

## BEFORE ENVIRONMENT CANTERBURY

**IN THE MATTER** of the Resource  
Management Act 1991

**AND**

**IN THE MATTER** of submissions and  
further submissions  
made by **the OIL  
COMPANIES** on  
Proposed Variation No  
6 (Christchurch  
Groundwater Protection  
Zones) to the Proposed  
Natural Resources  
Regional Plan Chapter  
4 – Water Quality

### STATEMENT OF EVIDENCE OF DAVID LE MARQUAND ON BEHALF OF THE OIL COMPANIES: HEARING VARIATION 6

#### 1.0 INTRODUCTION

1.1 My name is David le Marquand and I am a Director of Burton Planning Consultants Limited. My qualifications are a Bachelor and Master of Arts degree in Geography from Auckland University. I have practised resource management for over thirty years: fifteen of those years in Central Government including six years as a Scientist in the Planning Section of the Water and Soil Directorate (MWD) Wellington, and two years as a Policy Analyst and five years as a Senior Policy Analyst with the Ministry for the Environment in Auckland. I have spent the last fifteen years as a Resource Management Consultant with Burton Consultants.

1.2 My evidence generally supports the submissions and further submissions lodged by Shell New Zealand Limited, BP Oil New Zealand Limited, Mobil Oil New Zealand Limited, and Chevron New Zealand (the Oil Companies) on Variation 6 to Chapter 4 Water Quality of the Proposed Natural Resources Regional Plan (NRRP).

1.3 I have been the Account Manager for the Oil Industry Working Group (OIEWG) for more than thirteen years. OIEWG currently comprises of Shell New Zealand Limited, BP Oil New Zealand Limited, Chevron New Zealand and Mobil Oil New Zealand Limited (the Oil Companies). In that role I have been responsible for providing resource management advice to the Oil Companies on a national basis, on relevant district and regional plan provisions and various environmental issues of collective interest including contaminated land, air and water discharge provisions, hazardous substances and risk management provisions. OIEWG has been responsible for generating a number of guidelines including “Guidelines for Assessing & Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (MfE 1997)”, “Above-Ground Bulk Tank Containment Systems - Environmental Guidelines for the Petroleum Marketing Oil Companies (MfE 1995)” and “Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand (MfE 1998)”. I have also been involved in a range of joint venture oil industry projects relating to new and existing infrastructure (e.g. joint operated bulk terminal facilities) involving various regional and district council consents.

## **2.0 BASIS OF EVIDENCE**

2.1 I have read and am familiar with the Proposed Variation 6 NRRP provisions, the Officer’s Report for the Hearing in relation to the Oil Companies submissions and further submissions, and the redline version of the relevant provisions. My evidence primarily focuses on the recommendations in the Officer’s Report on the provisions as they relate to the concerns of the Oil Companies.

2.2 I have read the Code of Conduct for Expert Witnesses issued as part of the Environment Court Practice Notes. I agree to comply with the code and am satisfied that the matters I address in my evidence are within my expertise. I am not aware of any material facts that I have omitted that might alter or detract from the opinions I express in my evidence.

### **3.0 GENERAL BACKGROUND**

3.1 The Oil Companies principal concerns in relation to Variation 6 arise in respect of the storage and use of hazardous substances associated with their service station networks and bulk storage facilities. The key potential issues that arise from the activity relate to:

- storage containers (above and below ground) and the potential risk of contamination;
- removal of underground containers and the assessment and remediation of potential contamination;
- the discharge of stormwater from these facilities and the potential for hazardous substances to be entrained into stormwater discharges from areas where the substances are stored, used and handled. While many service stations will discharge into existing Council infrastructure there are a number, due to their location, that will be unable to do so, and where discharges may be to land or surface water.

3.2 As identified in paragraph 1.3 the Oil Companies have invested considerable effort in developing a number of Guidelines to address potential adverse effects from their operations. The “Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand (MfE 1998)” are the most relevant in relation to stormwater discharges. The Guideline sets out standard best practice for managing stormwater discharges from petroleum sites. The Companies have, and continue to, seek to ensure that the practices detailed in the Guideline are recognised and adopted. In particular the Guideline specifies the design of interceptors and management practices to address the areas at risk of entraining contaminants from such sites.

3.3 New underground storage tanks have had to comply with the OSH/Department of Labour Code of Practice for the Design, Installation and Operation of underground petroleum storage systems (1992) and its 1995

supplement. These documents set out specific requirements for tanks in sensitive groundwater areas. The HSNO legislation has established construction and containment standards and testing regimes that apply in sensitive groundwater areas and ERMA is currently finalising a Code of Practice for underground storage containers. HSNO also establishes requirements for containers, containment and monitoring and testing for above ground containers.

3.4 The Ministry for the Environment Guideline relating to petroleum hydrocarbon contaminated land is widely recognised and accepted and forms part of the MfE package of Guidelines that apply to the identification, assessment and remediation of potentially contaminated land.

3.5 The Oil Companies submissions in relation to the matters addressed by this hearing sought the following outcomes:

- Ensure that the policy and rule framework is focused appropriately on balanced risk mitigation (probability and consequences) of the effects of discharges and not just on avoiding consequences and/or activities;
- Ensure that existing hazardous facilities can continue to operate, subject to appropriate management measures. This should include upgrades or additions particularly where such upgrades or additions will result in a reduction in the level of risk to groundwater resources;
- If any changes are to be implemented, to ensure that they enable existing hazardous facilities to continue to operate as a permitted activity, and that any upgrades or extensions to such facilities can be undertaken (irrespective of aggregate volume) by way of a restricted discretionary activity consent; and
- That there be no prohibited activities (except for landfills as identified in the policy framework).

3.6 I support the intent of the Oil Companies submissions. My evidence focuses on the Officer's recommended changes to the provisions, the intent of those changes as I understand them (via discussions with staff), the issues that those matters raise and how they may be better targeted to ensure appropriate environmental outcomes, while satisfying the intent of Oil

Companies submissions. I examine the specific rules in the first instance then the policies.

#### **4.0 STAFF RECOMMENDATIONS**

4.1 The staff recommendations have made a suite of comprehensive amendments to the policy and rule framework. These changes are significant and need to be re-evaluated in light of the original submissions. I have assumed that there is scope within the various submissions for staff to make the various changes proposed.

4.2 Overall I am in general support of the clarity and simplification of the provisions now proposed. In particular I support the intent to:

- develop specific policies for each groundwater zone;
- make existing hazardous substance facilities permitted;
- remove overlap and duplication of HSNO provisions;
- include a schedule of thresholds of substances;
- focus on wet stock reconciliation rather than tank testing regimes;
- encourage underground tank removals by making the activity and any associated investigation and remediation permitted;

however, the changes proposed in the staff recommendations raise a number of issues that require further comment.

#### **Stormwater Rules WQL 5 and 7**

4.3 I have considered the stormwater rules in detail in my evidence presented at other hearings for the NRRP (e.g. refer Hearings 22 and 33) and it is not intended to repeat that here. Significant changes have been proposed to those rules via other hearings and the changes proposed as a result of this Variation are minor. A key outcome arising from these rules will be that many existing industrial facilities within groundwater protection zones will be required to obtain a stormwater discharge consent once the Plan becomes operative. The specific amendments proposed by staff in relation to Rules WQL 5 and 7 for Variation 6 are not opposed.

4.4 There is however, one matter relating to Policy WQL 19 (5) that needs further comment. The provisions states:

*(5) All hard surfaces and vehicle standing areas associated with urban activities within Christchurch Groundwater Protection Sub-Zone 1A must be designed, constructed and maintained so as to avoid hazardous substances and contaminants entering groundwater.*

- 4.5 The Companies sought that the word “new” be added to make it clear that it was applying to new activities. The reason for this was a concern about potential requirements to retrofit treatment to all existing surfaces, even where there are few risks of any contaminants getting entrained. The staff report now seeks to attach this condition to not only apply to zones 1A and 1D but also 1C. The staff report has rejected the submission (p179 of the staff report) and states:

*The zone 1A is within the highly vulnerable unconfined aquifer system. Hazardous substances pose the greatest risk to Christchurch’s drinking water, and existing vehicle standing areas and other hard surfaces must have measures to avoid these contaminants entering the system. It is envisaged that where hazardous substances are likely to be used, that measures will already be in place.*

- 4.6 I accept that where there is a risk of these substances entering the groundwater system there needs to be measures in place. I also accept that existing service stations and bulk storage facilities designed in accordance with the ME Guidelines will already be capturing contaminants. However not all runoff from hard surfaces will require specific treatment. In my opinion the policy should be targeted to “at-risk” areas where hazardous substances may be entrained in runoff as opposed to a blanket “all hard surfaces”. This is the way the MfE Guidelines have been designed, for example runoff from the canopy roof is not treated as uncontaminated and is diverted away from the on site treatment system. Consequently I would like to see the policy reworded as follows:

- 4.7 *(5) All hard surfaces and vehicle standing areas associated with urban activities within Christchurch Groundwater Protection Sub-Zone XX at risk of entraining hazardous substances must be designed, constructed and maintained so as to avoid hazardous substances and contaminants entering groundwater.*

## **Rule WQLZZ: Decommissioning of an underground container**

4.8 This rule sets out the process by which underground containers can be removed, potential residual contamination investigated and any contaminated identified and remediation as appropriate as a permitted activity. The rules rely heavily on the use of MfE Guidelines relating to contaminated land. I generally support the permitted activity framework as it “encourages” the activity in order for environmental improvements to be readily obtained. The framework reflects the best practice approach undertaken by the industry and MfE to managing the removal of underground containers. I also support the explanation for the Rule. However there are a couple of matters I wish to draw to the attention of the Committee.

### **Information Requirements**

4.9 The first matter relates to the information requirements in condition 1 of Rule WQLZZ. The Oil Companies sought in their submissions on condition 5 of WQL 42 that it be amended to only require the address, scheduled date of removal and contact details of the person/contractor doing the work.

4.10 The information requirements recommended in the staff report include additional conditions to those originally contained in WQL 42. The conditions are:

- 1, Environment Canterbury shall be notified in writing at least ten working days prior to the commencement of the decommissioning with the following information;*
- (a) the capacity of the container;*
- (b) the type of specified hazardous substance that is or has been stored in the container;*
- (c) the legal description of the land and the location of the container on the site;*
- (d) the name and address of the person undertaking the decommissioning of the container;*
- (e) the proposed method of decommissioning;*
- (f) the date and approximate time the container is to be decommissioned;*
- (g) the reason for the decommissioning of the container;*
- (h) the destination or proposed use of the decommissioned container;*
- (i) the process for cleaning or decontaminating the container, and the disposal of any residue from this process; and*
- j) the destination of any contaminated soil, water or other material removed during the decommissioning process.*

- 4.11 I can support conditions (a)-(g) as it pertains to the activity on site and condition (j) in relation to the excavation of any material in and around the container that needs to be removed. In my opinion the degree of information being sought in conditions (h) and (i) needs to relate to the nature of the activity being undertaken at the site of interest (i.e. the location at which decontamination and destruction is undertaken). This is a land use activity pertaining to a specific location. Once ECAN has the contact details of the person(s) doing the work, it can ask the person responsible whatever questions need answering in respect of matters pertaining to related activities at another location. For example the removal of a UPSS will involve the commissioning of contractors, whose responsibilities will include the transportation, cleaning and disposal of the UPSS appropriately. Decontamination and destruction of a tank is rarely undertaken on site. Managing any discharges that may result from the cleaning or destruction of the UPSS at another location should be considered within the context of the location at which that is occurring, and not within the original site. In my opinion an activity cannot be permitted subject to conditions, which apply off site and/or to third parties.
- 4.12 In Hearing 29 of the NRRP the staff report (p122) argued that such information is necessary to prevent the likes of the tanks being filled insitu with inert material or being used as spill tanks. However, the provision of such information will not, in my opinion, address the insitu filling of a tank with inert material, as the rule only applies to removal and demolition (i.e. decommissioning). If the intent is to address some concern with the way spill tanks are used in the electroplating industry (as I understand from that previous staff report) then the condition as written won't achieve that intent and a targeted rule may need to be introduced into the Plan for that activity. If Council considers that the conditions can and are to be used to bridge such gaps, then this is potentially concerning. It should also be remembered that this is a permitted activity rule and unscrupulous operators are unlikely to be mindful of the rules in any event.
- 4.13 If conditions (h) and (i) are to remain then they need to be clearly linked to the activity occurring on the site to which the rule applies. This could be achieved by making the following changes to the conditions as follows:

*(h) the ~~destination or~~ proposed on-site use of the decommissioned container;*  
*(i) if decontamination of the container is to occur on-site then the process for cleaning or decontaminating the container, and the disposal of any residue from this process; and*

#### **Rule WQLYY: Use of land to store or use a specified hazardous substance**

4.14 The intent of the rule to permit lawfully established facilities is supported. There are, however, a number of matters that are of concern to the Oil Companies.

##### **Condition 1**

4.15 Condition 1 states:

*The storage or use can be demonstrated to the satisfaction of the consent authority as being lawfully established before 4 July 2004 and similarly the maximum quantity stored or used has not increased since that date.*

4.16 In my opinion condition 1 is capable of being inappropriately interpreted as equally applying to throughput as to storage. Clearly a limit on throughput will be a very difficult condition to ascertain both for the Council and operators. Discussions with staff confirm that the intent is not to apply to throughput. Given that position, it is considered appropriate that reference to “used” be deleted from the condition as follows:

*The storage or use can be demonstrated to the satisfaction of the consent authority as being lawfully established before 4 July 2004 and similarly the maximum storage capacity ~~quantity stored or used~~ has not increased since that date.*

4.17 It is noted that the lawfully established date is now proposed to be 4 July 2004. Variation 6 introduced a lawfully established date of 1 August 2007. It is not clear upon what basis this date can be rolled further back. Doing so may well result in some anomalies and unforeseen complications. For example where an industry has relied on section 20A of the RMA in the intervening period for any minor increase in storage, or where a consent has been obtained for an activity in the meantime. It is unclear what would happen upon expiry of such a consent if the activity became a prohibited activity once the Plan was operative. The 1 August 2007 date should, at least, remain. Further consideration is required as to how to address the situation where a consented activity becomes a prohibited activity, which may arise through no

fault of the Oil Company, because someone has drilled a drinking water well in close proximity to a service station.

**Prohibited activity status**

- 4.18 The Oil Companies sought the deletion of the prohibited activity categories from the Plan. Rule WQLYY seeks to make any activity within a Community Drinking Water Supply Protection Zone for a bore listed in Schedule WQL2 a prohibited activity. In the original notified version of the NRRP such an activity would have been non-complying at these locations, at least enabling a case to be made via the consent process. While I could accept such a category for new facilities (i.e. they are free to locate elsewhere) such an activity status poses a significant potential impediment to the industry, and potentially the region, if applied to existing, regionally important facilities.
- 4.19 Bore 86 and 88 at Woolston are identified on Council's GIS, they are surrounded by a 400m wide circle, which indicates that the zones are, according to Schedule WQL 2, located in Aquifer 1 of the Coastal Confined Gravel Aquifer system (see attached ECAN GIS pages in Attachment 1). The Community Drinking Water Supply Protection Protection Zone covers the regionally important Woolston Terminal and part of the existing Lyttelton to Woolston petroleum pipeline, notwithstanding it is located within Groundwater Protection Zone 3. This effectively applies a prohibited activity status to any increase in storage capacity within the existing boundaries of the Woolston Terminal, thereby foregoing any associated improvement in the level of environmental protection.
- 4.20 Incidentally coastal confined aquifers are only mentioned twice in Water Quality Chapter 4 (in 4.4.3(c) and monitoring table WQL11). The maps refer to Woolston/Heathcote Groundwater Management Zone 1 yet there is no specific mention in Chapter 4 of the status or relevance of this. There is mention in 4.4.3(vi) that the Woolston/Heathcote area suffers issues of potential salt water intrusion, but there is no other connection to the aquifer classification on the maps. Indeed such a connection is only made through the Water Allocation chapter where there is specific policy to address saltwater intrusion. The policy in Chapter 5 sets abstraction limits and requires abandonment of extraction when certain criteria are exceeded. The operation of the bore that is affecting Woolston is at least marginal. The lack

of clarity in Plan means that numerous businesses may be unaware to the extent that they are so potentially disadvantaged.

4.21 Similarly there are half a dozen bores located within the Airport, which presumably are there to largely serve the airport for its water needs. The associated Community Drinking Water Supply Protection Zones for these bores effectively blanket the airport and cover the existing regionally important fuel storage facilities (see attached ECAN GIS pages in Attachment 1). This means that the existing facilities will be constrained into their present storage capacity, with no prospect of making any change even when demand requires it. If capacity is to be increased it will require new development in a different location with all the associated costs. It is difficult to foresee the Companies being willing to invest in new storage terminals and pipelines. The provisions mean there can be no increase in capacity even if the resulting works at the existing site would improve the level of environmental protection and decrease the probability and consequence (i.e. risk) of any incidents happening. In my view such an approach runs the risk of foregoing potential environmental improvements and improvements to the risk profile of a particular regionally significant facility, and accepting the present level of risk. It may also count against the introduction of bio fuels like biodiesel, which could have a wider environmental benefit to the region. It is assumed that ethanol could be introduced as it is not a “specified hazardous substance”, however this needs further clarification. It is not, in my view, acceptable to impose a prohibited activity status on such regionally significant strategic infrastructure, especially where an activity could reduce its level of risk if a consenting process were allowed.

4.22 There needs to be a basis upon which a case can be made, particularly for existing regionally significant and strategic infrastructure, but indeed for any existing activity, as realistically there are few alternative options. The Council is effectively “shutting down” these facilities if they need to expand, in turn imposing significant financial implications for the businesses and the region. Prohibited activity status is a draconian measure. While I understand the intent behind it, the approach is too blunt and will not lead to sustainable resource management. For regionally significant strategic infrastructure, the focus should be on both components of risk: probability and consequences, and not just consequences. As an example: it may be that bores in close

proximity to hazardous facilities have to be either deeper (thereby reducing the CDWSPZ), more closely monitored, or decommissioned and any changes to existing hazardous facilities constructed to the highest industry standards. For other activities there should at least be an ability to enact changes to those facilities that would see risk stay the same or reduce, even if storage is increased.

- 4.23 Further there appears to be an ongoing risk to industry that the development of new drinking water wells could blight existing development. While WQN 27 makes the establishment of new drinking water supplies a discretionary activity, the matters of discretion refer to the effect of existing activities on the drinking water activity. There is nothing in either the condition or the policy framework that protects existing activities from being subject to new protection zones. This is very concerning, creates investment uncertainty and could significantly impact on individual businesses who may or may not be made aware of such applications.

#### **Wet Stock**

- 4.24 Condition 2 states:

*Stock reconciliation of a specified hazardous substance shall be undertaken at regular intervals. If the stock reconciliation of a substance stored in a container located in or under land shows a discrepancy for the measurement period of more than 25 litres or 0.5 percent, whichever is the smaller, Environment Canterbury shall be notified;*

- (i) immediately, if the container is located within a Community Drinking Water Supply Protection Zone for a well listed in Schedule WQL2. or within Christchurch Groundwater Protection Zones 1, 1A, 1 B, 1 C, 1 D, or 2 ; or*
- (ii) within two working days if the discrepancy occurs over three consecutive measurements for a container located in any other area.*

- 4.25 Condition 2 requires immediate notification if a discrepancy is recorded in relation to a facility within a Community Drinking Water Zone or Groundwater Protection Zone. I remain concerned over the expectation of “immediate notification”. Notification should only be required once a wet stock reconciliation discrepancy above the threshold is confirmed and there is potential risk of loss to ground. Wet stock reconciliation discrepancies can arise for a variety of reasons other than a loss of UPSS integrity. For example:

- A wet stock reconciliation discrepancy will arise if manual wet stock monitoring data is incorrectly recorded or an arithmetic error is made in a manual reconciliation process.
- Similarly, in a situation where a wet stock reconciliation discrepancy is identified in a double-wall UPSS, then additional checks (e.g. monitoring of interstitial spaces) can be undertaken to determine system integrity. If there is a check to confirm there is no loss of UPSS integrity, then notification should not be immediately necessary, as it clearly indicates that one needs to work back and find out what has caused the error.
- If there is a double contained tank, and there is a check to confirm there is no leak, notwithstanding a confirmed discrepancy, then notification should not be immediately necessary, as it again clearly indicates that one needs to work back and find out what has caused the error.
- Further, a loss of system integrity does not always result in a loss of product to ground. In areas of high groundwater table, a loss of integrity can result in water ingress to a system rather than product loss. Similarly, if a loss of integrity occurs above the safe fill product level, product is unlikely to be lost to ground.

4.26 In my view in those sensitive zones ECAN should be notified when a discrepancy has been confirmed and there is a potential loss of integrity and therefore potential of product loss to ground. For a single skin tank ECAN would be advised once a discrepancy was confirmed as it would suggest a potential loss of integrity and that is difficult to assess. For a modern double walled tank and where there is secondary contained pipework notification of the discrepancy would not be needed if a check of the tank and line (interstitial spaces) confirms no product loss. On this basis I would therefore like to see condition 2 modified as follows:

*Environment Canterbury shall be notified:*

*(i) Immediately when a discrepancy has been confirmed, except where it can be verified that there is no potential loss of system integrity within a Community Drinking Water Supply Protection Zone (identified on the Planning maps) or Christchurch Groundwater Protection Zones 1 or Sub zones 1A, 1B, 1C or 1D; or*

*(ii) Within two working days if the confirmed discrepancy occurs over three consecutive measurements for a container located in any other area and there is potential loss of system integrity.*

4.27 It is noted that a discrepancy has to be reported if it is either 25 litres between each measurement period or 0.5 percent whichever is the smaller. The original version of the rule reflected the HSNO requirements of 0.5 percent. The 25 litre threshold is new and I have not been able to identify the basis and reasoning for its introduction. This causes the Oil Companies some concerns, in that it may not be practicable or necessary to reliably measure to this level of accuracy in all situations. The 0.5 percent threshold was introduced into HSNO in recognition of the nature and level of performance that wet stock inventory can reliably achieve. Further clarification is required on the rationale for the threshold. As indicated a reconciliation error does not mean there is a leak. Modern secondary contained systems can be readily checked to confirm if there is a loss of integrity. HSNO requirements will ensure that, within a relatively short period, all systems within sensitive groundwater areas will have secondary containment and therefore the threshold may not be necessary.

**Activity status for extensions to existing facilities**

4.28 The Companies sought that any extension to an existing facility be considered no worse than a restricted discretionary activity. I support the intent of the Oil Companies submission. At present the staff recommended rule provides for extensions to existing (e.g. service station or bulk storage) facilities within the groundwater protection zones as a non-complying activity, the same activity status as for new facilities. While I can understand the signal for new facilities to avoid these areas, I would prefer to see the activity status be no worse than a discretionary activity for existing facilities, where not within a Community Drinking Water Supply Protection Zone and non-complying if they are (as opposed to prohibited) but with an exception (i.e. discretionary) for strategic infrastructure such as the Airport and Woolston Terminal and pipeline if they are.

4.29 The reason why a change to the activity status is considered appropriate is that while existing activities are permitted there should be an “incentive” to improve all aspects of existing facilities in order to reduce any risks from those sites. This would involve ensuring those sites have the equipment and procedures that meet best practice (e.g. double contained tanks and pipework etc). The trend in modern underground petroleum tanks is to larger capacity tanks and/or multiple compartment tanks. Newer tanks and equipment will

reduce the probability of an incident. The reduction in probability of an event (and therefore risk) occurring will be an environmental improvement. To enable such an improvement will generally mean that there has to be a good business case (economic benefit to the business) for such work to proceed. A non-complying/prohibited activity does not, in my view, send that signal. If there is real ability to increase capacity and therefore capture associated improvements in environmental protection then that investment will increase. The probability of a failure can generally expect to increase with ageing equipment (except modern fibreglass tanks will not be subject to corrosion unlike the previous steel tanks) even though the consequence will remain the same.

4.30 The policy framework (including the zone policies and policy WQL 8 and 12) make specific provision for extensions to existing facilities, which reinforces my view that they should not be treated on the same basis as new facilities.

4.31 New provisions in WQLZZ should be introduced as follows:

**2A A discretionary activity if it:**

*Is an extension to a lawfully established activity and not within a Community Drinking water Protection Zone.*

*Is an extension to lawfully established strategic infrastructure and within a Community Drinking Water Protection Zone*

**3A A non complying activity if it:**

*Is an extension to a lawfully established activity and within a Community Drinking Water Protection Zone.*

4.32 There are some consequential amendments required to the policies these are discussed below.

## **OBJECTIVES AND POLICIES**

4.33 As the rules propose a non-complying activity status for new and any extensions to existing facilities, within the groundwater protection areas, the objectives and policies and their interpretation are critical for any activities involving hazardous substances.

4.34 I am supportive of Objective WQL 4 and the associated explanation and in particular the pragmatic recognition that where there is localised

contamination, the focus will be on removal or remediation of the source of contamination.

- 4.35 The reworking of policies 13-21 into new policies 13-19 represents a significant change to the notified version of Variation 6. While I am generally supportive of the restructure (e.g. one policy per groundwater zone) there are a number of issues that need addressing.

### **Reworked Policy 13**

- 4.36 Each policy (13-19) is prefaced with the same preamble taken from the previous policy 13:

*Manage activities in the Christchurch Groundwater Protection Zone XXX so that there is no significant increase in the risk of contamination of groundwater by avoiding activities that may result in contaminants entering and persisting in groundwater, and minimising effects of activities where contaminants will exist in groundwater for only a short period. In particular:*

- 4.37 The subsequent parts of the relevant policies (13-19) set out how activities are to be managed in each respective zone. There are clear differences between the groundwater protection zones and the subsequent elements of the policies, i.e. they do not result in “avoidance of all activities” that may result in contaminants entering groundwater, and they contain a variable element. Notwithstanding the phraseology of the policy it does not appear that the intent is to have to remove all hazardous substance use from Christchurch. As a consequence there is, in my opinion, an inherent and concerning contradiction and discretion built into the new policies.

- 4.38 The Oil Companies sought in their submission that Policy WQL 13 be reworded as follows (note: I have added some extra wording underlined to add clarification) :

*Ensure the risk of contamination to Christchurch groundwater from activities is appropriately assessed and managed to the extent that:*

- (i) Where discharges may result in contaminants entering and persisting in groundwater and would have an adverse effect on groundwater quality, the risk of discharge is avoided in the first instance by avoiding the establishment of that land use or where this is not practicable (e.g. existing activity), appropriate mitigation measures are implemented.*
- (ii) Discharges are minimised where the water quality effect of contaminants will only exist in groundwater for a short period of time.*

- 4.39 The staff report (page 81) identifies that the Oil Companies suggested wording is close to the intent of the existing wording. I disagree. In my opinion there are important differences between the two. The Oil Companies submission more appropriately reflects or enables the more pragmatic intent and effect of the staff recommended zone policies and rules. It introduces the concept of practicability. New uses can be readily avoided, existing activities can't. It is not practicable to avoid the risk of such discharges where there are already zoned urban areas, established activities using and storing hazardous substances or regionally significant strategic infrastructure (e.g. Woolston pipeline or the airport). In my opinion the Oil Companies version (with my amendment) would be more appropriate as a header to each zone policy. Alternatively this could be elevated as an objective as it applies to all the zone policies.
- 4.40 If the policy 13 header is to remain for each zone policy then the words "In particular" need to be replaced with words "to the following extent:" or similar. This would at least better reflect the collective intent and wording of each of the subsequent zone provisions.

#### **Policy WQL 15**

- 4.41 The Oil Companies sought the deletion from Policy WQL 15 of the reference to aggregate quantities. This reference now appears in the reworked WQL 13 as follows:

*(6) New hazardous facilities, and additions or extensions to existing lawfully established hazardous facilities, must:*

- (a) not aggregate large quantities of hazardous substances on a site; and*
- (b) be designed, constructed and maintained in accordance with best management practice so as to stop hazardous substances entering groundwater as a result of day-to-day use, leakage, accident or a natural hazard event.*

- 4.42 In my opinion and for the reasons specified previously and in relation to the discussion on risk in paragraphs 4.47-52, it is appropriate to amend the policy to recognise existing activities by making the following changes:

*WQL 13*

*(6) New hazardous facilities, ~~and additions or extensions to existing lawfully established hazardous facilities,~~ must:*

- (a) not aggregate large quantities of hazardous substances on a site; and*

*(b) be designed, constructed and maintained in accordance with best management practice so as to stop hazardous substances entering groundwater as a result of day-to-day use, leakage, accident or a natural hazard event.*

4.43 Introduce a new policy in WQL13 as follows:

*Any extension to existing hazardous facilities, must provide best management practice measures to prevent toxic, mobile or persistent contaminants entering groundwater as a result of:*

*(a) the routine use of a hazardous substance; or*

*(b) leakage or spill from a hazardous facility or pipeline; or*

*(c) seismic activity that is likely to result in structural damage from ground motion; or*

*(d) emergency situations.*

#### **Activity consistent with the protection of groundwater**

4.44 The Oil Companies submission sought to:

*Remove the significant discretion from Policy WQL 14 by providing further guidance and criteria by which ECAN would assess activities "provided for" in a District Plan to be "consistent with" protection groundwater.*

4.45 The phrase "the activity is consistent with the protection of groundwater quality" now appears in each of the new policies 13 - 17. In my opinion there is significant uncertainty over what that aspect is and how it will be applied. The staff report has made the following comment in response to the Oil Companies submission (staff report Part 5 p 105):

*The policy states that activities, which are legally provided for in district plans but have not yet been established on the parcel of land, may only be established under certain conditions. There is two requirements set out in the policy: applying best management practice measures and, that they are consistent with the protection of groundwater. While guidance is provided on appropriate measures, the requirement to be "consistent with the protection of groundwater" is purposefully left open to allow judgement to be exercised on the wide range of activities that are possible. The policies do, however, give specific requirements for the more common activities in each zone.*

4.46 The staff report identifies a particularly important intent in that it is supposed to be applying to activities not yet established. This is not clear in the present drafting. This aspect needs to be clarified in the respective policies by including reference to "new" as appropriate.

4.47 I remain uncomfortable with the deliberate openness of the policy as it is not likely to lead to consistent decision making and therefore will not lead to greater certainty in decision making. On the one hand it is purporting to

enable the urban development provided for in the other plans and RPS but on the other reserves discretion to thwart any and every such development sanctioned by those other documents on an ad hoc basis (i.e. when a consent is triggered). A test of “consistent with” would also appear to be a different test to “no significant increase in risk” in the policy header. If there is to be such a test then further guidance and criteria is required to be developed if such policy is to be capable of delivering consistent decision making. I do not believe that this provision is necessary given the header to the policies and would prefer it was deleted altogether from the revamped policies.

### **Policy WQL 16 Groundwater Protection Zone 1C**

- 4.48 Apart from the matters identified above I support those aspects of Policy WQL 16 that seek to enable the Christchurch International Airport to operate and function and thereby recognise and provide for the existing hazardous facilities, which is critical to their operations. However as highlighted earlier there is a policy/rule disconnect for zone 1C in that any extension of existing fuel facilities at the airport would appear to be a prohibited activity under the proposed rules. I accept that any extension in these areas should be required to implement best management practices. The relief identified in paragraph 4.29 of this evidence will, in my view, give effect to the intent of Policy WQL 16

### **Explanation to policy framework**

- 4.49 In general I support the proposed explanation to the policy framework, however there are a couple of matters that need further consideration. The overall approach is discussed at the end of the explanation; I would support the overall approach being considered upfront of the policy explanation.
- 4.50 The policy headers (in policies 13-19) refer to “*no significant increase in risk*”. However the explanation to the staff recommended policy introduces the concept of “*avoid unnecessary risk*” which is stated as being “*the emphasis of management to be on the consequences of an activity rather than the probability of those consequences occurring*”. I understand the concern is where an event will have a very high consequence irrespective of the probability of that event occurring. The explanation goes on to state “*As the quantity of contaminant being stored and used on-site increases, so too does*

*the level of consequence to groundwater in the event of a system failure. However it is only in the event of failure, or accident, that contamination occurs. There is clear need for a strong level of management of this risk, e.g. limiting the quantity of hazardous substances on site, or requiring bunding ”*

- 4.51 In my opinion there remains a role for the consideration of probability. Probability is an important consideration in relation to age of equipment. A 20 year old single skin steel underground tank will have a higher probability of failure than a new fibreglass tank, yet they may have the same volume and therefore have the same consequence of failure. The relationship between volume of storage, system failure and consequence is not a simple linear relationship. It is accepted that consequence increases proportionally in relation to the size of the largest container. Probability remains an important consideration though where there are multiple containers on a site. A system failure that results in the release of all multiple containers on a site at the same time is an extremely rare event. Indeed if we “planned” for such events there wouldn’t be a Wellington or an Auckland. Consideration of probability should be a factor when looking at extensions to existing facilities as an upgrade could result in an overall net reduction in the risk profile of a site. The opportunity for that reduction to occur will be lost if there is a zero tolerance threshold applied. As indicated earlier the probability of failure typically increases with ageing assets (although modern fibreglass tanks won’t corrode) , although consequence won’t.
- 4.52 By way of an example an existing service station currently operating with three underground (single skin steel) 50,000l tanks will be a permitted activity. Those three tanks may need replacing. They could be replaced by two multiple compartment (40000l/20000l) 60,000l fibreglass tanks and one 30,000l as a permitted activity and on that basis there is no net increase in volume or consequence from the site. The tanks would be modern, double walled tanks with modern fittings. The substances would be held in effectively five containers instead of three. If there were an increase in overall volume (e.g. by making the 30,000l tank 40,000l), there would still be an overall net reduction in the volume of the largest containers and therefore a reduction in potential consequence, that is unless all five containers simultaneously failed, the probability of which would be very remote.

	1 tank failure	2 tank failure	3 tank failure	4 tank failure
Existing Tanks (3x 50m3) Total 150,000l	50,000l	100,000	150,000l	N/A
New tanks (2x 40/20m3 and 1 x 30m3) Total 150,000l	40,000l	80,000l	110,000l	130,000l
New tanks (2x 40/20m3 and 1x 40m3) 160,000l	40,000l	80,000l	120,000l	140,000l

4.53 Such an expansion would, in my view, still provide a net overall reduction in the risk profile of that activity. If consequence is considered in isolation from probability then there is a big question on where to draw the line. For example petrol tankers travel on roads, therefore there is a chance of a spillage from a 40,000l tanker on a road, which in turn could wash off into the ground. Similarly there is also a chance that two tankers could collide and discharge their contents, but the probability of that happening is substantially less than one tanker, similarly three tankers could collide, the probability of that is extremely remote. If we were only concerned about consequence then those would need to be factored into the consideration about new roads.

4.54 I would like to see the following changes made to the fourth paragraph of the explanation by deleting:

~~Accordingly, the appropriate approach to managing groundwater quality is to avoid potential consequence, even if the probability of those consequences occurring is low. That is, the emphasis of management is to be on the consequences of an activity rather than the probability of those consequences occurring. This approach is called "avoid unnecessary risk".~~ And replacing with:

*Accordingly, the appropriate approach to managing groundwater quality is to avoid potential consequences in the first instance, even if the probability of those consequences occurring is low. That is the approach is to avoid all*

unnecessary risk. Where that is not possible then the probability of those consequences occurring can be considered, particularly for existing activities.

## **5.0 CONCLUSION**

- 5.1 The staff recommendations have made a number of significant changes to the policies and rules. The overall intent to simplify the structure of the rules is supported. Rule WQLZZ relating to the decommissioning of underground tanks is supported subject to the amendments outlined in this evidence.
- 5.2 Rule WQLYY permits existing hazardous substances facilities and requires a non-complying consent for any expansion in the groundwater protection zones. The activity status is not opposed for new activities but is for existing activities and an alternative basis is presented (refer paragraph 4.29). It is considered appropriate that there be careful scrutiny for any such expansion. However, the fact that there is proposed a prohibited activity status for any expansion within a Community Drinking Water Supply Protection Zone is major impediment particularly for the regionally significant strategic infrastructure of the Woolston - Lyttelton pipeline, Woolston terminal and airport fuel facilities. Notwithstanding that the facilities are located within such Protection Zones, there should be an opportunity to make a case, via the consent process, particularly for strategic infrastructure, which is limited in alternatives. The prohibited activity status could be retained for new activities. Removal of the prohibited activity status for the existing airport activities is required if effect is to be given to Policy WQL16 (Zone 1C: Airport). Removal of that activity status is also necessary if the strategic importance of the Woolston Terminal and pipeline is to be recognised and given that the Terminal is subject to a Community Drinking Water Supply Protection Zone that is marginal in that it is operating in an aquifer area that is suffering from salt water intrusion issues and over allocation and is located is within Groundwater Protection Zone 3.
- 5.3 The policy framework is generally supported but requires further amendment in accordance with the matters outlined in this evidence.

David le Marquand

26<sup>th</sup> March 2010

ECAN GIS IDENTIFYING COMMUNITY DRINKING WATER SUPPLY  
ZONES OVER WOOLSTON TERMINAL AND CHRISTCHURCH AIRPORT