

**BEFORE THE HEARINGS PANEL**

**IN THE MATTER** of hearings on  
submissions concerning  
the Proposed One Plan  
notified by the  
Manawatu-Wanganui  
Regional Council

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**SECTION 42A REPORT OF MR ALEXANDER WILLIAM ORMISTON  
ON BEHALF OF HORIZONS REGIONAL COUNCIL**

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## 1. INTRODUCTION

### Qualifications and experience

1. My name is Alexander (Sandy) Ormiston. I am a consulting Engineering Geologist with 26 years experience including investigation and design of on-site wastewater treatment and land disposal systems. I have a Bachelor of Science in Geology and a Master of Science in Engineering Geology from the University of Canterbury.
2. I am a Director of Ormiston Associates Ltd, a geotechnical engineering and engineering geological consultancy specialising in investigation and design of on-site wastewater treatment and land disposal systems. I have wide experience in on-site wastewater treatment and land disposal system investigation and design throughout New Zealand. I have been involved in on-site wastewater treatment and land disposal system design for individual houses, subdivisions, tourist developments, hotels, restaurants, marae, wineries, and public toilets. These involved daily wastewater flows ranging from less than 1,000 litres to more than 600,000 litres. I have also designed numerous systems in difficult locations such as Regional Parks in the Auckland Region and remote sites without reticulated power supply.
3. 1.3 I consult to the Auckland Regional Council, processing on-site wastewater treatment and discharge consent applications, attending hearings and advising hearing commissioners. I provide wastewater management advice to Auckland Regional Council for submissions on Plan Change applications.
4. I was retained by Manukau City Council in 2007 to undertake a study of on-site wastewater system performance in Clevedon Village, which required inspection of the majority of on-site wastewater systems in the village. The data collected was used to prepare an assessment risks posed by on-site wastewater systems to public health and the environment.
5. I provide review services to Manukau City Council for the on-site wastewater management component of land use consent applications within the Manukau City area.
6. I am co-author of the Auckland Regional Council On-site Wastewater Systems Design and Management Manual, Technical Publication 58 (TP58). Third Edition 2004.

7. I was retained by the Auckland Regional Council during 2007 to prepare and present on-site wastewater investigation and design training courses, with each course comprising two half-day sessions. The course was presented to Regional Council and Territorial Authority staff within the Auckland Region.
8. I was retained by Environment Waikato to assist with the review and processing of applications for on-site wastewater management within the Waikato Region.
9. I was retained in 2006 by Horizons Regional Council to prepare a new on-site wastewater system investigation and design manual, which is titled Manual For On-site Wastewater Systems Design and Management (April 2007).
10. I prepared a training course based on the Manual For On-site Wastewater Systems Design and Management, for Territorial Authority staff, wastewater system designers and installers. This was presented at four venues within Horizons' Region over two days during 2007.
11. I am a member of the New Zealand Land Treatment Collective, a specialist wastewater group that includes Crown Research Institutes, scientists, council staff and consultants, and I am the current Chairman of the Technical Committee.
12. I confirm that I have read the Code of Conduct for Expert Witnesses and agree to comply with that Code.

### **My role in the Proposed One Plan**

13. I was engaged in July 2006 by Horizons to assist with development of on-site wastewater rules for the Proposed One Plan. The draft manual was completed by the end of July 2006 and circulated within Horizons for comment.
14. The guideline manual titled Manual for On-site Wastewater Systems Design and Management provides guidance on:
  - i. Site assessment and investigation methods.
  - ii. Soil description and soil category.
  - iii. Wastewater production assessment including per capita flow allowances for common facilities (eg. dwellings, schools, camp grounds).
  - iv. Wastewater treatment methods and wastewater treatment standards (primary, secondary and advanced secondary).

- v. Land application methods and appropriate wastewater application rates for the range of soil categories (Soil categories 1-7).
  - vi. Separation distance guidance to be provided between land application systems and constraints such as surface water and groundwater.
  - vii. Wastewater system maintenance and management requirements.
15. The new manual was introduced to engineers, designers, installers and Territorial Authority staff within the Region at a series of workshops during June 2007. The workshops focused on the general content and use of the manual along with discussion on Horizons' expectations for on-site wastewater system design, operation and management to be provided by designers to support discharge consent applications.

## **2. HORIZONS' WASTEWATER DESIGN MANUAL**

16. The manual is based on a similar design manual published by the Auckland Regional Council (Technical Publication 58 *On Site Wastewater Systems: Design and Management Manual* and commonly referred to as TP58) and provides guidance for designers, engineers and council staff. TP58 is used by many councils throughout New Zealand as a design guideline manual. TP58 provides detailed prescriptive guidance for site assessment, system design and minimum separation distances.
17. The Australian/New Zealand Standard 1547 (2000), commonly referred to as AS/NZS 1547:2000, provides design guidance for assessing soils, dwelling occupancy and designing a limited number of land application systems based on soil category. AS/NZS 1547:2000 does not provide guidance on the currently available wastewater treatment systems or separation distance between land application areas and features such as surface water. AS/NZS 1547:2000 provides overall design guidance but recommends local councils provide specific guidance for design, based on local rules and constraints.
18. The Horizons manual provides detailed design guidance for engineers and designers investigating site soils and groundwater within a potential wastewater land application area. The results of the investigations allow determination of appropriate land application system for wastewater irrigation into or onto the ground. Generally accepted investigation procedures and soil category descriptions and methodology used elsewhere in New Zealand and overseas are provided.

19. One of the primary objectives for preparing the manual was to provide general, simple to follow, guidance for assessing potential occupancy, per capita wastewater production and sizing wastewater treatment systems. In addition, a significant part of the manual provides guidance for designing a range of appropriate land application systems, including the design method, rates for applying treated wastewater appropriate for the soil category (clay, silt, sand or gravel). It includes a design example for each method.
20. The manual includes guidance for separation distance between land application areas and surface water, groundwater, boundaries, dwellings, flood levels, and water bores. This is in a tabulated form and is qualified by soil category and the level of wastewater treatment (primary septic tank treatment to advanced secondary treatment by proprietary treatment plant).
21. I would expect the manual to be of significant assistance to officers processing wastewater discharge consents (Regional Council) and Building Consents (Territorial Authorities) by providing consistent design and separation distance guidance. I would also expect an improvement in the standard of design and supporting information provided to Councils, and that the combined benefits of improved guidance, design and understanding by both designers and regulators will provide for a reduction in detrimental effects from on-site systems on the environment in the medium to long term.
22. The Horizons manual provides comprehensive design guidance which I consider will simplify the design process for engineers and designers, and which simplifies on-site systems review by council officers (Regional and Territorial) within the region. The manual will also lead to consistency in design and expectation between the Territorial Authorities within the Region. A significant benefit is that Councils and designers will use the same document to provide consistency and I would expect this to reduce consent processing time, so long as designers have followed the guidelines. The manual does not preclude alternative designs or separation distances, but reduced separation distance proposals must be backed up by science.
23. The Regional Plan (On-site Wastewater) and manual require owners of on-site systems have an operative and signed programmed maintenance contract with the system supplier/installer or suitably qualified maintenance provider, and to undertake inspections and servicing at not less than six monthly intervals. The objective of maintenance contracts is to ensure the on-site systems operate as designed and that they comply with the Regional Rules for on-site discharges. A copy of the maintenance contract is to be supplied to the Territorial Authority.

24. Horizons has provided training for engineers, designers, installers and council staff (2007) and plans to provide regular training courses to keep practitioners up to date.

A. W. Ormiston

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