Act, 2008 (Act 59 of 2008) & National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)

Commissioned by: Deutsche Gesellschaft für InternationaleZusammenarbeit (GIZ) GmbH

Date: 13 December 2017

Author of Report: Melissa Mackay

Author Email: mel@cape-eaprac.co.za

Report Reference: NAT414/14

Cape EAPrac
Cape Environmental Assessment Practitioners

Tel: +27 44 874 0365 PO Box 2070, George 6530
Fax: +27 44 874 0432 17 Progress Street, George

www.cape-eaprac.co.za

APPOINTED ENVIRONMENTAL ASSESSMENT PRACTITIONER:

***Cape EAPrac* Environmental Assessment Practitioners**

PO Box 2070

George

6530

Tel: 044-874 0365

Fax: 044-874 0432

Report written & compiled by: **Melissa Mackay** (BTech & ND Nature Conservation), who has eleven years' experience as an environmental practitioner.

Registrations: Director, **Louise-Mari van Zyl** (MA Geography & Environmental Science [US]; Registered Environmental Assessment Practitioner with the Interim Certification Board for Environmental Assessment Practitioners of South Africa, EAPSA). Ms van Zyl has over fifteen years' experience as an environmental practitioner.

PURPOSE OF THIS REPORT:

Public participation report for the motivation to develop norms & standards for the treatment of organic waste in South Africa

COMMISSIONED BY:

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

CAPE EAPRAC REFERENCE NO:

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SUBMISSION DATE

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Submitted for:

Departmental Review

Report Issued by:

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Tel: 044 874 0365
Fax: 044 874 0432
Web: www.cape-eaprac.co.za

PO Box 2070
17 Progress Street
George 6530

ORDER OF REPORT

Public Participation Report

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1. INTRODUCTION

Cape Environmental Assessment Practitioners (*Cape EAPrac*) has been appointed by the **Deutsche Gesellschaft für Internationale Zusammenarbeit** (GIZ) to facilitate the development of a Motivation for Norms & Standards document for the treatment of organic waste in South Africa. This process is being undertaken in terms of Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998 as amended), the National Environmental Management: Waste Act (Act 59 of 2008), Regulation 9 of GN 634 dated 23 August 2013 and the National Environmental Management: Air Quality Act (NEM:AQA, Act 39 of 2004).

The motivation report serves to provide information to the national Department of Environmental Affairs (DEA) in support of the development of a Norms & Standards document which will provide a legal framework for operators for the treatment of organic waste without having to undertake potentially onerous and expensive licensing / permitting processes. The intent is not to avoid regulation but rather to apply the same standards across the board for treatment / technologies which have similar environmental impacts without putting undue pressure on the departmental capacity, whilst stimulating private sector involvement in the green economy and help reduce waste to landfill.

This public participation report has been collated to include provide proof of distribution and include all comments and responses received by stakeholders during the public participation period which extended from **16 October to 16 November 2017**. This 30 day period was agreed to by the Department of Environmental Affairs (DEA) in order to obtain industry / stakeholder input prior to the submission of the Motivation Report to the DEA for consideration.

2. NOTIFICATION

A list of stakeholders were developed starting with the networks associated with the various task team members, the DEA Industry Waste Forum, South African Biogas Industry Association (SABIA), Cape EAPrac and TOMA-Now. Further digital distribution included the Red Meat Abattoir Association (RMAA), AgriSA, OrgSA, the Institute for Waste Management in South Africa (IWMSA), South African National Energy Development Institute (SANEDI), GreenCape and the national Department of Agriculture, Forestry & Fisheries. Screenshots from the various web platforms have been included as Appendix 1 of this document.

In order to promote the document and make request for comment, presentations regarding the document were given at the Western Cape Department of Environmental Affairs & Development Planning's Abattoir Workshop on 26 October 2017 and at the 3rd National Biogas Conference on 1st November 2017. A request had been made to present at the DEA Industry Waste Forum but the next forum only takes place on the 22nd February 2018, by which time the Motivation Report will have been submitted to DEA for consideration. Copies of the Attendance Registers have been included as Appendix 2 of this document.

Figure 1: Presentation at DEA&DP Abattoir Workshop

Figure 2: Presentation at SABIA Conference

Figure 3: 3rd National Biogas Conference

A copy of the list of stakeholders who registered has been included as Appendix 3 of this document.

A Notification letter was circulated to all identified stakeholders providing the location of the Motivation Report and appendices. A copy of the letter is included as Appendix 4 of this document.

3. COMMENTS & RESPONSES TABLE

Comments received have been collated in the table below with responses from the project team. The unabridged versions of the comments are included in Appendix 3 of this document.

The comments below have been captured in alphabetic order for ease of reference.

COMMENT / ISSUES	RESPONSES
Barichievy, Reg – Smart Waste (15 November 2017)	
Clause 3.2. The area is too small for a recycling activity to be viable, a minimum of 1 500m2 is required.	The size (500m²) reflected in this clause is the threshold size that triggers the requirement for a Basic Assessment process in terms of the NEM:WA. The Applications referred in Section 3 mean that an organic waste facility that exceeds the given thresholds which would normally require an EIA process, may now apply to be registered in terms of the Norms & Standards.
Clause 3.6 The mass is too small to be viable for a recycling facility to be viable, a minimum of 5 tons is required.	The mass (1 ton) reflected in this clause is the threshold size that triggers the requirement for a Basic Assessment process in terms of the NEM:AQA. The Applications referred in Section 3 mean that an organic waste facility that exceeds the given thresholds which would normally require an EIA process, may now apply to be registered in terms of the Norms & Standards.
Clause 5(1)a. This distance is too short, we believe, with respect, it should be a minimum of 100 metres to allow for floods. It is difficult however difficult to find consensus on this distance.	The 32m reflected in this clause as an exclusion is the distance, from the edge of a watercourse, which is considered to be sensitive in terms of the NEMA. Any developments with certain thresholds that occur within this area, will require an EIA process in terms of NEMA. Our understanding is that the 32m should, in most cases will include the 1 in 100 year flood area. Please note this is not in all instances. Thus the siting information to be included in the registration of a facility in terms of the Norms & Standards is very important. Please note that this exclusion is only applicable to facilities wishing to register in terms of these Norms & Standards. Any facility that is proposed within this threshold will be required to undertake an EIA process.
Clause 5(1)c. This distance is too short, we believe, with respect it should be further to allow for storm surges and rising sea levels.	The distance of 100m above the high water mark of the sea involves the same reasoning as that of the 32m above. In many cases, the 5m contour is being used as a minimum distance to avoid storm surges and rising sea levels. We have therefore included the 5m contour condition as it provides sound coastal

	development strategies. Please note that this exclusion is only applicable to facilities wishing to register in terms of these Norms & Standards. Any facility that is proposed within this threshold will be required to undertake an EIA process.
Clause 5(1)e. 300m2 is too large an area of endangered vegetation it should be reduced to maybe 50m2.	The 300m² threshold is that provided in the EIA regulations. Thus any facility attempting to register in terms of these norms & standards that is likely to exceed that threshold will have to undertake an EIA. Since, as you pointed out previously, most facilities are likely to be in the region of 1500m², in order to comply with the norms & standards, a facility must avoid endangered and critically endangered ecosystem types.
Annexure 3 The conditions are too onerous and will have the effect of severely reducing the number of organic operations and driving up costs. If the objective is to make organic recycling a viable alternative to using landfill this will perpetuate the use of landfills.	The conditions are based on best practise principles and are reasonably achievable. The aim is to ensure environmental protection whilst encouraging removal of organic material from landfill. We take note of your concern, but would appreciate more specific reference to which items in Annexure 3 you find onerous.
Borello, Alberto – Fountain Green Energy (FGE) (15 November 2017)	
Page 22: the assumption is that the organic content in the MSW in SA is between 40% and 70%. This range is based on characterization analysis done in other countries and it is quite optimistic because many studies done by different universities, municipalities or private institutes on South African MSW concludes that the organic content is between 20 %and 35%. A value like this can negatively influence decisions on business development or choice of wrong technology for waste treatment.	Pages 17 & 18 of the report discuss how this figure was attained. Please note that the figure for MSW will vary significantly depending on the socio-economic status of the municipality i.e. Cape Town Metro has significantly less organic material from higher income areas and less so as a whole to rural municipalities (Pers. comm. New Horizons Energy, 2017). It has been further stated in the report that more efficient data collecting will enable better reporting. This in turn should then provide business development opportunities with sufficient data to invest in specific technologies.
Page 22 to page 29. At page 22 and 23 the waste is associated to a “feedstock”. From page 23 there is table with the list of feedstock. The table, at page 25, includes the food oils. In the document food oils are included in the list of feedstock and waste.	Under the current definition of waste, food oils are often classified as waste material and must then follow the correct processes for any technology which is used to treat them. The concept of referring to the waste materials as a feedstock is because it is

Food oils are not a waste, they can be a fuel, but not considered a waste. It is better to change the definition from “food oil” into “waste cooking oil”.	understood that the majority of these materials can be re-used as beneficial products, however, the current definitions of waste do not allow that type of thinking currently.
Page 42: table with environmentally sensitive exclusionary sites.: b) Within wetlands or floodplains, where the facility will be located outside of the 1 in 100 year flood line. Our suggestion is to include this areas, if the project will includes civil infrastructures compatible with the area.	If a project included infrastructure construction within these areas, an EIA in terms of the NEMA EIA Regulations will be required, in which case the Norms & Standards will not be applicable.
Page 46: food oils, same comments above. Can be changed to “waste cooking oil”	Response as above.
Page 70: syngas is produced from a gasification process, so syngas can’t be included in the anaerobic digestion paragraph	Biogas, which is a process entailing anaerobic digestion, is a platform which can lead on to the development of syngas. The technologies are often interchangeable as such it was discussed at this point as part of biogas.
Document “*Appendix 5 Draft NS for Organic Waste”*	
4. FEEDSTOCKS AND TECHNOLOGIES. Food oils are not a waste and they should be changed into Waste cooking oil. If the norm wants to include food oil as a renewable sources they need to be classified differently (not associated to a waste).	Under the current definition of waste, food oils are often classified as waste material and must then follow the correct processes for any technology which is used to treat them. Please note that food oils do not only refer to cooking oil, but also to the production of oils from any vegetable material (coconut, olive, canola, sunflower, mustard, groundnut, peanut, avocado etc.) or protein oils such as fish oil.
MINIMUM REQUIREMENTS FOR THE DESIGN AND PLANNING PHASE. Our suggestion is to include areas inside of the 1 in 100 year flood line, if the project will includes civil infrastructures compatible with the area.	If a project included infrastructure construction within these areas, an EIA in terms of the NEMA EIA Regulations will be required, in which case the Norms & Standards will not be applicable.
MINIMUM REQUIREMENTS FOR THE CONSTRUCTION PHASE. It includes many different permitting, to be obtained from different agencies. In many other countries to simplify and reduce the timing to get a permission for the constructions and operations, the government has identified only one agency that has the responsibility to invite all the parties involved (energy	The aim of the Norms & Standards is to speed up the permitting process in terms of the NEM:WA. In terms of planning etc yes, it would be beneficial to have a “one stop shop” but currently this is not in place.

department, environmental department, gas authorization, NERSA, …) to a "local authorities planning conference/service conference". The maximum time to release a permit is 180 days if the plant receive above 100t waste/day or 90 days if the project is under 100t waste/day. After the "local authorities planning conference/service conference" every invited agencies will release his authorization and all of them will be included in one final permit or license. If one agencies doesn't release the authorization before 90 days after the authorities planning conference, they will be simply excluded and the company will have the final permit before the final deadline. This will speed up the permitting process and will ensure that all the parties involved (private and public agencies) have been involved.	
14.ANNEXURE 1: ORGANIC WASTE TREATMENT TECHNOLOGIES. Combustion, the temperature indicated should be only indicative. I.e. the combustion of the biogas or landfill gas (considered also waste) cannot happen at temperature above 1200 C, because of limits of technology and materials. To have a complete combustion it is universally accepted a combustion temperature between 900 and 1200 C.	Noted. The range of 900 - 1200˚C has been captured.
16.ANNEXURE 3: GENERAL REQUIREMENT FOR ORGANIC WASTE TREATMENT FACILITIES. No long term storage i.e.feedstock must be used within 90 days. This is a very strict limit that cannot be considered if the feedstock will be Agricultural crop residue, that can be stored for more than 90 days.	Noted. In the event that storage exceeds 90 days (temporary storage as defined in the NEM:WA), the Norms & Standards for storage becomes applicable.
16.ANNEXURE 3: GENERAL REQUIREMENT FOR ORGANIC WASTE TREATMENT FACILITIES. Increase dry matter content to minimize leachate. This is not always possible, should be preferable but not mandatory	Noted.
One more general comment about the "*Appendix 5 Draft NS for Organic Waste* " is that it will be necessary to state that plants that uses the list of feedstock (waste) included in the table, will be considered "renewable energy	Not all organic waste technologies considered in this Norms &Standards is necessarily a renewable energy facility. Primarily all facilities treating organic waste with a by-product of electricity should be seen as waste management facilities and secondly as

plants" and for this reason they need to be considered *"not deferrable and urgent".* Also the ancillaries works (like grid connections, roads to access to the area, and so on) will be considered not deferrable and urgent. So they will have a shorter and easier permitting process, that will help the development and construction of these plants. This is what happens in many countries of Europe and other continents.	renewable energy facilities. The "*not deferrable and urgent*" aspect that you speak to does not mean that an EIA for waste treatment to renewable energy will not be required. Under the current regulations all facilities that treat general waste will require an EIA. One of the reasons for this Norms & Standards is to provide a mechanism that lessens the time require for an EIA process, as long as the facility falls within the ambit of the standards. The South African regulations (NEMA and NEM:WA) very clearly include all ancillary infrastructure. Everything associated with a facility must be taken into account as a whole.
Eichstadt, Larry – Resource Management Services (2 November 2017)	
RMS will participate hopefully more comprehensively during the DEA consultation phases **which must include regional workshops and a presentation of a revised document at Wastecon 2018.**	Once the Motivation Report is submitted to DEA, they will determine the process from then on. DEA will gazette the Norms & Standards, once they have reviewed the documents, for further public participation. This public participation process was undertaken at their request to obtain initial comment which will aid them in evaluating the documents going forward.
In brief based on the 20 years of experience in the organic waste treatment field the proposed Norms and Standards report reflects a lack of understanding of the challenges phased when treating different organic waste streams in particular sewage sludge, abattoir waste and chicken manure. These waste streams and the treatment thereof based on experience have shown to be particular sensitive taking into account the particular location of a facility, the health risks based on vectors present and the aesthetic nuisances which can be experienced at any waste management facility.	Siting of facilities has been indicated as a primary step in ensuring environmental sensitivity. It has been shown globally that all organic material can be successfully utilised for varying products, whether to improve soil function or provide energy. The management of those technologies is important to prevent health risks and aesthetic nuisances. It is recognised that the current definitions and requirements of the NEM:WA are restrictive for the development of organic waste technologies, many of which can (and are both nationally and internationally) recognised as beneficial means of treating organic waste. The norms and standards do not seek to avoid regulation but rather to ensure standard management for processes that present with the same impacts.
The generation of norms and standards should therefore only be considered for selected organic waste types subject to the prescribed location thereof i.e. in an industrial area and not in an area zoned for other purposes. Consideration should be given to reducing the need for a full EIA to a Basic	The original approach for this process was to identify select organic waste types associated with biogas technology only. In the preliminary discussions with the DEA, however, this office was instructed to consider the entire organic waste stream with multiple treatment technologies. In determining the various waste types, some have

Assessment for other organic waste types not included in a first round norms and standards approach.	been excluded (potentially hazardous or infectious materials). This led to the tables identifying potential feedstocks. The findings during the investigations are that the majority of the treatment options for general organic waste can be managed by means of standards instead of having to undergo EIA processes.
In summary a broad sweeping norms and standards approach for all organic waste types would be ill advised and therefore cannot be supported.	Noted. The norms and standards are aimed at biodegradable organic material that has a history (locally and internationally) of successful treatment to create beneficial products.
The statement that lengthy EIA's forms one of the bases for introducing a blanket norms and standards approach is questionable as it is poor site selection that is a primary contributory factor to delays. Such a situation should not be the reason for side stepping legal requirements. The option of reducing full EIA's to Basic Assessments must be explored first for certain of the more sensitive organic waste streams.	The statement is a reflection of the sentiment expressed by many of the roleplayers in the industry and government sectors. This process is not aimed at side stepping regulatory requirements as registering a facility in terms of the norms & standards still requires compliance with key strategies to minimise environmental impact. The 2014 NEMA regulations allowed for the option of reducing EIA processes (Full Scoping to Basic Assessment), however this clause was removed in the 2017 amendments. As such it is unlikely that this will be reinstated, as the intent from DEA is to provide other mechanisms to reduce EIA times and costs, such as the introduction of norms and standards. Site selection has been identified as a primary management tool in the norms & standards.
RMS will hopefully be in a position to participate more comprehensively in the DEA stakeholder consultation process which should consider including the suggested approach as mentioned.	We look forward to your constructive involvement in the process going forward.
Gamble, Cassandra – GreenHome (14 November 2017)	
I work for GREEN HOME, a biodegradable food packaging company. All our products are certified compostable and made from plants. Along with bagasse and wood pulp based products, we also supply wood cellulose and corn starch based bioplastics. These bioplastics look similar to petroleum based plastics, but are fully compostable, breaking down through the action of microorganisms.	Noted.

Composting our products maximises their environmental benefits, and we are committed to help grow the composting industry in South Africa to ensure that this circular material flow is realised. In this way we'd like to see all our products being correctly managed after use. Compostable food packaging has the potential to minimise packaging sent to landfill, while simultaneously increasing the amount of food waste that can be composted.	Noted.
To this end we see the correct classification of our products as essential, so that they are clearly recognised as organic wastes/feedstocks and composted accordingly. Within the Norms and Standards draft, bagasse is mentioned as a feedstock specifically. The report further states that 'organic waste (or feedstock) is determined by its biodegradability' (p. 42). Therefore it follows that all certified compostable plant-based products are included, if not explicitly mentioned, in the draft's definition of organics. We would simply like to confirm that this is the case.	There are several products that purport to be bioplastics but that cannot be treated by means of compost. There is no reason, however, why bioplastics that are certified as compostable cannot be included in the norms & standards. To this end we have included certified biodegradable bioplastics in the feedstock list under "Processing".
Gifford, Jason – SABIA (14 November 2017)	
Norms & Standards Document:	
Definitions; biogas: The primary gases in the mixture are typically methane, 60%, which is the main component and a source of fuel and carbon dioxide, 40%. Other minor components that may be found in biogas include; hydrogen, oxygen, nitrogen, hydrogen sulphide, siloxanes and water.	Noted. The definition has been updated.
"Composting" means a controlled aerobic biological process in which organic materials are broken down by micro-organisms.	Noted. The definition has been updated.
Annexure 3:	
Storage and handling; why is storage limited to 3 months? It is common for on farm plants to store silage for more than 6 months for use in the AD plant throughout the none growing months.	Noted. In the event that storage exceeds 90 days (temporary storage as defined in the NEM:WA), the Norms & Standards for storage becomes applicable.

Gower-Jackson, Stuart – JG Afrika (30 October 2017)	
I came across your site for registration and wondered where this all stemmed from? The reason I ask, is that we are currently waiting for the N&S for composting of organic waste (almost 5yrs now) as an outcome of the National Organic Waste Composting Strategy that JG Afrika compiled on behalf of the DEA (I'm sure you are familiar with it).	We are aware of the N&S for composting of organic waste. The original approach for this process was to identify select organic waste types associated with biogas technology only. In the preliminary discussions with the DEA, however, this office was instructed to consider the entire organic waste stream with multiple treatment technologies, as opposed to only one type of technology. We raised the issue of the composting N&S with DEA, and it is uncertain as to how they will proceed or which version they will adopt.
The NOWCS, perhaps a little premature, was a definitive step taken by DEA, which unfortunately seems to lost a little momentum. (sorry, I've just breezed over your motivation report and see it is referenced). I'm very surprised that I never got wind of it, as I thought I was relatively informed, and having worked with GIZ (and DEA) closely over the last few years, I find it surprising that they themselves didn't refer us to your project. I suppose this is the report that Jason was chatting about last week when we spoke.	The reports were circulated on several platforms in order to gain as much input from industry roleplayers as possible. This first round of public participation will be continued more formally by DEA by gazetting a follow up comment period once they have had a chance to review and / or amend the documentation.
I'm very interested to understand more about this, and whether its perhaps a contributor to the delays in the N&S for composting being finalised.	You have been registered as an I&AP and as such will automatically receive any updates on this particular process as we receive. Your comments included here are being submitted to DEA and perhaps they will be able to respond in more detail on the status of the composting N&S.
Hanekom, Eddie – DEA&DP (17 November 2017)	
Definitions: General **Suggestion: Please revise definitions section accordingly**	
Some critical definitions are excluded like biomass, abattoir waste etc. It must also be noted that the definition of abattoir waste in the motivation and background document is problematic as it does not include carcasses of dead animals.	Noted. The definition of biomass has been included. The definition provided for abattoir waste is based on the actual material that is discarded, abandoned or unwanted from an abattoir. Please feel free to make suggestions as to what you consider abattoir waste.

	Please note a carcass is defined as the body of a slaughtered animal, after removal of the offal. AS such in terms of abattoir procedures, a carcass is a product and not a waste. Some of the material on the carcass may become “abattoir waste”, and a carcass will only become waste if it is condemned (either as infectious or non-infectious), in which case it is referred to as “condemned abattoir waste”. Animals that have died and where the body will not be dressed for human consumption are considered “mortalities” which definition has been included in the document. These can also either be infectious or non-infectious depending on the reasons for the death.
All NEM:WA definitions in this document must be excluded because it is already covered in NEM:WA. Include definitions from other non-environmental legislation with a reference attached, e.g. Fertilizer Act all by making reference to NEM:WA definitions. It is important to maintain consistency. Please refer to format of current NEM:WA norms and standards to align format.	Noted. The formats of all current and out for comment Norms & Standards were used in drafting this N&S.
Furthermore, it seems a lot of definitions are mentioned which service now purpose.	Noted.
Definitions “Biodegradable” **Suggestion: Remove the wording “and thereby avoiding pollution”**	Biodegradable: A substance or object capable of being decomposed by bacteria or other living organisms and thereby avoiding pollution.
Just because something is biodegradable, does not mean it will not pollute the environment, as per the definition. If an abattoir, for instance, on a daily basis dispose of their waste (e.g. tons of blood, manure and intestines) to a piece of land, situated in a shallow water table, it might very well over time lead to the environment being polluted, despite the material being biodegradable.	The definition of “biodegradable” has not been defined in NEM:WA, therefore, as is accepted, the Oxford English Dictionary definition is used (see above). In light of your comments, other sources were investigated and the definitions found include: **Merriam-Webster:** Capable of being broken down especially into innocuous products by the action of living things (such as microorganisms. **Cambridge Dictionary**: Able to decay naturally and in a way that is not harmful. **Macmillan Dictionary:** Biodegradable substances can be separated into very small parts by bacteria so that they are not harmful to the environment. **Business Dictionary**: Capable of being broken down (decomposed) rapidly by the action of microorganisms. Biodegradable substances include food scraps, cotton, wool,

	wood, human and animal waste, manufactured products based on natural materials (such as paper, and vegetable-oil based soaps). Conditions are important to encourage biodegradability. Products that will biodegrade in nature or in compost heaps may not biodegrade in landfills, where there's not enough bacteria, light and water to move the process along. Thus the treatment becomes important. Your concern is valid, but does not mean that the definition of the material should be amended. The issue here is not whether the material is biodegradable but what method or site of disposal takes place. Any overloading of nutrients on a system can eventually lead to pollution, but that does not change the fact that the biodegradability of a feedstock does lead to the breakdown of the material into innocuous / beneficial / more environmentally friendly components.
Definition: Contaminated Material **Suggestion: This sentence should be deleted from the definition: "These materials must be separated from the general organic feedstocks and treated separately".**	
The definition contains the following sentence: "These materials must be separated from the general organic feedstocks and treated separately" this should not be added to the definition as it not define the concept but rather states that should be done with this type of material.	Noted and amended.
Definition: Organic fertiliser **Suggestion: Clarity should be added to the definition in terms of the meaning of the concept prescribed nutrients.**	
The definition of "Organic fertiliser" contains the following "….containing at least 40g/kg prescribed nutrients". Clarity should be given in terms of what does prescribed nutrients include / what does the concept mean?	This definition comes from the Draft Norms & Standards for Composting and GN250 of 23 March 2007 (Fertilisers, Farm Feeds, Agricultural and Stock Remedies Act (36/1947): Regulations regarding fertilises). It is the minimum amount of nutrients required to classify an organic fertiliser as such in the Act.

Definition: Recycling and Recovery **Suggestion: These should be deleted and if required should link to the NEM:WA definition.**	
The definition for “Recycling” and “Recovery” are the exact same definitions as noted in the NEM:WA, should these be included as they are already defined by the “mother “ legislation.	Noted and so amended.
Definition: Recycling and Recovery **Suggestion: The definition for “Recovery” should be placed before “Recycling”**	
The definition of “Recovery” should be placed before “Recycling”.	AS per the item above, the definitions have been removed as they are reflected in the NEM:WA itself.
Definition: Sterilise **Suggestion: “means to make something free from bacteria or other living micro-organism”.**	
The definition of “Sterilise” requires the addition of the word ‘to’ between the words “means make”.	Noted and so amended.
Definition: Thermal treatment **Suggestion: “means incineration and other high temperature treatment of general waste and can include co-processing under these conditions**	“.
The definition of “Thermal treatment” reads “means incineration, co-processing and other high temperature treatment of general waste”. Looking at this definition it seems that co-processing on its own is included as a Thermal treatment. This should be revised to read “means incineration and other high temperature treatment of general waste and can include co-	The definition has been taken from the NEM:AQA as these Norms & Standards propose to include certain activities from the Act. The point is appreciated but the definition will not be amended at this time in order to remain consistent with NEM:AQA.

processing under these conditions".	
Definition: Treatment **Suggestion: This definition should be amended or either left out and a link made with the original definition in NEM:WA.**	
The definition of "Treatment" is exactly the same as that in NEM:WA, although it does not include the last part which reads "…in order to minimise the impact of the waste on the environment prior to future use or disposal".	Noted, and has been removed.
Definition: Waste **Suggestion: This definition should be amended and deleted and the link made with NEM:WA.**	
The definition of "Waste" is the same as the definition included in the NEM:WA although the section "iv" is not separate in this definition. Also is this definition required as it is already defined in NEM:WA. If NEM:WA is amended then this definition will not change.	Noted, and has been removed so as not to conflict with NEM:WA changes.
Purpose **Suggestion: Consider the deletion of the word Socio-economic**	
Are we including socio-economic environment as part of the purpose of the document? Will this document be looking at the economic feasibility? Isn't this document slightly inhibiting economic development in order to implement Section 24 of the Constitution of South Africa.	Noted, and has been removed.
Application **Suggestion: Remove this section**	
The sorting, shredding, grinding, crushing , screening or bailing of general waste at a facility that has an operational area in excess of 1000m²	Thank you for identifying this. At the time of writing, the norms & standards you refer to was a draft document only. They were gazetted on 11 October 2017. This will be

(NEM:WA GN 921) is no longer applicable, it is now a norm and standard.	reflected in the revised documentation.
Application **Suggestion: Consider revising**	
All of these sections start with "These norms and standards apply to…" except for 1.	Noted. The section has been amended to read more easily.
Feedstock and Technologies **Suggestion: Clarity**	
"An organic waste treatment facility may not include the following in a facility considered in terms of this Norms and Standards – (a) …. – (c)" Is this the correct idea behind the sentence that the facilities may not use a – c or would it rather be the norms and standards do not apply to facilities which use a – c as they may still use a –c if they have a valid license. Clarity should be given.	Noted. The section has been amended to read more easily.
Section 5: Minimum requirements for Design and Planning stage **Suggestion:**	
Should listed activities be triggered, it must not be seen as a fatal flaw but needs to be assessed to determine the suitability of the location for the activity.	Noted. The section has been amended to read more easily. Any facility wanting to develop within any of the sensitive areas will have to undertake an EIA and the Norms and Standards will not be applicable.
Section 6: Minimum requirements for the Construction Phase **Suggestion: Align the N&S for storage and Grinding Bailing etc. .. the 90 days to register and the 90 days before the construction should be taken into account.**	
This should align itself with the N&S for storage and grinding current process of registration.	Thank you for identifying this. At the time of writing, the norms & standards you refer to was a draft document only. They were gazetted on 11 October 2017. This will be

	reflected in the revised documentation.
Section 7 & 8: Minimum and general requirements **Suggestion: Have a sub heading: General operational requirements and the have sub categories e.g.** **(a) Record Keeping** **(b) Notice boards** **(c) Waste Quantification** **(d) Dust and vermin control etc.**	
This section is a bit strange as all facilities must comply with these general operational requirements.	Noted.
Section 7: Minimum requirements for security and access control. **Suggestion: "Any organic waste treatment facility complying with these terms of the Norms and Standards must include the following"**	
Reads "Any organic waste treatment facility complying to these terms of these Norms & Standards must include the following" should be re-written to read "Any organic waste treatment facility complying with these terms of the Norms and Standards must include the following"	Noted, and amended.
Section 7(1): Minimum requirements for security and access **Suggestion: Redraft section by clarifying how and where the information must be presented or stored. "Then treatment facility must maintain regards of the following:"**	
There seems to be something missing from the first sentence in this section or then each clause must be separately written e.g. Where must this information be included on signage or maintain good records of the following.	Noted, and amended to read more easily.

Subsection (D) should be incorporated here. This section is very messy.	
Section 7(2) **Suggestion:**	
This clause must be redrafted. It should read "strict access control must be maintained throughout the facility". Further provision should be made for stricter control measures when contaminated materials are being treated at the facility. May also be in conflict with section 4(1).	Noted and amended to read more easily..
Section 8: General Requirements **Suggestion:**	
This section should be broken up into section dealing with specific issues. Too many loose items put together. It also contains contradicting issues as it stated upfront that sewage and sludge is excluded yet provision is made here for it.	Noted. Please note that swage and sludge is not excluded as suggested here, the items excluded are raw sewage and sludge that does not meet the DWS guidelines. Sewage that has been treated to the specified guidelines can be used for organic treatment as envisioned in this norms and standards.
Section 11: Operational monitoring, auditing and reporting **Suggestion:**	
This section is also too busy. Separate headings for monitoring and auditing; registration and reporting. Clarity must be provided on who must report and to which authority.	Noted.
Section 11(2) **Suggestion: Insert request for type of facility; what are the thresholds. Insert what the buffer zone should be for technologies.**	
The type of facility must be requested. No thresholds are also indicated. No	Noted. International buffer zones are determined by the type of material being composted and range from 45m for Category 1 materials up to 500m on municipal solid

mention of buffer zones.	waste sites with Category 3 materials.. According to the National Organic Waste Composting Strategy, buffers are determined in terms of the technology used for composting and the type of materials. These range from 60 -450m+. The recommendation for buffers is as follows: i. 60 – 150m for Category 1 & 2 materials; ii. 450m+ for Category 3 materials
Section 11(3): Operational Monitoring, Auditing and Reporting **Suggestion: Suggest the replacement of the reference to "norms and standards" with "regulations"**	
This sections makes reference to section 3 of GN 625 of NEM:WA dated 13 August 2012 as norms and standards. However, these are the National Waste Information Regulations not norms and standards. It is confusing and the public may search specifically for norms and standards as dated and come up empty.	The section reads: *In terms of GN 625 of NEM:WA (13 August 2012), all facilities that fall within the scope as described in section 3 of these norms and standards must, 30 days prior to commencement of the operation of such facility, apply to be registered on the SAWIS database as a treatment facility* The reference is to "these norms and standards". Assume this was misread.
Section 11(3): Operational, Monitoring, Auditing and Reporting **Suggestion: Maybe the norms and standards can be more specific and indicate facilities must register with SAWIS or a provincial waste information system if one is available.**	
Section 3 of the regulations indicate that facilities in provinces with a waste information system must submit information to the provincial IPWIS. This implies that the facilities must be registered with the provincial waste information system not SAWIS.	Noted and so amended.
Auditing	

Internal and external audit reports should also be submitted to the appropriate competent licensing authority.	Noted and so amended.
General	
The draft norms and standards needs a lot of work and it is not ready to be published at all. It is not user friendly at all. In its current format it will be impossible to implement and to enforce. The assistance of a legal drafter will definitely benefit the norms and standards.	DEA has confirmed that they will undertake a legal review internally to confirm if the document complies.
The format of this document is not aligned to other NEM:WA norms and standards. The whole document needs restructuring to align.	It must be noted that the available norms and standards were used to draft this document. The comments received have been applied to improve the structure, and it is noted that the lasts N&S (sorting, shredding, grinding etc.) has been structured somewhat differently to the previous documents.
The explanatory information for tables and graphs is problematic and there is not linking between the headings and the following text which makes this not very user friendly. Please revise format.	
These standards do not identify all the critical impacts of technologies e.g. air emissions which should then specify the required mitigation standards. This should be part of main document and not an addendum. Revise the section on technologies to reflect real environmental impacts with mitigation. Too much details are given on naming the types of treatment. It is suggested that the following treatment categories should be utilised: mechanical, chemical, biological and thermal.	The mitigations are included in the Motivation Report and not the actual Norms & Standards document. Compliance with the ambient air quality standards will ensure management of any critical impacts. Thank you for the input regarding the categories. The use of “biological” as a category for aerobic, anaerobic and insect farming has been adopted.
Throughout the document it is being referred to as the “Department”. This is incorrect because DEA is not the competent for general waste – the provinces deal with it, so therefore the wording “appropriate licensing authority” should be utilised.	Noted, and so amended.
The norms and standards must also be workshopped extensively to improve	The documents will now be submitted to the DEA for review. As per regulation 9 of NEM:WA, a public participation process will be gazetted and further workshopping will

the quality thereof.	be determined by DEA. This initial process was to provide industry input into the process, and provide a better series of reports up front to the department. Your participation has greatly assisted in improving the quality of the information ad reports going into the review process.
Hazell, Simon (19 October 2017)	
This is Simon Hazell from SMJ Biofeed, and I was recently put in touch with you by Green Cape after one of our consultations. They informed us that Cape-Eaprac is currently underway in its development of norms and standards for organic waste. As part of our company is involved in fly farming, we are directly affected. We would love to know your progress and possibly keep up to date on any outcomes. Green Cape mentioned that we can register as an Affected Party to receive updates. How would this be done?	Noted
Thanks for getting back to me. My business partner and I will go through the attached and gladly give our input. From the tentative look I've had, it looks terrific. Additionally, thanks for adding us to the database. We really do look forward to any updates.	Noted and thank you for taking the time to review the documents.
Heron, Gavin (6 November 2017)	
The main points of my note are the following: - bokashi fermentation is not mentioned. - this technology is widely used globally and in South Africa. - it is an easy and suitable solution for small scale food waste treatment in households and commercial canteens. - in South Africa the technology, from various suppliers, is already in wide use and distribution.	Many thanks for you input. I have been in communication with another person regarding the bokashi fermentation, and the consensus is that it falls into the wider category of "composting". I will in the report under the composting section include a description and discussion on bokashi so that it is clear that it is included.

Kuhn, Riël – First Ocean (6 November2017)	
Your presentation the 26 Oct was interesting and it was good you were part of the day. I have a copy of your motivation for Norms & Standards of organic waste and went through yesterday afternoon. Will it be ok if I send a copy to other people which may be interested?	Noted. Please feel free to distribute the documents as widely as possible.
17 November 2017	
Page 71: Figure 1 has an item on x axis Food Wate, should it perhaps be Food Waste ?	Note. That is correct. Unfortunately that diagram is taken from a published paper and cannot be amended in this report.
Page 86: About temperatures for pyrolysis – one type is flash pyrolysis and this operates at 950 degrees C. (RMS application for Winelands Pork pyrolysis)	Noted and so included.
Page 104: Figure 36 mentions Rendering; the picture shows a hydrolysis facility as far as my knowledge allows.	The information obtained via the manufacture was that the facility was a micro rendering plant.
Fantastic document Melissa.	Noted and thank you.
Ludwig, Melanie (8 November2017)	
Thank you for the opportunity to comment on the proposed Norms and Standards for Organic Waste. I have asked all the organic waste recyclers to comment on your draft document. Please see below my comments with regards to the Norms and Standards	Noted and thank you for distributing the documentation.
Clarity with regards to complying. With regards to complaints from neighbours etc it is important that a site that is complying with norms and standards receives a certificate of proof of this. In the past a waste permit would provide proof the site was legal but with norms and standards or sites	The norms and standards require that a site register with the competent authority prior to construction and operation. There will be acknowledgement of such a registration which will confirm the legality of the facility.

under the 10 tons per day threshold there is no legal proof the site is operating legally when a someone wants to try and shut the facility down. Inspections should be done and a certificate issued as proof. Also below is an example of the consequences of not complying with DEA, a threat of R 10 million or 10 yours in jail is enough to make a good intentioned recycler think twice. The norms and standards have to be such that it's cut and dry whether a recycler is safe from going to jail.	For sites that treat less than 10 tons per day, although there is no certificate or license confirming legality, the onus is on the operator to ensure compliance with best practise and Duty of Care (NEMA). They may also be municipal bylaws that are applicable.
Composting on a non-permeable surface area. The surface requirements of a compost site is a huge factor in the costs associated with composting, using plastic sheeting would help reduce costs but it is very difficult to work with as front end loaders and other machinery shred the plastic as the compost is turned. Would it be possible to use the level of the ground water in certain areas so as to determine which composting facilities do in fact need to be on an impermeable surface. When selecting sites this would reduce costs and still protect ground water. As nitrates are the predominate concern with ground water contamination other ways to reduce nitrates could also be employed eg using the correct Carbon: Nitrogen ratios in the compost or incorporating carbons (sawdust) in the underlying soils to bind the nitrates or moving composting areas annually and allowing plants to extract the nitrates from the soil. I believe hard surfaces create more run off and composting on carbon bases above the soil can protect the ground water and still benefit from composting with soil. Areas used for composting sites can then be re-used in the future for agriculture instead of being concreted. Tons of inorganic fertilisers are added to agricultural lands without any restrictions increasing ground water nitrates so why is composting seen as such a huge polluter of ground water with nitrates when it is above ground and designed to keep nitrogen in the compost and not lose it to the ground or atmosphere? Most ground water eg: Philippi borewater is regarded as non-potable and is used for irrigation of crops which would then extract the nitrates from the water during growth.	Noted. The intention was to name types of impermeable layers that could be used, however, the facility must choose the type that will be most practical. The norms and standards, and to an extent the NEM:WA regulations, are mainly written for facilities that are fixed i.e. treatment happens in one single place over and over again. As such the concern is over nitrifying of the groundwater. Your point regarding management to ensure that nitrates are not leached is very valid, however the risk averse nature of the current legislation is unlikely to support unlined facilities. There would have to be verified proof that no contamination will occur, so in effect, an environmental impact assessment will be required in which case the norms and standards will not be applicable. It must be noted though that composting of Category 1 and 2 materials (see N&S Motivation Report) is allowed on unlined soils, depending on soil type and distance from surface water and aquifers is many countries around the world. Onsite composting, ie. composting on fields and then using them for agriculture later may be difficult to achieve as it may require field to lie fallow for longer periods then currently practised. Again, this method will depend on the nature of the soils, water resources of the area, as well as the climatic water balance.

Monitoring of the site daily is often not possible as most sites are closed over weekends. Is not weekly monitoring acceptable?	Noted. The criteria has been amended to reflect daily during operational hours.
Why is weed control important from an environmental point of view? How would I define what is a weed or not?	Weed control in this context refers to the alien invasive vegetation classified in terms of the National Environmental Management: Biodiversity Act (NEM:BA, Act 10 of 2004). It is important to prevent the spread of alien invasive vegetation as it provides a significant threat to biodiversity. Composting does not necessarily destroy all seed material from some of these species and care must be taken to ensure that they are not spread via compost.
What are the designated buffer distances? Will these be prescribed as they could make site selection difficult in urban areas?	International buffer zones are determined by the type of material being composted and range from 45m for Category 1 materials up to 500m on municipal solid waste sites with Category 3 materials.. According to the National Organic Waste Composting Strategy, buffers are determined in terms of the technology used for composting and the type of materials. These range from 60 -450m+. The recommendation for buffers is as follows: i. 60 – 150m for Category 1 & 2 materials; ii. 450m+ for Category 3 materials
Infectious Waste: No infectious waste is to be handled at any organic processing facility between the volumes of 10 - 100 tons per day. This means that only full EIA facilities would be able to handle this waste. Surely as infectious waste is classified as hazardous waste then the 500 kg threshold per day would apply and small facilities would be allowed to handle this waste. By what standard is a carcass or animal waste determined to be infectious and therefore hazardous? Which list of infectious or zoonotic disease are regarded to make a carcass infectious? I think this has not been defined and there is in fact little chance of infections spreading or at least the list of pathogens that could result in disease is very limited. See SANS	No infectious waste may be handled by a facility registered in terms of these Norms and Standards. Infectious material is considered to be hazardous and as such has to comply with the requirements for hazardous waste. Material below the 500kg threshold do not require a license, but please note that if the infectious material is added to the rest of the compost, then the entire volume is deemed to be hazardous. As such it should be treated separately with due care and management. An animal must be classified as infectious by a veterinarian. According to the draft norms and standards for red meat abattoir, the following are listed as either infectious or non-infectious. It is noted that there has been much success in composting poultry affected by avian flu by means of composting. These are isolated incidents and not the norm so cannot be

10228.2012. Certain landfills have banned infected carcasses from being accepted, this places huge limitations on where this material could go, often resulting in it being buried on site. Small to medium composting sites are perfect for infectious carcasses as was seen with the avian flu outbreak in the Western Cape in 2017.	considered in terms of the norms and standards. When such an event occurs the controls that are required may be more onerous than that listed in the norms and standards and as such most facilities will not be able to accommodate the material, as an emergency event. However if a facility has the capacity to treat such material, then once off permission should be requested from the competent authorities.

Reason for condemnation	Type	Classification
Abnormal Pigmentation	Aesthetic	Non-infectious
Abscessation	Bacterial	Infectious
Actinomycosis	Bacterial	Infectious
Anaemia	Aesthetic	Non-infectious
Arthritis	Aesthetic	Non-infectious
Bloodsplashing	Aesthetic	Non-infectious
Brucellosis	Bacterial	Infectious
Bruising/Injuries	Aesthetic	Non-infectious
Cachexia (emaciation)	Aesthetic	Non -infectious
Contamination	It will depend on the physical, biological and chemical substance/agent	
Cysticercosis	Parasitic	Non-infectious
Degeneration		Non-infectious
Echinococcosis	Parasitic	Non-infectious
Edema	Will depend on the extent and cause of the condition	Will depend on the extent and cause of the condition

Emphysema	Aesthetic	Non-infectious
Enteritis/Gastritis	Bacterial	Infectious
Erysipelas	Bacterial	Infectious
Fascioliasis	Parasitic	Non-infectious
Fever	Septic fever- Virus and bacteria Aseptic fever	Infectious Non-infectious
Gangrene	Bacterial	Non-infectious
Hydadid cysts	Parasitic	Non-infectious
Immaturity	Aesthetic	Non-infectious
Insufficient bleeding	Aesthetic	Non-infectious
Jaundice/Icterus	Aesthetic	Non-infectious
Leptospirosis	Bacterial	Infectious
Lumpy Skin Disease	Viral	Depend on generalized acute infection accompanied with fever
Lymphadenitis (Caseous)	Bacterial, viral and fungi	Infectious
Metabolic Diseases	Chemical reaction	Non-infectious
Milk spot (Ascaris suum)	Parasitic	Non-infectious
Moribund	Chemical reaction	Non-infectious
Necrosis	Aesthetic	Non-infectious

Neoplasm/Cancer	Aesthetic	Non-infectious
Nephritis/Nephrosis	Infection	Non-infectious
Nodular worms	Parasitic	Non-infectious
Oedema	Aesthetic	Non-infectious
Parafilariasis	Parasitic	Non-infectious
Pericarditis	Bacterial	Infectious
Peritonitis/Pleuritis	Bacterial	Infectious
Pigmentation	Aesthetic	Non-infectious
Pneumonia	Bacterial Viral	Infectious Non-infectious
Prolapse	Aesthetic	Non-infectious
Rectal Prolapse	Aesthetic	Non-infectious
Sarcosporidia	Parasitic	Non-infectious
Scrotal sepsis	Bacterial	Infectious
Septicaemia/toxaemia	Bacterial	Infectious
Skin lesions	Viral	Depend on generalized acute infection
Stilesia Hepatica	Parasitic	Non-infectious
Swine Fever	Viral	Infectious
Tail bite necrosis	Aesthetic	Non-infectious

Telangiectasis	Aesthetic	Non-infectious
Toe necrosis	Aesthtic	Non-infectious
Tuberculosis	Bacterial	Infectious
Warm water scalding	Aesthetic	Non-infectious
Wet carcass syndrome	Aesthetic	Non-infectious

Sewage Sludge: Under the Norms and Standards facilities of these sizes would not be allowed to accept sewage sludge at the 500kg per day threshold which is more of a restriction than the current legislation. Again only large facilities would be allowed to accept this waste making it very expensive to handle this waste	Please note that sewage sludge, once treated to the required standards of the DWS, is not considered hazardous.
Matthews, Sharlene - AgriSA (18 October 2017)	
We wish to inform you that we have no input or comments at this stage. May we please request that you provide us with the initial draft, once available, and we will probably have some comments at a later stage.	Thank you very much for your email. Please note that the documents that are currently out for public review include the following: • Motivation Report for the Adoption of the Norms & Standards • Appendices 1 – 5 supporting the Motivation Report of which Appendix 5 is the draft Norms & Standards proposed for adoption. All of these documents are available on our website at www.cape-eaprac.co.za. The Department of Environmental Affairs (DEA) requested that the documents are circulated before submission to them in order to streamline the process. They will gazette the document for comments later on, but would like any issues resolved during this process. As such I would be most grateful if you are able to review the documentation. I have included the proposed Norms & Standards in this email for ease of reference. The Motivation Report provides the impetus as to how we arrived at the

	Norms & Standards.
McNamara, Brent - AgriSA (29 October 2017)	
These draft standards will only really apply to bigger organic waste processing. This could possibly include very large Dairies, Poultry Houses, Piggeries, abattoirs or composting facilities. I am however concerned that if we do not distribute, some of our bigger farmers might want to be aware of this. As such please distribute to all AA's with a note as above. They can decide if applicable. Not required for GC.	Noted and thank you for distributing.
Smout, Sam - GreenCape (29 October 2017)	
GreenCape is pleased to see the proactive movements made in the sector to reduce the requirements, and subsequent costs and delays, associated with the licensing process. In our experience, waste management licensing has time and cost implications that have led to barrier for many organic waste processers seeking to expand their operations, most notably SMEs. We support your efforts to develop legislation to create an enabling environment for the access of waste in general.	Noted and thank you.
There is no mention of feeding organic waste to livestock as a treatment option. It is in our opinion that the Norms and Standards should include, or provide clarity, on the role of livestock as an organic waste treatment solution. It is in GreenCape's experience that many organic waste generators make use of pig farmers as a waste solution. This is a direct competition to organic waste treatment solutions who are required to adhere to regulations whilst pig farmers do not, even though they are processing organic waste. The Norms and Standards should align with the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) as amended. As this is the legislation that governs farm feed. It is recommended that the Department of Agriculture as contacted regarding clarity on this	The norms and standards address the issue of treatment technologies. As we understand it, livestock is not a treatment technology. Feeding of organic material to livestock takes place on an ongoing basis, ie feeding left over cabbage leaves o cattle or feeding whey to pigs. To our knowledge this has never been considered as a waste treatment. However the feeding of organic material that is considered to be waste to livestock must be done circumspectly so as not to cause harm to the livestock. The relevant DAFF animal husbandry requirements must be applied. I will ensure that DAFF is provided with a copy of your comments to solicit further comment.

issue.	
The term tonne and ton are used interchangeably. Furthermore, ton is not distinguished between the United States of America ton vs the metric ton. This needs to be standardised and clarified. A USA ton is equal to 907kg whilst a metric ton, also referred to as a tonne, is equal to 1,000kg. A distinction should be made, practically if foreign investors are concerned.	South Africa applies the metric system and as such the metric ton is the applicable value.
There is little integration of other levels of government involvement. The Norms and Standards need to consider the involvement of provincial government. Especially considering that the provincial sphere is the authority on general waste management and licensing.	Noted. The document has been amended to reflect the competent authority, who may be either national or provincial as per the definition provided.
There is little integration of local municipalities in the Norms and Standards too. Many local municipalities, especially in the Western Cape, have integrated waste management by-laws. These by-laws require waste recycles, including organic, to register with their waste departments.	The norms and standards reflect that by-laws where applicable, must be complied with. Integration with municipal requirements would be greatly beneficial.
Acronyms	
The acronym “Department” should be moved to Section 1 (Definitions) and clarity on who exactly the Department is, in this case the National Department of Environmental Affairs, emphasis on National.	Noted and so amended.
The correct acronym for the Department of Environmental Affairs should be DEA.	Noted.
Section 4.1.a	
It is noted that no organic waste facility may include any infectious animal waste or carcass classified as hazardous. Currently, Section 3.7 of the listed waste management activities indicates that solution will require a basic assessment and waste management license if treating hazardous waste using any form of treatment at a facility that has the capacity to process in	The norms and standards can only be applicable to existing listed activities. Currently any hazardous material below 500kg is also exempt from a licensing process as well.

excess 500kg but less than 1 ton per day excluding the treatment of effluent, waste water or sewage. These Norms and Standards will create a void for treating less than 500kgs. That is the only facilities that can treat hazardous animal waste or carcasses are those that are licensed. This may have negative implications for, amongst others, abattoirs that would treat condemned carcasses on site. Abattoirs are often located far away from solutions and therefore transporting this hazardous waste would be unfeasible. The Norms and Standards should allow for the treatment of less than 500kg a day.	
Section 5.2.a	
The requirement of submitting a Standard Operating Protocol prior to construction may be a hindrance, would this need to be approved by the competent authority? In so, how is this different to an EIA? If not, how is it ensured that the design is appropriate?	An SOP includes the information required by the competent authority as part of the registration requirements. It is not an EIA, but the information required will allow the competent authority to approve registration in terms of the norms and standards.
The Norms and Standards need to allow the treatment technology to be built without approval, thus it should provide guidance on what is accepted treatment standards.	Products of a treatment facility already have standards applicable i.e. organic fertiliser, irrigation water, electricity etc. Thus all treatment has to achieve products that comply with the necessary standards.
Section 7.1.c and d	
The Norms and Standards should link to other legislations. Data collection and reporting should be in accordance with the National Waste Information Regulations	Noted.
Section 7.3.	
This section is vague. It should indicate what provisions need to be made by the facility owner / management: a) Reduce the occurrence of problem fauna b) Reduce the occurrence of windblown litter	Noted.

c) Ensure correct fire management.	
Furthermore, an additional requirement should be included: d) Reduce runoff from entering any water channels, both natural (drainage line) and anthropogenic (storm water).	Run off management is included in Annexure 3 as part of stormwater / run off control.
Section 8	
An additional general requirement should be added (Section 8.7) that indicates that any organic waste treatment facility must register with local waste authorities where applicable integrate waste management by-laws require such registration. This would ensure that local municipalities are not excluded from, especially seeing as they are responsible for supporting and providing alternatives to landfill.	Noted and so included.
Section 11.1	
The Norms and Standards require that facilities must inform the Department (National Department of Environmental Affairs) for a once off registration on the Departments database. However, the provincial government is deemed the primary licensing authority for waste activities for which the Minister is not deemed the licensing authority (i.e. general waste). Furthermore, many local municipalities have Integrated Waste Management By-laws that also require waste facilities within their borders to register operations.	Noted. The document has been amended to reflect the competent authority, who may be either national or provincial as per the definition provided.
Section 11.2.d	
When required to submit the size of the facility, clarity needs to be made on what is meant. Are you requiring the footprint of the facility or the expected processing capacity?	The registration requirement is for both property size and footprint size.
Section 11.2.e	

A list of standard facets that should be included on the layout must be stipulated. These should be facets that are vital for authorities to ensure the operation is well laid out.	A layout plan is required as part of the registration process.
Section 11.2.f	
Disclosing the proximity of the facility should be extended to not just residential areas, but should also include natural water courses, even if beyond 32 metres (with reference to Section 5.1.a). This is to provide the authorities an indication of how close operations are to sensitive ecosystems. Runoff from organic waste facilities may result in increased nutrient load of the water course, and subsequently impact negatively on the ecosystem (e.g. eutrophication).	A layout plan with surrounding geographic data is required as part of the registration process.
Section 11.3	
Organic waste facilities just need to comply with National Waste Information Regulations (GN 625). Some provinces have their own waste information system that feed into the national SAWIS. As such, to reduce confusion to include a section that follows the requirement: “or where a provincial waste information system exists” (see section 3).	Noted and this has been included.
Section 11.10	
It is noted that external audits of the facility must be submitted to the Department upon request, however, provincial government is the authority on general waste and as such, should be included.	Noted. The document has been amended to reflect the competent authority, who may be either national or provincial as per the definition provided.
Section 11.10g	
It is noted that confirmation of the presence of records of safe disposal certificates for all hazardous waste removed from the facility. This should also include general waste. Often organic waste is accompanied by packaging. As such, this packaging material is separated and should be	Noted.

either recycled where possible, or disposed of correctly	
Annexure 1: Organic Waste Treatment Technology	
Listing “Black soldier fly larvae” as a technology is highly specific, and does not provide scope for other insect alternatives. Granted, black soldier flies are used currently, but various other fly species have been tested and are currently being researched. As such, the technology “Black soldier fly larvae” should be generalised to insect farming.	Noted. The category has changed to “Biological” and includes aerobic, anaerobic and insect farming.
Annexure 2: Items to be included in standard operating procedure	
Disposal of wastes and contaminated products is mentioned as a subsection. However, this should be included as a principle component on its own. This is a major aspect of running a facility and should get greater focus. Other than general waste generated by staff and general operations, organic waste is accompanied by packaging, and often contaminated with hidden waste streams or strange unforeseen objects. As such, operating procedures should include a section governing the management of the facility.	Noted, and agreed. Amendment made.
Annexure 3: General requirement for organic waste treatment facilities	
Annexure 3 does not provide any norms and standards for the actual treatment of the organic waste, these requirements are too general and does not make provision to ensure that the waste will be suitably treated. Furthermore, design ranges are not taken into consideration. Different sized facilities have varied impacts and require different checks. As such, these Norms and Standards should also include standard requirements for different sized facilities. Obviously these minimum requirements should not be restrictive.	The management principles for differing sized facilities within the thresholds of the Norms & Standards (i.e. the listed activity thresholds) are the same as the potential impacts are the same. Annexure 3 identified the management criterias that must be applied for any site that falls within the thresholds.
Clarity must be made as to which requirements take precedence if a facility is making use of multiple technologies and processing different waste streams.	Many of the technologies can be used in conjunction with each other, but at different stages i.e. mechanical for pre-treatment , then AD for main treatment. For this reason, the Annexure 3 requirements were categorised by phases. There is thus no one stage

	that takes precedence.
Needs to be made that all non-organics that are separated are to be removed to registered waste facility and a safe disposal certificate is obtained (as per Section 11.10g)	Noted and included.
Under the operations" heading, there should be a clause under "minimising, containing and re-using waste water" that indicate that water should not be discharged off site, unless treated to the discharge limits, this should be discussed with Department of Water Affairs.	Noted and included. Please note that under Section 9(5) the requirement for water quality is already included.
Clarity is needed when referring to buffer distances. There is no actual distance given and thus opens to interpretation, and potential conflict over interpretations. An actual distance should be prescribed to reduce any ambiguity.	Noted. International buffer zones are determined by the type of material being composted and range from 45m for Category 1 materials up to 500m on municipal solid waste sites with Category 3 materials.. According to the National Organic Waste Composting Strategy, buffers are determined in terms of the technology used for composting and the type of materials. These range from 60 -450m+. The recommendation for buffers is as follows: i. 60 – 150m for Category 1 & 2 materials; ii. 450m+ for Category 3 materials
In closing, GreenCape also wishes to thank your office for providing an opportunity to submit comments on the proposed draft national norms and standards. GreenCape supports the efforts to develop legislation to create an enabling environment for the access of waste for value add solution providers.	Thank you for your input.
Tshibalo, Rudzani – DOE (26 October 2017)	
Motivation Report – 2.8	
"the NGA does provide for the development of alternative gas sources"	Noted and so included.

According to the existing Gas Act, 2001 (No.48 of 2001), Gas means all hydrocarbon gases transported by pipeline, including natural gas, artificial gas, hydrogen rich gas, methane rich gas, synthetic gas, coal bed methane gas, liquefied natural gas, compressed natural as, re-gasified liquefied natural, liquefied petroleum gas or any combination.	
Motivation Report – 2.8	
"2.8(1) Production of gas" Please note that the Department of Energy and its Energy Regulator is responsible for the development of regulatory framework related only to the Midstream and Downstream Sector. The production of gas which falls under the "Upstream Sector" involves exploration for and exploitation of gas. Therefore, the Department of Energy focuses on the transportation of gas from the production area to the storage facilities, gas-fired power plants and lastly to the ultimate consumers (i.e. domestic, wholesalers, factories etc.). The Department of Mineral Resources (DMR) therefore, has a jurisdiction over the production of "natural" gas which falls under the Mineral and Petroleum Resources Development Act (MPRDA). Hence, the mandate of Petroleum Agency of South Africa is to regulate the exploration and production of oil and gas in South Africa as per MPRDA. However, According to the existing Gas Act, Section 28(1) which deals with the REGISTRATION with GAS REGULATOR, an owner of an operation involving any of the following activities must register the operation with the Energy (Gas) Regulator: a. The production or importation of gas, or b. an activity referred to in items 1 and 2 of Schedule 1. Furthermore, in terms of Piped-gas Regulations, regulation 9(1) and (2) provides for the information to be furnished to the Energy (Gas) Regulator and gives the time frames for furnishing such information. Lastly, the owner of biogas project is required to register with the National	Noted.

Regulator of South Africa (NERSA).	
Van Hoeve, Reneé - SAPPI (14 November 2017)	
Definition "Agro-processing"	
Pulp & Paper manufacturing would classify as agro-processing in this definition. Needs to be revised to include.	Whilst pulp and paper has not been excluded, as you point out it has also not been specifically included as an organic feedstock in terms of these Norms & Standards. There are some potential concerns related to the stream of manufactured products based on natural materials (i.e. use of chemicals etc.) which led to it not being included at this stage. The suggestion at this point is to bring this to the attention of DEA at the next round of discussions to determine the direction they would like to follow. It may be that, similar to the certified biodegradable bioplastics, pulp and paper waste that is certified free of chemical should be included.
Definition "Biodegradable"	
Theoretically incorrect. Pollution is the introduction of contaminants into the natural environment that cause adverse change. Biodegrable material can cause adverse change, therefore, pollution is not necessary avoided. Suggest removing "...and thereby avoiding pollution".	The definition of "biodegradable" has not been defined in NEM:WA, therefore, as is accepted, the Oxford English Dictionary definition is used (see above). In light of your comments, other sources were investigated and the definitions found include: **Merriam-Webster:** Capable of being broken down especially into innocuous products by the action of living things (such as microorganisms. **Cambridge Dictionary**: Able to decay naturally and in a way that is not harmful. **Macmillan Dictionary:** Biodegradable substances can be separated into very small parts by bacteria so that they are not harmful to the environment. **Business Dictionary**: Capable of being broken down (decomposed) rapidly by the action of microorganisms. Biodegradable substances include food scraps, cotton, wool, wood, human and animal waste, manufactured products based on natural materials (such as paper, and vegetable-oil based soaps). Conditions are important to encourage biodegradability. Products that will biodegrade in nature or in compost heaps may not biodegrade in landfills, where there's not enough bacteria, light and water to move the process along. Thus the treatment

	becomes important. Your concern is valid, but does not mean that the definition of the material should be amended. The issue here is not whether the material is biodegradable but what method or site of disposal takes place. Any overloading of nutrients on a system can eventually lead to pollution, but that does not change the fact that the biodegradability of a feedstock does lead to the breakdown of the material into innocuous / beneficial / more environmentally friendly components.
Definition "Biogas"	
"mixture are methane, 60%, which is the main component and a source of fuel; carbon dioxide, 36%" Is this true of all biogas irrespective of source?	It is the generally accepted ratio for biogas, obviously it does vary slightly depending on the type of feedstock materials that are used.
Definition "Compost"	
Compost is not fully decomposed... It continues to decompose after use/application.	Noted. There are various definitions and we agree that decomposition continues to an extent, the important part of the definition is that the material is "stable". At this stage, the definition is in line with that of the Draft Norms & Standards for Composting.
Definition "Composting"	
If the process is uncontrolled, would it them not qualify as composting? i.e. farmer moves large amount of bagasse to a heap as "disposal" and it decomposes naturally with him not implementing controls. Is this then not composting? What is the intent of the word "control"?	The use of the word "control" implies that active management of the compost takes place and it classifies as a treatment method as per the NEM:WA. The uncontrolled scenario you refer to is "composting" in the sense of decomposing, but without control the heap could become anaerobic and create a nuisance.
Definition "Organic fertiliser"	
"40g / kg prescribed nutrients". According to which prescription?	This definition comes from the Draft Norms & Standards for Composting and GN250 of 23 March 2007 (Fertilisers, Farm Feeds, Agricultural and Stock Remedies Act (36/1947): Regulations regarding fertilises). It is the minimum amount of nutrients required to classify an organic fertiliser as such in the Act.

Definition "Organics"	
""Organics" means both processed and unprocessed compostable" Not all organic waste is compostable, i.e. medical or abattoir wastes.	All biodegradable organic waste is compostable, i.e. it is able to decompose by means of bacterial action and this includes medical and abattoir waste. In fact abattoir waste in particular has a long history of being composted, or buried to denature and it is the basis of eco cemeteries. The concern is whether or not the material is potentially infectious, and even in that instance it is possible to use composting as a mechanism to destroy some viruses and pathogens. This has been very successfully undertaken in the Western Cape with the recent avian flu incidents. The birds were composted on hard surfaces, under roof and the results are very positive, and doing this avoided potential infection spreading whilst transport to another site. This same method is extensively used in the United States to treat bird flu infected poultry.
Definition "Renewable energy"	
"but will also include energy from the decomposition of organic material". And incineration/combustion?	Noted and included.
Purpose	
The revised draft exclusion regs will be promulgated for comment soon - this includes biomass and following a risk based approach. How does these N&S fit into this as industry specifically moved away from a N&S approach?	Once a waste type is excluded in these regulations, it will no longer be classified as waste and as such neither the NEM:WA nor these norms and standards will be applicable. This will obviously depend on what clauses / requirements the DEA puts into the exclusionary regulations. The issue here will be which set of documents the DEA puts into place first.
Applications 3(1)	
No longer applicable, refer newest regs	Noted and removed.
Applications 3(7)	
Assume you are referring to Cat 8 of AQA here. Not clear what the intent is	Category 8 in this context refers to any of the thermal treatment technologies that use

here as in practice same equipment might "treat" organic & organic waste. Also the provisions in AQA is quoted in context with EIA Regs. Redraft.	organic waste to produce biofuels, biogas etc. Agreed, it applies to both organic and inorganic, however it must be included to accommodate the technologies mentioned.
Feedstocks and Technologies 4(1)(a)	
"Any infectious animal waste or carcass classified as hazardous". Delete underlined	These norms & standards will not apply to any material deemed hazardous.
Minimum requirements for design and planning phase 5(1)(e)	
"Where the construction of the activity and associated infrastructure requires the removal of more than 300m² of Endangered or Critically Endangered vegetation". Align with EIA regs	The intent is that any construction activity that triggers this EIA activity, will have to go through an EIA process. It cannot be considered in terms of these norms and standards.
Minimum requirements for design and planning phase 5(2)(a)	
"a) A Standard Operating Protocol (SOP) as per Annexure 2." Rather Risk Assessment & Risk Management Plan	Noted, not amended.
General Requirements	
This section is somewhat nonsensical? Laws must be complied with irrespective of new law, unless certain sections/regulations are repealed. What is the specific point of listing laws?	These are existing standards and requirements that have an overlap with the technologies for treating organic waste. They are already in effect and applicable, and for the most part provide all the necessary standards needed for effective management of an organic waste facility. Therefore instead of repeating everything included in those standards, this document refers to them.
General Requirements 8(5)	
"The National Ambient Air Quality Standards published in terms of section 9(1) of the NEM:AQA 2004 may not be exceeded as a result of the treatment of organic waste at a facility contemplated in terms of these norms and standards"	That is correct.

I assume background level measurements may be taken to ascertain whether exceedences are "as a result of..."?	
Operational Monitoring, Auditing & Reporting 11(2)(d)	
"The registration application referred to in section 1 above must as a minimum include the following: (d) the size of the complete facility" Operational footprint and total size	Noted and included.
Operational Monitoring, Auditing & Reporting 11(9)	
"Internal audits detailing environmental performance of the facility must be conducted biannually and official reports thereof must be prepared." Annually	Noted. The requirement has been left at "bi-annual" to remain in line with other norms and standards auditing requirements.
Operational Monitoring, Auditing & Reporting 11(10)	
"External audits of the facility must be conducted annually by an independent auditor….." Biennial	Noted and so amended. This conforms with other norms and standards auditing requirements.
Transitional arrangements	
"…may continue with the activity for the duration as stipulated in the approval, authorisation or license and after the expiry of the approval, authorisation or license comply with the provisions of these standards." Note that some approvals don't have an expiry date	Noted and amended.
Annexure 2:	
Align with new draft waste exclusion regs to be released soon	Noted. These are not available so cannot currently align with such. This matter can be discussed with DEA during the next phase of review.

Annexure 3	
"Requirements" Minimise waste water/screening of sound with trees/restriction of operational hours/ cars with silencers – statements like these are very general, how is this relevant to the aerobic part in a STP as example. It can't be requirements, only guidelines.	These are management mitigation measures that have found to applicable across the board in ensuring improved environmental operation of facilities. As such they can be applied as a standard to address a particular impact.
Rather identify the aspect, activity, receptor, impact & mitigation	Noted.
Van der Merwe, Rupert - Probiokashi (16 November 2017)	
Aim of organic waste treatment	
Organic waste originates ultimately from the soil and ALL organic waste was recycled back to the soil in pre-industrialized rural human society. Nutrients found in the soil pass into plants and then animals. The plants and animals contain these soil nutrients, which are returned to the soil through their waste and death. The difference now is that the flow of these soil nutrients is from the agricultural areas where land is plentiful into cities where land is scarce. The waste products and mortalities of plants and animals are now concentrated in cities and this is leading to an unsustainable concentration of nutrients, resulting in pollution and a depletion of agricultural soil nutrient levels. The main nutrients in agriculture such as phosphates and potassium, which are required to replace these lost nutrients, are mined from limited resources and these resources are not endless. The need to recycle these specific nutrients is essential for long-term agricultural sustainability. The main aim of organic waste management should be the sustainable recycling of these soil nutrients back to the soil. Therefore the various strategies to achieve this aim should be evaluated according to the environmental sustainability and efficiency of nutrient recycling. The by-products of these strategies is energy, consumer products or animal feed and the benefit is reduced environmental pollution due to landfilling. These by-products may	This office completely agrees with your position the importance of nutrient recycling and the need to improve agricultural soil nutrient levels. The intent with this document is to emphasise waste management of organic material with energy being a product thereof, as opposed to energy generation with waste being merely a raw material. The fact that the NEM:WA is the primary Act in this, supports this approach. The term waste to energy is a catch phrase, agreed, but it does convey a strong message in a country where we have both a waste and an energy problem. The success globally in using materials designated as waste to produce energy is indisputable, and further supports conservation efforts in getting buy in from the public in terms of using less fossil fuels and supporting climate change policies. It offers an alternative to landfilling and provides an awareness to the generators of waste. Again, though the energy is merely a product of such treatment, and there remains material such as compost etc which is equally if not more valuable in some areas. This norms and standards aims to ensure that all the technologies and products are equally considered.

contribute to the economical sustainability of nutrient re-cycling strategies, but they should not be the main aim of the strategies. The use of wording such as waste-to-energy is misleading and has no scientific value, since it implies that waste is converted to energy rather than energy is extracted from waste. The former gives the impression that ALL (or at least the majority) of waste is converted to energy, which is not true, whilst the later indicates that during the process of managing waste, energy is extracted. In the past processes such as anaerobic digestion was simply "a" part of an organic waste management process. For example in wastewater treatment anaerobic digestion serves as a biological phosphate removal process and the energy extracted may, but not always, be used for further waste water treatment. Unfortunately their has been a lot of misinformation regarding the extraction of energy from waste and in many cases this is slowing down the aim of re-cycling nutrients from organic waste back to the soil.	
Concerns about the prescriptive nature of the regulations, listed activities and the resulting draft Norms and Standards	
The motivation report claims that it wants to avoid onerous and expensive licensing/permitting processes by prescribing treatment processes, which have similar environmental impacts, without providing sufficient evidence that these treatment processes actually have similar environmental impacts. The idea of listing treatment processes is well considered, but making prescriptions on their suitability (environmental and otherwise) and modus operandi should not be part of any regulatory document. This is even born out in the draft since despite the listing of the treatment processes there are still plenty of licensing/permitting requirements. Regulations and guidelines should only state the aims and objectives of any organic waste management strategy and clarify the requirements of such processes regarding meeting environmental standards with regard air, water, ground, noise and light pollution, health and safety requirements, social requirements, zoning requirements and quality control requirements such as ISO or industry	The norms and standards adopted an approach of identifying categories of treatment methods (mechanical, chemical, biological and thermal) and identify the most common available types within those categories. The reason for the categorisation is because technology changes constantly, and in the event that new mechanisms become available, and they can prove their applicability with these norms and standards and any other statutory standards, they can then be approved and registered in terms of these standards. The categorisation is aimed at being more "criteria" approved as opposed to "list" approved.

equivalent and the aim of recycling nutrients back to the soil in a safe and sustainable manor. Listing processes is a form of free promotion and removes the competitive need to drive efficiency through market forces. This is not the task of the state. The states task is to make sure the rules are obeyed but not manage who plays the game. This way of managing regulations reduces the ability of newer companies and innovation to enter the market since they have to prove that their processes can be accepted into the list of "approved processes" before they can enter the market. If the new player obeys the rules they should be allowed into the market immediately since the first rule of the market economy is that all are free to play. Regulations that are prescriptive and list "approved" methods are anti-competitive and are designed to keep newer players out of the game.	
Concerns about the bias in the motivation report and norms and standards towards the Bioenergy sector	
This motivational report and the draft norms and standards have been paid for by a foreign government organization whose stated aim is to promote their national business interests, specifically bioenergy. This is a glaring conflict of interest and cannot be overlooked. This conflict becomes more apparent in the bias with regards the task team profiles that are clearly weighted in expertise and number towards the bioenergy sector. Only one person in the task team of fourteen has any background in agricultural sciences, but is not a South African and has no stated experience in South African agriculture or soils. This person is also linked to the bioenergy sector. Altogether nine persons in the team are experts in bioenergy or bioenergy related fields. I cannot identify any person on the team with expertise in composting, a critical component of any organics waste management strategy. I cannot identify anyone on the team with experience in organic waste recycling in South Africa. This team is clearly biased towards the sponsor's interest in bioenergy and it shows in the motivational report and	GIZ has initiated the development of the norms and standards with the understanding that biogas forms a part of the treatment technology. As reflected in the report and in these responses, the original approach for this process was to identify select organic waste types associated with biogas technology only. In the preliminary discussions with the DEA, however, this office was instructed to consider the entire organic waste stream with multiple treatment technologies. In light of this, the GIZ, made the decision to fund this process as it will support their direction of supporting renewable energy, and at the same time enable other technologies aimed at organic waste treatment. The task team members come from varied backgrounds, with a wealth of experience in multiple fields. Your statement is incorrect regarding the South African experience. Furthermore, the task team were the heads of networks from whom they sourced information and other expertise.

draft norms and standards.	
2. Legislative Review	
No mention is made of the "Guidelines for Registration of Group 3 Fertilizers" (February, 2016) in the review. These guidelines are directly related to the recycling of organic waste since the ability to add value to such waste as soil amendments, which have effects other than plant nutritional effects, is critical to agricultural sustainability and the economic sustainability of recycling organic wastes. Group 3 fertilizers encompass fertilizers, which have effects on the soil and plant growth other than due to plant nutrients. Many products already on the market and many in waiting are Group 3 fertilizers derived from organic wastes. Most of these products available are from outside South Africa were organic waste recycling into value added agricultural inputs is well established. The South African industry is undeveloped and these regulations are contributing to slowing this development down. The current guidelines, also being prescriptive, are proving unworkable both for producers of such fertilizers and the regulators. If these guidelines receive no attention from the organic waste processing sector the ability to maximize value from organic waste other than selling as plant nutrients will be restricted and this will restrict the aim of diverting organic waste from landfill back to the soil.	The Motivation Report does refer to the Fertiliser, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) which is the primary Act that regulates fertilisers and organic fertilisers. Since this is the current legal requirement for organic fertilisers, any standards and requirements it contains are relevant and applicable as indicated in the reports. Your concerns regarding the regulations must be addressed to the competent authority, in this case the DAFF, who are mandated to enforce the regulations. These norms and standards cannot contravene current legal requirements and as such this issue cannot be dealt with in this process.
5. Organic Waste Streams and Feedstock	
The proposed definition of biodegradability is misleading since the biodegradation processes results in much more byproducts than mentioned and the bias towards bioenergy is clear. The constant reference to "waste-to-energy" in the motivational report is misleading and unscientific. The processes involved with extracting energy from waste mostly result in further waste and in many cases the resulting waste is more than 50% of the waste used for energy extraction. The term waste-to-energy gives the impression that All or at least the majority of the	We disagree with your statement regarding bias. See previous comments.

waste used is converted to energy. Also since waste is often a potential source of pollution since it consists of a high concentration of minerals the process of extracting energy from waste leads to an increasing concentration of the mineral pollutants. This is counteractive to the whole idea of reducing the pollution potential of organic wastes. There is a need to be a much more critical approach to the bioenergy sector as a solution to the pollution hazards of organic wastes. The sole emphasis throughout the report on how anaerobic digestion can be a solution for organic waste management problems without any critical evaluation and no equal coverage of other waste management strategies is a big concern. The use of a single source of information for this section in table 5 (Feedstock uses and problems and table 6 Organic waste categorization (Department of Environment and Conservation (NSW), 2004) is a concern as there is no opportunity to compare with other regions of the world especially regions with similar socioeconomic challenges we face in South Africa. Australia is very far from comparable to South Africa in this respect and the impacts of these accepted sources of information are not considered adequately.	
6. Technologies	
There is only one reference listed Schubert et al 2009 as a source of information regarding the technologies available for the processing of organic wastes. This is can not be regarded as adequate and again the socioeconomic reality of South Africa is not taken into account in this list of technologies which are clearly based on capital intensive low labour technologies popular in 1st world westernized economies. The use of organic wastes such as food wastes as animal feeds for instance is not even mentioned despite historically being the main management strategy in first world countries and still the main strategy in third world rural environments. The separation of microbial technologies into anaerobic and aerobic has no value apart from trying to separate and highlight “anaerobic digestion” within the microbial technologies. The microbial environment is much more dynamic	The categories of “aerobic” and “anaerobic” have been grouped into a single category “Biological”. The norms and standards adopted an approach of identifying categories of treatment methods (mechanical, chemical, biological and thermal) and identify the most common available types within those categories. The reason for the categorisation is because technology changes constantly, and in the event that new mechanisms become available, and they can prove their applicability with these norms and standards and any other statutory standards, they can then be approved and registered in terms of these standards.

than the simplistic classification of anaerobic or aerobic. There is no clear physical separation line and many microbial technologies rely equally on oxygen and the lack thereof for their functionality. Activated sludge wastewater treatment, which is our main organic waste treatment process, uses both anaerobic and aerobic conditions often in the same locality to treat the organic fraction of wastewater. Another patented process described in the link below https://www.dropbox.com/s/fjrpixszmhyx3v3/Energy%20and%20retention%20and%20water%20manufacture%20process%20for%20the%20conversion%20of%20organic%20matters%20w hich%20fosters%20carbon%20sequestration.pdf?dl=0), involves both anaerobic and aerobic stages, is called the Groundswell continuous fermentation process. Please find an exhaustive study on the use of this process to manage municipal solid waste and garden refuse in Australian municipalities. https://www.dropbox.com/sh/qy3hkeqnm1n94f1/AAAQ1rcdeuZXujNCJQ2ZSymLa?dl=0 The Groundswell process was developed in Australia. This composting process involves a combination of anaerobic and aerobic phases for the efficient conversion of organic wastes to humic substances for soil conditioning.	
6.3. Anaerobic	
Only referring to anaerobic digestion within the category anaerobic digestion is also clearly a further bias of the report towards methanogen anaerobic digestion. There are many “anaerobic” organic waste treatment processes other than methanogen anaerobic digestion. These include dark-fermentation, lacto-fermentation, photo-bioreactors and photosynthetic sludge reactors. • Lacto-fermentation- involves the use of lactic acid bacteria and yeast in the	The categories of “aerobic” and “anaerobic” have been grouped into a single category “Biological”. The norms and standards adopted an approach of identifying categories of treatment methods (mechanical, chemical, biological and thermal) and identify the most common available types within those categories. The reason for the categorisation is because technology changes constantly, and in the event that new mechanisms become available, and they can prove their applicability with these norms and standards and any other statutory standards, they can then be approved and registered in terms of

fermentation of organic wastes. (e.g. silage , bokashi composting) o Bokashi composting ranges from completely anaerobic to fully aerobic methods of treating organic wastes and has become a popular method of managing food waste especially due to its ability to deal with the putrescible nature of food waste. § Please find a link below to various supporting documents on the use of bokashi food waste compositing. https://www.dropbox.com/sh/cvkohwh9pqua4lr/AAAWUdVtUCsmk38yt7bluHaXa?dl=0 § The use of bokashi food waste management was part of a local masters student project to understand the social impacts of such a system of food waste management on the informal settlement environment. https://www.dropbox.com/s/2no8rf7l3xynt8y/Pilot%20Project%20Report%202012.pdf?dl=0 § The use of bokashi composting as a pre-treatment of food waste for anaerobic digestion has also been research in South Africa. See links below. https://www.dropbox.com/s/tbrjmmyudufkbqx/effect%20of%20Bokashi%20treatment%20on%20AD%20of%20foodwaste.pdf?dl=0 https://www.dropbox.com/s/4lrriuuflhvlfk8/Treatment%20of%20vegetable%20waste%20with%20SCD%20Probiotics.pdf?dl=0 § The use of bokashi as a fertilizer has also been well researched https://www.dropbox.com/sh/d2vr4f94655c38s/AACFKPZpOqeNuLTSZyFeN42a?dl=0) • Photo-bioreactors – involves the use of photosynthetic microbes for the production of single celled protein from organic wastes o An Australian company has also patented a process which uses these reactions to convert food waste into liquid bio-fertilizers https://www.dropbox.com/s/0fppv2lazi1tk7n/Waste%20and%20Organic%20	these standards. I have been in communication with another person regarding the bokashi fermentation, and the consensus is that it falls into the wider category of “composting”. I will in the report under the composting section include a description and discussion on bokashi so that it is clear that it is included. Thank you for providing the links. We are aware that there are many different types of technologies that use anaerobic digestion as a basis, however, for the purpose of these norms and standards, reference was made to the most common available technologies available that have proven track records to which standards can be applied.

Matter%20Conversion%20Process%202012283757.pdf?dl=0 • Photo-synthetic sludge reactors – involves the use of photosynthetic microbes for the treatment of the organic fraction of waste water. Dark-fermentation – involves the use of photosynthetic bacteria for production of hydrogen as a source of energy from organic wastes Please find literature review on the use of photosynthetic microbes in organic waste management https://www.dropbox.com/s/rh7nx2gi2o29qps/Purple%20Non%20Sulphur%20Bacteria%20Summary_References.pdf?dl=0	
6.4. Aerobic **6.4.1 Aerobic digestion**	
The description of aerobic digestion in table 10 is inaccurate in a few respects. The process can and is being used for ALL organic wastes including food waste (municipal solid waste) and abattoir waste. The restricted description of the inputs for this process away from food waste and abattoir waste is clearly designed to bias anaerobic digestion as the process of choice for these wastes. The pathogen reduction process in composting is not entirely due to heat and can be equally subscribed to microbial competitive exclusion by beneficial microbes and other forms of inter action between beneficial composting organisms and pathogens such as predatory behavior. In fact heat can lead to more pathogens if the heat is excessive and the beneficial microbes are eliminated in the heat since pathogen swill re-colonize the sterile organic matter faster than beneficial microbes. The description of aerobic digestion in the written paragraph refers to the activated sludge process, which is neither an aerobic nor anaerobic process, but a combination of the two. The BNR process especially depends on both anaerobic and aerobic digestion for phosphate and nitrate removal. The addition of composting toilets as an “aerobic digestion” process is also inaccurate as many composting toilets are not based on aerobic processes but on anaerobic processes such as the terrapreta sanitation	Noted. We are aware that there are many different types of technologies that use aerobic digestion as a basis, however, for the purpose of these norms and standards, reference was made to the most common available technologies available that have proven track records to which standards can be applied.

(https://www.sswm.info/content/terra-pretasanitation-0), which relies on lacto-fermentation.	
6.4.2 Composting	
The description of composting, as a controlled process in the table 10 is contradictory to the written paragraph was it is described as a "naturally occurring process". The description of the composting process is also too prescriptive as there are many different methods (windrow composting, passively aerated windrows, forced aeration, static piles, enclosed, or in-vessel, composting and vermicomposting) of composting. Many methods of composting require no active/controlled aeration. The Groundswell process for example requires both an anaerobic phase and an aerobic phase which does not involve active aeration. Despite the description that pathogen management includes the "action of antibiotics produced by microorganisms" there is an over emphasis on the requirement of heat to inactive pathogens. This is further emphasized in the statement that if feedstock "may be considered infectious" that pasteurization or similar destruction mechanisms are essential. The use of microbes to manage pathogen has progressed sufficiently to discount the prescriptive nature of the above statement. Various methods (lacto-fermentation or dark fermentation) other than thermophilic treatment and/or pasteurization can eliminate pathogens. The prescription of only thermophilic and/or pasteurization to manage infectious is not useful and the requirement should be only to the demonstration that the end product is pathogen free. Under the benefits of using compost there is copy and paste items from black soldier fly benefits, which are not applicable to composting. Under challenges as explained above there are many composting processes, which do not require active aeration, and if certain microbes are introduced into the composting process no methane will be produced even if conditions go anaerobic for some time (see section 6.3 for further details). *See table of benefits of bokashi in the original comment.*	We are aware that there are many different methods that make up composting and each of these have the same impacts that can be managed in similar fashion. This includes the use of bokashi.

7. Environmental Impacts	
As mentioned above there are organic waste management processes such as bokashi composting, photo bioreactors, photosynthetic sludge bioreactors, dark-fermentation and groundswell process all of which use photosynthetic microbes and they do not result in unpleasant odours, gas emissions (methane, hydrogen sulphide, nitrous oxide) or leachates. Therefore many of the potential mitigation measure listed in Table 15 do not apply to these processes. The inclusion of category 2 and 3 organics into these processes does not require enclosed storage and processing facilities. The limitation on storage period of Category 1, 2 and 3 organics do not apply to many of these processes if they are first treated through the bokashi composting process since this process converts these types of organics into material that can be stored indefinitely. *See table 16 attached for benefits of bokashi as proposed in original comment.*	Noted. The norms and standards adopted an approach of identifying categories of treatment methods (mechanical, chemical, biological and thermal) and identify the most common available types within those categories. The reason for the categorisation is because technology changes constantly, and in the event that new mechanisms become available, and they can prove their applicability with these norms and standards and any other statutory standards, they can then be approved and registered in terms of these standards.
8. Mitigation and Management	
See table 20 for benefits of bokashi as proposed in original comment.	Noted.
4. Feedstocks and Technologies	
See attached table for benefits of bokashi as proposed in original comment.	Noted.
8. General requirements	
No mention of Class 3 fertilizer requirements on organic fertilizer requirements.	The statutory regulations for the Fertiliser, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947) is reflected.
Annexure 1: Organic Waste Treatment Technologies	
See attached table for benefits of bokashi as proposed in original comment.	Noted.

4. CONCLUSION

The Motivation Report with the proposed norms and standards was made available in an initial public participation process from 16 October to 16 November 2017. This 30 day period was agreed to by the Department of Environmental Affairs (DEA) in order to obtain industry / stakeholder input prior to the submission of the Motivation Report to the DEA for consideration.

Once the DEA has reviewed the documentation, further consultations / workshops will be initiated by them, and another public participation period will be gazetted.

During the initial public participation period, several comments were submitted in writing which have been collated into this report.

The overall response to the documentation has been supportive and constructive. It is hoped that with further input from the DEA, these norms and standards can be focussed into an effective and sustainable tool for the management of organic waste material.