

Resource Consent Application for Land Use

302, 367 and 464 Mt Herbert Road, Waipukurau

The Te Mata Mushrooms Company Limited

17013AP3 9th November 2020

டி

APPLICATION DETAILS

Consent Authority:	Central Hawke's Bay District Council
The Applicant:	The Te Mata Mushrooms Company Limited.
Address for Service:	Stradegy Planning Limited, PO Box 239, Napier 4140
Address for Invoice:	PO Box 8137, Havelock North 4157
Site Details:	
Street Address: Legal Descriptions:	302, 367 and 464 Mt Herbert Road, Waipukurau Lot 1 DP 427319, Lot 2 DP401209, Lots 1-2 DP 21840 and Lot 1 DP

22481

Activity for which Consent is sought:

Resource Consent is sought to establish, operate and maintain a mushroom compost production activity and associated activities. The proposed activity requires a **Discretionary Activity** land use consent because the activity is either a 'Factory Farm' as defined in the Operative District Plan, or as an activity not provided for as a permitted, controlled, restricted discretionary, non-complying or prohibited and defaults to **Rule 4.8.3(f)**.

A site coverage non-compliance over 464 Mt Herbert Road a **Restricted Discretionary** land use consent under **Rule 4.8.3(a) and Rule 4.8.3(e)**.

The total number of visitor carparks required under Table 1 Minimum Parking Space Requirements is twelve (12), yet two (2) visitor carparks are provided on site, therefore a **Discretionary Activity** consent under **Rule 8.4** is required.

Prepared by:

Claire Price BRP(HONS) MNZPI Senior Planner

Reviewed and Approved for Release by:

Cameron Drury BRP(HONS) MNZPI Principal Planner | Director

This document is the property of Stradegy Planning Limited. Any unauthorised employment or reproduction, in full or part is forbidden. This document has been prepared for a specific purpose for the above client and shall not be used for any other unauthorised purpose. Stradegy Planning Limited does not acknowledge any duty of care or responsibility to any other party.



TABLE OF CONTENTS

1. 1.1 1.2	INTRODUCTION Consents Required Overview	4 4 5
2. 2.1 2.2	SITE AND SURROUNDS Subject Site Surrounding Environment	6 6 7
3. 3.1 3.2	DESCRIPTION OF PROPOSAL Proposed Compost Production Facility Compost Production Processes, Activities and Mitigation	13 13 20
4.	STATUTORY CONSIDERATIONS	29
5. 5.1	PLANNING DOCUMENTS . National Environmental Standard for Assessing Managing Contaminants in So	30 il 30
5.2	Central Hawke's Bay District Plan	30
6.	CONSULTATION	31
7. 7.1 7.2 7.3 7.4 7.5 7.6 7.7 7.8 7.9 7.10	ASSESSMENT OF ENVIRONMENTAL EFFECTS Permitted Baseline Assessment Matters Rural Amenity Visual Effects Noise Odour Cultural Values Recreational Values Traffic Construction	31 32 34 35 36 37 38 39 41 44
8. 8.1 8.2	NOTIFICATION Section 95A Assessment – Wider Environmental Effects Section 95B Assessment – Effects on the Local Environment and Particular Parties	45 45
9. 9.1 9.2	RELEVANT OBJECTIVES AND POLICIES Central Hawke's Bay District Plan Regional Resource Management Plan	52 52 54
10.	PART 2 OF THE RESOURCE MANAGEMENT ACT 1991	56
11.	CONCLUSION	57



Appendices –

- 1. Certificates of title
- 2. District Plan Map and Compliance Table Performance Standards
- 3. Site Plan
- 4. May 2018 Stantec: Traffic Assessment
- 5. EAM: PSI Assessment
- 6. EARCON: Acoustic Assessment Reviewed 20 October 2020
- 7. AQP: Odour Effects Assessment, updated 9th November 2020



1. INTRODUCTION

The applicant seeks to establish a compost production facility at 464 Mt Herbert Road, Waipukurau.

The applicant searched for an appropriate site to establish a new compost production facility that enables efficient production, is in keeping with the surrounding character and amenity, and avoids adverse effects on sensitive activities beyond the site. The 464 Mt Herbert Road site is a Rural Zone property located at the end of Mt Herbert Road and fulfils these requirements. Refer to **Figure 1** for the general location of the activity.

Figure 1

Figure 1: Location of Activity



1.1 Consents Required

The proposed activity requires a **Discretionary Activity** land use consent under Rule 4.8.3(a) of the Central Hawkes Bay Operative District Plan as a Factory Farm activity. This is because composting is the initial process that comprises a mushroom farm, and a mushroom farm is considered factory farming. If composting on its own is not considered to fall within what is interpreted as a factory farm, then the activity is not provided for anywhere else in the District Plan and it would default to Rule 4.8.3(f) as a **Discretionary Activity** consent under that Rule. Other consents required for the proposed activity under the District Plan are as follows:

- Exceed site coverage (building and hardstand) under permitted performance standard Rule 4.9.1 for part of the subject site (464 Mt Herbert Road only),
- The total number of visitor carparks required under Table 1 Minimum Parking Space Requirements is twelve (12), yet two (2) visitor carparks are provided on site, therefore a Discretionary Activity consent under Rule 8.4 is required.



An application to discharge odour is to be lodged concurrently with the Hawke's Bay Regional Council.

1.2 Overview

The proposed activity is the process of producing compost and the associated facility and operations. To that end, the production of compost is key part of a factory farm activity and so the Rural Zone Objectives and Policies relating to factory farm activities are considered still relevant. Factory farming activities, and therefore compost production facilities, are encouraged in the Rural Zone provided rural amenity can be maintained. Specific to factory farming, the Rural Zone policies seek to reduce conflict between factory farm operations and other activities; seeking the location of factory farms to be away from urban areas and suggest the use of buffers.

The applicant has considerable experience in the operational requirements of a commercial mushroom farm and risks posed by reverse sensitivity matters. Consequently, the design and site planning of the proposed composting production facility is well informed and reflects this experience. In addition, expert advice on environmental matters such as odour management, transport, and noise is also reflected in the design.

Technical assessments that support this resource consent application include:

- An odour assessment by AQP Air Quality Professionals, 4th November 2020
- An acoustic assessment by EARCON, dated February 2018. This assessment has been reviewed and revised and memo dated 20 October 2020 based on the revised application.
- A Transportation Assessment by TDG (now Stantec) dated April 2018. This assessment supported a previous consent application in 2018/2019 (CHBDC Ref RM 180156). Its consideration of transportation matters is similar to both proposals. The envelop of effects determined under the original proposal has set an extent of effects that the new and current proposal would fall within. Key changes include less [light] vehicles generated by the proposed activity, less carparking on-site, two accesses (similar to Access 1 and 3 from the previous application) instead of seven (7) accesses. To this end, the Stantec Transportation Assessment has not been revised and is relied upon for the purposes of this application given the similarities and use of applicable recommendations.

Overall, it is considered that any actual and potential adverse effects can be either avoided through design of the on-site processes and/or mitigated by way of distance from site and notional boundaries.

The following report has been prepared in accordance with Schedule 4 of the Resource Management Act (**RMA**) and meets the requirements of Form 9. The level of detail provided is commensurate to the scale and significance of effects that the activity may have on the environment.



2. SITE AND SURROUNDS

2.1 Subject Site

The subject site is 464 Mt Herbert Road (Lot 1 DP 427319) as shown in **Figure 2** below. Although a separate site in itself, the following includes a description of the overall Mount Herbert property which comprises the following 5 parcels of land held in five separate titles with a total area of 114.9111 hectares (ha)

Legal Description	Area
Lot 1 DP 21840	9.8153ha
Lot 2 DP 21840	10.0113ha
Lot 1 DP 22481	39.4430ha
Lot 2 DP 401209	39.4946ha
Lot 1 DP 427319	16.1469ha
Total Area	114.9111ha

Mount Herbert is a large residential homestead located within the farm block at 302. This house and setting has a separate title (Lot 1 DP 401209) and does not form part of the subject site, yet is owned by the applicant. Certificate of Titles are provided in **Appendix 1**. The site is relatively isolated, as it is located at the end of a no exit road (Mt Herbert) and 'hidden' away due to the topography surrounding it.

Figure 2: Subject Site (464 Mt Herbert Road) and larger Mt Herbert Property (302, and 367 Mt Herbert Road) (Source: CHBDC GIS)





Existing Land use and buildings

The existing use of the site is a pastoral grazing farm east of Mt Herbert Road and river flats to the west of the road. There are two residential dwellings and associated farm utility buildings within the site. These are positioned within the elevated hills, east of the site and described as follows:

- House and farm buildings at the far eastern side of 464 Mt Herbert Road, near the boundary with the Tukituki River esplanade, and
- House and farm buildings at the south-east side of 302 Mt Herbert Road, near the Mount Herbert homestead.

There is an irrigation bore shed close to the road boundary of the site. There no other buildings on the site.

Road and Vehicular Access

There are existing vehicle accesses to the residential dwellings described above at 302 and 464 Mt Herbert Road. The river flats are accessed from Mt Herbert Road. Mt Herbert Road stops at the esplanade boundary of the Tukituki River.

Services

Water supply to the residential dwellings is rain water. An existing bore and groundwater take supplies the orchard with water as provided for in the water permit from Hawkes Bay Regional Council (ref WP120270T, WP120270a). Further, WP170596T, WP120270Ta, LU170595C enables works to construct a dam in the bed of an ephemeral water body and to take water at high flow and to dam the above water body at 302 Mt Herbert Road.

There is no connection to a wastewater system and existing residential dwellings would have an on-site system.

2.2 Surrounding Environment

The surrounding environment is a mix of rural, industrial and recreational characteristics and amenity.

Mt Herbert road commences from the township of Waipukurau and extends north-east towards the Tukituki River. The character of the road gets increasingly rural as the surrounding land uses move from urban to rural. At the subject site, Mt Herbert Road is a metal road that becomes a recreation track at the termination of the site and beginning of the Tukituki River esplanade. The Tukituki Trail comprises a formed bike track within the Tukituki River esplanade.

North of the subject site is the Tukituki River and its esplanade area, beyond that the land comprises open paddocks and is zoned Rural in the Central Hawkes Bay District Plan (CHBDP).

West of the subject site, and accessed from Mt Herbert Road, is an operational gravel extraction facility. Further south-west, along Mt Herbert Road, is the Waipukurau wastewater



treatment facility. East of the subject site is rolling hill country supporting forestry, and recreational activities.

South of Mangatarata Road are rural residential lifestyle activities, and strips of residential houses that line Mt Herbert Road at the Waipukurau township periphery. The nearest house is approximately 1.4km from the location of the proposed compost facility as shown on **Figure 3** below.

The topography of the area is characterised by a mix of rolling hills, flat pastoral land, and a shallow valley system defined by the Tukituki River and the Waipawa River. The part of the site proposed for the compost and mushroom growing operation is on flat land at an elevation of about 120m above sea level, with the river to the immediate east and north, and rolling hills peaking at 250m above sea level to the immediate west and south. The houses to the south of the site on Mangatarata Road shown on **Figure 3** are located along the higher slopes of these rolling hills.

While a number of subdivision proposals accordance with the minimum lot size framework of the District Plan for the Rural Zone have been obtained, none have been exercised thus the existing environment is as described above.

Figure 3: TMM Site (red outline) in relation to nearby residential dwellings (yellow circles), (Source: AQP Report, dated October 2020)





Cultural Values

The subject site is within the Statutory Acknowledgement Area associated with the Tukituki River and tributaries as part of the Heretaunga Tamatea Deed of Settlement, as shown on the Deed Plan OTS-110-30 for Statutory Areas. See **Figure 4** below for a copy of the relevant Deed Plan.

Figure 4: Deed Plan OTS-110-30 for Statutory Areas, Heretaunga Tamatea Deed of Settlement



It is noted that Section 31 of the Heretaunga Tamatea Claims Settlement Bill sets out the application of the statutory acknowledgement and deed of recognition to a river or stream and states:



General provisions relating to statutory acknowledgement and deeds of recognition

Section 31 Application of statutory acknowledgement and deed of recognition to river or stream

- (1) If any part of the statutory acknowledgement applies to a river or stream, including a tributary, that part of the acknowledgement—
 - (a) applies only to—
 - (i) the continuously or intermittently flowing body of fresh water, including a modified watercourse, that comprises the river or stream; and
 - (ii) the bed of the river or stream, which is the land that the waters of the river or stream cover at their fullest flow without flowing over the banks of the river or stream; but
 - (b) does not apply to—
 - (i) a part of the bed of the river or stream that is not owned by the Crown; or
 - (ii) an artificial watercourse.
- (2) If any part of a deed of recognition applies to a river or stream, including a tributary, that part of the deed—
 - (a) applies only to the bed of the river or stream, which is the land that the waters of the river or stream cover at their fullest flow without flowing over the banks of the river or stream; but
 - (b) does not apply to—
 - (i) a part of the bed of the river or stream that is not owned and managed by the Crown; or
 - (ii) the bed of an artificial watercourse.

While the proposed site adjoins the Tukituki River esplanade, it is on private land and not within the bed of the Tukituki River, or any tributary. However, the proximity of the site to the river may still require consideration of the Statutory Acknowledgement.

The statement of association for each statutory area is set out in the Deed of Settlement Schedule Documents. In relation to the Tukituki River the following statement is made:

Tukituki River and its tributaries within Heretaunga Tamatea area of interest

A narrative exists on the way in which the Tukituki River came into existence. A large lake was located in what is now the Ruataniwha Plains. Two taniwha lived in this lake. On one occasion a boy fell into the lake and the two taniwha fought over their prey. The resulting destruction on the landscape created breaks in the hills through which the lake drained away. One of the channels was the Tukituki River.

After the arrival of the Ngati Kahungunu tlpuna to Heretaunga, the Tukituki River was established as the first boundary between Taraia, who took the land to the west of this river, and Te Aomatarahi who took the land to east and south of the river. The Tukituki is a significant waterway for the hapu of Heretaunga Tamatea. It was used extensively for mahinga kai, and for transporting people and goods.



All along the Tukituki River are signs of occupation and sites that record key events in tribal history. On the lower section of river, there are a number of sites that relate to the actions of the ancient tipuna, Mahu. On the north bank is a white rock, Papaotihi. It is said the rock was once a man who was fishing in the river, but he was turned to stone by Mahu. A little further on is another rock, Tauhou, where Mahu turned another man to stone. Down river near Te Kauhanga pa is another spot touched by Mahu. Here he put a curse on the paepae and people died.

The river mouth was renowned for the abundance of fish species that were taken there. These included; kahawai, patiki, kanae, kataha, kokopu, inanga and tuna. Near the river mouth is Whakamarino where a battle took place at which another iwi was defeated by Tamaiawhitia. The kainga of Haumoana is also located here. Another pa is Te Kauhanga which was occupied first by Taraia I and then Te Whatuiapiti. Further up the river there is a large cliff, Pariwaiehu. Here Te Waka's pa was located, later taken by Hawea.

In the lower reaches of the Tukituki, to the east of Havelock North, the pa Te Korokoro sits on a western bank. From here the river runs below Parikarangaranga, Te Mata-o-Rongokako, and the smaller peak of Te Hau. Below both these peaks there are pits, terraces and other indications that people once lived here. From the river a track led to the summit of the range.

Further upstream above Kaiwaka on the river's eastern bank looms Kahuranaki maunga, a site of special significance to all hapu of Heretaunga Tamatea. It is said that as he lay dying Te Hapuku asked to be placed at Kaiwaka so that Kahuranaki would be the last thing he saw. This is also the place at which Rongokako, the father of Tamatea-pokai-whenua, is said to have lived.

Some distance upstream an old pa called Ngawhakatatara was located on an island while opposite was a kainga and pa named KurTwaharoa. Other more recently built pa on the Tukituki include Patangata and Tamumu.

Across the Tukituki River from the subject site, a Site of Cultural Significance (ref 230), recorded as a wahi tapu site, is identified on the Central Hawkes Bay District Plan (CHBDP) Map 9. A recorded archaeological site (ref 161) is also located at the northern end of the subject site. These two sites are shown on **Figure 5** below; a snippet of CHBDP Planning Map 9.

The New Zealand Archaeological Association records the site as V22/59 and describes the recorded features as terrace/midden/pit stating:

"A long bluff, terraced on the inland side. A few exposures of midden: fresh-water mussel, fire cracked rock, obsidian, charcoal. 6 terraces, largest 15x3m. Pit 5x4m by .7m deep".

This archaeological site is identified as Area B on the title of Lot 1 DP 427319, with the intent of Consent Notice 8401841.4 to ensure current and future owners are aware of their responsibilities under the Historic Places Act 1993¹. Archaeological site V22/59 is not near any of the proposed activities and is on land higher up and away from the area to be used for

¹ Since superceded by the Heritage New Zealand Pouhere Taonga Act 2014

the proposed composting activities (approximately 70m). Further, the Site of Significance is not within the subject site, but on the other side of the Tukituki River.



Figure 5: Insert of Planning Map 9 (Source: Central Hawkes Bay District Council)

Figure 6: Copy of Lot 1 DP 427319 CT showing Area B (red circle)





Overall, information from the Statutory Acknowledgement Area and District Plan signals that there are cultural values with the Tukituki River to be understood. The extent to which these affect the assessment of this particular proposal is expanded upon below.

3. DESCRIPTION OF PROPOSAL

The proposed activity comprises the establishment, operation and maintenance of a new compost making facility and involves a comprehensive development comprising two buildings, a working yard, access from Mt Herbert Road, manoeuvring on-site for heavy and light vehicles, parking, and associated supporting facilities such as the biofilter, ponds and water storage dam. The establishment of the development requires earthworks and other construction work activities.

Section 3.1 details the scale of the compost production facility, including the proposed buildings and structures, ponds, volume of weekly output, staff numbers, vehicle movements, use of the access points, likely signage, the water storage dam and earthworks.

Section 3.2 explains the processes and activities involved in the production of compost on a commercial scale for use in mushroom farming. In relation to these composting activities, **Table 3** summaries the proposed management and effects mitigation in order to avoid, mitigate and remedy actual and potential odour effects.

3.1 Proposed Compost Production Facility

The scale and nature of the proposed compost making facility is set out below under the following headings:

- Compost process
- Buildings, Structures and Impervious Surfaces
- Ponds
- Volume of weekly output
- Site Access
- Staff and Visitors on Site and Carparking
- Transport
- Landscaping
- Water storage dam
- Earthworks

Compost Process

Simply explained, the process of making compost at the site has three phases. Phase 1 takes the raw inputs (chicken litter, gypsum and soaked straw bales) and at the end of this phase, a partially decomposed substrate is formed. The Phase 1 end product is then transported to an enclosed building housing tunnels, and this is where Phase 2 and 3 processes occur. The



final compost that is used as a mushroom growing substrate is completed in the Phase 3 tunnels and ready for departure off site. **Figure 7** below is an example of the way the buildings, working yard and compost making activities work on site – noting that the proposed activity has 5 Phase 1 bunkers and 9 Phase 2 and 3 tunnels so is slightly different to this diagram shown here.



Figure 7: Schematic view of Phase 1 Bunkers, Mixing Hall, and Phase 2 and 3 Tunnels, Source, AQP report, Figure 6

Buildings, Structures, and Impervious Surfaces

The proposed compost production facility at 464 Mt Herbert Road is shown on the Site Scheme Plan by AHA Atkinson Harwood Architects. Some activities are housed in buildings, while others are with open yards.

<u>Buildings</u>

The proposed development has two buildings on site. The largest building, with a GFA of 4,420m² and a maximum height of 9m, houses the Phase 2 and 3 Tunnels, the Mixing Hall, storage, workshop and office space. The second building, with a GFA of 1,540m² and maximum height of 7.5m, houses the Phase 1 Bunkers.

The two buildings are connected by the conveyer and working yard as shown on the Site Plan.

Phase 1 Bunker Building

The Phase 1 Bunker Building is designed with a concrete floor, two concrete walls and insulated panel roof. The end openings are closed with permanent sliding curtain doors when not in use. The Phase 1 bunkers have recessed lines within the concrete floor which act in parallel as both aeration lines and a leachate collection system. Within this building there are five (5) bunkers. The bunker has an air extraction system directed to the biofilter.



Mixing Hall and Phase 2 and 3 Tunnel Building

The activities within the Phase 2 and 3 Compost and the Mixing Hall Building operate under different conditions. The Mixing Hall component is a semi-enclosed building due to the openings for the conveyer from the Phase 1 bunker and also doorways into the working yard. The Mixing Hall is mechanically ventilated via point source extraction hoods.

The Phase 2 and 3 tunnels are contained within a fully enclose building and mechanically ventilated. There are openings to the building for (1), the transfer of compost from the Mixing Hall, and (2), the loading of the finished product (via automated conveyers) into trucks either within the building or alongside it. The openings to these two parts of the building are noted on the Site Scheme.

The positioning of the two proposed buildings comply with the Rural Zone height, setback and recession plane standards as demonstrated on the Site Scheme Plan and the District Plan Compliance Analysis in **Appendix 2**.

<u>Structures</u>

A biofilter is proposed and is shown on the Site Plan. The Biofliter is a structure with a GFA of 750m².

Impervious surfaces

The proposed activity includes a new accessway and internal road to allow for manoeuvring of heavy goods vehicles and light vehicles in delivering raw materials to the site, and to receive and transport the finished product off site. The proposed access and internal road, including the carparking area, has an area of 5,705m².

In addition, the site will have an open working yard (1,050m²) which is situated between the Phase 1 bunker building and the Mixing Hall.

Finally, there is a straw storage yard (1,500m²) situated to the rear of the site and accessible from the internal road.

The total area of these impervious surfaces is 8,255m², and collectively, the new buildings, structures and impervious surfaces cover an area of **13,425m²**, which is 9% of the 16.1469ha area contained in the underlying title (Lot 1 DP 427319).

Ponds

The site will include two ponds as shown on the Site Scheme Plan. These ponds are the:

- Freshwater runoff pond,
- Phase 1 compost leachate pond ("goodie water").

The goodie water is loaded with organic compounds leached during the composting process. It will be aerated and mixed to maintain aerobic conditions so as to control odour.



The pond will be approximately 4m deep with a 500m² surface area, but will usually operate at lower levels with a surface area of only 240m² (except in extreme rainfall events).

As well as being a by-product of the composting operation, the goodie water is also an input - used to pre-wet the bales as part of the initial composting process. The pond will be topped up with fresh water when needed to maintain supply in this regard.

Volume of Weekly Output

The compost to be made at the facility will be used as a substrate for growing mushrooms (off site). The throughput rate will be up to 900 tonnes (of compost) per week ("Tpw").

Site Access

A new vehicle crossing and access to the site is proposed and shown on the Site Scheme Plan. The location of the access is approximately 15m from the existing driveway to the site (which provides access to the residential dwelling to the rear). The vehicle crossing will be used by both heavy and light vehicles and shall have a width of 9m to comply with the Width of Vehicle Crossings Access Performance Standard 8.5.2(e). The design and installation of the vehicle crossing and construction of the accessway will be in accordance with the Performance Standard 8.5.2(a)-(f).

A second access from the existing driveway within the site is proposed for light vehicles to access the site. The existing driveway will continue to access to the Gum Tree Farm Mountain Bike Park, which is situated in the adjoining property to the south-east of the subject site. The proposed vehicle crossing from the driveway to the site will comply with the engineering standards. Wayfinding signs to direct vehicles associated with the compost activity will be installed to avoid any potential misdirection.

The May 2018 Stantec Transportation Assessment was based on a project that had seven (7) vehicle accesses. While this is no longer the case, the assessment and recommendations for Access 1 and 3 from this original report are relevant as they are generally the same for this application i.e. the main access off Mt Herbert Rod is essentially Access 1, and the access off the existing driveway is essentially Access 3.

The key difference from the previous design and the above, is that the existing driveway is only used for light vehicles and not the heavy vehicles. Consequently, the recommendation within the Stantec report to widen the existing crossing to 9m is not proposed/part of this application.

Staff and Visitors on Site and Carparking

The applicant expects up to eight (8) staff to be employed at the site. The number of staff on site is considerably lower than stated in the Stantec/TDG Transportation assessment (128 staff), which was based on an earlier design of the compost facility that had less automation and mushroom growing activities also to be established. The number of carparks required by the District Plan is 1 carpark per two staff, therefore four (4) staff carparks are provided.



The number of visitors to the site at any one time are expected to be up to two (2). The District Plan sets a carparking ratio of 1 visitor carpark to 500m² GFA. Based on the GFA of the proposed buildings, 13 visitor carparks would be required under the District Plan. The provision of 13 visitor carparks would be an underutilisation of land and oversupply of carparking spaces. To this end, two visitor carparking spaces are provided which is a non-compliance addressed in this application. It is acknowledged that the TDG/ Stantec TIA was based on a 100% compliance with visitor carparking and did not assess a visitor carpark shortfall.

The six (6) on-site carparks will be designed and constructed to comply with the Parking Performance Standards set out in Section 8, Transport, 8.5.1(b) - (g), and (i). A condition of consent is anticipated requiring the design and construction of the carparks to be in accordance with these aforementioned standards.

Transport

<u>Traffic</u>

The proposed compost production facility will generate both light and heavy traffic movements. **Tables 1 and 2** below provide information on estimated daily vehicular volumes for an average weekday and weekend day. These tables have been adapted from those originally prepared and produced within the Stantec Transportation Assessment, dated May 2018. The adaption relates to the change made to the number of arrivals and departures of staff as the numbers have changed (as advised by the applicant). Further, the activities that were not related to compost production (Orchard and Vegetable Glasshouse) are no longer part of the application and therefore do not need to be calculated in the expected vehicular activity.

Table 1: Expected Average Weekly Vehicular Activity

Source: adapted from the Stantec Transportation Assessment with updated staff numbers.

Activity	Vehicle Type	Arrivals	Departures	Total
Supply Delivery (for composting activities)	Heavy Goods Vehicle	6	6	12
Composting	Heavy Goods Vehicle	4	4	8
Seasonal Straw Delivery	Heavy Goods Vehicle	12	12	24
Staff	Light Goods Vehicle	8	8	16
Total				60

Table 2: Expected Average Weekend Vehicular Activity,

Source: adapted from the Stantec Transportation Assessment with updated staff numbers.

Activity	Vehicle Type	Arrivals	Departures	Total
Supply Delivery (for composting activities)	Heavy Goods Vehicle	3	3	6
Composting	Heavy Goods Vehicle	2	2	4
Seasonal Straw Delivery	Heavy Goods Vehicle	12	12	24
Staff	Light Goods Vehicle	8	8	16
Total				50



Transport Routes

As detailed in Section 1.1 of the Stantec Transportation Assessment, there was consultation with Central Hawke's Bay District Council Land Transport Services Officer to define the study area for the site – and more specifically, the preferred route for heavy vehicles to and from the site. The Council noted that the central business area and main street (i.e. Ruataniwha) in Waipukurau should be avoided and heavy vehicles should rather make use of the following intersections and transport routes:

- Peel Street / Herbert Street (SH2);
- River Terrace / Herbert Street (SH2 2);
- Ruataniwha Street / St Joseph Street / Mt Herbert Road / Wellington Road.

Light and heavy vehicle traffic generated by the proposed activity will use the transport routes and intersections described above.

Figure 2 of the TDG Transport Assessment identifies the above intersections and applicable road hierarchy and is reproduced in **Figure 8** below.

Figure 8 This is 'Figure 2 ' reproduced from the Stantec Transportation Assessment for Mt Herbert proposal



Form and Upgrades to Mount Herbert Road

Geometrically, Mount Herbert Road is generally straight with manageable bends along the route. However, the form and function of the road changes as it gets closer to the subject site. For example, from the intersection with Mangatarata Road, the road narrows to single



lane and beyond the gravel extraction activity the road is unsealed. From the gravel extraction plant to an existing orchard access, the road is used by orcharding vehicles, and has a turnaround area. Beyond this area, towards the road frontage the site, the road is less formed.

Stantec recommended the following upgrades and changes to Mt Herbert Road, which are still relevant except for the extent of upgrade at the upper end of Mt Herbert Road as shown by the green line. This is no longer required beyond Access 1 as this part of the road will not be used by the activity.

The upgrades and changes are shown diagrammatically in **Figure 14** of the Transportation Report and repeated here in **Figure 9** of this report:

Figure 9: Upgrades recommended by Stantec (2018). All apply, except for upgrade of Mt Herbert Road shown in green.



Notes:

- Yellow extent: reduce the posted speed from 100km/h to 70km/h given that the 5.6m sealed width of Mount Herbert Road is not appropriate to accommodate 100km/h vehicle speeds.
- **Red extent:** Regrade the gravel portion of Mount Herbert Road. This extent is approximately from the quarry to the existing access into the subject site at 302 Mt Herbert Road. The existing width of the road is 4.6m and Stantec considered this sufficient to accommodate the



relatively low volume of vehicles but also wide enough to allow two heavy vehicles to pass one another.

- **Blue extent:** Upgrade the existing portion of Mount Herbert Road from the existing access into the subject site at 302 Mt Herbert Road to the new site access at 464 Mt Herbert Road. This extent goes slightly further than the diagram shows. The existing road will need to be completely rehabilitated as there does not appear to be any supporting pavement layers (base and sub-base layers) along this portion of road. It is from this upgraded road that the new site access will be taken from.
- **Green Extent** (within driveway to 464 Mt Herbert Road): Regrade the existing gravel path from the existing driveway to 464 Mt Herbert Road to the proposed secondary access to the site to provide a smooth surface for light vehicles. A road width of 3m is deemed sufficient.
- Green Extent (on Mt Herbert Road, <u>beyond the location of the new access</u>): No longer required as there is no proposed use of this part of Mt Herbert Road.
- Implement roadside approach signage to and from the site for both staff and visitors.

Landscaping

The development of the site includes amenity landscaping along the site frontage and along the eastern and western boundaries for up to 140m. The purpose of this amenity planting is to add to the existing vegetation within the area and demarcate the development area with a planted verge. The proposed landscaping is not designed to entirely screen the site from view, but to soften the outlook towards the proposed buildings from Mt Herbert Road. A condition of consent is anticipated requiring a detailed landscape plan prior to construction.

Earthworks

The construction of the water storage dam/reservoir, buildings, working yards, access and internal circulation of vehicles and the on-site carparking area will involve earthworks. The upgrade to Mt Herbert Road, fronting the site, will also require earthworks. Any construction works, including earthworks, will be managed to avoid and mitigate temporary effects such as dust and noise. Disturbed areas within the site will be reinstated and/or grassed.

3.2 Compost Production Processes, Activities and Mitigation

This section of the application sets out the following information:

- An overview of the composting process
- Times /day/week
- Key Facilities, Biofilter
- **Table 3**: Potential sources of odour from composting, proposed mitigation, potential for odour to cause an offensive or objectionable effect rating

Overview of the Composting Process

Section 3.1 of the Air Quality Professionals (AQP) Report provided in **Appendix 7** provides a succinct explanation of the composting process which is reproduced below.

"Compost is an essential part of the mushroom growing process and is used as part of the substrate that the mushrooms are grown on. Compost consists of straw, chicken



litter and gypsum. The key components of the composting process are described in this section.

Composting occurs in three phases, transforming the raw materials into a medium suitable for growing mushrooms. Phase 1 composting starts with the mixing of prewetted straw and pre-mixed chicken litter and gypsum. The mix is then loaded into one of multiple Phase 1 bunkers. During the composting in Phase 1 air is blown through the newly mixed and composting material to maintain aerobic conditions. The bunkers are progressively emptied and filled to facilitate turning of compost via transferring the compost from one bunker to another (known as "bunker-to-bunker transfer"). These bunkers have a concrete floor, two concrete walls and insulated panel roof, and the end openings are closed with permanent sliding curtain doors when not in use. The Phase 1 bunker concrete floors have recessed lines which act in parallel as both aeration lines and a leachate collection system.

The bunkers are operated under a slight vacuum or negative pressure compared to outside air to avoid leaking of odorous air from the bunkers. Foul air within the bunker is drawn from the top of each bunker and treated to remove odour before discharge to atmosphere.

At the completion of the Phase 1 process, the compost is transferred removed from the Phase 1 bunkers and into Phase 2 tunnels. During the Phase 2 cycle, air in the bunker is recirculated at one end of the bunker, and a portion of the air is drawn from the bunker and treated to remove odour. After Phase 2, the compost is transferred to Phase 3, and then is used in the mushroom growing operation.

Phase 1 takes about 12 days to complete, and the whole process from pre-wetting of bales until the compost is ready to grow mushrooms is nearly four weeks. Multiple batches of compost are in various stages of production at any time so that fresh compost is always available for starting the mushroom spawning process."

The above phases are described in more detailed in 3.2 of the AQP Report. The Site Plan shows where the respective facilities are located within the site.

Odour Source and Proposed Mitigation

Table 3 below has been generated from the information from Sections 3.2, 5.1 and 5.2 of the AQP report and provides a description of each part of the composting process, the potential sources of odour and proposed mitigation. The potential odour sources have been given a rating of low, low-moderate, moderate-high and high by AQP. This information demonstrates that with appropriate mitigation in place, all composting activities, no matter what stage or phase, have a low rating for offensive or objectionable odours.

Table 3: Potential sources of odour, mitigation and rating of potential for odour to cause an offensive or objectionable effect

Composting Activity	Actions involved in activity / Potential Odour	Proposed Mitigation	Potential for Odour to cause an offensive or objectionable effect
Bale pre- wetting	 Actions Straw bales will be stored on site. Bales dunked into a sump filled with goodie water² within working yard. Bales stacked on an aerated pad outside the Phase 1 bunkers for about 9 days. If necessary, the bales may be occasionally irrigated with goodie water during this 9-day period. Potential Odour Odour from bale pre-wetting is generated from presence of goodie water during dunking, bale draining, and supplementary irrigation if required. The magnitude of odour emissions is highly dependent on the quality of the goodie water. 	Mitigate the potential odour at source The proposed aeration of the goodie water pond will minimise the potential for odour emissions during the bale pre-wetting process, although some relatively minor odour emissions are likely.	Low
Chicken litter/gypsum storage and handling	 Actions Chicken litter will be delivered to the concrete pad outside the mixing hall, mixed immediately with gypsum, and then stored in an enclosed bunker within the Mixing Hall. 	Avoid odour effects at source. The best way to minimise odour emissions from chicken litter is to keep the litter dry in storage, which is enabled through this design approach.	Low

² 'goodie water' is Phase 1 compost leachate pond



Composting Activity	Actions involved in activity / Potential Odour	Proposed Mitigation	Potential for Odour to cause an offensive or objectionable effect
	 Potential Odour Odour may occur if chicken litter and gypsum mix are not maintained in a dry state. 		
Bale Break, mixing and material placement in bunkers	 Actions Within the Mixing Hall, a semi-enclosed building, a purpose-designed automated bale-break machine will break up the bales, mix in the correct amount of chicken litter/gypsum and water, and then deposit the mixed substrate directly onto a conveyor for transport into one of the five Phase 1 bunkers. Compost is placed evenly into the bunker via a telescopic, automated filling line with a capacity of 200 tonnes per hour ("Tph"). Timing: The process will occur over a period of up to 8 hours between the hours of 8am and 5pm The process will occur typically 1-2 days per week and will usually occur on weekdays, but may occur at weekends if necessary. Potential Odour Fugitive odour emissions from bale breaking when Mixing Hall doors are open, and not captured by the point source extraction. Some odour generated when compost leaves the Mixing Hall on the conveyors and transported to the Phase 1 Bunkers and deposited into a hopper for automatic 	 The design of the process and technology used minimises the generation of adverse odour effects. Design of Mixing Hall includes point source extraction above the bale break machine and hopper which will capture most of the odour emissions from the bale break process. Design of the bunker includes an air extraction system will operate at maximum capacity during the filling of compost into the Phase 1 bunkers and remove nearly all of the odour caused by the actual filling activity. Air extracted from the bunkers then passes through a custom designed biofilter. Minimising the generation of odour and the degree of unpleasantness of that odour during the bale break process involves the following: Keeping the chicken litter/gypsum mix dry during storage and only accepting chicken litter onto site which has been appropriately stored off-site (i.e. not anaerobic upon delivery). 	Low



Composting Activity	Actions involved in activity / Potential Odour	Proposed Mitigation	Potential for Odour to cause an offensive or objectionable effect
	filling at the bunker, as the conveyors and hoppers are not covered.	anaerobic decomposition do not accumulate inside the bales. 3. Aerating the bale break process is to be restricted to 8am-5pm on any day to avoid potential odour emissions during stable atmospheric conditions in the early morning and evening.	
First and second turning of compost in Phase 1 bunkers	 Actions During Phase 1, the compost will be turned twice by removing the compost from the bunker using a front-end loader, mixing the material and adding moisture in the bale break machine, and then immediately returning the compost to a spare bunker via the conveyor system and bunker filling line; this is known as "bunker-to-bunker" transfer. With five bunker operation (for 900 Tpw production) only four bunkers are used for composting and the fifth is kept available for turning operations. 	Design of Mixing Hall includes point source extraction hoods over the bale mixing line during bunker to bunker transfer process. This extraction will remove most of the odour caused by the mixing process. Operating hours of the bale break process is to be restricted to 8am-5pm on any day to avoid potential odour emissions during stable atmospheric conditions in the early morning and evening.	Low
	 Potential Odour Some odour will still emitted during the process due to the movement of front-end loaders in and out of the bunker, and from the compost in the bucket on the front-end loader whilst the loader is moving from the bunker back to the Mixing Hall. 		



Composting Activity	Actions involved in activity / Potential Odour	Proposed Mitigation	Potential for Odour to cause an offensive or objectionable effect
	• Likely that some of the odour from within the mixing hall will escape as fugitive emissions through the open doorways.		
Phase I bunker	 Actions The automated bale-break machine (within the Mixing Hall) deposits the mixed substrate directly onto a conveyer for transport to one of the five Phase 1 bunkers. During Phase 1, the compost will be turned twice by removing the compost from the bunker using a front-end loader, mixing the material and adding moisture in the bale break machine, and then immediately returning the compost to a spare bunker via the conveyor system and bunker filling line; this is known as "bunker-to-bunker" transfer The process takes about 8 hours, and will be conducted only during the hours of 8am to 5pm at the Mt Herbert site. At the end of the Phase 1 composting period 12 days after initial mixing, the compost will be removed from the Phase 1 bunkers by front end loader and returned to the Mixing Hall. Potential Odour Transporting substrate from Mixing Hall to Phase 1 bunkers. The conveyors and hopper will not be covered and therefore there will be some evolution of odour from this source. 	 Air extracted from the bunkers holding Phase 1 compost will be passed through a biofilter custom-designed for the site by GTL Europe. During the filling process, the Phase 1 bunker air extraction system will operate at maximum capacity and will remove nearly all of the odour caused by the actual filling activity. During the bunker-to-bunker extraction process, the bunker air extraction system will operate at maximum capacity. The mixing hall will be mechanically ventilated via point source extraction hoods over the bale mixing line during the bunker-to-bunker transfer process. This extraction will remove most of the odour caused by the mixing process. However, is it likely that some of the odour from within the mixing hall will escape as fugitive emissions through the open doorways. The odour will be less offensive at the stage it is transferred from Phase 1 bunkers to Phase 2 tunnels, as the compost has completed the most active stage of biodegradation Hours of operation of this process are 8am to 5pm. 	Low



Composting Activity	Actions involved in activity / Potential Odour	Proposed Mitigation	Potential for Odour to cause an offensive or objectionable effect
	 Some odour will still emitted during the process due to the movement of front-end loaders in and out of the bunker, and from the compost in the bucket on the front-end loader whilst the loader is moving from the bunker back to the mixing hall. There are likely to be some emissions of odour during the process of removing the finished Phase 1 compost from the bunkers by front-end loader and transferring it back to the mixing hall 		
Removal of compost from Phase 1 bunkers and transfer to Phase 2 tunnels	 Actions At the end of the Phase 1 composting period, the compost will be removed from the Phase 1 bunkers by front end loader and returned to the Mixing Hall. Within the Mixing Hall the compost will be turned again using the bale break machine. The compost will then be transported using the same conveyor system into a fully-enclosed building housing the Phase 2 and 3 composting operations. 	Operating hours to be restricted to 8am-5pm on any day to avoid potential odour emissions during stable atmospheric conditions in the early morning and evening.	Low
	 Potential Odour Likely to be some emissions of odour during the process of removing the finished Phase 1 compost from the bunkers by front-end loader and transferring it back to the Mixing Hall. At this stage the odour will be less offensive than earlier in the Phase 1 composting 		



Composting Activity	Actions involved in activity / Potential Odour	Proposed Mitigation	Potential for Odour to cause an offensive or objectionable effect
	period, as the compost has completed the most active stage of biodegradation.		
Phase 2 and 3 of composting	 Actions The compost will then be transported using the bale break conveyor system into the fully-enclosed building housing the Phase 2 and 3 composting operations. Phase 2 and 3 composting operations will be conducted in tunnels inside a fully-enclosed building. Potential Odour No fugitive odour releases to the atmosphere without treatment are expected from this process. 	Avoids the generation of adverse odour effects. All filling and emptying operations for the Phase 2 tunnels will be carried out in an enclosed building with air extracted to the biofilter for treatment. Similarly, all process air extracted from the Phase 2 tunnels will also be extracted and treated in the biofilter.	Low
Removal of end product and transportation off site.	 Actions Final product is fresh compost ready to cultivate mushroom spores. Compost loaded into trucks within building and/or to the side of the building. Potential Odour Process of loading product is mainly carried out within enclosed building. Odours released when loading outside the building are low because the final product does not have objectionable or offensive odour. 	The final product does not have an objectional or offensive odour so any odour released during the loading onto trucks can incorporated into a typical rural environment.	Low



Composting Activity	Actions involved in activity / Potential Odour	Proposed Mitigation	Potential for Odour to cause an offensive or objectionable effect
Goodie water storage pond (500m ² surface area and 4m deep)	 Actions The goodie water is loaded with organic compounds leached during the composting process, and the goodie water pond will be aerated and mixed to maintain aerobic conditions. The aeration design will be similar to the system currently used successfully at the Brookvale Road site, which uses an SAR[™] Aerator from Hydro Processing and Mining Ltd (Canada), proven in the field for mushroom composting farms. The aerator design recirculated recycled water through a land-mounted aerator, with the aerated water returned to the pond. Potential Odour Odour emissions from this source are expected to minor, and no additional mitigation measures are proposed. Dissolved oxygen concentration in the goodie water storage pond will be continuously monitored and logged. 	Mitigate the potential odour at source through design of the pond.	Low



4. STATUTORY CONSIDERATIONS

Section 88 of the RMA allows any person to make a resource consent application, provided it is in the prescribed form and includes, in accordance with Schedule 4, an assessment of environmental effects in such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

Schedule 4 of the Act lists those matters that should, and must be included in an assessment of environmental effects, as well those matters that should be considered. These matters are referenced throughout the body of this report confirming that the application meets all the requirements of Section 88.

Section 104 of the RMA requires (subject to Part II of the Act) a consent authority to have regard to the matters in section 104 when considering resource consent applications. Those parts of section 104 that are relevant are set out below:

- a) Any actual and potential effects on the environment of allowing the activity; and
- ab) Any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from 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.

An assessment of the activities actual or potential effects in terms of Section 104(1)(a) is undertaken in Section 7 of this report, the conclusions of which are considered in relation to notification in Section 8. The relevant provisions of the District Plan in terms of Section 104(1)(b) are considered in Section 9.

Part 2 of the Act contains Sections 5, 6, 7 and 8. Section 5 outlines the purpose of the Act, which is to "promote the sustainable management of natural and physical resources", and the meaning of the "sustainable management". Sections 6 and 7 contain "matters of national importance" and "other matters", while Section 8 provides for the principles of the Treaty of Waitangi. Part 2 of the Act is considered in Section 10 of this report where an overall assessment is arrived upon.



5. PLANNING DOCUMENTS

The proposal is subject to the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS) and the Central Hawke's Bay District Plan.

5.1 National Environmental Standard for Assessing Managing Contaminants in Soil

The "National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (**NESCS**)" applies to the following '**land use**' activities where they are undertaken on land on which an activity or industry included on the "Hazardous Activities or Industries List" (**HAIL**) has been, is or is more likely than not to have been undertaken;

- The removal of underground fuel storage system and associated soil
- Soil sampling
- Soil disturbance
- Subdivision of land
- Change in land use

The proposed activity introduces a new rural activity to the site and is therefore a change in use. Soil disturbance / earthworks will also occur as part of the proposed development.

A Preliminary Site Investigation (PSI) has been undertaken by EAM Environmental Consultants (refer to **Appendix 5**) over the price of land concerned. The PSI concludes that the land subject to the proposed activities is <u>not</u> 'a piece of land' as described in regulation 5(7) and the NESCS does not apply.

5.2 Central Hawke's Bay District Plan

District Plan Zone and Notations

Zone:

• The subject site is zoned **Rural** in the Central Hawke's Bay Operative District Plan (the "District Plan").

Other Notations:

• An archaeological site³ is located on the subject site, as shown on District Plan 9 (refer to Appendix 2). The archaeological site is not listed in Appendix C as a site of cultural significance.

³ District Plan (161 Archaeological site)

Archaeological site recording scheme (Identifier V22/59)



Activity Status

The proposed composting facility is a **Discretionary Activity** under Rule 4.8.3 of the Rural Zone, **either** as a factory farming activity under Rule 4.8.3(a) or as 'Any Other Activity' which is not listed as a Permitted, Controlled or Non-Complying Activity under Rule 4.8.3(f).

The proposed buildings and hardstand associated with the compost facilities on Lot 1 DP 427319 exceed the permitted standard for site coverage (**Rule 4.9.1**), and as such, require a Discretionary Activity consent under **Rule 4.8.4(e)**.

A Discretionary Activity consent under Rule 8.4 is required for visitor carparking noncompliance. Overall, the proposal is to be assessed as a **Discretionary Activity** under the District Plan.

6. CONSULTATION

In accordance with Schedule 4 of the RMA, an application for resource consent should:

- 1. Identify the persons affected by the proposal,
- 2. The consultation undertaken,
- 3. Any response to the views of any person consulted.

Sections 7 and 8 below demonstrate that the effects on the environment are less than minor, and that no parties are considered adversely affected in terms of Sections 95A and 95B of the Act. To that end, no consultation with immediate landowners has been carried out.

There has been discussion with the Central Hawkes Bay District Council (CHBDC) in the early stages of scoping the proposed activity and understanding of the District Plan.

Consultation with Taiwhenua o Tamatea Inc has been initiated and a meeting was held in which the project was shared. Further, as part of the Provincial Growth Fund (PGF) process it is understood that the CHBDC have informed Taiwhenua o Tamatea Inc of the project also.

7. ASSESSMENT OF ENVIRONMENTAL EFFECTS

The following assessment of environmental effects considers the Permitted Baseline in Section 7.1 and introduces the relevant Assessment Matters from the District Plan in Section 7.2, which are then considered in Sections 7.3 - 7.8.

7.1 Permitted Baseline

In terms of Section 104(2), it is considered that there are effects permitted by the District Plan which the Council may disregard.

The District Plan Rural Zone permits a range of rural and non-rural activities, such as:

• 'farming activities',

டி

- 'forestry activities',
- 'community activities',
- 'commercial activities',
- 'recreational activities', and
- 'some 'factory farming activities'.

All of these activities are subject to the envelop of effects set by the Rural Zone permitted activity performance standards for buildings, noise, signs, access, loading, carparks and other relevant matters.

The permitted factory farming activities are limited to piggeries and poultry farms, the scale of which is set at numbers of housed pigs (2,000) and birds (10,000). Any permitted piggery or poultry farm shall be no closer than 100m to a property boundary.

The range of activities provided as permitted activities allows a mix of activities in the Rural Zone. New buildings, facilities, accesses, increase in traffic on the local road network, on-site car parks, signs and noise generated by permitted activities can all be anticipated in the Rural Zone environment, to the extent that these comply with the performance standards set by the District Plan.

The subject site comprises five parcels of land, each of which could be realistically developed and support any of the activities listed above.

To that end, when considering the nature and scale of actual and potential adverse effects from the proposed development, any effects similar to or arising from the level of permitted development on each property may be disregarded. Here we note that all setbacks and the height of the proposed buildings meet the Permitted Activity standards, while the overall site coverage only just exceeds the 7% limit i.e. site coverage is 9%. Noting that this includes impervious surfaces, we scale of actual buildings can be considered permitted.

7.2 Assessment Matters

To assist the identification and consideration of actual and potential effects on the environment from a proposed compost production facility and associated activities, the District Plan provides a list of assessment matters for a Discretionary Activity 'factory farm' scenario. These are set out below:

14.4 DISCRETIONARY ACTIVITIES IN RELATION TO:

4. Factory Farming - Rural Zone

- a) The degree to which the factory farming operation will be compatible with the character of the surrounding rural area, including the density of and proximity to residential units in the area.
- b) The degree to which the proposed factory farming operation is likely to lead to odour, dust, noise or health nuisances beyond the boundary of the site, and in particular, the



technology and management systems proposed to mitigate noise or odour nuisance, including:

- i) the size of the proposed factory farming operation and its associated site;
- ii) the design of the buildings, facilities, and waste and noise management systems;
- iii) the management and operation of the waste and noise management systems;
- iv) waste treatment measures employed;
- v) odour and noise abatement measures employed.
- c) The degree to which existing or proposed landscaping, including plantings, will shelter and screen the proposed site.
- d) The degree to which the proposed buildings, will be compatible with the appearance, layout and scale of other buildings and sites in the surrounding area.
- e) The degree to which the proposed factory farming operation complies with relevant codes of practices promulgated by industry organisations.
- f) Where a building is to be erected for the purpose of a factory farming operation refer to the assessment matters in 14.2.1 and refer to assessment matters in 14.2.13 for effluent disposal associated with a factory farming operation.

In relation to exceeding site coverage, the District Plan provides the following assessment matters under Section 14.2:

1. Building Coverage - Township, Business, and Rural Zones

a) The degree to which the proposed buildings:

- will be compatible with the character of the area, including the scale of other buildings in the surrounding area;
- will overshadow adjoining sites and result in reduced sunlight and daylight;
- will cause a loss of privacy through being over-looked from neighbouring buildings;
- will block views from properties in the vicinity, or from roads or public open space in the surrounding area;
- will diminish the openness and attractiveness of the street scene;
- will detract from the amenity of adjoining sites, in terms of such matters as noise, odour, dust, glare or vibration occurring as a result of the building.
- b) The ability of the applicant to:
 - provide adequate opportunity for garden and tree planting around buildings;
 - provide adequate vehicle parking and manoeuvring space on site;
 - provide adequate outdoor space on the site for all outdoor activities associated with residential and other activities permitted on the site;
 - mitigate any adverse effects of increased height or exceedence of the recession planes, such as through increased separation distances between the building and adjoining sites or the provision of screening;
 - mitigate any adverse effects on people affected by the proposal.
- c) Where sewerage reticulation is not available to the site, the ability of the applicant to adequately dispose of effluent, which avoids:
 - any potential contamination of groundwater;
 - any potential slope instability problems;
 - any potential odour, noise and vibration nuisance to neighbours;
 - any potential seepage of effluent at ground surface.



- d) The degree to which the non-compliance with the standard allows more efficient, practical and/or pleasant use of the remainder of the site.
- e) The degree to which alternative practical locations are available for the building.

In relation to non-compliance with visitor parking and truck and trailer parking, the District Plan provides the following assessment matters under Section 14.5:

- a) Whether it is physically practicable to provide the required parking or loading spaces on the site in terms of the existing location of buildings, access to the road, topography and utility location.
- b) Whether there is an adequate alternative supply of parking or loading spaces in the vicinity. In general on-street parking is not considered an alternative.
- c) Whether there is another site in the immediate vicinity that has available parking or loading spaces that are not required at the same time as the proposed activity. In such a situation the Council may require the associated parking or loading spaces to be secured by way of written agreement and adequate signage to inform customers of its availability.
- d) Whether the car parking or loading will be unusually low as a result of business practice.
- e) Whether a significant adverse effect on the character and amenity of the surrounding area will occur as a result of not providing the required parking or loading space
- f) The degree to which the safety and efficiency of the surrounding roading network would be adversely affected by parked and manoeuvring vehicles on the roads.
- g) Any cumulative effect of the lack of on-site parking and loading spaces in conjunction with other activities in the vicinity, not providing the required number of parking or loading spaces.
- h) The degree to which any reduction in the design characteristics will result in the parking and loading area and/or access and manoeuvring areas being impractical, inconvenient or unsafe to be used by vehicles or pedestrians.

Overall, using the assessment matters above, the following effects on the environment are grouped and assessed accordingly in Sections 7.3 - 7.10 below:

- Rural Amenity
- Visual
- Noise
- Odour
- Cultural Values
- Recreation Values
- Traffic
- Construction

7.3 Rural Amenity

The proposed composting production facility introduces a new rural-industrial activity to the existing rural area. The existing environment supports a mix of activities including grazing, cropping, forestry, gravel extraction, recreation, and community infrastructure (wastewater facility).



The subject site was specifically investigated by the applicant to avoid conflict with urban areas, existing residential dwellings, lifestyle blocks and other sensitive land uses. Consequently, the subject site is isolated from any existing residential development. Further, the site avoids proximity to any of the Council's strategic residential growth areas for Waipukurau.

Given the existing mix of activities in the wider locality, and general absence of closely located residential activities to the main areas of activity within the subject site, it is considered the proposed composting production facility can be compatible with the character of the rural environment.

The Tukituki River and its esplanade are identified as an Area of Significant Conservation Value (ASCV) and it has high amenity values associated with it. The subject site adjoins the esplanade, yet the proposed composting facility is located on the opposite side of Mt Herbert Road from the river. This separation distance and proposed landscaping along the front and side boundaries is considered to mitigate potential visual effects from public vantage points within the river esplanade such that the area identified as significant will not be affected – certainly not beyond that anticipated by the District Plan through its performance standards.

The nature and scale of proposed buildings and facilities will be rural industrial. The position of the buildings within the site provide a substantial separation from the road. With landscaping to further soften the visual effects of the development, the actual and potential adverse effects on rural amenity are considered to be less than minor.

As demonstrated in the following sections, noise, odour, traffic and visual effects are all managed so that significant adverse effects on rural amenity are avoided beyond the boundary. Any residual effects beyond the site boundary, such as additional traffic on local roads and some infrequent odour beyond the boundary, are considered to be less than minor in the context of a working rural environment.

To conclude, the compost production facility will present a new type of rural industrial activity to the subject site and surrounds. The proposed activities will be compatible with what is provided for within the Rural Zone – with noise, traffic, odour and visual effects being managed so they are either avoided or mitigated. Overall, effects on amenity can be considered less than minor.

7.4 Visual Effects

The nature of the buildings and facilities associated with compost production are industrial, yet fundamentally provide for a rural based activity. These buildings and facilities enable the production of the substrate to grow mushrooms, and therefore belong in the rural environment. The buildings and facilities on site include:

- Mixing Hall and Phase 2 and 3 Tunnels 4,420m²
- Phase 1 Bunkers (5) 1,540m²
- Biofilter 750m²


- Working Yard 1,050m²
- Straw storage 1,500m²

The combined area of the buildings, structures and impervious surfaces exceeds the site coverage performance standard of 7% by creating 9% coverage across the 16ha title of land. Aside from site coverage, the design of the buildings complies with the Rural Zone performance standards including maximum height, yard setbacks and recession planes.

The public viewpoints of the subject site and proposed development include the immediate approach along Mt Herbert Road and parts of the Tukituki River esplanade.

The main bulk of the buildings are setback from Mt Herbert for a distance of 50m – 60m. The closest part of the building is the office and store area, which is setback 25m from the road, and has a smaller profile and frontage than the rest of the building. The setbacks assist the bulk of the buildings to appear less dominant to those viewing from Mt Herbert Road and the Tukituki River esplanade. Any views of the new buildings, facilities or development show that the subject site is being utilised for primary industry, albeit in a non-traditional sense. For example, rather than a new woolshed, milking shed, hayshed, grain silos, tanks, stockyards, or other traditional farming or horticultural buildings, the proposed compost facility will comprise outdoor yards, covered processing areas, loading bays, storage areas, a staff room, and carpark.

Landscaping within the site is proposed along the frontage of Mt Herbert Road and along the side boundaries. This landscaping will be of a moderate height (4-8m), with the purpose being to provide a vegetative buffer to soften views of the buildings and facilities as opposed to outright screening. The design of the landscaping has yet to be prepared and a condition of consent requiring a detailed landscape plan to achieve the above prior to construction is anticipated.

In conclusion, the proposed buildings and facilities will change the existing environment, which currently has a few residential and farming buildings on the river flats. Change does not necessarily mean adverse effects however, and in this case, the visual changes generated by the new rural industrial buildings and facilities are positioned within the site so they are not dominant and can be further soften by amenity landscaping on the front and side boundaries. Further, the scale of change is essentially provided for under District Plan development standards and with further landscape softening, visual effects are considered to be less than minor in this context.

7.5 Noise

An acoustic assessment of the proposed activity against the Rural Zone noise performance standards is provided by Earcon, refer to **Appendix 6**. The Earcon Report dated February 2018 assessed the noise performance standards against an earlier proposal that incorporated a composting production facility and mushroom farm activity. This report established an envelope of noise effects that could be reasonably anticipated based on their methodology.



This February 2018 assessment has been reviewed against the revised activity and a memo in **Appendix 6** of this application confirms that the activity will continue to comply with the noise standards of the Rural Zone.

On the basis of Earcon's conclusions, effects in relation to noise can be considered less than minor.

7.6 Odour

The design of the compost production system emphasises the management of odour effects at source, as well as dispersion through the large subject site. For detail on the composting process and odour management refer to the AQP Odour Report in **Appendix 7.** This covers/outlines the following:

- An understanding of the subject site and surrounding land uses and topography.
- A description and explanation of the proposed composting activities at the subject site.
- A description of potential odour sources from the proposed composting activities, and the mitigation measures to be incorporated in the proposal.
- An explanation of the meteorology conditions important to odour dispersion, and what is relevant to consider for the subject site and surrounds.
- Modelling of the odour dispersion, including methodology, results and conclusions.
- Overall conclusions and recommendations.

The discharge of contaminants to air, that generate adverse odour effects, are environmental matters that are comprehensively assessed in the discharge permit to the Hawke's Bay Regional Council (lodged alongside this application). Notwithstanding the assessment within the air discharge permit, odour effects contribute to the overall effects on the existing amenity values of the rural environment and are considered as part of this land use application as well. The assessment matters from 14.4 above are repeated here and commented on.

- b) The degree to which the proposed factory farming operation is likely to lead to odour, dust, noise or health nuisances beyond the boundary of the site, and in particular, the technology and management systems proposed to mitigate noise or odour nuisance, including:
 - i) the size of the proposed factory farming operation and its associated site;
 - ii) the design of the buildings, facilities, and waste and noise management systems;
 - iii) the management and operation of the waste and noise management systems;
 - iv) waste treatment measures employed;
 - v) odour and noise abatement measures employed.

Commentary

The following commentary does not repeat matters regarding noise, as noise has been demonstrated to comply with the Rural Zone provisions as stated previously. Instead, the commentary focuses on odour matters. We make we the following points:



- The scale of activity allows the applicant to invest in a level of technology for the facility that gives benefits in efficiency, and among other environmental matters, good odour management.
- As summarised in **Table 3** above, specific management and mitigation has enabled a low potential risk of odour rating for each aspect of the process
- The design of the compost production facility using new technology, automation, enclosed and semi-enclosed buildings, and on-site management techniques (known to avoid or mitigate odour generating activities) manages objectionable or offensive odours beyond the boundary of the site.
- In terms of nearby dwellings, Section 6.4.5 of the AQP report provides results of odour analysis and concludes that the potential for offensive or objectionable odour effects to occur at nearby dwellings due to composting operations at the site is less than minor.
- In terms of the Wahi Tapu site Section 6.4.6 of the AQP report provides results of the odour analysis and concludes that the potential for offensive or objectionable effects to occur due to that [from the proposed compost production activity] odour will be less than minor.
- In terms of the Tukituki River Esplanade Section 6.4.7 of the AQP report provides results of the odour analysis and concludes that the potential for offensive or objectionable effects to occur due to that [from the proposed compost production activity] odour will be less than minor.
- In terms of the Hawkes Bay Regional Council's Gum Tree Farm Mountain Bike park Section 6.4.8 of the AQP report provides results of the odour analysis and concludes that the potential for offensive or objectionable odour effects to occur will be less than minor.

7.7 Cultural Values

The following considers the recorded archaeological site (V22/59), the Site of Cultural Significance and the Statutory Acknowledgment matter.

The recorded archaeological site (V22/59) is identified within the site. The archaeological site has six terraces and a pit with a few exposures of middens (freshwater mussel, fire cracked rock obsidian, charcoal).

This area has been identified as Area B on the underlying title and the owners are aware of their responsibilities under the Heritage New Zealand Pouhere Taonga Act 2014. The nearest part of the proposed compost production activity on the site is 70m from the Area B. This is shown on the site plan. On this basis, it is unlikely to be affected. Nevertheless, the earthwork activities carried out during the construction will be subject to an accidental discovery protocol.

A Site of Cultural Significance (wahi tapu) is situated on the opposite side of the Tukituki River to the subject site approximately 370m from the nearest part of the proposed compost production facility.



In addition to the distance across the river channel, the proposed landscaping along the north-east boundary of the site and the concentration of activity on the western side of the site is considered to provide an appropriate level of mitigation from the wahi tapu site in terms of outlook and visual effects.

As discussed under the Odour effects assessment above, potential odour effects at the wahi tapu site have been analysed and Section 6.4.6 of the AQP report. The conclusion is that the potential for offensive or objectionable effects to occur from the proposed compost production activity will be less than minor.

The Tukituki River and its tributaries are a Statutory Acknowledgement Area OTS-110-30, and within the Statement of Association there is a sentence that states 'All along the Tukituki River are signs of occupation and sites that record key events in tribal history.' This evidenced in the archaeological site and wahi tapu site - signs of occupation. Nevertheless, the proposed compost production facility is distanced from the Tukituki River and these two cultural sites. Further, there are no discharges to land that may affect surface water quality.

Acknowledging the historical occupation along the Tukituki River and the cultural values associated with it, the effects of the proposed compost production activity on the river and wahi tapu site are considered to be less than minor.

We understand the applicant has met with Taiwhenua o Tamatea Inc and has discussed the proposal with its representatives.

7.8 Recreational Values

The Tukituki River and its esplanade presents a corridor of green space that forms and links to a network of recreation. The Gum Tree Farm Mountain Bike park is nearby and is an additional recreation asset for the region. While the effects of the proposal on both environments have been referred to in Sections 7.4 and 7.6 above, the following gives further consideration to the Tukituki River esplanade.

The assessment presented in the AQP report specifically investigates areas close to the proposed compost processing activity and are shown as Receptors R8 – R11 on Figure 12 below.



Figure 12: Location of ten discrete receptors used for detailed analysis of model results. Source AQP Report, Figure 16



These receptors along the Tukituki River Esplanade are not considered to be sensitive receptors, as activities considered to be sensitive to odour are not carried out at these locations. However, the model results show that people using the track for walking, running, cycling etc may notice odour as they pass along the track downwind of the composting facility on a small number of hours per year.

This intermittent and transient recreational use is quite different to a use associated with a residential activity where a dwelling and associated outdoor areas are used consistently and daily however, and this ought to be reflected in the consideration of the FIDOL factors in determining the magnitude of effect.

To that end, while odour may be noticeable, with recreationalists moving through the area instead of lingering at the spot, the impact of the odour is reduced. There is a low probability that a person will be present downwind of the composting site at the same time as the worst case GLCs occur, and the duration of exposure will be very limited. The wider environment which recreationalists use the Tukituki River cycle trails also pass by the wastewater treatment facility and the gravel extraction activity, so the area is not a pristine river environment. Further, cyclists passing rural and industrial activities comprising an element of odour is also not a foreign concept, and examples include the various activities at Awatoto, Napier.

Given the frequency, intensity, duration, the transient the use of the river corridor and overall low probability of recreational users being exposed to an infrequent odour, the potential for offensive or objectionable effects to occur due to that odour is considered to be less than minor. This view is supported by AQP.



7.9 Traffic

Traffic Generation and Relevance and Use of the Transportation Assessment by Stantec (May 2018)

A Transportation Assessment by TDG/Stantec (May 2018) for an earlier resource consent application (RM180156) supported a proposed compost production facility (Stage 1), mushroom farm (Stage 2) and horticultural hub (Stage 3). The May 2018 Transportation Assessment established an envelope of transportation effects based on their methodology.

Key points from that assessment included:

- The analysis of three key intersections within Waipukurau town centre confirmed that existing traffic volumes are low.
- The additional traffic generated by the proposed development during the average weekday AM and PM peak period has a minor impact on the overall performance of these intersections. Mount Herbert Road is expected to increase from 247 veh/h to 420 veh/h in the AM peak hour and similarly 174 veh/h to 347 veh/h in the PM peak. The intersection analysis confirms that this increase in vehicular activity has little effect on capacity.
- The increase in heavy vehicle activity is generated by deliveries/ distribution activities to/from the site. These vehicles generally arrive from the north (Napier, Hastings) and the west (Palmerston North). During the AM and PM peak hours the existing road network and intersection can safely and efficiently allow for the increased traffic. Mount Herbert Road is expected to increase from 9 heavy vehicles to 13 heavy vehicles in the AM and PM peak hours (48 heavy vehicles were used in the analysis as a worse case).
- The form and function of the existing urban roads are well suited to accommodate the additional vehicular trips from the development. Any adverse effects resulting from the increase in traffic on the safety and efficiency of these roads is considered to be less than minor. No upgrades or changes to the existing intersections are required.
- The form and function of Mount Herbert Road beyond the gravel extraction plant requires upgrades to cater for the increase in heavy vehicle activity. Without the upgrades to this part of Mount Herbert Road, the road would deteriorate at an increasing rate than originally designed for and the increase in traffic would result in an adverse effect on the safety and efficiency of this part of the local network. To avoid and mitigate adverse effects, the actions set out in Section 7.6 are required.

In relation to traffic count data used within the Transportation Assessment, Stantec later confirmed the following:

Table 7 of the Transportation Assessment report includes details of existing two-way traffic volumes for sections of Mt Herbert Road, River Terrace, SH2 and Peel Street.

Earlier at Section 3.4 of the report, it is described that a series of traffic surveys were commissioned at the following three intersections to inform the analysis undertaken:



- SH2 / Herbert Street;
- SH2 / River Terrace; and
- Ruataniwha Street / St Joseph Street / Wellington Road / Mt Herbert Road.

The respective weekday AM and PM peak traffic flows recorded by the surveys at these three intersections are then shown in the diagrams included as Figures 4 and 5 of the report.

The existing two-way traffic flows included at Table 7 are taken directly from these intersection surveys and match the peak hour data mapped in Figures 4 and 5.

As described earlier in the description of the proposal, the application includes majority of the recommendations put forward by Stantec in Section 7.6 of the Transportation Assessment. These recommendations result in various upgrades (grading, widening, formation) to sections of Mount Herbert Road. The upgrades respond to the necessary function of the road for the proposed activity and ensure the safety and efficiency of the road when servicing the various aspects of the compost production facility.

With the nature of the down scaled proposal being well within the characteristics assessed, and the same mitigation proposed where still applicable. the May 2018 Transportation Assessment is still considered relevant to this application and suitable to confirm that the effects of the proposal in relation to traffic matters can be considered less than minor.. Compared the original proposal, key points associated with the down scaled proposal include:

- Staff numbers have reduced from 150/115 week/weekend to 8 week/weekend.
- As a consequence of less staff numbers on site, a reduction in the volume of light goods vehicles as set out in Tables 5 and 6 of the Transportation Assessment.
- Vehicular volumes associated with the orchard and vegetable glasshouse activities (horticulture hub) are no longer relevant as these activities do not form part of the application.
- Similar access points to those identified as Access Points 1 and 3, shown in Figure 12 of the May 2018 report, are proposed as part of this application.
- Access points 2 and 4 7 as shown in Figures 12 and 13 of the May 2018 report are no longer part of the proposed activity.

While the proposed activity involves less light goods vehicles, a similar level of heavy goods vehicle movements are anticipated as described and evaluated in the May 2018 Transportation Report.

To that end, the same overall evaluation and recommendations in the aforementioned report remain and are relied upon to support a view that transportation effects will be less than minor.



On-site carparking

Previous Compost and Mushroom Farm, and Horticulture Hub

The May 2018 Transportation Assessment calculates the number of on-site carparks required for staff (1 park per 2 staff) and visitors (1 park per 500m² GFA) based on the District Plan car parking ratios. For the previous Compost and Mushroom Farm, and Horticulture Hub activity 150 staff were anticipated and a GFA of the buildings and working areas was calculated at 31,537m². Based on the District Plan car parking ratios, a maximum of 138 on-site carparks was calculated to comply with the District Plan. This previous scheme included a large carparking area to the rear of the site to provide for this considerable amount of carparking as per the district plan requirements.

Proposed Composting Facility

In relation to this proposal, the District Plan on-site carparking requirements are as follows:

- 12 visitor carparks
- 4 carparks are provided exclusively and shall be made available for staff.
- 5 truck and trailer parks

The proposed facility provides for the 4 staff carparks and two visitor carparks. There are no truck and trailer parks. To this end, the proposed development is different to what is described and assessed in the May 2018 Transportation Assessment and that report is therefore not relied upon for assessing the effects of this carparking non-compliance.

The assessment matters from 14.5 above are repeated here and commented on.

- a) Whether it is physically practicable to provide the required parking or loading spaces on the site in terms of the existing location of buildings, access to the road, topography and utility location.
- Whether there is an adequate alternative supply of parking or loading spaces in the vicinity.
 In general on-street parking is not considered an alternative.
- j) Whether there is another site in the immediate vicinity that has available parking or loading spaces that are not required at the same time as the proposed activity. In such a situation the Council may require the associated parking or loading spaces to be secured by way of written agreement and adequate signage to inform customers of its availability.
- k) Whether the car parking or loading will be unusually low as a result of business practice.
- I) Whether a significant adverse effect on the character and amenity of the surrounding area will occur as a result of not providing the required parking or loading space
- m) The degree to which the safety and efficiency of the surrounding roading network would be adversely affected by parked and manoeuvring vehicles on the roads.
- n) Any cumulative effect of the lack of on-site parking and loading spaces in conjunction with other activities in the vicinity, not providing the required number of parking or loading spaces.
- o) The degree to which any reduction in the design characteristics will result in the parking and loading area and/or access and manoeuvring areas being impractical, inconvenient or unsafe to be used by vehicles or pedestrians.

The four (4) staff parks are provided for in a small area of carparking immediately next to the office area. This is a better more convenient area for car parking than the previous proposal.



The demand for visitor carparking is only two, as few visitors are anticipated to the site. Should visitor numbers increase in the future, there is sufficient area within the site such that additional carparking can be created if required. This could be provided for via a Review clause.

All parking spaces will be designed and constructed in accordance with AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking.

The design of the on-site movement and use of heavy good vehicles arriving on site is such that there is no demand for truck and trailer parks or car parks. This is because heavy goods vehicles either arrive and collect Phase 3 compost substrate or are delivering other raw inputs. Indeed, the provision for large truck and trailer carparks would be an inefficient use of impervious surfacing, considering there would be no use for these types of carparks.

Overall the provision of staff and visitor on-site carparks is sufficient and the location of the carparks within the site are convenient. No adverse effects are anticipated on the local road network as a result of less visitor carparks, and no truck and trailer carparks.

Loading

The May 2018 Transportation Assessment is not relevant to the current proposal, as there was an expectation that compliance with the relevant District Plan Transportation standards for loading would be confirmed via the certification approach.

The District Plan requirements do not appear to be applicable to rural environments, or activities such as a factory farm. Nevertheless, the proposed internal access has been designed with turning circles that allow for heavy vehicles up to the size of a B-Train (two semi-trailers) unit and provides for the loading and unloading of materials and product.

The loading of final product and unloading of raw materials to the site is provided by way of the site access, internal roads and maneuvering. The demand for trucks and truck and trailer units to enter, manoeuvre, stop and load/unload product and raw materials has been provided for on-site and will not generate adverse effects on the safety and efficiency of the local road network.

7.10 Construction

Construction effects such as noise, dust and traffic management are temporary in nature, a reality of new development and can be managed through industry best practice and standard conditions of consent. Nuisance effects associated with construction can be managed by incorporating the following into the construction activities:

- A Construction Management Plan will be prepared,
- Hours of operation will be limited to daytime/working hours, being 7.30am-6.00pm Monday-Saturday
- Construction activity will be undertaken in accordance with the New Zealand Standard NZS 6803:1999 "Acoustics Construction Noise".



In conjunction with the temporary duration of such effects, these initiatives will ensure that overall, effects with regard to construction will be less than minor.

8. NOTIFICATION

There is no presumption in the RMA itself as to whether or not an application will be notified and a consent authority has discretion in determining whether or not notification is necessary. This assessment is primarily governed by Section 95A and Section 95B of the RMA.

8.1 Section 95A Assessment – Wider Environmental Effects

Section 95A of the RMA considers the need for public notification and sets out four steps in a specific order to be considered in determining whether to publicly notify.

In terms of Step (1), public notification has not been requested, Section 95C pertaining to notification in the event that further information is not provided under Section 92 is not applicable, and the application is not being made jointly with an application to exchange recreation reserve land under <u>Section 15AA</u> of the Reserves Act 1977.

In terms of Step 2, none of the circumstances precluding notification are applicable.

Moving to Step 3, notification is not required by a rule in a Plan while the effects of the proposal have been demonstrated in Section 7 of this report to be less than minor or minor on the wider environment.

Lastly, as no special circumstances are considered to apply public notification is not required under any of the pathways in Section 95A.

8.2 Section 95B Assessment – Effects on the Local Environment and Particular Parties

While public notification is not necessary, any effects of the proposal on the local environment and upon particular parties must still be considered. This is addressed through Section 95B of the RMA.

In terms of Step 1, being outside the CMA we understand there are no protected customary right groups or customary marine title groups in terms of Section 95B(2).

With respect to Section 95B(3) the site may be within (or at least adjacent to) land that is the subject of the Statutory Acknowledgement Area associated with the Tukituki River and tributaries as part of the Heretaunga Tamatea Deed of Settlement (as shown on the Deed Plan OTS-110-30 for Statutory Areas).



Objectives 36 and 37, and Policies 64 of the RRMP have also been considered alongside our review of the Statements of Association with the Statutory Acknowledgment Area in determining the scale of effects on tangata whenua.

Objective 36 sets out to protect and where necessary aid the preservation of waahi tapu (sacred places) and tauranga waka (landings for waka). Objective 37 sets out to protect and where necessary aid the preservation of mahinga kai (food cultivation areas), mahinga mataitai (sea-food gathering places), taonga raranga (plants used for weaving and resources used for traditional crafts) and taonga rongoa (medicinal plants, herbs and resource).

The proposed activities involve air discharges, with no change to the water resource of the Tukituki River, or the use of places along the river. The proposal is not expected to compromise the preservation tauranga waka, mahinga mataitai, taonga raranga, taonga rongoa or mahinga kai.

Effects of odour have been specifically considered, particularly in regard to the wahi tapu site (the listed site of significance) and determined to be less than minor. On this basis, effects on the persons to whom the statutory acknowledgement is made are considered less than minor.

None of the matters precluding notification apply in terms of Step 2.

Having disregarded land adjacent to the subject site for the purposes of Section 95D(a)(ii), that land is now returned to under Step (3) of Section 95B, which requires the consent authority to determine, in accordance with Section 95E, whether there are any affected parties.

Section 95E states that a person is an affected person if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor).

Land adjacent to the subject site is identified in **Figure 13** below, with an assessment of effects on those parties following. Although not in a Section 95B context, additional properties are also identified and considered.



Figure 13: Subject site (yellow) and adjacent properties. The Tukituki River is situated between the site and adjacent rural properties



Rural Properties to the north

This group of properties includes:

- 1. A 6.8ha property off Tapairu Road, immediately next to the Tukituki River (Lot 6 DP 525885).
- 2. A 29ha property at Tapairu Road (Part Tarewa A1 Block)

These rural properties are situated beyond the Tukituki River and are identified as being adjacent to the site because they are the nearest parcels of land. These rural properties do not have residential dwellings or other sensitive uses on them - except the identified wahi tapu site may extend into property 1 and 2 (identified above). Given the assessment made in Section 7 of this application, the actual and potential adverse effects on the above rural properties are considered to be less than minor because of the following rationale:

- The proposed activity complies with permitted noise levels set in the performance standard 4.9.11.
- With respect to the wahi tapu site (ref 230) the potential odour effects at this locality are less than minor (refer to Section 6.4.6 of the AQP report).
- The increased use and upgrade of Mt Herbert Road will not adversely affect the use of Ford Road, Tapairu or Kaimotu Road.



- Noting the location, bulk and height of the buildings themselves can be considered permitted, the potential visual effects of the proposed buildings and facilities are mitigated through distance, relative isolation within the subject site and the proposed landscaping on the front and side boundaries of 464 Mt Herbert Road.
- The exceedance of site coverage does not generate adverse effects from building dominance, privacy or shading on nearby houses or other rural buildings. The contribution to site coverage, includes areas of hardstand associated with the biofilter, straw storage, internal road, on-site maneuvering, carparks and working yard. It is considered that the concentration of buildings and areas of hardstand can be accommodated within the site without generating significant adverse effects on surrounding amenity.

The Forestry and Recreation Block (the Gum Tree Farm Mountain Bike Park)

This property is situated at 302 Mangatarata Road (Lot 2 DP 28812 BLK XV Waipukurau SD) and extends back into the rear section of 464 Mt Herbert Road (Lot 1 DP 427319). It is a rural property, currently in forestry and also used for mountain biking tracks.

With reference to the assessment made in Section 7 of this application, the actual and potential adverse effects on those occupying or using the property at 302 Mangatarata Road are considered to be less than minor for the reasons as summarised below:

- The proposed activity complies with permitted noise levels set in the performance standard 4.9.11.
- Cyclists using recreational areas in rural areas can expect rural odours and activities to be part of the environment that they are within. Passing rural and industrial activities comprising an element of odour is also not a foreign concept, and examples include the various activities at Awatoto, Napier.
- The use the Gum Tree Farm Mountain Bike Park by recreational cyclists is a transient use, rather than a permanent one.
- The proposed measures to avoid and mitigate significant odour effects from the proposed compost activities are wide ranging including the design of the facility, through to on-site management and hours of operation Section 6.4.8 of the AQP report provides results of the odour analysis and concludes that the potential for offensive or objectionable odour effects to occur will be less than minor.
- Any potential odour at the property would be infrequent and a short duration.
- There are sections of Mount Herbert Road that require upgrades to ensure the increase in traffic avoids adverse effects. With the upgrades in place, the effects on the local road network (and its users) are less than minor.
- There are positive effects from the road upgrades for those using the road to get to the entrance of the Gum Tree Mountain Bike park.
- Noting the location, bulk and height of the buildings themselves can be considered permitted, the visual effects of the proposed buildings and facilities are considered to be appropriately managed by way of setbacks from Mt Herbert Road and proposed landscaping along the front and side boundaries.
- The exceedance of site coverage does not generate adverse effects from building dominance, privacy or shading on nearby houses or other rural buildings. The



contribution to site coverage, includes areas of hardstand associated with the biofilter, straw storage, internal road, on-site maneuvering, carparks and working yard. It is considered that the concentration of buildings and areas of hardstand can be accommodated within the site, without generating significant adverse effects on rural amenity.

• While the proposed compost production facility introduces a new type of rural industrial activity to the subject site and surrounds, the proposed activities will be compatible with what is provided for within the Rural Zone and noise, traffic, odour and visual effects can be managed so they are either avoided or mitigated.

The Tukituki River Esplanade

The Tukituki River and its esplanade is considered to be part of the wider environment given it presents a corridor of green space and recreation that links to a network of recreation, rather than a having a stationery presence like an adjoining property. Taking a conservative approach however, specific consideration is given to this geographic feature and its potential users as adjoining land. With reference to the assessment made in Section 7 of this application, the actual and potential adverse effects on those occupying or using the Tukituki River esplanade are considered to be less than minor for the following reasons: :

- The proposed activity complies with permitted noise levels set in the performance standard 4.9.11.
- Cyclists using recreational areas in rural areas can expect rural odours and activities to be part of the environment that they are within. Passing rural and industrial activities comprising an element of odour is also not a foreign concept, and examples include the various activities at Awatoto, Napier.
- The use the river esplanade by recreational cyclists is a transient use, rather than a permanent one.
- The proposed measures to avoid and mitigate significant odour effects from the proposed compost activities are wide ranging including the design of the facility, through to on-site management and hours of operation. Section 6.4.7 of the AQP report provides results of the odour analysis and concludes that the potential for offensive or objectionable odour effects to occur will be less than minor.
- Any potential odour at the river esplanade would be infrequent and a short duration.
- There are sections of Mount Herbert Road that require upgrades to ensure the increase in traffic avoids adverse effects. With the upgrades in place, the effects on the local road network (and its users) are less than minor.
- There are positive effects from the road upgrades for those using the road to get to the Tukituki River.
- Noting the location, bulk and height of the buildings themselves can be considered permitted, the visual effects of the proposed buildings and facilities are considered to be appropriately managed by way of setbacks from Mt Herbert Road and proposed landscaping along the front and side boundaries.
- The exceedance of site coverage does not generate adverse effects from building dominance, privacy or shading on nearby houses or other rural buildings. The contribution to site coverage, includes areas of hardstand associated with the



biofilter, straw storage, internal road, on-site maneuvering, carparks and working yard. It is considered that the concentration of buildings and areas of hardstand can be accommodated within the site, without generating significant adverse effects on rural amenity.

• The proposed compost production facility introduces a new type of rural industrial activity to the subject site and surrounds. The proposed activities will be compatible with what is provided for within the Rural Zone and, noise, traffic, odour and visual effects can be managed so they are either avoided or mitigated.

Although not adjacent, and essentially considered in regard to Section 95A rather than Section 95B, the following provides specific consideration of the gravel extraction activity and residential properties to the south of Mangatarata Road.

The Gravel Extraction Activity

An existing gravel extraction activity operates at 302 Mt Herbert Road. This 2.8ha property adjoins the subject site to the south-west. With reference to the assessment made in Section 7 of this application, the actual and potential adverse effects on those at 302 Mt Herbert Road are considered to be less than minor for the following reasons:

- The proposed activity complies with permitted noise levels set in the performance standard 4.9.11.
- There is no sensitive activity (residential dwellings, marae, childcare, schools) located at the property, and therefore the odour effects are less than minor.
- The form and function of the existing urban roads are well suited to accommodate the additional vehicular trips from the development. No upgrades or changes to the existing intersections are required. Potential adverse effects resulting from the increase in traffic on the safety and efficiency of these roads are considered to be less than minor on the local environment.
- The provision of parking on site meets the needs of the activity and does not generate adverse effects.
- The potential visual effects of the proposed buildings and facilities are mitigated through distance, relative isolation within the subject site and the proposed landscaping on the front and side boundaries of 464 Mt Herbert Road.
- The exceedance of site coverage does not generate adverse effects from building dominance, privacy or shading on nearby houses or other rural buildings. The contribution to site coverage, includes areas of hardstand associated with the biofilter, straw storage, internal road, on-site maneuvering, carparks and working yard. It is considered that the concentration of buildings and areas of hardstand can be accommodated within the site, without generating significant adverse effects on surrounding amenity.

Residential Properties to the south

This group of properties includes:

- 4 Mangatarata Road, 0.5ha (Lots 49-50 DDP 354 BLK XV Waipukurau SD).
- 14 Mangatarata Road, 5.8ha (Lot 6 DP 14323 BLK XV Waipukurau SD)
- 22A Mangatarata Road, 0.4ha (Lot 4 DP 531809)

通道

- 22B Mangatarata Road, 0.5ha (Lot 3 DP 531809)
- 22C Mangatarata Road, 0.4ha (Lot 2 DP 531809)
- 22D Mangatarata Road, 3.4ha (Lot 1 DP 531809)
- 32 Mangatarata Road, 2.5ha (Lot 1 DP 363555)
- 44 Mangatarata Road, 0.5ha (Lot 1 DP 402935)
- 44A Mangatarata Road, 1.1ha (Lot 1 DP 381744)
- 44B Mangatarata Road, 1.6ha (Lot 2 DP 402935)
- 44D Mangatarata Road, 1.5ha (Lot 3 DP 402935)
- 44E Mangatarata Road, 2.0ha (Lot 4 DP 402935)
- 44F Mangatarata Road, 0.6ha (Lot 5 DP 402935)
- 74 Mangatarata Road, 8.4ha (Lot 10 DP 14323)

This cluster of lifestyle properties range in size and all access from Mangatarata Road. Some sections are developed with residential dwellings while some are vacant. These properties are identified as being adjacent to the site because they are immediately opposite the southern end of the subject site on Mangatarata Road. Given the assessment made in Section 7 of this application, the actual and potential adverse effects on the above properties are considered to be less than minor because of the following:

- The proposed activity complies with permitted noise levels set in the performance standard 4.9.11.
- Section 6.4.5 of the AQP report provides results of the odour analysis and concludes that the potential for offensive or objectionable odour effects to occur will be less than minor.
- The form and function of the existing urban roads are well suited to accommodate the additional vehicular trips from the development. No upgrades or changes to the existing intersections are required. Potential adverse effects resulting from the increase in traffic on the safety and efficiency of these roads are considered to be less than minor on the local environment.
- The provision of parking on site meets the needs of the activity and does not generate adverse effects.
- The potential visual effects of the proposed buildings and facilities are mitigated through distance, relative isolation within the subject site and the proposed landscaping on the front and side boundaries of 464 Mt Herbert Road.
- The exceedance of site coverage does not generate adverse effects from building dominance, privacy or shading on nearby houses or other rural buildings. The contribution to site coverage, includes areas of hardstand associated with the biofilter, straw storage, internal road, on-site maneuvering, carparks and working yard. It is considered that the concentration of buildings and areas of hardstand can be accommodated within the site, without generating significant adverse effects on surrounding amenity.

Conclusion

In considering the single and groups of properties above, the actual and potential adverse effects generated by proposed compost production activity are less than minor on persons at the identified parcels of land.



On the basis that no further special circumstances apply in terms of Step 4, the application may therefore be processed on a non-notified basis without the need for the approval of any specific parties.

9. RELEVANT OBJECTIVES AND POLICIES

In accordance with Section 104(1)(b) of the RMA, a consent authority must, subject to Part 2 of the RMA, have regard to the relevant provisions of any statutory plans and policy statements. This includes any relevant provisions of:

- i) National Environmental Standards (NES)
- ii) Other regulations
- iii) National Policy Statements (NPS)
- iv) The New Zealand Coastal Policy Statement (NZCPS)
- v) Regional Policy Statements or proposed Regional Policy Statements (**RPS**)
- vi) A Plan or Proposed Plan

The National Environmental Standard for Assessing Managing Contaminants in Soil has been addressed in Section 5.1. There are no other regulations that are relevant to this land use consent application. Likewise, there are no National Policy Statements that are relevant.

The Hawke's Bay Regional Resource Management Plan (**RRMP**) comprises the RPS and regional planning provisions, excluding coastal matters. The District Plan is to give effect to the RPS and therefore the Central Hawke's Bay District Plan is the primary document to be considered. Nevertheless, policies in the RPS pertaining to odour are considered in Section 9.2.

9.1 Central Hawke's Bay District Plan

The relevant objectives and policies for the proposal are contained within the following District Plan Chapters and considered below:

- Rural Zone (Chapter 4)
- Tangata Whenua (Chapter 3.1)
- Transport (Chapter 8)
- Utilities (Chapter 10)
- Signs (Chapter 11)

Chapter 4: Rural Zone

The relevant Rural Zone objective is 4.2.1, which is repeated below.

4.2.1 Objective - Rural Amenity and Quality of the Environment

A level of rural amenity which is consistent with the range of activities anticipated in the rural areas, but which does not create unpleasant conditions for the District's rural residents; or adversely affect the quality of the rural environment.



To achieve the above objective, the policies set out in 4.2.2 provide direction when considering new development. In summary, Policy 4.2.2-1 encourages a wide range of land uses and land management practices in the Rural Zone, while maintaining rural amenity. To protect the amenity and environmental quality of the Rural Zone, Implementation Method (1) references the provision of performance standards. Further, Policies 4.2.2-4 and 4.2.2-5 direct the use of buffers between factory farming and other activities to avoid or mitigate adverse odour effects, and encourage factory farming away from urban areas.

The direction provided by the relevant policies is considered to be consistent with the logic and approach to identifying the subject site and designing the proposed compost production facility. The supporting expert assessments for noise, odour and traffic demonstrate that actual and potential adverse effects are either avoided at the source, or mitigated through distance, and in relation to traffic – an upgrade to the road.

Chapter 3.1 Tangata Whenua

The relevant Tangata Whenua Objective is 3.1.2-2, which is repeated below.

Recognition of the importance of the relationship of the Tangata Whenua, their culture and traditions, with their ancestral lands, waters and sites, in the management of these resources within the District.

Policies set out in 3.1.3 largely refer to process and procedures between Council and Tangata Whenua to ensure consultation, involvement and information is shared to Tangata Whenua in relation to matters they may be interested in. Rural Zone Policy 4.2.2-8 encourages the protection of waahi tapu and other taonga by facilitating consultation between landowners and the Tangata Whenua should developments be proposed where values occur.

In relation to the values of importance to Tangata Whenua, an archaeological site (No 161⁴) is recorded on the subject site. The record shows the archaeological site to be located within an elevated knoll to the east of the proposed compost facility. The extent of the area identified on the consent notice on the underlying title is shown on the Site Plan. No earthworks or other disturbances at or near the recorded archaeological site are proposed, with a separation distance of at least 70m. Beyond the subject site, on the opposite side of the Tukituki River is a wahi tapu site, recorded on the District Plan as Site No. 230.

While these identified sites are not in the immediate vicinity of the proposed activity, their presence is acknowledged as being part of the wider environment. To this end, specific consideration has been given to them in the assessment of this proposal and the applicant has contacted Taiwhenua o Tamatea Inc in order to meet and discuss the proposed activity with them. The acknowledgement of the potential values and actions taken to consult with local Tangata Whenua are considered to be consistent with the above Objective and Policies.

⁴ A long bluff, terraced on the inland side. A few exposures of midden: fresh-water mussel, fire cracked rock, obsidian, charcoal. 6 terraces, largest 15x3m. Pit 5x4m by .7m deep



Chapter 8 Transport

The relevant Transport Objective is 8.1.2, which is repeated below.

Efficient use of the District's existing and future transport system through the maintenance and improvement of access, ease and safety of pedestrian movement.

In summary, the Policies in 8.2.2 direct the provision, design, and construction of onsite parking, access and loading to ensure the amenity, safety and efficiency of the local road network can be maintained. The proposed development provides for safe and efficient access to the site, practical areas for loading and unloading, and sufficient carparking to provide for staff and visitors. To that end, the proposal is consistent with the above objective and relevant policies.

Conclusion

The evaluation of the relevant District Plan objectives and policies demonstrates that the proposed compost production facility is in keeping with the Rural Zone given the mix of activities allowed to operate in that environment. The site selection and avoidance of urban areas is consistent with the District Plan. Acknowledging the subject site has potential cultural values - albeit separated some distance from the area to be developed and initiating consultation with Tangata Whenua gives regard to the policies of the District Plan. The proposed development is consistent with the relevant Objectives and Policies.

9.2 Regional Resource Management Plan

Regional Policy Statement

The Hawkes Bay Regional Council's (HBRC) Regional Resource Management Plan (RRMP) sets high level objective (Objective 16) and Policy (Policy 8) within Chapter 3.5 of the RPS Section. The direction given is to avoid or mitigate off-site impacts or nuisance effects arising from the location of a potentially conflicting new land use. Policy 8 gives greater direction on what factors will be considered in a discharge of odour to air.

Chapter 3.7 Management of Organic Material identifies the issue of nuisance and adverse effects on humans, property and the environment due to the poor management and utilisation of organic material derived from primary processing industries. There is recognition of the re-use of organic material (which is often generated from the primary production activities) as an alternative to disposal to landfill. Yet, in reusing organic material such activities do not result in any adverse effects on humans or the environment (Objective 20). Policy 11 refers to the use of non-regulatory methods around good practice for reuse of organic material. Whereas Policy 12 provides direction on regulatory method to manage effects from the use of organic material.

Policy 12 has two clauses. Clause (a) directs activities that generate discharges into air from the use of organic material (such as compost) are provided for where effects on the environment are avoided or minimised. The design of the compost production facility aims at avoiding and minimising any adverse objectionable or offensive odour effects generated



by the activities. Clause (b) directs that HBRC may request a management plan is prepared where the circumstances are such that:

- (a) organic material is sourced from industrial or trade premises
- (b) there are residential properties in close proximity to the activity
- (c) large volumes of organic material are being stored and/or used
- (d) the organic material is likely to be malodorous in nature
- (e) nutrient loadings may exceed the natural uptake rate by grass or crops
- (f) the groundwater resource is particularly susceptible to contamination e.g. on the Heretaunga Plains unconfined aquifer, or on highly permeable soils
- (g) when organic material is stored in a position where it can potentially enter a surface water body.

The proposed compost production facility will have a purpose built facility, with high level of enclosure and automation, combined with on-site management to avoid generating significant objectionable and offensive odour at source, and a large site within which residual odour can be diffused so that potential for objectionable and offensive odour beyond the boundary is managed and the risk of adverse effects considerably reduced.

Regional Plan Objectives and Policies

Chapter 5 of the Regional Resource Management Plan contains the Regional Plan Objectives and Policies. Objectives 39, 39b, and 39c relates to the maintaining ambient air quality with respect to managing air quality within identified airsheds and outside of these areas, while Objective 39a is that a standard of local air quality is maintained that is not detrimental to human health, amenity values or the life supporting capacity of air. Policy 69 contains environmental guidelines and standards that activities affecting air quality are to be managed in accordance with. In terms of odour, Guideline 1 states "There should be no offensive or objectionable odour beyond the boundary of the subject property". Based on the above, the proposal is expected to achieve this environment guideline.

Commentary

The consideration of odour effects for the proposed activity has been aimed at managing offensive and objectionable odour beyond the site boundary, with careful consideration of effects on neighbouring residential dwellings, cultural and recreational areas. The AQP report is the technical guidance that underpins the odour effects assessment and concurrent odour discharge application that has been lodged with HBRC.

In summary, the proposed compost production facility can operate at the Mt Herbert site and avoid land use conflict by managing odour sources at the site and within the broader Mt Herbert property as it is a large property, relatively isolated from neighbours, it is a purposebuilt facility, and appropriate on site management will be built in to the operation and maintenance of the facility.



10. PART 2 OF THE RESOURCE MANAGEMENT ACT 1991

The assessments contained in Sections 7 and 9 of this report are subject to the matters contained in Part 2 of the RMA, which contains Sections 5, 6, 7 and 8.

Section 5 sets out the purpose of the RMA, which is to promote the sustainable management of natural and physical resources and is supported by Sections 6, 7 and 8 of the RMA. Sections 6 and 7 contain the "matters of national importance" and "other matters" respectively and Section 8 provides for the principles of the Treaty of Waitangi. These sections are hierarchical and provide for a different level of consideration to be given to each.

The matters of national importance listed in Section 6 include:

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- (a) 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:
- (b) (b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:
- (c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:
- (d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:
- (e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:
- (f) the protection of historic heritage from inappropriate subdivision, use, and development:
- (g) the protection of protected customary rights:
- (h) the management of significant risks from natural hazards.

The subject site adjoins the Tukituki River esplanade, yet the natural character values of the subject site are low as it is currently a pastoral grazing farm. The buildings and facilities are to be well setback from Mt Herbert Road therefore separated from the river esplanade.

The subject site is not an identified outstanding natural feature or landscape, and there are no areas of significant indigenous vegetation or known habitats of indigenous fauna.

The proposed development may increase the current level of public access to Tukituki River due to the road improvements to Mount Herbert Road. There are no known customary protection rights within the subject site.

There is recognition and provision for potential cultural values associated with the wider environment in which the proposed activity sits. The applicant has met with Taiwhenua o Tamatea Inc and discussed the proposal with representatives.



Other than the archaeological site identified on the site, there are no other known historic heritage values to be protected on the site.

In terms of natural hazards, according to the Hawke's Bay Natural Hazard Property Report, the site is characterised by the following hazards:

- Earthquake Amplification
- Flooding
- Moderate Earthflow

The applicant is aware of these risks, and noting non-residential nature of the proposal, it is planned to address these through minimum floor levels (if required) and geotechnical assessment at the time of building consent.

The 'other matters' listed in Section 7 relevant to the proposal include:

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—

- (b) the efficient use and development of natural and physical resources:
- (c) the maintenance and enhancement of amenity values:
- (f) maintenance and enhancement of the quality of the environment:

The proposed development is an industry best isolated from urban development. The buildings and facilities are industrial, yet no different from other industries that are best suited to rural environments. This development can operate alongside the traditional type of farming and horticultural activities typically located within a rural environment. The building setbacks and proposed landscaping shall avoid significant adverse effects on rural amenity. The scale of the proposed compost facility means it can be cost effective to incorporate the latest design and best practice techniques in the composting system; therefore minimising adverse effects from odour.

The proposed compost production facility will have positive economic and social effects on the local community.

No other matters of Part 2 are specifically relevant.

In summary, the nature, scale and location of proposed development is considered to achieve the purpose and principles of the RMA and deserving of consent.

11. CONCLUSION

In summary, the proposal will result in less than minor effects and will not be contrary to the relevant Objectives and Policies of the District Plan, or any of the other statutory documents referred to in Section 104(1)(b).



Furthermore, having considered the proposal subject to Part 2 of the RMA, it is not expected to compromise the principles and purpose of the Act, and is subsequently considered deserving of consent pursuant to Sections 104 and 104B of the Resource Management Act 1991.

Appendix 1

Certificate of Title









Registrar-General of Land

507617 Identifier Land Registration District Hawkes Bay **Date Issued** 22 April 2010

Prior References HBY3/379

Estate	Fee Simple
Area	16.1469 hectares more or less
Legal Description	Lot 1 Deposited Plan 427319
Registered Owners	
Te Mata Mushroom I	Land Company Limited

Interests

8401841.4 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 22.4.2010 at 3:34 pm

Subject to a right of way over part marked A on DP 427319 created by Easement Instrument 8401841.5 - 22.4.2010 at 3:34 pm

The easements created by Easement Instrument 8401841.5 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right (in gross) to a right of way over part marked A on DP 427319 in favour of Trustees of the Rotary River Pathways Trust created by Easement Instrument 11272558.2 - 5.2.2019 at 12:04 pm

11635827.3 Mortgage to Westpac New Zealand Limited - 13.12.2019 at 8:53 am

11635827.5 Mortgage to Due North Limited Partnership - 13.12.2019 at 8:53 am







Search Copy



R.W. Muir Registrar-General of Land

IdentifierHBM4/1014Land Registration DistrictHawkes BayDate Issued11 March 1991

Prior References HBM4/617

Estate	Fee Simple
Area	9.8153 hectares more or less
Legal Description	Lot 1 Deposited Plan 21840
Registered Owners	
Te Mata Mushroom	Land Company Limited

Interests

9126232.1 Notice pursuant to Section 195(2) Climate Change Response Act 2002 - - 18.7.2012 at 12:37 pm 11635827.4 Mortgage to Westpac New Zealand Limited - 13.12.2019 at 8:53 am 11635827.5 Mortgage to Due North Limited Partnership - 13.12.2019 at 8:53 am





Search Copy



R.W. Muir Registrar-General of Land

IdentifierHBM4/1015Land Registration DistrictHawkes BayDate Issued11 March 1991

Prior References HBM4/617

Estate	Fee Simple
Area	10.0113 hectares more or less
Legal Description	Lot 2 Deposited Plan 21840
Registered Owners	
Te Mata Mushroom I	Land Company Limited

Interests

Land Covenant in Transfer 565848.1 - produced 29.1.1991 at 2.00pm and entered 11.3.1991

9126232.1 Notice pursuant to Section 195(2) Climate Change Response Act 2002 - - 18.7.2012 at 12:37 pm

11635827.4 Mortgage to Westpac New Zealand Limited - 13.12.2019 at 8:53 am

11635827.5 Mortgage to Due North Limited Partnership - 13.12.2019 at 8:53 am





Search Copy



Registrar-General of Land

Identifier	HBP2/455
Land Registration District	Hawkes Bay
Date Issued	15 October 1991

Prior References HBM4/1017

HBM4/1018

Fee Simple
39.4430 hectares more or less
Lot 1 Deposited Plan 22481

Te Mata Mushroom Land Company Limited

Interests

9126232.1 Notice pursuant to Section 195(2) Climate Change Response Act 2002 - - 18.7.2012 at 12:37 pm

Subject to a right to convey water over part marked F on DP 401209 created by Easement Instrument 9558935.4 -18.12.2013 at 3:20 pm

Appurtenant hereto is a right to convey electricity and water created by Easement Instrument 9558935.4 - 18.12.2013 at 3:20 pm

11635827.4 Mortgage to Westpac New Zealand Limited - 13.12.2019 at 8:53 am

11635827.5 Mortgage to Due North Limited Partnership - 13.12.2019 at 8:53 am



HBP2/455



Search Copy



R.W. Muir Registrar-General of Land

Identifier	402779
Land Registration District	Hawkes Bay
Date Issued	18 December 2013

Prior References HBM4/1016

Estate	Fee Simple
Area	39.4946 hectares more or less
Legal Description	Lot 2 Deposited Plan 401209
Registered Owners	
Te Mata Mushroom Land Company Limited	

Interests

9126232.1 Notice pursuant to Section 195(2) Climate Change Response Act 2002 - - 18.7.2012 at 12:37 pm

9558935.2 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 18.12.2013 at 3:20 pm

Subject to a right of way over part marked and A, and a right to convey electricity and water over part marked B, and to convey electricity over part marked C, and to convey water over part marked E and G all on DP 401209 created by Easement Instrument 9558935.4 - 18.12.2013 at 3:20 pm

Appurtenant hereto is a right to convey electricity and water created by Easement Instrument 9558935.4 - 18.12.2013 at 3:20 pm

Some of the easements created by Easement Instrument 9558935.4 are subject to Section 243 (a) Resource Management Act 1991 (see DP 401209)

11635827.4 Mortgage to Westpac New Zealand Limited - 13.12.2019 at 8:53 am

11635827.5 Mortgage to Due North Limited Partnership - 13.12.2019 at 8:53 am



Appendix 2

Performance Standard Compliance Assessment


Rural Zone

	Performance Standards and Terms	Comment
4.9.1	Building Coverage	Does not comply
	The net area of any site covered by buildings and impervious surfaces shall not exceed 700m2 or 7% of site area, which ever is the greater.	The new buildings, structures and impervious surfaces cover an area of 14,965m ² , which is 9% of the 16.1469ha area contained in the underlying title, Lot 1 DP 427319.
4.9.2	Height of Buildings	Complies
	Maximum height of any building for an activity shall be 10m	Maximum height is 9m
4.9.3	 Recession Lines No part of a building shall exceed a height of 2 metres plus the shortest horizontal distance between that part of the building and the nearest site boundary. Where an internal boundary of a site immediately adjoins an access or part of an access which is owned or partly owned with that site or has a registered right-of-way over it in favour of that site, the recession lines shall be constructed 	Complies
	from the far side of the access.	
4.9.4	Setback from Roads i The minimum setback for a residential unit shall be 5m; ii The minimum setback for any building for any other activity (including stockyards, and stock loading ramp\race) from road boundaries shall be 20m: except that buildings less than 10m ² in gross floor area, and buildings used by Emergency Service Activities, may be located within the above setbacks from road boundaries.	Complies N/A Complies
4.9.5	Setbacks from Neighbours Subject to any other rules for Rural Zone, the minimum setback of buildings for an activity from internal boundaries shall be: i residential unit 5m	Complies
	ii all other buildings 10m	Complies
4.9.6	Domestic waste water disposal All buildings containing ablution facilities and which are not connected to a reticulated sewage system, shall have an on-site septic tank system, including an approved filter unit, or any equivalent system that complies with the Draft Australian\New Zealand Standard DR96034 or any subsequent final standard.	N/A

	Please note that on-site waste water treatment	
	and disposal will also need to comply with the	
	relevant permitted activity rule in the Hawke's	
	Bay Regional Council Proposed Regional	
	to comply will need a discharge permit	
107	Factory Farming Effluent Disposal	
4.7.7	No land shall be used for the disposal of	N/A
	piggery or poultry effluent forming part of a	17/2
	factory farming activity shall be undertaken:	
	i within 500m of any Township or Residential	
	Zone boundary;	
	ii within 200 metres of a property boundary.	
4.9.8	Electrical Safety Distances	N/A
	Any activity, including the establishment of	
	buildings and structures or any earthworks,	No transmission lines in the vicinity of the site.
	within the vicinity of overhead electric lines	
	Code of Practice for Electrical Safety Distances	
	(NZECP 34:1993).	
4.9.9	Coastal Margin	N/A
4 9 10	Tree Planting	Complies
4.7.10	Setback from Neighbouring Properties	
	No tree planting except for amenity tree	Landscape/amenity planting along western
	planting, shall be located on, or within,	boundary is beyond 10m of the boundary.
	10metres of the boundary of any property	
	under a separate Certificate of Title unless prior	
	written permission has been obtained from the	
	affected landowner. A copy of the written	
	and will be registered on the land information	
	property records. (Note: Where written	
	permission is not obtained within this zone tree	
	planting shall be a discretionary activity with	
	respect to this matter).	
	Setback from roads	Complies
	when the trees grow they will shade a public	Amenity planting within 10m of Mt Herbert
	road between the hours of 10am and 2pm on	Road will not shade the public road.
	the shortest day of the year.	
	Setback from residential units	N/A
	No tree planting shall be positioned such that	
	when the trees grow they will shade a	
	residential unit on a neighbouring property	
	shortest day of the year	
	Setback from stopbanks	
	No tree shall be planted within 6 metres of a	N/A
	flood protection stopbank.	
4.0.12		
4.9.11	Noise	Compiles.
	On any site, activities, shall be conducted such	Refer to EAR CON report
	that the following noise levels are not	-
	exceeded at nor within the notional boundary	

	of any residential unit, other than residential units on the same site as the activity: • 55dBA L10 - 6:00am - 11.00pm Monday to Saturday • 45dBA L10 - at all other times • 75dBA Lmax - at all other times Exemptions	
	i Residential, Farming and Forestry Activities shall be exempt from the above provided that the activity shall comply with the requirements of Section 16 of the Resource Management Act. ii The 75dBA I may noise limit shall not apply to	
40.10	on-site sirens required by Service Emergency Service Activities, provided that the activity shall comply with the requirements of Section 16 of the Resource Management Act.	
4.9.12	No building for an activity shall be located within 20m of an earthquake fault line identified on the Planning Maps.	N/A No earthquake fault line on or near the site.
4.9.13	Areas of Significant Conservation Value There shall be no modification to any "Site of Significant Conservation Value"	N/A
	For the purposes of this performance standard a "Site of Significant Conservation Value" is either:	The Tukituki River and esplanade is a listed Area of Significant Conservation Value (ASCV), No 8.
	i. identified in Appendix D, and on the Planning Maps, as being of significant conservation value; or,	The site is adjacent to the river esplanade, but does not extend into the ASCV Area.
	 ii. any area of woody indigenous vegetation containing naturally occurring tree species, which attain at least 30 centimetres diameter at breast height at maturity, and is either: (a) over one hectare and with an average canopy height over 6 metres; or (b) over five bectares of any height 	
	For the purposes of this performance standard "modification" is deemed to exclude minor work.	
	Minor work is defined as: i. The disturbance or destruction of indigenous vegetation or habitat as a result of the	
	ii. The disturbance or repair of existing roads, tracks, rences or drains. ii. The disturbance or destruction of indigenous vegetation or habitat in gullies as a	
	consequence of the harvesting of plantation forestry activities; where the harvesting involves: • The lifting and/or dragging of logs, and/or	

	The construction and maintenance of forestry roads into gullies and culverts across streams (providing that the above work does not	
	vegetation that exceeds 5 hectares).	
4.9.14	Noise from Waipukurau Aerodrome	N/A
4.9.15	Buildings by Waipukurau Aerodrome	N/A

Section 8 Transport

Any activity which does not comply with the requirements for parking, loading, access and sight distances in accordance with any one of more of the following Performance Standards shall be a Discretionary Activity, with the exercise of the Council's discretion being restricted to the matter(s) specified in that standard.

	Performance Standards and Terms	Comment
8.5.1	(a) Parking and Loading	
	Minimum Parking Space Requirements:	
	i All activities listed in Table 1 below shall provide at least the number of parking spaces on site required by the rates identified in that table. The required parking spaces shall be available for residents, staff and visitors at all times during the hours of operation of the activity.	Does not comply
	ii Where there are two or more different activities on the site, the total requirement for the site shall be the sum of the parking requirements for each activity.	Complies
	Transport Rules	
	Table 1 - Minimum Parking Space Requirements G.F.A = GROSS FLOOR AREA OF ACTIVITY Residential Unit 2 parks, 1 bring the garage/carport Commercial activities - All Zones 1 park for staff per 200m ² Gross Floor Area; and 1 park for staff per 200m ² Gross Floor Area; and 1 park per 100m ² outdoor storage or outdoor display area (including the boarding of animals) Feedlots 5 truck & trailer parks and 5 car parks	
	(b) Car Parking for Staff	Noted
	Minimum parking requirement stated in Table 1 for staff shall be exclusively reserved for, and made available to, staff.	
	(c) Assessment of Parking Areas	Designed to Comply
	Where the parking requirements listed in Table 1 results in a fractional space, any fraction of one half or more shall be counted as one car parking space.	
	(d) Size of Parking Spaces	Designed to Comply
	All required parking spaces and associated manoeuvring areas, other than for residential units, are to be designed in accordance with the New Zealand Building Code approved document D1: Access Routes.	
	(e) Accessible Car Spaces Accessible parking spaces are to be designed in accordance with the New Zealand Building Code approved document D1: Access Routes.	Designed to Comply

F	Performance Standards and Terms	Comment
	(f) Queuing All queuing spaces are to be designed in accordance with the New Zealand Building Code approved document D1: Access Routes.	Designed to Comply
	(g) Reverse Manoeuvring i On-site manoeuvring shall be provided for all vehicles to ensure that no vehicle is required to reverse either onto or off a road except where:	Designed to Comply
	 a) Any activity is required to provide, or contain, two or less parking or loading spaces; or b) An activity is in the Business 1 Zone and has access onto any road other than a State Highway. 	N/A N/A
	Such on-site manoeuvring shall comply with the following requirements for a design vehicle anticipated to use a site: • for a design car (refer Appendix E3), • for a design two axled truck (refer Appendix E4), • for all other vehicles (refer Australian Standard AS 2890.2-1989, Off-street parking, Part 2: Commercial vehicle facilities).	
	ii All truck refuelling sites shall be designed to accommodate a maximum length BTrain in a manner which will avoid the need to reverse off the site.	N/A
	iii Parking spaces shall be located so as to ensure that no vehicle is required to carry out any reverse manoeuvring when moving from any vehicle access to any required parking spaces.	Designed to comply
	iv Vehicles shall not undertake more than one reverse manoeuvre when manoeuvring out of any required parking or loading space to depart the site.	Designed to comply
	(h) Loading Areas All service, industrial and commercial activities (including retail activities) in the Business Zone 2 shall provide one loading space and associated manoeuvring area, in accordance with the following:	N/A
	Every loading space shall be of a useable shape and shall have a minimum height of 3.8m and a minimum width of 3.5m or such greater width as is required for adequate manoeuvring. The depth shall be as follows: i For transport depots or other similar activities, not less than 9m.	N/A

	Performance Standards and Terms	Comment
	ii For retail premises, offices, warehouses, bulk	Designed to Comply
	stores, industrial and service activities and	
	other similar uses, not less than 8m.	
	except that	
	iii Offices and other non-goods handling	N/A
	activities, where the gross floor area is less	
	6m in depth, 3m wide and 2.6m high.	
	(i) Surface of Parking and Loading Areas	Designed to Comply
	trade vehicle storage greas shall be formed	
	and finished with an all weather, dust free	
	surface and shall be drained to the	
	satisfaction of the Council.	
	Rule i (i) does not apply where a site contains	N/A
	one residential unit and which requires no	
	more than two parking spaces.	
8.5.2	(g) Vehicle Access to be provided	
0.0.2		
	In all zones	
	I Every lot with direct vehicle access to a road	Complies
	with a complying vehicle crossing.	
	ii Every vehicle access lot shall be provided	Complies
	iii Every activity requiring access to a road	Complies
	shall have access to that/those road(s) only	
	by way of a complying vehicle crossing.	
	iv A complying vehicle crossing shall meet	
	the following requirements:	
	a) Where a lot has direct vehicle	Designed to Comply
	access to a road: a formed and	
	drivable surface shall be provided	
	between the carriageway of the	
	road and the road boundary of the	
	b) Where a vehicle access lot meets	Designed to Comply
	the road: a formed surface and	
	drivable surface shall be provided	
	between the carriageway of the	
	vehicle access lot	
	c) Where the lot has direct vehicle	N/A
	access to a vehicle access lot: a	
	formed and drivable surface shall be	
	of the vehicle access lot and the	
	boundary of the lot.	
	d) An access space shall be	N/A
	established on the lot. This shall	
	lot 3.5m wide by 5.0m long, formed	

Performa	nce Standards	and Terms		Comment
	and set aside motor car and vehicle crossin	e and useat d accessible g.	ole by a from the	
(b) For Crossing	mation and gs	Sealing of	Vehicle	Designed to comply
i All veh all weat the satis	icle crossings sh her surface ar faction of the (nall be forme nd shall be d Council.	d with an rained to	Designed to Comply
ii Where the vel vehicle	the road can nicle crossing crossing shall b Rule 8.5.2 (b) apply where gives access t not contain an are used exc grazing or crop Rule 8.5.2 (b) (i using any ve regular basis fo	iageway adj is sealed, e sealed. (i) and (ii) the vehicle o paddocks by buildings, a clusively for oping.) applies to de hicle crossin or milking	jacent to then the does not crossing which do ind which extensive airy herds ng on a	N/A
iii Minin crossing areas resident activitie	num height c s and commor on-site, shall ial units and 4 s.	learance foi vehicle mar be 3.5 ma .5 metres for	r vehicle noeuvring etres for all other	Designed to Comply
iv Vehic accord Code Routes.	le crossing gra ance with the approved do	dients be de New Zealanc cument D1:	signed in d Building : Access	Designed to Comply
(c) Migr	ation of Gravel	onto Sealed	Roads	
i All form with dire vehicle construc that gra migrate on to th	ned and drivak ect access to a crossing, sha cted and main vel and/or stor on to any form e sealed carric	ble surfaces of sealed road, II be design tained in such tained in such tained public for tageway."	on any lot , and any ned and ch a way t shall not otpath or	Designed to comply
Advice advice details your dri crossing road consulto	Note: Please c on the desig before comm iveway. Any v , between yo carriageway ation with the C	ontact the C gn and cor encing any works on the our property must be Council.	ouncil for hstruction work on e vehicle and the done in	
(d) Loo frontage	cation of ve e in relation to i	hicle crossin ntersections	ngs with	N/A
i The fol have fro the Rurc	lowing standaı ontage to State ıl Zone:	rd applies to e Highway 2 d	sites that and 50 in	

Performance Standards and Terms	Comment
a) Where the road frontage of the site lies entirely within 212m of an intersection, the vehicle crossing to the site shall be located on the access frontage within 12 metres of the side boundary of the site which is farthest from the intersection.	N/A
b) Where the road frontage of the site is greater than 212m in length, the vehicle crossing to the site shall be located on the access frontage at least 200 metres from the intersection.	N/A
 ii The following standards apply to all other sites in the Rural Zone: a) Where the road frontage of the site lies entirely within 80 metres of an intersection, the vehicle crossing to the site shall be located on the access frontage within 12 metres of the side boundary of the site which is farthest from the intersection. b) Where the road frontage of the site is greater than 80 metres in length, the vehicle crossing to the site shall be located on the site shall be located on the site shall be located on the site is greater than 80 metres in length, the vehicle crossing to the site shall be located on the allowed access frontage at least 68.0 metres from the intersection. 	Complies The site accesses to the Mangatarata Rd intersection is in excess of these requirements. Complies
iii The following standards apply to all sites in all Zones except the Rural Zone:	
 a) Where the entire road frontage of the site lies within 62 metres of an intersection, the vehicle crossing to the site shall be located on the access frontage within 12 metres of the side boundary of the site which is farthest from the intersection. b) Where the road frontage of the site is greater than 62 metres in length, the vehicle crossing to the site shall be located on the allowed access frontage at least 50 metres from an intersection. 	N/A N/A
(e) Widths of Vehicle Crossings The following crossing width (Table 2) shall apply:	
Minimum 6.0m, Maximum 9.0m.	Designed to comply
(f) Sight Distances from Vehicle Crossings and Road Intersections	
Unobstructed sight distances, in accordance with the minimum sight distances specified in Table 3, shall be available from all vehicle crossings and road intersections.	Designed to comply.

Performance Standards and Terms				Con	nment
Table 3 - Minimum Sight Distance Legal Speed Limit for Road (km/hr) 50 70 100 All sight distance measureme diagram in Appendix E.	tes from Vehicle Cross Minimum Sight Distance (m) 45 85 170 nts shall be undertaker	Ings and Road Intersections Minimum Site Distances for State Highways 85 140 250 h in accordance with the rele	vant		
(g) Vehicle Orien (f) Road/Rail Leve	ted Comm el Crossing:	ercial Activitie	es	N/A N/A	

Appendix 3

Site Plan



201 Scheme Plan

'e Mata Mushroom Iorticultural Hub At Herbert Road Revision: cale at A3: :500	1:1500,
Rev Revision	Date
Site Scheme Plan	
ATKINS HARWO Archited	SON DOD cture

sol@atkinsonharwood.co.nz ph: 027 465 9236

Appendix 4

TDG/Stantec: Transportation Assessment





Te Mata Mushrooms Company

Mt Herbert Compost and Mushroom Farm

Transportation Assessment

May 2018

TDG Ref: 15250 mt herbert ta 180502 final.docx

Te Mata Mushrooms Company

Mt Herbert Compost and Mushroom Farm

Transportation Assessment Quality Assurance Statement



Kristin Louw Project Transportation Engineer

Reviewed by: Cobus de Kock Associate

Approved for Issue by:

Glen Randall Principal Transportation Engineer

Status: **Final Report** Date: 2 May 2018

ISO 9001:2008

PO Box 786, Napier 4140 New Zealand

P: +64 6 834 4210

www.tdg.co.nz



Table of Contents

1.	Intro	duction1
	1.1	Extent of Study Area 1
2.	Site L	ocation2
3.	Existi	ng Transportation Environment
	3.1	Existing Road Hierarchy 3
	3.2	Intersection Descriptions 4
	3.3	Mt Herbert Road5
	3.4	Existing Traffic Flows7
	3.5	Existing Heavy Vehicle Activity 11
	3.6	Crash History
	3.7	Existing Footpaths and Cycle Routes 13
	3.8	Existing Public Transport14
4.	СНВС	Planning Strategies
5.	Deve	lopment Proposal
	5.1	Development Activities
	5.2	Development Size and Staffing17
	5.3	Walking and Cycling 18
	5.4	Signage
6.	Distri	ct Plan Provisions
7.	Asses	ssment of Traffic Effects
	7.1	Trip Generation
	7.2	Trip Distribution
	7.3	Intersection Analysis
	7.4	Parking
	7.5	Access
	7.6	Safety and Mitigating Adverse Effects
8.	Conc	lusion

Appendix A

Proposed MasterPlan

1. Introduction

Traffic Design Group (**TDG**) has been commissioned by the Te Mata Mushroom Company Ltd to examine and describe the transportation effects of a proposed new compost and mushroom farm located at 464 Mt Herbert Road, Waipukurau.

The compost component of the proposal is referred to as "Stage 1"; while the relocation of the mushroom farm component is known as "Stage 2". For the purpose of this report, and to provide a robust assessment, the investigation focusses on the "ultimate scheme", which comprises of both the compost and mushroom farm (Stage 1 and Stage 2) together with other minor operations as described below.

The ultimate scheme will include the following buildings / activities:

- a composting facility;
- mushroom growing operation;
- extension of commercial orchard;
- vegetable glasshouse; and
- water storage.

This report is intended to accompany the resource consent application and includes:

- a description of the existing traffic environment;
- an outline of the proposed development plans;
- a review of the relevant Central Hawkes Bay District Plan requirements;
- assessment of the associated traffic generation and distribution; and
- assessment of parking requirements and road safety.

The report concludes with a summary of the assessment and recommendations.

1.1 Extent of Study Area

TDG consulted with Central Hawke's Bay District Council Land Transport Services Officer to define the study area for the site; more specifically, the preferred route for heavy vehicles to and from the site. The Council noted that the central business area and main street (i.e. Ruataniwha) within Waipukurau town centre should be avoided and heavy vehicles should rather make use of the following intersections:

- Peel Street / State Highway 2 (Herbert Street);
- River Terrace / State Highway 2 (Herbert Street); and
- Ruataniwha Street / St Joseph Street / Mt Herbert Road / Wellington Road.

The above intersections form the study area and the analysis of these intersections and their performance is discussed in **Section 7**.



2. Site Location

Figure 1 shows the site location in relation to the local context. It can be seen that the site is located on the outskirts of the town of Waipukurau, south of the Tukituki River.



Figure 1: Site Location (source: STRADEGY)

The site is approximately 4.3 km east of Waipukurau, which falls within the Central Hawkes Bay District Council. The site comprises multiple Lots; namely Lot 1 DP 427319 (16.15 ha), Lot 2 DP 401209 (39.49 ha), Lot 1 DP 22481 (39.44 ha), Lot 2 DP 21840 (10.01 ha) and Lot 1 DP 21840 (9.82 ha). Collectively the site totals an area of approximately 115 hectares.

The lots are zoned as 'Rural' within in the Central Hawkes Bay District Planning Maps. The lots south of Mt Herbert Road are generally open area with a few interspersed buildings. A commercial orchard exists north of Mt Herbert Road (Lot 1 DP 21840 and part of Lot 2 DP21840).

The development site fronts Mt Herbert Road and Mangatarata Road forms the western site boundary. Various site access points exist along Mt Herbert Road.

North of the site, the Tukituki River flows; a popular destination among locals and tourists for swimming, walking and cycling. The site, being predominately rural, transitions from rural to rural residential and ultimately urban when travelling towards Waipukurau town centre.



3. Existing Transportation Environment

3.1 Existing Road Hierarchy

Figure 2 shows the existing road hierarchy of Waipukurau. The intersections that form part of the study area are illustrated as black dashed circles.



Figure 2: Waipukurau Road Hierarchy

State Highway 2 (**SH2**) is a strategic transportation route on the North Island as it links the Auckland Region with numerous east coast regions and the Wellington Region. SH2 runs through Waipukurau, entering the township in the north and exiting to the west where it then continues to Norsewood. Due to its strategic and economic importance along this section, NZTA has assigned it the highest classification on the One Network Road Classification (**ONRC**) system. The SH2 extends into the town centre from both the north and west.

To circumvent the high volume of through traffic, Waipukurau has introduced a bypass route in the form of Railway Esplanade and Peel Street. Railway Esplanade forms the natural priority of SH2 when entering the town from the west, with motorists having to physically turn right into Ruataniwha Street, which forms part of SH2. Both Railway Esplanade and Peel Street are classified as Arterial roads.

Peel Street has a carriageway width of approximately 12 metres, which includes two trafficable lanes and on-street parking on both sides. Pedestrian footpaths are present on both sides of the road. The street mainly provides access to businesses.



Travelling from the north, SH2 intersects with River Terrace which is classified as an Access Road to the west and a Secondary Collector to the east. Continuing east, River Terrace makes a sharp turn to the south and becomes St Joseph Street (an Arterial Road). St Joseph Street intersects with Mt Herbert Road (a Secondary Collector), which provides access to the proposed site.

3.2 Intersection Descriptions

3.2.1 SH2 (Herbert Street) / Peel Street Intersection

SH2 intersects with Peel Street in the form of a give-way priority-controlled T-intersection. At the intersection, the southern approach has a dedicated right turn bay turning into Peel Street and dedicated through lanes. The posted speed of all roads approaching the intersection is 50km/h.

3.2.2 SH2 (Herbert Street) / River Terrace Intersection

SH2 / River Terrace intersection is a staggered four-leg intersection with River Terrace being the minor approaches. At the intersection a generous road width is available for vehicles entering River Terrace from SH2 and for vehicles exiting River Terrace onto SH2. The stagger distance is sufficient to allow vehicles turning into / out of Peel Street to do so without impacting on traffic using the River Terrace intersection. The posted speed of all roads approaching the intersection is 50km/h.

River Terrace is the preferred route from the north to Mount Herbert Road for all vehicles. **Photos 1** and **2** show traffic calming at two locations along River Terrace. Despite this, the generous road widths make River Terrace the recommended route for heavy vehicles travelling to and from the development site.





Photograph 1: River Terrace looking towards SH2

Photograph 2: River Terrace looking towards St Joseph St

3.2.3 <u>Ruataniwha St / St Joseph St / Wellington Rd / Mt Herbert Road</u> <u>Intersection</u>

This intersection is a priority controlled four-leg intersection, with Mt Herbert Road (east) and Ruataniwha Street (west) forming the minor approaches. The posted speed for all the approaches is 50km/h.



Mt Herbert Road allows for two-way traffic with one lane in each direction. At the intersection the Mt Herbert Road approach is two lanes, the nearside lane being exclusively for left turners and the adjacent lane being a shared through and right turn lane. The approach lanes are separated by a 1m wide cycle lane.

Ruataniwha Street runs through the central business area of Waipukurau and is considered one of the main roads of the town. The road allows for two-way traffic with one lane in each direction. At the intersection, two approach lanes exist, both marked as give ways. Vehicles entering Ruataniwha Street can do so easily as a generous turning area is available.

St Joseph Street allows for two-way traffic and becomes Wellington Road, south of Ruataniwha Street. St Joseph Street has a marked lane in each direction and wide shoulders. Both shoulders are demarcated as bicycle routes. At the intersection the traffic lanes are separated by a traffic island which provides refuge for pedestrians crossing Wellington Road.

3.3 Mt Herbert Road

Mt Herbert Road originates in Waipukurau town centre where its form and function can best be described as urban. This is characterised by the presence of a sealed carriageway, 50km/h speed limit, on-street parking, shoulders, cycle paths, streetlights, footpaths, road markings and road signage (**Photo 3**). As the road continues east towards the development site, the form and function gradually changes from urban to rural. The speed limit also increases from 50 to 70km/h to reflect this change in character.

Continuing eastwards Mount Herbert Road passes the Waipukurau Bowling Club, the Waipukurau Waste Transfer Station Wastewater Treatment Plant (**Photo 4**) before the speed limit increases to 100km/h (**Photo 5**). Thereafter Mount Herbert Road narrows to 5.6m wide and is rural in nature. The sealed portion of Mount Herbert Road ultimately terminates at the entrance to a stone quarry (**Photos 6** and **7**) after which the road narrows to 4.6m wide and continues to the development site as a gravel road (**Photo 8**).



Photograph 3: Mt Herbert Rd Speed Change



Photograph 4: Mt Herbert Rd Wastewater Treatment Access





Photograph 5: Mt Herbert Rd Speed Change



Photograph 6: Mt Herbert Rd Seal Change



Photograph 7: Mt Herbert Rd Quarry Access



Photograph 8: Mt Herbert Rd Seal Change

Geometrically, Mount Herbert road is generally straight with manageable bends along the route. The varying sections of Mt Herbert Road is summarised in **Table 1** below:



Section	Length	Road Cross-Section	Ancillary Features
Wellington Rd – Gow St	240m	Single sealed carriageway Two trafficable lanes Road markings Cycle lanes on either side of the road. Shoulders / on-street parking on both sides Curb and channel on both sides Pedestrian footpaths on both sides	Street Lighting
Gow St – 52 Mt Herbert St	285m	Single sealed carriageway Two trafficable lanes Road Markings Curb and channel on both sides Pedestrian footpath on both sides Shoulder / on-street parking on both sides	Street Lighting
52 Mt Herbert St – 162 Mt Herbert St	1135m	Single sealed carriageway Two trafficable lanes Road markings Shoulder / off-street one side after which it road narrows to no shoulders Pedestrian footpath one side Curb and channel one side	No Streetlighting
162 Mt Herbert St – Mangatarata Rd	780m	Single sealed carriageway Two trafficable lanes No curb and channel No pedestrian footpath No shoulders	No Streetlighting
Mangatarata Rd – 307 Mt Herbert Rd	610m	Single sealed carriageway No road markings No curb and channel No pedestrian footpath No shoulders	No Streetlighting
307 Mt Herbert Rd – 464 Mt Herbert Rd	1220m	Single unsealed narrow gravel carriageway No road markings No curb and channel No pedestrian footpath No shoulders	No Streetlighting

Table 1: Mount Herbert Road Characteristics

3.4 Existing Traffic Flows

A NZTA non-continuous traffic station (00200715) located approximately 4.7 km north of Waipukurau on SH2 recorded an AADT of 9,301 vehicles per day in both directions for 2017. A typical week in March 2018 was analysed to determine the traffic patterns for this road and is presented in **Figure 3** below:





Figure 3: Hourly Flow Distribution on SH 2 Station 00200715 (source: NZTA TMS)

As shown, the average weekday morning peak occurred between 9:00 am and 10:00 am, with a peak of 759 vehicles per hour (veh/h) in both directions. The average weekday afternoon peak occurred between 5:00 pm and 6:00 pm, with 941 veh/h in both directions. On Saturday, the peak hour was observed between 11:00 am and 12:00 pm with maximum of 847 veh/h. The Sunday recorded a peak hour between 4:00 pm and 5:00 pm with a maximum of 941 veh/h.

As part to this transport investigation, TDG commissioned traffic surveys at the three intersections described earlier. The surveys were conducted in February 2018 and the results from the survey, particularly the counts on SH2 correlated with the data recoded by the NZTA traffic station.

Turning and through volumes were taken for the morning (7:00 am to 9:00 am) and evening (4:00 pm to 6:00 pm) peak periods to coincide with typical network peak periods. The existing AM and PM peak hour turning movements are shown in **Figure 4** and **Figure 5** respectively.

An assessment of these traffic volumes is presented in Section 7.

Page 8



Transportation Assessment



Figure 4: Existing AM Peak Period





Figure 5: Existing PM Peak Period



3.5 Existing Heavy Vehicle Activity

It can be seen from both Figure 4 and Figure 5 above that nine heavy vehicles were observed travelling along Mount Herbert Road in the AM peak hour and similarly eight heavy vehicles in the PM Peak hour. These vehicles would generally be travelling to and from either the waste transfer station, the wastewater treatment works or the quarry.

It is anticipated that the quarry produces the bulk of these trips due to it being a commercial activity. The quarry not only mines the river stone, but also crushes the stone on-site, which is used in manufacturing concrete. The quarry site is therefore also a batching plant for concrete ready-mix trucks. These trucks generally operate on demand and the number of trips would generally be sporadic throughout the day.

All existing heavy vehicle activity has been included in the analysis.

3.6 Crash History

The New Zealand Transport Agency Crash Analysis System database was searched for crashes at the intersections analysed (including 50 metres within the intersection) for the full 5-year period from 2013–2017, including the latest available data for 2018. A 2km segment of Mt Herbert Road from Mangatarata Road until it terminates north at the Tukituki River was included in the search. The crash history is summarised in **Table 2** below:

Intersection / Road Segment	Lost Control	Parked Car	Pedestrian	Rear End	Sideswipe	Turning	Total
River Terrace / SH 2 (Herbert St) intersection				1		1	2
Peel Street / SH 2 (Herbert St) intersection				2	3	2	7
Ruataniwha St / St Joseph St / Mt Herbert Rd / Wellington Rd intersection	1				3		4
Mt Herbert Rd	3						3
Total	4			3	6	3	16

Table 2: Summary of Crashes (source: NZTA CAS, 13 March 2018)

During the analysis period a total of 16 crashes were reported, of which 1 minor injury was recorded at Peel Street.

The SH2 / Peel Street intersection experienced seven crashes, which translates to 1.4 crashes per year. Of the seven crashes recorded for this intersection, two involved vehicles making turning movements to and from Peel Street colliding with through traffic on SH2. Three crashes involved vehicles wanting to turn left and failing to notice or misjudging the intention of the other vehicle.



Page 12

An investigation into the existing road layout shows that an attempt has been made to address these types of crashes through a painted median on the left edge of the intersection. This effectively narrows the width of the traffic lane and discouraging two vehicles stacking adjacent to one another. Two rear-end type crashes were also recorded at the intersection.

The Mt Herbert Road / St Joseph Street intersection recorded four crashes of which three were the result of vehicles failing to give way and colliding with through traffic. One vehicle travelling on Wellington Road lost control turning left into Ruataniwha Street. The incident rate for this intersection translates to less than 1 crash per annum.

The crash history showed that three crashes occurred along the section of Mt Herbert Road, all attributed to a loss of control as shown in **Figure 6**. The first crash was due to the driver not concentrating while travelling at night and the road being wet. This crash occurred along the sealed section of Mount Herbert Road. The second crash was some 100m past the quarry entrance on the gravel section of Mount Herbert Road. This crash was due to the driver travelling too close to the road edge and losing control. The third crash was some 150m past the quarry entrance, also on gravel surface. The cause is attributed to be driver being new and fatigued given that the crash occurred at 1:30am on a Saturday morning. This is further supported on account that the driver hit a tree on the opposite side of the road.



Figure 6: Mt Herbert Rd Crash Locations

No crashes involved pedestrians or cyclists.

In summary, the incident rate at the intersections analysed do not represent disproportionately high crash ratios.



The crashes recorded on Mt Herbert Road does highlight a potentially unsafe road environment; especially considering the low volume of traffic using the road as well as the lack of roadside infrastructure as previously alluded to in **Table 1**.

3.7 Existing Footpaths and Cycle Routes

The Hawke's Bay Area is well-known for its large network of cycling and walking trails within urban centres and off-road. Waipukurau forms part of the larger regional recreational cycling and walking network which connects nearby townships, such as the cycle trails that runs between Waipukurau and Waipawa and along the Tukituki River, Ruataniwha Rivers and Tapairu Road.

Within Waipukurau a well-connected footpath and cycling network is provided. The network connects residential areas to local amenities such as the central business area, Russel Park, Central Park and the off-road routes located along the Tukituki River. The network caters for commuter and recreational cyclists. **Photos 9, 10** and **11** show the existing off-road cyclepath and wayfinding signage for cyclists along Mount Herbert Road.

Footpaths and pedestrian crossing opportunities exist at all the intersections analysed. Demarcated cycling lanes are provided at the Mt Herbert Road / St Joseph Road intersection in both directions. Cycle lanes also exist in the northbound direction along St Joseph Road. The Central Park and Tukituki River trails are located approximately 350 meters from this intersection and is an attractive destination for recreational purposes. Cycling lanes are also present on either side of Ruataniwha Street, providing road access to and from the central business area.

Demarcated cycle lanes are present on either side of Mount Herbert Road between Gow St and the Mt Herbert Road / St Joseph Road intersection. Continuing east past Gow Street, the demarcated cycle lanes terminate, although shoulders exist on either side.



Photograph 9: Off-road cyclepath along Mt Herbert Rd



Photograph 10: Off-road cycle facilities





Photograph 11: Wayfinding signs

A mountain bike park also exists within the area and is accessible from either Mount Herbert Road or Mangatarata Road. The park, known as 'The Guns' is located south of the development site in a forest area.

3.8 Existing Public Transport

No public bus services operate in Waipukurau. Private bus operators, such as Intercity provide services between Waipukurau and the wider New Zealand.



The Central Hawke's Bay District Council published the draft urban growth strategy which identifies areas of urban expansion within Waipukurau, as highlighted in **Figure 7** below. The location of the proposed development has been added to this figure for clarity.



Figure 7: Urban Growth Area of Waipukurau (source: CHBC website)

It can be seen that the development site is located outside of the potential urban growth areas identified by Council.

Relating to future transport infrastructure, the Long-Term Plan 2018 – 28 document notes the following:

"Over the next 30 years the number of kilometres of road is not expected to change as the roading network is able to cope with project increase in population. However, if there is a development that happens in urban areas, the number of kilometres of road may change. Any roads created through development will be paid for by the developer."

This resolution is again echoed in the Draft Infrastructure Strategy 2018 -28:

"There will be no growth driven related roading infrastructure planned and funded by Council".



The proposed development will be located at 464 Mt Herbert Road, Waipukurau, which as previously mentioned comprises multiple Lots. The proposed Masterplan is currently in the early stages of development and included as **Appendix A** for reference.

The site has been identified to chiefly accommodate the composting process of the TMM. It is understood that the composting operation is proposed to be established on Lot 1 DP 427319 and Lot 2 DP 401209, located south of Mt Herbert Road. It is expected that this operation will produce a maximum of 1500 tonne of compost per week, which will initially be transported to the existing TMM site (in Havelock North) to be used as part of the mushroom growing operation.

It is also understood that ultimately the entire mushroom growing operation will be relocated to the Mount Herbert site. The mushroom production capacity will also be increased to a maximum of 250 tonne per week.

5.1 Development Activities

The site will be accessed from Mt Herbert Road via three accesses; namely Access 1, 2 and 3. Accesses 1 and 3 will be from an existing gravel road located along the western border of Lot 1 DP 427319 and Access 2 is a proposed new access located to the east. Access 1 is intended for:

- Workshops and Office (468m²);
- Mushroom Growing Tunnels (3,757m²); and
- Composting Operations (8,474m²)

The composting operation requires the delivery of straw (3,308m²) and Access 2 will be used exclusively for vehicles delivering straw. Access 3 will be used exclusively for staff and visitor parking. The various accesses proposed are discussed in Section 7.5.

In addition to the composting operation other activities have been identified which could also be implemented in the future (Stage 2) on adjacent lots within the site. These activities include:

- Extension of the existing commercial orchard located on Lot 2 DP 21840. This Lot has an existing access on Mt Herbert Road. It is expected that four staff members will be required for this operation;
- Commercial vegetable glasshouse located next to the compost yard on Lot 2 DP 401209. The glasshouse will be accessible from a new access proposed along Mount Herbert Road. It is expected that four staff members will be required for this operation;
- Water storage for internal farm operations, located on Lot 1 DP 22481, next to Mangatarata Road. No additional staff are anticipated for this activity;
- Future mushroom growing operations located south of the orchard extension on Lot 2 DP 401209. It is likely that access to this parcel of land will be serviced via a new access proposed along an existing gravel road (Access 6). The facility is likely to require 10 full time employees; and



Compost Yard located between the glasshouse and Stage 1 operations. This area is likely to supplement the Stage 1 composing operations once the TMM facility begins operating at full capacity. Four staff members are anticipated to manage the compost yard operations.

5.2 Development Size and Staffing

A summary of the land-uses and their prospective areas is provided in **Table 3** below together with the likely number of staff required for each land-use.

Stage	Masterplan Reference	Description	Bulk Area (m²)	Bulk to Gross Area Conversion Factor	GFA Area (m²)	Staff
	1.0	Workshops and Office			468	20
Stage 1	1.1, 1.3, 1.8	Phase 2 and 3 Composting Activity			3757	100
	1.2	Staff Car Park			851	0
	1.4, 1.9, 1.10, 1.12, 1.13	Composting Operations			8474	4
	1.5	Ponds			6508	0
	1.6	Straw			3308	4
	1.7	New Access Road			246	0
		23611	128			
Stage 2	1.14	Orchard Extension	28056	0.1	2806	4
	1.15	Vegetable Glasshouse	23207	0.2	4641	4
	1.16	Water Storage	7089	1	7089	0
	1.17	Future Mushroom Growing	20000	0.3	6000	10
	1.18	Compost Yard	20826	0.1	2083	4
		22618	22			

Table 3: Proposed Development Areas

It can be seen that 128 full time employees are anticipated for the Stage 1 operations with an additional 22 staff being required once Stage 2 is operational bringing the total to 150 full time employees. In reality however, the staff will work in shifts and the vehicular trips to and from the facility is likely to be less than the 150 trips. The trip generation is discussed in Section 7.1.



Given the good level of walking and cycling provision along the Tukituki River within close proximity of the site it is proposed that the existing cyclepaths be extended past the development site. It is anticipated that a percentage of staff who live in Waipukurau would wish to cycle to work, being only 4.3km away.

It is further recommended that adequate bicycle parking, suitable changing room facilities and showers are provided for staff.

5.4 Signage

Given the number of activities proposed for the development it is likely that visitors and commercial vehicles will require directional signs to the facility. These is particularly important for the commercial vehicles who are required to be directed via Peel Street and / or River Terrace. It is therefore recommended that a signage plan be prepared in conjunction with the Council to determine the most appropriate locations for these signs.



6. District Plan Provisions

The site is zoned "rural" within the 2003 Central Hawkes Bay District Planning Maps. General Performance Standard 8.5 of the District Plan relates to the requirements for Permitted Activities in respect of parking, loading, access and sight distances. The proposed development is assessed against each of the relevant standards and terms in **Table 4** as follows:

District Plan Requirement	Provision	Compliance
 8.5.1 (a) Minimum Parking Space Requirements All activities listed in Table 1 shall provide at least the number of parking spaces on site required by the rates identified in that table. The required parking spaces shall be available for residents, staff and visitors at all times during the hours of operation of the activity. Factory Farming: 1 park for visitors per 500m² Gross Floor Area or 2 parks whichever is greater; and 1 park per 2 staff 	Refer to Section 7.4 Stage 1 will have a maximum of 128 staff members which will require 64 staff parking spaces. The various buildings, manufacturing and storage areas have a combined GFA of approximately 16,000m ² , equating to 32 parking spaces being required for visitors. Stage 2 will have a maximum of 22 staff members equating to 11 parking spaces. An additional 31 visitor spaces are required.	Can comply.
8.5.1 (d) Size of Parking Spaces All required parking spaces and associated manoeuvring areas, other than for residential units, are to be designed in accordance with the New Zealand Building Code approved document D1: Access Routes.	The layout of each operation is currently conceptual stage. At this stage, it is confirmed that the car park layout for each section will be designed in accordance with these standards.	Can comply.
8.5.1 (e) Accessible Car Spaces Accessible parking spaces are to be designed in accordance with the New Zealand Building Code approved document D1: Access Routes.	The parking layout will provide of each operation is currently conceptual stage. At this stage, it is confirmed though that the car park layout for each section will be designed in accordance with these standards.	Can comply.
8.5.1 (f) Queuing All queuing spaces are to be designed in accordance with the New Zealand Building Code approved document D1: Access Routes.	The layout of each operation is currently conceptual stage. At this stage, it is confirmed though that the car park layout for each section will be designed in accordance with these standards.	Can comply.
 8.5.1 (g) Reverse Manoeuvring (i) On-site manoeuvring shall be provided for all vehicles to ensure that no vehicle is required to reverse either onto or off a road except: a) Any activity is required to provide, or contain, two or less parking or loading spaces: or b) An activity is in the Business 1 Zone and has access onto any road other than a State Highway Such on-site manoeuvring shall comply with the following requirements for a design vehicle anticipated to use a site: for a design car (refer Appendix E3) for a design two axled truck (refer Appendix E4) for all other vehicles (refer Australian Standard AS 2890.2-1989, Off-street parking, Part 2: 	The layout of each operation is currently conceptual stage. At this stage, it is confirmed though that the car park layout for each section will be designed in accordance with these standards.	Can comply.

District Plan Requirement	Provision	Compliance
8.5.1 (h) Loading Area All service, industrial and commercial activities (including retail activities) in the Business Zone 2 shall provide one loading space and associated manoeuvring area, in accordance with the following:	The layout of each operation is currently conceptual stage. Loading areas will be designed in accordance with these standards	Can comply.
Every loading space shall be of a useable shape and shall have a minimum height of 3.8m and a minimum width of 3.5m or such greater width as is required for adequate manoeuvring. The depth shall be as follows:		
ii) For retail premises, offices, warehouses, bulk stores, industrial and service activities and other similar uses, not less than 8m; except that		
 iii) Offices and other non-goods handling activities, where the gross floor area is less than 1500m2 the space can be reduced to 6m in depth, 3m wide and 2.6m high. 		
8.5.1 (i) Surface of Parking and Loading Areas	The layout of each operation is currently	Can comply.
The surface of all parking, loading and trade vehicle storage areas shall be formed and finished with an all-weather, dust free surface and shall be drained to the satisfaction of the Council.	conceptual stage. All parking and loading areas will be formed and finished with an all-weather, dust free surface, and drained to the satisfaction of the Council.	
Rule i (i) does not apply where a site contains one residential unit and which requires no more than two parking spaces.		


District Plan Requirement		Provision	Compliance
8.5.2 (a) Vehicle Access to be Provided		Refer to Section 7.5	Can comply.
In all zones: i) Every lot with direct vehicle access to a road or to a vehicle access lot, shall be provided with a complying vehicle crossing.		The layout of each operation is currently conceptual stage. Access to each operation will be in accordance with these rules.	
ii) Ever with a	y vehicle access lot shall be provided complying vehicle crossing.		
iii) Eve have a of a co	ry activity requiring access to a road shall ccess to that / those road(s) only by way mplying vehicle crossing		
iv) A co followi	omplying vehicle crossing shall meet the ing requirements:		
a)	Where a lot has direct vehicle access to a road: a formed and drivable surface shall be provided between the carriageway of the road and the road boundary of the lot		
b)	Where a vehicle access lot meets the road: a formed and drivable surface shall be provided between the carriageway of the road and the road boundary of the vehicle access lot.		
c)	Where the lot has direct vehicle access to a vehicle access lot: a formed and drivable surface shall be provided between the carriageway of the vehicle access lot and the boundary of the lot.		
d)	An access space shall be established on the lot. This shall comprise an area of land within the lot 3.5m wide by 5.0m long, formed and set aside and useable by a motor car and accessible from the vehicle crossing.		
Note: Notwithstanding the Rules in this Plan,			
every person proposing to construct or modify an accessway onto a State Highway must obtain permission from the Transit New Zealand regional Office (currently at Napier)			
8.5.2 (b) Formation and Sealing of Vehicle		The layout of each operation is currently	Can comply.
crossings i) All vehicle crossings shall be formed with an all-weather surface and shall be drained to the satisfaction of the Council		be wide enough to accommodate the largest vehicle type anticipated to use the crossing and will generally exceed the	
ii) Where the road carriageway adjacent to the vehicle crossing is sealed, then the vehicle crossing shall be sealed.		District Plan requirements.	
iii) Min crossin areas o and 4.5	imum height clearance for vehicle gs and common vehicle manoeuvring on-site, shall be 3.5m for residential units im for all other activities.		
iv) Vehi accorda approv	icle crossing gradients be designed in ance with the New Zealand Building Code ed document D1: Access Routes.		



District Plan Requirement	Provision	Compliance
8.5.2 (c) Migration of Gravel onto Sealed Roads All formed and drivable surfaces on any lot with direct access to a sealed road, and any vehicle crossing, shall be designed and constructed and maintained in such a way that gravel and / or stones and / or silt shall not migrate on to any formed public footpath or on to the sealed carriageway.	Refer to Section 7.6 The existing transition from gravel to sealed road along Mt Herbert Road remains unchanged.	Complies.
 8.5.2 (d) Location of vehicle crossings with frontage in relation to intersections ii) The following standards apply to all other sites in the Rural Zone: a) Where the road frontage of the site lies entirely within 80 metres of an intersection, the vehicle crossing to the site shall be located on the access frontage whining 12 metres of the side boundary of the site which is farthest from the intersection. b) Where the road frontage of the site is greater than 80 metres in length, the vehicle crossing to the site shall be located on the site shall be located on the site shall be located. 	The layout of each operation is currently conceptual stage. At this stage the site accesses to the Mangatarata Rd T- intersection is in excess of these requirements.	Can comply.
 8.5.2 (e) Widths of Vehicle Crossings A minimum crossing width of 6m and a maximum crossing width of 9m shall apply in all zones except for residential. The width of culverts and crossings shall be the actual length of channel covers or the length of the fully dropped curb. 	All vehicle crossings are wide enough to accommodate the largest vehicle type anticipated to use the crossing. The staff and visitor parking entrance will be 6m wide while all other crossings will be 9m to allow commercial heavy vehicles.	Complies.
 8.5.2 (f) Sight Distances from Vehicle Crossings and Road Intersections Unobstructed sight distances shall be available from all vehicle crossings and road intersections. Minimum sight distance for 100 km/h speed limit is 280m for Vehicle Oriented Commercial Activities. For a 70km/h speed limit the minimum sight distance reduces to 140m. 	Refer to Section 7.5 The proposed site accesses generally comply with the minimum sight distances.	Can comply.

Table 4: District Plan Compliance

As can be seen, the proposed development will meet the intention of these rules and performance standards of the District Plan. There is no operational or safety issue that requires further control or conditions that are not already contained in this application.



7. Assessment of Traffic Effects

7.1 Trip Generation

The volume of traffic generated by the site will be a function of the various operations on the site. Although the planned operations are likely to be phased, for completeness only the ultimate scheme has been assessed.

The trip generation of the site was determined using the existing TMM operations and the expected staffing numbers, as discussed earlier in Section 5.2. The increase in production capacity on the new site was accounted for by extrapolating the current traffic profile.

The expected average weekday vehicular volumes are summarised in **Table 5** below:

Activity	Vehicle Type	Arrivals	Departures	Total
Supply Delivery and Mushroom Pickup	Heavy Goods Vehicle	6	6	12
Composting	Heavy Goods Vehicle	4	4	8
Seasonal Straw Delivery	Heavy Goods Vehicle	12	12	24
Staff – All Other	Light Goods Vehicles	150	150	300
Orchard	Heavy Goods Vehicle	1	1	2
Vegetable Glasshouse	Heavy Goods Vehicle	1	1	2
Total		174	174	348

Table 5: Expected Average Weekday Vehicular Activity

The table shows that the site is expected to generate approximately 348 vehicles movements per day during the average weekday, consisting of 150 Light Goods Vehicles (**LGV**) and 48 Heavy Goods Vehicles (**HGV**). From the data provided the busiest periods occurred between 6:00 am and 9:00 am in the morning and 4:00 pm and 6:00 pm, coinciding with the starting and finishing times of the work shifts.

The expected average weekend vehicular volumes are summarised in Table 6 below:

Activity	Vehicle Type	Arrivals	Departures	Total
Supply Delivery and Mushroom Pickup including composting	Heavy Goods Vehicle	3	3	6
Composting	Heavy Goods Vehicle	2	2	4
Seasonal Straw Delivery	Heavy Goods Vehicle	12	12	24
Staff – All Other	Light Goods Vehicles	115	115	230
Orchard	Heavy Goods Vehicle	1	1	2
Vegetable Glasshouse	Heavy Goods Vehicle	1	1	2
Total		134	134	268

Table 6: Expected Average Weekend Vehicular Activity

The table shows that the site is expected to generate approximately 268 vehicles movements per day during the average weekend day, comprising 230 LGVs and 38 HGVs. From the data provided the busiest periods occurred between 6:00 am and 9:00 am, coinciding with the starting times of staff and 2:00 pm and 5:00 pm in the afternoon.

7.2 Trip Distribution

It is anticipated that the trips generated by the site will be distributed as follows:

Light Vehicles mainly transporting staff:

- 20% travelling to / from the West, including towns such as Takapau and Norsewood;
- 40% travelling to / from the North from towns such as Napier, Hastings or Havelock North; and
- 40% travelling to / from the South from nearby suburbs in Waipukurau.

Heavy Vehicles mainly transporting goods:

- 50% travelling to / from the West, including towns such as Palmerston North; and
- 50% travelling to / from the North, including towns such as Napier, Hasting or Havelock North

Figure 8 shows the recommended heavy vehicle routes for vehicles travelling to/from the West (shown in red) and to / from the north (shown in blue).



Figure 8: Heavy Vehicle Routes to / from Site

7.3 Intersection Analysis

The intersections in the study were analysed for a typical weekday AM and PM peak period for both the existing and future (post development) scenarios. For the purposes of assessing performance, the intersection has been modelled using the industry-recognised modelling package SIDRA, using the latest version of the software (version 7).

The analyses showed that the existing intersections, without the development traffic, as shown in Figure 4 and Figure 5 in the previous section, operate at a Level of Service (**LOS**) A for both the AM and PM.

The traffic volumes for the proposed development during the average weekday AM and PM peak periods were determined using the expected traffic volumes for the ultimate scheme, route distribution and travel time surveys of the existing operations at 174 Brookvale Road. Based on this, it is expected that during the AM peak period, which is between 7:45 and 8:45 AM, 29 trips (25 LGV and 4 HGV) will travel to the site while around 4 HGV trips will leave from site. These trips will be distributed along Mount Herbert Road and across the three intersections in the study area. During the PM peak period, which is between 16:45 and 17:45, approximately 4 trips (all HGV) will travel to the site and around 22 (18 LGV and 4 HGV) trips will leave the site.

To demonstrate a worst-case scenario the analysis has been undertaken assuming 60% of LGV which equates to 90 vehicles, will arrive to the site during the AM peak period and depart from the site in the PM peak period during the typical weekday. The remaining LGV will arrive and depart outside the peak periods. The movement of HGV is expected to be around 4 HGV entering and 4 HGV existing the site during the AM and PM peak. The expected trip distribution for this vehicle class is described in the previous section.

Road Segment	Peak Period	Existing Two-way volume	Additional Trips Generated	Post Development volumes (% increase)
Mt Herbert Rd	AM	247	98	345 (40%)
(between St Joseph St and Gow St)	PM	174	98	272 (56%)
River Terrace	AM	66	80	146 (121%)
(between SH2 and St Joseph St)	PM	181	80	261 (44%)
SH2 (between River	AM	613	40	653 (7%)
Terrace and Peel St)	PM	590	40	630 (7%)
Peel St (between	AM	439	40	479 (9%)
SH2 and Northumberland St)	РМ	353	40	393 (11%)

The increase in vehicles per hour along key routes are summarised in **Table 7** below:

Table 7: Expected Traffic Volume Increase in the Study Area



Although the overall increase in the volume of traffic utilising the local road network is high, the post development volumes remain low (typical link volumes vary between 800-1200veh/h per lane). The development trips are therefore considered to have a minor impact on network capacity.

The analysis of the future scenario, which includes post development traffic showed that the overall performance of the intersections remains at a LOS A during the AM and PM peak period as shown in **Figures 8, 9** and **10**. No geometric improvements are considered necessary.





Figure 9: SH2 / River Terrace Intersection Performance



Figure 10: SH2 / Peel Street Intersection Performance





Figure 11: Wellington Rd / Mt Herbert Rd Intersection Performance

The expected weekend period has not been analysed on account that less traffic is generated over the weekend period.

Given the relatively low trip generation for the proposed development the analysis clearly shows that the intersections have adequate capacity to accommodate the additional vehicular trips to and from the site. No additional infrastructure improvements are required or recommended from a capacity perspective.

However, given that all traffic to and from the site will travel along Mount Herbert Road some consideration should be given as to the operational safety of the road, which is separate from capacity driven improvements. These improvements are discussed in Section 7.6.

7.4 Parking

The design of the site is still in conceptual stage, given the size of the site it is expected that the sufficient parking will be provided as per the District Plan. All parking spaces will be designed and constructed in accordance with AS / NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking.

The District Plan requirement for factory farming is 1 space per $500m^2$ Gross Floor Area for visitors (minimum two spaces) and 1 space per 2 staff. Using the floor areas and staffing profiles described earlier the minimum number of parking spaces are summarised in **Table 8** below. It is expected that the development will meet or exceed these requirements.

Stage	Masterplan Reference	Description	GFA Area (m²)	Staff	Visitor Parking Required	Staff Parking Required	Total
	1.0	Workshops and Office	468	20	1	10	11
	1.1, 1.3, 1.8	Phase 2 and 3 Composting Activity	3757	100	8	50	58
	1.2	Staff Car Park	851	0	0	0	0
Stage 1	1.4, 1.9, 1.10, 1.12, 1.13	Composting Operations	8474	4	17	2	19
	1.5	Ponds	6508	0	0	0	0
	1.6	Straw	3308	4	7	2	9
	1.7	New Access Road	246	0	0	0	0
	Total		23611	128	32	64	96
	1.14	Orchard Extension	2806	4	6	2	8
	1.15	Vegetable Glasshouse	4641	4	9	2	11
	1.16	Water Storage	7089-	0	0	0	0
Stage 2	1.17	Future Mushroom Growing	6000	10	12	5	17
	1.18	Compost Yard	2083	4	4	2	6
		Total	22618	22	31	11	42

Table 8: Proposed Parking

It is expected that the heavy goods vehicles at the site will chiefly perform pick-ups and deliveries throughout the day and will mainly utilise service areas instead of demarcated parking. The Masterplan has yet to define the exact loading areas and number of loading bays although given the abundance of space, it is expected that the District Plans requirements will be easily met.



7.5 Access

The development accesses have been assessed to ensure they comply / can comply with the minimum sight distance requirements and crossing widths stipulated in the District Plan. A 70 km/h speed limit has been used as the reference speed based on an earlier recommendation to reduce the speed limit from 100km/h down to 70km/h. A minimum of 85m sight distance is required and increasing to 140m for commercial activities. In addition, the width of a driveway should generally be 6m for standard vehicle crossings and 9m for commercial vehicle crossings.

The driveways to the proposed Stage 1 development are shown in **Figure 12** while those required for Stage 2 are shown in **Figure 13**.



7.5.1 <u>Stage 1 Accesses</u>

Figure 12: Site Accesses (Stage 1)

Access 1 and 3

Both Accesses 1 and 3 will be located along the existing gravel road which intersects with Mount Herbert Road as shown in **Photo 12** below. It is anticipated that the existing gateway treatment will need to be removed to allow larger commercial vehicles to pass through the intersection in both directions.



Photograph 12: Mount Herbert Rd looking towards Access 1 and 3

Access 1 will be 9m wide to allow commercial vehicles to enter and exit the facility. Access 3, being the staff and visitor car park will only be 6m wide.

The access road meets Mount Herbert Road at right angles and good sightline distances are available in both directions. **Photos 13** and **14** show the available sightlines to the left and right respectively. The photos confirm that sightline distances in excess of 140m are achievable.



Photograph 13: Access Road sightline to the left



Photograph 14: Access Road sightline distance to the right

Access 2

This access is located at the end of Mount Herbert Road. **Photos 15, 16** and **17** show the existing road condition together with the available visibility in both directions. Only the visibility to the left is applicable on account that Mount Herbert Road terminates shortly after Access 2. **Photo 16** confirms that visibility is good and exceeds the 140m requirement due to Mount Herbert Road being straight along this segment fronting the site. Access 2, being for straw delivery will need to be 9m wide and designed to allow commercial vehicles to enter and exit unhindered.







Photograph 15: Access 2 Location

Photograph 16: Access 2 looking left



Photograph 17: Access 2 looking right towards river



7.5.2 Stage 2 Accesses



Figure 13: Site Accesses (Stage 2)

Access 4

An existing farm gate is the location of Access 4, straddled either side by rows of trees leading to the existing farmhouse as shown in **Photo 18**. This access will need to be widened to 9m once the glasshouse and compost yard becomes operational due to the need to accommodate commercial vehicles.

Photos 19 and **20** confirm that existing sightline distances exceed the minimum required in both directions.



Photograph 18: Access 4 Location



Photograph 19: Access 4 visibility to left





Photograph 20: Access 4 visibility to right



Photograph 21: Orchard Exit



Photograph 22: Orchard Entrance

This segment of Mount Herbert Road widens and appears to be used as a turnaround area for vehicles. This is further supported due to Mount Herbert Road narrowing to 3m east of the gateway treatment. It appears that the widened area is well used by commercial vehicles entering and existing the orchard. The exit gate is located directly opposite Access 4 (**Photo 21**).

The following improvements are recommended as part of the Access 4 upgrade.

- Widen Access 4 to 9m;
- Widen Mount Herbert Road between Access 4 and Access 1 to 4.6m;
- Provide directional traffic signage for visitors to the TMM facility;
- Remove existing gateway treatment on Mount Herbert Road (Photo 20); and
- Prior to the use of Access 4, undertake a preliminary design of the existing arrangement of accesses to the orchard and Access 4 in order to avoid conflict.



Access 5

This access is existing as shown in **Photo 23** and positioned on a gentle horizontal bend. **Photos 24** and **25** indicate that due to the access being positioned on the outside of the bend, good visibility is available in both directions and sightline distances exceed those required.





Photograph 23: Access 5 Location

Photograph 24: Access 5 visibility to left



Photograph 25: Access 5 visibility to right

The segment of Mount Herbert Road is gravel and 4.6m wide. The existing trees are outside the road reserve fence line and the opportunity to widen the road is available.

Access 6

This is a proposed 9m wide commercial access located along Mount Herbert Road to provide access to the future mushrooms growing area located south of Mount Herbert Road. The new access should be located where the longest sightline distances can be achieved. **Photo 26** shows the preferred location.

This access is proposed as an alternative to Access 7, described below.





Photograph 26: Access 6 Location

Access 7

This access is located along a narrow stone pathway at a position where an existing farmgate exists (**Photo 27**). The pathway currently serves as access to the residential dwelling and it therefore not suited for commercial vehicles. The access intersects with Mount Herbert Road close to the quarry entrance. This segment of Mount Herbert Road is 5.6m wide and sealed. **Photo 28** shows the narrow width of the access road which is only wide enough to allow one-way traffic. In addition, visibility to the right is substandard (**Photo 30**) due to the curvature of Mount Herbert Road at this location and the acute angle at which the access road meets Mount Herbert Road.



Photograph 27: Access 7 Location



Photograph 28: Access Road intersection with Mt Herbert Rd





Photograph 29: Access Road visibility to left

Photograph 30: Access Road visibility to right

It is recommended that this access **not** be utilised for future access.

7.6 Safety and Mitigating Adverse Effects

Based on the crash history analysis and recent site visit the following safety recommendations are made:

- reduce the posted speed from 100km/h to 70km/h given that the 5.6m sealed width of Mount Herbert Road is not appropriate to accommodate 100km/h vehicle speeds;
- regrade the gravel portion of Mount Herbert Road from the quarry to Access 4. The existing width of 4.6m is deemed sufficient to accommodate the relatively low volume of vehicles but also wide enough to allow two heavy vehicles to pass one another;
- upgrade the existing portion of Mount Herbert Road from Access 4 to Access 1 to be 4.6m wide. The existing road will need to be completely rehabilitated as there does not appear to be any supporting pavement layers (base and sub-base layers) along this portion of road. The improvements include the intersection with Mount Herbert Road and commercial access (Access1);
- upgrade the existing portion of Mount Herbert Road from Access 1 to Access 2 including new pavement layers to allow heavy vehicle activity. The existing width of 3m is to be retained due to the low volume of activity anticipated (straw delivery only);
- regrade the existing gravel path from Access 1 to Access 3 to provide a smooth surface for staff and visitors into car park. Given the tidal flow of arrivals and departures a road width of 3m is deemed sufficient;
- implement roadside approach signage to and from the site for both staff and visitors; and
- construct Access 6 along Mount Herbert Road in a location offering the best sightline distances and avoiding the need to utilise the existing access road to the residential dwelling.





Figure 14 shows the proposed road upgrades diagrammatically.

Figure 14: Proposed Road Infrastructure Improvements



8. Conclusion

TDG has been commissioned by TMM to examine and describe the transportation effects for a new development located at 464 Mt Herbert Road, Waipukurau. The full development includes the following:

- composting operations that can produce up to a maximum of 1500 tonne per week;
- mushroom growing operation that can produce up to maximum of 250 tonne per week;
- vegetable glasshouse;
- orchard operations; and
- water storage facility;

The analysis of three key intersections within Waipukurau town centre confirmed that existing traffic volumes are low.

The additional traffic generated by the proposed development during the average weekday AM and PM peak period has a minor impact on the overall performance of these intersections. Mount Herbert Road is expected to increase from 247 veh/h to 345 veh/h in the AM peak hour and similarly 174 veh/h to 272 veh/h in the PM peak. The intersection analysis confirms that this increase in vehicular activity has little effect on capacity.

The increase in heavy vehicle activity is generated by deliveries / distribution activities to / from the site. These vehicles generally arrive from the north (Napier, Hastings) and the west (Palmerston North). During the AM and PM peak hours the existing road network and intersection can safely and efficiently allow for the increased traffic. Mount Herbert Road is expected to increase from 9 heavy vehicles to 13 heavy vehicles in the AM and PM peak hours (48 heavy vehicles were used in the analysis as a worse case).

The form and function of the existing urban roads are well suited to accommodate the additional vehicular trips from the development. Any adverse effects resulting from the increase in traffic on the safety and efficiency of these roads is considered to be less than minor. No upgrades or changes to the existing intersections are required.

The form and function of Mount Herbert Road beyond the gravel extraction plant requires upgrades to cater for the increase in heavy vehicle activity. Without the upgrades to this part of Mount Herbert Road, the road would deteriorate at an increasing rate than originally designed for and the increase in traffic would result in an adverse effect on the safety and efficiency of this part of the local network. To avoid and mitigate adverse effects, the actions set out in Section 7.6 are required.

TDG now Stantec

Appendix A

Proposed MasterPlan





Appendix 5

EAM: Preliminary Site Investigation Assessment



PRELIMINARY SITE ASSESSMENT WITH NATIONAL ENVIRONMENTAL STANDARD FOR ASSESSING AND MANAGING CONTAMINANTS IN SOIL TO PROTECT HUMAN HEALTH



464 MT HERBERT ROAD WAIPUKURAU, CENTRAL HAWKE'S BAY

PROJECT NO. EAM1803-REP-01

PREPARED FOR TE MATA MUSHROOM COMPANY LTD

> PREPARED BY JASON STRONG

FEBRUARY 2018

EAM NZ LTD – ENVIRONMENTAL CONSULTANTS PO Box 1154, Napier 4110 Mobile 027 440 5990 Email info@eam.co.nz Report prepared by:

Jason Strong (MSc) Principal Environmental Scientist EAM NZ Limited

LIMITATIONS:

This report has been prepared based on information provided by third parties. EAM NZ LTD has not independently verified the provided information and has relied upon it being accurate and sufficient for use by EAM NZ LTD in preparing the report. EAM NZ LTD accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information. This report has been prepared by EAM NZ LTD on the specific instructions of TE MATA MUSHROOM COMPANY LTD for the limited purposes described in the report. EAM NZ LTD accepts no liability to any other person for their use of or reliance on this report, and any such use or reliance will be solely at their own risk.

© EAM NZ Limited



TABLE OF CONTENTS

Table	of Conte	entsII
1.0	Introduc	tion1
2.0	Site Detc 2.1 2.2	ails 1 Site Identification and Zoning 1 Site Description and Current Land Use 1
3.0	Environn 3.1	nental Setting
4.0	Desktop 4.1 4.2 4.3 4.4 4.5	Review of Site History3Central Hawke's Bay District Council Property Files3Historical Aerial Photographs3HBRC Land Use Register3Site Inspection6Summary of Desktop Investigation7
5.0	Conclus	ions8
6.0	Referenc	ces8
Figure	es 1:	Site Location
Figure Figure Figure Figure	2. 3: 4: 5: 6:	Historic (1996) aerial photo of Site
Figure Figure Figure	7: 8: 9:	Assessment Site looking east showing bore pump shed

1.0 INTRODUCTION

1.1 BRIEF

EAM NZ Limited (EAM) have been engaged by Te Mata Mushroom Company Ltd to undertake a Preliminary Site Investigation (PSI) at a property located at Mt Herbert Road, Central Hawke's Bay (Herein referred to as the Site). Figure 1 illustrates the Site location.

Te Mata Mushroom Company Ltd are exploring the opportunities of utilising the site for composting, glasshouses and various other agricultural/horticultural activities, including construction of a water storage reservoir. Note: this assessment only covers the flat land where the proposed activities would take place.

A phased approach has been adopted for the investigation, with an initial preliminary Site investigation of assembling background information to identify potential sources of contamination from past and present activities. This report provides the following information:

- Background information;
- Site history;
- Anecdotal information;
- A conceptual Site model;
- Evaluation of determinants and risk assessment;

This investigation has been carried out in accordance with the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES).

2.0 ASSESSMENT SITE DETAILS

2.1 SITE IDENTIFICATION AND ZONING

The assessment Site comprises three separate titles:

- 1. LOT 1 DP 427319 (part subject to covenant), approximately 16.1469 hectares;
- 2. LOT 2 DP 401209, approximately 39.4946 hectares; and
- 3. LOTS 1-2 DP 21840 LOT 1 DP 22481 (39.4430 hectares).

The assessment Site is zoned Rural as per the Central Hawke's Bay District Council Plan.

NOTE: The assessment site or 'piece of land' as shown in Figure 1 does not include the area where the residential dwelling, sheds, stockyards and sheep dip is located (refer Section 4.4 of this report).

2.2 SITE DESCRIPTION AND CURRENT LAND USE

The Site is flat predominantly flat but rises to rolling hill country to the east. Currently most of the site is used for pastoral grazing.

FIGURE 1: SITE LOCATION. NOTE THAT ASSESSMENT AREA IS THAT SHOWN WITHIN **BROKEN LINE (FLAT LAND)**



3.0 ENVIRONMENTAL SETTING

3.1 GENERAL SETTING

The topography of the site is largely flat but rises to rolling hill country to the east.

The nearest natural waterway is the Tukituki River located approximately 400 m to the north and west.

4.0 DESKTOP REVIEW OF SITE HISTORY

A desktop assessment was undertaken to provide an overview of any potential contaminants of concern that may be present at the site because of any documented past and present activities. The following information was sourced to establish the history of the site:

- Central Hawke's Bay District Council (CHBDC) Resource Consents Database and Property Files;
- Historical aerial photographs
- A search of the Land Use Register held at Hawke's Bay Regional Council (HBRC).
- Site Inspection.

4.1 CENTRAL HAWKE'S BAY DISTRICT COUNCIL PROPERTY FILES

EAM viewed the property files held at CHBDC. No information was contained within these files with regards to identifying a possible contaminant source.

4.2 HISTORICAL AERIAL PHOTOGRAPHS

A review of available historical aerial photographs of the Site was carried out. Aerial photographs for the years 1976, 1980, 1999 and 2009 were reviewed and these are shown as Figures 2, 3, 4, 5 and 6 respectively.

<u>1976:</u> The site looks as it does presently and is being used for pastoral grazing.

1980: No significant change since 1976.

1996: No noticeable change since 1980

2015: No change at the site between the 1980 and 2015 aerials

4.3 HAWKE'S BAY REGIONAL COUNCIL LAND USE REGISTER

A search was made for information from HBRCs Listed Land Use Register (LLUR). This register is used to hold information about sites that have used, stored or disposed of hazardous substances, based on activities detailed in the Ministry for the Environment's (MfE) Hazardous Activities and Industries List (HAIL) (MfE, 2011a). The search revealed that the site under assessment is not listed on the LLUR.





FIGURE 3: HISTORIC (1980) AERIAL PHOTO OF THE SITE



FIGURE 2: HISTORIC (1976) AERIAL PHOTO OF THE SITE





FIGURE 5: HISTORIC (2015) AERIAL PHOTO OF THE SITE



FIGURE 4: HISTORIC (1996) AERIAL PHOTO OF THE SITE

4.4 SITE INSPECTION

An initial site inspection was carried out in January 2018, with objective of identifying any potential sources of land contamination.

In general, the Site is used for pastoral grazing with some cropping and forestry (Figures 7 and 8). An irrigation bore shed was noted at the Site (Figure 7). This is not used for agrichemical preparation or storage. There is an area where the main farm sheds, stockyard and a residential dwelling are located. It was noted that the remnants of an historic sheep dip operation are present in this area (Figure 8). Note: Although the sheep dip and shed area are not considered part of this assessment, it is pertinent to identify these should these areas be developed in the future. Figure 9 illustrates the location of the mentioned structures from this Site visit.

Apart from the area around the stockyards and old sheep dip site, there was no indication of soil contamination of any sort noted during the site visit e.g. stunted vegetation, dead patches of pasture etc.

FIGURE 6: ASSESSMENT SITE LOOKING NORTH SHOWING GRAZING LAND



FIGURE 7: ASSESSMENT SITE LOOKING EAST SHOWING GRAZING LAND AND BORE PUMP SHED



FIGURE 8: ASSESSMENT SITE LOOKING SOUTH SHOWING SHEDS AND AREA OF OLD SHEEP DIP





FIGURE 9: ASSESSMENT SITE SHOWING SHEDS AND AREA OF OLD SHEEP DIP

4.5 SUMMARY OF DESKTOP INVESTIGATION

The findings of this PSI illustrate that the site has been used largely for pastoral grazing/cropping since the early part of the 20th Century. There is no evidence of orchard activities having taken place historically.

An area that would need further investigation (including soil sampling and analysis) should a change of use occur in this area is around the sheds, house and stockyards. The area where the old sheep dip is located would require investigation as the soil around this area may be contaminated with organo-chlorines and heavy metals (lead, arsenic and possibly mercury). However, for the purposes of this assessment they are not relevant to the 'piece of land' and therefore not subjected to the NES.

5.0 CONCLUSIONS

A Preliminary Site Investigation as required under the NES has been carried out for 464 Mt Herbert Road, Central Hawke's Bay.

The results of this assessment have identified that the 'piece of land' in question is not a HAIL site and therefore not subject to the NES.

An area (not part of the assessment site) that would need further investigation (including soil sampling and analysis) should a change of use occur in this area is around the sheds, house and stockyards. The area where the old sheep dip is located would require investigation as the soil around this area may be contaminated with organo-chlorines and heavy metals (lead, arsenic and possibly mercury).

6.0 **REFERENCES**

MfE 2011 Contaminated Land Management Guidelines No.1 Reporting on Contaminated Sites in New Zealand. Ministry for the Environment.

MfE 2012 Users Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Ministry for the Environment.

MfE 2011 Contaminated Land Management Guidelines No.5; Site Investigation and Analysis of Soil. Ministry for the Environment.

Appendix 6

EARCON: Acoustic Assessment and follow up Memo

#
NOISE ASSESSMENT

Date: 20/10/2020 By: Daniel Martens Page: 1 of 1

464 MOUNT HERBERT ROAD – PROPOSED MANUFACTURING FACAILITY CHANGES TO THE PROPOSED OPERATION

This memo has been prepared for the proposed adjustments/alterations in the operation of the proposed manufacturing facility at 464 Mt Herbert Rd for Te Mata Mushrooms.

The proposed changes are relatively minor and relate primarily to a new site plan and the associated variation to where noise sources will operate.

In the original acoustic report dated Feb 2018, the modelled scenarios were divided into 2, providing a Daytime, Monday to Saturday scenario and all other times scenario. The machinery used will remain relatively unchanged, however, will operate in different areas.

With the different operating areas, the noise levels are predicted to vary by no more than 3dB at the closest neighbouring receivers. This will result in no more than 38dB during the daytime and 31dB at all other times. This remains well below the permitted maximum of 55dBA L10 during the daytime and 45dBA L10 at all other times.

The proposed changes will have a negligible effect on the noise levels produced and received at the neighbouring receivers. We note that a 3dB difference is only just perceptible to human hearing, remaining relatively unchanged to the noise levels originally assessed.

The noise level will remain compliant with the District Plan Standards.

Yours faithfully Earcon Acoustics Limited

Daniel Martens Acoustician PG DipSci. ME(EngSci),



TE MATA MUSHROOM COMPANY PROPOSED MANUFACTURING FACILITY

464 MOUNT HERBERT ROAD LOT 1 DP 427319 WAIPUKURAU

for Te Mata Mushroom company

ACOUSTIC REPORT

Prepared by Earcon Acoustics Limited

For Resource Consent

February 2018 Ref J002477

Level 27, PWC Tower - 188 Quay St – Akld 1010 Tel: 09 443 6410 Fax: 09 443 6415 PO Box 301561 Albany - North Shore – Akld 0752 Mob: 021 437893



QUALITY ASSURANCE

Document: Te Mata Mushroom Company – Bunker Extension Acoustic Report – For Resource Consent

Contact	lssue	Date	Rev
Fadia Sami			
fadia.sami@earcon.co.nz	For Resource Consent	27/02/2018	В
<u>021 437893</u>			

1. Introduction

This report addresses the requirements for the proposed development at the 464 Mt Herbert Rd to meet the noise limits at surrounding sites in accordance with the requirements of the Central Hawke's Bay District Plan. This report has been prepared for resource consent.

The report is based on the briefing prepared by Stradegy, Urban, Environmental & Strategic Planning dated 18 Jan 2018.

2. Site

The proposed development involves the relocation of phase one of the Te Mata Mushroom Company Facility composting process to 464 Mt Herbert Road in Waipukurau. The proposed facility is to be located as shown in the figure below. The primary sources of noise are expected to be from the operation of the facility, (primarily wheeled loaders) and HVAC equipment.

The Site and surrounding area is zoned *Rural*.



Figure 1- Site Location

Figure 2 - Boundaries



3. Proposed Development

The proposed development will include construction of a new composting facility as shown in the figure below. However, in order to future proof the site, assessment will include all aspects of mushroom growing including growing rooms, dispatch, etc.

Figure 3- Proposed Development



4. Standards

Central Hawke's Bay District Plan – Operative 1 May 2003

The Central Hawke's Bay District Plan provides, inter alia, a regulatory framework defining the noise levels permitted within the jurisdiction of the Central Hawke's Bay District Council. These limits are references in this report and assessed against for compliance analysis.

NZS 6801: 1991 – Acoustics – Measurement of Sound

This standard defines the parameters, quantities and metrics to describe noise in community environments, in addition to the procedures and methodologies of measuring and acquiring these quantities.

NZS 6802: 1991 – Acoustics – Assessment of Environmental Sound

This standard defines procedures for the assessment of noise against compliance criteria.

NZS 6803:1999 - Acoustics – Construction Noise

This standard provides, for the purposes of noise level predictions, guideline noise levels expected from different machinery. NZS 6803:1999 includes reproduced annexes from the British Standard BS 5228: Part 1: 1997. These are cited in this report as "pertaining to BS5228 as referenced in NZS6803".

5. Requirements – Central Hawke's Bay District Plan

requirements of Section 16 of the Resource Management Act.

In accordance with the rules of the Hawke's Bay District Plan, the following rules apply:

4.9.11 Noise On any site, activities, shall be conducted such that the following noise levels are not exceeded at nor within the notional boundary of any residential unit, other than residential units on the same site as the activity: - 6:00am - 11.00pm Monday to Saturday 55dBA L10 45dBA L10 - at all other times 75dBA Lmax - at all other times Exemptions ÷ Residential, Farming and Forestry Activities shall be exempt from the above provided that the activity shall comply with the requirements of Section 16 of the Resource Management Act. ii The 75dBA Lmax noise limit shall not apply to on-site sirens required by Service Emergency Service Activities, provided that the activity shall comply with the

6. Equipment and Activities

The following table lists relevant noise generating equipment and mechanical plant expected to be used at the facility. Noise data is quoted below in accordance with previously done tests for the site, and with NZS 6803:1999, and BS 5228: Part 1:1997.

	Sound Power
Equipment	L _{WA} [dB]
Wheeled Loader	101
Wheeled Loader	101
Compost Fan	79
Compost Fan	79
Bunker Fan	97
Chiller Compressor	87

Table 1 - Equipment and Machinery SPL

7. Metrics

In accordance with the Hastings District Plan and NZ standards NZS6801, NZS6802, and NZS6803, the following metrics are used to quantify noise:

- L_{WA} [dB]: A-Frequency Weighted sound power level. This metric is primarily used to describe the power output from a sound source for the purposes of modelling.
- L_{A10} [dB] or L₁₀ [dBA]: A-Frequency Weighted sound level which is equalled or exceeded for 10% of the measurement period. L10 is an indicator of the mean maximum noise level and is used in New Zealand as the descriptor for intrusive noise.
- L_{Amax} [dB] or L_{max} [dBA]: Maximum sound pressure level.

8. Noise Assessment

This section details the assessment of noise levels on the site including models for prediction of noise from the proposed works, and noise predictions at surrounding receivers based on the models.

To predict noise propagation at the subject site from the proposed works, an environmental model was constructed for the operation using the CadnaA version 4.3 computer modelling program. The following applies to the modelling software CadnaA:

- The modelling method for noise propagation over distance is based on the international standard ISO 9613: "Acoustics Attenuation of sound during propagation outdoors" methodology.
- The model allows importing digital ground elevation contours and data to define the topography and data for each of the noise sources, and the locations, geometry and elevations of the noise receivers.
- The program then calculates the L_{A10} dB level as the metric for the noise levels at the receivers for the purposes of this assessment.

Modelled Locations

The locations of the machinery and plant was modelled based on the following schematic pertaining to the operation of the site.

Worth noting that mobile machinery (wheeled loader) was modelled at ground level, and fixed HVAC equipment were modelled as roof mounted at circa 5m height.



Figure 4 - Equipment Location

Modelled Scenarios

The following scenarios were selected as representative of the operation with the machinery, and associated noise power levels, as noted in the table below. Modelling was done for receivers at 1.5m height representing the first floors of residential dwellings.

Scenario	Description	Equipment	Sound Power Level (dBA)
1	Daytime	Wheeled Loader	101
6a N	6am–11pm	Wheeled Loader	101
	Mon - Sat	Compost Fan	79
		Compost Fan	79
		Bunker Fan	97
		Chiller Compressor	87
2	All other	Compost Fan	79
	times	Compost Fan	79
		Bunker Fan	97
		Chiller Compressor	87

Table 2 - Modelled Scenarios

Modelling Considerations

The following conservative assumptions were inherent in the noise models for the subject site in this report.

- **Simultaneity**: In each modelled scenario, all machinery was assumed running at full capacity simultaneously. This does not usually occur in reality.
- Time Averaging: In all modelled scenarios, machinery was assumed to run continuously regardless of sample time period. In reality, operations are usually highly variable with machines, especially loaders, cycling from off (setting up), to idling (preparation) to on (operating.) Taking time averaging into account would usually reduce the noise level for the compliance criteria L_{Aeq}.

Application of time averaging can be achieved using the follow equation

$$L_{A\,10(T)} = 10 \log_{10} \left(\frac{1}{T} \sum_{i=1}^{n} (t_i \times 10^{(L_1)/10}) \right)$$

Where

- $L_{A \ 10(T)}$ = The combined equivalent continuous A-weighted sound pressure level (in dB) over a given time T_i
- L_1 = The individual equivalent continuous A-weighted sound pressure level, L_{A10} , for an item or a plan during a period t_i (in dB)
- *n* = The total number of individual equivalent continuous A-weighted sound pressure levels to be combined.

Noise Predictions

The following legend identifies the colour codes of the modelled figures in the following section:



Figure 5 - Modelled Noise Level Colour Codes





9. Receiver Analysis

Rural Zone

The site and surrounding area is in a rural zone, in accordance with the Central Hawke's Bay District Plan. The noise limits, in accordance with the plan requires noise at the notional boundary of the site to be less than L_{A10} 55 during the daytime Monday to Saturday and less than L_{A10} 45dB at all other times.

As per the modelled scenarios, and even with the conservative assumption that all machinery runs continuously, the noise levels at the notional boundary (not on the subject site) complies with both the night-time and the daytime limits.

10. Conclusions

In accordance with the requirements of the Central Hawke's Bay District Plan, and based on conservatively modelled scenarios pertaining to the operation of the proposed facility, it is predicted that the noise levels from the operation of the proposed facility would comply with the relevant noise criteria at all assessed receivers at all times.

Appendix 7

AQP: Odour Effects Assessment





ABN 92 160 694 011

Odour Assessment – Te Mata Mushrooms Waipukurau Site



Report prepared for: The Te Mata Mushroom Company Limited 9 November 2020





Table of Contents

Table	of Cor	ntents.		2						
Apper	ndices			3						
1	Introduction									
2	Site Location									
	2.1	Neighbouring Land Uses								
	2.2	Тороді	raphy	8						
3	Descr	iption	of Proposed Activities	.10						
	3.1	Overvi	ew of Composting Process	10						
	3.2	Propos	sed Composting Methods	10						
	3.3	Recycle	ed Water Collection and Storage	13						
4	Mete	orolog	у	.14						
	4.1	Influer	nce of Meteorology in Odour Dispersion	14						
	4.2	Local V	Vind Records	14						
	4.3	Region	al Windfield Simulation	16						
	4.4	TMM S	Site Wind Monitoring	18						
5	Descr	iption	of Odour Sources	.19						
6	Odou	r Dispe	ersion from TMM site	.24						
	6.1	Approa	ach and Set-Up	24						
	6.2	Emissio	on Scenarios Tested in the Model	25						
	6.3	Odour	Modelling Guidelines	27						
	6.4	Model	Results and Discussion	29						
		6.4.1	Scenario 1	29						
		6.4.2	Scenario 2	31						
		6.4.3	Scenario 3	32						
		6.4.4	Scenario 4	33						
		6.4.5	Results Analysis at Residential Locations	34						
		6.4.6	Results Analysis at Wahi Tapu Site	37						
		6.4.7	Results Analysis at Tukituki Trail Receptors	39						



	6.4.8	Results Analysis at Mountain Bike Park	44
7	Conclusion		49
8	References	I	50

Appendices

- Appendix 1: Site Layout Drawings
- Appendix 2: Annual Windroses Waipawa Meteorological Data Station, 2010 2019
- Appendix 3: CALMET and CALPUFF Input File
- Appendix 4: Windroses Extracted from CALMET Model

© Air Quality Professionals Pty Ltd 2020 (unless Air Quality Professionals has expressly agreed otherwise with the Client in writing).

This report has been prepared by Air Quality Professionals on the specific instructions of our client, The Te Mata Mushroom Company. It is solely for our Clients' use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Air Quality Professionals has not given its prior written consent, is at that person's own risk.



1 Introduction

The Te Mata Mushroom Company (TMM) proposes to develop a compost making facility on Mt Herbert Road, 4km from Waipukurau (the "site"). The compost will be used as a substrate for growing mushrooms. The proposed compost throughput rate will be up to 900 tonnes per week ("Tpw").

The proposed composting plant is a new facility designed by GTL Europe (based in The Netherlands), using best practice processing equipment and odour control to minimise odour discharges. GTL Europe provides advisory and engineering services on installation technology, civil engineering, machine construction and automation for composting and mushroom cultivation¹.

The compost consists of straw, chicken litter and gypsum. Other additives such as maize are also used when available. The composting activity comprises three phases of compost production: (1) active aerated composting in closed bunkers; (2) maturation and pasteurisation in closed tunnels; and (3) mixing with mushroom spawn and incubation. All three phases of composting will be carried out at the new site.

The purpose of this report is to assess the potential odour impact arising from the proposed TMM operation at the site.

¹ <u>http://www.gtl-europe.nl/en/about-us/engineering</u>



2 Site Location

2.1 Neighbouring Land Uses

The site is located at 302-464 Mt Herbert Road, Waipukurau. The location is shown in Figure 1. Nearby houses and separation distances to the closest residences are also shown on Figure 1. The nearest residences are over 1400m from the proposed location of the composting operation.



Figure 1: Site location (red outline). Image source: Google Earth Pro, image flown 4 September 2017. Nearby houses shown by yellow circles.

The site is bounded by farmland and forestry land uses, including some nearby walking and cycling tracks which are part of the Tukituki Trail (see Figure 2 and Figure 3). A local Wahi Tapu site of significance is located northeast of the TMM site, approximately 500 m from the proposed composting plant location (approximate location shown on Figure 5).





Figure 2: Schematic map of Tukituki Trail, edited from <u>https://www.tukitukitrail.com/maps</u> accessed 25/10/20.

Te Mata Mushrooms Waipukurau Site Odour Assessment





Figure 3: Location of Tukituki Trail paths and tracks near the site, from <u>https://www.trailforks.com/region/the-tukituki-trail-18812/</u> accessed 25/10/20.



2.2 Topography

The Waipukurau area is characterised by a mix of rolling hills, flat pastoral land, and a shallow valley system defined by the Tukituki River and the Waipawa River. The regional topography is shown in Figure 4, with a closer view of the topography around the site shown in Figure 5. The black dashed line on Figure 5 following the south bank of the Tukituki River from Waipukurau to the north end of Mt Herbert Road indicates the location of the River Run and Titoki trails shown previously on Figure 3. The trails also passes adjacent to the Waipukurau Wastewater Treatment Plant which is located between the site and Waipukurau.

The part of the site proposed for the composting operation is on flat land at an elevation of about 120m above sea level, with the river to the immediate east and north, and rolling hills peaking at 250m above sea level to the immediate west and south. The houses to the south of the site on Mangatarata Road shown on Figure 1 are located along on the higher slopes of these rolling hills.

These terrain features will affect the direction of wind flows in the area around the site and assist with deflection of odour discharges away from the houses at elevated locations. This is discussed further in Section 4.



Figure 4: Regional topography. Image source: NZ Topo50 Map BL38. Downloaded from https://data.linz.govt.nz, April 2018. Red-outlined star marks location of proposed composting operation. Blue-outlined star marks location of Waipawa meteorological station (refer Section 4).

Te Mata Mushrooms Waipukurau Site Odour Assessment





Figure 5: Topography and land use features near site, with site shown in red outline. Image source: NZ Topo50 Map BL38. Downloaded from https://data.linz.govt.nz, April 2018.



3 Description of Proposed Activities

3.1 Overview of Composting Process

Compost is an essential part of the mushroom growing process and is used as part of the substrate that the mushrooms are grown on. Compost consists of straw, chicken litter and gypsum. The key components of the composting process are described in this section.

Composting occurs in three phases, transforming the raw materials into a medium suitable for growing mushrooms. Phase 1 composting starts with the mixing of pre-wetted straw and pre-mixed chicken litter and gypsum. The mix is then loaded into one of multiple Phase 1 bunkers. During the composting in Phase 1 air is blown through the newly mixed and composting material to maintain aerobic conditions. The bunkers are progressively emptied and filled to facilitate turning of compost via transferring the compost from one bunker to another (known as "bunker-to-bunker transfer"). These bunkers have a concrete floor, two concrete walls and insulated panel roof, and the end openings are closed with solid sliding doors when not in use. The Phase 1 bunker concrete floors have recessed lines which act in parallel as both aeration lines and a leachate collection system.

The bunkers are operated under a slight vacuum or negative pressure compared to outside air to avoid leaking of odorous air from the bunkers. Foul air within the bunker is drawn from the top of each bunker and treated to remove odour before discharge to atmosphere.

At the completion of the Phase 1 process, the compost is transferred removed from the Phase 1 bunkers and into Phase 2 tunnels. During the Phase 2 cycle, air in the bunker is recirculated at one end of the bunker, and a portion of the air is drawn from the bunker and treated to remove odour. After Phase 2, the compost is transferred to Phase 3, and then is used in the mushroom growing operation.

Phase 1 takes about 12 days to complete, and the whole process from pre-wetting of bales until the compost is ready to grow mushrooms is nearly four weeks. Multiple batches of compost are in various stages of production at any time so that fresh compost is always available for starting the mushroom spawning process.

3.2 Proposed Composting Methods

An overview showing the layout of the site and a drawing of the processing buildings is provided in Appendix A. The 900 Tpw processing capacity will require a total of five bunkers for Phase 1, and nine tunnels for Phases 2 and 3 (four for Phase 2, and five for Phase 3). A description of each part of the process is provided below.

1. Bale pre-wetting

Bale pre-wetting will occur by dunking the bales into a sump filled with goodie water (see Section 3.3). The bales are then stacked on an aerated pad outside the Phase 1 bunkers for about 9 days. If necessary, the bales may be occasionally irrigated with goodie water during this 9-day period.



2. Chicken litter/gypsum storage and handling

Chicken litter will be imported to the site approximately once per week, mixed immediately with gypsum and then stored in a covered bunker in the same room as where bale break occurs (see below).

3. Bale break, mixing, and material placement in bunkers

The mixing process will occur in a purpose-designed automated bale-break machine within a semi-enclosed building called the "Mixing Hall". The machine will break up the bales, mix in the correct amount of chicken litter/gypsum and water, and then deposit the mixed substrate directly onto a conveyor for transport to one of five Phase 1 bunkers. Compost is placed evenly into the bunker via a telescopic, automated filling line with a capacity of 200 tonnes per hour ("Tph").

The process will occur over a period of up to 8 hours between the hours of 8am and 6pm to avoid potential odour emissions during stable atmospheric conditions in the early morning and evening. The process will occur typically 1-2 days per week and will usually occur on weekdays, but may occur at weekends if necessary.

4. First and second turning of compost in Phase 1 bunkers

During Phase 1, the compost will be turned twice by removing the compost from the bunker using a frontend loader, mixing the material and adding moisture in the bale break machine, and then immediately returning the compost to a spare bunker via the conveyor system and bunker filling line; this is known as "bunker-to-bunker" transfer. One bunker is always kept spare for this process; i.e. with five bunker operation (for 900 Tpw production) only four bunkers are used for composting and the fifth is kept available for turning operations. The process is illustrated in Figure 7.

The process takes about 8 hours, and will be conducted only during the hours of 8am to 6pm at the Mt Herbert site.

5. Removal of compost from Phase 1 bunkers, mixing and placement into Phase 2 tunnels

At the end of the Phase 1 composting period 12 days after initial mixing, the compost will be removed from the Phase 1 bunkers by front end loader and returned to the Mixing Hall. There, it will be turned again using the bale break machine. The compost will then be transported using the same conveyor system into a fully-enclosed building housing the Phase 2 and 3 composting operations.

6. Phase 2 and 3 composting

Phase 2 and 3 composting operations will be conducted in tunnels inside a fully-enclosed building. Compost will not be exposed outdoors again until after the compost has been turned into mushroom cultivation substrate.





Figure 6: Schematic view of Phase 1 Bunkers, Mixing Hall, and Phase 2 Tunnels.



Figure 7: Illustration of bunker-to-bunker transfer process.



3.3 Recycled Water Collection and Storage

The site will include two ponds:

- 1. Freshwater runoff pond,
- 2. Phase 1 compost leachate pond ("goodie water").

The goodie water is loaded with organic compounds leached during the composting process, and the goodie water pond will be aerated and mixed to maintain aerobic conditions. The pond will be about 500 m² surface area and 4 m deep at full capacity, but will usually operate at about 240 m2 surface area except in extreme rainfall events. The aeration design will be similar to the system currently used successfully at TMM's Brookvale Road site, which uses an SAR[™] Aerator from Hydro Processing and Mining Ltd (Canada)², proven in the field for mushroom composting farms. The aerator design recirculated recycled water through a land-mounted aerator, with the aerated water returned to the pond.

The goodie water is used to pre-wet the bales, and will be topped up with fresh water when needed.

² <u>http://www.hpmltd.ca/Aeration.html</u>



4 Meteorology

4.1 Influence of Meteorology in Odour Dispersion

The most important meteorological conditions affecting dispersion of odour after emission are wind speed and direction, and atmospheric stability.

Wind speed: For emissions occurring close to ground or entrained in building downwash eddies, low wind speeds (roughly less than about 2 - 3 metres per second, or 4 - 6 knots) tend to result in noticeable odour at greater downwind distances than at higher wind speeds.

Atmospheric stability: The atmospheric stability is a measure of the vertical mixing, or turbulence, of the atmosphere close to ground. During low wind speeds around sunset and sunrise, and overnight, the atmosphere can be very stable with "inversion" caps keeping pollutants emitted close to the ground from rising high into the atmosphere. If such conditions coincide with odour emissions from sources located close to the ground, such as the potential odour sources from the composting operations at the TMM site, the dispersion of odour downwind from the source can be slow with odour nuisance more likely to be noticed by downwind sensitive receptors.

4.2 Local Wind Records

The nearest long-term meteorological monitoring station with publicly available data is 2.5 km east of Waipawa at the Waipawa wastewater treatment plant, about 3.2 km north-northeast of the proposed composting location (location marked on Figure 4).

Wind patterns at the TMM site may differ somewhat to those at Waipawa because the TMM site will be sheltered from southerly and easterly winds by the hill features to the east and south of the site, whereas at the Waipawa meteorological station the terrain is flat to the south but rolling hills are quite close to the northeast and east.

Hourly wind speed and direction data between January 2010 and December 2019 for Waipawa was downloaded from the online National Climate Database (also known as the NIWA Cliflo Database)³. Station information provided with the Cliflo data indicates that wind records from this station are expressed as a one-hour average. A windrose for Waipawa for that period of ten years is shown in Figure 8. Low wind speeds are dominantly from the northwest quadrant, following the course of the river along the path of least terrain elevation.

Windroses for the individual calendar years within that 10-year period are provided in Appendix 1. Each year shows a similar overall trend of prevailing wind directions, but with varying frequency of low wind speeds, particularly from directions where low wind speeds are uncommon. A breakdown of wind speed frequencies by year is shown in Table 1. A similar analysis of wind speeds was also prepared for only winds from the less frequent northeast to south sector (specifically 40 degrees to 180 degrees) and is provided in Table 2 – these

³ <u>https://cliflo.niwa.co.nz/</u>.



wind directions may also represent winds with the potential to carry odours from the composting operation towards sensitive receptors to the southwest on Mt Herbert Road, or towards the Tukituki River Esplanade.

Two calendar years were selected for the meteorological simulations described in Section 4.3; an "average" year, and a "worst case" year. The "average" year selected was 2014, based on the windrose for 2014 compared to the 10-year windrose, the speed distributions shown in Table 1 and Table 2, and the climate summary for 2014 from the NIWA website⁴.

For the "worst case" year, the 2017 was selected as that year showed the largest proportions of low wind speeds, as well as the greatest proportion of those light winds coming from the northeast to south sector (as per Table 1 and Table 2). The climate summary for 2017 from the NIWA website⁵ describes 2017 as a year with La Niña conditions (typically bringing more northeasterly winds and higher than normal temperatures⁶).

Wind			Perce	ent of hour	ly-average	records les	s than win	d speed in	year		
speed, m/s	2010- 2019	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
0	1.8	0.1	0.4	1.9	2.0	2.4	0.2	1.7	3.7	3.2	1.8
<0.5	14.6	3.0	11.0	18.1	14.4	14.1	10.0	16.3	21.1	21.6	16.9
<1	33.5	15.6	31.3	37.7	37.3	35.0	34.3	35.2	37.9	37.3	34.0
<2	60.2	60.8	59.5	62.9	63.5	60.5	60.2	60.1	60.8	58.2	55.7
<3	78.6	82.5	78.9	80.6	81.6	78.4	80.6	78.9	76.5	74.4	73.7
<5	95.1	95.8	95.9	95.5	96.6	95.1	97.3	95.3	94.3	93.1	92.1
<8	99.4	99.3	99.5	99.4	99.5	99.1	99.9	99.0	99.4	99.6	99.7
>=8	0.6	0.7	0.5	0.6	0.5	0.9	0.1	1.0	0.6	0.4	0.3

Table 1: Breakdown of wind speed frequency by year, Waipawa 2010-2019; all directions.

Table 2: Breakdown of wind speed frequency by year, Waipawa 2010-2019; only winds coming from 40-180 degrees.

Wind	Percent of hourly-average records less than wind speed in year										
speed, m/s	2010- 2019	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<0.5	12.7	2.3	8.9	12.3	11.3	12.2	11.2	17.3	21.6	17.1	15.6
<1	32.5	14.6	29.6	32.2	31.9	33.8	37.0	37.7	42.4	33.3	35.3
<2	64.3	63.4	61.9	63.2	61.2	66.0	67.4	68.7	72.2	56.8	64.5
<3	85.7	89.6	82.2	87.1	84.2	86.8	88.8	89.9	89.7	76.3	85.1
<5	98.1	99.3	97.2	98.3	98.4	98.1	99.4	99.2	99.4	94.0	98.0
<8	99.9	100.0	99.8	100.0	100.0	99.7	100.0	100.0	99.9	99.7	99.9
>=8	0.1	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.1	0.3	0.1

⁴ https://niwa.co.nz/climate/summaries/annual/annual-climate-summary-2014

⁵ https://niwa.co.nz/climate/summaries/annual-climate-summary-2017

⁶ https://niwa.co.nz/climate/information-and-resources/elnino/elnino-impacts-on-newzealand





Figure 8: Windrose showing hourly-average wind observations from Waipawa meteorological data station, January 2010 to December 2019. Refer Appendix 1 for windroses for individual years.

4.3 Regional Windfield Simulation

To provide additional information about wind fields in the vicinity of the TMM site, particularly during low wind speeds, the CALMET meteorological model was used to simulate wind fields in the region. As described in the previous section, the years 2014 and 2017 were selected for processing. Outputs from the CALMET meteorological model for these two years were also used as an input to the CALPUFF atmospheric dispersion model to study dispersion patterns for potential odour emissions from the TMM site (refer Section 6).

Guidance on running CALMET and CALPUFF for modelling applications in New South Wales was prepared for the NSW EPA by TRC Environmental Corporation (OEH, 2011). Since its publication, the guidance in OEH (2011) has become widely adopted by consultants in Australia and New Zealand as a best practice guideline for CALMET and CALPUFF modelling. The guidance in that document was followed in the preparation of CALMET and CALPUFF models for this report.

The CALMET model was run in "NO-OBS" mode, following the guidelines in OEH (2011). In this mode, gridded numerical model output from the prognostic meteorological model TAPM is used as the input meteorological data in CALMET. This option was necessary due to the lack of local cloud cover observations, which is a required input for running CALMET with observations as a direct input. Waipawa observation records of wind speed and direction were therefore used as inputs to the TAPM model.

Te Mata Mushrooms Waipukurau Site Odour Assessment



The parameters used for the TAPM model setup were as follows.

- Centre co-ordinate 39° 58.0'S, 176° 36.5'E
- Four nested grids, grid spacings 24000m, 8000m, 2400m, 700m.
- Number of grid nodes: 31 in both N-S and E-W directions, and 30 vertical levels.
- Waipawa observations included, with a radius of influence of 20km.
- Default advanced settings.

The CALMET model setup was as follows:

- Model executable version CALMET 6.5.0 (released June 22, 2015)
- Graphical user interface for model setup Lakes Environmental CALPUFF View
- January December 2014 and 2017 time periods; one-hour time step
- UTM Map Projection, zone 60S
- Grid spacing 0.125km with 112 grid cells in x-direction and 112 grid cells in y-direction, centred on the TMM Site (14km x 14km grid extent).
- 10 vertical levels used, with cell face heights from 20m to 4000m
- Geophysical data
 - 3-second (approximately 90m interval) data loaded from global SRTM database module in CALPUFF View.
 - Land use data generated using "Land Use Creator" tool in CALPUFF View, referenced to aerial photograph of modelling domain from Google Earth.
- **TAPM** output used as initial guess field for CALMET grid, converted using "CALTAPM" processor.
- Radius of influence of terrain features (TERRAD) 2.0km.

An input file for CALMET summarising key input and model settings is provided in Appendix 2.

Windroses were extracted for both years from the CALMET model at the location of the TMM site. These windroses are shown in Appendix 3 and show the wind patterns that would be experienced at the location shown in the figure in Appendix 3.

Due to the hills immediately to the east and southeast of the site, the extracted windrose varies quite significantly with the location from which the data is extracted from the model. For example, at the base of the hill at the alternative location shown on the figure in Appendix 3, the second pair of windroses provided in Appendix 3 shows that winds are highly dominated by northeast and southwest flows at that location, following the contour of the hill. This is to be expected, and shows the influence of terrain on wind vectors simulated by CALMET.



4.4 TMM Site Wind Monitoring

Establishment of a wind monitoring station at the site was recommended by AirQP to commence gathering of an onsite local wind dataset, and this was implemented by TMM in September 2020.

The wind sensor at the monitoring station is located on a mast 10m above ground, and the mast is located consistent with the recommendations of "AS NZS 3580.14-2014 Methods for sampling and analysis of ambient air - Meteorological monitoring" so that wind measurements at the site are not influenced by nearby obstacles such as tall trees or buildings. The mast location is shown in Figure 9.

The collection of wind data will serve three main purposes:

- 1. Future verification of potential causes of complaints, if any complaints arise.
- 2. Assessment and verification of odour risk through measurement of frequency and direction of wind patterns with the greatest potential to cause complaints due to offensive odour.
- 3. Measurement of data required for development of site-specific meteorological data files suitable for atmospheric dispersion modelling, if required in the future.



Figure 9: Location of on-site meteorological monitoring site installed and operated by TMM.



5 Description of Odour Sources

The odour control strategy for the composting operation is as follows:

- Extraction of odour from Phase 1 bunkers and Phase 2 tunnels and treatment of extracted air in biofilter to remove odour before discharge to air.
- Best practice design of bunker air extraction to minimise fugitive emissions during emptying of bunkers. Restriction of hours of operation to avoid fugitive odour emissions during worst case meteorological conditions.
- Point source extraction of odour from above the bale break machine for odour treatment in the biofilter.
- Some residual odour emissions and minor odour sources discharging to air without odour treatment.

The potential sources of odour are:

- 1. Bale pre-wetting.
- 2. Chicken litter mixing and storage.
- 3. Bale breaking.
- 4. First and second turning of compost in Phase 1 bunkers by bunker-to-bunker transfer.
- 5. Removal of compost from Phase 1 bunkers and transfer to Phase 2 tunnels.
- 6. Residual odour from biofilter after odour treatment.
- 7. Goodie water storage pond.

A summary of the composting process and the odour controls applied is provided in Figure 10 at the end of this section. The ways in which odour is generated and discharged from each of these sources of odour are explained below.

1. Bale pre-wetting

Odour from bale pre-wetting is generated from presence of goodie water during dunking, bale draining, and supplementary irrigation if required. The magnitude of odour emissions is highly dependent on the quality of the goodie water. The proposed aeration of the goodie water pond will minimise the potential for odour emissions during the bale pre-wetting process, although some relatively minor odour emissions are likely.

2. Chicken litter mixing and storage

Chicken litter will be delivered to the concrete pad outside the Mixing Hall, mixed immediately with gypsum, and then stored in an enclosed bunker within the Mixing Hall. The best way to minimise odour emissions from chicken litter is to keep the litter dry in storage, which is enabled through this design approach.

3. Bale breaking

The breaking and mixing of pre-wetted bales releases some odour. Bale break will occur in the Mixing Hall which is mostly enclosed except for doorways for movement of front end loaders and openings for the conveyors to transport the mixed raw materials to the Phase 1 bunkers.



The Mixing Hall will be fitted with point source extraction from above the bale break machine and associated hopper, which will capture most of the odour emissions from the bale break process. However, as the doors to the Mixing Hall will be open during the bale break process, odour which is not captured by the point source extraction may escape outside the Mixing Hall as "fugitive" emissions.

Minimising the generation of odour and the degree of unpleasantness of that odour during the bale break process involves the following:

- 1. Keeping the chicken litter/gypsum mix dry during storage and only accepting chicken litter onto site which has been appropriately stored off-site (i.e. not anaerobic upon delivery).
- 2. Keeping the recycled water aerobic so that odorous by-products of anaerobic decomposition do not accumulate inside the bales.
- 3. Aerating the bales.

These measures are all proposed to be implemented at the site. In addition, operating hours for the bale breaking process will be limited to between 8am and 5pm to avoid potential fugitive odour emissions during stable atmospheric conditions when odour dispersion is typically poor.

Once the compost leaves the Mixing Hall on the conveyors, it is transported to the Phase 1 bunker and deposited into a hopper for automated filling at the bunker. The conveyors and hopper will not be covered and therefore there will be some evolution of odour from this source. During the filling process, the bunker air extraction system will operate at maximum capacity and will remove nearly all of the odour caused by the actual filling activity.

4. First and second turning of compost in Phase 1 bunkers by bunker-to-bunker transfer

During the bunker-to-bunker extraction process, the bunker air extraction system will operate at maximum capacity. However, some odour will still emitted during the process due to the movement of front-end loaders in and out of the bunker, and from the compost in the bucket on the front-end loader whilst the loader is moving from the bunker back to the Mixing Hall.

As during the bale break operation, the Mixing Hall will be mechanically ventilated via point source extraction hoods over the bale mixing line during the bunker-to-bunker transfer process. This extraction will remove most of the odour caused by the mixing process. However, is it likely that some of the odour from within the Mixing Hall will escape as fugitive emissions through the open doorways.

Potential hours of operation of this process are 8am to 6pm.

5. Removal of compost from Phase 1 bunkers and transfer to Phase 2 tunnels

There are likely to be some emissions of odour during the process of removing the finished Phase 1 compost from the bunkers by front-end loader and transferring it back to the Mixing Hall, with the same potential odour sources as described above for bunker-to-bunker transfers. However, at this stage the odour will be less offensive than earlier in the Phase 1 composting period, as the compost has completed the most active stage of biodegradation. Potential hours of operation of this process are 8am to 6pm.



6. Residual odour from Phase 1 bunkers after odour treatment

Air extracted from the bunkers holding Phase 1 compost will be passed through a biofilter custom-designed for the site by GTL Europe. GTL Europe has recommended the design air flow volumes for the biofilter for the 900 Tpw operation shown in Table 4. When all bunkers and tunnels are closed and there are no yard operations requiring any bunkers or tunnels to be open for unloading/filling, the design air flow rate is at the baseline rate of 96,000 m³/hr.

However, when any bunkers or tunnels are open higher air flow rates are required to contain odour emissions. The increased air flow rates during these times will increase the overall air flow delivered to the biofilter. The highest design ventilation demand occurs when two Phase 1 bunkers are open for bunker-to-bunker transfer (one bunker unloading, and one bunker filling). This rate of air flow is 216,000 m³/hr, and would only occur for the duration of this scenario (up to a few hours per week during working hours); once the bunkers/tunnels are closed and operations in the Mixing Hall are finished the ventilation would return to the baseline ventilation rates.

Table 3: Baseline ventilation demand for biofilter sizing (no bunkers/tunnels open) – 900 Tpw operation.

Operation being ventilated	Basis of air flow calculation	Number of bunkers/tunnels	Air flow required
Phase 1 bunker process air (bunkers filled and undisturbed)	4,000 m³/h per bunker	4	16,000 m³/h
Phase 2 process air extraction	20,000 m ³ /h per tunnel	4	80,000 m³/h
TOTAL			96,000 m³/h

Table 4: Summary of highest design ventilation demand for biofilter sizing – 900 Tpw operation.

Operation being ventilated	Basis of air flow calculation	Number of processes	Air flow required
Phase 1 bunker process air (bunkers filled and undisturbed)	4,000 m ³ /h per bunker	2	8,000 m³/h
Phase 1 exhaust bunker during emptying/filling	40,000 m³/h per bunker	2	80,000 m³/h
Mixing Hall point source extraction	48,000 m ³ /hr	1	48,000 m³/h
Phase 2 process air extraction	20,000 m ³ /h per tunnel	4	80,000 m³/h
TOTAL			216,000 m³/h

The biofilter design will be based on a loading rate of 50 m³/hr air per m³ biofilter for the highest design ventilation demand. The proposed biofilter media depth is 1.8 m, and the media itself will be bark as has been used successfully at TMM's existing Brookvale Road site.

For an air flow of 216,000 m³/hr, the required volume of biofilter media is 4,320 m² (= 216,000 \div 50). The corresponding surface area for a depth of 1.8 m is 2,400 m².



6. Goodie water storage pond

The design and operation of the goodie water storage pond was described earlier in Section 3.3. Odour emissions from this source are expected to minor, and no additional mitigation measures are proposed. Dissolved oxygen concentration in the goodie water storage pond will be continuously monitored and logged.

7. Residual odour from Phase 2

All filling and emptying operations for the Phase 2 tunnels will be carried out in an enclosed building with air extracted to the biofilter for treatment. Similarly, all process air extracted from the Phase 2 tunnels will also be extracted and treated in the biofilter. Therefore, no fugitive odour releases to the atmosphere without treatment are expected from this process.

There is no ventilation of odour from the Phase 3 tunnels as odour concentrations in the compost are very low.
Te Mata Mushrooms Waipukurau Site Odour Assessment





Figure 10: Summary of composting processes and odour control.



6 Odour Dispersion from TMM site

6.1 Approach and Set-Up

The behaviour of odour emissions at the TMM site once they are discharged from potential odour sources and dispersed with the wind was simulated with an atmospheric dispersion model, CALPUFF.

CALPUFF is an advanced "puff" dispersion model that can simulate dispersion in complex situations with very low wind speeds and non-uniform topography. In a "puff" model, pollutant releases are represented by a series of puffs of material which are transported by the winds across the modelling domain. CALPUFF is widely used in Australia and New Zealand in complex modelling situations where topography has a significant influence on dispersion patterns.

The meteorological simulation from CALMET, described in Section 4.3, was used as an input to the CALPUFF model.

Most of the potential odour sources at the proposed composting site at Mt Herbert Rd are "fugitive" sources, being odour emissions from spaces or processes that are very difficult to capture and quantify. Therefore, the dispersion modelling has not attempted to quantify these emission rates. Instead, the modelling has examined the dispersion patterns from these sources given the emission types and times of day when the emissions occur, and therefore considered the risk and potential frequency of offensive odour carrying beyond the site to both existing residences and to the Tukituki River Esplanade.

The CALPUFF model was run with the following settings:

- Model executable version CALPUFF 7.2.1
- Graphical user interface for model setup Lakes Environmental CALPUFF View
- Time period January December (both 2014 and 2017); one-hour time step
- Calm condition wind speed threshold = 0.2 m/s
- Minimum sigma-v: 0.2 m/s for all land stability classes
- Grid spacing: 125m
- Terrain adjustments included

A sample CALPUFF input file is provided in Appendix 3.



6.2 Emission Scenarios Tested in the Model

Several different emission scenarios were tested in the dispersion model:

- 1. Normal odour emissions, no site processing activities (i.e. no bale break, bunker-to-bunker transfers, or Phase 1 to Phase 2 transfers). Sources included were:
 - a. Emission of odour from biofilter 24 hours per day, process air only (i.e. air flow 96,000 m³/h).
 - b. Emission of odour from goodie water pond, 500 m², at a nominal emission rate typical of an aerated bioreactor used for municipal wastewater treatment $0.5 \text{ OU.m}^3/\text{m}^2/\text{s.}$
- 2. As per Scenario (1) but with biofilter operating at maximum output (216,000 m³/h) during the hours of 8am to 6pm, 365 days per year.
- 3. Fugitive emissions from processing activities (such as bale breaking, or use of the Mixing Hall for bunker-to-bunker transfers). (No biofilter or pond emissions included in this scenario).
- 4. Cumulative worst case emissions combining Scenarios 2 and 3 and assuming these activities occur 365 days per year.

For Scenarios 1 and 2, the odour concentration in the air discharged from the biofilter under baseline ventilation rates was assumed to be 500 OU which is a common performance criteria for biofilters.

For Scenario 3, the fugitive odour emissions were assumed to be equal to 10,000 OU.m³/s. This estimate is a nominal "best guess" by AirQP and is considered to be an order-of-magnitude approximation – with the proposed odour extraction from the open bunkers and Mixing Hall it is considered that the likely fugitive emission rate will be more than 1000 OU.m³/s, but certainly well less than 100,000 OU.m³/s. It is not possible to accurately verify or calculate an OER for this type of fugitive odour source. The purpose of running this Scenario is to assess the potential frequency and intensity of odours occurring beyond the site boundary, and the uncertainty in the actual odour emission rate will be accounted for in the interpretation of model results.

The odour sources in the Scenarios are summarised in Table 5.



Table 5: Odour sources in Scenarios 1 - 5, 900 Tpw operation.

Source	Source dimensions	Odour emission rate basis	Odour emission rate
Scenario 1			
Biofilter, 24-hours per day	2,400 m ²	500 OU x 96,000 m³/h (26.7 m³/s)	13,333 OU.m³/s
Goodie water pond	500 m ²	0.5 OU.m ³ /m ² /s	250 OU.m ³ /s
Scenario 2			
Biofilter, hours 8am to 6pm	2,400 m ²	500 OU x 216,000 m³/h (60.0 m³/s)	30,000 OU.m³/s
Biofilter, hours 6pm to 8am	2,400 m ²	500 OU x 96,000 m³/h (26.7 m³/s)	13,333 OU.m³/s
Goodie water pond	500 m ²	0.5 OU.m ³ /m ² /s	250 OU.m ³ /s
Scenario 3			
Fugitive emissions from processing activities, hours of 8am to 6pm only	Volume source, 40m x 40m centred over processing yard	Hours of 8am to 6pm only	10,000 OU.m³/s
Scenario 4			
Biofilter, hours 8am to 6pm	2,400 m ²	500 OU x 216,000 m³/h (60.0 m³/s)	30,000 OU.m ³ /s
Biofilter, hours 6pm to 8pm	2,400 m ²	500 OU x 96,000 m³/h (26.7 m³/s)	13,333 OU.m³/s
Goodie water pond	500 m ²	0.5 OU.m ³ /m ² /s	250 OU.m ³ /s
Fugitive emissions from processing activities, hours of 8am to 6pm only	Volume source, 40m x 40m centred over processing yard		10,000 OU.m³/s

In the dispersion model, the biofilter emission was simulated using point sources rather than area sources. This allowed the initial dilution of the emissions to be accounted for, as well as the buoyancy of the emission during cold ambient conditions. The temperature of the discharge air was assumed to be a constant 20°C due to the heat from the composting process – in summer the discharge temperature may be warmer than this but the dispersion model is insensitive to the assumption of constant discharge temperature in such conditions. The source characterisation settings used in the model for the biofilter were:

- Four point sources, each of diameter equivalent to 25% of the biofilter surface area.
 - Each source cross-sectional area: 600 m2.
 - Each source diameter: 27.6 m.
- Vertical exit velocity calculated from air flow rate delivered to biofilter
 - Scenario 1: 0.011 m/s.
 - Scenario 2: 0.025 m/s.
- Height of release: 2 m
- Building downwash included:



- Biofilter structure 2 m high
- Bunker building 7.5 m high
- Tiered structure for the tunnels/Mixing Hall building of 9.0m along the ridgeline and 5.3m at either end.

6.3 Odour Modelling Guidelines

Odour modelling guidelines are tools against which dispersion model results are compared to determine whether significant adverse are predicted to occur. They usually contain two components; a concentration, and a percentage compliance (for example, 'odour concentration shall exceed X OU/m³ for less than Z% of the modelled hours"). X is the odour concentration predicted by the dispersion model. Z reflects the reliability of model results, and the probability of the model results giving an accurate representation, as well as a risk assessment approach for the very few highest odour concentrations that may occur infrequently.

The values of X and Z are set to represent the qualitative standard of 'no offensive or objectionable odour' and vary depending on the situation.

The Ministry for the Environment's Good Practice Guide for Assessing and Managing Odour in New Zealand (MfE, 2016) (herein referred to as the "MfE Odour Guide") gives general guidance for odour modelling guidelines, as summarised in Table 6.

Sensitivity of receiving location	Concentration	Percentile
High (worst case impacts during unstable to semi-unstable conditions)	1 OU	0.1% and 0.5%
High (worst case impacts during neutral to stable conditions)	2 OU	0.1% and 0.5%
Moderate (all conditions)	5 OU	0.1% and 0.5%
Low (all conditions)	5-10 OU	0.5%

Table 6: Recommended Odour Modelling Guideline Values (MfE, 2016).

Other background guidance to the MfE Odour Guide provides additional explanation of the selection of percentiles, stating that the 'baseline' percentile is 0.5%, although 0.1th percentile can also be used to assist in the evaluation of model results depending on the type of source and consistency of emission data.

In this case, the 0.5th percentile is appropriate, due to the lack of sensitive receptors (in particular dwellings) very close to the TMM site and the rural nature of surrounding land use. The sensitivity of the receiving environment is regarded as "moderate" because the nearby residences are located in rural areas, and also because most of the odours discharged from the site (particularly from the biofilter and the pond) will be similar to background rural odours once diluted and dispersed.

Therefore, the appropriate odour modelling guideline for sensitive receptors (in this case, residential dwellings) is 5 OU, 0.5th percentile.



For other potentially-sensitive land uses near the composting plant, such as the Wahi Tapu site, Tukituki Trail users, and Mountain Bike Park users, these locations are also considered to have "moderate" sensitivity with the 5 OU, 0.5th percentile guideline perhaps being applicable. However, for these land uses the interpretation of model results needs to take into account the low frequency and short duration of exposure to any odour that users at these locations would experience because of the nature of activities being carried out. The risk of odour being offensive or objectionable at these locations is much less than the risk of that same odour being offensive or objectionable at a residential dwelling.

The CALPUFF model calculates ground level odour concentrations (GLCs) at every receptor on the modelling domain for every hour of the meteorological data. For each year of meteorological data, the model stores 8760 concentration data points for each receptor. The model finally calculates the 99.5th percentile of the hourly concentration data at each receptor (i.e. the 43^{rd} highest GLC at each point), and this is the output concentration for that receptor. This is the same as the concentration that is exceeded for less than 0.5% of the time – i.e. as required by the odour modelling guideline. A similar logic can be applied to determine the 0.1th percentile result.

The graphed model results in this report show the 99.5th percentile highest GLCs predicted at each receptor from both the full 2014 and 2017 years of hourly meteorological data.



6.4 Model Results and Discussion

6.4.1 Scenario 1

The 99.5th percentile dispersion model results for Scenario 1 are shown in Figure 11. This shows the dispersion of normal site odour emissions when no compost processing activities are occurring – i.e. emissions from biofilter with all bunkers and tunnels full and closed, emissions from pond, and no activities in Mixing Hall. The figure shows both 2014 and 2017 model results. The GLCs are very similar between the two years, and this is found in all the model results presented in this report.

The highest GLC at a residence is 0.74 OU, occurring in the 2017 year.

Figure 6 shows the dispersion of odour from the pond alone, illustrating the relatively small contribution of this source to predicted off-site odour GLCs.



Figure 11: Model results for Scenario 1. Contours show 99.5th percentile, 1-hour average odour concentrations.





Figure 12: Model results for odour emissions from pond only. Contours show 99.5th percentile, 1-hour average odour concentrations.



6.4.2 Scenario 2

The 99.5th percentile dispersion model results for Scenario 2 are shown in Figure 13. This shows the dispersion of odour emissions from the biofilter and pond including the assumption that compost processing activities are occurring every day of the year between 8am and 6pm – i.e. emissions from biofilter at maximum design flow rate between 8am and 6pm. No fugitive emissions from the Mixing Hall or processing yard are included in this scenario.

The predicted GLCs are slightly higher than under Scenario 1, and the highest odour GLC at a residence is 0.77 OU, occurring in the 2017 year.



Figure 13: Model results for Scenario 2. Contours show 99.5th percentile, 1-hour average odour concentrations.



6.4.3 Scenario 3

The 99.5th percentile dispersion model results for Scenario 3 are shown in Figure 14. This shows the dispersion of odour emissions from a fugitive odour source representing residual odour emissions not captured by the bunker ventilation or Mixing Hall extraction systems during processing activities such as bale break, bunker-to-bunker transfers, or Phase 1 to Phase 2 transfers. It is assumed that these compost processing activities are occurring every day of the year between 8am and 6pm. The model does not include odour emissions from the biofilter or the pond.

The predicted GLCs in the vicinity of houses are low, with the highest odour GLC at a residence being 0.15 OU, occurring in the 2017 year. It is reiterated that the odour emission rate used with this source is at order-of-magnitude accuracy only. However, the low model results indicate that even if the odour emission rate was several times higher than the value of 10,000 OU.m³/s used in the model, the potential for this odour source to cause offensive or objectionable effects for at dwellings is very low.



Figure 14: Model results for Scenario 3. Contours show 99.5th percentile, 1-hour average odour concentrations.



6.4.4 Scenario 4

The 99.5th percentile dispersion model results for Scenario 4 are shown in Figure 15. This is the worst case scenario for total odour emissions, with the combined emissions from the biofilter running at the "Scenario 2" odour emission rate, plus the fugitive odour source for processing emissions (operating from 8am to 6pm), plus the pond.

Even under this worst case scenario, the predicted GLCs in the vicinity of houses are low, with the highest odour GLC at a residence being 0.78 OU, occurring in the 2017 year. Most of this odour GLC is contributed by the biofilter. The GLCs in the vicinity of houses are much lower than the odour modelling guideline of 5 OU.



Figure 15: Model results for Scenario 4. Contours show 99.5th percentile, 1-hour average odour concentrations.

Te Mata Mushrooms Waipukurau Site Odour Assessment



6.4.5 Results Analysis at Residential Locations

Assessment of the frequency of highest GLCs occurring at the closest residences and other nearby potentially-sensitive locations has been carried out. Figure 16 shows the location of 15 discrete receptors for which model results were extracted for further analysis. Receptors 1 to 6 are at dwellings, Receptor 7 is at the Wahi Tapu site, Receptors 8 to 11 are at locations along the Tukituki Trail on the south side of the river where people using the track for recreational purposes may encounter odour for brief periods, and Receptors 12 to 15 are in the Mountain Bike Park at the northwest end closest to the proposed composting site.



Figure 16: Location of discrete receptors used for detailed analysis of model results.

The cumulative percentiles of odour GLCs predicted at the residential receptors R1 to R6 for Scenario 4 are shown in Figure 17 for 2014 and Figure 18 for 2017. Note that the graphs use a logarithmic scale for the y-axis. The graphs show that the highest GLCs occur very infrequently. There is less than a factor of 2.5 between the 99.5th and 99.9th percentiles (in most cases, less than a factor of 2).

It is noted also that Scenario 4 assumes the worst case odour emission situation of compost-processing activities occurring in the Mixing Hall (with two open bunkers) 10 hours per day 365 days per year. Therefore, the GLCs shown in these cumulative percentile graphs significantly overstate the potential frequency of GLCs because of the following cumulative factors of conservatism:

- Compost processing activities occur constantly from 8am to 6pm in reality the processing will not require 10 hours in a day.
- Compost processing activities occur every day in reality these activities will occur 1-2 days per week, depending on site needs.





Figure 17: Cumulative percentiles of odour GLCs predicted for Scenario 4 at the residential receptors R1 to R6. 2014 meteorological dataset. Refer Figure 16 for receptor locations.





Figure 18: Cumulative percentiles of odour GLCs predicted for Scenario 4 at the residential receptors R1 to R6. 2017 meteorological dataset. Refer Figure 16 for receptor locations.



When these factors of conservatism are combined with the percentile frequency plots and the 99.5th percentile model plots in Figure 15, and compared to the odour modelling guideline of 5 OU, it is concluded that the potential for offensive or objectionable odour effects to occur at nearby dwellings due to composting operations at the site is less than minor.

6.4.6 Results Analysis at Wahi Tapu Site

The cumulative percentiles of odour GLCs for Scenarios 1 and 4 predicted at the receptor R7, representing the Wahi Tapu site, are shown in Figure 22 for both 2014 and 2017. The highest 99.5th percentile GLC occurring at the receptor is 1.3 OU for Scenario 1 (baseline scenario with no compost mixing/turning activities), and 2.3 OU for Scenario 4 (highest odour emission rates during compost mixing/turning). These concentrations are well below the suggested odour guideline of 5 OU. In addition, the graphs show that the highest GLCs occur very infrequently.

The model results show that for people visiting the Wahi Tapu site, the potential for offensive or objectionable effects to occur due to that odour is less than minor.





Figure 19: Cumulative percentiles of odour GLCs predicted for Scenario 4 at receptor R7. Both 2014 and 2017 meteorological datasets. Refer Figure 16 for receptor location.



6.4.7 Results Analysis at Tukituki Trail Receptors

The cumulative percentiles of odour GLCs predicted at the receptors R8 to R11 along the Tukituki Trail close to the compost processing area are shown in Figure 20 and Figure 21 for Scenario 1, and Figure 22 and Figure 23 for Scenario 4. Each pair of figures shows the 2014 and 2017 model results respectively.

The highest 99.5th percentile GLC occurs at R8; 5.4 OU for Scenario 1 and 10 OU for Scenario 4. At receptors R9-R11, the 99.5th percentile GLC are less than 2.1 OU for Scenario 1, and 4.5 OU for Scenario 4.

The graphs also show that the highest GLCs occur very infrequently.

These receptors along the Tukituki Trail are not sensitive receptors, as activities considered to be sensitive to odour are not carried out at these locations. However, the model results show that people using the track for walking, running, cycling etc may notice odour as they pass along the track downwind of the composting facility on a small number of hours per year – particularly where the odour concentration exceeds about 10 OU as shown in the cumulative percentile figures; i.e. in the vicinity of R8. However, this odour is not expected to be strong.

The figures for Scenario 4 significantly overstate the potential frequency of GLCs because of the same cumulative factors of conservatism listed in the Section 6.4.5. With the receptors along the Tukituki Trail, there are addition factors of conservatism due to the low probability that a person will be present downwind of the composting site at the same time as the worst case GLCs occur, and the duration of exposure will be very limited.

Overall, it is concluded that although users of the Tukituki Trail close to the composting site may at times be able to smell odour when close to the composting facility, this is likely to be infrequent and for short duration. Any odour is likely to be localised to the northeast end of the trail (in the vicinity of R8). Overall, considering the frequency, intensity, duration, offensiveness and location of the odours that may occur, the potential for offensive or objectionable effects to occur due to that odour is considered to be less than minor.





Figure 20: Cumulative percentiles of odour GLCs predicted for Scenario 1 at receptors R8 to R11. 2014 meteorological dataset. Refer Figure 16 for receptor locations.





Figure 21: Cumulative percentiles of odour GLCs predicted for Scenario 1 at receptors R8 to R11. 2017 meteorological dataset. Refer Figure 16 for receptor locations.





Figure 22: Cumulative percentiles of odour GLCs predicted for Scenario 4 at receptors R8 to R11. 2014 meteorological dataset. Refer Figure 16 for receptor locations.





Figure 23: Cumulative percentiles of odour GLCs predicted for Scenario 4 at receptors R8 to R11. 2017 meteorological dataset. Refer Figure 16 for receptor locations. Results Analysis at Mountain Bike Park



6.4.8 Results Analysis at Mountain Bike Park

The cumulative percentiles of odour GLCs predicted at the receptors R12 to R15 at the northwest corner of the Mountain Bike Park are shown in Figure 24 and Figure 25 for Scenario 1, and Figure 26 and Figure 27 for Scenario 4. Each pair of figures shows the 2014 and 2017 model results respectively. These four receptor locations were chosen because the 5 OU contour in Scenario 4 (see Figure 15) extends to these locations in the northwest corner of the Park.

The highest 99.5th percentile GLC occurs at R12; 6.7 OU for Scenario 1 and 9.7 OU for Scenario 4. At receptors R13-R15, the 99.5th percentile GLC are less than 2.1 OU for Scenario 1, and 3.7 OU for Scenario 4.

The graphs also show that the highest GLCs occur very infrequently.

As in the previous section, the model results show that people using the Mountain Bike Park may notice odour as they pass along the tracks in the northwest corner of the Park on a small number of hours per year – particularly where the odour concentration exceeds about 10 OU. However, as with the analysis at the Tukituki Trail, this odour is not expected to be strong.

As discussed in the previous sections, the figures for Scenario 4 significantly overstate the potential frequency of GLCs because the activities included in the odour emissions under Scenario 4 do not occur all day every day. With the receptors in the Mountain Bike Park, there are addition factors of conservatism due to the low probability that a person will be present downwind of the composting site at the same time as the worst case GLCs occur, and the duration of exposure will be very limited.

Overall, it is concluded that although users of the Mountain Bike Park may at times be able to smell odour when close to the composting facility, this is likely to be infrequent and for short duration. Any odour will be localised to the northwest end of the Park. Overall, considering the frequency, intensity, duration, offensiveness and location of the odours that may occur, the potential for offensive or objectionable effects to occur due to that odour is considered to be less than minor.





Figure 24: Cumulative percentiles of odour GLCs predicted for Scenario 1 at receptors R12 to R15. 2014 meteorological dataset. Refer Figure 16 for receptor locations.





Figure 25: Cumulative percentiles of odour GLCs predicted for Scenario 1 at receptors R12 to R15. 2017 meteorological dataset. Refer Figure 16 for receptor locations.





Figure 26: Cumulative percentiles of odour GLCs predicted for Scenario 4 at receptors R12 to R15. 2014 meteorological dataset. Refer Figure 16 for receptor locations.





Figure 27: Cumulative percentiles of odour GLCs predicted for Scenario 4 at receptors R12 to R15. 2017 meteorological dataset. Refer Figure 16 for receptor locations.



7 Conclusion

TMM proposes development of a compost making facility on Mt Herbert Road, 4km from Waipukurau. The compost will be used as a substrate for growing mushrooms. The site is ideally located in an isolated rural location, with the nearest residences over 1400m from the proposed location of the composting operation.

The composting operation will be designed as a modern "best practice" facility with automated machinery and extensive air extraction and treatment to help minimise odour emissions from the composting processes. Despite this design, there will be some residual or fugitive odour emissions from the composting facility, including some emissions that are present 24 hours per day (predominantly from the biofilter) and other emission sources that are present only for a few hours per week (during bale breaking, bunker-tobunker transfers for mixing Phase 1 compost, and removal of completed Phase 1 compost from the bunkers).

Meteorological modelling was conducted to simulate the movement of winds and atmospheric conditions around the site. This meteorological modelling was used to drive an atmospheric dispersion model for the odour emissions, to identify sensitive locations that could potentially be affected by offensive or objectionable odour effects. The modelling results were analysed using contour plots of the 99.5th percentile ground level concentrations, and also by examining cumulative percentile plots at individual receptor locations both at nearby dwellings and at other nearby land uses.

Overall, it was concluded that with the odour sources described in this report, considering the conservatism in the model inputs and the frequency, intensity, duration, offensiveness and location of the odours that may occur, the potential for offensive or objectionable effects to occur due to that odour is less than minor for all land uses around the site.



8 References

Ministry for the Environment (MfE), 2016. Good Practice Guide for Assessing and Managing Odour in New Zealand.

Office of Environment and Heritage (OEH) (2011), *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the 'Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia'*. Prepared for NSW Office of Environment and Heritage (now known as New South Wales Environment Protection Authority) by TRC Environmental Corporation. March 2011.

