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IN THE MATTER OF	the Resource Management Act 1991
BEFORE	Tasman District Council
AND	
IN THE MATTER OF	an application by Adcock & Donaldson Properties Ltd to establish a Motorsport Park at Stanley Brook

EVIDENCE OF MATTHEW JAMES MOLLOY

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28 February 2012

INTRODUCTION

1. My full name is Matthew James Molloy and I am a Director of Environmental Health Consulting New Zealand Limited a duly incorporated company having its registered office at Auckland.

2. Environmental Health Consulting NZ Limited ("EHC") is a consultancy specialising in environmental and public health which operates nationally and throughout the pacific. The predominant work carried out by EHC is to Government Departments, District Health Boards, Local Authorities, and businesses and involves the assessment and advice on water supplies for individuals, communities as well as compliant and legal aspects.

3. I have a Diploma in Environmental Health Science (Wellington Polytechnic now Massey University), and a Diploma in Drinking Water Assessment (Otago Polytechnic). As a result of those qualifications I was able to be designated by the Ministry of Health as a Health Protection Officer and a Drinking Water Assessor. I commenced work with Nelson Crown Health Enterprise, which morphed into the Nelson Marlborough Hospital Health Service, which morphed into the Nelson Marlborough District Health Board. I commenced employment in 1994 and remained in that employment until January 2011 when I took up my position as a Director of EHC. I am a member of the Water Industry Operations Group of New Zealand and the Pacific Water & Waste Association.

4. In the course of my employment with the various iterations of the Nelson Marlborough District Health Board one of my tasks with the Board was to review resource consent applications in relation to effluent disposal and potable water provisions. In addition to these tasks from 2008 – 2011 I took on the role of Technical Assistance Programme Facilitator which involved working with and

training communities in water supply operation, maintenance and sustainability. I was one of 10 such staff national wide delivering the Ministry of Health's Drinking Water Assistance Programme. I am accordingly, in my view at least, highly experienced with both of those aspects of development.

5. I have read the consolidated Environment Court Practice Note in relation to the giving of evidence by expert witnesses and I confirm that my evidence has been prepared in accordance with that Practice Note as well as any oral evidence I may give to the Committee.

SCOPE OF EVIDENCE

6. My brief was to:
   (i) Assess in conjunction with my company's water engineers the engineering feasibility of the water system proposed;
   (ii) Advise as to treatment options so as to ensure that any water supply is potable.

7. I attended on the site on the 24th day of February 2012 to generally satisfy myself that I was clear as to its location, aspect and to identify whether on my inspection there was anything in particular which I thought needed to be taken into account in the fulfilment of my brief.

THE PROPOSAL AND ASSESSMENT

8. Engineering feasibility of proposed water system – Potable water will be collected from roof water from buildings established in the boundaries of the site. It is estimated that the maximum amount of water required is in the region of $50m^3$ per day (at its peak).

Based on the evidence from Pattle Delamore there is sufficient rainfall in the area to ensure that this proposal is feasible. However during times of low rainfall and large events water can be supplemented by an onsite bore or trucked in from one of the many registered water tankers within the district. To offset this possibility additional storage tanks will be used within the site to ensure that there will be enough water at all times.

9. The proposed scheme is as follows:

(i) Water is collected from the roof from various buildings on site;

(ii) The water would then either be treated at each site or pumped to a central location and treated. Treatment would consist of sand filter, cartridge filter, and followed by ultraviolet disinfection.

What this means is that the water collected from the roof is filtered through sand to remove *"larger"* particles, then through a cartridge filter which will remove particles down to 1 micron and then through a ultraviolet disinfection tube (which consists of ultra violet tube lamp around which the water flows and by exposure to the ultraviolet light will inactivate pathogens including Giardia and cryptosporidium). Depending on the final design water will be used on the site where it is treated or pumped to tanks on a hill at the upper end of the site and then gravity fed back to a reticulated system within the site.

To reduce the amount of treatment required for rainwater first flush diverters and leaf guards will be used on all roofs where water is collected. This will ensure that the first rainfall is discarded to waste as this may contain dust, pollen and bird faeces. These measures drastically improve the quality of the raw water and make subsequent treatment easier and more efficient.

One of the benefits of using such a system is the modular nature of its components. Filters and UV disinfection equipment can be added to as the site

develops. In addition the treatment only requires a small footprint and is highly portable. The treatment facilities can be moved around the site to best fit the staged approach and final design.

10. Having viewed the standard proposal I can see no difficulty from an engineering perspective for the successful operation of the system. In effect, it is very similar to many of the community water supply systems found throughout New Zealand and the pacific. This scheme was designed to comply with the Drinking Water Standards for New Zealand 2005 (revised 2008). Filtration and UV disinfection is being used by the Tasman District Council for the Upper Takaka water scheme and has been investigated for use in the proposed Motueka Community Water Supply and a combined Richmond/Waimea supply. Marlborough District Council has also recently installed UV disinfection on the Blenheim water supply and the Woodbourne Air force base has UV disinfection as well. Many small communities, schools and campgrounds in the top of the south successfully use filtration and UV disinfection to provide potable water to their residents and customers.

    It is acknowledged that power will be required to run any pumps and the UV disinfection unit, however sustainable power generation such as solar panels can be used. Okiwi Bay, a medium sized community in the Marlborough Sounds have successfully been operating a filtration and UV disinfection treatment plant which runs on hydro and solar power for over 2 years now.

11. Treatment Options – I have already addressed this matter above. There are a range of options depending on the quality of the water. These could consist of any filtration plus chlorination, filtration plus ozonation (the addition of O_3 ozone to the water which kills the pathogens but then has to be removed from the water) or filtration and ultraviolet disinfection. Membrane filtration is another option where water is filtered though very small membranes (less than 0.1

microns where one micron is one millionth of a meter). Membrane filtration is however quite complex and expensive. Filtration and ultraviolet disinfection is the most commonly used in New Zealand, for small suppliers, and in my opinion is an appropriate method for use at this site.

12. I have investigated whether the use of the system proposed will constitute a *"community water supply"* under the Health (Drinking Water) Amendment Act 2007. The Health Act requires that in the event that water is supplied to more than one property it becomes a community scheme (because there is more than one property involved), but if the supply is made by a landowner to a property owned by that single landowner then it becomes a *"self supply"* and is exempt from most of the legal requirements of the Health Act. I am satisfied that this proposal will not create a community water supply as defined in the Health Act but the applicant has indicated a willingness for the water to be treated to the Drinking Water Standards.

13. There is a considerable body of legislation in New Zealand that refers to or relates to in one way or another water supplies. They are:

- The Health Act
- The Sale of Liquor Act;
- The Food Hygiene Regulations;
- The Camp Ground Regulations;
- The Building Act; and
- The Health and Safety in Employment Act.

All of those statutes require the provision of potable water as will of course certain provisions of the Tasman Resource Management Plan.

There are various definitions and interpretations of potable water, however the Health Act defines *"Potable water"* as meaning water which will comply with the Drinking Water Standards for New Zealand 2005 (revised 2008). This is considered the bench mark for potable water. I am satisfied with the scheme proposed above that that standard will be met.

14. I am happy to answer any questions.