

**BEFORE INDEPENDENT HEARING COMMISSIONERS APPOINTED BY TE AWA KAIRANGI  
HUTT CITY COUNCIL**

**IN THE MATTER            OF THE RESOURCE MANAGEMENT ACT 1991**

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**IN THE MATTER            of hearing submissions on the Proposed Hutt City Council  
District Plan**

**APPLICANT                Hearing Stream 2: Business**

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**STATEMENT OF EVIDENCE OF ROBERT ALAN VAN DE MUNCKHOF**

**HAZARDOUS SUBSTANCES**

**TONKIN & TAYLOR LTD**

**8 May 2026**

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## INTRODUCTION

### QUALIFICATIONS AND EXPERIENCE

- 1 My full name is Robert Alan Van de Munckhof
- 2 I am a Technical Director in Environmental Engineering at Tonkin & Taylor (“T+T”). I hold a Bachelor of Engineering (Chemical and Materials) from the University of Auckland. I have over 20 years’ experience in environmental management and have been employed as an environmental management specialist at T+T since 2005.
- 3 I have undertaken hazardous substances risk assessments for a wide range of industries as well as providing technical support to Councils associated with District Plan rules including:
  - a Preparation of evidence on behalf of Seaport Limited in relation to the hazardous substances provisions under the Proposed New Plymouth District Plan. The work included undertaking a review of the potential hazardous substances risks from adjacent hazardous facilities and implications for the potential redevelopment on the Seaport site.
  - b Undertaking a review of the requirements under the New Zealand hazardous substances regulations to identify potential gaps for management under the Dunedin City Plan. The work included a review of the requirements in various hazardous substances regulations, a review of different District Plan approaches and recommendations for the Dunedin City Plan;
  - c Undertaking a review of quantitative risk assessments associated with bulk fuel terminals and bulk chemical facilities to understand the extent of the residual risks, and implications in terms of current and future land use, including for Auckland Council associated with the Americas Cup Village, Dunedin City Council and Napier City Council;
  - d Preparation of hazardous substance assessments for Oceana Gold New Zealand Limited for a number of exploratory drilling sites in Hauraki District and Thames-Coromandel District, and hazardous substance assessments for the storage of explosives and hazardous substances at the existing and proposed above ground and underground mine sites; and

- e Hazardous substance assessments throughout New Zealand for land use consent under various district plans including facilities in Auckland, Waikato, Bay of Plenty, Wellington, Canterbury and Southland.

#### **CODE OF CONDUCT**

- 4 I confirm that I have read the Code of Conduct for expert witnesses contained in the 2023 Environment Court Practice Note and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions I express. In particular, unless I state otherwise, this evidence is within my sphere of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

#### **SCOPE OF EVIDENCE**

- 5 I have reviewed the Council's Section 32A report, Section 42A report, and the proposed amendments to the hazardous substances chapter, as well as the submissions on the Proposed Lower Hutt District Plan (PLHDP) by Seaview Marina [Submission 343] and the Fuel Companies [Submission 471].
- 6 In my evidence, I will:
  - a discuss the Issues, Objectives, Policies and Rules in the Hazardous substance chapter relevant to the relief sought by Seaview;
  - b comment on the basis for the plan provisions;
  - c comment on the definition of activities sensitive to hazardous substances;
  - d discuss the application of the proposed overlays to the site; and
  - e discuss the joint submission by the Fuel Companies.

#### **PROPOSED HAZARDOUS SUBSTANCES PROVISIONS**

- 7 The key matters included in the PLHDP relevant to hazardous substances risk and the Seaview Marina site include Objectives, Policies and Rules.
- 8 Objective HS-01 seeks to protect people, communities and the environment from unacceptable residual risk from facilities involving the manufacture, use, storage, transportation, or disposal of hazardous substances. In my opinion, the objective is appropriate; however, it does require clarification of what "unacceptable residual risk" and how it should be determined..

- 9 Objective HS-02 seeks to avoid activities sensitive to hazardous substances risks from locating in areas where they may be exposed to unacceptable residual risk and avoid activities sensitive to hazardous substances risks from compromising the operation of existing significant hazardous facilities due to reverse sensitivity effects.
- 10 Again, I support avoiding activities being located in areas where they are exposed to unacceptable residual risk, but in my opinion, this extends to all land uses and the key factor is determining criteria for an acceptable or unacceptable risk for different land use types or activities.
- 11 Policy HS-P2 requires the identification of areas of unacceptable residual risk from existing significant hazardous facilities and sets a risk threshold of  $1 \times 10^{-6}$  as the threshold for the level of acceptable risk. It then requires these areas to be mapped as part of the Hazardous Substances Risk Management Overlay.
- 12 Policy HS-P3 requires the defined activities sensitive to hazardous substances risks to be adequately separated from significant hazardous facilities to avoid new activities being exposed to unacceptable residual risk. It is not clear whether the risk threshold is the same under Policy HS-P3 as it is under Policy HS-P2 although I note that this is reflected through Rule HS-R3, which makes all activities sensitive to hazardous substances risks within the Hazardous Substances Risk Management Overlay a non-complying activity.
- 13 In my opinion, the overall approach proposed in the PLHDP is an appropriate mechanism to manage the potential risks from significant hazardous facilities, subject to:
- a the appropriate risk criteria being applied;
  - b the risk criteria being applied to the correct land use activities; and
  - c where a mapped overlay is included, it is an accurate reflection of the extent of risks.
- 14 If any of these three matters are not correct, this can result in activities being established where unacceptable risk exists, or activities being restricted even where the risk may be considered acceptable. I will discuss these matters further in my evidence.

#### **BASIS OF THE PROPOSED RISK CRITERIA FOR DETERMINING UNACCEPTABLE RISK**

- 15 Significant hazard facilities can create risks that extend beyond the property boundary. While these facilities are expected to internalise their effects (and therefore risks), this is not always possible—particularly for events with very low probability but high consequence. In these circumstances, the focus is typically an ALARP approach (as low as reasonably practicable), which seeks to reduce risk as far as reasonably practicable rather than eliminate risk entirely.
- 16 Determining whether off-site risk is acceptable requires judgement about tolerability for individuals versus society. Acceptability can vary depending on the perceived level of control over the risk. For example, even though the individual fatality risk of driving is higher than flying, people often feel they have greater control when driving and therefore tend to accept a higher level of risk. Conversely, public acceptance of aviation fatalities is lower, resulting in lower risk tolerance.
- 17 There is no New Zealand-based guidance on risk acceptability for hazardous facilities. In the absence of New Zealand guidance, New South Wales Hazardous Industry Planning Advisory Paper No. 4: Risk Criteria for Land Use Safety Planning (HIPAP 4)<sup>1</sup> has been applied in a number of previous plan change processes. The Section 42A report refers to the HIPAP 4 guidance as the basis of establishing the proposed risk criteria in the PLHDP.
- 18 HIPAP 4 considers individual fatality risk, individual injury risk, and societal risk. Individual injury risk relates to effects from heat radiation, explosion overpressure, and toxic exposure.
- 19 A key incident (commonly referred to as the Buncefield fire) that informed development of guidelines internationally occurred in 2005 at the Hertfordshire Oil Storage Terminal in the UK. Failures in the tank high-level switch and level gauges resulted in tanks overflowing, with petrol spilling down the side of a tank for a period of 41 minutes, during which a large vapour cloud formed before the initial explosion.
- 20 The proposed risk criterion applied in the PLHDP is based on the  $1 \times 10^{-6}$  criterion for individual fatality risk. This criterion has previously been applied as the basis for setting controls around proposed land use changes, including

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<sup>1</sup> HIPAP 4: Risk Criteria for Land Use Safety Planning © State of New South Wales through the Department of Planning 2011

within the South Taranaki District Plan, the New Plymouth City Plan and the Napier City District Plan.

- 21 Section 2.5.2.1 and 2.5.2.2 of HIPAP 4 states the principles that relate to development adjacent to hazardous facilities summarised as follows:
- a The half in a million ( $0.5 \times 10^{-6}$ ) risk criterion should be applied as the criterion above which no intensification of sensitive land use developments should occur;
  - b The one in a million ( $1 \times 10^{-6}$ ) risk criterion is an appropriate criterion above which no intensification of residential development should take place, except where mitigation measures can be implemented to reduce risk exposure to less than one in a million;
  - c The five in a million ( $5 \times 10^{-6}$ ) risk criterion should apply to commercial developments including retail centres, offices and entertainment centres;
  - d The fifty in a million ( $50 \times 10^{-6}$ ) risk criterion should apply to industrial land developments.
- 22 This approach provides for different risk criteria to be applied to different land uses. This differs from the current proposed objectives in the PLHDP, which set a single criterion for a wide range of potential activities with differing sensitivity.
- 23 In my view, relying only on the one in a million risk criterion in the rules is only appropriate where other provisions already restrict more sensitive activities, and the rules are clearly targeted to the land uses or activities to which the one in a million criterion is intended to apply (as defined in the HIPAP 4 guidance).
- 24 The HIPAP 4 guidance requires consideration of both individual injury risk and societal risk.
- 25 In my experience, the individual injury risk effects from bulk fuel terminals are typically internalised within a site, with the largest risk contours most commonly associated with vapour cloud events. These can occur due to overfilling of a tank containing a volatile substance (such as petrol), resulting in the generation of a vapour cloud. Therefore, I consider it is appropriate that the PLHDP includes consideration of individual injury risk in establishing risk criteria and controls over the Seaview Marina site.
- 26 In terms of societal risk, it is less clear how the proposed provisions address potential changes in societal risk associated with changes in land use. While

individual fatality risk provides a clear basis for whether the risk is acceptable (the activity is either within or outside the relevant risk contour), societal risk evaluates the risk against an ALARP (as low as reasonably practicable) approach.

- 27 The ALARP framework provides guidance on what is acceptable, with an intermediate region where risk may be tolerable depending on whether the benefits justify it. Below the negligible line, provided the individual criteria are met, societal risk is not considered significant. Above the intolerable line, even if individual risk criteria are met, the risk is not considered acceptable.
- 28 The judgement on whether the risk is acceptable compared with the benefits needs to consider both what is practicable in terms of reducing the risks at the contributing site (e.g., what level of risk mitigation at the terminal is appropriate) compared to the costs of restricting land use on the adjacent land.
- 29 Where the societal risk curve sits closer to the intolerable region, a greater level of benefit would be needed to justify accepting the risk. Conversely, where the curve sits closer to the negligible region, the benefits required to justify the risk may be lower. In simpler terms, this can be considered in terms of who bears the cost: the adjacent landowner (by restricting what they can do on their land) or the hazardous facility (through the level of controls required to reduce risk).
- 30 While I cannot answer this question, the Objectives and Policies clearly set out the basis for considering what is acceptable risk, and apply the one in a million individual risk criterion as the basis. Therefore, I consider that including societal risk as part of the basis for the rules would not be appropriate; however, societal risk would be an important consideration where a resource consent application for a more sensitive activity was required.
- 31 This would provide a pathway for risk (including both individual fatality and societal risks) to be evaluated and, if it can be demonstrated that the risk is acceptable, for the activity to proceed.

#### **DEFINITION OF ACTIVITIES SENSITIVE TO HAZARDOUS SUBSTANCES**

- 32 The Policies and Rules in the Proposed PLHDP in relation to managing residual risks seek to control new activities or landuses that are sensitive to hazardous substances risks and includes a definition of these activities.
- 33 The current definition of activities sensitive to hazardous substances is as follows:

*“means a:*

- a Residential activity, or
- b Retirement village, or
- c Supported residential care facility; or
- d Marae; or
- e Healthcare activity; or
- f Educational activity; or
- g Community facility; or
- h Office activity, other than ancillary to an activity that is not an activity sensitive to hazardous substances risks; or
- i Community corrections activity; or
- j Custodial corrections facility; or
- k Visitor accommodation activity; or
- l Place of assembly.”

- 34 I also note that the evidence of Alice Blackwell has recommended a definition of Marina activities which would be permitted activities within the Seaview Marina Zone. The only activities that could be considered to meet the definition of activities sensitive to hazardous substance risk and that also feature in the marina activities definition are offices and events, markets and community or cultural activities which are ancillary or associated with marine activities and the marine environment.
- 35 As discussed above, the Section 42A report also sets out that the basis for establishing the overlay is the mapped one in a million risk contour.
- 36 I note that a number of the listed activities in the activities sensitive to hazardous substances risk definition would be subject to a more stringent risk criterion (being the half in a million risk) if aligned to the HIPAP 4 recommended risk criteria, such as healthcare facilities or retirement villages.
- 37 While this is true in terms of the Hazardous Substances chapter, I understand that these highly sensitive activities are already restricted in the land use chapters through other provisions (such as the controls relating to activities sensitive to industry) and the proposed definition of marina activities. Therefore, they would not be permitted within the underlying zoning of the overlay, and their inclusion (or not) in the definition of activities sensitive to hazardous substances does not have any impact on the risk profile at the Seaview Marina.

- 38 Conversely, office activities under the HIPAP 4 recommended risk criteria would be subject to a less stringent risk criterion (being the five in a million risk criterion).
- 39 Therefore, if the basis for establishing unacceptable risk is the one in a million risk criterion, and the approach to establishing this follows the HIPAP 4 guidance, I do not consider it appropriate that offices are included in the definition of activities sensitive to hazardous substances.
- 40 In terms of residential land use, I agree that a change to residential land use that results in a significant increase in population density, without further risk mitigation, is not appropriate within the one in a million risk contour. I note, however, that HIPAP 4 does allow for residential development within the one in a million contour where mitigation measures can be implemented to reduce risk exposure to less than one in a million.
- 41 An example is the Wiri Woman's Prison in Auckland, where vapour detection (for potentially hazardous vapours from the adjacent bulk fuel storage at the Wiri Terminal) is provided at the prison to provide an early alarm enabling evacuation and avoiding effects on the people present. I consider that, where an activity can demonstrate that the residual risk is acceptable through the application of controls, this should be provided for within the PLHDP.
- 42 I also consider that the inclusion of *community facilities* in the definition for activities sensitive to hazardous substances may also require clarification, as community facilities can vary significantly in scale, occupancy, and use. For example, the current PLHDP definition includes land and buildings used by the community for recreational and sporting purposes. It is unclear whether this would capture activities such as a sailing or boating club that may be commonly associated with marina facilities. In addition, the sensitivity of such facilities to hazardous substances may differ from other listed activities where more vulnerable populations may be present or where continuous occupation can occur.
- 43 I also consider that the provisions may unnecessarily restrict occasional or irregular activities. This could include sporting events (such as a sailing contest), one-off or monthly markets, or annual community events.

- 44 As the key risk relates to the overfilling of bulk tanks, a key method to manage risk during these types of events would be to ensure they occur when fuel delivery activities are not occurring.
- 45 Therefore, if the timing and duration of ship arrivals and pumping can be managed alongside event timing, the residual risks can be managed. At present the proposed framework in the PLHDP would not provide a mechanism for these activities to occur where the risk can be managed.
- 46 I also note the evidence of Alice Blackwell who has identified that there is no definition of “Place of Assembly” and therefore it is unclear what is being controlled. On that basis, I do not have any technical concerns with the removal of place of assembly from the list.

#### **THE CURRENT MAPPED OVERLAY**

- 47 I understand that the current mapped Hazardous Substances Risk Management Overlay is based on quantitative risk assessments (QRAs) undertaken by the Fuel Companies (Submission 471). The Section 32 report on the hazardous substances chapter states that the overlays were based on risk assessments supplied by the Fuel Companies.
- 48 No information was provided to confirm the specific basis of the overlay, or whether the QRA was peer reviewed or otherwise evaluated to confirm it reflects current risks at the Seaview Marina site. It is also not clear whether any consideration was given to whether the sites included in the HSRMO overlay are operating in accordance with current best practices for safety management, and whether the provided risk contours reflect those controls.
- 49 In response to a request under the Local Government Official Information and Meetings Act (LGOIMA) 1987, copies of a number of QRAs were provided to Urban Edge Planning. Of most relevance to Seaview Marina is the QRA for the Mobil Seaview Terminal prepared by Sherpa Consulting, as this is the only QRA which reports risk contours over the Seaview Marina site.
- 50 The QRA version provided is dated 25 June 2018. It considers a number of different scenarios. In discussion with Sherpa Consulting<sup>2</sup>, we understand that

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<sup>2</sup> Meeting with Jenny Polich of Sherpa Consulting on 7 April 2026.

an updated QRA is being prepared, but it has not been provided at the time of writing my evidence.

- 51 I will not discuss the QRA in detail but wish to highlight a number of points:
- a Firstly, the QRA includes a current case and a future case, with or without an earthquake. It is not clear to me which one was used to establish the proposed Hazardous Substances Risk Management Overlay ;
  - b The half in a million and one in a million risk contours extend a significant distance over the Seaview Marina site, but the five in a million risk contour (which, based on HIPAP 4, would apply to offices) is almost entirely within the Seaview Terminal boundary;
  - c The Societal Risk Profile shows that the current and future cases without consideration of earthquakes are within the negligible region;
  - d The population density used within the QRA assumes that the Seaview Marina site is a special recreational zone, with potential rezoning to mixed use, with a population density the same as suburban commercial and much higher than low density residential. I note that the references are to land use types generally and not to the specific zones within the PLHDP.
  - e The modelling assumes that the tanks have independent high-level alarms and fire protection, but it does not state whether current best-practice controls are in place (such as vapour detection and automated shut-off during filling). It also assumes an overfilling duration of 30 minutes.
- 52 In terms of the earlier discussion on the consideration of societal risk, it is clear that the existing QRA has already considered a change in land use to commercial/mixed use, which in my opinion supports this not being a key factor in setting the PLHDP provisions.
- 53 In setting the extent of the overlay, I consider this needs to be based on the most up-to-date and accurate information due to the level of constraint it places on the Seaview Marina. As the majority of other land impacted by the proposed overlays is zoned industrial it is less critical for other adjacent properties.
- 54 I consider there should be clarification of whether the Seaview Terminal is applying current best practice controls (such as vapour detection with automatic shut-off) to reduce both the likelihood and extent of risk. For example, shut-off prior to overfilling would avoid consequences, and reducing the assumed

overfilling duration from 30 minutes to 5–10 minutes could reduce the potential extent of the vapour cloud and, therefore, the size of the risk contour.

- 55 This also raises a question about how changing risk is managed through the PLHDP. By establishing an overlay within the PLHDP, this can only be changed through a plan change process. This can result in the overlay not reflecting the actual residual risk due to changes in technology in managing risk, and changes at the terminals themselves.

### **FUEL COMPANIES SUBMISSION**

- 56 I have reviewed the submission made by the Fuel Companies (submission number 471). I will not discuss the submission in full but wish to comment on a number of specific items that are relevant to the hazardous substances chapter and the proposed overlay.
- 57 The Fuel Companies have proposed basing the overlay on the half in a million risk criterion in place of the one in a million risk criterion. As outlined above, I agree that the one in a million criterion is less conservative where highly sensitive land uses are proposed. However, I understand that other provisions in the PLHDP would restrict these types of activities from locating within the area subject to the overlay. On that basis, I understand the primary effect of the Fuel Companies' proposal would be to apply a half in a million overlay to land uses that are otherwise less sensitive.
- 58 The Fuel Companies have requested the addition of an overlay around the fuel transmission pipeline. There are no New Zealand-specific guidelines for development around pipelines transporting hazardous substances. There is a guideline developed by the NSW Government Department of Planning, Housing and Infrastructure<sup>3</sup>.
- 59 This utilises the approach outlined in HIPAP 4 by considering land use sensitivity and risk criteria, and recommends setback distances from pipelines. The recommended setbacks depend on whether the pipeline is for gasoline (petrol), natural gas, ethane, or jet fuel.
- 60 The guidance does not recommend setbacks for residential land uses (and therefore other less sensitive activities) from gasoline and jet fuel pipelines;

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<sup>3</sup> Guideline for planning proposals near high pressure dangerous goods pipelines First published: August 2024, NSW Department of Planning, Housing and Infrastructure,

setbacks are only recommended for more sensitive land uses such as schools, hospitals, childcare, and aged care.

- 61 Therefore, I do not consider there is any basis for setting an overlay surrounding the existing fuel pipelines.
- 62 I note that the Section 42A report agrees, and has not proposed to accept the Fuel Companies' submission on this matter.

#### **CHANGES RECOMMENDED IN THE SECTION 42A REPORT**

- 63 I have reviewed the Section 42A Officers Report on the Contaminated Land and Hazardous Substances chapters prepared by Hamish Wesney dated 23 April 2026.
- 64 I will not repeat or go through the report in detail but will highlight where I consider the proposed amendments to the plan are not appropriate.
- 65 Paragraph 165 proposes amendments to Rule HS-R3 to include both new activities and additions or alterations to an existing activity within the Hazardous Substances Risk Management Overlay as a non-complying activity. As outlined earlier in my evidence I consider this is generally okay, provided activities sensitive to hazardous risks are defined appropriately and some mechanism is included to enable development where the risk can be managed. The original rule and proposed changes do not provide for any mechanism for a proposal to seek consent where they can demonstrate that the risk is acceptable.
- 66 Paragraphs 167 to 181 discuss the submissions made on the provisions including the proposed changes by the Fuel Companies to apply the half in a million risk threshold in place of the one in a million risk threshold but this has not been accepted by the reporting officer.
- 67 I support the retention of the one in the million for the reasons outlined in my evidence.
- 68 Paragraphs 233 to 244 discuss the definition of activities sensitive to hazardous substances and proposes to retain the existing definition. As outlined in my evidence, I support the general approach but do not support the definition as written within the inclusion of office activities, the lack of clarity around community facilities and the lack of definition of place of assembly.

#### **CONCLUSION**

- 69 In summary, it is my opinion that:

- a The overall approach to managing residual risk from major hazardous facilities to sensitive landuses within the plan provisions is appropriate;
- b The inclusion of a mapped risk overlay around the fuel pipelines is not appropriate, and I support the Council's recommendation not to amend the current overlays;
- c If a mapped overlay is included in the plan, this should be based on the best available and up-to-date information, and include an expectation that hazardous facilities are implementing current best practice to reduce the extent of any mapped overlays where they impact on more sensitive land uses;
- d Subject to the proposed amendment to the definition of activities sensitive to hazardous substance risk to remove offices, community facilities and places of assembly, I consider the definition appropriately identifies those activities that are sensitive to hazardous substance risk at or above the one in a million risk criteria;
- e The plan should provide a mechanism to enable residential activities and events such as markets associated with the marina environment where the residual risk can be managed (either through long term controls in the case of residential or through temporary controls in the case of events and markets).