IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of application CRC190445 by the Christchurch City Council for a comprehensive resource consent to discharge stormwater from within the Christchurch City area on or into land, into water and into coastal environments

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STATEMENT OF EVIDENCE OF TRENT DAVID SUNICH ON BEHALF OF Z ENERGY LIMITED, BP OIL NZ LIMITED, MOBIL OIL NZ LIMITED

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1. INTRODUCTION AND EXPERIENCE

1.1 My full name is Trent David Sunich. I hold the position of Senior Environmental Consultant at 4Sight Consulting. I have been in this position since August 2012.

1.2 I hold a Bachelor of Technology (Environmental) which I obtained from the Unitec Institute of Technology in 2001. I have approximately 17 years' experience in the field of natural resources planning and environmental engineering. My expertise is in stormwater quality management, integrated catchment management planning, and industrial site auditing and contaminant management, and erosion and sediment control where previously I have held roles with the Auckland Regional Council and URS New Zealand Limited.

1.3 In my roles working for the Auckland Regional Council, URS New Zealand Limited and as a consultant working on behalf of the Auckland Council, I have been involved in several service station upgrade projects, new service stations and new truck stop facilities. While working for URS New Zealand Limited, I have also audited the bulk fuel terminal facilities in the upper north island being those operated by Wiri Oil Services Limited (Wiri terminal and Marden Point terminal) and the aviation fuel storage facility at the Auckland International Airport.

2. CODE OF CONDUCT

2.1 My qualifications as an expert are set out above. I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing this evidence. Except where I state that I am relying on the evidence of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

3. EXECUTIVE SUMMARY

3.1 The key conclusions of my evidence are:

(a) The Oil Companies are implementing a guideline document prepared in conjunction with the Ministry for the Environment which assists with site design, spill containment and treatment design for stormwater runoff from areas of the site where handling of fuels take place. The Guideline is applicable to retail fuel outlets and bulk fuel handling facilities and has been embedded in site practice throughout New Zealand.

(b) In my opinion Oil Company sites compliant with the guideline are demonstrating best practice relative to the risk of stormwater contamination and should not be excluded from being authorised by the CSNDC.

(c) I support the aim of the CSNDC to improve stormwater runoff quality throughout the city, however I do not agree with the consent seeking water quality equivalence with industrial residential and commercial land use types. I consider stormwater contaminant reduction from industrial sites should focus on best practice through contaminant prevention, contaminant source control and contaminant treatment working in combination to achieve water quality improvements and receiving environment outcomes. I consider in complying with the guidelines the Oil Companies are meeting best practice.

(d) Regarding construction phase stormwater management, I consider the Oil Companies are either following conventional and established methodology in the case of managing contaminated or potentially contaminated surface water or are following best practice in terms of erosion and sediment control where risk of the works encountering petroleum hydrocarbons is unlikely. Therefore, in my opinion a pathway should be presented for discharging to the reticulated stormwater system, subject to the implementation of the controls rather than being excluded from the CSNDC as is currently proposed in the consent application.

4. PARTS OF THE APPLICATION ADDRESSED IN MY EVIDENCE

4.1 In this evidence I:

(a) Briefly describe the oil company asset base within the Christchurch City Council area and context in terms of stormwater runoff management.

(b) Outline how stormwater discharges from oil company sites are typically managed throughout NZ referring to *The Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand.*

(c) Discuss how environmental risk from oil company sites is defined and comparison with CCC approach.

(d) Discuss oil company sites in the context of meeting stormwater runoff quality equivalent to residential land use.

(e) Discuss construction phase storm water runoff from Oil Company sites and the imposition of Total Suspended Solids (TSS) limits in stormwater runoff.

5. INTRODUCTION

5.1 Z Energy Limited, BP Oil NZ Limited, Mobil Oil NZ Limited (the Oil Companies) have commercial, shore and marine based and aviation and bulk fuel (petroleum) storage facilities in Canterbury which are recognised as regionally significant infrastructure in the Canterbury Regional Policy Statement. In Christchurch this includes the bulk storage tanks at the Port of Lyttelton, Christchurch Airport and Woolston and associated wharf lines and pipelines. The Oil Companies are also owners of retail outlets and suppliers of petroleum products to individually owned retail outlets and commercial refueling facilities, for instance transport depots.

5.2 Based on an analysis of Z Energy Limited retail sites in Christchurch (approximately 20 service stations and truck stops, excluding former

Chevron sites), it can be inferred that most of the Oil Companies retail truck stops and service stations sites will discharge stormwater to the reticulated stormwater network. There are some exceptions, particularly where the stormwater network does not extend to areas on the periphery of the city. This applies to discharges at the airport which are to ground soakage. Discharges at both the Woolston and Lyttelton terminals are to the reticulated stormwater network or via private infrastructure to the Coastal Marine Area.

5.3 Essential to the operation of these various facilities is the measurement, analysis and management of risk affecting the health, safety and wellbeing of staff, the public, property and the environment.

5.4 Mitigation of risk to the environment from operating each of the facilities can be in the context of discharges to air associated with venting or the transfer of petroleum products; discharges to ground and/or ground water from above or below ground storage tanks (either through unintended passive discharges or accidental spillage); or through the entrainment of petroleum hydrocarbons in stormwater runoff, including the accidental spillage of product. The following section outlines current Oil Company practice in relation to stormwater runoff quality, including best practice measures to prevent and manage spills.

6. OIL COMPANY SITE STORMWATER RUNOFF AND SPILL MANAGEMENT

6.1 In recognition of the potential risk to freshwater (including groundwater) and marine receiving environments from the operation of their sites, in the 1990s, the Oil Companies in a joint working group with the Ministry for the Environment and other industry partners sought to develop a guideline document complementary to the Acts and Regulations at the time which is entitled '*The Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand*[1]' (the Guideline).

6.2 I understand an evolution of the Guideline is being drafted to account for changes in the industry, including the availability of a range of oil and

[1] Ministry for the Environment 1998

water separators (of which only the API and SPEL have been demonstrated to comply with the existing Guideline), industry practice and additional products (e.g. urea-based diesel exhaust fluid) but the 1998 version remains industry standard and is referenced in various planning documents throughout the country[2].

6.3 The purpose of the Guideline is to *''assist with the sustainable management of water resources by ensuring that water discharges from petroleum industry sites meet the quality objectives laid down in regional policy statements and plans'.* This means providing guidance for the design and implementation of oil and water separator systems, system maintenance, water quality monitoring and procedural management systems to support the infrastructure. Principally the Guideline addresses the storage and handling of gasoline, kerosene, diesel, lubricating oil and fuel oil for retail fuel stations, truck stops, terminals and depots, and lubricating oil blending and grease manufacturing plants.

6.4 Although there is variance in the characteristics of these sites (size, site contour, fuel storage volumes) the basic premise of stormwater quality management remains a constant which is to provide a water quality treatment device capable of removing total petroleum hydrocarbons (TPH) entrained in stormwater runoff down to a standard not exceeding 15mg/L (15 parts per million). I understand from the Guideline this standard was derived from monitoring data gathered by NIWA and by drawing on international best practice at the time. Indicative of the relevance of the standard for implementation throughout the country, the 15mg/L standard was also adopted in the Auckland Regional Councils Stormwater Management Devices: Design Guideline Manual[3]. Partial sediment removal is also possible in oil and water separators; however, this treatment function is more incidental through sediment deposition in the tank units.

6.5 I note that monitoring and analysis of TPH is used as a general indicator of petroleum hydrocarbon contamination. Further analysis to understand the inferred source contaminant can be undertaken by dividing TPH into

[2] E.g. Auckland Council Unitary Plan, Chapter E33 Industrial and Trade Activities, Table E33.4.3, Waikato Regional Plan, 3.5.11 Implementation Methods - Stormwater Discharges
[3] Technical Publication 10, 2003.

hydrocarbon fractions (groups of petroleum hydrocarbons, each with specific carbon ranges).

6.6 Typically, the 15 mg/L treatment standard is achieved with oil and water separator systems using the gravity separation principle to remove oil from water relative to a contributing catchment size and design rainfall event. American Petroleum Industry (API) separators (typically pre-cast concrete units manufactured in New Zealand) are commonly used and there are also other proprietary systems available on the market, for instance the SPEL oil and water separator, which has been approved as compliant with the Guideline.

6.7 The design of stormwater management systems for retail fuel stations and truck stops follows the convention of isolating fuel transfer activities (fill points for above or below ground storage tanks and customer vehicle refueling bowsers) from the balance of the site. In this way, rain water falling on these areas is treated via the oil and water separator prior to discharge from the site. Isolation of fueling activities is also beneficial in the event of an accidental spill and enables prevention of product migrating to the wider site using bunding, slot drains and surface contouring.

6.8 In the case of retail fuel stations and truck stops, the Guideline specifies that oil and water separator devices are required to retain an accidental spill of at least 2500L. Commentary in the Guideline indicates this volume was derived through statistical analysis of spill events in New Zealand where it was concluded that the 2500L volume allowance in a separator would contain 99.9% of historic spills. It is important to note that the 2500L spill containment volume is also available under storm flow conditions thereby minimising the size of the above ground spill pool and associated ignition risk.

6.9 Regarding facilities such as bulk fuel terminals, the scale of infrastructure is larger with respect to stormwater oil and water separator sizing however the 15mg/L design standard remains for treated stormwater runoff quality. Bulk fuel tanks are located within bund structures capable of containing spilled product from a tank failure where uncontrolled discharges of product are prevented by isolation valve(s). The discharge

of stored rainwater is also typically undertaken in a controlled manner via an oil and water separator device where water quality suitability for discharge to drain the bund is verified through site operational procedures and is discharged under manual supervision. Product transfers outside of the bunded areas (e.g. gantry systems to road tanker trucks) also take place within catchments served by oil and water separators capable of treating hydrocarbons entrained in stormwater runoff or containing spilled product. In this case the Guideline dictates that spill containment volume should be sufficient to contain spillage from the largest single storage unit.

6.10 Coupled with the structural components of the Oil Company sites to manage stormwater runoff quality and the risk to receiving environments from accidental spills are procedural documents specifying maintenance frequency for site stormwater systems and oil and water separator devices. Typically, these procedures document matters such as oil and water separator inspection and cleanout frequency as well as the requirement for clean out and disposal of spilled immediately following a spill. Relative to the scale of the operation are also documented spill response procedures for staff to implement in the event of a spill including provision for spill clean-up and protocols for contacting the fire service and local authorities where there is a fire risk. For reference I have appended an example of a Stormwater Management Plan from a Z service station (refer Attachment 1).

6.11 In summary, I consider the Guideline is embedded in the Oil Companies' operations and that its outcomes have become accepted convention. I have observed implementation of the Guideline document first hand through the proposal of new retail fuel outlets and truck stops and the retrofit of existing facilities when undergoing redevelopment (e.g. cosmetic upgrades or to upgrade site infrastructure such as underground storage tanks). I have also audited practices at the Auckland based Wiri Oil Services Limited[4] terminal, the Auckland International Airport fuel terminal and the Wiri Oil Services terminal at Marden Point. I understand similar practices regarding fuel transfer, spill management and bund

[4] Wiri Oil Service Limited operates the Wiri Terminal and Marsden Point Terminal on behalf of its owners: BP, Mobil and Z Energy, Z Energy 2015 (formerly Chevron). The terminals distribute fuel to major customers around Auckland and Northland, including Auckland International Airport.

water quality management are implemented at the Christchurch based terminals.

6.12 This means that Oil Company site operations which present potential risk to stormwater runoff contamination leading to discharges to surface water or groundwater are mitigating those risks through the key mechanisms:

(a) Segregation of fuel transfer activities from balance site areas using site contouring, bunding and dedicated drainage systems;

(b) The operation and maintenance of oil and water separators deigned to treat petroleum hydrocarbons entrained in stormwater runoff to a maximum discharge standard of 15mg/L. The oil and water separators also act as spill containment devices and provide partial sediment removal; and

(c) Site practice and procedures documenting matters such as maintenance inspection and clean out frequency for the oil and water separators and steps that should be taken in the event of an accidental spill.

7. CSNDC NDC HIGH RISK SITES

7.1 The CSNDC application seeks to exclude some operational stormwater discharges from sites detailed in the Listed Land Use Register (LLUR) from the consent until 31 December 2024 where the applicant considers such sites will present an unacceptably high risk to surface or ground water contamination. I understand why the applicant seeks to manage risk regarding contaminant discharges to their stormwater network or to groundwater and in principle agree with this concept.

7.2 However, for the Oil Company sites, in a practical sense, the potential contamination pathways are likely to be controlled through the construction of impervious surfaces for retail fuel outlets (i.e. operational stormwater runoff typically does not encounter contaminated land) and in the case of the terminals, impervious bund structures surround the bulk fuel tank compounds (by nature are designed to contain spills and prevent underlying soil/ground water contamination).

7.3 Further, using the tool such as the LLUR may capture industry types which are demonstrating process control in terms of stormwater runoff quality and in the case of the Oil Company sites, continual improvements to avoid accidental spills with control systems (e.g. spill response procedures and oil and water separator systems) in the event a spill takes place.

7.4 In my opinion and noting my comments above in section 6, existing, redeveloped and new Oil Company sites which are operating stormwater systems compliant with the Guideline do not present a risk akin to the purpose identified in condition 2(a) of the draft consent conditions which is to exclude sites from the consent which pose an unacceptability high risk of surface or groundwater contamination.

7.5 Further I agree with Mr Norton in his evidence where he acknowledges *'it would be very difficult to write a condition which provides one hundred percent certainty with regard to the level of risk posed by all possible sites'*[5].

7.6 In suggesting an alternative means for defining what a high-risk site may be Mr Norton[6] concludes '*this conservative approach would potentially exclude sites where hazardous activities are well managed or managed in such a way that exposure to rainfall or the risk of spillage into the stormwater network is actually low'.* I agree with this comment and in the case of the Oil Company sites, the Guideline document is being implemented which reflects best practice throughout the country thereby minimising the risk to surface water and ground water contamination as is sought by the exclusion in the draft set of consent conditions

8. INDUSTRIAL SITE STORMWATER RUNOFF QUALITY

8.1 As is discussed in the CSNDC application[7], the applicant is seeking water quality discharges from industrial sites to achieve equivalence with residential or commercial land use type stormwater discharge quality. It is unclear to me whether this requirement is aspirational or whether actual water quality targets to this effect will be applied to industry groups

[5] Statement of Evidence of Robert Brian Norton, paragraph 133
[6] Statement of Evidence of Robert Brian Norton, paragraph 133
[7] Resource Consent Application and Assessment of Effects on the Environment, June 2015, Section 9.1.7

and/or individual sites. I understand this requirement will be exercised via the industrial site audit process to be implemented by the applicant where some for of pre-treatment will be required for stormwater runoff prior to discharging from a site.

8.2 In principle I agree with the aim of improving stormwater runoff quality for industrial sites and have been involved in several site improvement projects, either through processing resource consents on behalf of the Auckland Council, or while working on behalf of clients. Notwithstanding this, I do not agree that industrial site stormwater runoff should be required to achieve equivalent stormwater runoff quality with residential and commercial land uses. This is because the proportionality and constituents of contaminants in stormwater runoff is highly variable across industry types and is integrally linked to the type of industry and its potential contaminant suite. For example, an Oil Company site handling petroleum hydrocarbons would present different contaminant characteristics to an electroplating facility and neither are comparable to typical residential stormwater runoff.

8.3 In my experience, industrial site stormwater runoff quality is improved by implementing a contaminant reduction hierarchy which is:

(a) To stop the source of contaminants where practicable;
(b) Implement contaminant reduction at source to prevent entrainment in stormwater runoff; and
(c) Limiting the discharge of contaminants to the receiving environment through the implementation of stormwater treatment devices.

8.4 Regarding the latter, stormwater treatment devices with enhanced treatment capacity (e.g. contaminant specific filtration media) specifically targeting contaminants of concern only have so much treatment capacity based on conventional catchment area sizing flow and volume capacity design methods. In this regard it is well understood that beyond this typical sizing methodology, diminishing returns are observed relative to marginal improvements in treatment efficiency and additional cost of constructing and operating the treatment devices. Therefore, there is the potential for the residential stormwater runoff quality target proposed in

the CSNDC application to go beyond what would typically be considered the best practicable option assuming source control, source reduction and treatment devices have been optimised.

8.5 Notwithstanding these points around industrial site stormwater management and noting my earlier comment regarding the uncertainty for Oil Companies in meeting a residential water quality standard, in his evidence, Mr Laurenson proposes a set of water quality standards combining best practice outlined in the Guideline with TSS standards consistent with the Land and Water Regional Plan. The standards also capture management of a potential emerging contaminant associated with the handling of urea-based Diesel Exhaust Fluid.

8.6 I agree with the standards proposed by Mr Laurenson which provide an opportunity for new and redeveloped sites to comply with current best practice as stipulated in the Guideline, provide clarity in meeting certain water quality discharge standards while overall contributing to the outcomes sought by the CSNDC.

9. CONSTRUCTION PHASE STORMWATER DISCHARGES

9.1 As is discussed in the evidence of Mr Laurenson, the applicant does not typically allow construction phase stormwater discharges from Oil Company sites to discharge to the network under the CSNDC. Mr Laurenson also discusses the somewhat circular nature of the of approval to discharge to the network via the rule framework in the LWRP where permission is required from the owner of the reticulated system which may effectively require all construction phase stormwater runoff to discharge via alternative means (e.g. trucking off site, discharge to the reticulated wastewater system).

9.2 I acknowledge that certain earthwork activities require careful consideration of stormwater runoff when carrying out earthwork activities on Oil Company sites. Therefore, earthworks activities are generally managed through the implementation of a Site Environmental Management Plan which includes implementation methods for stormwater runoff management. I understand it is conventional practice for significantly contaminated surface water to be removed from site

using a vacuum loading truck for disposal at a licensed disposal facility. Surface water presenting a lesser risk is managed via mobile treatment plants. Typically, these plants (in addition to sediment treatment) also provide treatment of hydrocarbons entrained in surface water to the standard required for operational stormwater runoff identified earlier which is 15mg/L (thereby demonstrating consistency with the Guideline document). I also understand that alternative methods are also implemented such as the use of filtration cloth and wool based treatment media.

9.3 What I would term more 'typical' construction activities such as resurfacing or site redevelopments which do not contact potentially contaminated soil, it is appropriate for these works to be managed via conventional erosion and sediment control method-based practices. Mr Laurenson proposes smaller scale earthworks activities be enabled to discharge treated construction-based stormwater runoff which are commensurate to the (reduced) risk on the receiving environment. I agree with the principle of what Mr Laurenson proposes, including the associated works notification requirements and subject to design, construction and maintenance of erosion and sediment control in accordance with documents such as the Erosion and Sediment Control Toolbox for Canterbury, I consider this demonstrates best practice thereby minimising sediment discharges to a practicable level.

9.4 In summary, the Oil Companies are either following conventional and established methodology in the case of managing contaminated or potentially contaminated surface water runoff or would follow best practice in terms of erosion and sediment control where risk of the works encountering petroleum hydrocarbons is unlikely. Therefore, in my opinion and noting my comment at the beginning of this section a pathway should be presented for discharging to the reticulated stormwater system, subject to the implementation of the suitable contaminant management controls.

10. TSS LIMITS FOR CONSTRUCTION PHASE STORMWATER DISCHARGES

10.1 Mr Laurenson also discusses the implication of setting TSS limits regarding construction phase stormwater runoff quality. I agree with his commentary and conclude that the implementation of best practice is a more appropriate means to remove sediment from the water column via erosion and sediment control method-based practices, or specialised practices such as those methods discussed above that are conventionally employed on Oil Company sites. Further, the imposition of TSS limits such as the 100g/m^3 limit proposed in the evidence of Mr Tipper[8] may result in implementation of methods where there would be a marginal benefit in sediment removal from the water column relative to cost and impracticality of implementing measures to meet the standard. This aligns with the concept of diminishing returns and is generally the tipping point for best practice method-based standards.

10.2 It is also unclear to me as to how compliance with the TSS standard is to be achieved. For example, water quality sampling for laboratory analysis may result in instances where non-compliance with the TSS limit is determined 'after the event'. Although this will create an opportunity for erosion and sediment control practices to be improved, in terms of meeting a water quality outcome, this appears unsatisfactory for the applicant and practitioners alike. Similarly, storage of construction phase stormwater runoff for testing analysis against the TSS limits will also present practical difficulties such as management of sediment laden runoff volumes during consecutive rainfall events. This reinforces in my mind the value of method-based implementation of erosion and sediment control practices to achieving receiving environment water quality benefits.

Trent David Sunich
24 October 2018

[8] Statement of Evidence of Mark Tipper, paragraph 62

ATTACHMENT ONE