Before the Selwyn District Council

under: the Resource Management Act 1991

in the matter of: Proposed Private Plan Change 73 to the Operative District Plan: Dunns Crossing Road, Rolleston

and: **Rolleston West Residential Limited**
Applicant

Statement of Evidence of Donovan Van Kekem (Odour)

Dated: 13 September 2021

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STATEMENT OF EVIDENCE OF DONOVAN VAN KEKEM

INTRODUCTION

1 My full name is Donovan Van Kekem.

2 I have the following qualifications:

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

2.2 a Post Graduate Diploma in Forensic Science from the University of Auckland.

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

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

4.1 I have been involved in writing and presenting expert air quality evidence for a number of air discharge consents and development projects containing nuisance odour and dust discharges including:

(a) An application for a replacement air discharge consent for Envirofert's Tuakau composting and landfill facility;

(b) AB Lime's application for a replacement air discharge consent for discharges to air from its large landfill and lime quarry operation in Winton;

(c) The proposed Private Plan Change 50 to the Selwyn District Council;

(d) The Orini chicken egg layer farm on behalf of Mainland Poultry;

(e) The expansion of Fonterra's Studholme milk processing plant and wastewater treatment plant on behalf of submitters; and

(f) The Auckland Council Saint Mary's Bay/Masefield Beach Water Quality Improvement Project, on behalf of submitters.

4.2 I have also acted as an independent processing officer for the Canterbury Regional Council (CRC) assessing a number of complex air discharge consent applications, a number of

which have gone through to hearing at which I have attended as an air quality expert on behalf of CRC.

4.3 I have conducted air quality monitoring, technical peer review services and/or assessments at a number of composting plants including:

(a) Intelligro's Rolleston composting facility;

(b) Daltons' McLeans Island composting operation;

(c) The Taurapa Station composting plant; and

(d) The Rural Trees Limited Rangiora composting operation.

5 I am familiar with the plan change application by Rolleston West Residential Limited (the *Applicant*) to rezone approximately 160 hectares of land in two separate locations on Dunns Crossing Road, Rolleston to enable approximately 2,100 residential sites and two commercial areas.

CODE OF CONDUCT

6 Although this is not an Environment Court hearing, I note that in preparing my evidence I have reviewed the Code of Conduct for Expert Witnesses contained in Part 7 of the Environment Court Practice Note 2014. I have complied with it in preparing my evidence. I confirm that the issues addressed in this statement of evidence are within my area of expertise, except where relying on the opinion or evidence of other witnesses. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

7 I have been engaged to provide my expert opinion as to the potential for adverse air quality effects/reverse sensitivity effects on the PC73 Holmes Block development as a result of discharges to air from the Selwyn District Council (SDC) Pines Resource Recovery Park (PRRP) composting operation.

8 Whilst there are other sources of air discharges in the vicinity of the Holmes and Skellerup blocks which are part of the PC73 application, my evidence is limited to potential effects on the Holmes Block from the PRRP composting operation. Cathy Nieuwenhuijsen has been engaged by the applicant to provide expert evidence relating to all potential air discharge reverse sensitivity effects on PC73.

9 However, I do provide a brief comment on my professional opinions on the appropriateness of Ms Nieuwenhuijsen's recommended buffer distances.

10 My evidence will cover the following:

10.1 My previous involvement with PRRP's air discharge consent application.

10.2 The existing environment surrounding the PRRP.

10.3 The potential for any increase in potential adverse nuisance odour effects from the PRRP associated with re-zoning the Holmes Block.

10.4 A review of Ms Nieuwenhuijsen's recommended buffer distances.

SUMMARY OF EVIDENCE

11 I was recently engaged by CRC as a technical peer reviewer of the recent air discharge consent application for the PRRP composting operation. I reviewed the assessment of environmental effects and associated air quality assessment provided in support of the application. I provided expert advice to the applicant and CRC to ensure that the proposed composting operation would meet industry standard odour and dust mitigation and management measures. I also assisted CRC with developing appropriate Consent Conditions.

12 At the completion of my review, I concluded that there was a low potential for adverse air quality effects beyond the boundary of the site. The current Living 3 zoned Holmes Block was included within this review.

13 I have read the supporting documentation for PC73, in particular that which relates to odour discharges from the PRRP composting operation. I have assessed whether or not this plan change would change my opinion as to the potential for adverse air quality effects arising from the PRRP composting operation.

14 I remain of the opinion that there is a low potential for adverse odour effects at the Holmes Block even if it is re-zoned to Living Z. If anything, I consider that there will be a lower potential for adverse effects due to the removal of up to four dwellings within the proposed 600 m setback distance.

PREVIOUS INVOLVEMENT WITH PRRP'S AIR DISCHARGE CONSENT APPLICATION

15 I was engaged in February 2021 by CRC to act as an air quality technical peer reviewer of the recent SDC application for an air discharge consent for the composting and waste transfer operation at the PRRP.

16 I was initially engaged by CRC to review a Section 127 application to amend Condition 1 in the historic air discharge consent (CRC190492) for the PRRP composting operation. The amendment to Condition 1 effectively sought to remove any numerical limit on the volume of compost that the PRRP facility can process on-site.

17 I reviewed the air quality technical assessment prepared by Specialist Environmental Services (SES)[1] in support of the section 127 application.

18 The SES assessment considered that the recommended buffer/separation distance of 500 m from green waste composting operations in the Emission Impossible 2012 guidance document to Auckland Council[2] was appropriate for the PRRP composting operation.

19 Note that the SES assessment took into consideration the existing environment including the Holmes Block subdivision as it is currently zoned under the operative District Plan.

20 Furthermore, the SES assessment considered that a numerical limit on the amount/volume of composting was not needed as long as the "*composting of greenwaste and kerbside organic material occurs within the area designated and in the manner prescribed by the ODMP*".

21 As a part of this work for CRC I undertook a site visit of the current PRRP operation. During this site visit I reviewed the current facility, its composting operation and waste transfer station. I had extensive discussions with the applicant and site operators about the current operations and potential future expansion of the plant over time.

22 During my site visit we identified all of the odour and dust emission points across the composting operation and discussed industry standard mitigation and management practices to minimise/control these air discharges.

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[1] Specialist Environmental Services letter report titled *Assessment of Effects of Odour and Dust from Windrow Composting at Pines RRP, Rolleston – Update to Consider any Requirement for Volume Restrictions*. 26 June 2020

[2] Emission Impossible Ltd. *Separation Distances: A Discussion Document*. Prepared for Auckland Council, July 2012

23 As a part of my communications with the applicant (SDC), I provided advice on best practicable options (BPO) for a composting operation such as that which exists/is proposed to occur in the future.

24 Much of this advice was accepted by the applicant and incorporated into the current version of the site's Odour and Dust Management Plan (ODMP) and subsequent consent conditions.

25 Subsequent to my site visit SDC replaced the S127 application for a consent condition amendment, with an application for a replacement air discharge consent.

26 It was my advice to CRC that the new consent should have a set of conditions which is consistent with other similar operations in the Canterbury region and which would provide clearer bounds to the activity which is consented and ensure that the activities on-site remain within that which had been assessed.

27 I had extensive involvement in the development and refining of the proposed consent conditions and the ODMP which forms part of the consent (CRC211594 Condition 20 requires the composting operation to be undertaken in accordance with the ODMP Revision C dated 12 April 2021).

28 One of the critical restrictions to the scale of the PRRP composting activity is the restriction of the area within which active composting and maturation can occur.

29 Based on the area marked in the site layout diagram which forms part of the consent (Plan CRC211594), I calculated that the conservative maximum volume of compost that could be processed on the site using the static windrow system consented was ~53,000 tonnes per year. This was calculated based on the following:

(a) the area available as marked on the Figures in the application documents and ODMP;

(b) windrows 3m high with a base of 6m and a spacing of 3m between windrows;

(c) a bulk density of the compost raw materials of 0.6 t/m^3; and

(d) an active composting period of 12 weeks (i.e. 4 cycles per year per windrow).

30 However, this calculation is conservative for the following reasons:

(a) the area includes the area where stormwater soak pits and the receivals pad soak basin are located;

(b) there is no allowance for internal roads; and

(c) the maturation area is smaller so is likely to be the limiting factor in scale.

31 For this reason, the limiting factor on the volume of material which can be processed on-site is likely to be the areas marked in the Figure not the tonnes per annum consent condition limit (53,000 t/year).

32 Nonetheless, my conclusions below are not predicated on the fact that the site's processing capacity is likely to be less than 53,000 t/year.

EXISTING ENVIRONMENT

33 Before I comment on the receiving environment, I must reiterate that the scope of my evidence is to provide my expert opinion on the potential for any increase in potential adverse nuisance odour effects associated with re-zoning the Holmes Block from Living 3 to Living Z. Therefore, the currently consented Living 3 zoned development forms part of the existing environment – just as it formed part of the existing environment in the application for CRC211594.

34 In the technical review assessment which I undertook for CRC, I assessed the receiving environment and local meteorological conditions.

35 I note that within the existing Holmes Block ODP there is provision for up to four dwellings within the 600 m buffer distance (currently zoned Living 3) from the active composting operation. The closest dwelling could be approximately 500 m from the active composting area.

36 There are currently two existing dwellings within 600 m of the consented PRRP active composting operation. There is a rural dwelling located at 155 Burnham School Road on land zoned Outer Plains. This dwelling is between the composting operation and the Holmes Block subdivision and is approximately 400 m from the active composting zone. There is also a dwelling at 362 Brookside Road which is approximately 570 m from the active composting area.

37 The existing consented Holmes Block is zoned Living 3. In Chapter B3 of the Township volume within the Selwyn District Plan, the expected quality of the environment in various land zoning is

described. There is a clear distinction between Living and Business zones with regards to the expected aesthetics and nuisance effects. Business 2, 2A an 2B have "*lower standards for aesthetics and nuisance effects"*. Whereas Living zones have a "*character and amenity values most pleasant for living*".

38 There is a specific distinction outlined for Living 3 zones, they are to "*display a distinctly rural residential character*".

39 In my interpretation of the Plan, nuisance odour discharges from the PRRP composting operation would fit within 'nuisance effect' as defined in the SDC District Plan.

40 Based on my interpretation of the Plan, the currently consented Living 3 Holmes Block would have an expectation of amenity values most pleasant for living and the proposed Living Z zoned land (under PC73) would also have this expected amenity value.

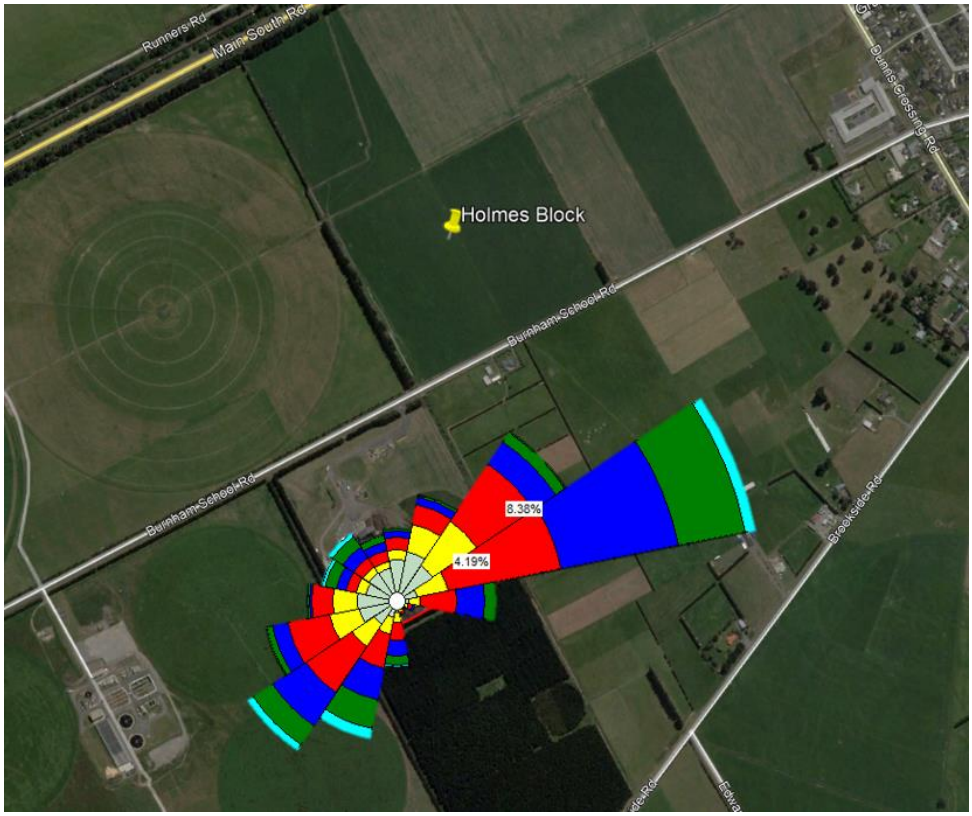
41 The sensitivity of a receiving environment to nuisance odour is discussed in Table 4 of the Ministry for the Environment Good Practice Guide for Assessing and Managing Odour (2016) (MfE GPG Odour). 'Residential' zones are listed as having a 'high' sensitivity to odour nuisance. 'Rural residential' is listed as having a 'moderate to high' sensitivity.

42 Based on the guidance in the MfE GPG Odour, I consider that the Living 3 zone would have a 'moderate – high' sensitivity to nuisance odour, and the Living Z zoning would have a 'high' sensitivity to nuisance odour.

43 The wind direction and speed conditions in the local environment will have an influence on the potential for adverse odour effects at the Holmes Block. I have overlaid a windrose of wind data collected at the Christchurch Airport (2010 - 2018)[3] over the PRRP composting operation in Figure 1 below. As you can see the dominant north easterly wind directions would blow PRRP odour emissions away from the Holmes Block. South – south southwest (S – SSW) winds which would blow odour emissions towards the nearest residential dwellings in the Holmes Block occur less frequently (~12 % of the time) and are generally associated with cold weather conditions where people are less likely to be using outdoor living areas.

[3] Christchurch Airport windrose data was also used in SDC's application for CRC211594. In the absence of publically available Rolleston specific wind data, I consider that the Christchurch Airport data is representative of wind conditions at the site.

Figure 1 – Wind directions relative to the Holmes Block



THE POTENTIAL FOR AN INCREASE IN POTENTIAL ADVERSE NUISANCE ODOUR EFFECTS

44 As has been discussed at length in Ms Nieuwenhuijsen's, Mr Bender's, and Mr Boyd's evidence, published recommended screening level separation distances for an open static windrow composting operation with regular turning such as that at the PRRP facility range from 500 m to 2,000 m. These separation distances are designed to be a starting point. Where an industry is separated greater than the distances stipulated in the guidance document then no adverse air quality effects are predicted to occur. Where there are receptors within the published separation distances then a more detailed assessment of potential effects is required.

45 As was described in the technical assessments provided in support of the air discharge consent application for the PRRP facility, previous applications, and associated technical reviews of these applications, for composting operations good management of on-site processes is more important than separation distances.

46 In the technical review I undertook for CRC I considered the following specific odour producing activities/sources and associated management practices at the PRRP composting operation:

(a) The composting methodology;

(b) The feedstocks;

(c) Leachate production and management procedures;

(d) The methodology employed when receiving the feedstocks, blending them, and forming the windrows;

(e) The monitoring and management of the windrows to ensure that the windrows remain aerobic; and

(f) The maturation process.

47 Static windrow composting is a higher risk composting methodology, as compared with other composting methods such as aerated pile, in vessel, enclosed operations, etc. However, the lower risk feedstocks, lack of the requirement for leachate collection and treatment (due to the porous ground), and the industry standard management/mitigation methods, present the PRRP composting operation as a low risk odour discharge composting operation, despite the composting methodology.

48 I compared the PRRP operation to other similar composting operations in New Zealand which have similar or higher risk odour discharge factors (i.e. Intelligro). Other well run composting operations with even smaller buffer/separation distances (some as small as 150m) are able to effectively manage odour discharges such that there is no adverse odour effects beyond the boundary of the site.

49 Mr Boyd considers that any separation/buffer distance applied to the PRRP operation should be measured from the active composting and maturation zones combined. He considers that there is a potential for odour and dust discharges to occur from within the maturation area. Whist I agree that odour is discharged from maturation processes and the handling of mature compost. The intensity and character of odour generated from maturation processes is lower than that from the active composting operation. Therefore, I don't consider that the same buffer/separation distance applied to the active composting operation is appropriate for the maturation area. I note that Mr Bender is of the same opinion.

50 For these reasons I determined that the proposed PRRP operation had a low potential to generate adverse odour effects on the surrounding environment, which includes two existing dwellings

within 600 m of the PRRP and the consented Holmes Block subdivision.

51 Based on the SES report and the advice I provided to CRC's consent processing team the air discharge consent application was granted on a non-notified basis (i.e. adverse effects in the surrounding environment were determined to be less than minor).

52 Based on my understanding of the PC73 proposal, there will no longer be any dwellings built within 600 m of the active composting area, effectively increasing the minimum separation/buffer distance from ~500 m to 600 m. This further reduces the potential for adverse odour effects. An odour plume emitted from a source, such as the PRRP composting operation, will disperse with distance from the emission point. Odour concentrations generally decrease exponentially with distance from an emission source.

53 As discussed earlier based on the guidance in the MfE GPG Odour, the sensitivity of the receiving environment will not greatly increase from Living 3 – Living Z. I consider that residents who live in a Living 3 zone will have a similar sensitivity to nuisance odour which is discharged from a composting operation as residents living in a Living Z zone. Furthermore, the expected amenity values within these zones, as outlined in the SDC District Plan, are also similar.

54 From my perspective the key question is whether or not having a more densely populated area beyond the 600 m buffer will result in any increase in the potential for adverse nuisance odour effects. Ms Nieuwenhuijsen has provided a summary in her evidence of the extent of the increase in housing density which will likely occur within 100 m of the 600 m buffer.

55 As I have stated earlier, it is my opinion that there is a low potential for adverse air quality effects from the consented PRRP composting operation on the existing environment, which includes up to six dwellings within 600 m of the operation. The SES technical report and assessment of environmental effects which supported the recent SDC application for its current PRRP air discharge consent reached the same conclusion.

56 Whilst under PC73 there will be more dwellings which will have a high sensitivity to the odour discharge, beyond 600 m I don't consider that this increases the potential for adverse effects as I consider that odour discharged from the PRRP composting operation will not be observable/result in adverse effects to the current dwellings within 600 m.

57 I also concur with Ms Nieuwenhuijsen that the frequency and duration that winds would blow towards these receptors will remain the same. Furthermore, by removing the closest dwellings (i.e. the

four dwellings which could legally be established within 600 m of the PRRP) the peak intensity of odour discharged from the PRRP composting operation at the nearest sensitive receptor within the Holmes Block will be lower (due to progressive dispersion of the odour plume).

58 I note that both Mr Bender and Ms Nieuwenhuijsen discuss the potential for upset conditions at the composting operations resulting in observable odour within the Holmes Block (i.e. beyond 600 m). Whilst I agree that at other poorly run/higher risk composting operations in New Zealand nuisance odour has been observed well beyond 600 m, I consider that the current Consent Conditions and associated stipulated management practices for the PRRP operation will limit the potential for these upset conditions to occur. Furthermore, the likelihood that these upset conditions occur at the same time as the wind is blowing towards the Holmes Block (only 12% of the time) is even lower.

59 Furthermore, Condition 15 in the current PRRP air discharge consent requires that the activities on site do not result in an 'offensive or objectionable' effect beyond the boundary of the site. Therefore these 'upset conditions' which could, in the opinion of Mr Bender, result in offensive odour being observed beyond 600 m which would breach the current consent conditions, regardless of whether the Holmes Block is developed under its current ODP or under that proposed by PC73. There would be sensitive receptors/land use beyond 600 m in both instances.

60 The method for determining whether or not an odour discharge generates an 'offensive or objectionable' effect is determined by CRC using the FIDOL[4] factors and assessment tools described in Schedule 2 of the Canterbury Air Regional Plan. The only FIDOL factor which might change beyond 600 m as a result of PC73 would be the 'location' factor. However, as I have discussed earlier, in my opinion the sensitivity of Living 3 and Living Z zoning remains the same. Therefore, odour which is considered offensive in a Living 3 zone would also be considered offensive in a Living Z zone.

61 For these reasons, I don't consider that there is an increase in the potential for adverse odour effects associated with the proposed PC73 re-zoning.

APPROPRIATENESS OF OTHER SEPARATION DISTANCES

62 I have reviewed the assessments undertaken by Golder Associates and the evidence of Ms Nieuwenhuijsen with regards to the

[4] Frequency, intensity, duration, offensiveness, and location (FIDOL).

appropriateness of the proposed separation/buffer distances from other air discharging activities in the vicinity of PC73.

63 In general, I agree with Ms Nieuwenhuijsen that they are appropriate and consistent with the recommended guidance for reverse sensitivity air quality effects.

CONCLUSIONS

64 In my role as a technical peer reviewer of the recent air discharge consent application for the PRRP composting operation, I concluded that there was a low potential for adverse air quality effects beyond the boundary of the site. The current Living 3 zoned Holmes Block was included within this review.

65 I remain of the opinion that there is a low potential for adverse odour effects at the Holmes Block even if it is re-zoned to Living Z. If anything, I consider that there will be a lower potential for adverse effects due to the removal of up to four dwellings within the proposed 600 m setback distance.

Dated: 13 September 2021

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Donovan Van Kekem