BEFORE THE INDEPENDENT COMMISSIONER

UNDER the Resource Management Act 1991

IN THE MATTER of an application for air discharge consent by Airport Farm Trustee Limited to operate a free range chicken farm at 58 Airport Drive, New Plymouth (5262-3.0)

STATEMENT OF EVIDENCE OF DONOVAN VAN KEKEM ON BEHALF OF VARIOUS SUBMITTERS (THE MCDONALDS, THE HIBELLS, THE BROWNS & POPPAS PEPPERS 2009 LTD)

8 February 2022

CONNECT LEGAL TARANAKI
LAWYERS
Private Bag 2031
DX NX10021
NEW PLYMOUTH
Telephone No. 06 769 8080
Fax No. 06 757 9852
Lawyer acting: SWA Grieve
Email: scottg@connectlegal.co.nz

1. INTRODUCTION

1.1 My name is Donovan van Kekem. I am the managing director of NZ Air Limited an independent air quality consultancy. I have over 18 years' specialist air quality experience.

1.2 I was engaged in October 2021 by nine interested parties, with four being submitters, and the others being entitled to participate and support through this process as a consequence of the resolution of judicial review proceedings filed by that group, hereafter referred to as the Submitter Group. I have been engaged to prepare air quality evidence and provide my expert opinions in relation to the Submitter Group's submissions in opposition to the air discharge consent application made by Airport Farm Trustee Limited (the Applicant, **AFT**) for a proposed free range broiler farm at 58 Airport Drive, New Plymouth.

1.3 I am familiar with the area surrounding the existing farm, and conducted a site visit on 21 January 2022.

2. QUALIFICATIONS AND EXPERIENCE

2.1 I have the following qualifications:

(a) a Bachelor's Degree in Biochemistry from the University of Canterbury; and

(b) a Post Graduate Diploma in Forensic Science from the University of Auckland.

2.2 I am also a Certified Air Quality Professional of the Clean Air Society of Australia and New Zealand.

2.3 Some of my work experience which is relevant to this application is as follows:

(a) I have been involved in writing and presenting expert air quality evidence for a number of air discharge and land use consent applications for poultry farms containing nuisance odour and dust discharges, including:

(i) the proposed expansion of the Clarence Harvest Limited broiler farm on behalf of the applicants;

(ii) the proposed expansion of R S & K R Jones broiler farm on behalf of the applicants;

(iii) the Mainland Orini egg layer farm on behalf of the applicants; and

(iv) the proposed Lamond free range egg layer farm on behalf of submitters

(b) I have also acted as an independent processing officer for Selwyn District Council and Canterbury Regional Council assessing a

number of complex air discharge consent applications, a number of which went to hearing where I attended as an air quality expert on behalf of Council.

2.4 I have conducted air quality monitoring and/or assessments of effects at a number of chicken farms including:

(a) the replacement consent of the DB Chicks broiler farm on behalf of the applicants;

(b) the proposed Zealand Farms Levin free range egg layer farm on behalf of the applicants;

(c) the proposed Marsden Grange free range broiler farms on behalf of the applicants;

(d) the proposed Henergy Carters Line egg layer farm on behalf of the applicants; and

(e) the proposed Waipara Valley Farms egg layer farm conversion on behalf of the applicants; and

2.5 In preparing this statement of evidence I have considered the following documents:

(a) The Tonkin and Taylor (**T+T**) Odour Assessment Report, Airport Farm Trust (June 2021);

(b) submissions as relevant to my area of expertise;

(c) the statements of evidence for the Applicant prepared by Mr Whiting, Mr Pene, Ms Ryan, and Mr McDean; and

(d) the Section 42A report.

2.6 Although not necessary in respect of council hearings, I can confirm I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing this evidence and I agree to comply with it while giving oral evidence before the hearing committee. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

SCOPE OF EVIDENCE

2.7 The scope of my evidence is limited to potential air quality effects associated with the proposed activities at the Applicant’s site.

2.8 My evidence will address the following matters:

(a) A critical assessment of the T+T Odour Assessment Report for the application;

(b) The existing air quality environment;

(c) Potential for discharges to air;

(d) Assessment of potential off-site effects of the proposed free range farm and proposed mitigation measures;

(e) Comments on the Section 42A Report;

(f) Comments on the Applicant's expert evidence and associated additional technical assessments;

(g) Comments on the Ms Ryan's review evidence;

(h) Comments on the recommended Conditions of Consent; and

(i) Conclusions.

2.9 There are a number of aspects of the application, the s42A reporting officer report, and the Applicants evidence with which I agree. However, to remain concise, I have focused on the elements I do not agree with or consider have not been addressed fully. It is not my intention to be negative or critical of any individual associated with the application or their assessment but rather to discuss the facts pertinent to my area of expertise.

3. CRITICAL ASSESSMENT OF THE TECHNICAL AIR QUALITY ASSESSMENT PRODUCED BY TONKIN AND TAYLOR

3.1 I have read and reviewed the assessment and associated documents produced by T + T in support of the air discharge consent application. I have also read the independent review of the assessments by Ms Ryan of Pattle Delamore Partners Limited (**PDP**) on behalf of the Applicant.

3.2 The T+T assessment used a limited number assessment tools recommended in the Ministry for the Environment Good Practice Guide for Assessing and Managing Odour (2016) (**MfE GPG Odour**). Table A2.1 in the MfE GPG Odour provides tools for assessing odour discharges from an existing odour discharging operation. Table A2.2 provides tools for assessing modifications to an existing activity. The relevance of each assessment tool is similar between the two Tables. Table A2.1 is reproduced below.

Assessment tool	Priority based on effects: Chronic	Priority based on effects: Acute	Comments
Community consultation	High	High	Periodic meetings with community representatives from community associations. Look for anecdotal evidence of community feeling about odour effects.
Complaint records	High	High	Complaints that have been validated by an enforcement officer should be clearly identified. Complaints may also be substantiated (verified) based on wind direction or process records, or as simply registered but not confirmed.
Industry/council experience	High	High	Experiences of the industry or regional council with other similar discharges.
Odour annoyance survey	High	–	Urban and semi-urban areas. Assess against per cent annoyed criterion.
	–	Low	If the acute effects are infrequent, surveys may not reflect the impact of the effect on the surrounding environment.
Meteorology and terrain assessment	Moderate to high	Low	Use to assess the potential for downwind adverse effects as a result of poor dispersion around terrain features or in particular meteorological conditions.
Review emission control system(s)	Moderate	Low	Look for compliance with best practicable option (BPO) or industry codes of practice.
Odour diaries and weather monitoring	Moderate	–	Isolated areas with low population densities. Assess the frequency, duration, and strength of odour impact events and associated experiences over six months, or a longer time period if necessary, to encompass a specific season.
	–	Low	If the acute effects are infrequent, diaries may not reflect the impact of the effect on the surrounding environment.
Review of odour management plan and contingency procedures, risk assessment	Not applicable	High	What is the level of acceptable risk for uncontrolled odour discharges? Consider high-probability/low-impact events, and low probability/high-impact events. Is BPO being used?
Olfactometry and modelling of odour sources	Low	–	**Generally not recommended** unless assessing potential effect of proposed plant changes, confirming actual emission rate changes following new procedures and/or new plant commissioning etc, or distinguishing the activity in question from other similar activities in the region.
	–	Low	**Not recommended** as an assessment tool for occasional or periodic releases of odour.

3.3 The level of assessment required for any given consent application is generally proportional to the scale and risk factors associated with the discharge. In the case of the AFT farm odour discharges, the farm is a small to medium sized farm, however it is surrounded by a sensitive receiving environment with a large number of receptors within 300 m of the site (which is acknowledged by T+T).

3.4 As a result of the number and proximity of sensitive receptors to a meat bird farm of this size, in my expert opinion a high level of assessment would be appropriate in this case. There are a number of cases across New Zealand where poorly managed chicken farms have generated offensive and objectionable odour effects where there are very close neighbouring receptors, even in rural environments.

3.5 In most regions in New Zealand chicken farms are seen as a high risk odour discharging activity and are Discretionary activities in the relevant Regional or District Plans. As such I consider that most of the assessment tools ranked 'high priority' in Table A2.1 are applicable/appropriate and should have been employed.

3.6 There are two highly recommended tools (community consultation and an odour annoyance survey) which were not employed by T + T. There is also a 'moderate' recommended tool (odour diaries) which was not used. The T + T assessment relied heavily on a complaints analysis and Council compliance records to determine the current level of adverse air quality effects.

3.7 Ms Ryan states in here evidence (Paragraph 25) that whilst she initially agreed with the T + T reasons for not undertaking community engagement or odour annoyance surveys "*in hindsight community engagement would have been a useful addition to the assessment method*".

3.8 Whilst the absence of complaints from historical operations at an existing site can provide a relatively strong level of evidential basis that an existing operation is not resulting in adverse odour effects, complaints analysis can be flawed due to the following factors (listed in the Section 4.1 MfE GPG Odour)

(a) some people may be reluctant to complain, or simply not know who to complain to.

(b) sometimes complaints are vexatious.

(c) sometimes complaints are made by people who are sensitised or have vested interests. These factors can reduce the overall usefulness of the complaint records because they may skew the complaint frequency data compared to other evidence of adverse effects.

(d) people may stop complaining about a continuing problem if they feel no action is being taken.

(e) people's tolerance or intolerance to odours can vary considerably with individual perception.

(f) it can sometimes be difficult to identify the cause of specific odour problems, so that one activity may be wrongly blamed for the actions of another.

3.9 Mr Pene admits that the analysis of complaints data is not a conclusive indicator of the presence or absence of offensive or objectional odour/dust effects (Paragraph 40 of his evidence). Ms Ryan also states that there are limitations to complaint data analysis (Paragraph 24 in her evidence). Furthermore, in the Section 42a report (Paragraph 224) the recommending officers state "…*for the avoidance of doubt, it is noted by the Council officers that the absence of recorded complaints is not taken as proof of no off-site effect*".

4. NEIGHBOUR INTERVIEWS

4.1 I have undertaken an unbiased independent community survey of three of nearest neighbours (the McDonalds, the Browns and the Hibells) to better ascertain the current level of odour effects. I also questioned these neighbours as to why they had not made formal complaints to Council.

4.2 They all were of the understanding that the farm would close at the expiry of the existing consent (2026). The foundations for this belief are provided in their submissions and the submitter statements.

4.3 In general, all of these neighbours stated that they were 'not complaining' people. In addition, they stated that in their opinion there was no point making complaints as this would not result in the farm closing earlier and it was best to just put up with the smell until the farm closed.

4.4 Some consider that due to the delay in time it takes Council to respond to complaints (and prevalence of wind direction changes) that complaints may not be verified and therefore there is little point in making complaints.

4.5 In my opinion, in this instance, the absence of complaints has a low weighting as to the current/historic level of adverse odour/dust effects experienced by neighbours. I consider that the following provides a stronger evidential basis that there are adverse effects beyond the boundary of the site:

(a) All of the notified neighbours submitted in opposition to the application with most of them stating that there are substantive existing odour effects and raising concerns about future odour effects.

(b) Most of the neighbours have invested considerable money to engage legal representation and experts to oppose the application (which I expect they would not do unless they were very concerned about potential future adverse effects).

(c) The submissions have been supported by neighbours further afield who share the same concerns about odour effects.

(d) The information I have gathered through my interviews with the McDonalds, Browns, and Hibells.

(e) The information in the odour diaries which I have reviewed (discussed further below).

Browns

4.6 I interviewed Karen and Rod Brown on 21 January 2022. The Browns live approximately 185m (165m if you include a 20m curtilage area) south west of the nearest chicken shed. The Browns have lived at their current address for a long time and state that they have experienced intermittent offensive and objectionable odour effects from the farm for the entire time they have lived at 40 Airport Drive.

4.7 I questioned the Browns on the frequency, intensity, duration and offensiveness (based on the FIDOL factors) of the odour they observe on their property.

4.8 The Browns state that they smell the farm almost always during a north easterly wind. Whilst north easterly winds are relatively infrequent (~9% of the time based on the New Plymouth Airport weather data), the Browns are retired and often home. They also state that the prevalence of north easterly winds is seasonal, therefore they experience odour more frequently in winter/spring.

4.9 With regards to the intensity of the odour, they state that the odour is most frequently at a 2 (weak) to 3 (distinct) on the six point odour intensity scale used in the MfE GPG Odour (reproduced below). However, it can reach a 6 (extremely strong) on occasions.

Scale of Intensity	
6	Extremely Strong
5	Very strong
4	Strong
3	Distinct
2	Weak
1	Very weak
0	No odour

4.10 The Browns state that the duration of observable odour can be anywhere from 1-2 hours to ¾ of a day. Generally, it is dependent on the length of time the north easterly wind is blowing.

4.11 The Browns described the odour character as like effluent or sewerage and highly nauseating. They consider the odour to be highly intrusive and offensive.

4.12 More information on the Brown's experiences is included in their statements.

McDonalds

4.13 I interviewed Glenis McDonald on 21 January 2022 and Kevin McDonald on 26 January 2022.

4.14 The McDonalds residence is approximately 55m from the nearest shed (however if a 20m curtilage is applied it would be 35m from the nearest shed). Kevin also operates a home business (8am – 6pm) in and office/workshop located approximately 40m from the nearest shed.

4.15 These two receptor locations are downwind from the sheds during winds from the east – southwest.

4.16 During my interview with Glenis (which was on a separate date to my interview with Kevin as he was not present when I visited the McDonald residence), she stated that they experience odour frequently. She stated that it was very apparent to them where the birds were in the growing cycle

with more intense odour occurring in the last two weeks of the cycle. Glenis stated that she not only observed odour at their residence during south – southwest winds but also during calm conditions where air would drift towards their property.

4.17 With regards to the intensity of the odour, Glenis stated that when she detects the odour in the first 21 days of placement, the intensity is usually between 1 (very weak) to 3 (distinct), however in the last 21 days of the cycle the odour is usually between a 3 (distinct) and 6 (extremely strong).

4.18 Glenis stated that the duration of observable odour is very dependent on the wind direction and windspeed. During calm conditions the odour can be constant. Glenis recalls an event during one of the lockdown periods where odour was present for almost a whole week. Other occasions the duration can be quite short (minutes/hours) as the wind direction will change.

4.19 With regards to the offensiveness, Glenis states that the character of the odour is difficult to describe, but early in the bird cycle it is like 'fresh manure/compost' and later in the cycle it is 'putrid, foul, decayed, ammonia damp/moist' like smell.

4.20 Glenis considers that the odour in the first half of the cycle has a hedonic tone of -1 (mildly unpleasant) to -2 (unpleasant) on the -4 to +4 hedonic scale (below). In the last half of the bird cycle the hedonic tone is between -3 (very unpleasant) and -4 (extremely unpleasant).

Hedonic Tone Scale	
+4	Extremely Pleasant
+3	Very Pleasant
+2	Pleasant
+1	Mildly Pleasant
0	Neutral
-1	Mildly Unpleasant
-2	Unpleasant
-3	Very Unpleasant
-4	Extremely Unpleasant
+4	Extremely Pleasant

4.21 When I interviewed Kevin, he spoke of his observations at his workplace (building adjacent to Airport Drive near the entrance to the McDonald property).

4.22 Kevin stated that he was not as sensitive to the odour as his wife Glenis, but still found the odour to be offensive and objectionable at times. He also

noted that historically dust used to be an issue with dust coming through the hedge between their property and the farm. However, the dust is no longer an issue after recent improvements to dust control.

4.23 Kevin stated that he often observes the odour whilst walking between his workplace and the house. At times he will hold his breath as he walks along the driveway so as not to breath in the odour.

4.24 With regards to the frequency which he experiences odour, he also stated that it is very dependent on the wind direction. He said that at times odour was observable at the house but not at his office (and vice versa). However, in general if there are chickens in the sheds and the wind is blowing towards them he can smell the odour. Given the number of different wind directions that their property is downwind from the farm (and the fact that they smell the odour during still conditions), this is quite frequent.

4.25 Sometimes he can smell the odour every day for a period of 5-6 days and others he can go for 2-3 weeks without smelling the farm.

4.26 With regards to intensity, Kevin considers that within the first two weeks of bird placement the odour is a mild litter/feed like smell. During these early weeks and when there are stronger winds the odour intensity is not more than a 3 (distinct). But in the latter weeks of the cycle and when there is slow air movement odour intensity can be up to a 4/5 (strong/very strong). 2-3 times a year he would rate the odour at a 6 (extremely strong) and this is generally observed as he is walking between the office and the house.

4.27 Kevin also stated that the odour is more often observable at the house rather than at his workplace, as the wind tends to blow that direction more frequently.

4.28 He has had some clients who have visited his business complain of the smell. He stated that he uses air freshener to improve the odour in his workplace. In hot humid conditions he says that they cant open windows in his workplace or the house.

4.29 In terms of the duration, it is highly dependent on the airflow. Can be from less than 1 hour to 2-3 days.

4.30 He considers that the odour is not offensive in the first two weeks of the cycle, but in the latter weeks of the cycle he considers that odour to be a -2 (unpleasant) to -3 (very unpleasant) on the hedonic tone scale.

4.31 Glenis has provided further information on the McDonalds odour and dust experiences in her statement.

Hibells

4.32 I interviewed Neil Hibell on 26 January 2022. The Hibells live approximately 170m west of the nearest shed (150m if you include a 20m curtilage).

4.33 Neil stated that they only smell the odour during northerly or north easterly winds. As the dominant winds are from the west, they don't smell it that frequently. These northerly/north easterly wind conditions occur more frequently in winter and spring. On average they smell the odour 2-3 times a month.

4.34 With regard to the intensity of the odour, sometimes it is a 3 (distinct) others it can be up to a 5 (very strong). Lloma Hibell is more often home and therefore smells the odour more frequently. Any odour that they detect with an intensity of under a 3 (distinct) they are not worried about as they accept that they live in a rural area.

4.35 In terms of duration, the odour is generally observable from a couple of hours up to 5-6 hours.

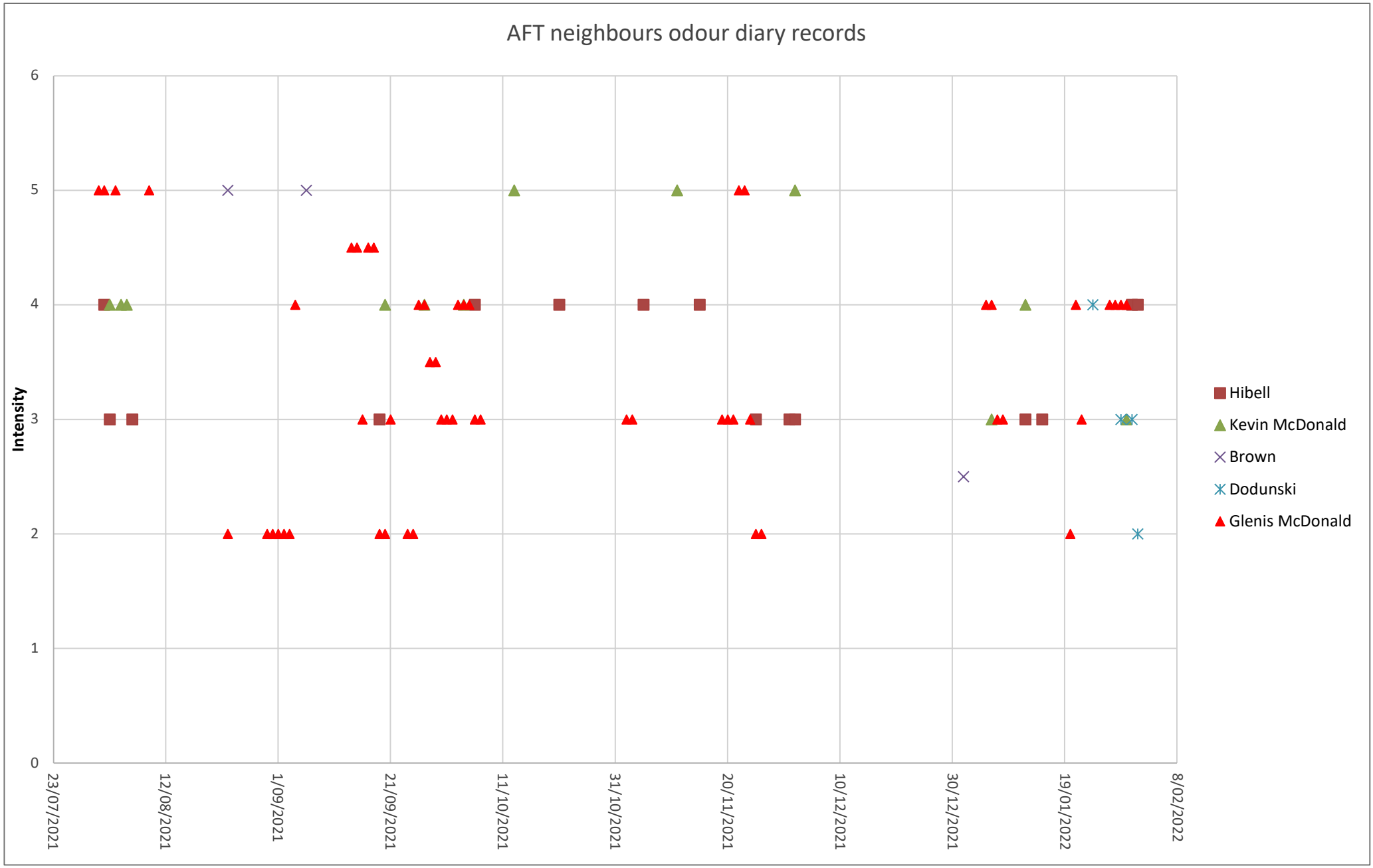
4.36 Neil considers that the character of the odour is like manure and is similar to the smell from pigs. He considers that the offensiveness is from a -2 (unpleasant) to a -3 (very unpleasant).

4.37 More information with regards to the Hibells experiences (including Lloma's experiences) is included in their submitter statement.

5. ODOUR DIARIES

5.1 I provided the submitters I represent with odour diary forms. These have been filled in by the Browns, Hibells, McDonalds and Dodunski's. I have attached these forms as **Appendix A**. Glenis McDonald and Lloma Hibell have records of historic odour events in their personal diaries which they have transposed into the odour diary forms I provided.

5.2 In **Figure 1** below I have graphed the data for the recorded observations between July 2021 and early February 2022.


AFT neighbours odour diary records
Intensity
0
1
2
3
4
5
6
23/07/2021
12/08/2021
1/09/2021
21/09/2021
11/10/2021
31/10/2021
20/11/2021
10/12/2021
30/12/2021
19/01/2022
8/02/2022
Hibell
Kevin McDonald
Brown
Dodunski
Glenis McDonald

5.3 It is clear to see that odour is observed off-site relatively frequently by multiple neighbours. The recorded odour intensity ranges from a 2 (weak) to a 5 (very strong). Further information regarding the observed odour by each neighbour is documented in the odour diaries (**Appendix A**).

5.4 It is also clear to see that there is a gap in the odour observed off-site between early Dec 2021 and early Jan 2022. It is my understanding that over this period the sheds were empty.

6. FIELD ODOUR OBSERVATIONS

6.1 On the date that I visited the site surrounds (21 Jan 2022) it was a warm sunny day with a strong blustery west-northwest breeze. I undertook 10 minute downwind (of the AFT farm) odour field observations in accordance with the guidance in Appendix 3 of the MfE GPG Odour.

6.2 I surveyed the area downwind of the farm, I detected odour out to approximately 80 m downwind of the sheds in the McDonald paddocks. At this furthest extent of the plume, I observed intermittent weak – distinct 'mealy litter' like odour 23% of the time. On two 10 second periods I observed a weak 'sour, acrid, vinegar' like odour. At this location I rated the odour is -1 (mildly unpleasant) on the hedonic tone scale.

6.3 I undertook another 10 minute observation round at approximately 30m downwind of a shed sidewall ventilation fan. At this distance I detected a 'mealy, sour, manure' like odour for 75% of the 10 minute observation period. For 13% of the time this odour was at an intensity of 4 (strong). 37% of the time it was 3 (distinct) and for the remainder of the time odour was observed it was 2 (weak).

6.4 The McDonalds estimated that the bird placement was approximately ½ way through the cycle on the date of my observations.

6.5 I note that the odour plume extended beyond the distance that the McDonald dwelling is from the sheds. I expect that if the wind had been blowing towards the McDonald dwelling on the date of my observations that similar odour would have been detectable at their dwelling. In my opinion, if odour of this intensity, character and nature was to be experienced on a frequent basis at my dwelling, I would consider it offensive and objectionable.

6.6 I note that the other air quality experts and Taranaki Regional Council (**TRC**) field odour observations generally did not detect odour at the boundary of the site (which is in most instances 10 – 30m from the sheds). However, I note that on nearly all occasions that these parties made observations, that the observers did not leave the site to see if any odour was observable off-site. At times due to thermal buoyancy of odour emissions an odour plume can rise above ground level before settling some distance from the source.

6.7 I do however note that Ms Dwyer of T+T observed intermittent odour consistent with the chicken farm, that she rated as -2 (unpleasant), at a

distance of 320 m downwind during her observations on 21 and 22 Sept 2021.

6.8 Furthermore, on one of the rare occasions that a compliance officer made odour observations beyond the site boundary (in the McDonald orchard), at approximately 110m downwind of the sheds very weak to distinct 'poultry type' odour was detected (paragraph 162 of the Section 42a Report).

6.9 Whilst the TRC investigations were extensive and undertaken over a range of farm operating conditions, I consider that it would have been helpful for more off-site field observations to have been made.

6.10 Notwithstanding this, there appears to be a disparity between the neighbouring resident's observations of off-site odour and the investigations made by TRC and the observations presented by the other experts.

7. SUMMARY OF EXISTING EFFECTS

7.1 Based on the submitter evidence I have reviewed it appears that there have been, and continue to be, observable offensive and objectionable odour beyond the boundary of the site. In the most part, this appears to be at odds with the observations of TRC and the other experts.

7.2 The site is surrounded by neighbouring residents from southwest – north east. Given the proximity of the McDonald residence and workplace, and the horizontal discharges of the shed ventilation (and wind tunnelling effect as identified by Ms Ryan), during still/calm conditions odour is likely to be observable on the McDonald property. Therefore, in a relatively large proportion of wind conditions (winds towards a receptor and still calm conditions) there are sensitive receptors downwind from the farm.

7.3 This appears to be represented in the limited odour diary information that I have been able to collect. It is also represented in the submission statements.

7.4 Given the fact that all of the submitters within 300 m of the site have identified that they have experienced offensive or objectionable odour to varying degrees, I consider that it is very likely that there is an existing adverse odour effect associated with the existing/historic operations of the AFT farm.

7.5 The neighbours observations are almost unilateral and given the number of submitters, consistency in the description of odour effects, and accuracy in the odour diaries (noting the gap in observations when the sheds are empty), I consider it is unlikely that there is some form of bias in the neighbour's description of the existing environment.

7.6 Furthermore, in my experience it is unusual that a broiler farm is situated within 55m of a dwelling. I am not surprised by the descriptions of the odour effects experienced by the McDonalds. Their residence and workplace are very close to the sheds and associated wall mounted

ventilation fans. As there is established vegetation which will reduce the localised windspeeds[1] and as such reduce the potential nearfield dispersion of the odour, I consider that it is likely that adverse odour effects are occurring at the McDonalds residence and workplace.

8. POTENTIAL FOR ADVERSE ODOUR/DUST EFFECTS FROM THE PROPOSED FREE RANGE FARM

8.1 I agree with the other experts and Council officers that the proposed shed design improvements are consistent with industry best practice and will reduce odour discharges from the sheds.

8.2 I also agree that the reduction in bird stocking rates will reduce the odour mass emission rates from the sheds. Although, it is unfortunate that Figure 2 in Mr Pene's evidence is absent so I cannot review the extent of the odour emission rate reduction that he has used to support his evidence. I also note that it is missing from his Appendix C, which is unhelpful as it is the basis for his comparative air dispersion modelling assessment.

8.3 I also agree that the use of roof vents will reduce peak off-site odour concentrations beyond the boundary of the site, especially at nearfield receptors, due to better dispersion of the odours emitted from the sheds.

8.4 However, my concerns are that the reduction in peak off-site odour concentrations will not be substantive enough to eliminate potential adverse off-site odour effects.

8.5 I would be interested to see what the peak predicted off-site odour concentrations were in the air dispersion modelling assessment undertaken by T+T. Without having the odour emission rates (and other modelling inputs) which were used in the modelling assessment I am unable to replicate the modelling study to ascertain the peak off-site concentrations under the three scenarios modelled.

8.6 It is common in other assessments of effects from chicken farms in New Zealand to use air dispersion modelling to determine the peak off-site 1 hour average 99.5%ile odour concentrations (expressed as odour units per cubic metre of air (**OU**)). These peak concentrations are often compared against a 5 OU criteria for rural dwelling receptors.

8.7 Whilst I am aware there has been a lot of contention with regards to the correct modelling methodology for predicting these peak off-site concentrations, I note that the T+T modelling assessment has used a generally accepted modelling approach for a broiler farm of this configuration.

8.8 A 50% reduction in off-site odour concentrations does not necessarily equate to the removal of potential offensive or objectionable odour effects. For example, if the peak 1 hour average 99.5%ile odour concentration at the McDonald residence under the existing farm modelling scenario was

[1] I note that Mr Pene also considers that the shelter belts and other mature vegetation will alter wind flows and reduce windspeeds (para 27 of his evidence).

50 OU, then a 50% reduction would make the peak concentrations 25 OU, which would still be above the accepted criteria.

8.9 I accept that the premise for the T+T conclusions, that it is unlikely that adverse odour effects will occur beyond the boundary of the site from the proposed farm, is based on the assumption that there is no or little effect occurring at present. As discussed above, based on the evidence I have gathered this may not/is unlikely to be the case.

8.10 As such, the question is whether or not the reduction in odour emissions and increased dispersion from the new farm operation will be sufficient to eliminate adverse effects beyond the boundary of the site.

8.11 In my opinion, the applicant has not supplied sufficient evidence to determine whether or not this will be the case.

8.12 I note that in the applicants evidence, that a number of the proposed farm improvements have been implemented already. However, the odour diary records and submitter statements are indicating that there are still adverse off-site odour effects, despite the upgrades to date.

8.13 Another matter I wish to address is the potential for emissions from the proposed ranging areas. Both Mr Pene and Ms Ryan correctly state that there is a limited amount of manure that is deposited on the ranging areas and therefore there is a low potential for odour discharges to occur from these ranging areas. This is correct with the exception of when groundcover is not maintained and manure is deposited into mud. Mr Pene quoted a RIRDC research paper by Brown, G and Gallagher, E (paragraph 77 of Mr Pene's evidence). Within this study there were elevated odour discharge rates from the areas around the pop holes which were in the shade, got wet, and no grass cover was maintained. These high traffic areas also had higher manure deposition.

8.14 If permanent ground cover is not maintained in a ranging area, then there is reduced uptake of the manure into the ecosystem. It is good practice to maintain at least 70% ground coverage in the ranging area[2]. In addition, at other farms I have been to, coarse gravel is used around the pop holes to limit the tracking of mud into the sheds.

8.15 Chickens have a natural tendency to scratch the surface of ranging areas when foraging and dust bathing. These activities reduce ground cover which increases the risk of dust and odour discharges from the ranging area. Permanent ground cover will limit odour and dust discharges from the ranging area.

8.16 For this reason, I recommend a Consent condition that requires a minimum of 70% natural ground cover in the ranging area. I also recommend that an air quality management plan (**AQMP**) Consent Condition be added so that the farm operators have a framework for implementing best practice air discharge controls (such as using fresh

[2] As recommended in the SPCA Certified Standards for Free Range Meat Chickens 2021, Page 15

washed gravel around pop holes and resting/rotating ranging areas to allow groundcover to recover). I comment more on Conditions later.

8.17 Another factor which I believe has not been fully addressed is the potential effects of dust discharges from the stacks. Historically there have been reported adverse effects from dust discharges from the horizontal fans. It is clear from Photo 9 in the Section 42a Report (reproduced below) that there is dust discharged out of the current wall fans, a white strip of dust is noticeable on the site access road and there is a coating of dust on the shade cloth fences adjacent to each fan.

8.18 Any dust in the ventilated air will be discharged out of the roof stacks. With the elevated discharges the dust will travel further from the sheds and potentially deposit on adjacent properties. I note that the farm is “trialling” water misting on these fans. I consider that the efficiency of these misting systems and ability to control dust emissions from the fans should be presented and the residual potential for off-site effects assessed.

9. CONSENT CONDITIONS

9.1 There is a set of proposed draft Consent Conditions included in the Section 42a Report. There is also comment on the Conditions in Mr Pene’s evidence.

9.2 I agree with Mr Pene’s suggestion that there should be an averaging period on the proposed suspended dust concentration limits in draft Condition 10.

9.3 Further to the above, I consider that there should be some clarity about how/when the requirement for monitoring these levels shall be

implemented. For example, the additional wording in the proposed Condition could include wording to the following effect. Should TRC observe dust beyond the boundary of the site, it can/will require the Consent holder to commission dust monitoring/at or beyond the boundary in accordance with the appropriate respective AS/NZ standards for each dust monitoring parameter, for a period of no less than 6 months or 6 bird cycles. The monitoring locations are to be agreed with TRC's Chief Executive prior to undertaking the monitoring program. A monthly report of the monitoring results shall be provided to Council and the neighbourhood liaison group. Should there be a breach of the dust limits, the Consent holder may be served with an infringement or abatement notice and be required to rectify the dust discharges and extend the monitoring program to ensure future compliance.

9.4 I also consider that the draft Consent Conditions should include a requirement for the Consent Holder to prepare and submit an Air Quality Management Plan for the site. I can provide some standard wording which is in other poultry farm consents that I have been involved in which can be used in this instance. The purpose for the AQMP would be to provide a framework/procedures for site operators to ensure compliance with the Consent Conditions and best practicable options as required by draft Condition 4. I also consider that this AQMP should be submitted to TRC and that there should be a minimum review period (i.e. annually, or every two years).

9.5 As mentioned earlier, I consider that there should be a requirement for a minimum ground coverage in the ranging area to reduce the potential for dust discharge beyond the site boundary (generated by the birds foraging and dust bathing natural behaviour) and odour discharges.

9.6 In draft Condition 6 v) I consider that the word "calibration" should be added so that in shed sensors (and other equipment) are calibrated in accordance with the manufacturer's recommendations and remain accurate.

9.7 In draft Condition 7 I consider that the proposed in shed sensors for ventilation control (particularly carbon dioxide and ammonia sensors) are listed. Appropriate limits for maximum in shed concentrations of these gases can be stipulated in the AQMP.

9.8 In draft Condition 8 I think that there should be clarity regarding the 100m setback from the dwelling at 62 Airport drive, does the setback include the curtilage area. The setback distance should be stipulated based on the current house footprint, as a house extension in the future may make the farm technically non-compliant.

9.9 Condition 9 should have wording that states that offensive or objectionable odour determination should be 'in the opinion of a TRC compliance officer as determined in accordance with Council's standard field odour methodology'. This avoids ambiguity.

9.10 Consent Condition 13, replace the word "him" with "it", there is no guarantee that any future owner of the farm will be a male.

9.11 Also, I consider that the Consent Holder should be required to supply details of the complaint to TRC as soon as possible, but no less than within 24 hours. I also consider that there should be details of what parameters should be recorded by the Consent Holder when receiving a complaint. For example, the date and time, complainant details/location of alleged odour/dust, wind direction and speed, on-site processes at the time of the complaint, results of any investigation undertaken to determine the source of dust or odour, etc. Once again, I have standard wording for such a Condition.

9.12 Based on the wording in draft Condition 14, I suspect that there will be three neighbourhood liaison group meetings required. I consider that it would be appropriate to have wording in this Condition that allows TRC, at its discretion, to extend the date/number of meetings should it consider that additional neighbourhood liaison meetings are appropriate/required.

9.13 In draft Condition 15 TRC would have the ability to review the Consent Conditions once every three years. Other Regional Councils have wording in such a Consent Condition which allows for a review to be triggered within six months (i.e. May or November of any given year). This allows the Regional Council to, at its discretion, instigate a review of the Consent in a timely manner if the Conditions are not appropriate/sufficient to control emissions from the site or determine compliance. Having to wait up to three years to instigate this review is overly lengthy.

10. CONCLUSION

10.1 In my opinion, the Applicant has provided insufficient information to demonstrate that the potential off-site odour and dust effects from the proposed free range broiler chicken farm will not adversely affect the neighbouring residents.

10.2 The separation distances between the proposed farm and the nearest residences/curtilage areas are much smaller than would be expected around a poultry farm of this size. For this reason, combined with the number of residences in close proximity to the proposed farm, I consider there is an elevated requirement for certainty around potential effects.

10.3 T+T have used a combination of industry standard assessment tools to attempt to quantify the potential effects. However, in my opinion the absence of a community survey was a critical oversight. Based on my community survey and the odour diary results, I consider that it is highly likely that there are existing adverse effects beyond the boundary of the site. This is based on the number of independent, but consistent, responses from adjacent neighbours.

10.4 I consider that the lack of odour observations beyond the boundary of the site on neighbouring properties (particularly at neighbouring dwellings) may have underestimated the level of current effects.

10.5 The level of reduction in odour emissions (through improved shed design and lower stocking rates) combined with the better dispersion of

discharges (stack discharges) may not be sufficient to completely remove adverse effects beyond the boundary of the site.

10.6 I consider that should future operations continue, robust management tools for the ranging areas will be required. I have suggested a number of Consent Condition changes which I consider are in line with industry best practice for a chicken farm of this nature.

Donovan Van Kekem

8 February 2022

Appendix A – Odour diaries

ODOUR DIARY

Name Kevin M'Donald Address 62 Airport Dr. BBK. N.P

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description
2-8-21	9:30 Am	South	light 2	4	2 hour	38
4-8-21	11 Am	"	2	4	2 "	38
5-8-21	Evening	S.W.	2	4	4 "	38
20-9-21	10 am	S	2	4	1 "	38
27-9-21	Noon	S	2	4	1/2 "	38
4-10-21	11 am	S	1	4	1 "	38
13-10-21	9 am	S	1	5	2 "	38
11-11-21	7 am	S	1	5	1 "	38
2-12-21	8 am	S	2	5	1 "	38
6-1-22	10 am	S	2	3	1/2 "	38
12-1-22	7 am	S.W	0	4	1/2 "	38
30-1-22	6 am	S.W	0	3	2 "	38

ODOUR DIARY

Name: Glenis McDonald Address: 62 Airport Drive, R.D. New Plymouth, 4373

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description	My Health Symptoms ranked in # as per "Submission" #32
2020							
29.3	100%	SoSE	Very	4-5	24/7	25 and 27 (Suffocating)	#1 to 3
30.3	of the	"	windy	"	"	"	#1 to 5
31.3	time	"		"	"	" "	#1 to 6 VIRUS*
1.4	"	"	to	"	"	" "	" "
2.4	"	"		"	"	" "	" "
3.4	"	"	Calm 0	"	"	" "	" "
4.4	"	"	Still	"	"	" "	" "
5.4	"	"	Did not	"	"	" "	" "
6.4	"	"	note	"	"	" "	" "
7.4	"	"	speed	"	"	" "	" "
8.4	"	"		"	"	" "	" "
9.4	"	"		"	"	" "	" "
20.6	—	SE	—	"	—	25 & 27	#1 to 2
24.6	—	SE	—	"	—	"	#1 to 3
25.6	—	"	—	"	—	"	#1 to 5
26.6	—	"	—	"	—	"	#1 to 6 VIRUS
29.6	—	"	—	"	—	"	" "
30.6	—	"	—	"	—	"	" "
1.7	—	"	Still/Calm	"	—	"	" "
8.9	—	—	—	—	—	"	#1 to 3
9.9	—	—	—	—	—	"	"
2021							
9.6	—	E	5	4-5 DUST	6 hrs	Outflow removal 26+ DUST	#1 to 3
31.7	10am	E	0	5	24/7 hours	27 (TRC Neighbour complaint)	#1 to 3
1.8	7am	SE	0	5	24 hours	27	#1 to 3
3.8	1pm	S	3	5	24 hours	27	#1 to 3
9.8	10am	S/SE	3-4	5	12 hours	27	#1 to 3
23.8	10am	SE	1	2	12 hours	38 (new fresh manure)	—
30.8	12pm	SE	2-3	2	6 hours	" "	—

* Vacated Master bedroom 1

ODOUR DIARY

Name: Glenis McDonald Address: 62 Airport Drive 3 R.D. New Plymouth, 4373

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description	My Health Symptoms ranked in # as per "Submission" #32
2021							
31. 8	7am	SE	0-1	2	24hours	38 (new fresh manure)	–
1. 9	7am	S/SE	0	2	5 hours	" " "	–
2. 9	7am	S/SE	0	2	24hours	" " "	–
3. 9	7am	SE	0	2	4 hours	" " "	–
4. 9	7am	SE	0	2	3 hours	" " "	–
14. 9	7am	E	0	4	24 hours	27	# 1 to 3
15. 9	8am	SE	0-1	4-5	24 hours	27	# 1 to 5
16. 9	7am	S/SE	1-2	4-5	5 hours	27	# 1 to 6 VIRUS
"	12-8pm	S/SE	5-6	3 sokm/h	8 hours	27 between gusts	# 1 to 6 VIRUS
17. 9	8am	SE	5-6	"	24 hours	" " "	" "
18. 9	8am	SE	3	4-5	4 hours	27	" "
"	1:00pm	W	3	–	–	No odour, drifts to W	" "
19. 9	8am	E/SE	0	4-5	3 hours	27	" "
"	2pm	N	0	2	over night	mild " wif at times	" "
20. 9	7am	W/SW	0	2	24 hours	" " " "	Gethyen top "
21. 9	7am	W	3	2	5 hours	" " " "	–
"	12pm	NE	3	–	over night	No odour, NE takes it away	–
22. 9	7am	N/NE	3	–	24 hours	" " N/NE " " "	–
23. 9	7am	NE	4	–	24 hours	" " NE " " "	–
24. 9	7am	S/SW	4	3	24 hours	27 between gusts	–
25. 9	7am	N/NW	0	2	24 hours	mild 27 at times	–
26. 9	7am	S/SW	3	2	24 hours	" " " "	–
27. 9	7am	S/SE	0	4	24 hours	25 and 27	–
"	2pm	W/SW	3	3	5 hours	27 between breeze	# 1 to #2
28. 9	1am	SSE	4	4	12 hours	25 and 27	Wake #1 to 5
"	1p.m	W	3	3-4	overnight	27 between breeze	# 1 to 4
29. 9	7am	S/SW	3	3-4	5 hours	" " "	"
"	1pm	"	"	"	overnight	" " "	"
30. 9	7am	W	5	"	"	26 manure taken out	"

ODOUR DIARY

Name: Glenis McDonald Address: 62 Airport Drive, R.D. New Plymouth, 4373

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description	My Health Symptoms ranked in #'as per "Submission" #32
2021							
1.10	7.00am	SW	1	3	24 hours	27 between air pockets	#1-3
2.10	8.00am	W/SW	3	3	24 "	" " "	# 1-3
3.10	8.00am	NE	0	3	" "	33 (Still/calm)	"
4.10	7.00am	NE	1	4	" "	33	"
5.10	7.00am	N/NE	0	4	Away	33 (still/calm)	STAYED AWAY
6.10	2.00pm	NE	0	4	"	33 wash down water on track	OVERNIGHT
7.10	12.00pm	N/NE	0	3		"	
8.10 ↓							AWAY
31.10							HOUSE SITTING
1.11	7.00am	S/SW	1	-	-		
2.11	7.00am	S/SE	3	3	24 hours	26 fresh early m run	
3.11	12.00pm	SE	5-6	3	18 hours	" " "	
4.11 to 18.11	Mostly Northerlies/North West SE					odour away from property	
19.11	9.00pm	SSW	0	3	24 hours	27 calm/still	
20.11	7.00am	NW	0	3		" " "	
21.11	7.00am	NW	0	3		" " "	
22.11	7.00am	S/SW	4	3		27 between air pockets	
"	6.00pm	"	4	3		" " "	
23.11	7.00am	S/SE	2-3	5	24 hours	DAY 27 (calm)	# 1 to 3
"	12.00pm	"	"	5	" "	1 27 "	# 1 to 3
"	5.30pm	"	3-4	5	" "	27 (breezy)	# 1 to 3
24.11	8.00am	SE	0	5	4 "	Day 27 (weirse & offine)	# 1 to 3
"	12.30pm	"	0	5	4 "	2 27 (COMPLAINT)	
"	4.30pm	W	1	3	24 hours	27 breeze taking odour away	
25.11	8.00am	W	0	3	" "	27 (slight air movement)	J
26.11	8.00am	W/NW	0	2	" "	27 slight	
"	12.00pm	"	0	2	" "	27 "	

ODOUR DIARY

Name: Glenis McDonald Address: 62 Airport Drive 3 R.D. New Plymouth, 4373

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description	My Health Symptoms ranked in # as per "Submission" #32
2021							
27.11		N/NW	0	—		—	
28.11		N/NW	0	—		—	
29.11		N/NW	0	—		—	
30.11		N/W	0	—		Noisy - litter removed - Odour away	
1.12	7.00am	S	0-1			Litter removed - Surprising not	
"	1.00pm	"	"			to odour count	
2.12	7.00pm	N	0	—		—	
2022							
5.1	8.00am	S/SE	2	2		26 - early days odour	
"	3.00pm	S/SW	1	—		—	
6.1	8.00am	S/SE	2	3	12 hours	26 Hours locked up	#1 to 3
"	8.00pm	"	3-4	4	12 "	26 " " "	#1 to 3
7.1	8.00am	"	2	4	" "	26 " " "	#1 to 3
"	8.00pm	"	5	3	" "	26 (windy pockets still)	—
8.1	8.00am	SE	4	3	8 hours	26 " "	
"	5.00pm	W	4	2	overnight	26 wind dispersed odour	
9.1		NW		—		Wind took odour away	
↓		to		—		" "	
19.1		SW		—		" "	
20.1	7.00am	SW	3	3	24 hours	27 (James)	
21.1	8.00am	S/SW	3	2		27	
22.1	7.00am	N	0	4		27 woke office calm/still	
27.1	7.00am	S	2	3	6 hours	27	
"	1.00pm	"	5	3	8 "	27	
"	9.00pm	"	4	3	overnight	27	
28.1	7.00am	SE	1	4	6 hours	27	#1 to 3
"	1.00pm	W	1	2	8 "	27	Out
"	9.30pm	S	1	4	Overnight	27	#1 to 3
29.1		S/SW		4		27 (still/calm)	#1 to 3

ODOUR DIARY

Name: Glenis McDonald Address: 62 Airport Drive R.D. New Plymouth, 4373

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description	My Health Symptoms ranked in # as per "Submission" #32
2022							
30.1	1a.m	S	0	4	7 hours	27 Heavy in Air	WOKE to #1 to 5
	8am	SE	0	4	9 hours	" " " "	#1 to 5
31.1	5am	SE	0	4	1½ "	26-27 truck noise within 5 around 5 theirs	BAD EYES
"	6.30am	SE	0	4	10½ "	26-27 " " " "	" " (PHOTO)
"	8.00pm	W	3	1	overnight	Finally open up house	" "
1.2	7.00am	S	2	-			
	5.00pm	N	1	-			
2.2	11.30am	N	2	-			
"	4.30pm	N	2	-			

ODOUR DIARY

Name. KAREN + ROD BROWN Address. 40 AIRPORT DRIVE, R.D.3 NP

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description
23/8/21	9.10	N/East	?	6	?	38/39
5/9/21	11:45	N/East	?	5	?	38/39
1/1/22	11.Am	N/East	light	2½	Unknown	38

ODOUR DIARY

Name: Brent + Melanie Dodunski Address: 32 Avant Drive N. PLY.

Date	Time	Wind Direction	Wind Speed	Odour Strength	Duration	Odour Description
24/1/22	6 pm	N-N/E	1	4	3/4 hr	Putrid + slightly sickening.
29/1/22	11 am	N/W	1 km/hr	3	1 1/2 hr.	Putrid.
31/1/22	10-30 am	N/E	5 knots	3	1 hr	Putrid Sour
1/2/22	8-45 pm	N/W	2.	2		Sweet Putrid.

Hi James

Over the past 6months my diary has shown occasions when odour has occurred and I have remembered to record it.

Strong

2021 Sunday 1st August 11.30am – 12.00pm (visitors disgusted) again 9.30pm +
- Wednesday 6th October 1.15pm – 3.15pm.
Thursday 21st October 9.30am +
Friday 5th November 5pm – 6pm.
Monday 15th November 9am – 11am.
2022 Monday 24th January 5.45pm +
Tuesday 25th January 8.00pm – 10.00pm. (House filled with odour. I emailed RegCouncil
- Monday 31st January 8.45pm – 10.30pm. (I went to bed)
- Tuesday 1st February on/off all day (25deg. I had to have windows + doors closed!)

Mild

2021 Monday 2nd August – afternoon.
Friday 6th August 3.50pm +
Sunday 19th September morning
Thursday 25th November 10.30am +
Wednesday 1st December morning
Thursday 2nd December morning
2022. Wednesday 12th January 11.30am (musty smell)
Saturday 15th January 10.45pm (musty smell)
- Monday 31st January 9–15am – 11.30am.

Lloma Hibell