

In the Matter of                      the Resource Management Act 1991

And

In the Matter of                      the hearing of submissions and further submissions on  
the Proposed Land and Water Regional Plan

Evidence of Robert John Potts on behalf of  
Lyttelton Port Company Limited

Dated: 4 February 2013

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1. **INTRODUCTION**

- 1.1 My name is Robert John Potts. I hold the qualification of NZCE (Civil), BE(hons)(Ag), Dip Hydrology(groundwater), CPEng and Making Better Decisions. I am a Member of IPENZ, Water NZ (current Chairman of SWAN), NZ Land Treatment Collective.
- 1.2 I am currently employed by Lowe Environmental Impact Ltd, providing advice to clients on stormwater, land treatment of wastes and effects of land use changes.
- 1.3 I have provided advice to Lyttelton Port Company (LPC) on stormwater for the last two years, particularly regarding expansion of the quarry and the reclamation.
- 1.4 I confirm that I have read and agree to comply with the Code of Conduct for Expert Witnesses (Environment Court Practice Note 1 November 2011). This evidence is within my area of expertise, except where I state that I am relying on facts or information provided to me by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

2. **SCOPE OF EVIDENCE**

- 2.1 I provide a brief background on the soils and treatment for earthworks related construction activities on the Port Hills.
- 2.2 My evidence relates to the technical issues arising from the stormwater rules only; Rules 5.72 and 5.73.

3. **BACKGROUND**

- 3.1 As discussed by Mr Purves, most of the LPC land is flat land associated wharves, storage and handling areas. Stormwater from these areas are either discharged into the Christchurch City Council's reticulated stormwater system or directly into the coastal marine area and are not captured by Rule 5.72.
- 3.2 LPC however also has a considerable land holding on the hillside above the Port. This land includes the LPC Gollans Bay quarry and associated haul road – this is

shown in Mr Purves' evidence. The hard-rock quarry is essential to the Port because the rock is used to maintain the seawalls and is a key resource for reclamation.

- 3.3 The terrain of the quarry and haul road is steep and there are numerous gullies that contain ephemeral streams under rainfall conditions. As a consequence, LPC has had previously stormwater discharge permits from Environment Canterbury associated with the quarry and the haul road.
- 3.4 The soils on the Port Hills around the LPC port are predominantly derived from wind-blown silt (loess) which contains a high percentage of sodium as a bond. This is a weak bond making the soils dispersive to varying degrees and thus prone to erosion. The natural slopes are therefore prone to rill and gulley erosion as well as under-runner development.
- 3.5 This means that even without vegetation disturbance, during rainfall events, streams can carry high concentrations of suspended solids and have a very dirty appearance.
- 3.6 The silt material has poor settling characteristics which mean standard sedimentation ponds struggle to reduce concentrations unless they are very large. Due to the relatively steep nature of the hills, sufficient room for large ponds is not always possible so coagulating and flocculating agents are usually added to achieve the required reductions in suspended solids.

#### 4. **RULES ON THE DISCHARGE OF STORMWATER**

- 4.1 Rule 5.72 permits the discharge of stormwater into a river, lake, wetland or artificial watercourse or onto or into land in circumstances where a contaminant may enter water provided a number of listed conditions are met.
- 4.2 Rule 5.73 states that the discharge of stormwater, which fails to comply with one or more of the conditions listed under Rule 5.72, is to be classified as a non-complying activity.
- 4.3 LPC has submitted on Conditions 6 (a) and 6 (b) (i) listed under Rule 5.72 and has submitted on the non-complying status specified in Rule 5.73. The submission is also discussed in the evidence of Mr Purves.

## **RULE 5.72**

- 4.4 LPC Submission Point 283.3 seeks the deletion of Condition 6 (a), or alternatively seeks that the areas subject to Condition 6 (a), excluding land owned by the Lyttelton Port Company, is shown on a map. The reason for the submission is that condition 6 (a) is considered unreasonable because there will be many cases when construction-related stormwater discharges will not involve contaminants other than suspended solids. In such circumstances there is no need to test for the raft of determinands set out in Schedule 5. Schedule 5 may in some circumstances be justified (i.e. from some urban areas) but should not apply universally.
- 4.5 Schedule 5 has a huge list of toxicant determinands – metals, phenols, organics and inorganics. An owner of site could only ascertain whether a stormwater discharge was a permitted activity by testing all of these determinands, and therefore the cost would be in the thousands of dollars per testing round. It is also unclear how many testing rounds would be required to prove compliance and under what flow conditions compliance needs to be tested, i.e. 2%, 5%, 10% or 20% AEP storms. Furthermore, it is unclear how Schedule 5 would be used during an assessment of a resource consent required under Rule 5.73.
- 4.6 In my opinion, the toxicant list in Schedule 5 is not relevant for temporary construction water or earthworks, rather the issue with construction water is suspended solids and this is covered by Condition 6 (b).
- 4.7 In addition, further explanation in the Plan is required on how Schedule 5 will be managed by Environment Canterbury. For example, when the testing of toxicant list will be required from industrial or urban sites and how the determinands will be selected.
- 4.8 I also consider that Condition 6 (a) needs rewording, particularly when read in conjunction with the headings in the tables in Schedule 5.
- 4.9 Some of the table headings relate to a change in water quality due to a discharge (columns; DOC, Temperature, pH, Visual Clarity, Colour) and some are water quality standards (columns; DIN, DRP, E.coli, Toxicants). With regard to the four columns of water quality standards, the discharge could contain very low concentrations of these

determinands (i.e. could be clean water) and if the receiving water is already above the standards, then the discharge will not be permitted.

4.10 Based on the foregoing discussion, Mr Purves and I consider that the following amendments to Condition 2 (d) of Rule 5.72A, as recommended by the Reporting Officer, be adopted (or similar):

“(d) (i) *The discharge, **other than discharges directly associated with Earthworks, does not result in** ~~meets~~ the water quality standards in **Tables A and B of Schedule 5 not being met** after reasonable mixing with the receiving waters, ~~in accordance with Schedule 5.~~*

**(ii) The discharge directly associated with Earthworks does not result in the water quality standards in Table A of Schedule 5 not being met after reasonable mixing with the receiving waters.**

**(iii).....”**

4.11 I also believe the Reporting Officer's Condition 2 (d) (ii) needs either rewording or clarification. It is currently:

“(ii) *The concentration of total suspended solids in the discharge shall not exceed:*

- *50 g/m<sup>3</sup> where the discharge is to any spring-fed river, Banks Peninsula river, or to a lake ; or*
- *100 g/m<sup>3</sup> where the discharge is to any other river or to an artificial water course; and”*

4.12 However, I believe that just about every river in the world would have some spring fed component of it. Certainly every Canterbury River I can think of is spring fed in its upper catchment which would put it into the bullet point 1 category. The Plan writers need to consider what they are trying to protect here and reword appropriately. I consider the clearest way would be along the lines of the first table in Schedule 5 (we suggest it be called Table A), i.e. set limits on Hill-fed – upland at 50 g/m<sup>3</sup> and Hill-fed lower at 100 mg/L. This would mean that 2 (d) (iii) above would not be required, with Schedule 5, Table A having the final column presently labelled

“Toxicants” replaced with a column labelled “Discharge Suspended Solids” and either put 50 or 200 g/m<sup>3</sup> beside each river category.

#### **s42A Report**

4.13 Regarding the recommended changes to the Rule in the s42A report. I support the splitting of Rule 5.72 into discharges to water (5.72A) and land (5.72B). This makes the rules clearer to see.

4.14 I also agree with the TSS standards adopted of 50 and 100 mg/L and the Officers reasoning. Meeting 50 mg/L on Banks Peninsula is difficult without significant treatment, such as good erosion protection followed by sedimentation ponds with flocculation. As pointed out in the LPC submission, this may not be required at all discharge locations due to proximity to the sea and the natural TSS of the receiving waters. However, providing the Officer’s recommendation that Rule 5.73 is Discretionary remains, then I consider the standards appropriate.

#### **RULE 5.73**

4.15 LPC Submission 283.5 seeks to amend Rule 5.73 so that the status of any activity failing to comply with the conditions of Rule 5.72 is a discretionary activity. The reasons for the submission are that non-complying status of this rule is inappropriate and unduly onerous. The rules implies that all of the conditions in Rule 5.72 are bottom-lines that must be achieved.

#### **s42A Report**

4.16 Regarding the recommended changes to the Rule in the s42A report. I support the Officer’s recommendation of making Rule 5.73 Discretionary.

Robert John Potts  
04 February 2013