

## RESOURCE MANAGEMENT ACT 1991

### DECISION OF ENVIRONMENT CANTERBURY

### ON A RESOURCE CONSENT APPLICATION

<b>APPLICATION REFERENCE:</b>	CRC156783
<b>HEARING COMMISSIONER</b>	DEAN CHRYSTAL
<b>APPLICANT:</b>	R S & K R Jones
<b>SITE ADDRESS:</b>	3307 South Eyre Road, Waimakariri
<b>LEGAL DESCRIPTION:</b>	Lot 3 DP 78019
<b>PROPOSAL:</b>	To establish a new six shed 330,000 head poultry broiler operation.
<b>ZONING &amp; NOTATIONS:</b>	Rural
<b>TYPE OF ACTIVITY:</b>	Restricted Discretionary
<b>DATE OF HEARING:</b>	3th May and 12 <sup>th</sup> October 2016
<b>APPEARANCES:</b>	<u>Applicant</u> Ms Ebony Ellis, Legal Counsel Mr Ricky Jones, Applicant Dr Brent Cowie, Environmental Consultant Mr Michael Block, Livebird Production Manager for Tegel Mr Donovan Van Kekem, Air Quality Scientist Mr Andrew Curtis, Air Quality Scientist Mr Graeme Kelly, Real Air Solutions Limited <u>Submitter</u> Mr Richard Frahm Mr Richard Chilton, Air Quality Scientist <u>Council Reporting Officer</u> Craig Davison, Planner for Environment Canterbury

## **INTRODUCTION**

1. In brief the proposal is now an application to Environment Canterbury for the establishment of six chicken rearing sheds to enable an additional 330,000 head poultry broiler operation at 3307 South Eyre Road, Waimakariri.
2. A section 42A (of the Resource Management Act) report by Mr Davison provided details of the application, the notification process, subsequent amendments, other consents obtained and the relevant plan provisions including the status of the activity.
3. The proposal was limited notified to three parties on the 19<sup>th</sup> June 2015. A total of 2 submissions were received opposing the application.
4. I undertook a site visit on the afternoon of the 4<sup>th</sup> May 2016 to view the site from within and from the perspective of the adjoining neighbours. I also viewed a similar shed to those proposed near Springston on the 13<sup>th</sup> January 2017. This shed had both roof ventilation and a misting system.
5. The hearing was held in two parts as a result of a request for further information, particularly associated with odour modelling, I sought after the first day of hearing. There was subsequently extensive further information, particularly around the modelling and potential mitigation, provided over a long period up to and beyond the reconvened hearing. Much of this has been detailed information and, given the topic, very technical in nature. This has resulted in an extensive decision in order to address, cover and provide context to the various issues which have been raised throughout the process.
6. I also at this point note that this was the second of two hearings on the expansion of broiler chicken operations which I heard and am responsible for issuing a decision on. The first hearing was that of Clarence Harvest. Some of the participants and issues raised during the two hearings were similar, evidence was jointly made and I issued joint memorandums in some cases. As a result my discussion in this decision does at times also refer to the Clarence Harvest hearing process.

## **THE PROPOSAL**

7. The applicants currently own and operate an 180,000 head poultry broiler operation with five existing rearing sheds on Lot 2 DP78019 at 3307 South Eyre Road. The current operation has consents for discharges into air and onto land authorised under discharge permits CRC151072 and CRC151075 respectively, and the take and use of groundwater for stockwater supply and wash down water authorised under water permit CRC151079.
8. The proposal was initially for the establishment of an eight shed 444,000 head poultry broiler operation at the same address but located closer to South Eyre Road and on a separate title being Lot 3 DP78019. The new operation was to be run as a separate entity.
9. As a result of an odour assessment on the original eight shed proposal post notification which predicted that potential nuisance effects associated with odour on neighbouring properties would be

unacceptably high the applicant amended the proposed activity, reducing the number of sheds to six, with peak chicken numbers being 330,000.

10. In detail the proposal was to now comprise of:

- Six sheds with a maximum of 330,000 chickens;
- Chickens reared on a litter base comprising of sawdust and wood shavings for a maximum of seven weeks in every eight week period, across the six sheds;
- A bird density ranging from 18 to 20 birds per square metre, and a maximum stocking rate of 38 kg/m<sup>2</sup>.
- An independently controlled ventilation system in each shed as required under the Animal Welfare (Meat Chickens) Code of Welfare 2012. The ventilation provides fresh air, and to assist in the control of temperature, moisture, airborne particles, and litter quality;
- 12 roof mounted ventilation fans at the central ridgeline of each shed positioned 5.5m above ground level. The roof mounted fans will be supplemented by a bank of 18 box fans on the northern end of the sheds which can operate the shed ventilation in a combined roof and wall mounted fan venting mode during hot/dry weather conditions ( $\geq 25^{\circ}\text{C}$ ); and
- A misting systems which operates during periods of high temperature (greater than  $25^{\circ}$ ) minimising the use of the full tunnel mode for ventilation.

11. I was advised that the operation involved the removal of the chickens between 28 and 42 days of rearing. The females were removed at the 28 day mark and the males at the 42 day mark. This meant that post the 28 day mark the number of chickens is effectively halved. The chickens are removed from the sheds using specialist transport trucks and transported to a processing facility. Once the final chickens are removed the litter is pushed out and removed from the site by contractors and the sheds cleaned before a new batch of litter and chickens arrive.

12. The proposal was to operate a different seven week cycle from the existing farm so as not to have fully grown chickens maturing at the same time on both sites.

13. I note at this point that the applicant has also applied Environment Canterbury for a water permit (CRC154125) to authorise the take and use of groundwater for stockwater and washdown water purposes, a change of conditions to discharge permit CRC151075 and a discharge permit (CRC156784) to discharge washdown water, stormwater and odour into air from waste management processes. These applications have been processed separately on a non-notified basis and do not therefore form part of this process and my decision.

14. The applicant has also obtained consent from Waimakariri District Council (RC155126), for the excavation of land for the proposed poultry broiler operation. The applicant initially sought resource consent under the intensive farming rules of the Waimakariri District Plan. However, following further analysis of this requirement in relation to neighbouring dwellings, it was determined the proposed

poultry broiler operation met the relevant **permitted activity** rule, given the separation distance to neighbouring dwellings was greater than 300 metres.

#### **The Receiving Environment**

15. The subject site itself has a rural zoning. The immediate surrounding land is also rurally zoned containing a scattering of farming blocks with residential dwellings. The nearest residential dwellings to the new sheds are located approximately 340m to the west (the Inch dwelling) and 500m to the south (the Frahm dwelling) of the proposed location of the six new broiler sheds. The Frahm dwelling is however only some 200m from the first of the existing broiler sheds.
16. Both dwellings have established hedges between them and the proposed sheds. The Frahms also have an earth bund.

#### **Activity Status**

17. Mr Davison advised that consent was required to discharge odour and dust into air from the proposed broiler operation and that a consent duration of 35 years was sought.
18. It was accepted that non-compliances with Rule AQL60A of the Natural Resources Regional Plan (NRRP) and at the time Rule 7.62 of Proposed Canterbury Air Regional Plan (pCARP) made the application a **restricted discretionary activity**.

#### **HEARINGS**

19. Due to the review of odour modelling much of what was presented at the first hearing on that aspect was overcome by subsequent events. Nevertheless, I have provided a summary of relevant evidence presented at the first hearing date.

#### **Evidence for the applicant at the Original Hearing**

20. **Ms Ellis** emphasised the importance of the existing air discharge consent (CRC151072) indicating that case law had determined that such consents were considered part of the existing environment. She noted that the Frahms had given their affected party approval to this consent.
21. Ms Ellis went on to outline the relevant sections of the Resource Management Act (RMA) that I needed to take into account in my decision.
22. **Mr Block** provided a description of broiler chicken farming. He said that growers receive day old chicks which are grown to a maximum of 40-42 days when they have an average weight of about 3.3kg. He said each shed holds males and females separately and that the birds are currently placed at 20 birds per square metre but it would be desirable for this to be less (on average 19 per square metre). He went on to say that the collection of birds begins with females at around 28 days at which time they are approximately 1.6kg and that birds are then progressively taken from there. Mr Block said that the requirement to start taking birds at 28 days was both market driven and to ensure that Animal Welfare Stocking Standard is met.

23. Mr Block said that there was currently a 6-8 days turnaround between all the chickens being removed from the broiler farm and the next lot of day old chicks being delivered. He said that Tegel would prefer this to be 10-12 days and to have less birds at stocking however the shortened turnaround times were demand driven and a consequence of the under supply of shed capacity nationally.
24. Mr Block went onto explain that broiler chicken farming requires chickens to be grown in very specific conditions. The sheds are pre-heated prior to the arrival of the new chicks and initially, the temperature in the shed needs to be 32 degrees. This heat is progressively reduced as the chickens mature and are able to regulate their own body temperature. He said that mortality in the sheds is about 3-3.5% and that dead chickens were collected daily, frozen and taken off-site for rendering.
25. Mr Block indicated that ventilation was critical to maintaining welfare and performance requirements and that newer sheds were all computer controlled for ventilation, temperature, light and so on. He went onto explain the Tegel Shed Standards (TSS) which have sought to improve and upgrade grower's sheds to increase both efficiency and reduce off-site effects. He said the new sheds at the Jones farm would be the latest TSS5.3. The key differences between this standard and TSS5 was the use of chimney ventilation at all but high temperatures, radiant water heating versus the use of LPG, and the installation of high pressure misting systems. He considered these new sheds would significantly reduce off-site odour emissions.
26. Mr Block went on to discuss that litter in the sheds was made up of wood shavings and that once all the birds were removed from the sheds, the litter was pushed out with a bob cat and removed from the farm. He said the sheds were then washed down for hygiene purposes then cleaned and sanitised to remove all bacteria. This process occurred straight after the litter was removed to allow the sheds time to dry before the next rotation of birds.
27. Mr Block concluded by discussing the relationship between Tegel and the contractor and animal welfare matters.
28. In response to my questions Mr Block confirmed that each set of sheds on the Jones farm would be on a different cycle and he indicated that further measures to reduce odour might be available such as dryer litter.
29. **Mr Jones**, provided a background to the development of the existing chicken sheds on his property. He said that they currently ranged from TSS4 to TSS5.1 and had a total capacity of 180,000 birds. He went on to discuss consultation that was had with neighbours and that after the initial odour modelling the number of sheds was reduced from eight to six and the design was changed to TSS5.3 which introduced chimney ventilation, under floor heating and misting. He said that the capital cost of these new sheds would be in the order of \$9-10 million.
30. Mr Jones concluded by saying that the proposal was a great opportunity to expand their business in a way that did not significantly affect any neighbours and that he wanted to maintain good relationships with their neighbours.

31. In response to my questions Mr Jones said that the removal of the litter currently took 5-6 truckloads. He said that the new sheds would operate in the same way but with a different driveway. He considered that odour was at its worst at the 28 day mark when destocking starts.
32. **Mr van Kekem** said that in recent air discharge decision for a new broiler chicken farm it had been agreed that a one hour, 99.5% odour modelling guideline of 5 OU/m<sup>3</sup> (odour units) was appropriate as the threshold at which nuisance odour effects could occur at a neighbouring residence/sensitive receptor. He said that the 5 OU/m<sup>3</sup> guideline was based on a number of factors which include; the generally offensive character of the odour produced by chicken farms (ammonia like odour); the general perception of this type of odour above normal background odour in the receiving environment; the generally conservative modelling methodology used to generate these results; and historical compliance of chicken farms producing odours below this threshold. Mr van Kekem went on to say that although he agreed that the process used to develop this guideline is appropriate for assessing a proposed new farm, in the case of expansion of an existing farm where predicted impacts from the existing operation at neighbouring residences are already well above 5 OU/m<sup>3</sup> there is a strong case for alternate assessment criteria, particularly, as in this case, where there is no history of odour complaints.
33. Mr van Kekem said that as the existing discharges of odour and dust are authorised by CRC151072 they can be considered as the existing environment on the property. He said when this is considered the starting point a more appropriate assessment criterion would be to demonstrate that the increase in odour will not be detectable above what exists and is consented now.
34. Mr Van Kekem stated the assessment was made under very conservative assumptions, and focussed on the three parties who were served notice of the application.
35. Mr Van Kekem said the human perception of odour intensity in relation to odour concentration was not a linear relationship but logarithmic. This meant that a 10 fold increase in odour concentration will not result in a perceived increase in odour intensity of the same amount. He said it was generally considered that odour concentrations need to double before the perceived intensity change is recognisable. In response to a question I posed he said an increase from 10 to 13 OU/m<sup>3</sup> was potentially detectable.
36. Mr van Kekem said the dispersion modelling, using CALPUFF (Version 6.4), was conducted on very conservative assumptions, it was assumed that all sheds would be producing 75% of their theoretical maximum odour emissions every hour of every day, for the one year modelled. He said in reality this did not occur as the two farms would operate on off-set 42 day growing cycles, in general the odour concentrations increase over the cycle (as birds get bigger) and there is approximately an eight to ten day stand down between cycles. Three scenarios were modelling being existing, existing and proposed and proposed on its own. He said the odour modelling results show maximum predicted odour concentrations at the neighbouring residences are much higher than 5 OU/m<sup>3</sup> (being 172, 173 and 13

OU/m<sup>3</sup> respectively under each scenario for the Frahm residence). Mr van Kekem said that if odour concentrations were in fact this high as a result of the current farm operations, he would expect that there would be a series of odour complaints associated with the existing chicken farm. As there had been none he said this demonstrated how conservative the modelling approach was and the high likelihood that the modelled results over represent off-site impacts.

37. Mr van Kekem said that at the Frahm residence the maximum increase in odour concentrations from his modelling was 1 OU above the worst case odour concentration of 172 OU/m<sup>3</sup>. He said this was a very small increase (under 1%) and is considered a negligible increase in odour (especially given the conservative approach to the modelling). Furthermore, he said this one odour unit increase only occurs for 40 hours out of the 8760 hours (0.04 %) in a year. Overall he considered the potential effects were no more than minor.
38. Mr van Kekem went onto describe the operation of the discharge stacks. He said that the odour is discharged in a jet of air which is shot vertically into the air resulting in effective dilution of the plume before it drops to ground level. This he said was a much improved scenario from the traditional wall mounted horizontal discharges, which produce a diffuse, low velocity discharge which allows the plume to remain consolidated as it drifts off-site.
39. **Dr Cowie** said that from the initial modelling results it was notable that the full eight sheds built to TSS5 would have less effect on the Frahm property if the back two sheds on the existing farm were de-commissioned. In other words the back two sheds on the existing farm had more effect on odour concentrations at the Frahm property than would the full eight new sheds. He went onto say that Mr Jones did not want to de-commission the back two sheds due to the capital tied up in them and therefore the proposal was modified to six sheds at TSS5.3 with chimney ventilation.
40. Dr Cowie said that he was more sensitive to odour than most people based on testing and that having been to chicken farms many times, he can detect little odour until the birds are 2-3 weeks old. After that time he said the odour becomes increasingly strong, and while he would not call it objectionable, it was at least moderately offensive. He said odour was strongest when the sheds have been cleaned out, and the litter is waiting on the pads to be collected. He went onto say that it was important to recognise that peak odour intensities from one group of sheds would not coincide with those from the other group of sheds.
41. Dr Cowie referred to the 2010 report commissioned by Poultry Industry Association of NZ (Inc) (PIANZ) and the Egg Producers Federation of NZ in response to the proposed Regional Plan for the Auckland region. The report covered 36 broiler farms and 14 layer farms (and three farms of other types) over a 10 year period, and considered only verified odour complaints. Two of the conclusions reached by the report were:

- *There is no justification for setting separation distances of greater than 120m as no complaints have occurred where there is more than that distance between sheds and the nearest residence; and*
- *There is no validity in using flock size as a criterion for determining whether a farm is correctly sited to avoid complaints.*

42. Dr Cowie said there had never been a complaint about odour from the Jones existing sheds from any party. He said when read in conjunction with the findings from the PIANZ report, this was not surprising. He did however acknowledge that in rural communities odours of various types are common place, and most people are reluctant to complain about activities on a neighbour's property.
43. Dr Cowie said that the conservative modelling showed the odour from the modified proposal would be slightly discernible on the Inch property but that there would be negligible change in effects at the Frahm residence from the cumulative discharges. He also said that a 35 year term for consent was necessary to give long term certainty given the high capital cost involved.
44. Dr Cowie also noted that there would be significant positive effects from implementing the proposal in that the applicants will be able to expand their business, work will be provided for a large team of contractors and at least two permanent staff on the farm, there will be downstream benefits for the processing industry and other chicken farmers will have less pressure on turnaround times.
45. In addressing relevant objectives and policies Dr Cowie considered the proposal was generally consistent with those he'd identified.
46. In addressing section 5 (of the RMA) Dr Cowie said the proposed addition of a new chicken farm on the applicant's property will meet the criteria for sustainable management. In particular he considered it would allow the applicant, and downstream processors, to help provide for their economic wellbeing while avoiding or mitigating any adverse effects on the local environment. In terms of section 7 Dr Cowie considered the proposal to be a highly efficient use of land as it utilised what is presently bare ground used for raising steers for intensive broiler farm production. He noted that the land had only moderate value for any other agricultural activity as the soils were thin. He also considered the proposal would have a more than minor effect on local amenity values until boundary screen plantings became established.
47. In answer to my questions Mr Cowie agreed that odour could be a very subjective topic and that people had very different perspectives. However, he said that the basis for the modelling was well established and was conservative. In relation to the existing consent Mr Cowie said the applicant did not want to surrender it because it had only recently been issued with neighbours consent.

#### **Evidence of submitters at Original Hearing**

48. **Mr Frahm** began by saying that the undesirable effects from the existing operation were already at a point that affects his and his wife's lifestyle. He said that when they had purchased the property the



effects from the broiler operation were at a level that was undesirable to them. As a result they had constructed a 2m high earth mound and planted a double row of trees along their northern boundary. This however was not successful in reducing the odour.

49. Mr Frahm said that they currently experienced the effects of the offensive odours when the wind was coming from the north-northwest, north and north-northeast or in still conditions when there was a draft their way. He said the frequency was considerably higher in the warmer months when it was not unusual to be effected off and on for 3-4 days in a row. He went on to say that at times the odour got to a level that they could not sit in their garden or have a meal on their deck and at other times gardening or hanging the washing out had to be postponed.
50. Mr Frahm considered that over the past 13-14 years the offensive odours from the chickens had been increasing to a level that had now reached saturation point. He said he had responded to Dr Cowie question as to why he didn't complaint by saying *"we are not like that, we don't like to complain"*. He continued by stating that *"just because there hasn't been any complaints doesn't mean we haven't been adversely affected. A more realistic assumption would be that we have tolerated it, although we find it annoying"*.
51. In response to my question as to why he had given affected party approval to the recent consent application Mr Frahm said he considered they were protected by the offensive and objectionable odour condition.
52. **Mr Chilton** began by saying that the applicant's assessment is premised on the basis that due to an absence of complaints regarding odour from its existing broiler farm that it is achieving the requirement of there being no offensive or objectionable effect beyond the site boundary. He went on to say that although a record of complaints is helpful when evaluating the effects of an existing activity, an absence of any complaints does not necessarily mean that offensive or objectionable odour effects are not occurring.
53. In terms of the modelling Mr Chilton notes that the proposed farm includes the discharge from the existing sheds, which have been modelled as having horizontal discharge vents. He considers the use of vertical vents as proposed will provide for improved dispersion and dilution of contaminants as compared to the use of horizontal vents. On this basis he acknowledged that it has merit in potentially minimising the effects of the odour discharged from the proposed sheds.
54. Mr Chilton disagreed with Mr van Kekems contention that for the expansion of an existing farm where predicted impacts from that operation at neighbouring residences are above 5 OU/m<sup>3</sup> there is a strong case for alternative assessment criteria which is to demonstrate that the increase in odour over the existing operation will not be detectable above what exists and is consented now. He noted that the 5 OU/m<sup>3</sup> criterion, which was first developed as part of the Rickerby<sup>1</sup> assessment, was for the

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<sup>1</sup> Known as GR & RW Wilson v Selwyn DC (C23/2004)

expansion of an existing broiler farm. Mr Chiltons key point however was that the existing consent (as per Condition 5) does not allow for offensive or objectionable odour effects.

55. Mr Chilton went onto discuss the results of the odour dispersion modelling. In relation to the predicted odour concentrations at the Frahms residence of 172 OU/m<sup>3</sup> for the existing operation and 173 OU/m<sup>3</sup> for the proposed operation, he acknowledges that these concentrations are likely to represent a worst case combination of high emission rates and meteorological conditions that give rise to poor dispersion. He notes however that the predicted concentrations are approximately 34 times higher than the accepted odour assessment criterion of 5 OU/m<sup>3</sup> that he considers should apply for the Frahm residence. Mr Chilton went on to say that he would expect predicted concentrations of the strength reported in Table 2 of Mr Van Kekems evidence would be immediately recognisable to an average person and would be likely to cause objection and offense due to the character of the odour.
56. Mr Chilton further noted that the third modelled scenario, being the new sheds only, predicts concentrations at the Frahms residence of 13 OU/m<sup>3</sup>. He goes on to say that the new sheds alone are predicted to result in odour concentrations at the Frahms' that are more than twice the odour assessment criteria of 5 OU/m<sup>3</sup> and would indicate a significant adverse odour effect in his view. Mr Chilton summaries this by stating<sup>2</sup>:

*“while the new shed configuration proposed by the applicant may be beneficial in reducing odour compared to normal operation (horizontal ventilation) of the sheds, the results of the modelling presented by Mr Van Kekem do not, in my opinion, provide evidence that those concentrations will not result in offensive or objectionable odour effects”.*

57. Mr Chilton was somewhat critical of the PIANZ report referred to by Mr Cowie saying that in his opinion, the findings of this work are contrary to widely accepted conventions regarding odour from poultry activities, which he considers is likely due to the fact that the analysis focuses on complaints data, which can be unreliable when establishing whether an activity may give rise to offensive or objectionable effects. He goes on to note that the 120m separation distance recommended in the report is very small and contrary to published separation distance guidelines. He also said that the finding that there is no validity in using flock size as a criterion for determining whether a farm is correctly sited to avoid complaints was also contrary to an extensive body of published data, where the odour emission rate of a farm is directly linked to the number of birds.
58. In considering odour treatment options and engineering solutions Mr Chilton reaches a conclusion that the only alternative realistic approach to mitigation would be to reduce the source of emissions, notably the number of birds, to a point that odour emissions were not causing an adverse effect.
59. Mr Chilton raised concerns about water entering the proposed vertical discharge vents. He also considered that given the risks associated with the proposed activity, that a consent term of between 5 and 10 years would be more appropriate if consent were granted.

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<sup>2</sup> Para 38 of R Chilton evidence

60. In addressing conditions Mr Chilton said it was unusual and possibly inappropriate that the existing and proposed sheds would be consented separately given that they have the same discharge and are located on the same overall site. He considered that the entire operation (existing and proposed) should be covered by a single air discharge permit, enabling there to be an enforceable limit on the total number of birds for the farm. He also said that the applicant's assessment was reliant on the age of the birds in the existing sheds being off-set from those in the new sheds, but that no condition was included to this effect.
61. Mr Chilton said that the requirement for daily checks of the sheds should be carried out at least twice daily. In relation to the requirement for an odour management plan (OMP) he said a notable exclusions from the matters to be included in the OMP was requirements for the monitoring of in-shed temperature and humidity and measures to be taken to avoid odour effects during the clean out of the sheds. In this regard he recommend that shed clean out occurs between 10 am and 4 pm so as to avoid times of the day when winds are likely to be relatively calm and dispersion relatively poor and that it should only occur when the wind is expected to be away from the Frahm property.
62. Other specific recommendations suggested by Mr Chilton were:
- the number of fans per shed be stipulated, along with the minimum height above ground level and the roof apex, the stack diameter and the stack efflux velocity, and that the stacks are such that nothing impedes the vertical efflux velocity;
  - that wash down water be managed so that it has a positive dissolved oxygen (DO) content of at least 1% while it is being stored and that DO monitoring be undertaken to confirm this occurs; and
  - that flushing of any irrigation lines be required following irrigation to ensure wash down water does not remain in the irrigation lines.
63. Finally, Mr Chilton considered that due to the uncertainties with the odour assessment and the difficulties of relying on complaints the conditions should require routine downwind odour observations to be made by a suitably qualified and experience independent person. He said that the frequency that such observations were carried out, and the period of time that these occur over, will be important in order to provide sufficient information to inform a robust assessment of actual odour effects – in particular whether chronic odour effects are, or are not, occurring.
64. In response to a question I asked Mr Chilton said the requirement for objectionable and offensive is not no odour. He said that objectionable and offensive is determined by the FIDOL<sup>3</sup> factors and that the frequency of the events is critical.

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<sup>3</sup> The frequency, intensity, duration, offensiveness (or character) and location of an odour event

### Initial s42A report

65. **Mr Davison** said that overall he agreed with the assessment and the existing environment methodology applied to Scenarios One and Two of the dispersion modelling, and he considered this demonstrated the potential nuisance effects on the parties served notice of the application would be minor. He said the modelling also demonstrated the Inch residence will be subjected to the greatest increase of odour concentrations, at 7 OU/m<sup>3</sup> but noted that this party was served notice of the application and did not make a submission. He said he agreed the modelling demonstrated there would be a small increase in odour concentrations on the Frahm and Carleton Dairies properties, which may be subjected to increased odour concentrations of 1 OU/m<sup>3</sup> and 2 OU/m<sup>3</sup> respectively,
66. Additionally, Mr Davison said the FIDOL factor assessment undertaken by Mr van Kekem referred to the intensity of the predicted increase in odour concentrations on the parties served notice to be “just noticeable”, with no further explanation of this potential effect provided. He considered without any further quantification of “just noticeable”, it was difficult to reach a definitive conclusion about the potential adverse effects. However, given the nuisance effect on the Inch residence was only 2 OU/m<sup>3</sup> above the nuisance threshold of 5 OU/m<sup>3</sup>, he considered the potential adverse effects on this party would be no more than minor.
67. Mr Davison also agreed with the assessment of cumulative odour effects, and the proposed mitigation measure of operating the two farms on independent production cycles. He considered the potential cumulative effects of the proposal would be minor.
68. Mr Davison identified Objective 14.2.2 and Policy 14.3.5 of the Canterbury Regional Policy Statement (RPS), Objective AQL1 and Policies AQL5 and AQL6 of the NRRP, and Objectives 5.4, 5.5, 5. And Policies 6.5, 6.6, 6.8, 6.9, 6.10 and 6.26 of the pCARP as being relevant to the proposal. He considered the proposal to be inconsistent with Objective 14.2.2 (of the RPS) in relation to one neighbouring land owner (the Inch property) and also inconsistent with Policy AQL5 (of the NRRP) due to the modelling demonstrating there are effects on three neighbouring properties which are considered to be minor or more than minor. Mr Davison also considered in relation Objective AQL1 (of the NRRP) and Policy 6.2.6 (of the pCARP) there will be times when odour may be discharged beyond the boundary of the property which could be considered to be offensive or objectionable. He considered the proposal was consistent with the remainder of the above provisions.
69. Mr Davison had also considered the Mahaanui Iwi Management Plan 2013 and said that he did not consider the proposal would result in the loss of air as a taonga to Tangata Whenua.
70. In summary Mr Davison considered any potential adverse effects would be acceptable, and were able to be avoided, remedied or mitigated subject to an appropriate set of conditions. However, he did consider there were some uncertainties in relation to potential nuisance effects on the Inch property under this proposal. He recommended the application be granted and went onto recommend a number of conditions.

71. Mr Davison's s42A report contained a review of the dispersion modelling by Mr Myles McCauley of Environment Canterbury. In that review he states:

*"... However, the modelling does potentially indicate a very much higher level of impact from the entire proposed farm or even from just the proposed sheds on their own than I would have expected, with the 10 OU/m<sup>3</sup> contour extending well over a kilometre beyond the site footprint in some directions, and the 5 OU/m<sup>3</sup> line not in view (possibly due to the way in which the plotting software was configured, rather than because it is actually out of range)." and*

*"... I am surprised by the modelled extent of impacts and I would not expect that the actual level of effect in terms of nuisance would be as substantial as suggested by it. This is probably because the modelling is conservative, but I cannot predict the effects of fine tuning it."*

#### **Rebuttal Evidence**

72. Both Mr van Kekem and Dr Cowie provided rebuttal evidence to Mr Chilton's evidence.
73. In relation to the issue of complaints Mr Cowie said that if the Frahms have been significantly affected by odour from the existing chicken farm, he was bemused as to why Mr Frahm gave affected party consent in 2014 to the construction of a new 48,000 bird chicken shed as part of the existing chicken farm. He went on to say that this was now the existing environment on the Applicants property and must form the starting point for any evaluation of the effects of the proposal - not some arbitrary odour limit far below existing modelled thresholds at the Frahm property as Mr Chilton suggests. He further said that in his experience neighbours of activities that do cause notably offensive or objectionable odour do complain frequently to local authorities.
74. In terms of wash down water Mr Cowie said he had smelt this very dilute water after it has been stored for several weeks on another chicken farm, and it generates very little odour at all. In his opinion there is no remote possibility of this water causing any off-site effects at all, particularly as the most that would be stored at any time is only about 110 cubic metres.
75. On the matter of consent duration Mr Cowie said granting a short term consent would be tantamount to a decline, as the applicants could not secure the \$9-10 million of funds to implement the proposal.
76. Turning to conditions Mr Cowie provided the following responses:
- A new consent had to be sought because the CRC would not have accepted an application to vary the current consent for a substantial new development. Conditions of consent for the existing chicken farm and the proposed new broiler farm would separately specify the maximum number of birds on each. There is certainly no need to combine the consents to achieve this outcome (and nor really is there any need for the advice note suggested by Mr Davison about maximum bird numbers).
  - To ensure the two farms are offset the a condition of consent along the lines is proposed:

*The chicken production cycles for existing consent CRC151072 and this current consent shall be offset from one another by at least three weeks.*

- Each shed starts to be cleaned out as soon as the last chickens are removed. It is not practical to limit this clean out to between the hours of 10am and 4pm.
- It is also impractical to not clean out the sheds immediately after the chickens are removed, irrespective of wind conditions.
- Odour monitoring would be an unnecessary and expensive imposition upon the applicant, particularly given there have been no odour complaints about the property in the past and apart from Mr Frahm, no neighbours appear to have any issues with odour emissions from the existing broiler farm. I have never seen nor imposed any such condition of consent on any resource consent granted to discharge to air.
- The Regional Council has a duty to monitor compliance of conditions of consents that it administers and that it can make charges for doing so under s36 of the Act.

77. In response to the issue of complaints and offensive and objectionable odour Mr van Kekem said that it was Environment Canterbury's responsibility to ensure compliance with all consent conditions, and he was not aware of any non-compliances recorded by Environment Canterbury on the existing consent Condition 5 in the time that the farm has been operating under this consent.

78. Mr van Kekem agreed that the options for odour treatment are limited for chicken farms primarily due to the high volumes of air required to be treated. However, he said the use of the proposed stack like roof fans to achieve far greater dispersion than traditional wall mounted fans had demonstrated a very marked improvement in potential odour impacts off-site.

79. In terms of the roof fans Mr van Kekem advised that they had a twin sleeve design which allows the rainfall to drain onto the roof and not enter the shed below.

80. Mr van Kekem agreed that it was important that the wash down water was not allowed to turn anaerobic and then irrigated across an area potentially generating potential adverse odour effects. He also agreed that it was important to check the sheds for water leaks as elevated moisture levels in the litter can lead to elevated odour emission from the sheds.

#### **Commissioner Minutes**

81. Having considered the evidence presented a number of matters arose upon which I considered additional information was necessary. Firstly, I was unclear whether the odour modelling which had been undertaken showed an adverse effect or not and whether or not all the appropriate inputs into the model had been made. I also found the use of a 'conservative' approach claim in the modelling difficult to understand. Finally, I was also unclear as to the ability to mitigate against potential offensive and objectionable odour effects should they arise and what mitigation may incorporate.

82. I therefore issued a minute on 11<sup>th</sup> May in order to:
- (a) Establish a process for ensuring that the modelling was as accurate as possible and provided me with a reasonable understanding of the potential extent of odour effects;
  - (b) Identify what mitigation measures might be available and how these might be incorporated into an Odour Management Plan; and
  - (c) Seek clarification on other matters raised during the hearing, including whether there is a need for some form of linkage between the existing discharge consent and that being sought.
83. For the purposes of (a) above I requested Mr John Iseli act as a mediator/advisor on the odour modelling process.
84. I subsequently issued further minutes (some jointly with the Clarence Harvest application) providing directions around the process to be subsequently followed upon receipt of the above information and setting a reconvened hearing. Within this process I note that Mr van Kekem role for the applicant was replaced by Mr Curtis. Within the above process I understand that the air quality experts met and some additional modelling scenarios were agreed and developed.

#### **Subsequent Reports**

85. Prior to the reconvened hearing two reports had been prepared by Mr Curtis for the applicant.
- 12 July 2016 Report
86. The first report detailed the results of various modelling scenarios for the existing and expanded chicken farms. Of particular relevance in my opinion were Scenario's 3 (the existing farm) and 7 (the expanded farm) which seemed to most closely relate to the reality.
87. In Scenario 3 the side fans were modelled as point sources (instead of volume sources) with momentum flux set to zero and odour emission rates changing with bird age with the variable emission rates assumed to reach a maximum at the maximum allowable stocking density set in the Code of Welfare (approximately the 28th day of the cycle) and then remained constant until day 42 when all remaining birds are removed. It was assumed that the first day of the first cycle of the year occurs on 1 January. The results showed the 99.5 percentile 1 hr average odour concentrations at the Frahm property to be 7 OU/m<sup>3</sup>, at the Inch property to be 1 OU/m<sup>3</sup> and at the Carleton Dairies property to be 2 OU/m<sup>3</sup>.
88. Scenario 7 introduced the expanded farm and is based on the same parameters as Scenario 3 but with the starting date of the proposed shed cycle as the 1<sup>st</sup> of January and the existing farm sheds offset by three weeks. The results showed the 99.5 percentile 1 hr average odour concentrations at the Frahm property to be 12 OU/m<sup>3</sup>, at the Inch property to be 3 OU/m<sup>3</sup> and at the Carleton Dairies property to be 2 OU/m<sup>3</sup>.

89. In the discussion which followed Mr Curtis said that regardless of how the existing farm is modelled (Scenarios 1 to 3) it is unlikely that the odour concentrations at the Frahm residence will be less than the 5 OU/m<sup>3</sup> guideline commonly used in Canterbury. He also said that the results showed that the new farm would result in a small increase in odour concentration at all three receptors investigated, (comparing Scenario 5 versus Scenario 2). This increase was predicted to be 4 OU/m<sup>3</sup> at the Inch residence and Carleton Dairies and 3 OU/m<sup>3</sup> at the Frahm residence.
90. I note at this point that it was unclear to me (and it was not explained in the report) why Mr Curtis used Scenarios 2 and 5 (which used constant emission rates) for his comparisons as they seemed to me to be less realistic than Scenarios 3 and 7 referred to above. The importance in this is that if the comparison have been made between Scenarios 3 and 7 then the increase at the Frahm residence would be 5 OU/m<sup>3</sup>. This in turn may have affected his conclusions where he stated that:

*“Overall the results appear to indicate that there will be a small increase in odour as a result of the proposed expansion. The increase from the proposed expansion may be perceivable at the Inch residence but will still be less than the 5 OU/m<sup>3</sup> guideline commonly used in Canterbury, but is unlikely to be perceived at the Frahm residence”.*

#### 14 September 2016 Report

91. The second report followed expert caucusing, and assesses the impact of installing a misting system within the existing sheds. The misting system is designed to reduce the operation of the tunnel mode by providing evaporative cooling which reduces the potential odour emissions from the sheds by reducing air flows as it minimises the use of tunnel fans. Three model scenarios, existing, existing with misting and expanded farm, were assessed.
92. The existing scenario modelled appeared to me to be based on exactly the same values as Scenario 3 in the 12<sup>th</sup> July report (which again raises the question as to why this did not form part of the comparison referred to above). The results however were different, as noted by Mr Iseli<sup>4</sup>, with the 99.5 percentile 1 hr average odour concentrations at the Frahm property indicating 14 OU/m<sup>3</sup>, the Inch property 0.7 OU/m<sup>3</sup> and the Carleton Dairies property to be 3.6 OU/m<sup>3</sup>. The difference at the Frahm property is significant being double that indicated under seemingly the same values in the 12<sup>th</sup> July Report. Mr Curtis explained that this was associated with the increased resolution of the sampling grid (something Mr Chilton had originally been critical of) and for that reason the values presented in the 14 September report were more appropriate<sup>5</sup>. This modelling also included the frequency of exceedance of 5 OU/m<sup>3</sup> (measured in hours per year). For the Frahm property this was 240 hours for the Inch property 2 hours and for the Carleton Dairies property 21 hours.
93. The existing scenario with misting conservatively assumed that for ambient temperatures below 25°C, only half of the tunnel fans will be operational since the misting system in combination with these

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<sup>4</sup> Para 11 of J Iseli Memorandum

<sup>5</sup> Para 3.10 of A Curtis evidence for reconvened hearing



fans are able to provide sufficient cooling. When ambient temperatures were above 25°C, it was assumed that all tunnel fans are operational. The emission rates and fan parameters used were similar to those used for the existing scenario. The results showed a reduction at all three receptors with the Frahm property indicating 6.8 OU/m<sup>3</sup>, the Inch property 0.3 OU/m<sup>3</sup> and the Carleton Dairies property 1.7 OU/m<sup>3</sup>. The hours exceeding of 5 OU/m<sup>3</sup> also reduced to 79, 1 and 0 respectively.

94. The final expanded farm scenario (with misting in the existing sheds) assumed the existing farm cycle starts three weeks later than the proposed farm otherwise the parameters were the same as had previously been used. The results showed increases, albeit relatively small, at all three receptors with the Frahm property indicating 7.5 OU/m<sup>3</sup>, the Inch property 3.1 OU/m<sup>3</sup> and the Carleton Dairies property 3.6 OU/m<sup>3</sup>. The hours exceeding of 5 OU/m<sup>3</sup> also increased to 104, 13 and 12 respectively.
95. Mr Curtis commented that a comparison between the existing scenario with and without misting show that the misting system will result in a significant reduction in predicted odour concentrations. Further, he noted that in comparison to the existing scenario with misting, modelling of the expanded farm predicts only a small increase in odour concentration (<1 OU/m<sup>3</sup>) at the Frahm residence with slightly greater predicted concentrations at the Inch and Carleton Dairies residences, but still below 5 OU/m<sup>3</sup>. He also said that the modelling indicates that the number of occasions that 5 OU/m<sup>3</sup> concentrations occur will increase as a result of the farm expansion with the misting system in place, however, in the case of the Frahm and Carleton Dairies residences, the number of occasions will be less than that of the existing scenario.
96. Mr Curtis went on to discuss research undertaken in Australia on chicken broilers by Jiang and Sands which allows odour concentrations to be converted into odour intensities by an equation. Using the equation he calculated odour intensities for the three receptors with and without the misting system. Having located this research I found the odour intensity criteria identified as follows:

Odour	Intensity level
Extremely strong	6
Very strong	5
Strong	4
Distinct	3
Weak	2
Very weak	1
Not perceptible	0

97. Mr Curtis said that misting system will lead to a reduction in odour intensity level at the Frahm residence, in the case of both the existing and expanded farm scenarios, from 4 to 3 and that the odour intensity level at the Inch residence was predicted to increase from 1 to 2, which he considered to be low.

98. Mr Curtis concluded his 14<sup>th</sup> September report by saying that the modelling predicts that the implementation of a misting system to reduce the operation of tunnel venting fans will effectively halve odour concentrations from the existing farm and will thereby significantly reduce odour effects from both the existing and proposed expanded farms.

#### **Reconvened Hearing**

99. The hearing was reconvened on the 12th October 2016 with the further information sought having been pre-circulated with input from all parties, including Mr Iseli.

#### Mr Iseli

100. Mr Iseli had been appointed at my request in order to facilitate discussions and understanding of the odour dispersion modelling assessment in relation to both this and the Clarence Harvest application. In his 23<sup>rd</sup> September 2016 memorandum Mr Iseli outlined the meetings held between the air quality experts. He said in general terms substantial progress had been made between the experts in adopting an agreed modelling approach that is expected to provide a reasonable indication of the degree of odour impact. However, there were two notable exceptions in relation to this application:

- (a) There was disagreement regarding the odour emission rate calculated during the peak of the cycle (Days 28-42) based on the weight of birds at 28 days; and
- (b) There was disagreement regarding the likely effectiveness of the proposed misting system as a means of reducing odour from the existing sheds.

101. Mr Iseli said based on the modelling from the 12 July report the increase in predicted odour concentrations at the Frahm residence from 7 OU/m<sup>3</sup> existing to 12 OU/m<sup>3</sup> for the expanded scenario were likely to equate to a detectable increase in the degree of odour experienced at this location. He went on to say that while there was some predicted increase in odour at the Inch residence (from 1 OU/m<sup>3</sup> existing to 4 OU/m<sup>3</sup> proposed) the degree of odour was likely to be acceptable.

102. Mr Iseli noted that Mr Curtis's odour unit emission rate calculations were based on an average bird mass of 1.39kg at 28 days, however that information supplied by Mr Block indicates a top end live weight average at 28 days of 1.775kg. Consequently, he said the odour unit emission rate from days 28 to 42 of the cycle may be in the order of 28% higher than calculated by Mr Curtis. Thus there is potential for a small increase to the predicted level of odour experienced at neighbouring properties. I note this matter was also raised by Mr Chilton.

103. Mr Iseli indicated he had reservations about the effectiveness of the misting system in odour reduction. He said in relation to Mr Curtis's statement that the misting would cause evaporative cooling and result in only approximately half the fans being used at up to 25°C ambient temperature, that he was not convinced that the consequent reduction in odour emission rates would be as high as 50%, noting that Mr Curtis had not provided any odour measurement data to support this assumption.

104. Mr Iseli said that given his reservations about the effectiveness of the misting system in odour reduction he considered that the odour concentrations for the expanded farm scenario were likely to be closer to the 12 OU/m<sup>3</sup> predicted in the 12 July report than the 7.5 OU/m<sup>3</sup> predicted in the 14 September report. Based on the current information he considered that it was probable that there would be a detectable increase in odour experienced at the Frahm residence, both in terms of odour intensity and annual hours of exposure. He said there was potential for further mitigation, such as installation of roof ventilation on the existing sheds, to reduce the predicted odour concentrations caused by the proposed scenario.
105. Mr Iseli concluded by saying that some degree of caution should be exercised when interpreting odour modelling results of this type, that odour modelling was only one assessment tool and there are numerous assumptions adopted in the model that can vary in practice. He further said that modelling does not take into account odour emissions from shed cleanouts (occurring approximately 7 times per year per shed) and abnormal operations.
106. In response to my questions with regards the misting system, Mr Iseli said on balance given the uncertainty he wouldn't rely on the model reduction in odour with any certainty. He said 9–16 OU/m<sup>3</sup> was relatively high and therefore questioned whether the existing discharge was complying with the conditions of consent. In terms of further mitigation he said roof ventilation was an obvious option. Mr Iseli considered the use of a 19% increase in emissions modelled by Mr Curtis in relation to bird weight seemed reasonable.

Mr Chilton

107. In addition to the emission rate matter referred to above, Mr Chilton expressed significant reservations about the approach of halving the emission rates modelled when ambient temperatures are below 25°C on the basis that only half the tunnel fans will need to operate due to the misting system providing sufficient cooling. He was concerned that there was no supporting data, such as odour emission testing provided to justify this position and confirm odour emission rates will reduce. He said increasing the in-shed humidity levels inside the shed as a result of operating the misting sprays with reduced fan operation may result in increased odour concentrations in the shed as a result of an increase in moisture in the litter. Consequently, he did not consider the modelling results presented could be relied upon.
108. Mr Chilton also expressed concerns about the increase in litter removal resulting from the proposal and the potential for this to increase odour effects.
109. In response to questions Mr Chilton said the misting system was a key issue in terms of the benefits of mitigation. He remained concerned that without verification it was impossible to determine whether the system will work. He also maintained that a 28% increase in emissions rates should be factored in rather than the 19% now utilised by Mr Curtis in his latest modelling (see below).

Mr Davison

110. Mr Davison said he agreed with the comments of Mr Iseli regarding the misting system, the associated assumptions and absence of any substantiating data. He considered it difficult to reach a definitive position in the absence of such information. Again based on Mr Iselis assessment Mr Davison considered the Frahm residence may be subjected to offensive or objectionable odour cumulatively as a result of this proposal irrespective of the discharges authorised under CRC151072, which affected party approval was provided for.
111. Mr Davison considered the retrospective installation of roof stack ventilation to the existing sheds to further reduce the odour concentrations as suggested by Mr Iseli would be the best practicable option, and may reduce the potential cumulative effects of the proposal, in combination with the existing operation below the 5 OU/m<sup>3</sup> threshold. He noted however that no dispersion modelling had been carried out to model the predicted odour concentrations if this mitigation was adopted.
112. Mr Davison had reconsidered the relevant objectives and policies of the RPS and NRRP based on the new information and now considered the proposal to be inconsistent with these given the potential for offensive and objectionable odours to arise on the Frahm residence beyond the boundary of the applicant's property.
113. Mr Davidson advised that decisions on the PCARP had been released on 1 October 2016. He had therefore undertaken an assessment against the revised objectives and policies. He considered the proposal was overall generally inconsistent with these objectives and policies as the Frahm residence may be subjected to cumulative offensive or objectionable effects which are noticeably detectable.
114. Mr Davison at this point now recommended the application be declined, but he provided a revised set of conditions if I was of a mind to grant the application.

Mr Curtis

115. In his evidence for the re-convened hearing Mr Curtis initially outlined the background to his involvement in application.
116. In response to Mr Iselis memorandum Mr Curtis said neither he or Mr Iseli were experts on the operation of ventilation systems in chicken sheds, and therefore he did not think it appropriate for either to comment on the effect of the misting system on the fan operation, which he said was provided by Tegel and its ventilation experts. However in his opinion it was appropriate to consider what changes in running fans might have on the odour emissions.
117. Mr Curtis said that the initial work (as presented in the 12 July report) assumed that with all of the fans operating, all of the odour that might be generated in the shed was discharged. However, he considered it was unreasonable to assume that this is the case when there were only half the fans operating. Therefore he concluded emissions have effectively halved when the misting system is operating by assuming that the 50% of the fans that do operate, only remove an amount of odour

equivalent to their flow multiplied by the odour concentrations within the shed on that day. This is he said in fact how odour, and emissions from other sources are normally calculated. In addition, the model still assumed that when temperatures were greater than 25°C all of the fans operated and all odour was discharged.

118. Mr Curtis said he had not assumed any reduction in the odour generation rates, only reductions in the amount of odour emitted, which was related directly to the number of fans operating. He said given this, based on the advice provided by Tegel and the farm operators, we are still overestimating the number of fans that operate for the majority of the time, and so he was comfortable that the odour assessment remains conservative. He did not therefore agree with Mr Iseli that odour concentrations will be closer to those that would occur if the misting system was not installed or Mr Chilton's comment on the effectiveness of the misting system
119. In terms of the issue of bird weight, Mr Curtis said that his assessment used Australian odour emission factors, which linked bird age and weight with an odour emission rate. He had now become aware through Mr Block that on average birds in New Zealand grow faster than those in Australia, and therefore at day 28 the average bird weight is 17% greater. He noted that Mr Iseli had based his comments and calculation on the top end weight, which he did not consider appropriate, as the emission factors are based on average bird weight for a particular day, and already take into account the natural variation in bird weight that will occur within the shed. Therefore it would be extremely conservative to use the top end weight to assess the odour as this would not reflect the shed emissions and result in an extremely conservative assessment which does not reflect what has been done in the past.
120. Mr Curtis said therefore, if it was assumed that there is a proportionate increase in odour, which may or may not be the case, then there could be a 19% increase in the concentrations he had predicted (not the 28% increase mentioned by Mr Iseli). While he accept that there is likely to be some difference in the odour concentrations per bird, he was unsure whether it was necessarily going to be as great as 19%, as there were many factors that contribute to shed odour including: the site management practices and the ventilation regime, which will not change.
121. Notwithstanding his reservations, Mr Curtis adjusted his predicted concentrations by the 19% factor and provided a new set of contours. The adjusted levels for the expansion showed concentrations at the Frahm property increasing to 8.9 OU/m<sup>3</sup>, the Inch property increasing to 3.7 OU/m<sup>3</sup> and the Carleton Dairies property increasing to 4.3 OU/m<sup>3</sup>. The existing level at the Frahm property from the recalculation increased from 14 to 16.7 OU/m<sup>3</sup>.
122. Mr Curtis noted that even with this 19% increase there will be a significant reduction in odour at the Frahm residence compared to what is predicted for the current operation. He said that the issue of bird weight raised by Mr Iseli and Mr Chilton, while of importance and something that needs to be taken into consideration, does not result in a significant change in the off-site odour concentrations

predicted. He also said there was no modelling that he was aware of that included litter removal, which he considered should be addressed through appropriate on-site management.

123. In addition he said the Applicants had made commitments to significant additional on-site mitigation to avoid off-site effects, and to ensure that off-site effects on the Frahm residences, which he said were associated with the existing operation, will be significantly reduced over what exists now. He noted that these additional mitigation measures come at substantial cost.

Additional Evidence

124. In addition to Mr Curtis the Applicant provided evidence from Mr Block, Mr Kelly and Dr Cowie. Mr Block and Mr Kelly's evidence was common between this application and the Clarence Harvest application.
125. Mr Block said he was concerned about the amount of emphasis which was being placed on the results of the odour modelling. He considered there were many variables involved in poultry farming which may, or may not affect the odour generation potential which are hard, if not impossible to capture within air discharge models. Further, he said his experience was that modelling tends to add uncertainty rather than provide clarity and that even though we know the figures are conservative they are still subject to debate. He was also concerned about the blanket use of 5 OU/m<sup>3</sup> as a threshold for assessing effects. He said this figure does not mean anything in reality and the contours are subject to significant change and therefore it should only be a guide and not a defining figure.
126. Mr Block then sought to provide me with a better understanding of what actually happens. He provided a placement summary of five shed farms. This showed the day old chicks varying in weight. Mr Block said this was important as for every gram difference at placement it will be 16 grams at the tail end of the run. The summary showed that at the 29 day point the density numbers were different.
127. Mr Block said the modelling did not account for this level of complexity and likewise it does not take into account diet formulation and raw material specification which impact on litter quality, increased focus on ventilation management and a drop in placement density. He said this demonstrated that there was too much complexity to fully model accurately and make conclusive decisions.
128. Mr Block concluded by saying that current chicken odour modelling is taken from data out of Australia from ten years ago. He did not believe it was still relevant due to all the things he had mentioned and considered this made it even more conservative.
129. **Mr Kelly** addressed the misting system. He said the system called High Pressure Cooling (HPC) can provide up to 7 degrees of cooling with outside humidity of 55% or less. The principal is for very fine droplets of water to evaporate within 2-4m thereby cooling the air within the shed. Mr Kelly said that the litter did not get wet through this process as the droplets evaporate before getting to the litter.
130. Mr Kelly advised that HPC used with low power ventilation (LPV), the main ventilation using chimney fans, provides the most efficient control within a broiler shed. He said this can provide stable

conditions for birds with outside temperatures up to 35 degrees. He predicted, based on relevant data, that in Christchurch with LPV and HPC, tunnel ventilation will only be required on average 90 hours per year.

131. Mr Kelly said that LPV plus HPC used 12 chimney fans (depending on shed size), plus 3-4 end wall fans which would provide significant dispersal of the air. He said the chimney fans are dispersing the air at 11m/s up to 5 to 6 metres above the ground. He considered this system provided the most controlled outcome for the birds with even temperatures throughout the shed for the full 42 day cycle.
132. Dr Cowie reiterated the view that the intensity of the odour discharges on the property must be the starting point for assessing the effects on the Frahm residence for the modified proposal and that the Frahms had given their consent in this regard. He said the modelling, which he said was conservative, now showed a significant reduction in effects on the Frahm residence given the mitigation now proposed.
133. Given Mr Davison's revised recommendation Mr Cowie said he could not reconcile how Environment Canterbury could have granted the current consent and now say the present application should be refused when the effects are shown to be significantly reduced.

#### **Post Hearing Information**

134. At the end of the reconvened hearing the applicant sought leave to address matters which had arisen. This resulted in correspondence from Mr Curtis (twice), Mr Davison and Mr Chilton.

#### Mr Curtis

135. Mr Curtis provided further information in a memorandum on the 15<sup>th</sup> November 2016 as to matters raised at the reconvened hearing.
136. In relation to ventilation requirements Mr Curtis said for animal welfare reasons, chicken sheds are constructed with significantly more fans than is required for normal weather conditions. This allows for some redundancy in the ventilation as a result of fan failures as well as those infrequent extreme weather conditions and for the majority of the time less than half of the installed fan capacity is used. He said despite this it is typical to model the worst case conditions by operating all of the fans.
137. In terms of ventilation Mr Curtis said the system serves two purposes. Firstly it ensures that there is sufficient fresh air for the birds and secondly it ensures that the birds are kept at a comfortable temperature at all times, which changes with bird age. He noted that fans are run to cool the sheds and in most existing sheds ventilation occurs using a number of wall mounted fans, typically located at one end of the shed so that it can operate in tunnel mode, but often with a few smaller fans mounted along the sides to provide ventilation when the birds are smaller. He said it was the operation of the ventilation fans that results in the potential for odour emissions and that the quantity of odour discharged into the environment is therefore directly related to the number of fans operating at any given time.

138. In order to demonstrate the conservativeness of the assessment Mr Curtis said that he had calculated the number of ventilation fans that are required to operate at any given time using data which represented ventilation rates during the hottest time of the year. He said that this showed that when birds are young (up to around 8 days old) only one fan is required to operate to ensure fresh air is circulated into the shed to maintain healthy air quality. When the birds are between 9 and 42 days old, the number of fans increases with typically less than six fans required to operate to ensure adequate cooling of the birds. He said that given that there are 12 fans on these sheds, this means that the ventilation does not operate at maximum capacity at all times which means that the odour predictions are very conservative.
139. In relation to the concerns raised about the decision to keep the odour concentrations the same, Mr Curtis indicated that further research had been undertaken to determine whether there was any information on changes in odour concentrations with ventilation rates. He had identified work undertaken by the Rural Industries Research and Development Corporation (RIRDC) in Australia which reported on this issue. The data indicates that higher odour concentrations were measured when the ventilation rates were lower and that once ventilation rates were greater than approximately 2,500 m<sup>3</sup>/min the odour concentrations were relatively constant. Using the 14<sup>th</sup> September report and based on RIRDC data Mr Curtis said there would not have been any significant increase in odour concentrations inside the sheds and therefore the assumption made that the odour concentration would remain the same were reasonable and defensible. He said he was therefore confident that he had not underestimated the potential odour concentrations from the sheds when assessing the effectiveness of evaporative cooling.
140. In addressing odour mitigation Mr Curtis said there are a large number of factors that contribute to the odours associated with chicken broiler farms, which are largely related to operational management. He said there was little, if any, publically available data which quantifies the effects of, for example, changes to feed composition and therefore it was not possible to factor the benefits of these changes into the modelling.
141. In terms of the misting system Mr Curtis said he was confident that the lower off-site concentrations presented in the 14 September report were a good approximation of the benefit of the installation of evaporative cooling. Notwithstanding this, an assessment as to the effect of installing roof fans in existing Sheds 4 and 5 on odour impacts from the existing farm has been modelled in a similar manner to that presented in previous assessments. As with the new sheds it was assumed that all odour is discharged through the roof fans at temperatures below 25°C and that sheds would only operate in tunnel mode at temperatures above 25°C. The results showed 6.7 OU/m<sup>3</sup> at the Frahm residence as compared with 7.5 OU/m<sup>3</sup> for the misting system. I note that these figures did not seem to include the 19% pro rata adjustment made for bird weight which had been included in Mr Curtis's evidence at the reconvened hearing.



142. Mr Curtis concluded by saying his review confirmed that it was valid to reduce the number of fans based on the use of misting systems in the existing sheds, and that it is also appropriate to keep the odour concentrations the same. He considered the modelling showed either mitigation option (installing the misting system in all five sheds or installing roof fans in Sheds 4 & 5) achieves a similar and substantive reduction in predicted odour concentrations at the Frahm property compared to the consented existing environment. He said the applicant has a preference for installing misting systems in all sheds for bird health reasons, but would, if required to do so, install chimney ventilation in existing sheds 4 and 5 as an alternative.

Mr Davison

143. Mr Davison in response to the above considered the effectiveness of the proposed misting system option still relied on assumptions that are unable to be validated. In terms of the roof ventilation option he considered the potential adverse nuisance effects on the Frahm residence were likely to be minor as the modelling demonstrated this to be 1.7 OU/m<sup>3</sup> above the 5 OU/m<sup>3</sup> guideline. He said that written approval for the existing operation was limited to 5 OU/m<sup>3</sup>, and only effects above this value should be considered on the Frahm property.
144. Mr Davison concluded that his preference was for the roof ventilation option to be adopted and if that were the case his recommendation would be to grant consent. However, he cautioned that he was not familiar with any of the inputs used in the dispersion modelling results for this option. Further, he said that if consent were to be granted a condition would need to be drafted with the effect of requiring a change of conditions to discharge permit CRC151072 to be sought prior to the first exercise of CRC156783. He went onto provide wording to that effect.

Mr Chilton

145. Mr Chilton considered Mr Curtis's had over simplified the mechanism for odour generation and discharge and therefore the potential for odour emissions. He said in practice the operation of the fans on the shed provides the mechanism for odorous air within the sheds to be discharged to atmosphere. However, the mechanism for generation of odour within the shed depends on a number of factors, including the number and age of birds, the in-shed relative humidity, the condition of the litter etc.
146. Mr Chilton said the odour emission calculation method used in the assessment is not based on the number of fans operating at any given time. Instead it is simply based on the total mass of birds within the sheds. This is then varied by the age of the birds (and therefore the changing mass) to maintain a bird mass stocking density. He said at this point, the total odour emission rate from the sheds has no dependence on the number of fans operating and that regardless of the number of fans operating the total amount of odour discharged remains the same.
147. With regard to the RIRDC report Mr Chilton said it did not relate to the effect that in-shed misting sprays may have on odour generation. He irritated his concern that the operation of in-shed misting

sprays will increase in-shed humidity levels and ultimately the moisture content of the litter, which in turn would increase the generation rate of odour. He continued by saying that the report while showing a decreasing trend in concentration with increasing ventilation rate is not especially helpful when considering the effect that ventilation has on the overall amount of odour (or odour emission rate) discharged from the shed. It is the odour emission rate (and not in-shed concentration) that drives off-site odour effects and is what is calculated as the input to any odour dispersion modelling.

148. In terms of the alternative mitigation of roof fans Mr Chilton said it was unclear what the parameters were for those fans and whether the two sheds (and/or the other existing sheds) have been modelled using assumptions regarding evaporative cooling. He also reiterated his concerns about the approach of using a 1 January start date for bird growing cycles in the modelling without additional testing as to the effect that the assumed arbitrary start date has on the overall predicted odour concentration.

Mr Curtis

149. Mr Curtis responded to Mr Chilton's comments, stating that he agreed that the factors that influence odour will largely continue regardless of the degree of ventilation occurring. However he considered Mr Chilton had misinterpreted his comments in relation to odour emissions. He said what he was saying was simply that if there are no fans operating then there is no discharge of odour from the sheds. Therefore given that the fans operate at a fixed air flow, there must Mr Curtis considered be some proportionality to the odour emissions, based on the in shed concentrations and the flows.
150. Mr Curtis said he had assumed that the odour generation rates remain constant and multiplied the resultant concentration by the flows to determine emissions. He noted that this in fact seems to be what Mr Chilton suggested in the last paragraph of his section titled Broiler shed ventilation requirements.
151. In relation to odour emission rates Mr Curtis said he had based his conclusions on the fundamental premise, used in most dispersion modelling, that you multiple concentrations by flow to determine the mass (or in this case odour) emission rate. He said he based the concentrations on the calculations presented previously and data from the RIRDC report which graphed odour concentrations against ventilation rates. Consequently while he accept the RIRDC data shows some ambiguity, in his opinion that it does not support Mr Chilton's conclusion that there is "no relationship between the ventilation rate (number of fans operating) and the odour emission rates".

**Applicant's right of reply**

152. In her right of reply of the 29<sup>th</sup> November 2016 Ms Ellis addressed a number of matters which I summarised below.
153. Ms Ellis said that overall it was the case for Tegel that modelling is very conservative and that the issue of odour has been comprehensively considered throughout the evidence. She said Mr Curtis accepts combined odour emissions from both the existing and proposed farm will not drop below 50U

at the Frahm residence in the worst case conditions regardless of the mitigation option chosen. But the modelling predicts that the new farm is likely to result in only negligible increases in odour experienced at the Frahm residence (well less than 1 OU). In addition his modelling predicts that there will be a substantial reduction in odour at the Frahm residence if either of the two, or both mitigation options are implemented.

154. In terms of the start date issues associated with the modelling Ms Ellis submitted that the start date used coincides with the hottest 6 weeks of the year. She submitted that running more start dates would not improve the conservatism or reliability of the information provided by Mr Curtis.
155. Ms Ellis said that given this significant reduction in off-site effects, and given that the Frahms gave written approval to the existing discharges, it is submitted that the 50U guideline (which has been applied only to entirely new blocks of proposed sheds) is meaningless. Put simply, it is modelled to be exceeded now, has been approved by the Frahms, and the applicant is proposing to significantly reduce off-site effects. She went onto say that Mr Curtis has shown that effects at both the Inch residence and the Carleton Dairies residence will be below the 50U threshold, and Mr Iseli has agreed that the effects at these properties will be acceptable.
156. She said Tegel has provided the additional mitigation noted by Mr John Iseli with the final mitigation package including:
- roof ventilation systems in all the new sheds and (if considered essential) existing sheds 4 and 5;
  - misting systems in all the new sheds and existing sheds one to five;
  - state of the art in-shed technology;
  - odour Management Plan;
  - compliance with animal welfare standards;
  - compliance with industry standards;
  - offsetting of run cycles between the proposed new farm and the existing farm;
  - maintenance of complaint records; and
  - prompt removal of litter and shed clean outs.
157. Additionally, Ms Ellis said that the applicant has shown a commitment to ensuring that the proposal does not result in offensive and objectionable odour by amending the original application and proposing extensive (and expensive) upgrades to the sheds on the existing farm. She said the Applicant remains of the view that, for operational reasons, the installation of the misting system will provide the best outcome and that they are committed to reducing odour effects at the Frahm property, and complying with the conditions of consent, if granted.

158. Ms Ellis said that while there remains a likelihood of some odours effects on the Frahm residence as a result of the proposal; these effects are expected to be significantly less than those currently experienced. In this context she submitted that some leeway must be read into the pCARP to provide for such situations, and to acknowledge the existing rural environment, where odour effects are already present. She submitted that to require all odour effects to be avoided, without accounting for existing activities, would create a situation where no new intensive farming activities could ever be consented in rural areas and that this simply could not be the intention of the pCARP.
159. In addressing the pCARP decision, Ms Ellis said it was agreed that this ought to be taken into account. The question was one of weight and she submitted that I needed to be cautious about placing too much weight on the provisions of the pCARP decision where they remain subject to appeal (on points of law). In that regard she referred me to the Canterbury Aggregate Producers Group appeal against the definition of "sensitive activities" which she advised may impact on objectives, policies and rules to which the definition relates.
160. Ms Ellis submitted that the prior conduct<sup>6</sup> of the applicant may have some relevance under the "any other matters" arm of section 104(1) so long as there was no conflict with the underlying objectives of the RMA. She said that the Applicants are responsible and competent broiler chicken farmers and consent holders and have shown a dedication to compliance not only with their current consents but also in the amendments made to this application since it was lodged 18 months ago. She said there is nothing to show that operations at the existing farm have breached the existing consent at any time. In particular, there is no evidence that there has ever been offensive and objectionable odour beyond the boundary and no odour complaints have ever been made by any neighbour.
161. In relation to shed cycles Ms Ellis submitted that Tegels processing facilities will not be able to handle both farms beginning a cycle at the same time and that this alone will ensure that the farms will always be run on separate cycles. Nevertheless she said that the applicant was prepared to have consent CRC151072 for the existing farm varied so as to not allow the two farms to operate on the same cycle. The cycles being offset by at least three weeks would mean that there would never be litter cleaned out of the 11 sheds at the same time. Mr Ellis submitted that the conditions to vary the existing consent were offered on the basis that the application will either be non-notified or, at the most, limited notified to Mr and Mrs Frahm.
162. Ms Ellis said that the Applicant considers a review condition appropriate and had proposed a condition providing that ECan may review the conditions of the consent annually.

### **Closure of Hearing**

163. The hearing was closed on the 8<sup>th</sup> December 2016.

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<sup>6</sup> New Zealand Suncern Construction Ltd v Auckland CC (1997) 3 ELRNZ 230

## ASSESSMENT OF EFFECTS

### Statutory Considerations

164. The application is to be considered under Section 104 and 104C of the RMA. Section 104 sets out the matters to which I must have regard, subject to Part 2 (which contains the RMA's purpose and principles). Relevant to this case, the s104 matters include:
- any actual and potential effects on the environment of allowing the activity; and
  - any relevant provisions of the regional policy statement and regional plan; and
  - any other matter I consider relevant and reasonably necessary to determine the application.
165. In considering this application, I am mindful that the proposal is for a restricted discretionary activity and therefore in terms of s104C of the RMA I am only able to consider those assessment matters that are specified in the relevant Plans. In assessing this proposal I am also able to have regard to the nature and scale of activities that might be permitted as of right on the site in terms of Section 104(2) of the RMA (the permitted baseline). I am not convinced there is any permitted baseline argument in this case, however the impact of the existing discharge consent is discussed below.

### Statutes of Proposed Canterbury Air Plan

166. The pCARP was notified in February 2015 prior to the lodging of the application. All provisions of the pCARP had immediate effect. The decisions on the pCARP were notified on the 1 October 2016.
167. In his supplementary evidence of the 12 October 2016 Dr Cowie said "*the operative Plan [sic] is not a relevant consideration*"<sup>7</sup>. I took from his comment that he was referring to the pCARP. However, Ms Ellis in the right of reply agreed that the pCARP ought to be taken into account. She said the question was one of weight particularly given the appeal against the definition of "sensitive activities" which may impact on objectives, policies and rules to which the definition relates.
168. I agree the pCARP is of relevance to my considerations and I accept that where the term "sensitive activities" is used I need to be somewhat cautious as to the weighting I give to those provisions. Nevertheless, it would seem improbable that a residence or dwelling would not fall within the definition of sensitive activity and I note that under both the notified and decision version of the plan this was the case.

### **Odour Modelling**

169. A key issue in this application, as it is in the Clarence Harvest application, is that of odour modelling and the resulting contours which are measured in Odours Units (OU/m<sup>3</sup>). The modelling is an extremely technical and complex process and like all models dependent on the various inputs. As a result I was advised by witnesses on more than one occasion that it is but one of a number of factors that need to be taken into account in assessing this application. Notwithstanding this, odour

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<sup>7</sup> Para 4 of Dr Cowie supplementary evidence

modelling has over more recent years been used as a key tool in assisting and guiding decision making.

170. The modelling is designed to predict the 99.5<sup>th</sup> percentile one hour concentration of odour at ground level in odour units per cubic metre (OU/m<sup>3</sup>). The odour dispersion modelling results in contours for concentrations of odour often expressed in 2, 5 or 10 OU/m<sup>3</sup>. This portrays the odour concentrations that could be expected at a particular location for 0.5%, or approximately 43 hours of any year.

#### 5 OU/m<sup>3</sup> Threshold

171. I was advised that air discharge decisions for broiler chicken farms<sup>89</sup>, had established that a one hour, 99.5% odour modelling guideline of 5 OU/m<sup>3</sup> was appropriate as the threshold at which nuisance or offensive or objectionable odour effects could possibly occur. As part of my deliberations I have read these and other associated decisions. I note that these decisions were not confined to new broiler farms and I can see no reason why the 5 OU guideline should not be used in situations of farm expansion.
172. I note that Mr Curtis consistently referred to the 5 OU/m<sup>3</sup> guideline being acceptable or commonly used in Canterbury in his 12<sup>th</sup> July report as if to suggest that it was not used elsewhere. I was unsure as to the relevance of these comments but I noted that the Jiang and Sands research Mr Curtis referred to had as one of the recommendations that *"A one hourly averaged odour concentration of 5 ou/m<sup>3</sup> at the 99.5th percentile be adopted in the development of odour impact criteria for broiler farms in temperate Australia on the basis of the assumptions used in the study"*.
173. In the Burgess decision I noted that the experts were all agreed that at concentrations exceeding 10 OU/m<sup>3</sup>, any odour would be distinct and most people would regard this as objectionable and offensive. At less than 10 OU/m<sup>3</sup> things were less straight forward. Experts in this case contended that the effect of odour within the 5 - 10 OU/m<sup>3</sup> contour is harder to characterise and its assessment must take into account FIDOL factors - Frequency, Intensity, Duration, Offensiveness and Location. I note that Mr Chilton is quoted within that decision as holding a similar view and advised that there would be a recognisable odour at concentrations from 6-8 OU/m<sup>3</sup> but whether this odour was objectionable or offensive depends on the frequency and the duration of exposure<sup>10</sup>.
174. I note however that it was cautioned in Burgess<sup>11</sup> that a 5 OU/m<sup>3</sup> threshold was not to be treated as a pass or fail test, and the fact was that the model only makes predictions about the concentration of odour which may or may not eventuate. Further in Craddock Farms Limited v Auckland City Council (2016 NZEnvC 051) (Craddock Farms) the Court concluded that *"we have concerns about the reliability of the modelling as a basis for predicting odour levels"*<sup>12</sup>.

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<sup>8</sup> Wilson and Selwyn District Council (C23/2004)

<sup>9</sup> Burgess and the Selwyn District Council v McFall (2014 NZEnvC 11)

<sup>10</sup> Para 26 Burgess and the Selwyn District Council v McFall (2014 NZEnvC 11)

<sup>11</sup> Para 35 Burgess and the Selwyn District Council v McFall (2014 NZEnvC 11)

<sup>12</sup> Para 96 Craddock Farms Limited v Auckland City Council (2016 NZEnvC 051)

175. I therefore accept that the 5 OU/m<sup>3</sup> threshold should be seen rather as a guideline for a point where odour may be discernible in certain circumstances and may be offensive or objectionable but it is not determinative of that. In other words the application doesn't stand or fall on the 5 OU threshold and there are a number of other matters including FIDOL assessments that need to be considered.

#### Modelling of Jones Application

176. Turning to the modelling in this application (and that of Clarence Harvest) it was somewhat frustrating that the modelling scenarios varied so greatly even when the same parameters seemed to have been used in some cases. There may be reasons for all this but I was unable to determine exactly what they were.
177. I found Mr van Kekems initial "conservative" based modelling of little value when it showed contours of 173 OU across dwellings such as the Frahms. His modelling assumed for example that odour emissions remained constant for the entire growing cycle when clearly in reality they do not. He also stated that in the case of expansion of an existing farm where predicted impacts from the existing operation at neighbouring residences are already well above 5 OU/m<sup>3</sup> there is a strong case for alternate assessment criteria, particularly, as in this case, where there is no history of odour complaints. I will comment on this matter later, however I found this modelling did not provide me with a good understanding or guide as to the potential odour effects particularly when there is an established guideline threshold of 5 OU/m<sup>3</sup>. Partially as a result of this I sought further work to be undertaken as referred to above.
178. The subsequent modelling by Mr Curtis appeared to establish more realistic situations and values which I found easier to relate to potential effects on the ground. He also provided an indication of the number of hours per year where odour is predicted to be at or above the 50U level in his modelled scenarios which was also helpful in guiding my understanding of the effects.

#### Differential Start Dates

179. Mr Chilton expressed concern about the modelling not considering the impact of different start dates for each cycle. In his 23<sup>rd</sup> September evidence for Clarence Harvest he said the start date assumed for the growing cycle can influence how worst case emission rates interact with worst case meteorology. He noted that for Clarence Harvest such scenarios had been modelled by Mr Curtis in his 4<sup>th</sup> July letter and that a scenario with a start date of 8 February gave the highest model prediction of odour and 1 January the lowest with the start date affecting the model predictions by up to 15%.
180. Having reviewed Mr Curtis letter of the 4<sup>th</sup> July for Clarence Harvest I accept he does state that *"the choice of start date for the variable emissions file is important with differences of up to 15% apparent.* However he goes on to say that *"it is also apparent that in some cases the use of the 1 January start date gave the lower predicted off-site concentrations in this case than other start date options and therefore potential [sic] underestimates the potential off-site concentrations".* [Emphasis added]

181. My review of the modelled scenarios in this case (scenarios 6 - 9 in the Clarence Harvest 4<sup>th</sup> July letter) also showed that at some receptors 1 January had the highest levels equal to 8 February and that the difference at each receptor for each scenario was no more than 1 OU. Mr Curtis in his conclusion to that letter had stated that there *“appears to be little merit in using variable emissions rates and arbitrary start dates, compared to with a fixed emission based on maximum stocking density.”* Mr Curtis also stated in his 14<sup>th</sup> September report that he had assessed the impact different starting dates has on predicted concentrations and found that it had little effect.
182. On this matter therefore I am not convinced that further modelling of different start dates would, given the circumstances, provide me with any better understanding of the potential odour effects, particularly in a situation where the modelling is seen as a guide.

#### Use of Misting System

183. The misting system was introduced as a mitigation measure for the existing sheds with detailed evidence on the system being provided by Mr Kelly at the reconvened hearing. My understanding was that the system would help provide a controlled environment for birds with even temperatures throughout the shed. Mr Kelly explained that the droplets sprayed out from the system would evaporate before they hit the ground.
184. Both Mr Chilton and Mr Iseli expressed concerns with regards the effectiveness of the system in reducing odour, with Mr Chilton suggesting that it may result in increased odour through increased shed humidity. Having viewed the system, albeit not in full operation, I accept its ability to help better control the environment for the birds. What remains unclear in my mind, and indeed there was no supporting evidence other than predicted modelling, was whether the system actually helped in reducing odour. At this stage without substantiated evidence that odour effects are reduced, and if so by what sort of level, I am reluctant to give the misting system any significant weight in terms of reducing odour effects.

#### Ventilation Rates and Odour Discharge

185. On the matter of ventilation I am not convinced that lower ventilation rates or having less fans operating necessarily results in lower odour emissions. I found this proposition which I understood Mr Curtis to be making difficult to understanding. It may have been what Mr Curtis was suggesting was that with less fans operating less odour was being dispersed at once. However, I failed to understand in this context why the total amount of odour discharged wouldn't remain the same.

#### Criticism of Modelling

186. Mr Block's criticism of the modelling at the reconvened hearing is noted and I understand his frustration but I believe it is somewhat misguided. While I acknowledge the various points he makes, odour modelling, like other air discharges, has become an accepted tool, including by the Environment Court, in the overall evaluation of proposals. In my view it is perhaps time for the industry to embrace it further and ensure that the model is updated, appropriately calibrated and the



corrected values are agreed. I also consider that if more appropriate and realistic values had been used in the modelling in this case in the first place then perhaps the time and extensive input (and expense) which has resulted may not have eventuated.

### Conclusion

187. Overall, given the variables involved, the inability to incorporate certain aspects and the lack of agreement between experts as to the relevant inputs or modelling scenarios I have accepted that the modelling presented by Mr Curtis is a tool in understanding odour effects and forms a guide in my assessment, but that it may not represent the reality on the ground. In other words the results do not set absolutes or some sort of pass or fail test which I need to decide upon. I also tend to accept that there is an element of conservatism in the modelling, given Mr Block's comments about the complexity of the operation, the elements which are not accounted for and the changes to placement density. The degree of that conservatism however remains unclear.
188. Notwithstanding the above, for the purpose of my assessment the odour modelling of the existing chicken farms by Mr Curtis has indicated that levels upwards of 16.7 OU/m<sup>3</sup> maybe being received at the Frahm residence (utilising the 19% increase for bird weight figures), with much lower levels at the Inch residence and Carleton Dairies. At 14 OU this equated to 240 hours above the 5 OU threshold, so it could be anticipated that at 16.7 this figure might be greater.
189. With the mitigation measures proposed the modelling shows that with overall misting and roof ventilation on the two sheds closest to the Frahms residence a level of 6.7 OU is reached for the expanded farm and without the roof ventilation the figure is 7.5 OU<sup>13</sup>. The 7.5 OU figure equates to the figure provided in the 12 September report which did not take account of the 19% pro rata for bird weight which Mr Curtis accepted in his 1 October statement of evidence. That showed the 7.5 OU measurement increasing to 8.9 OU<sup>14</sup>. On this basis it would seem likely therefore that the figure associated with roof ventilation mitigation might rise to around 8 OU when allowing for the 19% pro rata for bird weight. Either way the modelling indication is that with mitigation the 99.5 percentile 1 hour average odour concentrations at the Frahm residence will be between 5 and 10 OUs for the expanded farm whereas the existing farms concentrations at this residence are predicted between 10 and 20 OUs. At the Inch and Carleton Dairies Residences the figures modelled are below 5 OUs.
190. The modelling also indicates that the expanded farm cumulatively adds less than 1 OU at the Frahm residence and between 2 and 3 OUs at the Inch and Carleton Dairies Residences.

### ***Existing Consent***

191. Existing consent CRC151072 to discharge to air was granted on the 18<sup>th</sup> September 2014 for a term of 35 years. That consent, covering the discharge to air from five chicken sheds, was for the expansion of the existing operation to include a further chicken shed providing for an overall total of some

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<sup>13</sup> Table 2 of Curtis memorandum dated 15 November 2016

<sup>14</sup> Table 2 of Curtis Statement of Evidence

180,000 birds. The consent was dealt with on a non-notified basis and included affected party approval from the Frahms. The consent included a condition (Condition 5) requiring that the odour discharge must not result in an offensive or objectionable odour beyond the boundary of the site.

192. The impact of this is that the existing discharge consent is considered to be part of the environment although the discharge must not reach a point of being offensive or objectionable odour beyond the boundary of the site. Mr van Kekem and Dr Cowie contend therefore that it is only the additional odour effects of the proposed new sheds over and above those existing effects that should be taken into account.
193. Turning to Ms Ellis's submission in paragraph 42 of the right of reply and referred to above in paragraph 155 I need to make it clear that no evidence was provided to suggest that the Frahms gave consent to the 2014 application to exceed the 5 OU guideline. In fact I was not advised that any odour modelling had actually been undertaken on this previous consent. What the Frahms gave consent to was the discharge of air from four existing shed holding 130,000 birds and one additional shed holding 50,000 birds. A condition of the consent then granted was that there be no objectionable or offensive odour beyond the boundary.
194. Therefore, while I accept that the existing discharge consent is part of the existing environment it is only so where compliance with the conditions set within it, including Condition 5 referred to above, is being met. The updated modelling evidence (generally agreed by all experts) was that the Frahms residence was already predicted to be receiving level around three times in excess of the 5 OU/m<sup>3</sup> threshold, with a calculated prediction of 240 or more hours per annum above that threshold and an odour intensity grading of Strong. From the cases I have read above it seems unlikely that a proposal containing modelled odour units at this level would on the face of it obtain consent.
195. The evidence from Mr Frahm was that they experience the effects of offensive odours in various northerly winds and still conditions and that it was not unusual for this effect to be off and on for 3-4 days in a row.
196. Ms Ellis submitted that there is nothing to show that operations at the existing farm have breached the existing consent at any time and there is no evidence that there has ever been offensive and objectionable odour beyond the boundary. Yet based on the modelling results, which is evidence, it would appear possible that the odour currently being received by the Frahms may well be regarded as offensive and objectionable and thus it is therefore possible that Condition 5 is not currently being met. Perhaps more to the point is that no party has sought to verify (by independent expert) whether or not the Frahms are receiving offensive or objectionable odour.
197. This to my mind highlights the problem with the alternative assessment criteria and modelling approach taken by Mr van Kekem. It could only potentially be appropriate if the existing consent was deemed compliant and a history of no complaint does not in my view equate to compliance.

198. This also highlights the problem I see with Dr Cowie and Mr van Kekems contention (although not wrong) that it is the Regional Council's responsibility and duty to monitor and ensure compliance with conditions including Condition 5. I'm not sure how this is to be achieved under the current situation unless a complaint is lodged and even then, as discussed further below, it is not all that straightforward. Dr Cowie's reference to monitoring is however interesting because as far as I can see no such monitoring is taking place.

***Offensive or Objectionable Odour Conditions***

199. Most air discharge consents involving odour rely heavily on a condition requiring that the activity not result in an offensive or objectionable odour beyond the boundary of the site or some other point such as a notional boundary. The offensive or objectionable effect threshold is determined by what is known as the FIDOL factors referred to earlier which stem from a Ministry for the Environment Good Practice Guide for Assessing and Managing Odour in New Zealand (2003).
200. The flaw in this condition it seems to me is that the current process of establishing whether there is an offensive or objectionable odour event relies in the first instance on a complaint being made. The complaint however does not in itself mean that there is an offensive or objectionable odour occurring. That needs to be determined by a qualified expert normally from a Regional Council, because as Dr Cowie said offensive or objectionable odour is different to different people and is dependent on their sensitivity. There seems to be no regular monitoring process set up to review whether odour discharges are complying with the offensive or objectionable conditions unlike say noise in similar situations. I note that this matter was raised in the Craddock Farms case (and referred to by Mr Chilton as a potential condition) but was seen to be fraught with difficulties.
201. I accept that those living in a rural environment will be subjected to various odours and to a large extent that needs to be seen as an accepted part of living in such an environment. I also accept as Mr Frahm said that as neighbours we do not like to complain. He went on to say that *"just because there hadn't been any complaints doesn't mean we haven't been adversely affected. A more realistic assumption would be that we have tolerated it, although we find it annoying"*<sup>15</sup>.
202. I suspect this is not uncommon and indeed similar sentiments were expressed in the Clarence Harvest hearing. As Mr Chilton noted *"there are many reasons why persons might not complain about a neighbouring activity, even though the odour may annoy them. Reasons can include wanting to maintain a positive relationship with their neighbour, being uncertain of who to complain to, or having little faith that a council would investigate a complaint in a timely fashion"*<sup>16</sup>. I also note that in the decision on Craddock Farms the Environment Court was not convinced that a lack of verified odour complaints was sufficient evidence that odour may not be a problem<sup>17</sup>. For these reasons and those

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<sup>15</sup> Para 19 of R Frahm statement

<sup>16</sup> Para 15 of R Chilton evidence

<sup>17</sup> Para 126 Craddock Farms Limited v Auckland City Council (2016 NZEnvC 051)

put forward by Mr Chilton referred to earlier I am left somewhat sceptical of the PIANZ report referred to by Dr Cowie and have not considered it further.

203. Notwithstanding Mr Frahms comments on not complaining, the offensive or objectionable condition in such environments does present a problem when it comes to complaints because unless a qualified expert is on the spot relatively quickly to assess the complaint they are difficult to verify as conditions may have changed. Further, it would seem unlikely that a call would be made as to an offensive or objectionable odour based on one single event and that because frequency is an important determinant it would require continued monitoring for a period of time in line with FIDOL factors to establish this. Overall this seems likely to take some time, let alone finding solutions should they be deemed necessary.
204. Therefore, despite the backstop of a condition it is important in my view to reach a point in circumstances where a new operation is proposed to be convinced the odour effects will not be offensive or objectionable. In circumstances where this is not the case I find it difficult to foresee how an offensive or objectionable condition would work unless it is linked to a regime of monitoring for a period of time. In my view it should not be left to a situation of complaints to trigger an investigation of such a condition.

***Odour effects***

205. The key issue in this application is the potential nuisance effects resulting from the discharge of odour. As the application falls to be considered as a restricted discretionary activity accordingly my evaluation is limited to the matters to which discretion has been restricted. These are as follows:

**Natural Resources Regional Plan**

- The quantity, quality and type of discharge and any effects arising from that discharge.
- The methods to minimise the discharge and avoid, remedy or mitigate any adverse effects of the discharge including the adequacy of the control measures for the collection, containment, management and treatment of the discharge, as well as the type and adequacy of control equipment and preparation of management plans.
- The relevant zone(s) and associated provisions in the Operative District Plan.
- Available measurements, samples, analyses, surveys, investigations, or inspection.
- Provision of information to the consent authority at specified times.
- Compliance with monitoring, sampling and analysis conditions at the consent holder's expense.
- Duration of consent.
- Review of conditions of consent and the timing and purpose of the review.

Proposed Canterbury Air Regional Plan (pCARP)

- The quantity, quality and type of discharge and any effects arising from that discharge, including cumulative effects; and
- The methods to control the discharge and avoid, remedy or mitigate any adverse effects, including the odour and / or dust management plan; and
- The location of the discharge, including proximity to sensitive activities, wāhi tapu, wāhi taonga or sites of significance to Ngāi Tahu; and
- The matters set out in rule 7.2. (which include the lapsing period, the term of the resource consent, the review of the conditions of a resource consent, the need for a bond or financial contributions, and the collecting, recording, monitoring and provision of information concerning the exercise of a resource consent).

206. I have grouped the relevant assessment matters under headings below.

Quantity, Quality and Type of Discharge

207. Odour from chicken farms is often described in character as an ammonia type odour, which depending on the intensity can be offensive. In the case of broiler chicken farms odour is not continuous. There are times when there are no chickens in sheds and other times when chickens are small and odour is limited. The key period for more intensive odour was described in the evidence as being the period between 4 and 6 weeks as the birds reach maturity and on the day the litter is cleaned out of the sheds. The dispersal of odour from the sheds and thus its potential effects is highly dependent on the type of ventilation provided and whether conditions.
208. Notwithstanding the above, I note that in Craddock Farms the Environment Court stated that “*we conclude that even if the objectionable odour occurred infrequently only there is a high potential impact involving significant adverse effects that are beyond the extent and level a reasonable person should have to experience on neighbouring properties*”<sup>18</sup>.
209. In relation to this proposal the intention is for the new sheds (or farm) to be offset by three weeks from the existing farm so that in the case of odour there is not a cumulative impact of the key 4-6 week period at the same time. The impact of that however is that the key period is spread over another three weeks.
210. In terms of the three key receptors I consider the quantity and quality of odour received by the Inch and Carleton Dairies Residences as a result of the proposal to be within acceptable limits having regard to the modelling, the separation distances and the shed design features. In terms of the Frahm residence I consider, on the modelling and anecdotal evidence before me, that the quantity and quality of odour currently received from the existing sheds would not meet an acceptable level and

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<sup>18</sup> Para 142 Craddock Farms Limited v Auckland City Council (2016 NZEnvC 051)

could be considered a significant adverse effect. I accept that the Frahms have given their consent to the air discharge occurring from these sheds however I do not believe that was done on the basis that they would accept significant odour effects. Further, they are in theory protected by the offensive or objectionable condition in that consent.

211. The mitigation measures now proposed to those existing sheds, in particular the roof ventilation, has been shown, at least via the modelling, to significantly reduce the predicted level of odour impact on the Frahm residence, despite the introduction of the new sheds. In this regard I accept that the component of the new sheds which cumulatively makes up this predicted level is minimal and note that the Frahm residence is some 500m from these sheds.

Location of the Odour Discharge, including its Proximity to Sensitive Activities and Methods to Minimise Odour and Avoid, Remedy or Mitigate any Adverse Effects

212. In addressing these matters there have been two principles of note established by respective Environment Courts which I consider provide important guidance. These are as follows:

1. In *Winstone Aggregates v Matamata-Piako DC* (paragraphs 56 & 66) the Court accepted that there was a difference between existing and new facilities in terms of what may be acceptable. The Court stated:

*But there is also recognition that new chicken farms will be expected, substantially at least, to internalise their adverse effects by providing the necessary buffer zones within the farm property and not on neighbouring properties.*

*Inevitably, that will require larger and more expensive blocks than might previously have been the case but, as we have already commented, that has to be accepted as the cost of coming into an industry at a time when expectations of being an environmental good neighbour are higher than before.*

2. There is no requirement in the RMA that effects must be completely contained within a site. In this regard the Environment Court has recognised that having done all that is reasonably achievable, total internalisation of effects within the site boundary will not be feasible in all cases.<sup>19</sup>
213. Three sensitive activities (or receptors) were identified in evidence, the Frahm, Inch and Carleton Dairies Residences. I note that in *Craddock Farms* the Court accepted that the garden or curtilage of a house is effectively part of the house in terms of people's use of their property<sup>20</sup>.
214. Separation distance is clearly one method of minimising odour effects and the proposed new chicken sheds are some 340m from the Inch residence, over 700m from the Carleton Dairies residence and 500m from the Frahm residence. The Frahm dwelling is however only some 200m from the first of the

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<sup>19</sup> *Catchpole v Rangitikei* (W35/2003) and *Winstone Aggregates v Matamata-Piako DC* (W55/2004)

<sup>20</sup> Para 95 *Craddock Farms Limited v Auckland City Council* (2016 NZEnvC 051)

existing broiler sheds and it is therefore the cumulative effect of both the new and old sheds that becomes important. Other recognised methods are improvements in shed design and ventilation as proposed here and changes to litter content and feed.

215. While I accept in relation to the Frahm residence that the new sheds are not adding significantly to the overall odour likely to be received by that residence, the fact that they would add in any way to a situation, where it appears on the basis of the evidence odour is already at a level which would be distinct and likely regarded as objectionable and offensive, is important.
216. In order to address this the applicant, as detailed, is now also proposing mitigation measures associated with the existing sheds. The options proposed are incorporation of the misting system in all five sheds (the applicants preferred position) or the addition of roof fans on sheds 4 and 5 in addition to the misting.
217. I accept that the roof mounted fans system provides much better dispersion of odour emissions, through elevated unimpeded vertical discharges, compared with historical tunnel or cross vented shed designs. Due to there being no substantiated evidence that odour effects are reduced by the misting system (although I am not ruling out that it does) in my view the roof mounted fans system on existing sheds 4 and 5 would be the most appropriate solution to reduce the odour impact on the Frahm residence. While it seems unlikely that odour would be completely internalised by the roof ventilation in terms of these older sheds short of their complete removal this appears to be the best option available. Further, despite my scepticism as to its effectiveness, the offensive and objectionable odour condition of the existing consent remains.
218. While I acknowledge Mr Curtis's comments that additional mitigation measures come at substantial cost, it seems to me that on the face of the modelling information before me the Frahms are currently receiving levels of odour (above 10 OU/m<sup>3</sup>) at their property that, based on expert opinion, would be distinct and might well be regarded as offensive or objectionable. The point being that the "additional mitigation" whatever that might entail may well be necessary now regardless of this current application should an investigation be triggered by Condition 5 of the existing consent, although I accept there is no certainty around that. I also note that the condition sets the test at the boundary of the property and not the residence as has been used in the modelling.
219. I have considered the issue of litter removal from the proposed sheds. I accept this is a period when odour is likely to be distinctive. However, it occurs only once every seven weeks over a relatively short period of time in one day and in a reasonably controlled manner. Given this, couple with the distance from any sensitive receptors and the requirement for detailing the operation within an Odour Management Plan leads me to a conclusion that its effects are minimal and there is no need to further control the times of day it occurs or the wind conditions in which it occurs.

### Zoning

220. The relevant zone is the Rural zone in the Waimakariri District Plan. The site is located within that zone as are the surrounding properties. All dwellings are at least 300m from the notional boundary for the nearest proposed chicken shed which meets the requirements of Rule 31.17.1.2 the setback of an intensive farming activity. I also consider the Rural zone is an appropriate zone for the activity proposed.

### Consent Duration, Review Conditions, Monitoring

221. The applicant seeks a 35 year duration for the discharge consent. In my view the starting point under the RMA for this is section 123 which provides for a duration for discharge consents of 35 years unless there is sound reasoning that warrants a shorter period. In this regard I accept Dr Cowie's point that there is a need for long term certainty given the substantial investment involved. I also note that there are significant costs involved in re-consenting applications.
222. I can see no reason in terms of environmental effects to shorten the duration if all potential adverse effects are appropriately addressed either through the design of the sheds, the management of the operation or conditions of consent.
223. In terms of monitoring and/or review, the conditions proposed have been limited to one allowing the Regional Council to annually review the conditions to deal with any adverse effects arising and requiring the adoption of best practicable options to remove or reduce any such effect. Also proposed is a condition requiring the three yearly review of the Odour Management Plan.
224. As referred to earlier Dr Cowie made reference to monitoring indicating that in his view it was the Regional Council's responsibility and duty to monitor and ensure compliance with conditions. I have considered therefore whether I could impose a more directive monitoring regime as suggested by Mr Chilton that might ensure that odour effects were within acceptable levels. Such a regime might involve regular odour assessment in line with the FIDOL factors for a period of a year to ensure that offensive or objectionable odours weren't occurring. The difficulty in this situation however is that I have no ability to alter the existing consent, which as discussed appears to be the primary contributor to odour effects, and I'm not convinced on its own the current proposal warrants such an extensive conditions.
225. Notwithstanding the above, I consider improved self-monitoring would be appropriate and I have considered this further below. I also note that as part of the Odour Management Plan details of contingency measures that will be taken in the event of odour or dust becoming offensive or objectionable beyond the boundary of the property are required. I assume such contingency must include amongst other things de-stocking.



### Positive effects

226. It is normally appropriate to take positive effects of a proposal into account in determining a resource consent application. However, in the case of restricted discretionary activities I can only consider under this section those which might stem from the matters of discretion. In this regard I accept that the proposal will reduce existing odour effects. I note however that the High Court<sup>21</sup> has concluded that Part 2 matters are relevant considerations to the grant of a consent.

### ***Conclusions on effects***

227. I have concluded, based on the evidence before me, that the proposal for six new chicken sheds with associated misting and roof ventilation is unlikely to increase odour effects in the surrounding environment to the degree that it will be offensive or objectionable from those sheds. I have also concluded that the cumulative effect of the odour from these sheds in combination with the existing sheds on the Frahm property will, subject to the mitigation proposed, overall be significantly reduced.
228. It seems to me that the odour being received by the Frahms from the existing sheds might well be at an offensive and objectionable level based on the odour modelling and the statement of Mr Frahm. However that has not been assessed by Environment Canterbury or the applicant. The applicant has however as part of this application now chosen to seek to reduce the odour effects on the Frahms from the existing farming. The modelling evidence would suggest that this will result in a reduction in odour effects. I note that without that mitigation my view would very likely be different because any potential increase in odour from the new sheds however small that was adding to the existing situation which, on the predicted modelling and personal evidence, is indicating effects at the significant level would be an adverse effect which was more than minor.
229. I have no ability to address the existing operation or order any investigations. However, I consider the total package of the proposal now offered will result in a reduction in the odour effects received by the Frahms and hopefully an improvement in their situation. In all other circumstances I consider this to therefore be a good outcome.

## **OBJECTIVES AND POLICIES**

### ***Regional Policy Statement***

230. Objective 14.2.2 seeks to enable discharges provided there are no significant adverse effects, while Policy 14.3.5 requires that new discharging activities be located away from sensitive land uses. In my opinion the proposal is consistent with the policy as the new discharge is located sufficiently away from sensitive activities. However there may, despite the mitigation put in place, remain an element of inconsistency with the objective as I cannot be certain based on the evidence that no significant adverse odour effects will occur at the Frahm residence [emphasis added]. Nevertheless, I consider

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<sup>21</sup> Auckland City Council v John Woolley Trust CIV 2004-404-3787

the frequency of such occurrences, if they occur at all, will be greatly reduced compared to the current situation and that any the contribution from the proposed new sheds will be minimal.

***Natural Resources Regional Plan***

231. Objective AQL1 seeks that localised discharges into air, either on their own or in combination with other discharges, do not result in significant adverse effects on the environment, including offensive and objectionable odour. Policy AQL5 specifically addresses odour nuisance and requires that discharges from new activities shall not be offensive or objectionable to the extent that it has, or is likely to, cause an adverse effect on the environment beyond the boundary of the site where the discharge originates.
232. As referred to above, I cannot be certain that no significant adverse effects will result from the combination of the two sets of sheds in relation to the Frahm residence. However I consider that the contribution of the discharge from the new sheds to this combination is minimal and importantly the effects and frequency of odour which might possibly be considered offensive or objectionable is very likely to be reduced for the Frahms due to the mitigation now proposed. For the avoidance of doubt I do not consider that the discharge from the new sheds on their own will be offensive or objectionable beyond the boundary of the site.

***Proposed Canterbury Air Regional Plan***

233. The pCARP has a greater array of relevant objectives and policies than the previous two documents. Some of these are generic to air quality and other more specific to odour. In summary the objectives seek to maintain amenity values, ensure appropriate location of discharges in relation to sensitive activities and avoid offensive and objectionable effects. The policies are quite directive stating:
- Offensive and objectionable odours are unacceptable.
  - Discharges from new activities are appropriately located and adequately separated from sensitive activities.
  - Longer consent durations may be available to provide on-going operational certainty to appropriately located activities.
  - Minimise cumulative effects by requiring resource consents to apply the best practicable operation.
  - Adverse effects of odour from farming activities are managed through performance standards or conditions on resource consents that ensure the amenity values of the area in which the discharge of odour occurs are maintained and effects on sensitive activities are minimised.
  - Discharges associated with farming activities do not cause offensive or objectionable effects beyond the boundary of the property of origin.

234. I consider the proposal on its own would be consistent with the above objectives and accord with the general policy framework of not causing offensive or objectionable effects. However as I have noted it is the cumulative, albeit relatively small, impact of the proposal on top of the existing chicken operation which is of importance. In this regard I consider the overall proposal is now applying practical options in relation to the existing sheds to address this cumulative issue.
235. The guidance provided by the odour monitoring indicates that the levels that might be received at the Frahm residence as a result of the mitigation are now reduced to within 5-10 OU/m<sup>3</sup>. As I have already referred to experts contend that the effect of odour within this range is harder to characterise and whether it was objectionable or offensive depends on the frequency and the duration of exposure.
236. On balance therefore, I consider that while there is an element of inconsistency with some of the above provisions, particularly given the subjective nature of odour assessment, overall the activity is not inconsistent with the relevant provisions of the pCARP.

**OTHER MATTERS (S104 (1)(c))**

237. I do not consider there are any other matters I need to consider.

**PART 2 RESOURCE MANAGEMENT ACT**

238. Part 2 of the RMA sets out its purpose and principles. The purpose of the RMA is the sustainable management of natural and physical resources. Section 5(2) enables people and communities to provide for their social, economic and cultural welfare, and for their health and safety, subject to the qualification that adverse effects on the environment be avoided, remedied, or mitigated.
239. There are no matters of national importance under Section 6 or treaty issues under Section 8 of the RMA, which are relevant to determining this application. With respect to Section 7, there are three sub-clauses that I consider are relevant to have regard. These are as follows;

*(b) The efficient use and development of natural and physical resources;*

*(c) The maintenance and enhancement of amenity values;*

*(f) The maintenance and enhancement of the quality of the environment.*

240. In line with the High Court decision previously referred to I consider the proposal will provide for the economic wellbeing of the applicant, provide employment opportunities and help meet demand in the poultry industry. The proposal does result in an agricultural use continuing in terms of efficiently using the rural land resource. Indeed chicken farming can be seen to constitute a highly efficient and economic use of land. I also note Dr Cowies reference to the soils being of only moderate value for any other agricultural activity.
241. I consider that the proposal overall will at least maintain, and for the Frahms result in improved, amenity values and quality of the environment. In this context it is hard to escape the mitigation

measures now proposed to the existing chicken farm which are resulting through this proposal. There is no guarantee that they might occur otherwise.

242. Overall I am satisfied that the proposal is in accordance with Part 2 of the RMA in promoting sustainable management whilst avoiding or mitigating any adverse effects on the environment. On balance therefore, I consider that the purpose of the Act would be better served by granting consent to the application, subject to a range of conditions. At the end of the day if as a result of granting this consent there is high likelihood of a resulting improvement overall in odour effects then that is a positive outcome. Anything further is almost solely related to the existing operation for which I have no jurisdiction although I remind all parties that Condition 5 of that consent still requires no offensive or objectionable odour beyond the boundary.

#### **Comments on Conditions**

243. Having concluded that a grant of consent would be appropriate subject to conditions I am generally satisfied with many of the conditions proposed by the Mr Davison and subsequently in Ms Ellis's right of reply. There are however some areas of difference between the two and some areas where I consider amendments are appropriate based on the evidence. I have dealt with these in turn below:

a. Period Broiler Chickens are Housed

Mr Davisons conditions included a requirement that the chickens shall be housed in each shed for no more than six weeks in every seven week period. The applicant has sought to change this to seven weeks in every eight week period.

I am unclear as to why this change was sought and there has been no modelling associated with a seven week period. I have therefore retained the six weeks in every seven week period.

b. Odour Management Plan

The proposed Odour Management Plan condition included identifying emission sources with the potential to generate odour, and the measures in place to avoid, remedy, or mitigate those discharges. I consider it would be appropriate to include within this clause the requirement for regular boundary inspections during each cycle.

c. Amendments to Existing Consent

(i) Timing of Mitigation

In order to provide the mitigation measures proposed to the existing chicken sheds Mr Davison had proposed a condition requiring an alteration to the existing consent (CRC151072) relating to the installation of roof mounted chimney ventilation fans along the central ridgeline of the two sheds closest to the southern boundary of the property.

Requiring the alteration of an existing consent is a somewhat unusual mechanism nevertheless Ms Ellis in the applicant's right of reply has effectively endorsed the approach albeit that it is sought post three new sheds being completed.

While I am prepared to enable the condition to go forward on the basis that the applicant is effectively pro-offering it, I consider the mitigation to the existing sheds needs to occur prior to the commissioning of any new sheds or that upon the commissioning of any of the new sheds the existing sheds are immediately closed and the mitigation measures to them implemented before they are re-opened. In this regard I consider it would be inappropriate to enable three new sheds to open and the existing sheds to continue without mitigation occurring given that no evidence was provided on that scenario.

(ii) Chicken Numbers and Production Cycles

A condition has been proposed limiting the chicken numbers on both the proposed and existing sites and requiring the offsetting of the cycles on each site by three weeks. I accept that this needs to apply to both consents.

Note: In response to the comment in the right of reply regarding these conditions being offered on the basis that the application will either be non-notified or, at the most, limited notified to Mr and Mrs Frahm I note I have no ability to address this.

d. Lapse period

The two sets of conditions show a lapse period through until 2026. I can find no reference within the application of a 10 year lapse period being sought and therefore it did not form part of the notification. I am unable therefore to grant consent on a 10 year lapse period basis.

**DETERMINATION**

For the forgoing reasons set out above, having regard to Part 2 of the RMA, and in accordance with the provisions of ss104, 104C and 108 of the RMA, I have determined that resource consent CRC156783 to establish a new six shed 330,000 head poultry broiler operation at 3307 South Eyre Road, Waimakariri be granted subject to the conditions set out in Appendix A.



**Dean Chrystal**  
**Hearings Commissioner**

**23 January 2017**

## APPENDIX A

### CONDITIONS

1. Other than necessary to give effects to the conditions set out below, the activity shall be carried out in accordance with the approved application plans and further information stamped CRC156783.

#### Limits

2. The discharges into air shall be only odour and dust originating from a poultry broiler farm operation, located at 3307 South Eyre Road, Oxford, legally described as Lot 3 DP 78019, at or about map reference Topo50 BW22o:3745-0060, and labelled "Poultry Broiler Operation", on Plan CRC156783, which forms part of this consent.

#### Poultry Numbers and Production Cycles

3.
  - a. The maximum number of broiler chickens housed in the six poultry sheds shall not exceed 330,000 during any production cycle, and the stocking rate shall not exceed 38 kilograms of live weight per square metre.
  - b. Broiler chickens shall be housed in each shed for no more than six weeks in every seven week period.
  - c. The combined number of broiler chickens housed on the legal description subject to this consent (Lot 3 DP 78019) and the legal description subject to discharge permit CRC151702 (Lot 2 DP 78019), or any variation thereof, shall not exceed 510,000 during any production cycle, across 11 poultry broiler sheds.
  - d. The production cycles of the two poultry broiler operations referred to in clause (c) of this condition shall be offset by a minimum of three weeks.
4. Each poultry broiler shed shall be fitted with a ventilation system comprising of:
  - a. 12 roof mounted chimney ventilation fans along the central ridgeline of each shed, which shall be a minimum of 5.5 metres above ground level; and
  - b. 18 box fans on the northern side of each shed.

#### Odour and Dust Management

5. The discharges referred to in Condition (2) shall not cause odour or particulate material, which is offensive or objectionable, as determined by an officer of the Canterbury Regional Council, beyond the boundary of the property on which this discharge permit is exercised.
6. The consent holder shall take all practicable measures to ensure compliance with Condition (5). Such measures shall include, but not be limited to:
  - a. Removal of all animal waste and litter from the poultry sheds with off-site disposal within 12 hours of removal of the final birds from the sheds;
  - b. Twice daily checks of the poultry sheds for deceased birds and feed or water spillages;

- c. Prompt removal, freezing and off-site disposal of all deceased birds from the poultry sheds;
  - d. The use of formulated feed;
  - e. Regular maintenance and monitoring of the ventilation systems.
7. The consent holder shall keep records of all visual inspections and checks undertaken in accordance with Condition (6) above, and at the start and end dates of each production cycle. These records shall be provided to the Canterbury Regional Council on request.
  8. This consent shall be exercised in accordance with an Odour Management Plan (OMP). The Odour Management Plan shall include the measures that will be taken to ensure compliance with the conditions of this consent, including but not limited to:
    - a. A description of the poultry broiler operation;
    - b. A description of the measures to be undertaken to achieve compliance with the conditions of this consent;
    - c. Identifying emission sources with the potential to generate odour, and the measures in place to avoid, remedy, or mitigate those discharges, including details of regular boundary inspections during each cycle;
    - d. Operation and maintenance procedures for the ventilation systems;
    - e. Complaints and response procedures;
    - f. Details of routine and contingency inspections of the sheds, chickens and litter;
    - g. How the moisture content, condition and depth of the litter will be managed to minimise odour and dust;
    - h. Details of cleaning of the inside of the sheds and removal of litter off-site following each batch of chickens; and
    - i. Details of contingency measures that will be taken in the event of odour or dust becomes offensive or objectionable beyond the boundary of the property on which the discharge permit is exercised.
  9. The Odour Management Plan prepared shall be reviewed once every three years, and updated as required, and the outcome of the review, and any update, shall be provided in writing to the Canterbury Regional Council, Attention: Regional Manager RMA Monitoring and Compliance by 1 May.
  10. The Odour Management Plan prepared in accordance with Condition (8) shall be submitted to the Canterbury Regional Council, Attention: Regional Manager RMA Monitoring and Compliance, at least twenty working days prior to commissioning of the proposed broiler poultry farm operation.
  11. The consent holder shall maintain a record of any complaints relating to odour and dust from the broiler poultry farm operation. For each complaint, the record shall include:
    - a. The location where the odour or dust was detected by the complainant;

- b. The date and time when the odour or dust was detected;
- c. A description of the wind speed and wind direction when odour and dust was detected;
- d. The most likely cause of the odour or dust detected; and
- e. Any action taken by the consent holder to minimise or cease the odour of dust detected by the complainant.

#### Changes to Existing Consent

12. Prior to the first exercise of this consent, the consent holder shall apply to change Condition (3) of resource consent CRC151072, or any variation thereof, under Section 127 of the Resource Management Act 1991, to:
  - a. Stipulate the installation of 6 roof mounted chimney ventilation fans along the central ridgeline of the two sheds closest to the southern boundary of the property (Sheds 4 & 5) described in Condition (1) of CRC151072, which shall be a minimum of six metres above ground level and the installation of a misting system in each of the existing sheds.
  - b. Provide the reciprocal condition to Conditions 3 (c) and (d) above as shown below:
    - (c) *That the combined number of broiler chickens housed on the legal description subject to this consent (Lot 3 DP 78019) and the legal description subject to discharge permit CRC151702 (Lot 2 DP 78019), or any variation thereof, shall not exceed 510,000 during any production cycle, across 11 poultry broiler sheds.*
    - (d) *The production cycles of the two poultry broiler operations referred to in clause (c) of this condition shall be offset by a minimum of three weeks.*
13. This resource consent shall not be exercised until CRC151072, or any variation thereof, has been varied in accordance with Condition (12) and either mitigation to the existing sheds has been undertaken prior to the commissioning of any new sheds or, that upon the commissioning of any of the new sheds existing Sheds 4 and 5 (referred to above) are immediately closed and the mitigation measures to them implemented before they are re-opened.

#### Administration

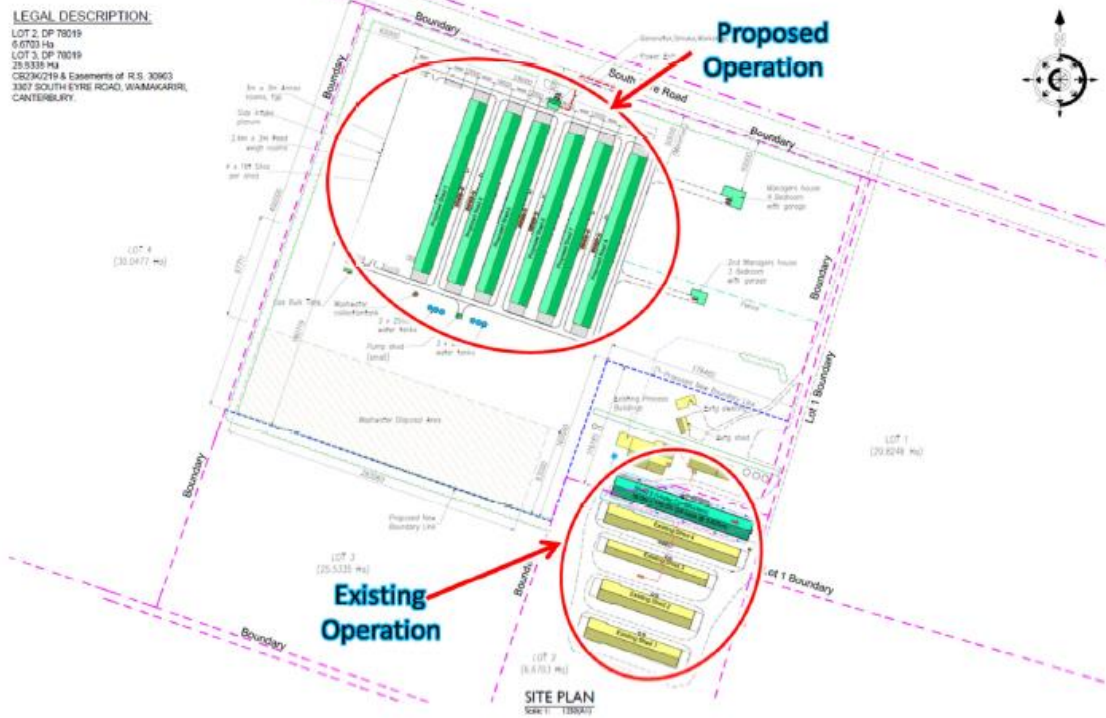
14. The Canterbury Regional Council may annually, on any one of the last five working days of May or November, serve notice of its intention to review the conditions of this consent for the purposes of:
  - a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent; or
  - b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment.



15. If this consent is not exercised within 5 years of the date of this decision it will lapse in accordance with Section 125 of the Resource Management Act 1991.

# Plan CRC156783

**Figure 3      Layout of Existing and Proposed Farm**



**Figure 1. Roof vent design**

exhaust air cone increases the exhaust air rate (Venturi effect) and keeps away most of the rain

rain run-off

roof duct for the connection between cone and roof sheet

labyrinth seal between roof duct and roof sheet prevents water from entering into the roof area

built-in fan ensures an optimum ratio between pressure stability and power consumption

roof sheet available with different profiles

exhaust air duct can be extended by an extension duct as required

damper is used as a chimney shutter and to reduce the air rate in the speed-controlled system

specially-shaped suction head for increased exhaust air performance

