

Applicant: Te Mata Mushrooms Limited

Consent Number: DP100128A

Consent Type: Discharge of contaminants into the air from a composting and mushroom growing operation, and associated activities.

Activity Type: Discretionary

Notification Type: Publicly Notified

Property Address: 174 – 176 Brookvale Road

1. DESCRIPTION OF THE ACTIVITY

- 1.1 Resource consent application DP100128A has been made by Te Mata Mushrooms Ltd (TMML) to authorise the discharge of contaminants into the air from a composting and mushroom growing operation, and associated activities. The site of discharge is legally described as Lot 1 & 2 DP16311 and Lot 2 DP7771 and the applicant's property is situated at 174 – 176 Brookvale Road, Havelock North. Lot 3 DP28543 is leased by the applicant from the Hastings District Council and is used by the applicant to store spent mushroom compost.

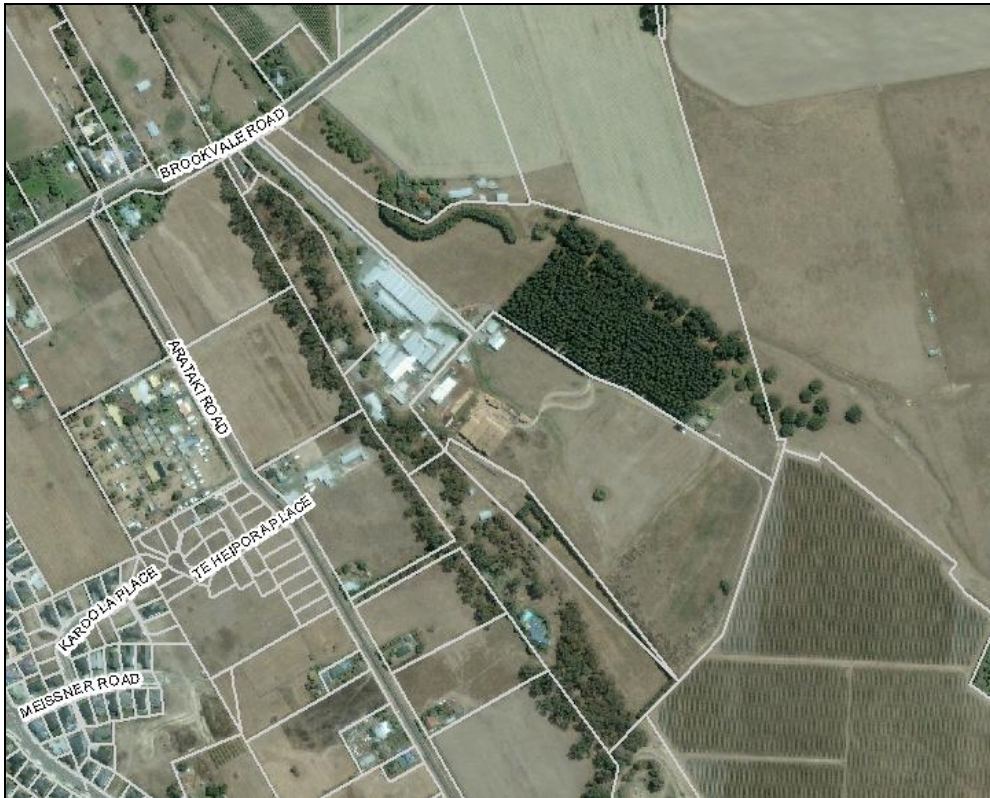


Figure 1: Location of Te Mata Mushrooms Ltd – 174-176 Brookvale Road Havelock North

Background

- 1.2 The Council received an application for the discharge of contaminants to air from a composting and mushroom growing operation, and associated activities on 26 February 2010. An application was also received to discharge contaminants from a composting operation onto land (DP100129L).
- 1.3 The applicant's previous consents, P980233A and DP000711La, expired on May 31 2010. Because the applications for the new consents were received within three months of the expiry of the existing consents, the applicant has been able, with the permission of the Hawke's Bay Regional Council, to continue the activities under s 124 of the Resource Management Act, 1991 (RMA).
- 1.4 Resource consent application DP100129L was processed on a non-notified basis and was granted on 30 November 2010. Therefore, it is only resource consent application DP100128A that is considered in this report.

Nature of the Activity

- 1.5 Te Mata Mushrooms Limited was established in 1967 and is currently managed by the sons of the founding directors. It employs 120 people and grows a range of different types of mushrooms which are sold in supermarkets and other outlets across the North Island.

- 1.6 The discharges to air, for which consent is sought, arise from the activities associated with the manufacture, transfer and storage of mushroom compost, the mushroom growing operation and the storage and disposal off-site of spent compost. The 'associated activities' the air discharge consent refers to include the above activities, and the discharge of contaminants to air arising from the management of the wastewater/leachate, which is generated on site and is discharged to land via a travelling irrigator.
- 1.7 In terms of the nature of the discharges to air arising from these activities, the principal concern is contaminants that are released into the atmosphere in sufficient concentration (which can be very low) that they are detected by some people as odour. In the case of TMML there is also likely to be some small amount of dust and fine particulate matter discharged, as well as aerosols arising from the discharge of wastewater to land. The main focus of this report relates to the discharge of odour to the environment, as any adverse effects of the other contaminants discharged are likely to be very minor and possibly below the permitted baseline in a rural environment.

Compost Manufacture and Mushroom Production

- 1.8 There are four main phases to mushroom production. Phase 1 is the production of a suitable compost media on which to grow the mushrooms, and Phase 2 is the pasteurisation of the mushroom compost. During Phase 3 the compost is placed in trays, inoculated with spawn and stored for up to 17 days. Peat and lime are then added and the trays are placed in growing rooms for Phase 4, where the actual mushroom production takes place.

Phase 1 and 2: The Manufacture and Pasteurisation of Compost

- 1.9 The manufacture of compost is undertaken at the site and is an essential component of the mushroom growing process. The raw material for compost is straw, chicken litter (a waste product from poultry farms, used to provide a source of nitrogen) and gypsum (calcium sulphate dihydrate, used to control pH of the compost and neutralise ammonia). Phase 1 is a high-temperature chemical reaction process that completes the active fermentation of soluble carbohydrates. Phase 2 composting is the low-temperature microbial process, further decomposing the Phase 1 bulk ingredients into lipids and proteins suitable for mushroom consumption.
- 1.10 The baled straw is initially stockpiled on a gravel pad on the property until it is required. The bulk chicken litter, which is dry, is kept in a three-sided, roofed concrete bunker. Gypsum is mixed with the chicken litter and stored, until it is required, in a bunker adjacent to the bulk chicken litter.

- 1.11 The applicant advises that approximately 120 tonnes of compost is produced each week. Compost is processed in two parallel batches at any one time and the timeline of the processing of each batch is shown in Table 1.

Table 1 Processing Timeline – Compost Manufacture at Te Mata Mushrooms Limited

Week 1	Thursday	Straw Bales laid out on concrete pad
	Friday	
	Saturday	
	Sunday	
	Monday	Bales wet with effluent for approximately 30 hours (less if the weather is hot)
	Tuesday	
	Wednesday	
Week 2	Thursday	Chicken litter and gypsum placed on top of bales. Bales turned twice and put into covered concrete bunker "Phase 1".
	Friday	Compost in Phase 1 bunker.
	Saturday	
	Sunday	
	Monday	Compost removed from bunker and mixed. Returned to bunker.
	Tuesday	Compost in Phase 1 bunker.
	Wednesday	
Week 3	Thursday	Compost removed from bunker and mixed. Returned to bunker.
	Friday	
	Saturday	
	Sunday	Compost in Phase 1 bunker.
	Monday	
	Tuesday	Half of compost removed from bunker. Compost is turned and extra water is added if necessary. Compost is put into "Phase 2" bunker and is pasteurised.
	Wednesday	Second half of compost is removed from the "Phase 1" bunker, turned and wetted, and put into a second "Phase 2" bunker.
Week 4	Thursday	Compost in Phase 2 bunker.
	Friday	
	Saturday	
	Sunday	
	Monday	
	Tuesday	Remove pasteurised compost from "Phase 2" using front-end loader. Processed into mushroom trays.
	Wednesday	Remove pasteurised compost from "Phase 2". Processed into mushroom trays.

- 1.12 Te Mata Mushrooms Limited has two Phase 1 bunkers which are emptied and filled on alternate weeks. The bunkers have a concrete floor, two concrete walls and an insulated panel roof. The end openings are enclosed with heavy tarpaulins. Recessed lines in the floor of the two Phase 1 bunkers collect leachate, which is drained to the leachate sump, and allow air to be blown through the composting material to maintain aerobic conditions. Probes inserted into the compost measure the temperature and oxygen content of the compost. Air from the Phase 1 bunkers is ducted through the top of each bunker to a bark biofilter for the control of odour.
- 1.13 The Phase 2 bunkers also consist of a concrete floor, walls and roof. Probes are inserted into the compost to measure temperature and oxygen content. During Phase 2 air in the bunker is either re-circulated or passively vented to the atmosphere. During the filling of both the Phase 1 and Phase 2 bunkers the ends of the bunkers are open to the atmosphere.
- 1.14 Leachate and stormwater derived from the composting area is collected in a sump, screened and then conveyed to an aerated sump. It is then continuously circulated between this sump and the storage pond, which is not currently aerated. The liquid contained in the pond and sump is used to wet the bales, and any excess is irrigated to paddocks on the applicant's property via a travelling irrigator. This is regulated by a separate consent.

Phase 3 and 4: Spawn Inoculation and Mushroom Growing

- 1.15 In Phase 3 the compost is placed in trays, inoculated with spawn and stored for 17 days.
- 1.16 In Phase 4 peat and lime are added and the trays are placed in enclosed controlled-environment buildings. The mushrooms are harvested in up to three flushings over a 40 day period before being packaged and transported off site for sale. Spent compost is pasteurised and stockpiled before being on-sold to home gardeners or plant nurseries. The trays are then cleaned prior to being ready for the next production run.

The Perception and Nature of Odour

- 1.17 Odour is perceived by the brain in response to chemicals (olfactory stimulants) that are present in the air that people breathe¹. A person's life experiences and natural variation in the population can result in different sensations and emotional responses by individuals to the same odorous compounds. It is possible that one odorous compound can mask the presence of other compounds, and it is also common for a mix of odorous contaminants to have an additive effect or even a synergistic effect. (Synergism is when the intensity of the compounded odour exceeds that of the sum of the effects of the individual odorous contaminants - the presence of more than one contaminant enhances the effects of the other contaminants). As the odour concentration reduces through dilution, the nature of the odour may change as

¹ MfE, 2003; Good Practice Guide for Assessing and Managing Odour in New Zealand, 67pp

different compounds dominate the effect. For example, mushroom composting odour is known to have a distinctly different odour character at source than when diluted down-wind.

- 1.18 In terms of assessing the degree of the effects, there are a number of factors that are usually considered and these are collectively known as the FIDOL factors:

Frequency	How often an individual is exposed to odour;
Intensity	The strength of the odour;
Duration	The length of a particular odour event;
Offensiveness/character	The 'hedonic' tone of an odour which may be pleasant, neutral or unpleasant;
Location	The type of land use and the nature of human activities in the vicinity of an odour source.

- 1.19 People who work in an environment with a persistent odour can become desensitised so that they can no longer detect the odour and are not aware of the impact that an odour is having on the surrounding community. Conversely, individuals may become sensitised to olfactory stimulants through acute exposure events or as a result of repeated exposure to nuisance levels of odour.
- 1.20 Odours are usually classified as being either acute, or chronic, or a mixture of both. Chronic odours are those that are low-intensity, moderately unpleasant odours occurring frequently over a long period of time, whilst acute odours are high-intensity, highly unpleasant but occur infrequently. The odours generated from the TMML site are most likely to be acute odours and typically arise from abnormal or upset conditions, such as the production of anaerobic conditions or a malfunctioning biofilter.
- 1.21 The odours associated with mushroom composting activity are typically described as musty/mouldy and composty/earthy but can also be described as a rotting vegetation smell, rotten/dead animal, sulphurous or sewage odour.

The Potential Sources of Odour at Te Mata Mushrooms

- 1.22 Table 6.1 – ‘Odour Inventory and Description of Mitigation Options’ contained in the report prepared by Beca Infrastructure Limited (Beca) for the applicant² lists the potential sources of odour during the Phase 1 and Phase 2 operations. Odour problems primarily stem from the manufacture of compost, rather than the Phase 3 spore inoculation and Phase 4 mushroom growing activities.
- 1.23 The first potential source of odour is the storage of the chicken litter and the mixing of the chicken litter with gypsum. If the chicken litter is of poor quality (i.e. it contains the remains of food, dead animals etc), or has too high a moisture content then there is the potential for odour problems to develop. The gypsum provides an additional source of sulphur to the composting process, and if anaerobic conditions develop hydrogen sulphide and other odorous sulphur-containing and nitrogen-containing compounds can be produced, which can lead to a rotten egg or sewage-type odour.
- 1.24 Anaerobic conditions can also develop during the bale wetting process if the bales are over-wetted or kept wet too long before they are broken up. The use of recycled anaerobic wastewater for pre-wetting the straw also has the potential to result in significant odours during the pre-wetting and bale-breaking stages.
- 1.25 Once the wetted straw/chicken litter/gypsum mix is transferred to the Phase 1 bunkers, high pressure air is forced through the straw mixture so that biological and chemical processes break the material down to a suitable substrate for mushroom growth. These processes generate considerable heat (typically 70-80°C), gases, and some odours. If the oxygen concentration within the compost is allowed to significantly decrease, anaerobic metabolic activity will produce odorous gaseous contaminants which are emitted with the airstream, some of which may be emitted to the atmosphere as fugitive odours. There is a fine balance between supplying sufficient air to minimise anaerobic conditions and to control the temperature of the compost to avoid sterilising it. Ammonia is also produced from the chemical breakdown of compost and whilst this compound has a distinctive odour, it does have a high odour threshold and needs to be emitted in significant volumes to cause odour issues downwind. The Phase 1 bunkers are kept under slight negative pressure to minimise fugitive emissions but this is not the case when the bunkers are being accessed.

² Beca Infrastructure Ltd, ‘Te Mata Mushrooms Odour Source Assessment – Prepared for Te Mata Mushrooms Ltd (Client)’, 24 February 2010 3292282//NZ1-2475100-8 0.8

- 1.26 Once the composted straw has had sufficient time in the Phase 1 bunker it is transferred outside via a loader to the concrete pad, where it is mixed through a turning machine before being taken back on the same day to the bunker. The composted straw is likely to be on the concrete pad for a number of hours, during which time it is aerated via the aeration lines in the concrete pad. If there is insufficient aeration because the lines are blocked or the air pressure is too low, then anaerobic conditions can begin to develop. The transfer of compost to and from the Phase 1 and 2 bunkers and the mixing of compost on the concrete pad are all done in the open air at the TMML site and are the activities that have the highest rating in terms of odour potential beyond the boundary of the property, according to the Beca Odour Source Assessment.
- 1.27 Beca does not refer to the operation of Phase 2 Bunkers except for their filling (high odour potential) and their emptying (low odour potential). In the experience of the Council's technical consultant, Mr Ron Pilgrim, the Phase 2 stage after filling and until emptying does not have high odour potential but at this stage Mr Pilgrim is reluctant to say that odour nuisance potential is low. It may be that its odour nuisance potential is relatively low but can be additive to other relatively low potential odour sources, which could have nuisance potential beyond the Company's site especially during adverse meteorological conditions.
- 1.28 Beca state that the leachate/wastewater is highly organically loaded and may be consuming oxygen rapidly in the pond. The aeration in the sump may not be sufficient to continuously maintain the leachate/wastewater in the pond in an aerobic state. Low dissolved oxygen (DO) levels in the leachate/wastewater are an indicator that anaerobic conditions could develop. The rating for odour potential beyond the boundary, for leachate/wastewater in the sump and the storage pond, is moderate to high.
- 1.29 Odours are not generally attributed to Phase 3 and 4 activities and these are undertaken within enclosed buildings. However, the stockpiles of spent mushroom compost can generate an odour when they are disturbed, particularly if the stockpiles have been undisturbed for a month or more, and/or the weather conditions have been warm and wet, allowing anaerobic conditions to develop in the interior of the stockpile. The applicant reports that approximately 300 m³ of spent mushroom compost may be stored on a site which is located near the entrance to the TMML property off Brookvale Road and is on property leased from the Hastings District Council (Lot 3 DP28543). The spent compost is transferred to this site on a Thursday, where it is stored in an uncovered pile for a maximum period of up to two weeks.

1.30 A summary of the potential sources of odour is provided below (in no particular order of potential significance)³:

- Chicken litter becoming wet in storage
- Ammonia levels in the chicken litter
- Bale pre-wetting if the leachate/wastewater used is anaerobic
- Bale break and mixing with ingredients on the outdoors concrete pad
- Development of anaerobic conditions in stockpiles
- Development of anaerobic conditions in wastewater
- Wastewater disposal and recycling
- Transfer of compost to and from bunkers
- Development of anaerobic conditions during the composting process
- High ammonia levels as a result of the chemical breakdown of compost
- Inadequate maintenance of aeration channels and holes
- Inadequate maintenance of sumps and storage pond
- Inadequate maintenance of extraction fans and biofilter
- Breakdown /malfunction of aeration pumps, extraction fans and biofilter.

Odour Mitigation Methods Currently In Place at Te Mata Mushrooms Limited

1.31 The primary mitigation measures used at TMML to reduce the odour emissions beyond the boundary of the site are optimising processing conditions, containment of the Phase 1 and 2 bunkers when not being accessed and ventilating the Phase 1 bunkers to a biofilter. Odour neutralising spray ("Super Spice") is used at many odour emission points that are not ducted to the biofilter. There are also a number of operating procedures that are undertaken to minimise the likelihood that anaerobic conditions, which can lead to the emission of offensive and objectionable odours, do not develop during the composting process.

³ New Zealand Mushrooms Ltd 603949A Waikato Regional Council 42A report, Dean Lal 1011637

The Ventilation System and Biofilter

- 1.32 The ventilation system picks up odorous emissions from the forced air Phase 1 composting bunkers and conveys ventilation air to the biofilter. The speed of the fan that extracts air from the bunkers is regulated so that the air temperature within the Phase 1 bunkers is maintained at approximately 38-40°C when the doors are closed (the temperature of the compost is much higher). When the doors of the bunkers are closed negative pressure is maintained inside of the bunkers, which helps to control the release of fugitive odours from the bunkers. However negative pressure cannot be maintained when the doors of the bunkers are opened to transfer compost material in and out, and when this activity is occurring there is the potential for fugitive odours to be released into the atmosphere.
- 1.33 The biofilter measures 24.6 m x 6.6 m and has an internal surface area of 144 m². It was designed to be 2 m deep (giving a media volume of 252 m³) and to be filled (from the surface downwards) with 1.5 m radiata pine bark (10-20 mm diameter), 0.25 m bark (25-75 mm diameter) over a 0.25 m washed river gravel (20-40 mm diameter) base. The maximum air flow to the biofilter is 20,250 m³/hr which equates to a maximum hydraulic loading rate of 80 m³/hr per m³ of media. This maximum loading rate only occurs during emptying or filling the bunkers. According to the applicant's consultant, Beca⁴, it is considered that an appropriate design loading rate for the biofilter with graded bark media would be 20-40 m³/hr per m³ media. However, Beca state that "the biofilter appears to be operating well and no immediate modifications to increase the capacity are recommended." The design loading rate of the biofilter is discussed further in section 8 of this report. Beca recommend that no additional airflows should be put through this biofilter, unless the biofilter is increased in size and/or the medium is modified.

Odour Neutralising Spray

- 1.34 The odour neutralising spray "Super Spice" is used around the composting yard at many odour emission points that are not ventilated to the biofilter. The company that manufactures "Super Spice" claims that it "neutralises odours and converts them into an acceptable state". "Super Spice" is dispersed via spray nozzles suspended above the concrete turning pads and over the doors and vents of the Phase 1 and Phase 2 bunkers, and has been used at the site since 2007. The use of odour control sprays is considered further in section 8 of this report.

Operating Procedures

- 1.35 The key operating parameters have been described in the Environmental Management Plan which is presented in Appendix 6 of the application.

⁴ Beca Infrastructure Ltd – Te Mata Mushrooms Odour Source Assessment 24 February 2010 pg 8.

Compliance/Complaints

Incident Database

- 1.36 Council's incident database shows that 42 odour complaints have been received from members of the public over the period 1 January 2000 to 24 January 2011 that have been attributed to the activities undertaken at the site (Appendix 1). For some of the complaints the odour was verified by Hawke's Bay Regional Council staff as having come from the site, or it was acknowledged by TMML staff that there was a problem. However, for a number of complaints the source of odour was unable to be verified. The reasons that the source of the odour could not be verified are generally:
- Council was contacted retrospectively, i.e. after the odour had disappeared. Some complainants are not aware of the 24 hour pollution hotline that the Council operates, and do not wish to contact the Council outside of normal working hours. A number of comments in the database are in the nature of the odour being "on and off over the last few months" and "intermittent but all week and no odour at the time of the call".
 - Council staff did not visit the site at the time of the odour complaint. This would generally occur if the caller stated that they could no longer detect the odour but wanted a complaint logged on the database.
 - Council staff did visit the site but the odour had dissipated by the time they arrived. This reflects the intermittent and short-duration nature of the odour.
- 1.37 Council's incident database is a generic database used to gather and store information on all complaints that are received, not just odour-related complaints. The database does not specifically ask for information on the FIDOL factors, and this explains why the information relating to the complaints is patchy, as it is up to each Council staff member who is receiving/handling the complaints to remember to ascertain this information from the complainant.
- 1.38 However, some important information can be obtained from the records in the incident database. It is apparent that the majority of complaints originate from the Arataki Road/Brookvale subdivision area. The complaints appear to come in "clusters" and there have been several years, most recently 2010, where Council has not received any complaints at all. The most common possible cause of the odour was the breaking and turning of the bales, and the transfer and turning of the compost (i.e. Phase 1 and Phase 2 activities).

Compliance Monitoring Reports

- 1.39 The compliance monitoring grades given by Council for the years 2000 to 2010 are shown in table 2 below (a scale of 1 – 5 was used with 1 being full compliance and 5 being non-compliance).

Table 2: Compliance Grades for Te Mata Mushrooms Limited 2003 – 2010.

Date	Grade	
	Technical	Environmental
Feb 2010	1 - Compliance	3 – Moderate non-compliance
Jan 2009	1 - Compliance	4 – Significant non-compliance
Jan 2008	1 - Compliance	4 – Significant non-compliance
May 2007	2 – Minor non-compliance	1 – Compliance
Jan 2007	2 – Minor non-compliance	5 – Non-compliance
	Grade	
Jan 2004	3 – Moderate non-compliance	
Feb 2003	Not specified	

- 1.40 In 2004 the non-compliance that was identified by the Council's compliance officer was technical in nature and related to a failure to update the Environmental Management Plan, and the Biofilter Management Plan and Contingency Plan, as required by condition 4 and 7 of DP980233A.
- 1.41 In the January 2007 year the Company received an overall Environmental Grade of 5. This related to an escalation of odour complaints between January 2006 and January 2007, and a failure to comply with condition 8 of DP980233A, which required that there be "no offensive and objectionable odour beyond the boundary of the site". In an updated compliance report dated 8 May 2007 the Company received a grade of 1 for condition 8, and it was noted by the compliance officer that there were no new odour complaints since a "Super Spice" system was installed.
- 1.42 In January 2008 the Company received an overall Environmental Grade of 4, with condition 8 being graded at 5. This grading related to odour complaints that were received between May 2007 and January 2008.
- 1.43 The Company received an overall Environmental Grading of 4 in January 2009, due to the continuation of odour complaints to the Council. Non-compliance identified in the February 2010 compliance report also related to a failure to comply with condition 8 of DP980233A.

Enforcement Action

- 1.44 Te Mata Mushrooms Limited was served with an abatement notice under s 322 of the RMA on 8 April 2008, for discharges to air that were contrary to s 15(1)(c) of the RMA. In particular, discharges into air from the property between 10 October 2007 and 4 April 2008 did not comply with condition 8 of DP980233A and were not authorised by any Rule in the Hawke's Bay Regional Resource Management Plan (operative 28 August 2006). Condition 8 of DP980233A stated that "there shall be no offensive or objectionable odour beyond the boundary of the site". Of the six odour complaints that were listed on the abatement notice three were verified by Council staff as being a problem and three were not verified by Council staff but were considered likely to have an adverse effect beyond the property boundary based on the description given by the complainant.

2. APPLICATIONS FOR RESOURCE CONSENT

Consent Required and Activity Status

- 2.1 Section 15(1)(c) of the RMA provides as follows:

(1) No person may discharge any –

(c) Contaminant from any industrial or trade premises into air –

Unless the discharge is expressly allowed by a rule in a regional plan and in any relevant regional plan, a resource consent, or regulations.

- 2.2 The RMA provides a definition for 'contaminant' as any substance (including gases, odorous compounds, liquids, solids and micro-organisms) that by itself or in combination with the same, similar or other substances, when discharged into land, air or water is likely to change the physical, chemical or biological condition of the land, air or water onto or into which it is discharged.
- 2.3 The RMA also provides a definition for an 'industrial or trade premises' as any premises used for any industrial or trade process, any premises used for the storage, transfer, treatment and disposal of waste materials or for other waste-management purposes, or any premises from which a contaminant is discharged in connection with any industrial or trade process.
- 2.4 An 'industrial or trade process' is defined in the RMA as one which includes every part of a process from the receipt of raw material to the dispatch or use in another process of any product or waste material.
- 2.5 The applicant's proposal therefore falls for consideration under this definition as an 'industrial or trade premises'. As the proposed discharge to air is not provided for by regulations, resource consent is required.

- 2.6 The applicant has applied to the Regional Council for resource consent to discharge contaminants into the air from a composting and mushroom growing operation and other associated activities carried out on the site. These activities are classified as discretionary in the Regional Resource Management Plan (RRMP) and under Rule 28 of Change 2 of the RRMP: Air Quality.

3. THE ENVIRONMENT

The Site

- 3.1 Te Mata Mushrooms Ltd is located on the periphery of Havelock North at 174 - 176 Brookvale Road. The legal titles for the 27 hectare property are Lots 1 & 2 DP 16311, Lot 2 DP 7771, Section 28 Blk IV Te Mata SD and Section 8 Blk IV Te Mata SD. The property is flat except for a 20 m high escarpment which runs along the south-west boundary. Mature trees (*Eucalytus spp.*) line the escarpment. Aside from the buildings and concrete areas that make up the composting and mushroom growing enterprise there are a block of mature pine trees on the property (*Pinus radiata*) and surrounding paddocks that are used to graze livestock, and also to irrigate the surplus wastewater onto. An intermittent surface water body that stems from an underground culvert at the southern end of Lot 2 DP 16311 runs through the property. An adequate map of the property, including the locations of buildings and key areas associated with the proposed activity was provided with the application as Appendix 3.
- 3.2 The TMML site is located just outside of, and to the east and south of the gazetted Hastings Airshed (Schedule XIII of the RRMP). The boundary for the airshed runs to the north of Brookvale Road and to the west of Arataki Road.

The Surrounding Physical Environment

- 3.3 Properties to the north and east of TMML are predominantly rural in nature. Land-based primary production such as cropping, grape growing, and pastoral grazing are the main activities. The areas to the south and west of TMML were once also used for rural activities such as pip-fruit orchards, but have been, and are still being subdivided, and are now either part of the peri-urban or urban surrounds of Havelock North.

Zoning

- 3.4 Under the Hastings District Plan the site is situated in the Plains zone, which extends to the northern side of Arataki Road. The General Residential Zone extends back towards Havelock North from the southern side of Arataki Road. The distance from the site to the General Residential Zone is therefore approximately 200 m.

- 3.5 The area that is immediately south and west of Arataki Road was rezoned in the late 1990s from Rural 2 into two areas, Residential 3 and Deferred Residential 3, as part of the Hastings Urban Development Strategy. A map that shows these zones was provided in the application.⁵
- 3.6 In developing the Brookvale/Arataki Structure Plan it was identified that it would be desirable to provide a substantial buffer between the existing mushroom farm and any residential development and that it was reasonable to afford the mushroom farm protection from residential encroachment. Te Mata Mushrooms Ltd and Arataki Honey Ltd, another nearby land-based primary production operation, submitted on the proposed Plan Change and objected to the lack of permanent buffer between the proposed urban area and the existing rural activities. In deciding upon the Plan Change, the commissioners considered Arataki Road to be a logical boundary in terms of the rural/residential interface.
- 3.7 The Heretaunga Plains Urban Design Strategy (HPUDS) has identified the area between Arataki Road and the top of the escarpment which runs along the south-west boundary of the site as a future “green-field” growth area for the period 2015-2045.

Meteorology

- 3.8 The nearest meteorological monitoring station to TMML is at Whakatu, approximately 10.5 km to the north-west of the site. The wind patterns at TMML may differ slightly to those at Whakatu because of the proximity of Whakatu to the coast. The prevailing wind direction at the Whakatu meteorological site is a south-westerly and this is also likely to be the case at Brookvale Road (Figure 2). Any winds recorded at Whakatu from the north-easterly to easterly directions are considered to have the potential to carry odours from TMML towards the Brookvale/Arataki residential area.

⁵ Planoramic Environmental Planning Consultants Ltd – Resource Consent Application to Discharge Contaminants (Odour) into Air – Te Mata Mushrooms Limited, 24 February 2010.

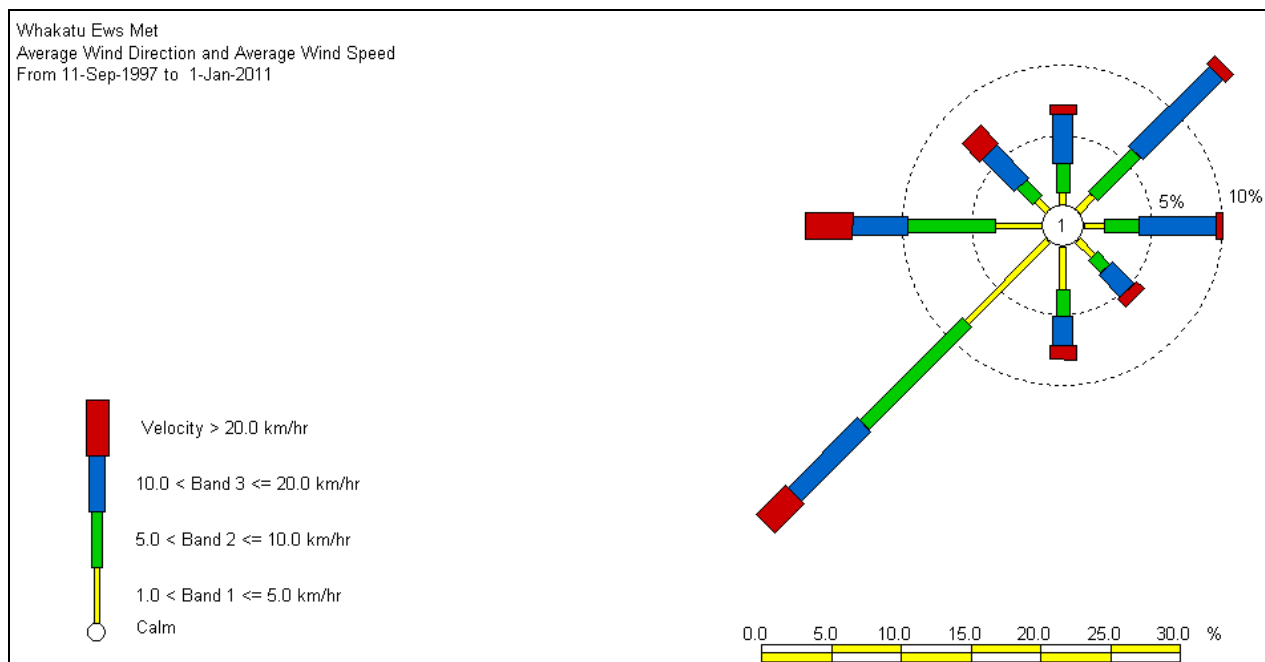


Figure 2 Windrose for Whakatu 1997 to 2011

- 3.9 The localised wind patterns at TMML are also influenced by the escarpment that lies along the southwestern boundary of the site. Air is likely to swirl and fluctuate around the site in response to the presence of the escarpment. Beca consultants consider that the escarpment will provide some enhanced initial dilution of any odours from the composting operation.
- 3.10 The speed of the wind is relevant when considering odour emissions that occur close to the ground. Low wind speeds (less than 2 - 3 metres per second or 4 - 6 knots) tend to result in more noticeable odour at greater distances than higher wind speeds. Relatively intense pockets of odour can also accumulate in the air at a site while there are near-calm conditions, then move off-site when the wind picks up. An analysis of the wind speed frequencies for the winds that are from the north-northeast through to the east at Whakatu (undertaken by Beca) shows that 10.5% of the records (from 1997 to 2008) were less than 3 m/s.

The Receiving Environment

- 3.11 The majority of complaints that have been recorded by the Regional Council regarding odour generated at the TMML site have come from residents in the Brookvale/ Arataki area to the southwest. However, this is not to say that the extent of the receiving environment is limited only to that direction, and given the direction of the prevailing wind, it is reasonable to assume that the receiving environment would also extend towards the north east of the site. For the purposes of notification all residents within a 1.3 km radius of the site were directly notified, in line with best practice for air discharge consents, and corresponding with the further-most complaint that has been received (anecdotally) by the Council.

3.12 The Arataki subdivision is the closest subdivision to the site, with the Brookvale subdivision located behind the Arataki subdivision towards Havelock North. According to the Hastings District Council's website, Arataki is approximately 80 ha in size and will eventually accommodate approximately 750 lots. Arataki is being developed in two stages. In Stage 1, 460 sections have been subdivided with 425 building consents issued. Stage 2, which has now been released for sale, has potential for approximately 290 lots, and will provide between 5 - 10 years of residential growth. Currently services and roads are being designed and built for Stage 2. The Ministry of Education has bought the site of the Arataki Motor Camp, formerly located at 139 Arataki Road for a school. Figure 3 shows the extent of current and planned development of the Arataki area, and the location of TMML in the north-western corner.



Figure 3: Current and Planned Arataki Subdivision.

3.13 When the subdivision is complete there will be a distance of approximately 240 metres between the nearest houses on Arataki Road and the composting yard area. The distance between the nearest houses on Arataki Road and the south-western boundary of the property (on Section 28 Blk IV Te Mata SD and Section 8 Blk IV Te Mata SD) will be little more than the Arataki Road reserve itself. This is significant because the area of land owned by the applicant above the escarpment (Section 28 Blk IV Te Mata SD and Section 8 Blk IV Te Mata SD) is currently used for the discharge of wastewater leachate to land.

4. SITE VISIT

4.1 I undertook a site visit on the morning of Wednesday 9 June 2010 accompanied by Ron Pilgrim (technical consultant for HBRC), and Martin Speeden and Chris Hawley of TMML. A complete walk-through of the site was undertaken and the mushroom growing process was explained to us. Points of note from the site visit relevant to this application are:

- On approaching the property from the Havelock North end of Brookvale Road it is evident that the subdivision activity in the Arataki Road area has been considerable in the past two years and the 'buffer zone' that existed between the applicant's property and the urban area has been encroached upon.
- At the time of the site visit compost was being brought out of one of the Phase Two tunnels by loader for turning.
- No odour that could be described as offensive or objectionable was evident to us at the time of the visit, either at the property itself or in the Arataki Road/ Brookvale area.

5. NOTIFICATIONS AND SUBMISSIONS

Consultation

- 5.1 No consultation was undertaken by the applicant prior to the application being received by the Regional Council.
- 5.2 Staff from TMML, along with Mr Cameron Drury, met with Mrs Diana Martin, Mr and Mrs Hunter, and Mr and Mrs Barclay onsite on Saturday 2 October 2010. The resource consent process and the matters raised in their submissions were discussed. A tour of the site, explaining the various processes with reference to sources of odour, was also undertaken.

Notification

- 5.3 While the applicant's previous air discharge consent, DP980233A, was publicly notified, the notification decision for this application was not influenced by that process. After undertaking a notification assessment it was determined that DP100128A would be publicly notified under s 95A(2)(a) of the RMA because the activity will have or is likely to have adverse effects on the environment that are more than minor. In particular the Council's complaints database shows that there have been 34 odour complaints attributed to Te Mata Mushrooms Ltd over the period 12 March 2005 to 28 September 2009. Whilst not all of these complaints have been verified by Council officers there is sufficient evidence that odour generated from the site has had a more than minor effect on some members of the public.

- 5.4 Notices were placed in the Hawke's Bay Today on Saturday 7 August, and the submission period of 20 working days closed at 5 pm on 3 September 2010. Copies of the application documentation were made available at Hawke's Bay Regional Council office in Dalton Street and the Havelock North Public Library as well as on line at www.hbrc.govt.nz.

Submissions

- 5.5 A total of 54 submissions were received, 13 opposing the applications, 39 in support of the applications and two neutral submissions. Seven submitters wished to be heard in relation to their submissions, and of those seven, five were in support of the application. A summary of the submissions is attached as Appendix 2 of this report. Table 3 summarises the main issues raised by submitters in terms of the effects of the proposed activity:
- 5.6 One submitter, Ms Jane Parslow, withdrew her submission via email on 29 September 2010, which reduced the number of submitters opposing the application to 12. Another submitter, Mrs Faye Barclay advised via email on 10 October 2010 that she did not wish to appear at the consent hearing. Prior to a hearing being held all seven submitters that initially wished to be heard in relation to their submissions agreed to withdraw their right to be heard (six in writing and one in a recorded telephone call to the Council's Hearing Administrator).
- 5.7 Therefore, the application can be processed without the need to hold a hearing under s 100 of the RMA, given that there were no other submitters that wished to be heard.

Table 3: Main Issues Raised By Submitters in Terms of Effects

Effect	Opposing	Supporting
Effects on Amenity Values	<ul style="list-style-type: none">• The odour is offensive and objectionable beyond the boundary of the property and impacts on resident's ability to enjoy outdoor living areas, hang washing out and have windows open.• The effects of odour on future owners of property in the new Arataki subdivision.	<ul style="list-style-type: none">• Smell is episodic in nature and not offensive.• Te Mata Mushrooms is an existing business that has been in the area for more than 40 years, and long before the subdivisions were granted.• Buyer beware for anyone purchasing property in the area.
Economic Effects	<ul style="list-style-type: none">• The effects of odour on property values in the area.	<ul style="list-style-type: none">• Te Mata Mushrooms is a major employer in the area and supports the local economy.
Health Effects	<ul style="list-style-type: none">• The odour may be carrying airborne contaminants that could cause health problems.	

- 5.8 The location of the submitters that are domiciled in Havelock North is shown in Figure 4. Green markers represent those submitters supporting the application, red markers represent those submitters opposing the application and yellow representing neutral submitters.



Figure 4: Location of submitters properties domiciled in the Havelock North area.

6. PRE-HEARING MEETING

- 6.1 No pre-hearing was held for this application under s 99 of the RMA. Whilst it is the Council's usual practice to hold a pre-hearing meeting for the applicant and the submitters, in this case the applicant preferred to liaise directly with the submitters that indicated they wished to be heard in support of their application at a Hearing.

7. ASSESSMENT OF ENVIRONMENTAL EFFECTS

- 7.1 Section 3 of the RMA defines the meaning of effect as including-

- (a) any positive or adverse effect; and
- (b) any temporary or permanent effect; and
- (c) any past, present, or future effect; and
- (d) any cumulative effect which arises over time or in combination with other effects- regardless of the scale, intensity, duration, or frequency of the effect, and also includes –
- (e) any potential effect of high probability; and
- (f) any potential effect of low probability which has a high potential impact.

- 7.2 Under the RMA, the main concern with odour is its ability to cause an effect that could be considered 'offensive or objectionable'. Whether something is offensive or objectionable has to be linked to whether it has, or is likely to have, an adverse effect on the environment. The High Court in *Zdrahal v Wellington CC*[1995]⁶ held that the correct test for what may be offensive or objectionable under the RMA must be objective; that is, reasonable ordinary people – neither hypersensitive nor insensitive – would be offended or find it objectionable.
- 7.3 The MfE guidelines "Good Practice Guide for Assessing and Managing Odour in New Zealand" state that the recommended consent condition for the environmental effect of odour is as follows:
- "There shall be no objectionable or offensive odour to the extent that it causes an adverse effect at or beyond the boundary of the site."*
- 7.4 The guidelines state that for a breach of the condition to occur it would not generally be sufficient for one person or one council officer to find the odour objectionable in a one-off situation, unless it can be demonstrated that an adverse effect had occurred in that instance.
- 7.5 The adverse effects that may arise as a result of the applicant's operation fall into three broad categories; being the effects on amenity values in the area, economic effects and potential health effects. However, in considering these applications, the adverse effects must also be weighed up against the positive effects of the applicant's activities. I have considered each of these effects and have had regard to the comments made by the submitters in doing so.

Effects on Amenity Values

- 7.6 Amenity values are defined in the RMA as those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes. Any activity that reduces people's appreciation of the pleasantness of an area, and impacts on their ability to enjoy the cultural and recreational attributes of that area are therefore having an adverse effect on the environment. However, this must be considered alongside the positive effects that an activity contributes to the amenity values of an area.
- 7.7 It is clear from the 13 submissions opposing the proposed activity, and from the complaints that the Council has received on its 'pollution hotline', that the discharge of odour from the TMML site is, at times, having an adverse effect on the amenity values of some of the people who reside and/or work within the receiving environment. In particular, people have reported having to close doors and windows and that they were unable to enjoy outdoors dining and barbeques etc because of the odour.

⁶ *Zdrahal v Wellington City Council* [1995] 1 NZLR 700

7.8 The applicant's consultant, Mr Cameron Drury, has undertaken an appraisal of the FIDOL factors associated with the odour discharges at TMML and these are shown in Table 9.1 of the resource consent application.⁷ Whilst I agree in general with Mr Drury's assessment my own assessment and comments on the FIDOL factors are presented in Table 4.

Table 4: My FIDOL Assessment for Te Mata Mushrooms Ltd Odour Incidents Beyond the Boundary of the Property.

Factor	Appraisal	Comment
Frequency	<ul style="list-style-type: none"> Complaints to HBRC's pollution hotline occur 5-10 times per year out of 365 days of operation. It is generally accepted that some members of the public may never complain about adverse effects that an odour is having on them. These people will therefore not be represented in the Council's database figures. There are also people who may only complain infrequently, when they could be, in fact, experiencing the odour more often. Therefore, whilst the Council's complaints database is useful it can only be used as a guide as to how often and individual is exposed to odour. Also, it is evident from the comments in the database that some complainants will ring only after an extended period of experiencing odour, e.g. "has been occurring on and off every one or two days for past two to three weeks". Quantitative wind speed and wind direction data would suggest that the frequency of 'odour carrying' low-speed winds blowing towards the Brookvale area are less than 10.5%, as discussed in section 3 of this report. 	Based on this evidence, the frequency that an individual is exposed to the odour is likely to be low to medium .
Intensity	<ul style="list-style-type: none"> Ranges from "terrible", "offensive and objectionable" and "it stinks," to "unpleasant," to "not a problem". 	High potential impact on some people.
Duration	<ul style="list-style-type: none"> Short (usually gone within half an hour) Submitters, and people who have filled in odour diaries for the Council in the past, report that the odour is intermittent in nature. 	Low to medium impact
Offensiveness	<ul style="list-style-type: none"> Ranges from "offensive," to "normal rural smell" and "not offensive". 	High potential impact on some people.
Location	<p>Plains Zone</p> <ul style="list-style-type: none"> Rural activities such as pastoral and hobby farming, horticulture, viticulture and cropping are undertaken on the Plains Zone and all of these activities have the potential to generate odour. People who live and work in these areas generally have a high tolerance for rural type odours. However 'unusual' odours (in terms of strength, character or unpleasantness) can still be unacceptable. <p>Residential Zone</p> <ul style="list-style-type: none"> People living in residentially zoned areas typically have a high sensitivity to both rural and non-rural odours. 	<p>Low to medium potential impact</p> <p>High actual and potential impact</p>

⁷ Planoramic Environmental Planning Consultants Ltd – Resource Consent Application to Discharge Contaminants (Odour) into Air – Te Mata Mushrooms Limited, 24 February 2010.

- 7.9 That the 'normal' rural activities carried out in the Plains Zone are potentially a source of odour (as well as noise, dust, exposure to sprays etc) is sometimes overlooked by people who are new to the area, especially if they are not familiar with those activities. This can lead to 'reverse sensitivity' which refers to the effects of the existence of sensitive activities on other nearby activities that have lower sensitivities. There is a principle in common law to deal with such nuisances and that is 'internalisation'; that is that those who create adverse effects must confine them to within their own sites rather than force society to bear the burden of dealing with them.⁸
- 7.10 In *Hill v Matamata Piako DC & Waikato Regional Council* [1999]⁹ the Court was not satisfied that odours could be contained on site, and a consent application to operate a broiler chicken farm was declined. The Court stated:
- "We reiterate again in this decision that we are of the view that adverse effects such as objectionable odour emissions should be confined on site. People living and working in rural neighbouring properties adjacent to sites where intensive farming such as broiler chicken rearing is carried out should not be subjected to objectionable and nauseating odours. It is incumbent upon the industry as a whole and upon individual farmers to so arrange their affairs in the way of siting, management, technology and feed formulations to ensure that objectionable odours are confined on site. This may well involve extra cost to the industry generally and to particular farmers. As a general principle we are of the view that such cost should be borne by the industry in the event that the siting of operations are such that there is potential to cause adverse effects."*
- 7.11 In the case of TMML, the applicant has internalised some of the odours generated at the site by installing a biofilter to capture the building air from the Phase 1 bunkers. Improvement options have been listed by the applicant's consultant, Beca, which, if they were undertaken by the applicant, would ensure that a far greater proportion of the odours generated at the site would be likely to be internalised within the property boundaries. These options are discussed further in section 8 of this report.
- 7.12 Whilst it is hard to quantify, intrinsically the 'rural nature' of the activities that border the Arataki/Brookvale subdivisions may also contribute in a positive way to the character of the area and provide an environment that is pleasant for activities such as walking, running, cycling and dog exercising. For some residents the close proximity to a rural zoned area may have even been a reason to purchase property within the subdivision.

8 MfE (2003) Good Practice Guide for Assessing and Managing Odour in New Zealand.

9 *Hill v Matamata Piako DC and Waikato RC* (EnvC) A065/99

- 7.13 The RRMP does not regulate land use activities such as pastoral and hobby farming, horticulture, viticulture and cropping, and the discharge of contaminants (odour) to air from them is the permitted baseline, in terms of the RMA. The appropriate comparison of the activity for which the consent is sought is with what is either being done lawfully on the land or could be done there as of right by the plan.
- 7.14 Whilst a mushroom growing operation could not be considered to be a common rural activity, the manufacture of compost in a rural setting is not unusual. There are currently 19 consented compost operations in the Hawke's Bay region, and some of these are located reasonably close to the urban areas of Napier and Hastings. A similar activity might also be the manufacture of silage, which can be carried out without the requirement to obtain resource consent.

Economic Effects

- 7.15 A number of the submitters who were opposed to the application were concerned that the odour from TMML would impact on the value of their property. I have had a discussion with a registered valuer, Mr Mike Lawson, who is familiar with and frequently values properties in the Brookvale/ Arataki area. The properties in the area currently sell in the range \$420,000 to \$580,000. This range is comparable to other properties of a similar age and construction in subdivisions in Taradale and in the Palmbrook subdivision in Havelock North. It is the opinion of Mr Lawson that there is no direct, measurable evidence that property values in the area are being adversely affected by their proximity to the TMML site. For every potential buyer who may be sufficiently discouraged by the proximity of the TMML site as to consider purchasing elsewhere, there will be other purchasers who regard the area favourably and wish to live there.
- 7.16 The applicant employs up to 120 people at a time, and many of the submitters that supported the application were employees of the company who wrote of the impact that losing their job would have on them and their family, if the mushroom factory were to close. It is estimated by the applicant that the activities at TMML contribute approximately \$1,000,000 each year to the local economy in outgoings and \$2,200,000 in wages. In real terms, the investment in the existing infrastructure at the site has been estimated by the applicant to be in the order of 15 to 20 million dollars. The economic effects of the activity also extend to the suppliers of goods and services provided to the company and the employees of the company.

- 7.17 A further consideration in terms of economic effects is the role TMML plays as one of a number of 'niche' food industries that exist in the area. Alongside Te Mata Cheese Company, Te Mata Wines Ltd and Arataki Honey Ltd, TMML provides tourists and locals who are intent on sampling local produce a "cluster" of sites to visit on a tourist loop. The economic value of this has not been assessed as part of the application, but must be considered to be a positive effect in terms of the local economy.

Health Effects

- 7.18 Frequently, submitters concerned about odour impact express concern not only about objectionable or offensive odour as such, but also about possible toxicity, especially since the odours (or the contaminants that cause the odours) at times make some people feel sick, or result in headaches or irritation and other symptoms. In the case of TMML, at least one submitter was concerned about potential health effects, and attached information to her submission regarding the toxicity of hydrogen sulphide, which is a gas produced by anaerobic bacteria in the presence of sulphur compounds and organic carbon.
- 7.19 Exposure to some odorous contaminants at concentrations many times less than the lowest concentrations that are observed to cause irritation or other classical physical health symptoms appear to affect the physical health of some people. The complex relationship between physiological, behavioural, and psychological factors is not fully understood. However, it is becoming widely accepted that some odours, even at low concentrations in air, may cause physical health effects such as nausea, headaches, irritation, stress, and mood changes. Exposure to objectionable odours may also cause stress and mood changes and these changes may cause illness or worsen existing illness.
- 7.20 Typical odorous contaminants emitted from anaerobic compost and wastewater include hydrogen sulphide (rotten egg smell), dimethyl sulphide and dimethyl disulphide (decayed vegetable smell), methyl mercaptan (decayed cabbage through to a sulphide smell), aromatic hydrocarbons (normally a solvent-like smell), and amines (fishy smell). The mix of odours gives anaerobic materials their typical smell. Some of these odorous contaminants have ambient air contaminant guidelines based on odour effects published by jurisdictions such as the N.Z. Ministry for the Environment, the World Health Organisation (WHO), and the Texas Commission on Environmental Quality.
- 7.21 These guidelines are based on odour effects rather than being derived from the lowest concentrations causing irritation and other physical health effects. Such guideline values are many times lower than they would be if derived from irritation and other physical health effects data. For example, in respect to hydrogen sulphide (rotten egg odour which is often a part of the odour from anaerobic compost and wastewater), the World Health Organisation's ambient air guideline based on irritation of 0.10 parts per million by volume is 20 times higher than the

N.Z. Ministry for the Environment's guideline for hydrogen sulphide based on odour effects of 7 µg/m³ (0.0047 ppm) – which is the same as the WHO odour guideline. This is in recognition that good health is not just the absence of disease or infirmity but also includes social and mental wellbeing.

- 7.22 However, it is highly unlikely that contaminants having objectionable odour will be present in ambient air outside of TMML premises at concentrations approaching their physical irritation thresholds even though the odour may be objectionable or offensive to some people.
- 7.23 In summary, exposure to odorous contaminants at concentrations many times less than the lowest concentrations that are observed to cause irritation or other classical physical health symptoms appear to affect the physical health of some people. Adverse physical health effects can include effects such as nausea, headaches, irritation, stress, and mood changes. It is important not to lose sight of the fact that the primary issue downwind of TMML, to some people at least, on occasions when adverse meteorological conditions occur, is objectionable and offensive odour. If odour nuisance can be substantially eliminated then adverse effects, if any, on the health of susceptible people will also be eliminated.

8. MITIGATION MEASURES

Mitigation Proposed by the Applicant

- 8.1 The applicant has employed Beca to identify the sources of odour at the site and consider options to mitigate the effects of odour beyond the boundary of the property. Beca's report, 'Te Mata Mushroom's Odour Source Assessment, 24 February 2010, is presented as Appendix 1 of the application. The rating of odour potential beyond the applicant's boundary for the existing receiving environment and after the Arataki subdivision is completed, and the mitigation options are presented in Table 6.1 of Beca's report. Beca has classified odour potential beyond the boundary into categories ranging from 'low' through to 'high'. The potential mitigation improvement options are presented at two levels; 'first level' and 'second level'. With respect to the potential for odour beyond the applicant's boundary, in relation to both the existing environment and the receiving environment after the subdivision is completed, Beca rate most of the odour sources in the range of low to moderate, with only a few sources rated as potentially moderate - high and high.
- 8.2 In general, the first level of mitigation proposed involves relatively minor changes to management practices and the continuation of the use of low-key options (e.g. odour neutralising sprays) that do not involve significant investment by the applicant. The second level of mitigation involves significantly more investment in infrastructure and includes options to enclose parts or all of the operation, increase the ventilation of the bunkers, and to increase the size of the biofilter.

- 8.3 The activities identified in the Beca report that have ‘possibly moderate-high’ and ‘high’ odour potential beyond the boundary of the applicant’s property are:
- Compost mixing (removal from the Phase 1 bunker, mixing, and replacement in the bunker): odour potential of ‘high’ in respect to the existing receiving environment and after the subdivision is completed
 - Compost transfer from Phase 1 to Phase 2 bunkers and outdoor mixing: odour potential of ‘high’ in respect to the existing receiving environment and after the subdivision is completed
 - Effluent pond (possibly insufficient aeration of pond effluent in the sump leading to anaerobic conditions and increased odour emission from the pond and sump): potential of ‘possibly moderate’ in respect to the existing receiving environment, and ‘possibly moderate-high’ after the subdivision is completed.
- 8.4 Mr Pilgrim believes that if anaerobic effluent is used to wet straw bales, especially by effluent spraying rather than ‘dunking’ (the trial of which was apparently unsuccessful), and the bales are subsequently broken and mixing thereafter, the odour potential rating may increase from ‘low’ to ‘moderate’ or possibly even ‘high’ with respect to the existing environment and the receiving environment after the subdivision is completed.
- 8.5 At the time of the site visit the applicant expressed a desire to avoid having to undertake the second level mitigation options if possible, because of the considerable cost that would be involved. The applicant was concerned that the mushroom growing business would not be economically viable if substantial modifications to existing infrastructure, and the installation of new infrastructure, was required.
- 8.6 The applicant has provided an updated Environmental Management Plan (EMP) that was prepared in February 2010 and is shown as Appendix 6 in the application prepared by Mr Cameron Drury. In that document the applicant states that “compliance with the EMP will ensure there will be no adverse effects resulting from the discharge of contaminants, including offensive or objectionable odour, beyond TMML’s property”. According to the information in the application, the EMP is site specific, has been prepared to address the specific nature of the odour generated and has been prepared with regard to the site’s changing surrounds and the expectations of its new neighbours.
- 8.7 However, it is my opinion, and that of Mr Pilgrim’s, that compliance with the EMP alone will not be sufficient to ensure that the discharge of offensive or objectionable odour beyond the boundary of the applicant’s property will not have adverse effects on people who are living, working or visiting the receiving environment. The potential for this to occur is even more likely once the Arataki subdivision is completed.

- 8.8 The reason for this opinion is that the operating procedures outlined in the EMP are effectively activities that have been carried out at the site for some time, i.e. at least since the previous consent was issued in 2001, and over that time the Council has received complaints about offensive and objectionable odours beyond the boundary of the property that have had an adverse effect on people living in the Arataki area. The EMP that has been prepared with the application, whilst detailing standard operating procedures, does not appear to include any significant new mitigation measures, and does not contain quantifiable control parameters that need to be adhered to (such as the active depth of the bark in the biofilter and the design media loading rate across the biofilter, the minimum concentration that dissolved oxygen must be maintained at to ensure the leachate remains aerobic, the maximum length of time (days) that spent compost can be stockpiled etc.
- 8.9 The additional mitigation measures initially proposed by the applicant as part of this resource consent application, over and above what is already undertaken at the site, were:
- Storing the chicken litter and gypsum substrate in an enclosed bunker in order to maintain it in a dry state
 - Using odour control sprays on the turning machine
 - Minimising the amount of air that is blown through the compost in the outside windrow so that aerobic conditions are maintained during the composting operation whilst minimising stripping odours
 - Monitoring the level of dissolved oxygen in the leachate/wastewater pond in order to maintain aerobic conditions.
- 8.10 The applicant also stated in the application that they are **not** proposing to undertake the following mitigation measures:
- To enclose the bale wetting process and ventilate to odour control equipment
 - To use a bale break automated machine
 - To construct a new bunker to enclose the compost mixing activity
 - To increase the extraction capacity of the blower (fan) to minimise fugitive odour emissions from the Phase 1 bunkers
 - To ventilate the Phase 2 bunker to odour control equipment during the filling to avoid fugitive odour emissions.

8.11 The applicant initially considered that the above measures were not justified in terms of the need to mitigate effects, the certainty of the outcome, or the expense involved¹⁰. Rather, the applicant stated, in paragraph 6 of the EMP, that “the concept of continuous process improvements will ensure best practicable outcomes”¹¹. However, during a visit to the site on 25 January 2007 undertaken by myself and another Council officer, the applicant recognised that significant additional odour mitigation measures could be required at some point in the future and stated that the company was considering a new building to enclose the stack mixing operation, which would be vented through the biofilter. This intention was documented (and not challenged by the applicant) in the 2006-2007 Compliance Monitoring Report for the previous consent, DP980233A.

The Ventilation System and the Biofilter

8.12 Currently only the air from the Phase 1 bunkers is directed to the biofilter. All compost mixing and turning activities are undertaken outside of enclosed bunkers, and the Phase 2 bunkers are vented passively to the atmosphere. Therefore, the activities that are classified as having a moderate, a moderate - high, or a high rating of odour potential beyond the boundary¹², once the Arataki subdivision is completed, that are not vented to odour control equipment (the biofilter) include:

- Bale wetting – moderate (Beca) to potentially high odour potential rating if anaerobic wastewater is used (Ron Pilgrim)
- Bale break and initial mixing – moderate (Beca) to possible high odour potential rating if anaerobic wastewater is used (Ron Pilgrim)
- Compost transfer from the bunkers and compost mixing – high odour potential rating
- Storage of wastewater in the effluent pond - moderate to high odour potential rating.

8.13 Initially only two of the four additional mitigation methods proposed by the applicant; that is minimising the amount of air that is blown through the compost in the outside windrow so that aerobic conditions are maintained during the composting operation and minimising odour stripping, and monitoring the level of dissolved oxygen in the leachate/wastewater pond in order to maintain aerobic conditions, were offered to address the potential effects of these activities.

¹⁰ Resource Consent Application to Discharge Contaminants (Odour) into Air - Te Mata Mushrooms Ltd, 24 February 2010. Planoramic Ltd Environmental Planning Consultants, 090030, pg 20.

¹¹ Resource Consent Application to Discharge Contaminants (Odour) into Air - Te Mata Mushrooms Ltd, 24 February 2010. Planoramic Ltd Environmental Planning Consultants, 090030, Appendix 6

¹² Beca Infrastructure Ltd – Te Mata Mushrooms Odour Source Assessment 24 February 2010 pg 8.

- 8.14 It is my opinion, and that of Mr Pilgrim's, that minimising the amount of air that is blown through the compost in the outside windrow alone will be not be sufficient as a mitigation measure to avoid the stripping odours that could lead to the generation of offensive and objectionable odours beyond the boundary, such that they have an adverse effect on people who live and work in the area.
- 8.15 I consider, with support from Mr Pilgrim, that the best way that the applicant can ensure that no offensive or objectionable odour is emitted beyond the boundary of the property, such that it has an adverse effect on people, is to undertake the high odour potential activities in fully enclosed buildings that are ventilated to a biofilter, or biofilters, with sufficient design capacity.
- 8.16 The applicant was asked, in a section 92 information request, to provide a detailed assessment of the dollar cost of implementing each of the second-level mitigation improvement options suggested by Beca, in real terms. The applicant was also asked to provide an assessment of the order of priority for each option, and an implementation plan by which time these options could be in place, from both a practical and financial aspect. The applicant, whilst quite explicit that they did not wish to implement these options, provided the following information:
- To provide an extra bunker so that Phase 1 compost can be turned without being outside, and to provide additional ventilation of the Phase 1 bunkers and to enclose the front end of the Phase 1 bunkers to minimise odour emission during bunker to bunker transfer - \$NZ 250,000 (ex GST)
 - To enclose the turning operation that occurs between the Phase 1 and Phase 2 bunkers within a building and ventilate the building to a biofilter - \$NZ 250,000 (ex GST)
 - To upgrade biofilter capacity - \$NZ 50,000 (ex GST).
- 8.17 From the information provided by the applicant it would therefore appear that the indicative costs of mitigating the high odour potential activities with the "second level" options detailed in the Beca report is in the order of \$NZ 550,000 (ex GST).
- 8.18 I am recommending that second level mitigation options be adopted as consent conditions for the activities that are undertaken at the site that have **high** potential odour ratings. However, I recommend that the applicant be given an appropriate lead-in period for each improvement option, in order to be able to adequately plan and make possible the capital investment that will be required.
- 8.19 To this end I recommend consent conditions with the timeframes that have been supplied by the applicant in the s 92 response letter dated 10 December 2010. The exception to this is the installation of a building that is vented to a biofilter to enclose the turning operation that occurs between the Phase 1 bunker and the Phase 2 bunker. My recommendation, which is supported by Mr Pilgrim, is that this should be completed by 1 March 2017 instead of the applicant's

recommendation of 2021. This is because the Arataki subdivision is expected to be completed within the next 5 - 10 years and I consider it is necessary to address, sooner rather than later, the potential issues that may arise as a result of the subdivision encroaching on an area of land that has, effectively, been a “buffer zone” between the TMML property and a large residential area.

8.20 Over the course of the processing of this application considerable discussion was had with the applicant’s consultant over the mitigation options and the cost and possible timing of them, should they be required as conditions of consent. In particular, the transfer of compost between the Phase 1 and Phase 2 bunker process, which was identified by Beca as having a high potential odour rating was discussed. The description of this process was summarised by Beca in the Odour Inventory Table as the “compost transfer from Phase 1 and Phase 2 bunkers and outdoor mixing”. More detail was provided by the applicant’s consultant, who clarified the steps of the process as being:

- a) The removal of compost from the Phase 1 bunker into a windrow;
- b) The turning of compost using a turning machine;
- c) The transfer of compost between the Phase 1 and Phase 2 bunkers (this involves the compost placed in the windrow being moved via a front end loader over a distance of 50 to 60 m to the Phase 2 bunkers;
- d) The loading of the Phase 2 bunkers.

8.21 Initially a consent condition was proposed that required the transfer of the compost material from the Phase 1 bunker to the Phase 2 bunker to be undertaken in an enclosed building, and ventilated to a biofilter. However, the applicant’s consultant advised that the physical transfer of compost from the Phase 1 bunker to the Phase 2 bunker was likely to have a low odour rating potential, and the condition, if imposed, would require the applicant to install a 50 – 60 m long enclosure, (with significant room for the manoeuvring of front end loaders) at significant cost and safety risk. According to the applicant’s consultant, the high odour potential rating part of the process refers to the turning of the compost (“b” above). Mr Pilgrim and I have considered the information provided by the applicant on this point, and recommend that the condition of consent refer only to enclosure and ventilation of the turning of the compost between the Phase 1 bunker and the Phase 2 bunker. This recommendation is consistent with our other recommended consent conditions that require second-level mitigation options for those activities with high odour potential rating only.

8.22 Further, in conjunction with the applicant, consent conditions have been recommended that clearly define the activities referred to as Phase 1 activities, and those that are referred to as Phase 2 activities. It is acknowledged in the recommended consent conditions that the physical emptying and loading of bunkers, and the transfer of compost from Phase 1 to Phase

2 will be undertaken by a front-end loader operating in an outdoor environment. The consent holder will be required to ensure that the design of the ventilation system and all access ways to and from the bunkers is sufficient to reduce any fugitive odours that may escape beyond the boundary of the property when the bunker doors are open. Review conditions are recommended that require the process of transferring Phase 1 compost from bunker to bunker for Phase 1 turning processes to be ventilated to a biofilter with sufficient design capacity, if this particular activity is identified as causing offensive and objectionable odour beyond the boundary of the property, such that it has an adverse effect, at some time in the future. A similar review condition is recommended for the transfer of Phase 1 compost to the Phase 2 bunker.

- 8.23 The improvements that I am recommending are consistent with other mushroom composting activities carried out in sensitive to relatively sensitive locations. Meadow Mushrooms in Canterbury (which is a much larger activity than TMML) now operate a new and totally enclosed system with ventilation extraction air treated by biofiltration. Cresta Mushrooms at Pukekawa, which is a smaller activity than TMML, is also undertaken in a fully enclosed facility with ventilation air from odorous activities extracted to an ammonia scrubber then to a biofilter.
- 8.24 N.Z. Mushrooms Ltd is located near Morrinsville. A new resource consent was appealed to the Environment Court. This Company only carried out composting to Phase 1 at their Taukoro Road site, with the remaining stages of composting being carried out at another site near Morrinsville. The activity was subject to continuing complaints from local farmers, farm workers and their families about offensive odour. The Phase 1 bunkers were enclosed and ventilated to a biofilter. However, as at TMML, in order to undertake periodic mixing of compost during the Phase 1 cycle the compost was removed by a front-end loader and transferred to the new bunker via an outdoor pad, prior to being placed directly into an in-tunnel machine in the new bunker, where it was turned, wetted and mixed as it was placed.
- 8.25 It was accepted by the Court that the air extraction used in the composting (Phase 1) bunkers could not adequately capture odour during the bunker to bunker transfer process nor could it capture odour from the compost at all while it was outside the bunkers. The Court did not necessarily mean to enclose the whole operation – it referred to enclosing the bunker to bunker transfer operation to the extent necessary to adequately capture odour, along with associated measures such as increasing the capacity of the air extraction system and probably the biofilter¹³.
- 8.26 The Court proposed to give N.Z. Mushrooms Ltd until 31 October 2007 (or an extension for a limited time) to report back to the Court and other parties about whether or not it was agreeable

¹³ *Waikato Environmental Protection Society Inc v Waikato Regional Council* [2007] W60/07.

to proceed on the basis of the necessary required degree of enclosure. If the Company formed the view that enclosure in whatever form was not a viable option for it then the appeals against the granting of the air discharge consent and bunker expansion would be allowed.

- 8.27 In a press article dated 10 February 2009, Environment Waikato was reported to have stated that it supported a bid by N.Z. Mushrooms Ltd to continue operating until the end of 2010. The Company was also reported as saying that the extension of operation to the end of 2010 was to enable its Christchurch operation (Meadow Mushrooms) to expand its Canterbury site and for the Morrinsville Company to source its compost from there. This would allow the Company to retain mushroom growing in Morrinsville and its 160 jobs. However, it is Mr Pilgrim's understanding that the entire operation at Taukoro Road has now closed down.
- 8.28 With regard to the existing biofilter the applicant's consultant has calculated that the actual biofilter loading rate, under maximum air flows, is 80 m³/hr per m³ of bark media. According to the applicant's consultant, Beca¹⁴, it is considered that an appropriate design loading rate for the biofilter with graded bark media would be 20-40 m³/hr per m³ media. The Auckland Council recommendation for activities under their jurisdiction is that the rate of airflow for biofilters using bark media should not exceed around 50 m³/hr per m³ of bark media, in order to provide for degrading of media over time and allow for partial replacement of media, while continuing to operate. A condition of consent is therefore recommended that limits the loading rate of the biofilter, or biofilters, to a maximum of 50 m³ air per hour per m³ of bark media.
- 8.29 Whilst Mr Pilgrim and I accept that the Company's biofilter, when inspected in July 2010, was operating well, we recommend a consent condition that requires the applicant to engage a professional biofilter designer to provide written evidence to the Council that the existing biofilter will be fit for purpose over a specified period of time. Given the degree of variance between the recommended design loading rates and the actual maximum loading rate that the biofilter is currently operating under, further assurance is needed to show that the biofilter is fit for purpose. It is recommended that this written evidence be provided to the Council by 1 December 2011.
- 8.30 Any increase in rates of ventilation will require an expansion in biofilter capacity. New biofilter capacity should either be designed based on 50 m³/hr per m³ of bark media or if composite or other media is proposed then the rate of odorous air flow to be treated per m³ of media must be specified by a biofilter designer and supported by documentary evidence that the biofilter design will be fit for purpose over a specified time and to the satisfaction of the Council.
- 8.31 As discussed in section 1 of this report the Phase 2 stage after filling and until emptying does not have high odour potential. However, whilst it may be that its odour nuisance potential is relatively low it could be additive to other relatively low potential odour sources, which could

¹⁴ Beca Infrastructure Ltd – Te Mata Mushrooms Odour Source Assessment 24 February 2010 pg 8.

have nuisance potential beyond the Company's site especially during adverse meteorological conditions. I am recommending that the Phase 2 bunkers, after filling and until emptying do not require ventilation to a biofilter at the present time. However, I recommend that a review condition be added to the consent document requiring that the Phase 2 bunkers be ventilated to the biofilter, if at some time in the future it becomes evident that the Phase 2 compost process, after filling and before emptying, is creating objectionable or offensive odour to the extent that it causes an adverse effect at or beyond the boundary of the site. The Company may wish to vent the Phase 2 bunkers to a biofilter as part of an overall upgrade in any case.

An Electric Bale Breaking Line

8.32 The applicant has also stated that the installation of an electric bale breaking line for the purpose of reducing the time the bales are kept wet, and the time it takes to create the compost substrate, would cost approximately \$NZ750,000 (ex GST). This improvement option would help to mitigate any potential odours that may be generated throughout the bale wetting, breaking and initial mixing stage. However, the cost of this improvement is substantial and possibly un-necessary at this stage, particularly if the quality of the wastewater used to wet the bales is maintained, via adequate aeration. We are recommending that the installation of an electric bale breaking line be included as a review condition in the consent.

Maintaining Optimum Dissolved Oxygen Concentrations in the Wastewater Pond

8.33 The applicant has stated that they intend to monitor the dissolved oxygen (DO) concentrations in the leachate pond twice per week for the first six months of the consent. After this time the applicant is proposing to analyse the data in relation to any physical effects prior to prescribing the form of any further mitigation or monitoring. Mr Pilgrim and I support the applicant in their intention to monitor DO concentrations in the wastewater, and agree that the DO levels should be maintained at over 1.0 mg/L. However, we do not consider that twice a week sampling is sufficient nor will it provide any meaningful data from which any conclusions can be reached. The reason for this is that the DO levels are likely to fluctuate significantly within the wastewater pond depending on factors such as water temperature and the concentration of organic influents to the pond. Therefore, only continuous measurement of DO concentration will provide any meaningful data, and the advantage of continuous monitoring is that it can automatically be linked to the aeration system so that when DO concentrations fall below a "trigger" the aeration system in the pond is activated. According to the Council's Manager: Environmental Science, Mr Graham Sevicke-Jones, a continuous monitoring system that is logged and alarmed to a mobile phone would cost approximately \$NZ 5000 (ex GST). A slightly cheaper option would be to telemeter the data to the Council's web site, whereby the applicant could access the data via their own log-in and the system could also be alarmed.

- 8.34 I am recommending consent conditions that require the continuous measuring and recording of DO concentrations, and the maintenance of the concentration of DO in the wastewater above 1.0 mg/L at all times. I consider that this level of mitigation is required to address the potential problems that can arise (as they have in the past at the site) when the wastewater conditions become anaerobic. The applicant's consultant, Beca, has assigned the wastewater pond the odour potential rating of moderate to high, a rating that Mr Pilgrim agrees with, and we consider that the only way to adequately address the potential problem is to continuously measure and maintain DO levels.
- 8.35 The applicant has reviewed the draft consent conditions and has agreed to continuously measure and record the DO concentrations from 1 December 2011 onwards. By 1 December 2012 DO concentrations are to be maintained at no less than 1.0 mg/L at all times. The lead-in time has been agreed upon to allow TMML time to install additional infrastructure, if continuous measurements show that more aeration is required to maintain the DO concentration.

The Use of Odour Neutralising Sprays

- 8.36 Although Mr Pilgrim advises that he has no specific experience with "Super Spice" (but does have experience with "Epoleon", "Air Repair", and "Ecolo"), from the description in the Beca Report it appears to be a standard odour neutralising agent consisting of high molecular weight monomers, essential oils, and other compounds including a "highlight" (perfume).
- 8.37 The use of odour neutralising agents is popular because of low capital cost and moderate operating cost compared with more traditional odour control programmes. Their effectiveness is seldom demonstrated by solid scientific evaluation but occasionally there are references to their ability to substantially reduce the concentration of contaminants such as hydrogen sulphide in air, and more frequently when the agent is applied directly to solids and liquids. Mr Pilgrim has not found their use to be effective when sprayed in accordance with the vendor's recommendations into ambient air to neutralise odour as a gas phase reaction. This is not surprising since it is very difficult to effectively mix odorous air with the neutralising agent (or with any other de-odouring agent).
- 8.38 In a paper by Fleer *et al* (2002)¹⁵, the authors evaluated a number of odour neutralising agents for the control of odour associated with the manufacture of glass wool insulation, vehicle tyres, an animal by-products plant, a broiler farm, and a municipal solid waste landfill, based on dynamic dilution olfactometry data. The evaluations included direct application to odorous surfaces, use in a water scrubber, and sprayed into air. In each instance, either minimal or nil reduction in source odour levels was observed.

¹⁵ Fleer, F.E., Ormerod, R., & Pollock, T. Odour Neutralising Agents – Fact or Fallacy? CAZANZ International Clean Air Conference. 2002.

- 8.39 Discussion with the Company on 9 June 2010 indicated that they were aware of the limitations of odour neutralising agents such as “Super Spice”, especially if it is not effectively mixed with odorous air, or if it is used in excess (as the perfume smell can be offensive to some people). Providing the odour of the neutralising agent is not discernable beyond the boundary of the Company’s site there is no actual disadvantage in the Company continuing to spray “Super Spice” into odorous air streams but, in Mr Pilgrim’s opinion, it is unlikely to have a significant measurable positive effect on odour concentrations, and it is not an alternative to employing sound operating practices and other odour minimising practices at the site. Therefore, no consent condition requiring the use of odour neutralising agents is recommended, and whether or not the Company continues to use “Super Spice” is at their own discretion.
- 8.40 There is a possible alternative to “Super Spice” and that is chlorine dioxide generated from sodium chlorite. While chlorine dioxide is a very effective odour neutralising agent and disinfectant, it has to be intimately mixed with fugitive odours to be effective and in this respect its limitations are no different than using “Super Spice”.

‘Other’ Infrastructure Improvements

- 8.41 The applicant has stated that they intend to store the chicken litter and gypsum substrate in a fully enclosed bunker in order to maintain it in a dry state and estimate that the cost of the new bunker will be approximately \$NZ 10,000 (ex GST). The applicant has also stated that the new bunker could be completed within 1 year. We agree with the applicant’s consultant, Beca, that keeping the chicken litter and chicken litter/gypsum substrate dry is the primary means of controlling odour from this potential source. We have recommended a consent condition that aligns with the applicant’s intention to enclose the raw materials.

Operating Procedures

- 8.42 A condition of consent is recommended that requires the applicant to prepare, and review at least every two years, a comprehensive Odour Management Plan (OMP). The minimum requirements for the contents of the OMP are listed as part of the consent condition, and have been derived from the Ministry for the Environment’s “Good Practice Guide for Assessing and Managing Odour in New Zealand (June 2003)”. The applicant’s previous consent, DP980233A, required the consent holder to comply with an Environment Management Plan (EMP) that was attached as an appendix to the consent, as well as to provide a “final” management and contingency plan relating to the operation, monitoring and maintenance of the biofilter.
- 8.43 The recommended OMP condition brings the previous EMP and the biofilter management and contingency plan into one document, and places odour management as the primary focus. A condition of consent is recommended that requires the applicant to submit a copy of the reviewed OMP to the Council every two years.

- 8.44 I recommend a condition of consent that limits the scale of the mushroom compost production to 120 tonnes of compost per 7 days. This is because the assessment of environmental effects for this application has been undertaken on the assumption that the applicant is not increasing, or proposing to increase, the scale of activity at the site, over the duration of the consent. This recommendation has been discussed with the applicant, who has agreed to the condition. The applicant will detail how to measure the mass of compost produced per seven days in the Odour Management Plan.
- 8.45 One area of potential odour generation that was not commented on in the initial odour potential rating assessment undertaken by the applicant's consultant, Beca, was odour that can be generated when the stockpile of spent mushroom compost is disturbed, especially if the stockpiles have been undisturbed for a month or more, and/or the weather conditions have been warm and wet allowing anaerobic conditions to develop in the interior of the stockpile. At least one complaint that the Council has received has been attributed, by the applicant, as having come from this source (ER2000.0122 – 24/03/2000). The applicant was asked, via a s 92 request, to provide an odour assessment rating for this activity. Beca have since assessed the activity as having an odour potential of "low", and have stated that no mitigation improvement options are required, "provided the material is not allowed to become anaerobic due to long storage times, large piles and very wet." However, preventing the spent compost becoming anaerobic may be difficult if it is not protected from rainfall especially if the compost is retained for a week or more. While appropriate maintenance of the spent compost should be included in the OMP, I recommend that the consent contains a review condition that requires the applicant to adequately address any odour issues that arise from this source, if it is found to be a problem in the future.

9 STATUTORY CONSIDERATIONS

- 9.1 In deciding upon this application, the RMA contains a number of provisions that require consideration. These include sections 104 and 105.

Part 2 of the RMA

- 9.2 Section 104(1) is subject to the matters contained in Part 2 of the RMA, which contains sections 5, 6, 7 and 8.
- 9.3 Section 5 sets out the purpose of the RMA, which is to "*promote the sustainable management of natural and physical resources.*" The term "*sustainable management*" is defined in section 5(2) as meaning "*managing the use, development, and protection of natural and physical*

resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety while:

- a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations,*
- b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems,*
- c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.”*

9.4 The promotion of sustainable management requires an overall broad judgement as to whether a proposal will meet the requirements of section 5(2). The approach recognises that the RMA has a single purpose – sustainable management. Such a judgement allows for the comparison of conflicting considerations and the scale or degree of them and their relative significance or proportion in deciding an application.

9.5 I consider that the applicant’s proposal allows it to use and develop the site in a way that provides for the economic wellbeing of the company, as well as the economic well-being of up to 120 employees and other businesses who depend on the mushroom growing operation.

9.6 I believe that natural and physical resources at the site are being sustained in such a way as to meet the reasonably foreseeable needs of future generations, whilst safeguarding the life-supporting capacity of air, water, soil and ecosystems.

9.7 The potential adverse effects of the proposed activities, specifically the discharge of contaminants (odour) to air, can be mitigated by the applicant. In addition to the measures that have already been implemented at the site, the applicant is proposing further mitigation and this has been discussed in section 8 of this report. In addition I recommend consent conditions that require additional staged mitigation measures to be installed that will require the venting of odours generated in the Phase 1 operations to a biofilter, or biofilters.

9.8 I believe consent can be granted in accordance with s 5 of the RMA, and that with appropriate mitigation measures, the proposed activities will not have an adverse effect on the environment that is more than minor.

9.9 Section 6 of the RMA sets out the following matters of national importance that are to be recognised and provided for in achieving the purpose of the RMA.

- The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development
- The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development

- The protection of area of significant indigenous vegetation and significant habitats of indigenous fauna
- The maintenance and enhancement of public access to and along the coastal marine area, lakes and rivers
- The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga
- The protection of historic heritage from inappropriate subdivision use and development
- The protection of recognised customary activities

9.10 In terms of s 6, there are no matters of national importance that are of relevance to this application.

9.11 Section 7 requires persons acting under the RMA in relation to managing the use, development, and protection of natural and physical resources, to have particular regard to:

- Kaitiakitanga
- The ethic of stewardship
- The efficient use and development of natural and physical resources
- The efficiency of the end use of energy
- The maintenance and enhancement of amenity values
- Intrinsic values of ecosystems
- Maintenance and enhancement of the quality of the environment
- Any finite characteristics of natural and physical resources
- The protection of the habitat of trout and salmon
- The effects of climate change
- The benefits to be derived from the use and development of renewable energy

9.12 In relation to the applicant's proposed activities, the matters listed in s 7 of the RMA that are of most significance relate to the maintenance and enhancement of amenity values and the quality of the environment. In terms of maintenance of the existing environment the applicant is not proposing to increase the scale of the activity, or change the scope of the activity and there should be no deterioration to the amenity values or the environment as a result of the consent being granted. However, I consider that the proposed consent conditions will lead to an improvement in amenity values and the environment over the duration of the consent and that overall the relevant matter identified in s 7 of the RMA have been addressed.

- 9.13 Section 8 of the RMA requires the reporting officer to take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi). The level of consultation an applicant is obliged to undertake must be tempered with an acknowledgement of what is reasonable. The application was publicly notified and the Waipatu Marae, the Ruahapia Marae and Ngahiwi Tomoana were directly notified. No submissions were received from tangata whenua.
- 9.14 On balance, it is therefore considered that the application is generally consistent with the purpose and principles of the RMA, subject to the recommended terms and conditions of consent.

Section 104(1) of the RMA

- 9.15 When considering an application for resource consent, and any submissions received, s 104(1) requires, among other factors, the consent authority, subject to Part 2, to have regard to:
- a) any actual and potential effects on the environment of allowing the activity; and
 - b) any relevant provisions of:
 - i. a national environmental standard:
 - ii. other regulations:
 - iii. a national policy statement:
 - iv. a New Zealand coastal policy statement:
 - v. a regional policy statement or proposed regional policy statement:
 - vi. a plan or proposed plan; and
 - c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.
- 9.16 The relevant matters for this application are discussed in the following sections.

Environmental Effects

- 9.17 The actual and potential effects of the proposed activities have been considered in section 7 of this report.

National Environmental Standard

- 9.18 The National Environmental Standards for Ambient Air Quality (September 2004) are mandatory technical environmental regulations that must be taken into account. Under Section 104(3)(c) of the RMA a consent authority cannot grant a resource consent contrary to any regulations. Their primary purpose is to set minimum requirements for outdoor air quality, to protect the health of all New Zealanders. The standards apply to the five contaminants specified in Table 5 below.

Table 5: National Environmental Standards for Ambient Air Quality (September 2004)

Contaminant	Standard	Time Average	Allowable exceedances per year
Fine Particulate (PM ₁₀)	50 µm/m ³	24-hour	1
Sulphur dioxide (SO ₂)	350 µm/m ³	1-hour	9
	570 µm/m ³	1-hour	0
Carbon monoxide (CO)	10 mg/m ³	8-hour	1
Nitrogen dioxide (NO ₂)	200 µm/m ³	1-hour	9
Ozone (O ₃)	150 µm/m ³	1-hour	0

- 9.19 Under the National Environmental Standards for Air Quality (NES), the Council has until 2013 to reduce the amount of PM₁₀ within the Hastings Airshed to a standard which complies with the NES. The Government recently revised the NES which will give the Council until 2020 to reduce PM₁₀ levels within Hastings. The amended regulations are expected to come into force in March 2011. The applicant's property sits just outside of the boundary of the Hastings Airshed.
- 9.20 Section 17 of the NES deals with resource consents for discharges of PM₁₀. The proposed discharges are adjacent to the Hastings Airshed, which already breaches its ambient air quality standard. However, as this proposal is unlikely to significantly increase the concentration of PM₁₀ in the airshed (according to the definition of 'significant')¹⁶ granting this resource consent would not be contrary to the regulation.
- 9.21 There are no other regulations or National Policy Statements relevant to this activity.

Regional Planning Documents

- 9.22 In addition to the Regional Policy Statement, the Regional Resource Management Plan (RRMP) and the Change 2 of the RRMP: Air Quality also require consideration.
- 9.23 The relevant objectives and policies contained in the Regional Policy Statement, and the RRMP are summarised in Table 6.

Table 6: Summary of Relevant Objectives and Policies

Regional Resource Management Plan
Regional Policy Statement

¹⁶ "Significant" connotes important or major, not just a few percent. Summary Advice on Key Air Quality National Environmental Standards Legal Questions, raised by the Auckland Regional Council and other Councils (primarily regarding the application of s.17 to 20, July 2006).

Objective 17	Land Use Conflicts
Policy 5	Land Use Conflicts
Policy 6	Land Use Conflicts
Policy 7	Land Use Conflicts
Policy 8	Odour Effects
Objective 20	Management of Organic Material
Policy 13	Composting
Policy 14	Separation Distances
Objective 34	Matters of Significance to Iwi/Hapu
Objective 35	Matters of Significance to Iwi/Hapu
Policy 59	Matters of Significance to Iwi/Hapu
Regional Plan	
Objective 39	Air Quality
Policy 69	Air Quality
Policy 70	Air quality

Regional Policy Statement

- 9.24 The Regional Policy Statement (RPS) contains a number of objectives and policies relevant to these activities, as does the Regional Plan. Both these documents are contained in the Regional Resource Management Plan (RRMP) document.
- 9.25 Objective 17 of the RPS applies to existing activities, and aims to remedy or mitigate the extent of nuisance effects arising from the present location of conflicting land use activities. The objective does not provide an explanation as to the extent that nuisance effects are required to be remedied or mitigated, but rather introduces the concept of “reverse sensitivity”. Where an existing activity produces a situation that a new activity would likely regard as noxious, dangerous, offensive or objectionable, then the new activity should not be sited next to the existing one. Alternatively safeguards should be put in place to ensure that the new activity does not curtail the existing one. According to information provided in the application, the matter of reverse sensitivity was considered when the Brookvale/Arataki Structure Plan was developed.¹⁷ It was identified during the Hastings Urban Development Strategy that a buffer between the existing mushroom farm and any residential development was desirable. The commissioners who decided upon the Plan change considered Arataki Road to be a logical boundary, and since the initial plan change, the area that is now within the General Residential Zone, extends from Havelock North to Arataki Road. The plan change became operative in 1997. More recently, the Heretaunga Plains Urban Development Strategy (HPUDS) has

¹⁷ Resource Consent Application to Discharge Contaminants (Odour) into Air - Te Mata Mushrooms Ltd, 24 February 2010. Planoramic Ltd Environmental Planning Consultants, 090030, pg 8.

identified the area between the escarpment and Arataki Road as a future “green fields” growth area for the period 2015 – 2045.

- 9.26 Policy 5 seeks to use non-regulatory methods, in particular liaison and collaboration between the Regional Council with territorial authorities, as the primary means of preventing or resolving problems arising from incompatible land-use activities. This policy recognises that the conflict between incompatible land uses has generally arisen as a result of past land use planning decisions and a legal inability to consider the likely effects of conflicting land uses. I consider that, to a large degree, the reverse sensitivity issues that the applicant is now having to contend with have arisen as a result of past land use planning decisions. Whilst I have considerable sympathy for TMML (as do a number of the submitters) I am mindful that businesses need to adapt to changing external environments and this involves a degree of forward planning, including setting aside capital for infrastructure upgrades. Once the plan change became operative the Company could reasonably anticipate that further internalisation of the adverse effects of their activities would be required. Based on a conversation I had with the applicant in 2007 it would seem that consideration was being given, at least at that stage, to enclosing part of the composting operation.
- 9.27 Policy 6 of the RPS recognises that no existing land use activity (which adopts the best practicable option (BPO) or is otherwise environmentally sound) should be restricted or compromised as a result of the future establishment of potentially conflicting land use activities adjacent to it. This policy seeks to encompass the concept of “reverse sensitivity”, recognising the rights of lawfully established activities.
- 9.28 Policy 7 sets out the problem solving approach to be taken to address existing problems that arise as a result of incompatible land uses. The policy expressly recognises the rights of existing lawfully established activities that are operated in a manner that adopts the BPO, or which is otherwise environmentally sound.
- 9.29 Best practicable option is defined in the RRMP as being the best method for preventing or minimising the adverse effects on the environment, and takes into account:
- a) The nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects, and
 - b) The financial implications, and the effects on the environment, of that option when compared with other options, and
 - c) The current state of technical knowledge and the likelihood that the option can be successfully applied.
- 9.30 “Environmentally sound activities” are defined in the RRMP as being those that comply with the Environmental Guidelines set out in Chapter 5 of the RRMP (the Regional Plan Objectives and

Policies); any relevant rules of the Plan; any effects-based environmental guidelines, standards or rules of the relevant territorial authority; and any resource consents required for the activity. With regard to Policy 6 and Policy 7, the activities undertaken at TMML, that is the production of mushroom compost and mushrooms should not be “restricted or compromised” so long as there is “no offensive or objectionable odour beyond the boundary of the property”.

9.31 With regard to what is the BPO for the TMML site, I consider that the following apply:

- a) The nature of the discharge has not changed since the activities at TMML first began; i.e. the potential source of odour emissions continues to be from a composting and mushroom growing operation and associated activities. However, the sensitivity of the receiving environment has increased as zoning changes have allowed residential subdivisions to develop, in what would have been a natural buffer zone between the TMML site and residential housing that existed at the time when the mushroom growing operation was first established. Further, the sensitivity of the receiving environment is likely to continue increasing as housing development extends right up to the Arataki Road boundary over the next 5 – 10 years. In 1967 when TMML was first established it was in a rural zone and there was a distance of over two km between the mushroom composting site and the nearest residential subdivision. By the time the Arataki Mews subdivision is complete this distance will have reduced to approximately 240 m.
- b) A key aspect for the applicant must be the financial implications of complying with recommended consent conditions that require significant infrastructure upgrades and improved monitoring. I have considered the financial burden that the recommendations may place on the applicant, and for this reason propose that the upgrades be “staggered” over a period of six years. Further, my recommendations are targeted to address the activities that have been identified by both the applicant’s consultant (Beca) and Mr Pilgrim as having the highest odour potential rating.
- c) With regard to the current state of technical knowledge available there is more that can be done at the site to mitigate the potential adverse effects of odour, and details of the possible improvements to infrastructure and monitoring were outlined by the Beca on behalf of the applicant. I have used this information, in conjunction with the odour potential rating given to each of the activities carried out at the site and the guidance of Mr Pilgrim to make my recommendations.

9.32 Guidance on what could be considered to be BPO can be taken from the Environment Court decision for the Meadow Mushrooms case (discussed in section 8 of this report). The Court established that, even in an **existing** operation, the onus is on the consent holder to ‘adequately capture odour’, and that this included enclosing parts of the composting operation. The proposed condition requiring the enclosing and venting of odours generated in the Phase 1

and Phase 2 operations to a biofilter or biofilters is consistent with these objectives and policies relating to the BPO.

- 9.33 Policy 8 of the RPS specifically relates to odour and provides guidance to HBRC staff when determining resource consent conditions and when assessing any odour complaint. The factors to be taken into account include the FIDOL parameters and the policy seeks to minimise conflict and reduce the adverse effects of incompatible land use activities on one another. The FIDOL factors have been considered as part of this consent process and my recommendation is that they be listed as an advice note on the consent document to provide guidance to the consent holder and HBRC staff when assessing any odour complaints.
- 9.34 Objective 20 seeks to manage and use organic material derived from industries processing primary products in a manner that does not result in any adverse effects on humans or the environment. By way of explanation this could include storing and using organic material in locations away from adjoining incompatible activities. These matters have been discussed in the body of this report and a review condition is recommended requiring the consent holder to address any issues that may arise as a result of the storage of spent compost.
- 9.35 Policy 13 requires an industrial or trade premise to obtain a resource consent for the discharge of contaminants to air for the composting of more than 100 m³ of compost. The application is consistent with this policy.
- 9.36 Policy 14 of the RPS requires the establishment and maintenance of separation distances in relation to the storage, use or disposal of organic material to ensure that there are no offensive or objectionable odours imposed on neighbouring properties. The separation distance has been set through the Brookvale/Arataki Structure Plan Change.
- 9.37 Objective 34 requires the recognition of tikanga Maori values and the contribution they make to sustainable development and the fulfilment of HBRC's role as guardians, as established under the RMA, and tangata whenua roles as kaitiaki, in keeping with Maori culture and traditions. Objective 35 requires the Council to consult with Maori in a manner that creates effective resource management outcomes and Policy 59 sets out the criteria for that consultation to be most effective. With regard to this application, members of the Waipatu Marae and the Ruahapia Marae, and Ngahiwi Tomoana were directly notified, in accordance with the timeframes set out in the RMA. No submissions were received from tangata whenua.
- 9.38 I believe the applicant's proposal is consistent with the objectives and policies of the Regional Policy Statement.

Regional Resource Management Plan

- 9.39 The relevant issues dealt with by the Regional Resource Management Plan pertaining to air quality are covered by Objective 39 and Policies 69 and 70.

- 9.40 Objective 39 requires the maintenance of a standard of ambient and local air quality that is not detrimental to human health, amenity values, or the life-supporting capacity of air.
- 9.41 Policy 69 outlines the environmental guidelines pertaining to air quality, of which two are relevant to these applications. Guideline 1 states that there should be no offensive or objectionable odour beyond the boundary of the subject property. Guideline 2 states that there should be no noxious or dangerous levels of gases or other airborne or airborne liquid contaminants beyond the boundary of the subject property, in concentrations and at locations that are likely to cause adverse effects on human health, ecosystems or property. Consent conditions are recommended to require the consent holder to enclose parts of the mushroom composting operation that have the highest odour potential rating, and to ensure the dissolved oxygen levels in the leachate/wastewater are above a minimum concentration required for aerated conditions. Further consent conditions have been recommended relating to the performance of the biofilter. These are significant new mitigation measures that should ensure that there are no offensive or objectionable odours beyond the boundary of the applicant's property such that they cause adverse effects on human health, ecosystems or property.
- 9.42 Policy 70 sets out the three ways that the Council uses to implement the air quality standards set out in Policy 69. These are through the regional rules, the resource consent process and non-regulatory methods.

Change 2: Regional Resource Management Plan Air Quality

- 9.43 Most of Change 2 is now operative, except for some parts that have been appealed. The parts of Change 2 that have not been appealed over-ride the RRMP (2006) provisions. Given that the plan change decisions have been issued, even the sections under appeal (denoted by underline in the Change 2 document) carry more 'weight' than the provisions in the RRMP. The relevant issues dealt with by Change 2: Regional Resource Management Plan Air Quality are covered in Objectives 39, 39a and 39b, as well as Policies 69 and 70.
- 9.44 Objective 39 states that a standard of ambient air quality is maintained at, or enhanced to, a level that is not detrimental to human health, amenity values or the life supporting capacity of air, and meets National Environmental Standards. Objective 39a is similar to objective 39, but refers to 'local air quality' rather than ambient air quality.
- 9.45 Objective 39b requires an improvement to the ambient air quality in the Hastings Airshed, so that by 1 September 2020, the concentration of PM₁₀ does not exceed 50 µg/m³ (24 hour average) more than once in any 12 month period. As discussed above, the proposed activities are adjacent to, but not actually within the boundary of the airshed, and are unlikely to have a discernable effect on the airshed as a whole.

- 9.46 Policy 69 of Change 2 includes the existing guidelines contained within the August 2006 RRMP (referred to above) but also includes a number of additional guidelines. Guideline 6 states that the ambient air quality must remain within the standards stated within the Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins and other Toxics) Regulations 2004. With regard to these applications the discharges to air from this existing activity will not significantly degrade ambient air quality.

Section 104(2A)

- 9.47 When considering an application affected by section 124, the consent authority must have regard to the value of the investment of the existing consent holder. The significant value of investment of the existing consent holder is acknowledged, and it is recommended that consent is granted to authorise the ongoing use of the existing facilities. However, it is also noted that TMML has been using the existing facilities since 1967 and an upgrade is likely to be required to the odour control facilities, in order to address adverse effects on the encroaching receiving environment. As this capital expenditure is expected to be substantial, it is recommended that the consent allows the consent holder a lead-in timeframe.

Section 104(3) of the RMA

- 9.48 Under s 104(3)(c)(iii) of the RMA a consent authority cannot grant consent contrary to any regulations. As discussed earlier, the contribution of PM₁₀ to the Hastings Airshed will not be significant and the granting of this consent will not be contrary to any regulations.

Section 105 of the RMA

- 9.49 As the proposed activity involves a discharge of a contaminant, under s 105 of the RMA, the consent authority must also have regard to:
- a) *the nature of the discharge and the sensitivity of the receiving environment to adverse effects;*
 - b) *the applicant's reasons for the proposed choice; and*
 - c) *any possible alternative methods of discharge, including discharge into any other receiving environment.*
- 9.50 The applicant proposes to discharge odour and liquid aerosols to air arising from a mushroom growing operation and the associated activity of the management of leachate/wastewater. The receiving environment is the air-shed predominantly to the west and south-west of the site extending over a distance of approximately 1.3 km from the site. The sensitivity of the receiving environment has been discussed in section 3 of this report. There is no other receiving environment that the applicant can discharge to without transferring all or parts of the operation to another site.

10. MONITORING

Monitoring By Consent Holder

10.1 The consent holder will be required to monitor the following:

- The tonnage of Phase 1 compost manufactured over any 7 day period
- The dissolved oxygen (DO) concentration (mg/L) at the point where wastewater flows from the storage pond into the aerated pond
- The moisture levels in the biofilter, or biofilters
- The design depth of active media in the biofilter, or biofilters
- The condition of the media in the biofilter, or biofilters
- The inlet air temperature to the biofilter, or biofilters
- The static pressure within the air supply pipes to the biofilter, or biofilters
- The pH within the biofilter bed, or beds
- Any other operating parameters that are identified by the consent holder in the Odour Management Plan as needing to be monitored.

Monitoring By Council

10.2 In addition to the sampling and analysis to be carried out by the consent holder, Council staff will carry out the following monitoring:

- Routine site inspections up to twice per year
- Auditing of consent holder's sampling procedures (and other auditing) once per year (in conjunction with one of the site inspections)
- Interpretation of monitoring data
- The production of an annual compliance monitoring report.

10.3 Additional monitoring may be required if there is non-compliance or if monitoring indicates adverse effects are greater than anticipated.

10.4 The costs of any routine monitoring will be charged to the consent holder in accordance with the Council's Annual Plan at the time.

11. CONSENT CONDITIONS

11.1 The recommended consent conditions are attached as Appendix 3. The recommended conditions were drafted and then discussed extensively with the applicant, who has provided

written confirmation that the conditions are acceptable. The recommended conditions were also discussed with those submitters that indicated that they wished to be heard at a hearing, in relation to their submission.

12 DURATION

- 12.1 The applicant has requested that the consent be granted for a period of 25 years. Only one submitter sought relief in terms of the consent duration, and that was Ms Lara Blomfield representing Flipkat Trust. Ms Blomfield submitted that, given the effects of the discharge, it is not appropriate for the term of consent to be 25 years as sought by the applicant.
- 12.2 When considering the most appropriate consent duration the following factors have been considered:
- The Regional Plan (RRMP (August 2006)
 - Environmental court decisions (case law)
 - Other hearing decisions/internal regional comparisons
 - Environmental effects expected

The Regional Plan

- 12.3 Section 8.2.4.1 of the RRMP indicates that a term of consent for discharges will be given for a period of between 20 – 35 years *unless* the type of activity has effects that are unknown or potentially significant for the locality in which it is undertaken.
- 12.4 The effects of the existing discharge from the site have been discussed in Section 7 of this report. Odour that is described as offensive and objectionable has occurred beyond the boundary of the site as a result of the existing discharge.
- 12.5 With an increase in the number of dwellings within a 1.5 km radius of the site likely over the next five years there is the potential for a lot more people to adversely affected by any discharge from the site. Whilst the adverse effects of odour are known and documented, the degree to which those effects impact on new residents to the Arataki area is not able to be quantified at this stage.

Environment Court Decisions (Case Law)

- 12.6 PVL Proteins Ltd case law (PVL Proteins Ltd vs Auckland Regional Council, A61/2001), is particularly relevant as this operation caused adverse environmental effects but the company was committed to a significant plant upgrade. The following matters were considered:
- Enabling people to provide for their economic well-being (in the context of a statutory purpose).

- The economic effects on the consent holder of a particular consent term.

12.7 PVL Proteins Ltd were granted a 14-year term. The court ruled that due to the commitment shown by the company to minimise the effects, a shorter term would not be desirable. Taking into consideration the company's investment, their location in an appropriate zone, and the ability to review the conditions, it was considered that the duration should be appropriate for which the consent holder could have security of consent.

Other Hearing Decisions/Internal Regional Comparisons

12.8 Ravensdown Fertiliser Co-operative Limited (Ravensdown) were granted a 14-year term and Tomoana Pelt Processors Limited (TPP) and Galvanising (HB) Limited were granted a 15-year terms, for their air discharge consents. Both companies were committed to making improvements.

12.9 The TPP consent duration was based on the Ravensdown consent duration. Tomoana Pelt Processors had 11 odour complaints recorded over a 7-year period while Galvanising (HB) Ltd had 5 recorded complaints in 10 years.

Recommendation

12.10 I recommend a 14-year consent duration, expiring on 31 May 2025. In making this recommendation I have had regard to the number of complaints received, the RRMP, case law and the duration of other air discharge consents that have been issued by Hawke's Bay Regional Council. I have also considered the consent holder's investment in terms of securing the consent, whilst recognising the uncertainties relating to the long term effects of the activity on future property owners in the Arataki Road area. I believe this consent duration also provides "security of consent" to the consent holder and note that there will be a further eight years of consent duration once the final recommended improvement option is completed in 2017.

12.11 I consider that annual section 128 review opportunities are appropriate.

13. CONCLUSION

13.1 The applicant has applied to discharge contaminants, principally odour, into the air from a composting and mushroom growing operation, and associated activities.

13.2 The activity is classified as discretionary in the Regional Resource Management Plan (RRMP) and under Rule 28 of Change 2 of the RRMP: Air Quality.

13.3 The applicant's property is located adjacent to Arataki Road, Havelock North. Sections are currently being sold in a new subdivision, Arataki Mews, which will border the south-western side of Arataki Road.

- 13.4 The Council has received 42 complaints about odour from the applicant's site since 2000.
- 13.5 "Reverse-sensitivity" issues are likely to increase as a result of the encroaching subdivision, if substantial improvements are not made to the infrastructure at the applicant's site.
- 13.6 I consider that, to a large degree, the reverse sensitivity issues that the applicant is now having to contend with have arisen as a result of past land use planning decisions. Whilst I have considerable sympathy for TMML I am mindful that businesses need to adapt to changing external environments and this involves a degree of forward planning, including setting aside capital for infrastructure upgrades. Once the plan change became operative the Company could reasonably anticipate that further internalisation of the adverse effects of their activities would be required.
- 13.7 Consent conditions are recommended to fully enclose the Phase 1 turning of compost operations within buildings that are ventilated to a biofilter, or biofilters with sufficient design capacity.
- 13.8 These conditions, and the other recommended conditions, should ensure that offensive and objectionable odours that are generated at the site are "internalised" on the applicant's own property, and do not have an adverse effect on people living and working within the receiving environment that is more than minor.

14. RECOMMENDATION

- 14.1 I recommend that the resource consent be **granted** to Te Mata Mushroom Ltd, subject to the conditions in the attached draft consent.



Natasha Berkett
Environmental Consultant



Darryl Lew
Manager Consents
RESOURCE MANAGEMENT GROUP
13th April 2011

Appendices

1. Incident database summary
2. Summary of submissions
3. Recommended consent conditions

APPENDIX 1: SUMMARY OF ODOUR INCIDENTS REPORTED TO COUNCIL 2000 – 2011: TE MATA MUSHROOMS LIMITED

Date	Time	Potential Cause	Wind Direction	Odour Detected		Period	Intensity
				Yes/No	Location		
2000							
24/03/2000	-	Moving spent compost that was 1 month old	-	Yes	Brookvale Road	-	-
01/06/2000	16:30	Not stated	-	No	Not stated	-	-
2001							
15/02/2001	9:30	Blending Compost	NE	Yes	Arataki Road	-	Strong
16/02/2001	9:00	Not stated	NE	Yes	Arataki Road	-	“Bad”
4/05/2001	17:00	Turning compost piles	-	Yes	Guthrie Road	-	-
11/05/2001	12:30	Not stated	-	No	Guthrie Road	3 weeks	-
11/05/2001	-	“smells like chicken manure”	-	No	Te Mata Road	-	-
10/08/2001	10:30	Not stated	-	No	Te Mata Road	-	-
2005							
12/03/2005	20:15	Effluent aerator not working properly	NE	No	Arataki Road	-	-
2006							
16/02/2006	11:00	Turning bales, bales had gone anaerobic	SE	Yes	Scott Place	“reoccurring”	“traces”
17/02/2006	8:40	Emptying bunkers	N	No	Arataki Rd/ Goddard Lane	-	-
6/04/2006	7:40	Turning bales, bales may have been overwatered	N	No	Scott Place	-	“very intense”
23/11/2006	7:47	Turning bales, bales may have been overwatered	Still	No	Not stated	-	-
23/11/2006	19:00	Turning bales, bales may have gone anaerobic	-	No	Fairview Place	-	“very strong”
26/12/2006	12:25	Not stated	-	Yes	Arataki Road		“very light”
27/12/2006	7:32	Turning bales	NE	Yes	Arataki Road	-	-
2007							
31/01/2007	16:30	Not stated	-	No	Scott Place	“often prevalent on hot afternoons”	-

10/10/2007	9:00	Not stated	NE	Yes	Arataki Road	1 hour	-
21/11/2007	20:04	Not stated	NE	No	Fairview Place	-	-
22/11/2007	7:30	Not stated	-	No	Arataki Road	Half an hour	"terrible"
12/12/2007	14:30	Super Spice?	NE	No	Scott Place	Intermittent	-
2008							
02/01/2008	14:33	"Upgrading part of compost system – not yet complete"	-	No	Scott Place	On and off over months	-
09/02/2008	15:57	Chicken manure laid on bales	NE	Yes	Arataki Road	On and off all day	strong
09/02/2008	16:20	Chicken manure laid on bales	NE	Yes	Arataki Road	On and off all day	strong
19/02/2008	16:50	Transfer of compost to bunker	N	No	Brookvale Road area	-	very Strong
12/03/2008	16:55	Not stated	-	No	Brookvale Road	-	-
04/04/2008	8:00	Bark filter newly reconditioned	-	Yes	Scott Place	"on and off for 2-3 weeks"	"bad"
15/04/2008	10:13	Not stated	-	No	Brookvale Road	-	"strong"
19/05/2008	20:00	Not stated	-	No	Brookvale Road	-	"intense"
22/10/2008	8:10	Not stated	-	No	Brookvale Road	-	-
19/12/2008	7:00	Not stated	-	No	Scott Place	1.5 hours	"strong"
23/12/2008	10:30	Not stated	NE	No	Scott Place	2.75 hours	"strong"
2009							
07/01/2009	14:45	Not stated	-	No	Scott Place	-	"significant"
12/02/2009	7:45	Chicken manure laid onto bales	Still	Yes (by owner)	Scott Place	-	-
23/02/2009	7:40	Not stated	NE	Yes	Arataki	40 mins	-
26/02/2009	7:57	Not stated	-	No	Scott Place	-	-
04/03/2009	17:35	Not stated	-	No	Scott Place	-	-
27/03/2009	8:29	Not stated	Still	Yes	Scott Place	30 mins	"slight"
05/05/2009	8:00	Not stated	Still	No	Scott Place	-	-
17/07/2009	16:30	Not stated	-	No	Brookvale Road	1 hour	-
25/08/2009	8:30	Compost stack "wetter than normal"	-	No	Fairview Place	45 min	"stronger than normal"
28/09/2009	11:40	Not stated	NE	No	Fairview Place	-	
2010							

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APPENDIX 2: SUMMARY OF SUBMISSIONS RECEIVED

	Issues Raised	Relief Sought
Opposing Submitters		
Lynda & Tom Bird	<ul style="list-style-type: none"> Extremely bad odours around Palmbrook Avenue area 	<ul style="list-style-type: none"> Decline consent
Sylvia Grace White	<ul style="list-style-type: none"> Smell is terrible during the day 	<ul style="list-style-type: none"> Discharge odour at night when wind conditions are acceptable
Diana Mary Martin	<ul style="list-style-type: none"> Unpleasant odour in Palmbrook Avenue area particularly on hot summer days Odour could affect the value of properties in the Palmbrook Avenue area 	<ul style="list-style-type: none"> Not stated
Jane Parslow	<ul style="list-style-type: none"> Unpleasant odours get into everything, cannot hang washing out or have windows open Future owners of new sections in Arataki area may purchase without being aware of the problem Odour could impact on property valuations in the area 	<ul style="list-style-type: none"> Not stated
David Charles Tester	<ul style="list-style-type: none"> Lives at least one km from Te Mata Mushrooms but experiences odour so bad he cannot remain outside Considers technology, such as biofilters, is available to eliminate the problem Te Mata Mushrooms cannot ignore their responsibilities to their 	<ul style="list-style-type: none"> Not stated

	neighbours and the people of Havelock North	
Dave Couchman	<ul style="list-style-type: none"> • It "stinks" • The closer the housing gets to Te Mata Mushrooms the worse it will be for future home owners 	<ul style="list-style-type: none"> • Not stated
Marcus & Lynette Pohio	<ul style="list-style-type: none"> • Object to the odours that will affect their enjoyment of the area they have chosen to live in. 	<ul style="list-style-type: none"> • Not stated
Terry & Lydia Durrance	<ul style="list-style-type: none"> • Offensive odours created by the composting process 	<ul style="list-style-type: none"> • Appropriate deodourising plant/ equipment installed to reduce/ eliminate offensive odours.
Terence Frederick & Annette May Murdoch	<ul style="list-style-type: none"> • Odour being released into the air is not acceptable with today's technology 	<ul style="list-style-type: none"> • Not stated
Darrin John Smith	<ul style="list-style-type: none"> • Odour is offensive and smells of sewerage • Odour is noticeable on still days and in early morning/ late afternoon when trying to sit outside 	<ul style="list-style-type: none"> • Not stated
Jim & Barbara Frogley	<ul style="list-style-type: none"> • Odour is episodic and so minimal as to be inoffensive 	<ul style="list-style-type: none"> • Grant consent
Jillian Hunter, David Hunter & Stephen Greer as Trustees of the Flipkat Trust	<ul style="list-style-type: none"> • Submitters are immediate neighbours of Te Mata Mushrooms Ltd. • Odour is offensive and objectionable beyond the boundary of Te Mata Mushroom's boundary • The smell is so strong that the submitters close all windows and cannot use outdoor living areas • Discharge of odour is contrary to Objective 39, Policy 69 and Table 6 of the RRMP 	<ul style="list-style-type: none"> • Decline consent; or • Grant consent with conditions requiring the applicant to undertake further measures to remedy or mitigate the effects of odour discharged from its operation • Term sought by the applicant (25 years) is inappropriate

Fay & Graham Barclay	<ul style="list-style-type: none"> • Discharge of odour does not maintain or enhance amenity values or the quality of the environment (section 7(c) and 7(f) of the RMA) • The odour ruins residents' rights to enjoy their outside living areas • The odour causes embarrassment when visitors call • The odour will detract from the value of property in the area • The odour may be carrying airborne contaminants that could cause health problems • Te Mata Mushrooms Ltd should be able to comply with HBRC guidelines • Odour usually arrives around 7.30 to 8.00 am when it is around; usually when there is a mild N-NW wind, but is often worse when there is no wind • Odour issues need to be resolved as a school is to be established in the area in the future and new houses will be built along Arataki Road • Concerns about the land and the aquifer of the area 	<ul style="list-style-type: none"> • Restrictions to the hours of activity or undertaking them at night time • Cessation of activities during still conditions or in a light N-NW breeze
Supporting Submitters		
Rhys Flack Arataki Honey Ltd	<ul style="list-style-type: none"> • Not stated 	<ul style="list-style-type: none"> • Not stated
Donald Sydney Baker	<ul style="list-style-type: none"> • Experiences unpleasant odours on Fridays 	<ul style="list-style-type: none"> • Grant consent so long as odour does not intensify
Janice Ngaire Skinner &	<ul style="list-style-type: none"> • Offensive Odours are experienced on Fridays 	<ul style="list-style-type: none"> • Grant consent so long as odour does not intensify.

Noel Roland Skinner		
David Archelaus Toop	<ul style="list-style-type: none"> • Application is to continue an existing discharge • Existing rights of applicant should not be impacted by subdivision closing in on longstanding business in rural area • Developers and purchasers knew of the Te Mata Mushrooms operation before land development commenced • Case law exists where existing rights have outweighed urban spread and objectors have had to pay costs. 	<ul style="list-style-type: none"> • Not stated
Hugh Sowman	<ul style="list-style-type: none"> • Existing business that has been in the area for more than 40 years 	<ul style="list-style-type: none"> • Grant consent
Tony Harrison	<ul style="list-style-type: none"> • Te Mata Mushrooms are a well established company with existing use rights • Buyer beware for anyone purchasing property in the area 	<ul style="list-style-type: none"> • Not stated
Amanda & Stewart Milne	<ul style="list-style-type: none"> • Te Mata Mushrooms was there before the subdivisions • Buyer beware for anyone purchasing property in the area • Occasionally smells odour but considers it to be a natural "country" smell • Te Mata Mushrooms is a Havelock North "institution" 	<ul style="list-style-type: none"> • Not stated
Fiona Jane Baker	<ul style="list-style-type: none"> • Has noticed smell but does not consider it offensive and it does not last long • Te Mata Mushrooms was there long before the subdivisions • Te Mata Mushrooms is a major employer in the area and supports the local economy 	<ul style="list-style-type: none"> • Not stated
Oswald Peter	<ul style="list-style-type: none"> • Resulting changes made by Te Mata Mushrooms (since previous 	<ul style="list-style-type: none"> • Not stated

Ghuras	application) have made the area pleasant to live in	
Reid John Gow	<ul style="list-style-type: none"> Long term resident of the area who has not had any difficulty with the odour that may occur from time to time. 	<ul style="list-style-type: none"> Not stated
Kerrie Ann Lovell	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> Not stated
Adele Adams	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> Not stated
Nasra Mohamed	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> Not stated
Sharon Barnes	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> Not stated
Ann Christie	<ul style="list-style-type: none"> Te Mata Mushrooms Ltd is an integral part of Havelock North's tourism industry along with Arataki Honey, Te Mata Winery and Te Mata Cheese Company Economic impacts on those who are employed at the company as well as other businesses in Havelock North and outlying districts if consent was declined Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> Not stated
Joan Christine Chadderton	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions Company is an employer of over 100 people and is a worthwhile enterprise 	<ul style="list-style-type: none"> Not stated
Christine Rose	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and 	<ul style="list-style-type: none"> Not stated

Kaye	flexible working conditions <ul style="list-style-type: none"> • Company has been operating over 40 years without too many problems in the past • Odours do not bother submitter and are not around 24/7 • Loss to community if the company were to close and unemployment was to result 	
Fiona Morgan	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> • Not stated
Rhonda Perkins-Gordon	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions • Submitter does not find odour offensive 	<ul style="list-style-type: none"> • Not stated
Brad Limmer	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> • Not stated
Cameron J Adams	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions • Existing business that has been in the area for more than 40 years • Buyer beware for anyone purchasing property in the area 	<ul style="list-style-type: none"> • Not stated
Kieran Moloney	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> • Not stated
Janice Moloney	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> • Not stated
Michael John Moloney	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions 	<ul style="list-style-type: none"> • Not stated
Catarina	<ul style="list-style-type: none"> • Employee of Te Mata Mushrooms Ltd who depends on the job and 	<ul style="list-style-type: none"> • Not stated

Cavallaro	flexible working conditions	
Alexia Helen Moren	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions Has not found emissions to be offensive 	<ul style="list-style-type: none"> Not stated
Janice Anne Douglas	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions Does not smell much (odour) at any time of the working day 	<ul style="list-style-type: none"> Not stated
Tracy Annan	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions Does not find odour offensive Buyer beware for anyone purchasing property in the area 	<ul style="list-style-type: none"> Not stated
Judi Schnell	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions Company employs many immigrants to New Zealand Te Mata Mushrooms provides wonderful mushrooms for people all over the North Island of New Zealand 	<ul style="list-style-type: none"> Not stated
Lindon Wilson	<ul style="list-style-type: none"> Submitter's wife is an employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions The company employs over 100 people and the consequences would be disastrous if the mushroom farm were forced to close Existing business that has been in the area for more than 40 years 	<ul style="list-style-type: none"> Not stated
Miriam Wabu-Wilson	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions The company employs over 100 people and the consequences 	<ul style="list-style-type: none"> Not stated

	<p>would be disastrous if the mushroom farm were forced to close</p> <ul style="list-style-type: none"> Existing business that has been in the area for more than 40 years 	
Maxine Gavin	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions The company employs over 100 people and the consequences would be disastrous if the mushroom farm were forced to close 	<ul style="list-style-type: none"> Not stated
Analyn Anderton	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who enjoys flexible working conditions 	<ul style="list-style-type: none"> Not stated
Rosemary Dunn	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions Would be devastating to her and others if they were to lose their jobs 	<ul style="list-style-type: none"> Not stated
Allen and Sandra Connor	<ul style="list-style-type: none"> Near neighbours to Te Mata Mushrooms Ltd for 25 years Have not been affected by the activity and odour has been less noticeable in recent times 	<ul style="list-style-type: none"> Not stated
Karen Berry	<ul style="list-style-type: none"> Live up the road from Te Mata Mushroom Ltd and have not noticed any smell from the company 	<ul style="list-style-type: none"> Not stated
Ivan John Coombs	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and flexible working conditions Te Mata Mushrooms have employed hundreds of people and are good employers 	<ul style="list-style-type: none"> Not stated
Rebecca Mary Harvey	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who enjoys her job 	<ul style="list-style-type: none"> Not stated
Robyn	<ul style="list-style-type: none"> Employee of Te Mata Mushrooms Ltd who depends on the job and 	<ul style="list-style-type: none"> Not stated

Coombs	flexible working conditions <ul style="list-style-type: none"> Te Mata Mushrooms have employed hundreds of people and are good employers 	
Neutral		
Mark Robert Pritchard & Angie Chaplow	<ul style="list-style-type: none"> Does not wish to see odour get any worse 	<ul style="list-style-type: none"> Grant consent so long as the activity remains as it is now and does not get any worse
Joanna Kate Newbigin	<ul style="list-style-type: none"> See relief sought 	<ul style="list-style-type: none"> Decline consent if application is to enable more odour to be discharged Grant consent if the activity is to remain as the status quo

APPENDIX 3: RECOMMENDED CONSENT CONDITIONS

1. All works and structures relating to this consent shall be installed to conform to best engineering practices and at all times maintained to a safe and serviceable standard.
2. The consent holder shall undertake all operations in accordance with any drawings, specifications, statements of intent and other information supplied as part of this application. Specifically this shall include:
 - a) Te Mata Mushrooms Limited – Resource Consent Application To Discharge Contaminants (Odour) Into Air, Planoramic Ltd Environmental Planning Consultants, 23 February 2010 090030.
 - b) DP100128A – Request for Further Information, Planoramic Ltd Environmental Planning Consultants, 10 December 2010 090030

Where a conflict arises between any conditions of this consent and the application, the conditions of this consent will prevail.

3. For the purposes of this consent, 'Phase 1' activities are defined as:
 - a) The filling of Phase 1 bunkers with a mixture of straw, chicken litter, and gypsum;
 - b) Composting of this mixture (after it has been placed in the Phase 1 bunkers) including aeration of the compost and ventilation of the Phase 1 bunkers to odour control equipment;
 - c) The turning of the compost during the composting process; and
 - d) Removal of compost and final turning (prior to transferring the compost to the Phase 2 bunkers).
4. For the purposes of this consent 'Phase 2' activities are defined as:
 - a) The filling of Phase 2 bunkers with compost;
 - b) Ventilation of the Phase 2 bunkers during their filling with compost;
 - c) Aeration of compost to achieve pasteurisation, and ventilation of the Phase 2 bunkers during this process; and
 - d) The removal of pasteurised compost from the Phase 2 bunkers.
5. The contaminants discharged to air shall be from the operation of a mushroom compost plant producing not more than 120 tonnes of compost per 7 days. The consent holder shall record the tonnage of compost manufactured over any 7 day period and make the records available to the Council on request and at the time of the site visits.

Note: For the purposes of this condition 'compost' is defined as the product produced from the Phase 2 pasteurisation process prior to it being placed within the compost trays.

6. There shall be no objectionable or offensive odour to the extent that it causes an adverse effect at or beyond the boundary of the site (see Advice Note 1).
7. The consent holder shall undertake all operations in accordance with a written Odour Management Plan held on site that includes (but is not limited to):

- a) A description of the purpose of the plan;
 - b) The names and contact phone numbers and addresses of key personnel;
 - c) A general description of the activities undertaken at the site;
 - d) Identification of the potential sources of odour, including the stockpiling and transfer of spent mushroom compost;
 - e) A full description of the odour mitigation system;
 - f) Relevant operating procedures that need to be undertaken to minimise odour emissions;
 - g) A diagram that clearly identifies the locations across the surface of the biofilter, or biofilters, where moisture and pH sampling will be carried out to provide representative data (see Advice Note 2);
 - h) A detailed description of the method used to determine the pH of the media in the biofilter, or biofilters.
 - i) An inventory of odour mitigation equipment and materials;
 - j) An equipment maintenance programme;
 - k) A contingency plan in the event that there is an adverse effect as a result of an offensive or objectionable odour beyond the boundary;
 - l) A list of records that need to be kept including maintenance and control parameters, weather records and odour complaint and investigation records;
 - m) A description of staff training including methods, frequency and training records;
 - n) A description of the process for reviewing the overall system performance.
8. The consent holder shall review the Odour Management Plan at least every two years and update as appropriate. A copy of the Odour Management Plan shall be submitted to the Council (Manager Compliance) within one month of completing each review.
 9. By 1 March 2012 all chicken litter, gypsum, and chicken litter/gypsum mix shall be stored in three-sided and roofed bunkers that are enclosed with soft door flaps.
 10. By 1 December 2011 the consent holder shall continuously measure and record the dissolved oxygen (DO) concentration (mg/L) at the point where wastewater flows from the storage pond into the aerated pond. The DO records shall be made available to the Council on request and at the time of each site inspection.
 11. By 1 December 2012 the consent holder shall ensure that the aeration of wastewater is sufficient to maintain dissolved oxygen (DO) concentrations at no less than 1.0 mg/L at all times.
 12. By 1 March 2015 the consent holder shall ensure that all Phase 1 composting and turning as defined in Condition 3(b), and 3(c), is undertaken in a fully enclosed building, or buildings, that is/are ventilated to a biofilter with sufficient design capacity.

Note: The physical emptying and loading of the Phase 1 bunkers during the Phase 1 turning processes will involve compost being transferred from one bunker to another via a front-end loader operating in an outdoor environment; with one door of each bunker being open at any one time to facilitate this process.

13. By 1 March 2017 the consent holder shall ensure that all Phase 1 turning, as defined in Condition 3(d), is undertaken in a fully enclosed building, or buildings, that is/are ventilated to a biofilter with sufficient design capacity.

Note: The physical emptying of the bunker containing the compost and the loading of the bunker containing the turning machine will involve compost being transferred from one bunker to another via a front-end loader operating in an outdoor environment; with one door of each bunker being open at any one time to facilitate this process.

Note: The transfer of compost from the Phase 1 bunker containing the turning machine to the Phase 2 bunker will involve compost being transferred from one bunker to another via a front-end loader operating in an outdoor environment; with one door of each bunker being open at any one time to facilitate this process.

14. The consent holder shall ensure that negative pressure within the enclosed Phase 1 bunkers, and within buildings required by Condition 12 and 13, is sufficient to reduce fugitive odour emissions to the extent that condition 6 can be complied with, and is maintained at all times when the doors are closed while composting activities are being carried out.
15. The consent holder shall ensure that the design of the ventilation system and the design of all access ways (to and from the bunkers) will reduce any fugitive odour emissions that may occur when the enclosed bunker doors and doors of buildings required by Condition 12 and 13 are open, to an extent that condition 6 can be complied with.
16. The loading rate of the biofilter, or biofilters shall not exceed 50 m³ air per hour per m³ of bark media.
17. If the biofilter existing at the time this consent was granted does not comply with the loading rate stated in Condition 16, the consent holder shall, by 1 August 2011, engage a professional biofilter designer to provide written evidence, to the satisfaction of the Council (Manager Compliance), that the biofilter design will be fit for purpose over a specified period of time.
18. If the biofilter existing at the time this consent was granted is upgraded to receive additional air flow and/or additional biofilters are installed, and the existing biofilter or new biofilters will not comply with the loading rate stated in Condition 16, the consent holder shall engage a professional biofilter designer to determine the rate of odourous air flow to be treated per m³ of media. The designer shall provide written evidence, prior to upgrading the existing biofilter or before new biofilters are constructed, to the satisfaction of the Council (Manager Compliance), that the biofilter design will be fit for purpose over a specified period of time.
19. The temperature of the inlet air to the biofilter, or biofilters, shall not exceed 40°C.
20. The consent holder shall ensure that the design parameters of the ventilation air biofilter, or biofilters, are consistently maintained in order to minimise the emission of odour so that condition 6 is able to be complied with. This maintenance shall include, but is not limited to:
- a) Maintaining satisfactory moisture levels in the biofilter, or biofilters, at all times;
 - b) Maintaining the design depth of active media in the biofilter or biofilters;
 - c) Ensuring that the biofilter media is maintained to avoid short-circuiting of the gases being treated through the bed;
 - d) Replacing the biofilter media at an appropriate time. This shall be considered to be when the pressure differential is unable to be maintained within its normal design operating range, and/or evaluation of representative samples of media indicates that it is approaching or has reached the end of its effective life, or at any time when it is evident that the biofilter, or

biofilters, are no longer performing to a satisfactory level in respect to odour removal and cannot be remediated.

21. The consent holder shall monitor and maintain records of the operational parameters of the biofilter, or biofilters, as follows:

- a) The inlet air temperature shall be monitored continuously, and recorded once between 6:00 am and 10:00 am and once between 2:00 pm and 5:00 pm per operating day;
- b) The pressure differential within representative inlet air distribution laterals of the biofilter, or biofilters, shall be monitored continuously and recorded once between 6:00 am and 10:00 am and once between 2:00 pm and 5:00 pm per operating day, with a note as to significant rainfall that has occurred for an hour or more preceding each recording (see Advice Note 3);
- c) The media moisture level and the condition of the biofilter bed, or beds, at a depth of 20 to 25 cm from the surface of the bed and at the locations specified in the Odour Management Plan, shall be qualitatively monitored and visually inspected at least once every week, and the observations shall be recorded (see Advice Note 4);
- d) The media moisture content within the biofilter bed, or beds, at depths of 25 cm **and** 50 cm from the surface of the bed, and at the locations specified in the Odour Management Plan, shall be measured via gravimetric method each year in February and August and the results shall be recorded. (see Advice Note 5);
- e) The pH within the biofilter bed, or beds, at a depth of 50 cm from the surface of the bed and at the locations specified in the Odour Management Plan, shall be measured by an appropriate method, as documented in the Odour Management Plan, each year in February and August and the results shall be recorded. (see Advice Note 6);
- f) The records collected in accordance with this condition shall be made available to the Council on request and at the time of each site inspection.

22. The consent holder shall log all odour complaints received. The log shall include:

- a) The date and time of the odour incident;
- b) The date and time the complaint was received;
- c) A detailed description of the odour incident, taking into account the FIDOL factors outlined in Advice Note 1 as far as it is possible to ascertain these from the complainant;
- d) The name, telephone number, and address of the complainant;
- e) Weather conditions (including an estimate of wind speed and direction) at the time of the odour incident;
- f) Details of key operating parameters at the time of the odour incident;
- g) Any corrective action taken.

The log of complaints shall be made available to the Council at the time of any site visit, and on request.

22. That where, for any cause, contaminants associated with the consent holder's operations are discharged to air such that an adverse effect does, or is likely to, occur beyond the boundary of the site, the consent holder shall:

- a) Immediately take all practicable steps to cease the emission of the contaminants, and;

- b) Immediately notify the Council, and;
- c) Report to the Council, if requested, in writing and within 7 days, describing the manner and cause of the discharge and steps taken to control it and prevent its recurrence.

1. REVIEW OF CONSENT CONDITIONS BY THE COUNCIL

The Council may review conditions of this consent pursuant to sections 128, 129, 130, 131 and 132 of the RMA. The actual and reasonable costs of any review undertaken will be charged to the consent holder, in accordance with s. 36(1) of the RMA.

Times of service of notice of any review: During the month of May, of any year.

Purposes of review:	<p>To deal with any adverse effect on the environment which may arise from the exercise of this consent, which it is appropriate to deal with at that time, or which became evident after the date of issue.</p> <p>To require the adoption of the best practicable option to remove or reduce any effects on the environment.</p> <p>To modify any monitoring programme, or to require additional monitoring if there is evidence that current monitoring requirements are inappropriate or inadequate.</p> <p>To impose a discharge standard if it is considered necessary.</p> <p>To require the installation of an electric bale breaking line to reduce the time bales are kept wet and the time it takes to create the compost substrate.</p> <p>To require the process of transferring Phase 1 compost from bunker to bunker for Phase 1 turning purposes to be ventilated to a biofilter with sufficient design capacity.</p> <p>To require the process of transferring Phase 1 compost from any Phase 1 bunker to a Phase 2 bunker, to be ventilated to a biofilter with sufficient design capacity.</p> <p>To require the Phase 2 bunkers to be ventilated to a biofilter with sufficient design capacity, to ensure that the Phase 2 compost process, after filling and before emptying, does not create objectionable or offensive odour to the extent that it causes an adverse effect at or beyond the boundary of the site.</p> <p>To require the adoption of suitable measures to ensure odour arising from the disturbance of spent mushroom compost does not create objectionable or offensive odour to the extent that it causes an adverse effect at or beyond the boundary of the site.</p>
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2. REASONS FOR DECISION

The activity will have minor actual or potential adverse effects on the environment and is not contrary to any relevant plans or policies. The activity is also consistent with the purpose and principles of the Resource Management Act 1991.

3. ADVICE NOTES

1. When assessing whether odour is offensive or objectionable to the extent that it causes an adverse effect at or beyond the boundary of the site the Council shall generally follow the procedure outlined in section 6.1.4 of the Hawke's Bay Regional Resource Management Plan (RRMP). This assessment will take into account the FIDOL factors – frequency, intensity, duration, offensiveness and location; and shall be undertaken by a Council officer who has experience in odour complaints and has had his/her nose calibrated using olfactometry.
2. The number of locations across the surface of each bed should be not less than 10.
3. The pressure differential across any biofilter containing bark media generally should not exceed 100 mm water gauge.
4. Qualitative assessment is squeezing a sample of media in the palm of the hand – as a guide it should feel damp and when released the palm should not be obviously wet, and the squeezed media “ball” should easily disaggregate and not be sticky (see also Advice Note 5).
5. As a guide, bark media moisture content should be within 40 – 60 % by weight (determined on a wet basis) for optimum performance. The assessment description of media in Advice Note 4 applies to this moisture range. However, moisture content of 70% by weight or higher may still ensure good performance. Moisture content much less than 40% by weight can result in “dry” media and substandard biofilter performance.
6. If pH is determined from actual media samples, the most appropriate depths are 50 cm or deeper because acidification of the media from oxidation of hydrogen sulphide and other reduced sulphur compounds is more pronounced at depth, with the acidification ‘rising’ as deep media becomes sulphate-bound. Shallow depths are not appropriate because they can be influenced by the natural acidity of rainwater (clean rainwater has a pH of approximately 5.6 due to its CO₂ content but it may be less than this if there are acid gas emitters in the area), or higher than this if the bed has been surface-topdressed with lime. Bed pH can also be reasonably estimated from sampling the biofilter drainage water providing it does not come into contact with concrete which may neutralise acidity. However, drainage water pH does not provide an indication of varying pH through the bed (a pH profile) that may occur due to changes in media composition and consistency and other factors. In addition, during dry periods there may be no drainage of water from the media. The optimum operating range for most biofilters is between pH 5 to 8.