

**From:** [Georgina Hamilton](#)  
**To:** [Plan Hearings](#)  
**Cc:** [mwebb](#); [Judy Blakemore](#); [Julia Crossman](#); "[Andrew Mockford](#)"; [Keri Johnston](#); [Greg Ryder](#); [grantporter@xtra.co.nz](#); [Saunders, Caroline](#); [Tim Ensor](#)  
**Subject:** Plan Change 7: Opihi Flow and Allocation Working Party (PC7-382) - Evidence in Chief  
**Date:** Friday, 17 July 2020 5:50:39 pm  
**Attachments:** [Evidence of Mark Webb 17.7.20.pdf](#)  
[Evidence of Gregory Anderson 17.7.20.pdf](#)  
[Evidence of Mark Hawkins 17.7.20.pdf](#)  
[Evidence of Grant Porter 17.7.20.pdf](#)  
[Evidence of Caroline Saunders 17.7.20.pdf](#)  
[Evidence of Murray Bell 17.7.20.pdf](#)  
[Evidence of Dan Davies 17.7.20.pdf](#)  
[Evidence of Keri Johnston 17.7.20.pdf](#)  
[Evidence of Dr Gregory Ryder 17.7.20.pdf](#)  
[Evidence of Gregory McAlister 17.7.20.pdf](#)  
[Evidence of Timothy Ensor 17.7.20.pdf](#)  
[Evidence of Jonathan Sutherland 17.7.20..pdf](#)

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Dear Tavisha

We act for the Opihi Flow and Allocation Working Party (**OFAWP**), submitter no. PC7-382.

We **attach** for filing, in relation to the above matter, statements of evidence in chief of the following witnesses on behalf of the OFAWP:

1. Mark Webb (OFAWP representative – Fish & Game);
2. Gregory Anderson (OFAWP representative – North Opuha);
3. Murray Bell (OFAWP representative – Upper Opihi);
4. Deiniol Davies (OFAWP representative – South Opuha);
5. Mark Hawkins (OFAWP representative – Te Ana Wai);
6. Keri Johnston (hydrology);
7. Dr Gregory Ryder (ecology/freshwater quality);
8. Grant Porter (economics);
9. Dr Caroline Saunders (economics);
10. Tim Ensor (planning);
11. Gregory McAlister (drone footage);
12. Johnathan Sutherland (drone footage).

Kind regards,

Georgina Hamilton  
Partner



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**BEFORE INDEPENDANT HEARING COMMISSIONERS  
APPOINTED BY THE CANTERBURY REGIONAL COUNCIL**

**UNDER:** the Resource Management Act 1991

**IN THE MATTER OF:** Proposed Plan Change 7 to the  
Canterbury Land and Water Regional  
Plan – Section 14: Orari-Temuka-  
Opihi-Pareora

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**STATEMENT OF EVIDENCE OF JONATHAN DOUGLAS MOWATT SUTHERLAND  
ON BEHALF OF THE OPIHI FLOW AND ALLOCATION WORKING PARTY  
(SUBMITTER NO. PC7-382)**

Dated: 17 July 2020

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## **1. INTRODUCTION**

- 1.1 My full name is Jonathan Douglas Mowatt Sutherland.
- 1.2 I am a Director of Vector Charlie Charlie (VCC) and also hold the role of Chief Pilot. VCC is a commercial drone data company that specialises in data gathering and mapping for engineering, precision agriculture and resource management project work. VCC is authorised to operate under Part 102 of the Civil Aviation Act and I am noted as chief pilot /safety officer in that authorisation.
- 1.3 I am a helicopter pilot and hold a NZ CPLH with over 10 years flying experience in both New Zealand and overseas. I also hold a Certificate in Thermography, pilot chemical Growsafe Certificate rating. I have 5 years drone flight experience in varying sectors; producing related video footage, mapping and surveys contracting to large commercial companies such as BECA, McConnell Dowell, Lyttleton Port Company, Resson Agriculture Canada, Hummingbird Technologies and Christchurch International Airport Limited. VCC also provides drone data services and processing to statutory agencies including Environment Canterbury and Fish and Game.
- 1.4 VCC was engaged by Opuha Water Limited and the Opihi Flow and Allocation Working Party to map via drone data, specified reaches of the Te Ana Wai, Upper Opihi, Opihi and North and South Opuha rivers.
- 1.5 This evidence describes how the data was captured and details relevant flight parameters and equipment used.

## **2. IMAGERY**

- 2.1 VCC were charged with creating ortho rectified images of various reaches of waterways at varying flows plus some video footage, to enable ecological assessment. In order to achieve this, location, timing and flight parameters (altitude, speed, resolution requirements) were agreed after discussion with Dr Greg Ryder.
- 2.2 The drones used included a DJI Matrice 600 Pro with a Zenmuse X5 sensor and a DJI Phantom 4 Pro.

- 2.3 To ensure the drone data was relevant, liaising with Opuha Water Limited, Dr Ryder, Consultants (Irricon), water quality/quantity sampling technicians (Environmental Consultancy Services and Irricon), landowners and where appropriate (i.e. for flying over roads and bridges) New Zealand Transport Authority and local District Councils began in January 2019.
- 2.4 Specific flows to be captured were specified by Dr Ryder and flights were undertaken on various occasions – (each data set is time stamped and geo referenced) in order to coincide with the work of other parties detailed above (i.e. flow gauging).
- 2.5 As per all drone data gathering, certain decisions have to be made on site on the day regarding sensor settings, direction of flight path, and risk assessments and mitigation. There were no unusual events or amendments required during any of the flights.
- 2.6 The same flight parameters, drone and sensors were used for each repeated flight to ensure comparability of data at different flows for the same site. The flight paths were pre-set from kmz files that were provided by Dr Ryder. Flight parameters and details are available on request from Agisoft Metashape Processing Reports. As noted above, the same parameters were used for flights at the same sites.
- 2.7 The 2D ortho rectified imagery is geotiff and jpeg formats and mp4 film format for video accompanies the evidence of Dr Greg Ryder.

**JONATHON DOUGLAS MOWATT SUTHERLAND**

17 July 2020