Before Hawkes Bay Regional Council and Hastings District Council

In the matter of	the Resource Management Act 1991
And	
In the matter of	Application by Te Mata Mushroom Company Ltd (**TMM**) to Hawkes Bay Regional Council (**HBRC**) to discharge contaminants into air from a composting and mushroom growing operation at 174 – 176 Brookvale Road, Havelock North (**air discharge application**)
And	
In the matter of	Application by TMM to Hastings District Council (**HDC**) to increase production of mushrooms from 25 tonnes per week to 100 tonnes per week, including increased compost production, extending existing and constructing new buildings and retrospective consent for an oxidation pond at 174 – 176 Brookvale Road, Havelock North (**land use application**).

Evidence of Jenny Simpson for Hastings District Council as Submitter
Air Quality

Dated 24 July 2019

INTRODUCTION

1. My full name is Jennifer Mary (Jenny) Simpson. I am a Technical Director in Environmental Engineering at Tonkin & Taylor Limited. I hold the qualifications of Bachelor of Engineering (Chemical and Materials) and a Diploma in Environmental Management, both from the University of Auckland. I have worked as an environmental engineer at Tonkin & Taylor for over 20 years and, prior to that, I was employed in the agrichemical and specialty chemicals industry. I am an accredited Independent RMA Commissioner and am the immediate past-president of the New Zealand Branch of the Clean Air Society of Australia and New Zealand. I have also recently been appointed as special advisor to the Environment Court (under S 259 of the RMA) on air quality matters.

2. I have undertaken numerous assessments of effects of odour discharges, including from landfills and other waste activities, composting, intensive farming and industrial sources. I am familiar with mushroom farming activities and the nature of odour emissions from production of mushroom compost and mushroom growing.

3. I have been engaged by HDC to provide air quality advice in relation to their submission on the air discharge consent application by TMM to the HBRC.

4. At the time of writing this evidence I have not been onto the TMM site, but I have driven around the site, most recently on 1 July 2019, to familiarise myself with the surrounding environment. I intend to undertake a site visit on 31 July 2019, prior to the Council hearing.

CODE OF CONDUCT

5. I confirm that I have read the 'Expert Witnesses Code of Conduct' contained in the Environment Court of New Zealand Practice Note 2014. My evidence has been prepared in compliance with that Code in the same way as I would if giving evidence in the Environment Court. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

SCOPE OF EVIDENCE

6. My evidence will address the following:

   (a) The matters I understand to still be in disagreement relating to the proposed odour mitigation;

   (b) The likely effectiveness of the proposed extended eaves and extraction system on the Phase 1 bunkers;

   (c) A brief comment on the risk posed by emissions of bioaerosols, as this was raised by the panel in their Direction No. 2;

   (d) The proposed staging of odour mitigation and increases in production;

   (e) The likely odour effects in the intervening period until all mitigation is implemented; and

   (f) The odour monitoring conditions suggested in the HBRC Officer's Report

7. I prepared a report, dated 12 June 2017, reviewing the odour assessment prepared by Air Quality Professionals Pty Ltd to support TMM's resource consent application to HBRC. The key issues identified in my review were (in summary):

   (a) The proposed linkage between improvements to odour control and increases in production, which could have meant that some improvements would never be implemented because production did not exceed a certain threshold. This issue has been addressed because the applicant now proposes fixed timing for implementation of odour controls; and

   (b) The absence of a FIDOL assessment of the current level of odour effects, or an overall judgement as to whether the effects are likely to be offensive or objectionable after the proposed controls are implemented.

8. Based on my understanding of activities at the TMM site and observations at other mushroom growing operations (most recently Meadow Mushrooms in Canterbury), I am generally in agreement with Ms Freeman's identification of the activities with the greatest potential for offsite odour impacts, as being (in order of importance and excluding activities with a low potential):

(a) Transfer of compost from Phase 1 bunkers into Phase 2 tunnel (High)

(b) First and second turning of compost in Phase 1 bunkers (Moderate – High)

(c) Laying out bales then breaking, mixing and placing into bunker (Moderate)

(d) Bale wetting (Low-Moderate)

(e) Phase 2 composting (Low-Moderate)

MATTERS IN DISAGREEMENT

9. I participated in expert conferencing and the preparation of a Joint Witness Statement, dated 21 May 2019. There was agreement amongst the parties on most of the matters discussed. In particular, it was agreed that modification to the methods for bunker-to-bunker transfers and bunker-to-Phase 2 transfers were the highest priority for odour mitigation. Attachment A of Ms Freeman's evidence shows a flow chart of the applicant's current proposed timing of mitigation (Steps 1 to 4), which is modified from the original application. Step 1 (installation of extended eaves and extraction on both ends of the Phase 1 bunkers) and Step 2 (construction of the new Phase 2 transfer building) are intended to address the highest priority odour sources (activities (a) and (b) above). There is general agreement that these modifications will reduce the risk of offensive or objectionable odours from the site compared to the current situation.

10. Step 3 of the odour mitigation is the installation of the bale breaking machine and semi-enclosed blending line, which addresses odour from activity (c).

11. Step 4 is the construction of a third Phase 1 bunker. I understand from Mr Drury's evidence that this is no longer proposed as an odour mitigation measure, but would be installed if required to physically enable increased production.

Bale breaking

12. The main area of disagreement in the conferencing was the relative importance of bale breaking as an odour source and whether it was appropriate that a bale breaking machine would not be installed until after production had increased to 200 tonnes per week (which was the applicant's proposal at the time).

13. I understand that having reviewed the more recent odour complaints records, Ms Freeman considers they generally show the number of complaints on a Thursday (when bale breaking is carried out) is still lower, compared to a Tuesday or Friday. In my opinion, this supports the hierarchy of odour sources set out at paragraph 8. However it does not show that bale breaking is not significant as a contributor to offsite odour (and I don't think Ms Freeman is saying that either). Therefore any difference in opinion relates only to the likely significance of odour effects in the period between implementation of Step 2 and Step 3 controls (a period of about a year). There does not appear to be any disagreement that the bale breaking machine should be installed as soon as possible, which the applicant considers to be 30 months.

14. From the available information, it is not possible to quantify the reduction in odour effects that will occur as a result of the first two stages of mitigation. However, I agree with Ms Freeman that the risk of offensive or objectionable odours will reduce. I consider that the level of complaints on a Thursday suggests that there is an ongoing risk of offensive or objectionable odours in the intervening period after Steps 1 and 2 have been completed and before the bale breaking machine is installed.

Third Phase 1 bunker

15. Another area of disagreement (not discussed in the conferencing) is the need for a third Phase 1 bunker. As outlined in paragraph 34 of Mr Curtis' evidence, a third bunker would avoid the need to transfer Phase 1 compost via loader, in the open air, to the western end of the split bunkers. The amended conditions in Mr Drury's evidence show that the applicant is not proposing to install a third Phase 1 bunker, but will install extended eaves and extraction on the western end of the bunker to control odour from the outside transfer operations.

16. Phase 1 compost transfer processes have a high potential to generate odour and, in my opinion, any measures to reduce the time that Phase 1 compost is outside will reduce the potential for offsite odours. I also note that the western end of the bunker is closest to residential neighbours, so it would be desirable to avoid openings on this end of the bunker. While the proposed extension of eaves and

extraction will be partially effective at capturing odours, it will not be as effective as keeping transfer activities within the building.

EFFECTIVENESS OF EXTENDED EAVES AND EXTRACTION SYSTEM

17. Extended eaves and extraction are proposed by the Applicant on both ends of the Phase 1 bunkers. As discussed earlier, this will only be needed on the eastern end if a third Phase 1 bunker is constructed. A preliminary design report for the extraction system has been prepared by Armatec (5 July 2019).

18. The detailed design of extraction systems is not within my area of expertise. However, in reading the Armatec preliminary design report I noted that the basis for the design was the extraction rate shown to be effective in controlling odour within the bunkers while the door was closed, and the air blowers turned on. The design provides for dampers to increase air extraction at certain points when the doors are open. The preliminary design report raises two questions for me:

    (a) Whether the face velocity at the openings will be high enough to overcome the turbulence caused by moving equipment (given this was not the basis for the design); and

    (b) The extent to which the damper system will rely on manual adjustments to be made each time the doors are opened (which increases the risk of adjustments not being made and odour control efficiency being reduced).

19. In the event that the face velocity will not be sufficiently high and/or manual adjustments are required, I consider there would be a risk of the extraction being less effective than anticipated by the applicant. It would be useful to have further information from the applicant on these matters.

BIOAEROSOLS INCLUDING LEGIONELLA

20. Composting can generate bioaerosols which contain a range of micro-organisms, including Legionella bacteria. Bioaerosols are more likely to be emitted when compost is disturbed (i.e. turned or transferred). Where these activities occur outdoors, there is the potential for wind entrainment and transport off-site.

21. The rate of emission of bioaerosols from composting is a function of the quantity of compost and the extent to which activities are controlled (e.g. using water sprays) or undertaken indoors. The composting activities at the TMM site are relatively small on a commercial scale, compared to large scale windrow composting of greenwaste. For example, the UK Environment Agency's 2010 position statement[1] required a site-specific bioaerosol risk assessment (SSBRA) for existing composting facilities that handled more than 500 tonnes of waste at any one time and carried out composting operations in the open (such as windrow turning). In comparison, the TMM facility currently produces 120 tonnes per week (TPW) of compost. Once the spent compost stockpile has been moved indoors, the amount of compost that would be outdoors at any time is unlikely to approach 500 tonnes.

22. I do note however that the Environment Agency's most recent guidance[2] does not include the tonnage limit and requires a SSBRA for all composting activities within 250 m of a sensitive receiver. The SSBRA is a qualitative assessment that focuses on emissions of total bacteria and Aspergillus fumigatus (not Legionella). There are sensitive receivers (dwellings) within 250 m of the TMM site.

23. Taking into account the relatively small scale of activities at TMM, that storage of spent compost is being moved indoors and the small amount of time that Phase 1 material is outside, I consider the risk of effects of effects of bioaerosol emissions is low. However, for completeness, the applicant could use the SSBRA to characterise the level of risk associated with bioaerosols from the TMM site.

STAGING OF MITIGATION AND PRODUCTION INCREASES

24. I do not think there is any disagreement that the current level of odour effects of the TMM site is unacceptable, and has been unacceptable for many years. The necessary odour control upgrades to reduce the risk of offensive or objectionable odours are well-defined and I consider these to represent the Best Practicable Option for the particular circumstances of the site (with the exception of the need for a third Phase 1 bunker). The remaining issues are therefore related to timing,

[1] http://www.organics-recycling.org.uk/uploads/article1822/Composting_ &_bioaerosols_position_ statement__fina_2010l%5B1%5D.pdf

[2] https://www.gov.uk/government/publications/bioaerosol-monitoring-at-regulated-facilities-use-of-m9-rps-209/bioaerosol-monitoring-at-regulated-facilities-use-of-m9-rps-209

the appropriateness of the consent holder increasing production prior to all of the controls being fully implemented, and the broader issue of the appropriateness of granting a resource consent that permits offensive or objectionable effects for a period of time.

Timing

25. On the matter of timing, I understand all of the parties to be in agreement that odour control measures should be implemented "as soon as possible". The panel will need to be satisfied with the applicant's justifications as to the time required for implementation. Although I am surprised it would take 30 months to procure and install a bale breaking machine, I do not have direct experience with purchasing equipment offshore that would allow me to dispute this or propose an alternative timeframe.

Increases in production

26. The applicant proposes increases in production limits after implementation of Step 1 (120 TPW to 160 TPW), and again after implementation of Step 3 (160 TPW to 200 TPW). In my view the proposal to increase production after Step 1 needs to be considered in the context of the lack of certainty about the effectiveness of each stage of proposed odour mitigation at reducing overall odour effects of the site. The effectiveness of mitigation will be subject to detailed design (such as the face velocity and need for manual adjustments that I discussed in paragraph 19) and construction and will need to be proven in practice.

27. I consider the consenting framework should reflect a staged approach of baseline field odour monitoring and further field monitoring after each stage of controls is implemented to demonstrate its effectiveness. I do not consider that increases in production should be contemplated until after Step 3 (the final stage of odour mitigation, i.e. the bale breaking machine) has been completed <u>and</u> it has been demonstrated through field odour monitoring that the site is not giving rise to offensive and objectionable odours.

ONGOING ODOUR EFFECTS

28. The conditions suggested by Mr Drury outline a framework that would permit offensive or objectionable effects of odours until after all the proposed odour mitigation is commissioned. I consider these conditions proposed reflect the reality of the applicant's proposal, i.e. that there will continue to be offensive or objectionable effects of odour for a period of 31 months. It is a matter for the panel to determine whether this is appropriate in the circumstances of this particular application.

29. I am aware of one precedent for this type of approach, being the Gelita NZ Limited gelatine plant in Christchurch (consent CRC144081). I am not familiar with the specific details surrounding the granting of that consent or their relevance to this application.

30. Even if the panel were of a mind to grant a consent on this basis, we must then turn to the possibility that the effects of odour are still not fully controlled after all the currently identified mitigation is in place. While I believe the risk of this occurring is relatively low, it was acknowledged by all of the experts at conferencing that we cannot be certain that the proposed mitigation measures would control odours to the level where there was no residual risk of an offensive or objectionable effect. For this reason, I consider it is important that, if consent is granted, the conditions clearly set out the processes for confirming compliance with the odour limit condition to provide certainty to both the applicant and the community.

CONDITIONS

31. The HBRC Officer's Report includes a set of suggested consent conditions for the Panel's consideration, if it is of a mind to grant consent. I will not go through these in detail, but I will comment on the suggested odour monitoring conditions (37 to 41) given their importance in relation to enforcement of compliance with the odour limit condition.

Odour monitoring

32. The frequency of proactive monitoring (weekly) and complaint response times set out in proposed conditions 37 and 38 seem reasonable. These conditions provide clarity to the community about how complaints will be managed.

33. I am aware of several resource consents that include a requirement for regular odour monitoring (field odour observations) to verify the performance of a site's odour control measures, for example, PVL Proteins (a rendering plant) and the Redvale Landfill, both in the Auckland region. In both these examples the monitoring is for management purposes, i.e. to proactively identify odour sources and continuously improve odour controls. The person carrying out the odour survey works collaboratively with site staff as part of the overall odour management processes. On this basis there are no special qualifications required to undertake the odour field observations. The main requirement is that the person is demonstrated to not be particularly over- or under-sensitive to odour when compared to the normal distribution of the population.

34. The proposed conditions in the Officer's Report are more specifically related to odour monitoring for the purposes of confirming compliance with the odour limit conditions, i.e. the need to make a determination as to whether odours relating to complaints constitute an offensive or objectionable effect. This would require a more specialist skillset, as presumably this person would be required to give evidence in Court in the event of enforcement action being necessary.

35. In my view, there are three potential problems with the proposed approach, being:
    a. Perceptions of the independence of a person engaged by the consent holder to undertake monitoring for compliance purposes. This is a legal question that is outside my expertise, but I would be concerned if it undermined the effectiveness of enforcement proceedings;

    b. Whether the conditions seek to impose requirements on a third party. In particular, the need for the consent holder to "ensure" that the independent person is available to assess odour complaints within 60 minutes. If this timeframe is not met, then the consent holder could be considered in breach of the conditions (notwithstanding the reference to "as far as practicable"); and

c. The ability of a vexatious complainant to incur substantial costs to the consent holder. In fairness to a consent holder, I consider there should be a process to manage this situation if it arose.

36. An alternative approach that might avoid these issues would be for the Council to engage the contractor. The conditions of consent could still set out the scope of odour monitoring and complaint response, and require the consent holder to provide access to the site and pay the costs. I believe this would still achieve the intended outcome of providing clarity and certainty around compliance monitoring and complaint response processes. However, I also acknowledge that the majority of Mr Drury's concerns about these conditions (at paragraph 37 of his evidence) relate to the cost to the consent holder. Therefore, the ability to negotiate rates and terms may be a practical reason for the consent holder to engage the odour monitoring contractor directly (subject to the concerns I noted previously).

CONCLUSIONS

37. In summary:

a. In my opinion, the current odour effects of the TMM site are unacceptable. I consider the proposed upgrades (described as Step 1, 2 and 3 in Ms Freeman's evidence), will reduce odour emissions from the most significant sources of odour at the site. I consider odour control would be further improved by the construction of a third Stage 3 bunker which would enable enclose of the western end of the bunkers;

b. The applicant has proposed timing that it considers represents the earliest time that odour control improvements can be implemented. Although I consider that odour effects should begin to reduce after 12 months, offensive and objectionable odours will continue to occur for 31 months after consent is granted;

c. I do not consider that increases in production should be contemplated until after Step 3 (the final stage of odour mitigation, i.e. the bale breaking machine) has been completed <u>and</u> it has been demonstrated through field odour monitoring that the site is not giving rise to offensive and objectionable odours; and

d. There remains a risk, albeit low, that the proposed mitigation will not fully control odours to the extent that offensive and objectionable effects of odour are avoided even after the proposed additional controls are implemented.

Jennifer Simpson