Before the Selwyn District Council

under: the Resource Management Act 1991

in the matter of: Proposed Private Plan Change 69 to the Operative District Plan: Lincoln South

and: **Rolleston Industrial Developments Limited**
Applicant

Evidence of Donovan Van Kekem (Odour)

Dated: 4 November 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) The expansion of Fonterra's Studholme milk processing plant and wastewater treatment plant on behalf of submitters;

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

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

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

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

(f) The proposed Private Plan Change 73 to the Selwyn District Council.

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 waste water treatment plants including:

(a) Mangere WWTP Auckland;

(b) Rosedale WWTP Auckland; and

(c) Wacol WWTP Brisbane.

CODE OF CONDUCT

5 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

6 My evidence relates to:

6.1 The potential for adverse odour effects on proposed residences adjacent to the Allendale Pump Station as a result of Private Plan Change 69 (PC69).

7 In preparing my evidence, I have reviewed and considered the following:

7.1 Novo Group report– Request for Change to the Selwyn District Plan prepared for: Rolleston Industrial Developments Limited. April 2021;

7.2 Golder Associates (NZ) Limited letter – Review of Odour Effects Relating to Lincoln Sewage Treatment Plant Setback – Lincoln South Plan Change. Letter dated 16 Feb 2020. (hereafter referred to as the Golder letter);

7.3 Aqualink report – Application to use land for a community wastewater management pond – Assessment of Environmental Effects. Report dated 18 Apr 2019;

7.4 Ms Catherine Nieuwenhuijsen's Evidence (and associated reference papers);

7.5 Council's Section 42a Report prepared by Mr Nick Boyes; and

7.6 The odour peer review prepared by Mr Chris Bender.

EVIDENCE

8 Rolleston Industrial Developments Limited (RIDL) has engaged me to peer review the technical odour assessment undertaken by **Ms Nieuwenhuijsen** and provide my expert opinion as to the potential for adverse odour effects on PC69 from an adjacent wastewater overflow pond.

9 Based on the information I have reviewed, it is my understanding that the following infrastructure and processes occur at the wastewater overflow pond located at the end of Allendale Lane, Lincoln (legally described as Lot 1 DP 50546).

9.1 This pond covers an area of approximately 33,000 m^2 and operates at a normal operating volume of 55,000 m^3. The pond has capacity to take up to 20,400 m^3 of additional water. The pond is used as a contingency buffer in the event of plant failure or storm events, where the existing fixed holding tanks (former SBR tanks, capacity ~600 m^3 water) are insufficient to hold the volume of waste water required.

9.2 The water level in the pond is maintained at least 300 mm above the sludge layer in the pond. This occurs by balancing the rainfall versus the evaporation rate, with either additional wastewater or by pumping excess water into the wastewater network (to the Pines Wastewater Treatment Plant (WWTP)).

9.3 The pond has two water aeration lines along the north western corner to promote aerobic conditions within the pond.

10 Based on the information I have reviewed, it is my understanding that there is currently a 150 m setback buffer in Rule C4.9.32 of the Selwyn District Plan. However, this buffer overlay was imposed when the site was used as a WWTP and not its current use (a wastewater pumping station with buffer tank/pond emergency storage). Therefore, it is considered that the 150 m setback is no longer applicable as the odour generation potential has reduced.

11 In the Golder review letter, it has been estimated that the pond will receive up to 100 m^3 of wastewater overflow in a one in five year annual reoccurrence interval 12 hour storm event.

12 In such a storm event, the wastewater will be diluted due to the mixing of stormwater with the wastewater (approximately 2 – 3.5 times more dilute).

13 In my opinion, from a purely qualitative perspective, the addition of 100 m^3 of dilute wastewater into an aerated buffer pond holding 55,000 m^3 of aerobic water will have a negligible potential to increase the odour generation potential of this waterbody.

14 However, Ms Nieuwenhuijsen has calculated the potential decrease in dissolved oxygen which would occur in the pond as a result of the introduction of 100 m^3 of dilute wastewater to provide a quantitative assessment of the potential for odour generation.

15 I have cross checked the calculations and references provided in the Golder letter. I consider that these are conservative and that the calculated decrease in dissolved oxygen in the water would be minor and is very unlikely to result in the pond water becoming anaerobic.

16 The active aeration system in the pond along with the large surface area and wind wave action is likely to rapidly replenish any reduction in the oxygen content of the pond water as a consequence of this overflow event.

17 Hydrogen sulphide among other gases is released from anaerobic wastewater, which has a distinctive rotten egg like odour (even at low concentrations) and is considered offensive. However, based on the calculated increase in the BOD of the pond as a result of this overflow event, the potential for the water in the pond to turn anaerobic would be negligible. Therefore, the potential release of offensive odour is also negligible.

18 I agree with Ms Nieuwenhuijsen that the overflow storage tanks (which are approximately 190 m from the nearest PC69 boundary) will have a minimal potential to result in odour discharges which are detectable within the PC69 site. This is due to the distance between these tanks and PC69, the dilute nature of the wastewater which would be stored in these tanks, and the very short holding times described (a number of hours).

COMMENT ON COUNCIL S42A REPORT

19 I note that **Mr Bender** agrees that the temporary storage of dilute wastewater (as described in the Golder review letter and discussed above) is unlikely to result in adverse odour effects beyond the pond site boundary.

20 However, Mr Bender raises concerns about the potential use of the pond for temporary storage of wastewater during emergency events. Mr Bender does not provide any evidential basis for his

assertion that offensive odour would be observed beyond the site boundary.

21 I have reviewed the information and calculations provided by Ms Nieuwenhuijsen in her evidence dated 4th November 2021. Based on the information provided I concur that these calculations are accurate and correct.

22 Based on the predicted 1 in 20 year occurrence where an emergency event would necessitate the use of the pond for storage of untreated wastewater, I consider this event to be a very infrequent occurrence. The potential that this occurs, that the wind direction is blowing towards a neighbouring receptor and that the odour dispersion conditions are such that an odour would be detectable within PC69 will be even lower.

23 I consider that Ms Nieuwenhuijsen's calculations of the potential for an odour release event are conservative for the following reasons:

23.1 There is no accounting for the aeration currently installed in the pond which will reduce the time it takes for the pond to return to an aerobic state.

23.2 The calculations are based on the pond receiving the maximum amount of wastewater that could occur in the peak emergency event assessed. In reality, emergency events are likely to involve lower volumes of wastewater overflow.

24 As such I agree with Ms Nieuwenhuijsen's conclusions that any odour which may be observable within the 150 m buffer distance in the proposed PC69 development under this infrequent and short duration event would be acceptable.

25 As such, based on the information I have reviewed, I agree that maintaining a 150 m setback distance from this emergency storage pond is not required.

CONCLUSION

26 Overall, based on the information I have reviewed, I agree with Ms Nieuwenhuijsen that the potential for offensive or objectionable odour effects to occur in PC69 as a result of the peak wet weather event as described in the Golder letter is negligible.

27 Furthermore, I consider the potential for offensive or objectionable odour effects from an emergency temporary wastewater storage event occurring within the 150 m buffer which extends into PC69 to be low.

Dated: 4 November 2021

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Donovan Van Kekem