

BEFORE CENTRAL OTAGO DISTRICT COUNCIL

IN THE MATTER of the Resource Management Act
1991 and Private Plan Change 12

REQUESTOR **Wooing Tree Holdings Limited**

**STATEMENT OF EVIDENCE OF TOMMY CHAN
ON BEHALF OF WOOING TREE HOLDINGS LIMITED
INFRASTRUCTURE AND SERVICING**

1 November 2017

FLUENT SOLUTIONS
2nd Floor Burns House, 10 George Street, DUNEDIN 9056

Introduction

1. My name is Tommy Chan. I am an Infrastructure Engineer at Fluent Infrastructure Solutions Ltd in Dunedin and have 16 years' experience in the water and wastewater industry.

Qualifications and Experience

2. I have a Bachelor of Engineering (Civil) from the University of Newcastle Upon Tyne in the United Kingdom. I am a member of Engineering New Zealand and of Water New Zealand.
3. My expertise is in pump and pipeline systems design including construction supervision and monitoring.
4. I am conversant with the technical standard for subdivisional development most commonly used in New Zealand, namely the National standard AS/NZS 4404:2010 through continuous involvement in my work.
5. I confirm that I have read the Code of Conduct for Expert Witnesses contained within the Environment Court Practice Note 2014 and agree to comply with it. This evidence is within my area of expertise, except where I state that I am relying on information I have been given by another person. I confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

SCOPE OF MY EVIDENCE

6. I have been asked by the applicant, Wooing Tree Holdings Limited, to review and assess the water supply, wastewater and stormwater (3 waters) requirements for a future development at the Wooing Tree in Cromwell subject to Plan Change 12.
7. In this matter, I will discuss the approach that was taken to assess the water supply, wastewater and stormwater for the site.
8. I will respond to the matters identified by submitters relating to 3 waters infrastructure.

EXECUTIVE SUMMARY

9. Having evaluated and assessed the impacts on the existing Council infrastructure to supply water, discharge of wastewater and stormwater for a future subdivision development on the Wooing Tree site, I confirm the site can be adequately serviced.

10. The site is currently used as a vineyard with an existing water pond and building located in the North East of the site. The proposed plan change for the site is to develop a 210 Lot residential sub-division and business resource area comprising of with mixed use, traveller's accommodation and commercial activities. Part of the vineyard will be retained.

WATER SUPPLY

11. It is proposed that the site is serviced from the Central Otago District Council (CODC) water reticulation network water supply at two connection points to provide a dual feed supply. Two options have been identified; however the preferred option is to connect into the existing 300mm diameter trunk watermain within the South Western area of the site and the 200mm diameter main at the intersection of Shortcut Road and Roberts Drive.
12. Design standards in New Zealand applying to infrastructure design are principally governed by NZAS4404:2010 Land Development and subdivision Infrastructure. CODC Addendum July 2008 to NZS4404:2004 was adopted to calculate the water demand.
13. The estimated water demands were calculated based on the future development masterplan and the maximum allowable development for the Wooing Tree site. An estimated peak flowrate of 63 Litres per second (L/s) and estimated fire fighting flow of 69 L/s was calculated for the site.
14. The water reticulation pressure in the vicinity of the Wooing Tree development is 58 to 61 m during a peak future day and was provided by Rationale Ltd (CODC consultants). The additional peak flow demand from the Wooing Tree site was estimated to reduce the network pressures by 8 m.

WASTEWATER MANAGEMENT

15. The existing Scott Terrace Pumping Station (PS) has an estimated capacity of 8.6 L/s and was designed in 2004 to service 200 Lots; this also considered future development at the Wooing Tree site. Currently, there are 61 Lots serviced by the pump station. The Scott Terrace PS pumps into the Lowburn rising main.
16. The wastewater design criteria for the development have been adopted from the CODC Addendum to NZS 4404:2004 dated July 2008. The wastewater flow from the Wooing Tree site is estimated to have a peak dry weather daily flow of 6.9 L/s and a peak wet weather flow of 12 L/s.

17. The existing Scott Terrace PS is inadequate to take all of the estimated peak wet weather flow from the Wooing Tree development plus the existing catchment flows, which is a total peak wet weather flow of 15 L/s (12 L/s from Wooing Tree plus 3 L/s from the existing catchment).
18. Three options for handling wastewater disposal from the Wooing tree site have been identified. These are:
 - a) Option 1: Divide the Site - South West side of development to the existing Scott Terrace PS and North West side to gravity main on Roberts Drive.
 - b) Option 2: Connect entire development to the existing Scott Terrace PS and upgrade pumps and rising main.
 - c) Option 3: Install new pump station to service site and pump directly to the Lowburn Rising Main.
19. Option 1 considers diverting part of the Wooing Tree Site to the Roberts Drive sewer, which gravitates towards the East side of the Cromwell township to a pump station on Alpha Street. This option needs further analysis to determine whether there is available capacity in this wastewater catchment to accommodate part flows from the proposed development.
20. Option 2 considers upgrade of the pump station and rising main at Scott Terrace PS. This represents a significant cost and it was found there was insufficient land on the existing site to increase the emergency storage capacity to meet Council's 24 hour requirement. CODC have specifically adopted the requirement for 24 hours of emergency storage for all wastewater pump stations.
21. Option 3 is for a new pump station to service the Wooing Tree site, which can pump directly into the Lowburn Rising main. If Option 1 is not viable due to capacity issues in the Roberts Drive wastewater catchment, Option 3 would be the next preferred option.

STORMWATER MANAGEMENT

22. There is no existing stormwater infrastructure in the vicinity of the development. The management of stormwater can be facilitated within the boundaries of the site with disposal to the gravels. An existing bore hole log at the Wooing Tree site identifies layers of gravels suitable for stormwater disposal.
23. Sizing of any stormwater disposal facility will require confirmation from a number of boreholes to confirm the permeability rate. At this stage, with the development layout only being conceptual, it is recommended that the

stormwater management design is undertaken as part of the subdivision consent stage.

SUBMISSIONS

24. I have reviewed the four submissions that specifically identify matters relating to 3 waters infrastructure.
25. B Anderson (1/4) states *“The report concedes that the current infrastructure in the vicinity is not adequate and will require substantial upgrading”*. Water supply to the proposed Wooing Tree development can be accommodated within the existing design capacity of Council’s system. Similarly for wastewater, CODC have raised no capacity issues with the existing Lowburn rising main; where there is available capacity in the existing wastewater catchment. I have identified options to service the site for wastewater disposal.
26. R & W Byrne (5/11) states *“It is not accepted that the proposed development will be appropriately serviced. There will be additional, heavy demand and loading on the relevant networks”*. This is addressed by my foregoing comment.
27. R & W Byrne (5/13) states *“The proposal may have issues in terms of the RC SA [sic ?] requirements in terms of stormwater quality and quantity”*. The stormwater management will be designed to meet the Resource Consent requirements with the Otago Regional Council - Regional Plan for Water, which outlines the acceptable rules for discharge of water.
28. K Checkletts (7/6) states *“b) Stormwater – significant development is proposed and all stormwater systems planned must ensure any discharge to the lake is prevented (including through development)”*. Stormwater management will be disposed via the ground into the identified gravels within the site.

PLANNER’S REPORT

29. No specific matters were identified in the planner’s report that requires a response. I agree that the appropriate stormwater management techniques would need to be designed at the subdivision consent stage.

SUMMARY

30. Having evaluated and assessed the 3 waters infrastructure for the proposed development subject to Plan Change 12, I confirm my view that the development can be adequately serviced. Water supply and wastewater management can be achieved in accordance with the CODC Addendum to NZS 4404:2004 dated July 2008.

Tommy Chan

1 November 2017