BEFORE THE HEARING COMMISSIONER
FOR SELWYN DISTRICT COUNCIL

UNDER	the Resource Management Act 1991
IN THE MATTER	of proposed Private Plan Change 69 (Lincoln) to the District Plan
AND	**Rolleston Industrial Developments Ltd (Applicant)**

STATEMENT OF EVIDENCE OF GREGORY PETER BURRELL

ON BEHALF OF SELWYN DISTRICT COUNCIL

FRESHWATER ECOLOGY

26 November 2021

Introduction, Qualifications, and Experience

1 My name is Gregory Peter Burrell. Selwyn District Council contracted me to review ecological aspects of Private Plan Change Application 69 (PC69) to the Selwyn District Plan and provide input to the council's S42A report. This evidence provides a summary of my report to the council, along with responses to updates to the proposed Outline Development Plan (ODP), and relevant aspects of the Applicant's evidence.

2 I hold a Bachelor of Science, Post Graduate Diploma in Science, and a Doctor of Philosophy (PhD) in Science, all majoring in Zoology (in particular Ecology) and all obtained from Canterbury University. I am a member of the New Zealand Freshwater Sciences Society, the North American-based Society for Freshwater Science, and I co-facilitate the Christchurch Ecology Group. I have published scientific papers and a book chapter on ecology in relation to groundwater-surface water interactions.

3 I am a director and senior scientist at Instream Consulting Limited. I have worked in the role for the past seven years. My work is centred on freshwater ecology and water quality, including assessing ecological values, assessments of environmental effects, restoration, and catchment planning. I have over 20 years' experience working as an ecologist.

4 I am familiar with the site, having previously undertaken ecological sampling in Springs Creek, Liffey Stream, LI Creek, Lincoln Main Drain, and the Ararira / LII River for the Living Water programme. I have also undertaken fish sampling and fish relocation in Lincoln Main Drain and its tributaries for the Te Whāriki subdivision. I have no conflict of interest with this application.

Code of conduct

5 While this evidence is not being presented to the Environment Court, I confirm that I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014 and agree to comply with it. The contents of this statement are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this statement.

Scope of Evidence

6 The scope of my evidence is as follows:

(a) Summary of ecological values and issues within the PC69 area.

(b) Response to the updated ODP.

(c) Residual concerns regarding ecological effects.

Summary of Ecological Values and Issues

7 As discussed in my report to Selwyn District Council[1], I consider the following to the be the key ecological values and issues associated with PC69:

(a) Spring and wetland habitats across the site are ecologically significant. That is because springs and wetlands are threatened ecosystems and biodiversity hotspots. The area of proposed development has the greatest density of mapped springs within the Canterbury region.

(b) I consider that the key ecological issue associated with the proposed plan change is the impact of urbanisation on hydrology of threatened spring and wetland ecosystems.

(c) Given the ecological significance of the site and the potential adverse effects of urbanisation, a high degree of certainty is required that spring and wetland values can be adequately protected as part of any landuse change.

(d) Spring and wetland habitats can be protected once they are adequately delineated, their underlying hydrology is understood, and adequate buffers are placed between them and infrastructure, such as roads, buildings, and service trenches.

Response to the Updated ODP

8 The most recent version of the ODP (dated 24/11/2021) includes numerous changes and additions under the heading of “Water Bodies and Freshwater Ecosystems”. Overall, these changes provide greater

[1] Burrell, GP (2021): Private plan change application 69 to the Selwyn District Plan. Ecology Report. Prepared for Selwyn District Council, 19 October 2021.

protection to all waterbodies on site, and I am broadly supportive of them.

9 I particularly support the proposed buffer zones between waterbodies and earthworks and building. I consider the 100 m buffer zone for springs to be appropriate, given the significance of the site. A 100 m buffer around springs will effectively join up the springs into two large spring zones, with one spring zone to the north near the old homestead, and one spring zone to east, closer to the LII / Ararira River. Joining up the springs into two protected spring zones provides the opportunity to protect and enhance ecological values at a greater scale, providing greater overall ecological benefit.

10 I have some minor suggested changes to the revised ODP, as follows:

(a) Insert 'Springs Creek' into the following sentence, as indicated by underlining: *"This could include protected reserve space, native planting, naturalisation and instream enhancement of Springs Creek and the spring-fed drains within the site."*

(b) In section b(ii), delete the words indicated by strikeout in the following sentence: *"Plans specifying spring head restoration, Springs Creek riparian management, waterway crossing management and wetland restoration and enhancement options ~~within the proposed reserve spaces~~, segregation of spring water and untreated stormwater."* That is because there is ecological benefit to enhancing wetland and riparian values within parts of the 100 m spring buffers that are currently shown to fall outside of proposed reserve areas.

Residual Concerns Regarding Ecological Effects

11 Overall, I am pleased with the positive changes made to the proposed ODP, with regards to protecting and enhancing ecological values. I do, however, have some residual concerns, mainly regarding potential construction impacts on springs, and regarding how wetlands will be managed.

12 In her main evidence for Environment Canterbury and Christchurch City Council, groundwater expert Ms Aitcheson-Earl raised concerns about shallow groundwater levels and the lack of groundwater monitoring data from the site. Based on her evidence, it is unclear just how shallow

groundwater levels are on the site and therefore the risk and practicality of mitigating effects on springs using engineering methods.

13 Regarding engineering mitigations, in paragraph 15 of his summary evidence, Mr McLeod referred to several subdivisions he has been involved with that used mitigation measures to deal with shallow groundwater and springs. The examples he gave fall within the Christchurch City Council's South West Halswell ODP and within the Upper Styx ODP. I note that there are very few mapped springs[2] in these ODPs (two springs in each ODP vs dozens at the PC69 site), plus they are new developments with presumably no groundwater monitoring data. Thus, the potential significance of adverse effects are smaller in his examples (because there are far fewer springs to affect) and it is uncertain whether the mitigation measures were successful (because they are such recent developments).

14 With regards to construction dewatering impacts on springs, in paragraph 18 of his summary evidence Mr Veendrick suggested water could be pumped into the downstream watercourse to mitigate flow loss in the spring. This would not be an acceptable mitigation from an ecological perspective, given that the greatest value to protect may be the spring itself, not necessarily the downstream waterway.

15 Mention is made under section a(ii) of the updated ODP text of potential mitigation measures for loss of spring flow. A common solution is to pump groundwater into the springhead to restore surface flow. I am aware of several examples in Christchurch city where urban development has resulted in flow loss in springfed streams (Kaputone / Kā Pūtahi Creek, Shirley Stream, and Ilam Stream). In all cases the council ended up supplementing flows with pumped groundwater, with generally poor success in terms of protecting ecological values.

16 Given the ecological significance of the site with respect to springs, there should be a high level of confidence that the development can avoid adverse effects. I am not sure if this level of confidence has been reached yet; this is a matter for the relevant groundwater and engineering experts to confirm.

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[2] Mapped using Environment Canterbury's Springs GIS layer.

17 In paragraph 27 of her main evidence, Ms Drummond refers to protection of ‘natural inland wetlands’, as defined by the operative National Policy Statement for Freshwater Management (NPS-FM). This NPS-FM definition refers to a subset of wetlands that are dominated by native plant species. In my opinion, this restrictive wetland definition may not be appropriate for this site, given its long history of pastoral landuse. There is a risk that such a restrictive definition will preclude protection and enhancement of all wetlands on site. I raised this definition as an issue during a telephone conversation with Ms Drummond on 23/11/2021, but it is currently unresolved.

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Gregory Peter Burrell

26 November 2021