IN THE MATTER OF	The Resource Management Act 1991
AND	
IN THE MATTER OF	An application by Genera Limited (RM19-0663) to discharge contaminants to air for the purpose of fumigation at the Port of Tauranga.
BETWEEN	**GENERA LIMITED** **Applicant**
AND	**BAY OF PLENTY REGIONAL COUNCIL** **Consent Authority**

REPORT AND DECISION OF HEARING COMMISSIONERS

John Iseli, Alan Watson and Shane Solomon

October 2023

Heard on 19th to 23rd June 2023 at Baypark Events Centre, Tauranga

and 14th to 15th September 2023 at BOPRC Council Chambers

Representations and Appearances

Applicant:

Ms Theresa Le Bas, Counsel
Mr Robbie Ramlose, Group CEO, Genera
Mr David Baker, Health, Safety and Compliance Manager, Genera
Mr Nicholas Browne, Occupational Hygienist, Air Matters Ltd
Mr Peter Cressey, Science Leader, ESR
Mr Kieran Murray, Consulting Economist
Mr Keith Frentz, Director in Planning, Beca
Mr Chris Bender, Air Quality Scientist, Pattle Partners Ltd (Reconvened Hearing only)

Submitters:

Mr Chris Rayes, Rayonier Matariki Forests
Mr Parke Pittar, AVA Timber
Mr Brendan Gould, NZ Forest Owners Association
Mr Ken Glassey, MPI
Mr Mark Proctor, TPT Forests and Port Blakely
Mr Don Hammond, Phytos
Mr Richard Peacocke
Ms Tracy Livingstone, NZ Outdoors Party
Ms Sarah Omundsen, Tauranga City Council
Ms Helen Gear, Draslovka
Mr Dan Kneebone, Port of Tauranga
Ms Awhina Ngatuere, Whareroa Marae
Mr Joel Ngatuere
Ms Pia Bennett, Te Runanga o Ngai Te Rangi
Ms Nicole Smith, Mr Michael Sharp and **Ms Kate Barry-Piceno**, Tauranga Moana Fumigation Action Group (**TMFAG**)
Ms Emma Jones, Clear the Air
Ms Kristen Gunnell, Ms Michelle Grinlinton-Hancock and **Mr Simon Prevett**, KiwiRail
Mr Peter Stacey, Consultant Air Quality Scientist, KiwiRail (Reconvened Hearing only)

Section 42A RMA Reporting Officers:

Ms David Greaves, Planning Consultant
Mr Sam Weiss, Senior Regulatory Project Officer, BOPRC
Mr David Ede, Senior Regulatory Compliance Officer, BOPRC
Ms Jenny Simpson, Air Quality Scientist, Tonkin and Taylor
Mr Dylan Vernall, Air Quality Scientist, Tonkin and Taylor
Ms Marlene Bosch, Principal Consents Advisor, BOPRC

Decision Summary

Consent to discharge contaminants to air from fumigation activities using methyl bromide, phosphine and ethanedinitrile is granted for a term of 10 years. The proposal and the proffered conditions of consent were subject to substantial amendments during the hearing process. We have made some further changes to key conditions to ensure that any adverse effects of the discharges are acceptable.

The mitigation and monitoring required by consent conditions will result in significant improvement to the control of current fumigation discharges at the Port of Tauranga. Having taken into account both the positive and adverse effects of the proposal, we conclude that the discharges from fumigation activities are consistent with the sustainable management purpose of the Resource Management Act.

BACKGROUND AND PROCEDURAL MATTERS

1. This is the report and decision of hearing commissioners John Iseli, Alan Watson and Shane Solomon (**the panel**). We have been appointed by the Bay of Plenty Regional Council (**BOPRC**) to hear and decide the application by Genera Limited (**Genera** or **the applicant**) pursuant to the Resource Management Act 1991 (**RMA** or **the Act**) for a resource consent to discharge contaminants to air from fumigation activities at the Port of Tauranga (**POT** or **the port**).

2. Genera holds an existing air discharge permit, number 62719 (the **existing consent**), to discharge contaminants to air from its fumigation operations associated with quarantine and export activities located at 11 Maru Street, Mt Maunganui and the port. The existing

consent provides for the discharge of methyl bromide and phosphine as part of fumigation activities and expired on 30th April 2020. Resource consent RM19-0663 was lodged on the 30th of October 2019 and is seeking to replace this existing resource consent. Because the current application was lodged more than six months prior to the existing resource consent expiring, the continued operation of the activity is provided for in accordance with section 124 of the RMA.

3. This application, when lodged and notified, sought approval for a 'replacement' resource consent, associated with the fumigation of containers at the Port Sulphur Point wharf and for logs (on wharf and in ships holds) and 'break bulk' cargo at the Mount Maunganui Wharf, generally in line with the existing operation. Additionally, fumigation activities for other cargo in ship holds are proposed to be undertaken at the Mount Maunganui Wharf, when directed by the Ministry of Primary Industries (**MPI**) for biosecurity purposes. We note that the applicant is no longer seeking to discharge fumigants from the 11 Maru Street property.

4. Genera seeks authorisation for the discharge of the following contaminants to air associated with the fumigation activities at the Mount Maunganui Wharf and Port Sulphur Point:
   - Methyl Bromide (**MB**);
   - Phosphine (**PH_3**);
   - Ethanedinitrile (**EDN**).

5. The application has had a protracted and complex processing history since it was lodged in 2019, including further information requests and a revised application. At the time of making the application for consent, the Environmental Protection Authority (**EPA**) was in the process of considering an application from the Stakeholders in Methyl Bromide Reduction Incorporated (**STIMBR**, now **Phytos**) for a reassessment of the use of MB[1] (the **MB reassessment**) under the Hazardous Substances and New Organisms Act 1996 (**HSNO**).

6. The MB reassessment process conducted by the EPA was to specifically consider proposed new controls regarding recapture; the timeframes for minimum recapture requirements; and the buffer zones associated with all MB fumigations. The reassessment involved a publicly notified process and hearing. A decision on the MB reassessment was made by the

[1] EPA Reassessment decision for Methyl Bromide HSR001635, August 2021.

EPA in August 2021 and included a number of changes to the use and operation of MB. In particular, the reassessment placed controls on the use of MB for fumigation activities in ships holds, requirements for the recapture of MB prior to ventilation and the imposition of buffer zone setback distances from the fumigation activities. Following the release of the decision, Genera submitted a revised application to the BOPRC to reflect the controls imposed by the EPA.

7. In addition to the reassessment of MB fumigation, since lodging the application, the EPA has also made a decision on the use of EDN for fumigation activities. EDN is a gas used to kill common pests found in wood. The active ingredient of EDN, ethanedinitrile, had not been previously assessed by the EPA. The decision approved the use of EDN subject to a number of controls. To enable the use of EDN in practice, authorisation is required from WorkSafe via a 'Safe Work Instrument'.

8. As a result of the decisions of the EPA on the MB Reassessment and on the use of EDN, the applicant has revised the proposal to align the regulatory controls of the EPA with the resource consents.

9. The applicant has requested that consent be granted for a duration of 10 years.

10. Prior to the hearing, a report was produced on behalf of the BOPRC pursuant to section 42A of the RMA by Mr David Greaves, planning consultant. This **s42A Report** included a technical review of the application by BOPRC officers Messrs Shane Iremonger, Sam Weiss and David Ede (the **Technical Review Report**). Subsequently a peer review of the Technical Review Report was undertaken by Tonkin and Taylor (the **Peer Review**). Ms Jenny Simpson and Mr Dylan Vernall of Tonkin and Taylor (**T&T**) attended the hearing in their capacity as peer reviewers.

11. Prior to the hearing, Counsel for the applicant sought additional time to consider and address recommended conditions in the s42A Report with which they had concerns. We provided for that on the basis that any agreements between parties to the hearing would assist our decision making. However, in doing so this did not prejudice our role in deciding the application having due regard to differing views, particularly from submitters who opposed the proposal and who would have the opportunity to make submissions at the hearing in due course. In accordance with our associated directions, conferencing occurred

between planning experts for Genera and BOPRC. This caucusing refined areas of agreement and disagreement concerning suggested conditions of consent. A Joint Witness Statement (the **Planning JWS**) was provided following the caucusing.

12. The initial hearing to decide the application occurred in Tauranga on 19th to 23rd June 2023. The hearing was adjourned on 23rd June to allow for discussions between the parties regarding amendments to the proposed conditions[2] of consent and to the draft Fumigation Monitoring and Reporting Plan (**FMRP**). Updated versions of the suggested conditions and FMRP were duly provided. After reviewing this material, we determined that there were several outstanding matters that should be addressed via a reconvened hearing and issued directions to that effect.

13. Prior to the reconvened hearing on 14-15th September 2023, we received written evidence from several parties in relation to matters in contention regarding suggested conditions and the draft FMRP. Statements were received from Messrs Baker, Browne, Cressey and Frentz for the applicant. In addition, a statement of evidence was provided by Mr Chris Bender, Air Quality Consultant, in response to questions we had raised regarding monitoring of phosphine emissions from fumigation and appropriate consent conditions. We also received written statements from submitters MPI, Phytos, TMFAG, KiwiRail, Draslovka, Rayonier Matariki Forests, AVA Timber and POT. Finally, we received a memorandum from the BOPRC officers that responded to the key outstanding matters we had raised in our directions prior to the reconvened hearing.

SITE VISITS

14. We visited the Port and observed the areas where fumigation activities are proposed on 16th June 2023, prior to the commencement of the hearing. During the hearing in June, we were inducted onto the port and viewed a demonstration of the procedure used to fumigate logs under tarpaulins. We were also shown the process for fumigating logs in ship holds with phosphine. In addition, we visited various locations surrounding the port that were identified by submitters, including Whareroa Marae and Blake Park.

[2] In this decision report, unless we otherwise specifically qualify the term, we use "proposed conditions" to refer to the set of conditions that evolved and were further developed during the hearing.

NOTIFICATION AND SUBMISSIONS

15. The application was publicly notified. Notification commenced on Friday 16 October 2020 with submissions closing on Monday 16 November 2020. A notice was placed in the Bay of Plenty Times and letters were sent to the contact addresses for approximately 7,000 parties identified in the Council's rates database. The identification of potentially affected parties was based on the dispersion modelling of the MB discharge that was relevant at that time. We note that the requirements of the EPA MB reassessment decision that are now in force are expected to result in a change to the modelling predictions considered at that time.

16. 342 submissions were received within the specified time period in the RMA. Five of these submissions were received after the closing date but were accepted by BOPRC as late submissions under section 37A of the act.

17. The s42A Report, Section 6, summarised the matters raised in submissions, focussing on concerns raised in opposition to the proposal. The summary of the issues raised was not disputed. Mr Greaves has detailed these matters as follows.
    - MB is toxic and banned in other countries;
    - MB is an ozone depleting substance;
    - Proximity of the operation from sensitive activities, including sports fields, residential properties, play centres, the harbour;
    - Adverse effects on human health;
    - Track record of the applicant regarding breaches of the existing resource consent;
    - Uncertainty regarding the effectiveness of containing MB under tarpaulins;
    - All contaminants should be recaptured;
    - Community health should be prioritised over economic benefit;
    - The proposed monitoring and buffer zones are not adequate;
    - Operational procedures are not adequate to ensure the health and safety of people working on the Port;
    - No assessment of alternatives undertaken, such as purpose built facility or relocation to a less populated area such as the Rangiuru Business Park or the requirement for debarking;
    - There is already evidence of toxic discharges in the industrial area, as is demonstrated by dust and health effects on people in the community;
    - A reduction in the term of the consent;
    - The phasing out of MB fumigations;

- BOPRC financial interest in the Port;
- Fumigation activities are important to New Zealand's export operations and economy;
- Imposition of conditions that require good practice and safety procedures to be in place during fumigation;
- The proposal is inconsistent with the relevant statutory documents;
- Reverse sensitivity effects with regard to Whareroa Marae;
- Failure to address potential cumulative effects of the discharge on the environment; and
- The effects of the proposal on cultural values are significant.

18. We also note that several submissions were lodged in support of the application. These submitters included various forestry companies, Phytos, Draslovka and MPI. They noted the importance of fumigation for biosecurity purposes. These submitters also stressed the scale of log exports (requiring fumigation) from POT and the importance of the resulting income to the regional and national economy.

19. Mr Greaves noted that the majority of the submissions in opposition related directly to the use of MB, its toxicity and the potential health effects associated with its use. Further, submitters noted the proximity of sensitive activities, such as sports fields, residential areas and Whareroa Marae to the fumigation activities and the potential significant effects that could result from the uncontrolled discharge of fumigants. Several submitters also stated that alternatives to fumigation, such as de-barking, should be advanced ahead of the discharge of contaminants to the environment. Other submitters considered that fumigation should occur in a less sensitive location, such as at the Rangiuru Industrial area, situated inland and within half an hour's drive from the port.

THE HEARING

20. The hearing was conducted over five days in June 2023 and two further days in September 2023. We have heard a great deal of evidence and submissions from the parties and reviewed much written material. That written material has included several versions of proposed consent conditions and suggested amendments, and also a detailed FMRP. We note that there has been considerable refinement of proposed consent conditions during the hearing process.

21. The volume of material we have been required to review in this case is very large. It would be impractical and unnecessary to attempt to detail or summarise all that material here. Rather, our focus is on the key matters in contention between the parties. Our determination regarding evidence and submissions received in relation to these key matters will be detailed in our evaluation of effects.

22. Copies of written material provided at the hearing are publicly available via the BOPRC website.

ASSESSED EFFECTS

23. Based on the application documents and all the submissions and evidence we have received, we determine that the following actual and potential effects on the environment require assessment:
    (a) Effects of MB;
    (b) Effects of phosphine;
    (c) Effects of EDN;
    (d) Effects on cultural values; and
    (e) Positive effects of the proposal.

24. We record that we have considered all these actual and potential effects in relation to the proposal.

25. In addition, numerous submitters have raised the issue of alternatives to fumigation (particularly in relation to MB). Alternative options include using different fumigants, fumigating logs within a building or fixed structure, de-barking logs and undertaking fumigation at a different location. We have considered the various alternative options as part of our evaluation under section 105 of the Act.

ASSESSMENT OF THE APPLICATION

26. In assessing the application, we have considered all the application documentation and assessments, the s42A Report and supporting technical review and peer review, all submissions and evidence received, and the information provided after the hearing adjournment in accordance with our directions. Because of the complexity of this case our evaluation focusses on the key matters in contention.

Status of the Application

27. The starting point for our assessment of the application is to determine the status of the proposed activity.

28. Mr Greaves concluded that the proposal is classified as a discretionary activity under Plan Change 13 (**PC13**) of the Regional Natural Resources Plan (**RNRP**). The applicant accepted his analysis.

29. The relevant rule of the RNRP requires that at least 80% recapture of MB be achieved to meet the discretionary activity classification. The submission from TMFAG questioned the activity status on the basis that there is no clear evidence that 80% recapture is being achieved. TMFAG submitted that it is not appropriate to accept self-reporting of recapture statistics by Genera and that a conservative approach would treat the activity as non-complying. They contended that the stated 90% recapture under tarpaulins is based on a value that would allow workable EPA buffer distances to the port boundary to be achieved, but there is no clear evidence that this is achievable.

30. Mr Baker provided details of the monitoring procedure used to determine the percentage of MB recapture. These details have been included in the draft FMRP that would be certified by BOPRC if consent was granted. While we recognise that the recapture data is reported by Genera, it is acknowledged that the monitoring data and the recapture procedure can be audited on site by BOPRC staff at any time. Given our conclusions regarding the importance of achieving the stated recapture values, we expect that BOPRC staff would initiate unannounced site visits on a regular basis and inspect the recapture process, live monitoring data, and the calculated recapture rates.

31. We consider that there is sufficient evidence that recapture is being achieved in accordance with the requirements of the EPA Reassessment for MB. We therefore determine that the application is to be considered as a <u>discretionary activity</u>.

Statutory Considerations

32. In terms of our responsibilities for giving consideration to the application, we are required to have regard to the matters listed in sections 104, 104B and 105 of the Act.

33. In terms of section 104(1), and subject to Part 2 of the Act, which contains the Act's purpose and principles, we must have regard to-

(a) Any actual and potential effects on the environment of allowing the activity;
(ab) Any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity;
(b) Any relevant provisions of a national environmental standard, other regulations, a national policy statement, a New Zealand coastal policy statement, a regional policy statement or a proposed regional policy statement, a plan or proposed plan; and
(c) Any other matters the consent authority considers relevant and reasonably necessary to determine the application.

34. Section 104(2) states that when forming an opinion for the purposes of section 104(1)(a), we may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect. This is referred to as consideration of the 'permitted baseline'.

35. In terms of section 104B for a discretionary activity, we may grant or refuse the application, and if granted we may impose conditions under section 108.

36. In terms of section 105, when considering section 15 (discharge) matters, we must, in addition to section 104(1), have regard to-

(a) The nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
(b) The applicant's reason for the proposed choice; and
(c) Any possible alternative methods of discharge, including discharge to any other receiving environment.

37. We consider each of these sections of the RMA in reaching our decision on the application.

Section 104(1)(a) RMA - Actual and potential effects on the environment

Effects of Methyl Bromide

38. The majority of the submissions expressed concern regarding the effects of MB, noting that sensitive activities including dwellings, Blake Park and Whareroa Marae are in close proximity to the port. Submitters in opposition stated that matters of concern include potential effects of MB on human health, impact on the ozone layer and the requirements of the Montreal Protocol, non-compliance with the existing consent conditions, risks associated with the practice of log fumigation under tarpaulins, insufficient recapture of MB and uncertainties with that process, health risks for people working on the port, inadequate assessment of alternatives to MB use, insufficient buffer zones and monitoring proposed, and potential cumulative effects (both from multiple fumigations and from combination of different fumigants). Many submitters stated that MB is banned in other countries and considered it's use should be phased out.

39. Several submitters in support of the application (including various forestry companies, Phytos, and MPI) emphasised the importance of fumigation for biosecurity purposes. These submitters also noted the scale of log exports (requiring fumigation) from the port and the importance of the resulting income to the regional and national economy. They expressed concern that controls we might impose on fumigation activities, in addition to controls already required by the EPA, could involve added expense with potential to affect the viability of log exports.

40. Mr Baker, Health, Safety and Compliance Manager for Genera, explained that the August 2021 EPA MB Reassessment decision includes very specific standards and timeframes that must be met, such as:
a) the prohibition of fumigating ship holds with MB from 1 January 2023 (now in effect);
b) buffer distances related to the dosage applied and minimum recapture achieved; and
c) a "sinking lid" on venting MB to the atmosphere so that by 1 January 2031 99% of methyl bromide remaining at the end of fumigation must be recaptured from containers with the same requirement for fumigation under sheets by 1 January 2035.

41. Mr Baker calculated[3] that the EPA requirements and measures already put in place by Genera resulted in an approximate 99.5% reduction in 2022, relative to 2021, to the total mass emission rate of MB vented from log rows at POT. We accept the evidence that there has been a substantial reduction in total MB emissions from the port. That is appropriate in light of the requirements of the Montreal Protocol that have been taken into account by the EPA. Nevertheless, we are conscious that MB emissions from a single fumigation event (particularly for log rows) are significant and stringent controls are necessary to prevent localised adverse effects.

42. Mr Cressey provided expert evidence for the applicant regarding the potential health effects of MB and appropriate exposure limits that could be applied to conditions of consent. He explained that the non-occupational bystander tolerable exposure levels (**TELs**) are for exposure periods of up to 1 hour, up to 24 hours or over a chronic (lifetime) timeframe. He stated that the TELs for MB were derived by the EPA and are substantially based on exposure limits derived by either the US Environmental Protection Agency (**USEPA**) or the California Environmental Protection Agency (**CEPA**)[4]. Mr Cressey considered that the approach used to develop the TELs is consistent with international best practice for the setting of exposure guideline levels and includes a suitable level of conservatism.

43. Mr Cressey noted that the occupational exposure standards for MB have recently (2021) been reviewed and updated by WorkSafe and include a time-weighted average (**TWA**) of 1 ppm and a short-term exposure limit (**STEL**) of 2 ppm. The TWA is applicable to an 8-hour working day and the STEL is applicable to a 15-minute period. He stated that these values were adopted to align WorkSafe's standards with overseas jurisdictions. The conclusions of Mr Cressey regarding the suitability of these guideline levels to protect against adverse health effects were not challenged in expert evidence. Ms Simpson agreed that the MB limits recommended for conditions of consent are appropriate and sufficiently protective of human health. She considered that the 1-hour average values are sufficient for monitoring purposes and that adjusted 10-minute average guidelines are not necessary. We accept the evidence of the experts on this matter.

44. Several submitters raised concerns regarding potential for MB to cause acute and neurotoxic health effects, cancer, motor neurone disease (**MND**) or immunological issues,

[3] Evidence in chief of David Baker for Genera, para 74 and subsequent table.
[4] Evidence in chief of Peter Cressey for Genera, para 9.

such as allergy and asthma. Mr Cressey stated that the carcinogenicity of MB has been considered by several expert bodies. He noted that International Agency for Research on Cancer (**IARC**) evaluated MB in 1999 and concluded there is inadequate evidence in humans for the carcinogenicity of MB and that more recently the USEPA had determined that MB is not a likely human carcinogen[5].

45. Mr Cressey observed that a potential cancer cluster of MND cases in workers at Port Nelson was investigated in 2005. The study found no causal relationship between MB and MND[6]. Mr Cressey also found no evidence that exposure to MB causes or promotes conditions mediated by the immune system, such as allergies and asthma. With regard to possible effects of MB on the kidneys and liver, Mr Cressey stated that while effects have occasionally been reported in humans and animals exposed to high concentrations of MB, such effects do not always occur and have not been reported at exposure to concentrations likely to be experienced due to fumigation activities at POT. We accept his evidence in relation to potential health effects of MB.

Montreal Protocol and Ozone Depletion

46. We heard evidence that fumigation activities in New Zealand make a significant contribution to global MB emissions. However, the recent decision of the EPA requiring MB recapture at varying percentages by specified dates will result in a large reduction in the mass emission of MB from fumigation activities in this country. Mr Glassey for MPI noted that NZ is currently the only country in the world to mandate recapture of MB.

47. During the course of the hearing a question arose regarding the extent to which we are able to consider the effects of the discharge on ozone depletion. That is because the application was lodged prior to the recent amendments to the RMA that no longer prevent consideration of effects on climate change. Mr Greaves considered that consequently we are unable to consider ozone depletion effects of MB. However, there is an argument that the requirements of the Montreal Protocol can be considered as an "other matter" under section 104 of the RMA. That is the approach the Environment Court appeared to take in the *Envirofume*[7] decision.

[5] Ibid, para 36.
[6] Ibid, para 38.
[7] Envirofume v BOPRC [2017] NZEnC 12

48. Ultimately, we do not consider it is necessary for us to make a determination on this legal issue. That is because we are satisfied that the matter of ozone depletion was addressed by the EPA in the recent decision on MB fumigation. That decision includes stringent recapture requirements that result in a very large reduction in the contribution from the proposed activities to ozone depletion. On this basis we consider that ozone depletion effects are being adequately controlled and minimised to the extent achievable. A detailed analysis of alternatives is discussed later in our decision and notes that we are satisfied that alternatives to MB are being appropriately pursued. We accept the evidence that MB use for fumigation cannot be entirely eliminated at the current time. However, as alternative fumigants and treatment options are approved by trading partners, there is potential for MB emissions to be significantly reduced during the term of any consent.

Proportion of MB Recapture

49. Genera proposes that a minimum of 90% of MB used for fumigation activities will be recaptured. This percentage recapture is currently being achieved, ahead of the deadline specified by the EPA. The EPA Reassessment decision further requires that minimum recapture rates of 95% by 1 January 2031 and 99% by 1 January 2033 be achieved for MB application under sheets (tarpaulins). Since the EPA decision banned the use of MB to fumigate logs in ship holds, fumigation of logs under tarpaulins on the wharf has become a focus of attention as the remaining large volume source of MB emissions. In response to questions, Mr Baker confirmed that, on average, approximately one covered log stack per week is currently fumigated with MB at the port.

50. The applicant has described the methodology used to determine recapture percentage of MB. During our site visit to the port, we were shown the carbon filter recapture equipment used and were provided with a demonstration of the procedure for log fumigation and ventilation under tarpaulins, including the recapture process. A draft FMRP has now been provided that includes detail of the recapture process and associated monitoring requirements. The proposed conditions require BOPRC certification of the final FMRP.

51. Whilst the EPA specifies minimum MB recapture percentages, the evidence was that MPI does not specifically monitor recapture rate, nor does WorkSafe. Certainty regarding the percentage of MB recapture was an issue of concern raised by TMFAG, as discussed in our determination of the status of the activity under the relevant plan. We reiterate that we

consider percentage recapture to be an important aspect of the application. While the monitoring and reporting procedures described by Mr Baker and specified in the FMRP are appropriate, we expect that BOPRC monitoring officers would regularly inspect the recapture monitoring process and calculations. Unannounced site visits for this purpose would be appropriate, in order to address the issue raised by TMFAG regarding self-reporting. We note that it will be necessary for Genera to achieve effective MB recapture in order to meet the MB trigger levels at the Monitored Safety Zone (**MSZ**) and TELs at the port boundary that would be specified in any conditions of consent.

Dispersion Modelling and the EPA Reassessment Decision

52. We heard evidence that the EPA Reassessment for MB involved a robust process of effects assessment with dispersion modelling used to assess effects specifically at POT. The dispersion modelling work was undertaken by several expert modellers using the CALPUFF and AERMOD models. The results of the modelling were used to set minimum separation distances to the port boundary relating to various types of fumigation activities (as proposed by the applicant in condition 9.1). We are conscious of the concerns expressed by some submitters that the EPA reassessment work might not have taken into account the specifics of the proposed discharges and the local receiving environment. Accordingly, we asked the peer reviewers for BOPRC to examine the dispersion modelling work undertaken for the EPA and provide comment.

53. The dispersion modelling results considered in the EPA Reassessment were analysed by Ms Simpson and Mr Vernal of T&T. They stated that the results are regarded as conservative and adequately account for potential cumulative effects of multiple fumigations. We are satisfied on the evidence that the buffer distances imposed by the EPA are sufficient to prevent adverse health effects to the general public beyond the port boundaries, provided the activities are undertaken in accordance with the conditions we intend to impose.

54. We are aware that the dispersion modelling undertaken as part of the EPA Reassessment was based on a set of assumptions regarding how the various fumigation and ventilation activities would be undertaken. The setback distances to the port boundary in proposed condition 9.1 rely on at least 90% MB recapture being achieved and the integrity of the enclosure (such as tarpaulin covers) being maintained during a fumigation event. We regard the assumption of the integrity of the tarpaulin enclosure as critical and, as discussed later,

we consider that video monitoring is an important tool to be used in confirming this integrity.

55. The EPA Reassessment modelling based on fumigation at POT predicted peak MB concentrations in the industrial estate to the south-east of the port, where bulk storage tanks are present. In response to our questions, the advice of Mr Cressey and Ms Simpson was that the probability of exceedance of the short-term TEL for MB was low for this industrial area. Predicted MB concentrations are significantly less for the residential and recreational areas adjacent to the port. Subject to a robust set of consent conditions we intend to impose, we accept the evidence that concentrations of MB beyond the port boundary are expected to be within air quality guidelines intended to prevent any adverse health effects. The monitoring regime now proposed is designed to confirm that expectation. The monitoring will, for example, have specific regard to the Whareroa Marae.

Log Fumigation Under Tarpaulins

56. Several submitters expressed concern regarding the risks associated with the practice of fumigating logs under sheets. They noted that the use of tarpaulins for large scale fumigation is not authorised in other countries. We recognise log fumigation under sheets as the proposed activity that has the highest risk of accidental discharge, given the nature of tarpaulin use (particularly if high winds occur unexpectedly) and the quantity of MB or other fumigants required to treat the large log stacks.

57. We note that dispersion modelling for the EPA Reassessment set a buffer distance of 700m in circumstances when no MB recapture occurred, substantially larger than the buffer of 150m proposed based on 90% recapture and an MB dose rate of 72-120g/m^3. Those theoretical modelling results indicate that in an extreme failure scenario (such as tarpaulins removed by wind or badly torn after fumigant is applied but prior to recapture) there is potential for MB concentrations to exceed the TEL beyond the proposed buffer. We therefore determine that it is important that tight controls are imposed in relation to MB application under tarpaulins if consent is to be granted for this activity. These controls should be coupled with comprehensive air quality and compliance monitoring. We determine that live video monitoring of the log fumigation activity should be part of that monitoring, allowing confirmation that the integrity of the tarpaulin enclosure is being maintained. Video monitoring will also provide confidence to the public that correct

processes are being conducted in the interests of public safety. We consider this will assist to alleviate some of the concerns of opposing submitters.

Consideration of Effects on Port Workers

58. The evidence and submissions included considerable comment from several parties on potential effects on non-fumigation workers within the port area and the extent to which we should have regard to these workers when imposing conditions on any consent. In opening legal submissions for the applicant, Ms Le Bas noted that the EPA decisions on the use of fumigants have been made under the Hazardous Substances and New Organisms Act 1996 (**HSNO**). She submitted that the same or similar effects on the environment of the fumigants are controlled under the RMA, HSNO and also the regulation of risks arising at work under the Health and Safety at Work Act 2015 (**HSWA**). Genera's position, supported by submitters including Phytos and MPI, was that in the absence of expert evidence to justify a departure, we should rely on the controls the EPA has placed on the fumigants used at the port under HSNO. Concern was expressed that any departure from the existing EPA controls by way of consent conditions could result in operational issues and additional costs.

59. In legal submissions for KiwiRail, Ms Gunnell submitted[8] that nothing in the RMA, HSWA or HSNO expressly excludes the application of RMA to health effects arising from a substance that may also be subject to the latter two pieces of legislation. She submitted that health and safety issues are part of the stated RMA purpose of sustainable management regardless of the existence of an overlapping jurisdiction. This obligation to consider health and safety issues is not discharged because another jurisdiction may also address similar issues.

60. The legal submissions on behalf of TMFAG stated that the amended application (as put forward at the time of the June hearing) did not contain sufficient conditions relating to the Risk Zone and Monitored Safety Zone in order to protect port workers, including the areas covered by these zones and the Workplace Exposure Standard (**WES**) levels that would apply in those zones. We had specifically questioned, in our directions of 30 May 2023, whether such requirements should be included in the conditions of any consent granted.

61. Mr Sharp, Ms Barry-Piceno and Ms Smith for TMFAG were firmly of the opinion that the risk/MSZ zone areas and WES levels should be included in conditions of any consent. They

[8] Legal Submissions on behalf of KiwiRail Holdings Limited, para 3.3

referred to the *Envirofume* decision in 2017. In that case, involving fumigation of logs under tarpaulins with MB, a similar proposed approach to the protection of worker health advocated by the applicant and BOPRC was rejected by the court. They noted that the following sections of the *Envirofume* decision are of particular relevance.

"[116] The original proposal put to this court was that monitoring would occur at the boundary of the port property, several hundred metres away from the areas in which these activities were to take place. The view of the parties was that we should rely on the existing rules to control workers (WES) and non-occupational bystanders through the TELs if you are within the port land. On that basis the only concern would be beyond the port boundary, with persons who would be regarded as the public.

[117] The Resource Management Act does not work in this way. It refers to the health and safety of people. People includes all the people who may visit the port, for whatever reason, together with workers and residents. In this regard, we note that it was acknowledged that the WES of 5ppm is not reliable for workers who are working 12 or more hours per day. The oil company suggests, and we understand the applicant now accepts, that the parts per million rating in this area should be something in the order of 2.5ppm to recognise the additional exposure of at least some workers or contractors at the Port."

62. We note that in the *Envirofume* case the Court was critical of the Council's reliance on monitoring at the port boundary under the existing Genera consent, rather than compliance with TELs at zones within the port[9]. The Court also highlighted the lack of information at that time (2017) indicating compliance with the existing consent held by Genera.[10] The limited boundary monitoring of MB that had occurred at that stage was regarded by the Court as inadequate.

63. TMFAG submitted that the comments by the court in *Envirofume*, particularly at paras 116-117 of the decision, also apply to the amended application before us. They considered that the WorkSafe and EPA national standards must be at a minimum met within a particular resource consent for the discharge of a fumigant. However, the particular circumstances of the consent may require additional requirements. We agree.

[9] Envirofume v BOPRC [2017] NZEnC 12, para 124.
[10] Ibid, para 125.

64. We have considered all this material and determine that it is appropriate for us to assess effects on port workers and impose relevant conditions as we see fit. It may be that in many aspects such conditions align with the controls imposed by the EPA. However, there may be sound technical reasons for specific additional controls to ensure that adverse effects are adequately mitigated, particularly in relation to monitoring at the MSZ. This determination is consistent with the Court's view in the *Envirofume* decision and with legal advice the BOPRC obtained on this matter from Wynn Williams prior to the June hearing.

65. We determine that it would be insufficient for any consent to rely on monitoring for worker protection that was supervised by a third party, such as WorkSafe. If consent is granted, we would need to be satisfied that appropriate monitoring is prescribed by consent conditions and compliance can be verified by BOPRC.

66. We are conscious of the submission from KiwiRail regarding potential effects on railway workers who operate close to the fumigation discharges, particularly from the covered log stacks. KiwiRail's key concern is the impact of the methyl bromide fumigation activities on the health and safety of KiwiRail workers in close proximity to the discharges.[11]

67. Mr Prevett, Site Manager for KiwiRail stated that there are 22 – 27 KiwiRail staff who work at the KiwiRail site, along with 35 train drivers, and other contractors working for KiwiRail. He stated that these workers go onto the port 20 - 25 times per day, typically being present intermittently for periods of up to one hour. He noted that the KiwiRail site, and in particular KiwiRail's activities on the rail shunt within the port, are in close proximity to Genera's operations. Mr Prevett estimated[12] that at some points KiwiRail's workers are within approximately 70 metres of the area currently used by Genera for methyl bromide fumigation. Given the toxicity of methyl bromide, he expressed concern that the health and safety of KiwiRail workers could be put at risk in the event of any leakages or exceedances of the TELs and WES. He noted that KiwiRail workers could be active within the proposed boundary setback distances for log fumigation.

68. We consider that the concerns expressed by KiwiRail are valid and find that any consent should be subject to conditions requiring monitoring of MB concentrations prior to ventilation (including percentage recapture) and also requiring active monitoring at the

[11] Legal Submissions on behalf of KiwiRail Holdings Limited, para 1.4.
[12] Evidence in chief of Simon Prevett for KiwiRail Holdings Limited, para 4.1.

MSZ. The MSZ would be adjusted in accordance with this monitoring to ensure that trigger concentrations are not exceeded, with the aim of meeting the WES beyond the MSZ. This is important to ensure that port workers who are not wearing breathing apparatus are not exposed to fumigant concentrations that could cause adverse health effects.

69. In response to our questions, Ms Simpson pointed out that active monitoring at the MSZ by Genera fumigation workers currently requires instantaneous response to MB concentrations exceeding the WES (8-hour average) of 1ppm. She agreed with the evidence of Mr Browne that the WES values are not strict air quality limits but are used as part of the worker risk assessment required by WorkSafe. Because the WES for worker protection is based on an 8-hour average, she considered that this current approach used to monitor MB at the MSZ is conservative and provides a good degree of health protection for port workers. We accept the expert advice of Ms Simpson in this regard.

70. In response to extensive questioning and exchanges during the hearing process, Genera has now proposed conditions 5.1 and 5.2 that require monitoring of all fumigants at the MSZ during application and ventilation, including during single pass recapture for MB (involving some discharge from the recapture unit after carbon filtration). It is proposed that monitoring trigger values would be specified in the FMRP, allowing a degree of flexibility if WES limits changed in future. We find that such a condition should specify that such monitoring trigger values are set to ensure that the WES is not exceeded beyond the MSZ. We note that proposed condition 5.8 requires certification (by BOPRC) of the FMRP that would contain the MSZ trigger values. We find that such a monitoring approach is appropriate to protect workers that may be present near to the fumigation areas on the port.

Monitoring

71. Monitoring of MB undertaken within the port and at the POT boundary in recent years is detailed in the evidence of Mr Baker. He summarised monitoring results[13] at the port boundary that indicated a significant reduction of MB concentrations measured in 2022, relative to 2021. Measured boundary concentrations in 2022 were well below the MB TEL of 1ppm. Mr Baker explained that the significant reduction in monitored MB concentrations over this period is unsurprising given the recapture requirements of the EPA Reassessment

[13] Evidence in chief of David Baker for Genera, para 74 and subsequent table.

decision and the more than 89% decrease in the number of log rows fumigated from 2021 to 2022.

72. Mr Baker noted that much of the routine monitoring for MB is undertaken using Photo-Ionisation Devices (**PIDs**). The PIDs measure total volatile organic compounds (**TVOCs**), including MB. They allow responsive and cost-effective monitoring but do not measure MB specifically. More accurate MB monitoring results are obtained using a Fourier Transform Infrared Spectrometer (**FTIR**) that can distinguish different VOCs in the air, including methyl bromide. Mr Baker stated that both FTIR and PID monitoring was undertaken by an independent third party (**ECOCIFIC**) during 2020-2022 and he provided a summary of the port boundary monitoring results[14].

73. The ECOCIFIC monitoring reported boundary concentrations of MB during 2020 to 2022 using the two methods (PID and FTIR) that were within the TEL. Mr Baker stated that the 2021 ECOCIFIC report concluded that: *"although the PID measures TVOC, the generally high correlation with [the] FTIR indicates that the PID is responsive to the methyl bromide presence in ambient air at the port boundary."* He further noted that the report stated that: *"during most venting events, [the] PID was reporting higher concentrations of TVOC than methyl bromide by [the] FTIR".*[15] Mr Baker's evidence is that devices that measure MB directly are either inaccurate in the 1ppm range of the TEL, or very expensive and complex (like the FTIR), needing highly trained technicians to operate the equipment and interpret the results, and are therefore less efficient in an operating environment where a quick response may be required. We have given particular attention to the monitoring of MB, given the concerns expressed by submitters, and find that overall, the proposed monitoring approach is reasonable and appropriate.

74. Given the potential risks associated with the discharge of MB, particularly in relation to fumigation of log rows under tarpaulins, we consider that any consent granted should require a comprehensive MB monitoring programme. That programme should include monitoring to demonstrate accurately the percentage of recapture, monitoring at the MSZ, monitoring at the port boundary and some fixed FTIR monitoring at sensitive receptors beyond the port boundary. The purpose of fixed monitoring by FTIR would be to confirm for submitters and local residents that MB concentrations are consistent with the

[14] Ibid, para 81.
[15] Ibid, para 82.

applicant's assessment. The proposed monitoring is detailed in conditions and in the FMRP that would require certification from BOPRC.

75. In response to our directions, the draft FMRP was updated during the hearing process with input from the parties. KiwiRail and their air quality consultant, Mr Stacey, provided comment on the FMRP at the reconvened hearing in September. Mr Stacey stated that he met with Genera on 5th September 2023 and some technical matters raised had now been addressed in the draft FMRP. We are comfortable that the content of the draft FMRP is generally appropriate and in keeping with the requirements of the proposed conditions, subject to some further refinement. We determine that fumigant trigger levels for monitoring at the MSZ to protect worker health should be included in the FMRP. The proposed condition 5.8 requires the FMRP to be submitted within two months of commencement of consent for certification by BOPRC. We consider that this certification step is important to confirm that the conditions we intend to impose are addressed in the final FMRP.

76. During the hearing and in our directions to the parties we expressed concern that the fumigant monitoring originally proposed focussed on measurements at the port boundary only. Our view was that this approach did not adequately address potential effects on port workers and also had limited ability to identify elevated fumigant concentrations, should they occur. Port boundary locations are commonly a substantial distance from the point of discharge and, given that the direction of wind flow is often inconsistent, it would be difficult to locate boundary monitors to intercept the contaminant plume. In response to these concerns, the applicant has now proposed conditions 5.1 and 5.2 (monitoring at the MSZ to protect worker health) and condition 6.1 (investigative trigger levels at the MSZ boundary). These conditions have been developed in consultation with the officers and the peer reviewers. We are satisfied, subject to minor amendments to ensure trigger levels in the FMRP achieve the relevant WES, that these proposed conditions now adequately address this issue.

77. Condition 6.1 that specifies investigative trigger levels to be met at the MSZ was developed based on the advice of Ms Simpson. This condition requires monitoring at the MSZ in circumstances where the downwind port boundary is more than 50m from the MSZ or is over water (offshore winds). The investigative trigger levels (15 minute average) are set at concentrations that are 10 times the relevant 1-hour average boundary limits (TELs) for

each fumigant. We questioned Ms Simpson on the method used to develop the trigger levels. She confirmed that they are based on a simple 10 fold dilution factor that is calculated to achieve the TELs at 50m from the source. She confirmed that the then proposed condition should be amended to specify the 50m separation distance relative to the MSZ boundary, not the point of fumigant discharge. We accept her advice.

78. During the reconvened hearing in September, Mr Cressey provided further comments regarding potential health effects at the proposed air quality limits. He stated that the WES and TEL values do provide protection to susceptible individuals. In his opinion, the levels of protection required by the EPA and WorkSafe align with "de minimus" or negligible effects. We questioned Mr Cressey regarding potential effects on port workers if they were exposed to concentrations above the TELs but below the investigative trigger levels. He responded that there would be a possibility of noticeable effects at a concentration of 10 times the TEL if the worker was more susceptible than average, but that any such effects would be expected to involve transient discomfort. We find that this matter is now adequately addressed by proposed conditions 5.1 and 5.2 that effectively would require the WESs to be achieved beyond the MSZ.

79. The evidence was that monitoring of MB concentrations at the wharf edge during offshore winds has been problematic due to health and safety issues and problems associated with the monitoring procedure required by the EPA. This is an example where the monitoring requirements of a third party are not currently adequate and additional controls would be necessary as part of any resource consent. Condition 5.3, as proposed at the June hearing, included a clause that reflected the EPA controls and effectively could have resulted in "downwind" monitoring occurring at locations well removed from the discharge source and very unlikely to detect peak contaminant concentrations. This situation has been rectified by the deletion of this suggested clause by Genera and the acceptance of MSZ monitoring in accordance with proposed conditions 5.1 and 6.1. We find that the now proposed monitoring approach is more scientifically robust than what has previously occurred under the existing consent and EPA requirements and is significantly more likely to verify that compliance would achieve fumigant concentrations that do not exceed the TELs beyond the boundary setback distances.

80. The POT seaward boundary is 50m offshore from the wharf. Mr Ngatuere stated that he paddles his waka in proximity of ships berthed at the port. We heard evidence that

recreational craft are actively discouraged from entering this area (within 50m of the wharf), and that the probability of such craft being in this area for more than a very brief period of time is low. Bearing in mind the MSZ trigger limits we intend to impose and the expected separation distance to any transient water craft passing near the wharf, at a likely distance of over 50m from the discharge, we find that the fumigation discharges are unlikely to cause any adverse effects to occupants of recreational vessels. That finding does not detract from Mr Ngatuere's submission that covers a number of matters that we have due regard to in our final decision. For example, we now provide for monitoring close to the Marae in order to specifically determine compliance with the MB TELs in that location.

Designated Fumigation Areas

81. Several submitters, including KiwiRail, stated that any fumigation should occur in clearly defined areas to minimise the risks to other port workers and allow effective monitoring of the discharge. Genera considered that there may be operational difficulties with such an approach, particularly in relation to being able to relocate fumigation areas if boundary setbacks are reduced as a result of applying smaller MB dose concentrations to the logs in future.

82. This issue is particularly relevant to the log fumigation area, which has been identified as a higher risk activity due to the scale of the discharge and the practice of using tarpaulins. We are conscious of the intermittent presence of KiwiRail workers close to the current (and potential future) log fumigation area. Genera has now provided a plan, to be attached to conditions of any consent, that shows the boundaries of the MB and EDN fumigation areas that would apply to log fumigations under sheets based on the various dosage rates and setbacks specified by the EPA. We find that this approach is acceptable.

83. Mr Kneebone for POT explained that there are advantages for port operations if log fumigation occurs within a dedicated area. We consider that, in practice and given the requirements we intend to impose for video monitoring of log fumigations, such operations would likely continue to occur with defined areas.

Night-Time Fumigations

84. The EPA prohibits night time fumigation with EDN based on avoiding inversion conditions with low wind speeds when contaminant dispersion is poor. However, we accept the explanation of Ms Simpson that this approach appears to be "belt and braces" because it is proposed (in accordance with EPA requirements) that ventilation would not occur during wind speeds of less than 2m/s. We note the applicant's argument that there is sufficient lighting at the port during night time to provide adequate visibility of the fumigation areas and warning signs. We accept the opinion of Ms Simpson and determine that, given the minimum wind speeds imposed, it is not necessary to restrict fumigation with MB and phosphine to daytime only.

Relevance of the Envirofume Decision

85. The 2017 decision of the Environment Court in *Envirofume* was cited by several submitters as relevant to this application. We have already discussed this decision in some detail relating to findings on legal matters, particularly in relation to effects on port workers. There are clearly several matters of relevance to this application, but we note the timing of decision prior to the 2021 EPA Reassessment for MB and that recapture was not proposed by Envirofume. The specific circumstances of the Envirofume proposal were therefore very different to the details of this application. We are acutely aware that our decision on this application must be based on the specific details of the proposal before us and the mitigation measures and consent conditions now proffered.

Conclusion Regarding Effects of MB

86. We are satisfied that the recent EPA Reassessment for MB was a comprehensive process with significant expert input to the dispersion modelling and the assessment of the effects of MB. We are satisfied on the advice of Ms Simpson and Mr Cressey that the assessment was robust and significant adverse health effects of MB are not expected to occur. However, this conclusion is contingent on imposition of comprehensive conditions controlling the fumigation and ventilation process and requiring robust monitoring. Those conditions include monitoring at the MSZ to protect worker health and ensure that TELS at the boundary will be met. They also include video monitoring of log fumigation under tarpaulins.

87. We are conscious of submitter concerns regarding the ongoing use of MB at the port. As we discuss in detail later in this decision, there are limited alternatives available at this time. Submissions from MPI and others have stressed the importance of MB as an option in the toolbox for biosecurity purposes. We note the substantial reduction in the amount of MB used at the port, driven by EPA recapture requirements and banning of MB fumigation in ship holds. Overall, subject to the controls we intend to require as conditions of consent, we find that the fumigation methods proposed are consistent with the best practicable option at this time.

Effects of EDN

88. EDN (C_2N_2) is a rapid acting, volatile, colourless, flammable chemical used for fumigation. Following the release of the EPA decision on EDN[16] in June 2022, the application has been amended to include the controls and requirements specified by the EPA and WorkSafe. We accept the submission of Ms Le Bas that the application as notified included the use of EDN under sheets and in containers for the treatment of export logs and timbers, as detailed in proposed condition 1. We note that EDN is not currently used at POT but has potential to replace MB as a fumigant once accepted by the recipient country for exported material.

89. Draslovka (the supplier of EDN who sought the EPA approval) submitted that additional uses of EDN (such as fumigation in ship holds) should also be approved by consent, so that any future approval by the EPA would not require a change to consent conditions. We consider that such a change would be outside the scope of the application as notified and determine that we are unable to authorise such additional uses of EDN as part of any consent granted.

The EPA Decision for EDN

90. Ms Gear for Draslovka outlined the recent EPA approval process for EDN. She explained that Draslovka's application was rigorously assessed by both the EPA and WorkSafe. Ms Gear stated that the dispersion modelling provided in 2022 to support the application was undertaken for discharges at the POT using an approach agreed by three internationally recognised dispersion modellers as the most appropriate for fumigant modelling near a built up area close to the ocean. She noted that to inform their assessments the EPA

[16] EPA approval for EDN HSR101529, June 2022.

employs toxicologists and where necessary engages experts (nationally and internationally).

91. Ms Gear stated that EDN use in New Zealand is controlled by the requirements imposed by the EPA registration approval (HSR101529) and in the WorkSafe document titled 'Health and Safety at Work [Hazardous Substances— Requirements for Specified Fumigants] Amendment Safe Work Instrument 2022' (**SWI**). These documents list requirements for the use of EDN, WESs, record keeping, notifications, reporting and require continuous monitoring of EDN levels under the stack, around the enclosure (including the public buffer) and of individuals working onsite.

92. We are satisfied on the evidence that an appropriately robust assessment process was undertaken by the EPA in the 2022 assessment for EDN. The dispersion modelling supporting that assessment focussed on the POT. Ms Simpson, the peer reviewer for BOPRC, confirmed that she is comfortable with the EDN controls now proposed by Genera. These conditions generally align with the current EPA requirements.

Air Quality Guidelines and Health Effects

93. Mr Cressey stated that for EDN, the EPA has derived only a chronic TEL of 0.034ppm, as a 24-hour average. He explained[17] that the chronic TEL was based on the no observed adverse effect level (**NOAEL**) for a 6-month rat inhalation study, with application of a 100-fold uncertainty factor. He observed that additionally, in their assessment of EDN, the EPA used acute exposure guideline limits (**AEGLs**), derived by the US National Advisory Committee for Acute Exposure Guideline Levels for Hazardous Substances, for assessing short-term exposures (10 minutes to 8 hours) of non-occupational bystanders (general public).

94. Mr Cressey stated that the AEGL-1 values were in the range 1.0 to 2.5ppm, with a 1-hour average AEGL-1 of 2.0ppm. He confirmed that AEGL-1 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, he considered that such effects are not disabling and are transient and reversible upon cessation of exposure. Mr Cressey noted that WorkSafe has derived a WES-TWA (8-hour average) of 3ppm and a WES-Ceiling of 5ppm for EDN.

[17] Evidence in chief of Peter Cressey for Genera, para 14.

95. Mr Cressey's opinion[18] is that the EPA TEL (24-hour average) and the AEGL-1 values (proposed as port boundary limits) provide a suitable set of guideline concentrations for assessing the potential impact of EDN discharges to air on non-occupational bystanders. He further considered that the WorkSafe WES values appear appropriate for the occupationally exposed population.

96. We observe that the proposed 1-hour average limit for EDN (aligning with the AEGL-1 of 2ppm) does not appear to be conservative, and we questioned the parties in this regard. Ms Gear stated at that, according to the AEGL definition, at the AEGL-1 level there could be a degree of transient discomfort experienced by sensitive individuals. The BOPRC officers, including the T&T peer reviewers, responded (in written reply to our directions in Minute 3) that the *"EPA has not set a short term TEL for EDN. The Applicant is proposing that the Level 1 Acute Exposure Guideline Level (AEGL-1) for EDN could be imposed. However, it is noted that the AEGLs have been developed for emergency response purposes and do not anticipate repeated exposure. The AEGL-1 is described as being set at a level where there would be 'Notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure'.[19] An ambient air quality criterion would usually be set on a more conservative basis to avoid even transient effects (other than odour)".*

97. We accept the opinion of the BOPRC officers, including the expert advice of Ms Simpson and Mr Vernall, in relation to setting an appropriate 1-hour average limit for EDN concentrations to be applied at the port boundary. We agree that the AEGL-1 of 2ppm (1-hour average) at the port boundary is not conservative. We also agree that in the context of the RMA, rather than the EPA's assessment framework, an air quality criterion that is intended to protect members of the public would normally be set on a more conservative basis to avoid even transient adverse health effects.

98. It is somewhat surprising that the EDN limit of 2ppm (1-hour average) suggested by Mr Cressey is so much greater than the TEL (24-hour average) set by the EPA of 0.034ppm. We also note that concentrations approaching the AEGL-1 level over a one hour period would result in exceedance of the 24-hour average TEL set by the EPA. Mr Cressey stated that

[18] Ibid, para 15.
[19] https://www.epa.gov/aegl/about-acute-exposure-guideline-levels-aegls

compliance with this TEL at the port boundary directly aligns with the controls specified in the EPA decision for EDN[20].

99. We determine that a degree of conservatism should be applied to setting the 1-hour average criterion in condition 11.4, to protect members of the public. Accordingly, we determine that the proposed limit is reduced by 50% to 1ppm (1-hour average). Consequently, the investigative trigger level for EDN in condition 6.1 is reduced by 50% to 10ppm (10 x the 1-hour average boundary limit, consistent with the calculation explained by Ms Simpson).

100. We have considered the reduction to the proposed short-term boundary concentration limit for EDN in light of the comprehensive controls and monitoring now proposed, including a 700ppm concentration limit at ventilation, a 50m boundary setback, and monitoring to meet both investigative and occupational trigger levels at the MSZ. In order to achieve the WES beyond the MSZ, trigger limits for monitoring at the MSZ boundary (to be included in the certified FMRP) would effectively require the 2ppm AEGL-1 to be met in close proximity to the MSZ and thus the 1ppm (1-hour average) limit would likely be achieved well within the port boundary, at least 50m distant. We consider that compliance with the revised short-term boundary limit for EDN would not be onerous, and indeed would be necessary in order to achieve the TEL and meet the requirements of the EPA.

101. Given the proposed controls, the amended 1-hour average boundary limit we intend to impose, and also the need to comply the EPA requirements (including the TEL), we conclude that any adverse effects of EDN on port workers or the general public are likely to be minor.

Cumulative Effects

102. The EPA decision specified a 50m buffer to the port boundary and, based on revised modelling assessments, was satisfied that cumulative effects from multiple EDN fumigations would not be significant. Proposed condition 3.1 requires that *"where multiple under sheet fumigations are within 200m of each other and the same fumigant has been used, during ventilation each individual sheet must be fully removed one at a time".* Based on this condition and the evidence provided, including written comments from the BOPRC officers and peer reviewers in response to our directions, we are satisfied that any

[20] Evidence in chief of Peter Cressey for Genera, para 33.

cumulative adverse effects of multiple EDN fumigations in future would be minor. We discuss cumulative effects of simultaneous use of different fumigants later in our decision.

Monitoring

103. Limited information is available regarding the monitoring procedures and equipment for EDN, given that no EDN fumigations have occurred at the port to date. However, we are satisfied that key matters are covered in the draft FMRP and this plan would be updated and certified prior to the commencement of EDN fumigations. Ms Gear explained that appropriate monitoring equipment is available, with FumiAce monitors being suitable for use under tarpaulins (minimum of 3 probes) while the smaller Drager monitors would be worn by fumigators. She noted that both monitors have data logging capability, as required by WorkSafe. In the circumstances, we find that it is reasonable to require details of the monitoring equipment to be provided to BOPRC as part of the FMRP for certification at a later date.

Odour Effects

104. In our directions to the parties, we sought comment on potential odour effects of EDN. The response from the BOPRC officers and peer reviewers was that: *"Odour was identified as a matter to be addressed in the EPA decision for EDN. The odour detection threshold is higher than the WES limit. As such, compliance with the WES limit will ensure that there is no odour present beyond the MSZ and the risk of odours at the Port boundary is low*." We accept the evidence that the use of EDN for fumigation is not likely to cause odour nuisance effects.

Conclusion Regarding Effects of EDN

105. The June 2022 EPA decision on EDN followed a robust assessment process and included dispersion modelling of emissions at the POT. Subject to the reduction to the proposed 1-hour average EDN boundary limit (and consequential reduction to the MSZ trigger value) we intend to impose, the suite of conditions now proposed are expected to achieve compliance with the EPA requirements. The requirement for active monitoring of EDN at the MSZ (conditions 5.1 and 6.1), with adjustment of the MSZ to meet specified trigger levels, is key to ensuring that the health of port workers and the public is appropriately protected. On this basis, we are satisfied that any adverse effects of the use of EDN for fumigation are likely to be minor.

Effects of Phosphine

106. Phosphine is now used in large quantities at the port to fumigate ship holds as it has replaced MB fumigation for this purpose following the EPA Reassessment for MB. However, we heard that phosphine has been used to only a limited extent to date for fumigation of containers such as grain silos.

107. The EPA approvals for use of the various forms of phosphine fumigant[21] were reissued in December 2021. However, the evidence was that the original EPA (then ERMA) assessment for phosphine was less robust than the more recent assessments undertaken for EDN and MB. Specifically, the EPA assessment process for phosphine was not based on dispersion modelling and did not set boundary setback distances. It also did not specify a maximum phosphine concentration prior to ventilation. Due to these limitations, we posed several questions to the parties regarding the assessment of effects of phosphine and specific controls (additional to EPA requirements) that might be applied via any consent granted.

108. The evidence of Mr Frentz described the phosphine fumigation activities[22] occurring at the port. He noted that phosphine is a colourless, flammable, toxic gas compound with the chemical formula PH_3. It is used for in-hold treatment of logs in-transit for the China market. He stated that, like EDN, phosphine is not an ozone depleting gas and is therefore not the subject of the Montreal Protocol and does not require recapture technology.

109. Mr Frentz explained that phosphine is currently applied at POT in two forms, aluminium phosphide (**ALP**), that reacts slowly when exposed to the atmosphere and Vaporph3os which is phosphine gas contained in cylinders and is effective on release. ALP reacts with moisture and the air to produce phosphine gas which kills the pests in/on the logs or other target material. Mr Frentz stated that once the packaging seal is broken, the chemical reacts slowly with the atmosphere and there is limited preliminary release of gas before the ship's manhole or fumigation enclosure is sealed. He added that Vaporph3os is pumped into the hold using a dedicated piece of equipment that dilutes the gas well below the self-combustion limit. Phosphine fumigant is added to ship holds typically within about 4-6 hours of the departure time. Mr Frentz noted that fumigation of logs in ship holds has a 10-

[21] HSR001632, HSR001636 and HSR007629 EPA approvals for phosphine, aluminium phosphide and Vaporph3os, December 2021, appended to the Evidence in Chief of Keith Frentz for Genera.
[22] Evidence in chief of Keith Frentz for Genera, paras 60-71.

day duration which makes it ideally suited to a transit to China which typically takes 14+ days.

Air Quality Guidelines and Health Effects

110. Mr Cressey stated[23] that the EPA (then ERMA) adopted a long-term TEL derived by the USEPA of 0.00022ppm and derived a ceiling TEL of 0.0072ppm. He noted that the basis for the derivation of the ceiling value was not included in the relevant decision document and it is unclear how the value was derived. Mr Cressey added that the compilation of workplace exposure standards and biological exposure indices for New Zealand lists a WES-TWA (8-hour average) concentration for phosphine of 0.3ppm. The associated WES-STEL, a 15-minute weighted average, for phosphine is 1ppm.

111. Mr Cressey noted that WorkSafe reviewed the WES in 2022 and proposed a revised WES-TWA of 0.05ppm and a WES-Ceiling of 0.15ppm, with no WES-STEL proposed. He stated that these WES values are still at the consultation stage and have not yet been formally adopted.

112. Given that the information supporting the EPA TEL for phosphine is now somewhat dated, Mr Cressey discussed published reference dose and daily intake data for phosphine[24] in support of updated guideline values. On the balance of available information, he concluded that the EPA long-term TEL appears overly conservative. Mr Cressey stated that, based on the acute and chronic health-based guidance values derived by the USEPA and the European Food Safety Authority (**EFSA**) and providing protection for young children, 24-hour and chronic TELs of 0.02 and 0.01ppm would be consistent with recent assessments and with the proposed WorkSafe WESs.

113. The applicant has now proposed a limit of 0.05ppm (1-hour average) for phosphine at the port boundary, in condition 10.2. This value is generally consistent with the longer term limits suggested by Mr Cressey. We determine that the 24-hour average criterion of 0.02ppm recommended by Mr Cressey should also be included in condition 10.2. Whilst the 1-hour value is key for monitoring purposes (given the typically short-term and intermittent nature of emissions), the 24-hour value is appropriate in the event that monitoring of longer term phosphine concentrations at the boundary is undertaken during the term of consent.

[23] Evidence in chief of Peter Cressey for Genera, para 16.
[24] Ibid, paras 17-22.

We accept the expert evidence of Mr Cressey regarding suggested phosphine exposure limits and note that Ms Simpson did not dispute his recommendations or the 1-hour average criterion included in proposed conditions.

Buffer Distances

114. In response to our questions during the hearing, Genera has now proposed minimum port boundary setback distances for phosphine fumigations of 50m from container fumigations and fumigations under sheets and 10m from silos. Mr Frentz explained that this reflects a precautionary approach that recognises the limited monitoring data available for phosphine. He noted that ship hold fumigations are excluded as they are not ventilated in port.

115. Ms Simpson considered that the smaller proposed 10m setback for silos (primarily involving grain fumigation) is acceptable provided ventilation occurs via the top of the silo, resulting in improved dispersion. For certainty, we have amended proposed condition 10.1 to be clear that the 10m setback applies to top-venting silos only.

116. We find that the proposed setback distances for phosphine are reasonable, given the monitoring data currently available and the amended proposal that will require adaptive monitoring to occur at the MSZ. The applicant has also proposed condition 10.4, which will require further monitoring at downwind transects, or otherwise dispersion modelling if monitoring is not feasible, to investigate and confirm the suitability of the phosphine setbacks proposed. We determine that this condition is appropriate given the limited monitoring data available for phosphine at this time.

Phosphine Monitoring Data

117. Bearing in mind the limited data available at the time of the hearing and that the EPA assessment for phosphine was not based on dispersion modelling, our directions prior to the reconvened hearing in September 2023 requested further evidence regarding the effects of phosphine. In response, the applicant engaged Mr Bender, Air Quality Scientist with Pattle Delamore Partners, to address our questions and assess effects of phosphine based on the controls now proposed.

118. Mr Bender explained that Genera does not currently measure phosphine concentrations within the fumigation container or enclosure. Rather the phosphine is applied using either cylinderised phosphine gas or slow-release pellets/blankets containing ALP, which react with air to release phosphine. He stated that the amount of phosphine applied is based on dosage rates prescribed by MPI for imports, the destination country for exports and label rates for domestic pest control. The dose rate is set to achieve the target concentration over the required period. The concentration of phosphine within the enclosure decreases over the 5-to-15-day fumigation period due to natural decay and absorption into the fumigated material.[25]

119. Mr Bender noted that shorter fumigation periods would result in higher residual concentrations. Consequently, setting a maximum concentration of phosphine prior to ventilation has the potential to cause delays in the ability to complete fumigation by extending the timeframe beyond what is required to achieve MPI and/or end client requirements. He considered that Genera's approach of continuously monitoring pollutant concentrations downwind of a source provides an alternative to managing the effects of fumigation discharges, and in his view provides a more effective means of managing adverse effects from sources that have irregular discharge characteristics.[26]

120. With regard to the Draft FMRP, Mr Bender stated that this plan provides details of the monitoring undertaken during fumigations at POT. He noted that the monitoring equipment for detecting phosphine uses electrochemical sensors specific to phosphine and has a measurement range of 0 to 10 ppm with a resolution (and lower detection limit) of 0.01 ppm. The lower detection limit is sufficient to measure low levels of phosphine down to the (current) WES-TWA of 0.3 ppm and the WES-STEL of 1 ppm, as well as the proposed 1-hour boundary limit of 0.05 ppm.

121. Mr Bender analysed phosphine monitoring data for seven fumigation events described in Annexure A of Mr Baker's further statement of evidence to the reconvened hearing. He concluded that the monitoring data show that phosphine has mostly been below the instrument detection limit of 0.01 ppm when measured downwind of the fumigation sites. He noted that the exception is Fumigation Event #7 that measured phosphine out to 25 metres from the source and was due to unreacted ALP blankets being present at the end of

[25] Evidence of Chris Bender for Genera, Reconvened Hearing September 2023, paras 13-14.
[26] Ibid, para 15.

the fumigation period. The highest instantaneous phosphine concentrations measured at the MSZ, 10 metres downwind, was 0.65 ppm, which Mr Bender noted is below the current WES-STEL of 1 ppm. He stated that the average concentration at 10 metres over the two hour and 20-minute ventilation period was 0.2 ppm, which is also less than the 8-hour average WES-TWA of 0.3 ppm. Mr Bender confirmed that measured concentrations of phosphine were lower at further distances, and the highest instantaneous concentrations measured at 25 metres downwind of the fumigation site were less than the proposed boundary limit for phosphine of 0.05 ppm as a 1-hour average.

122. Based on his review of the available information, Mr Bender considered that there is a high degree of certainty that the normal range of phosphine fumigation activities will result in acceptable concentrations at locations where people are potentially exposed without the need to set a minimum required concentration prior to ventilation.[27] We accept his evidence in this regard. Mr Bender stated that in the event that phosphine is measured at the MSZ, Genera management procedures require that the fumigation process be slowed in order to reduce the rate of release, and/or that the MSZ be extended to exclude workers from potential exposure.

123. Subject to the suite of controls now proposed for phosphine, including adaptive MSZ monitoring to protect the health of port workers and members of the public, we are satisfied that phosphine fumigation emissions are not likely to cause any significant adverse effects.

Potential Effects of Ship Hold Fumigations

124. In our directions prior to the reconvened hearing, we raised questions regarding potential for leakage of phosphine during ship hold fumigations and the need for any setback distance to protect port workers. Mr Bender responded that the main period in which phosphine may be released to air from ship hold fumigations is during the application phase. Because ship hold fumigations are ventilated during transit, or otherwise offshore, there is virtually no risk of worker exposure within the wharf areas to phosphine from the ventilation of ship holds. His understanding is that there is a minimal risk of fumigant being released during the main fumigation period because the ship holds are closed and sealed after the desired amount of fumigant has been applied.

[27] Ibid, para 21.

125. Mr Bender confirmed that Genera actively monitors for phosphine within the MSZ downwind of the fumigation area during the application phase on ships. He stated that if leaks are detected then the source is identified and sealed, and if necessary, the setback distance is extended to exclude other workers from potential exposure. After application, the vessel is sealed, and the fumigation technician remains on the vessel monitoring for phosphine. Mr Bender noted that Annexure B of Mr Baker's further statement of evidence (dated 11 September 2023) provides monitoring data for phosphine downwind of ship hold fumigations, in which there were no detectable concentrations of phosphine on the shipping berths. Due to the lack of an exposure route, Mr Bender considered that there is no need for an MSZ to remain in place beyond the application phase of the ship hold fumigation.

126. We have examined the monitoring data presented in Annexure B of Mr Baker's further statement of evidence. Mr Bender's statement regarding no detectable concentrations on the berths adjacent to ships does not appear to be quite correct. However, the reported instantaneous concentrations of phosphine at 10m from fumigated ships did not exceed the proposed port boundary limit of 0.05ppm (1-hour average).

127. Mr Bender concluded[28] that, given the minimal risk of phosphine being discharged from ship hold fumigations, the exposure risk to workers in the POT is already managed with existing MSZ controls. He considered that phosphine levels will be below the relevant workplace exposure standards in the vicinity of the ship without the need to specify setback distances or maintain an MSZ beyond the application phase.

128. We received written advice on this matter from the BOPRC officers and peer reviewers prior to the September reconvened hearing. Their advice was that the wider suite of consent conditions achieve the protection of workers and the public from discharges associated with ship fumigations. The applicant's evidence is that ship holds are inspected for leaks prior to fumigation commencing and that some air quality monitoring is undertaken following fumigation. The Council officers understood that the purpose of this is to ensure there is no uncontrolled release from the ship (for health and safety as well as fumigation efficacy reasons). Given the logistical requirements of the port, fumigation activities are one of the

[28] Ibid, para 25.

last tasks to be completed prior to vessels leaving, meaning that they generally depart within hours of fumigation being completed.

129. The officers noted that there have been previous incidents (such as mechanical issues) that mean ships under fumigation have been unable to complete their departure. In such cases, the vessels have anchored offshore and ventilated until the fumigation process is complete. However, the applicant's evidence is that for the vast majority of time, ships depart immediately following fumigation. The officers considered that a process to address this could be included in the Emergency Response Plan (**ERP**) that is required to be prepared (proposed condition 7.1). They also pointed out that proposed condition 3.7 relates to fumigations using cylinderised phosphine in ships holds and requires the inspection of the vessel for potential leakage points prior to fumigation commencing. Active monitoring is required to be undertaken to detect phosphine out to the MSZ boundary.

130. The officers further noted that the nature of the port environment means that worker access to the wharf immediately adjacent to ships is tightly controlled and consequently, there is a low probability of workers being located in proximity for a period of time. Similarly, with regard to members of the public being in proximity to fumigated vessels on the Tauranga harbour, the busy nature of the port environment and the BOPRC bylaw requirement to remain 50 metres from vessels generally ensures that members of the public do not congregate in the vicinity of fumigated vessels for extended periods of time. They concluded that these factors are important in determining the potential risk to human health from the proposed activity.

131. The controls for the application of phosphine using ALP tablets differ to those for cylinderised phosphine. The officers noted that in particular, the requirements for leak detection (condition 3.6) and monitoring at the MSZ (conditions 5.1 and 5.2) do not apply. This is because the ALP tablets are activated by exposure to air and humidity once they are placed in the ship hold. Genera's evidence is that they are typically introduced into ship holds within about 4 hours of the ship's scheduled departure, so that under normal circumstances there should be no appreciable release of phosphine until the ship has left port.

132. Mr Frentz stated[29] that, following the application of the ALP blankets or cylinderised phosphine, the ship's hold is closed up and certified as being suitably gastight with additional checks on areas of occupation around the ship. There is a person on board monitoring for, and managing, any issues. He considered that, should there be a problem, it would be managed in real time. Mr Frentz observed that restricting vessel departure times is unnecessary given the low probability of there being a problem and the effectiveness of current controls as evidenced by around 20 years of this activity at several ports around the country.

133. We considered the option of imposing a time limit for ship departure following fumigation, to further reduce any potential effects associated with phosphine leakage. The response from the parties was that such a control would not be practical and would be legally problematic given the movement of ships is not controlled by Genera. We accept that advice.

134. We have considered all the evidence on this issue, including the substantial amount of updated information provided by the applicant's experts and the Council officers and peer reviewers at the September reconvened hearing. On balance, we are satisfied that the various controls now required by the proposed conditions of consent are sufficient to ensure that the risk of adverse effects associated with phosphine release from ships is adequately mitigated.

Fire Risk Associated with ALP

135. The BOPRC Technical Review questioned the fire risk associated with the application of phosphine, in particular increased risk associated with the use of ALP. During the June hearing, Mr Weiss stated that he continued to hold concerns about the use of ALP. He noted that a previous fire incident had occurred at POT.

136. During the June hearing we questioned Mr Baker regarding the risk of fire with ALP use and the previous incidents that occurred at the port. He stated that there was an ALP flask that had a minor flare in June 2021 that was addressed so that a fire did not result. Mr Baker also stated that in 2020 some ALP residue was left in a drum which built up and caused a

[29] Further evidence of Keith Frentz for Genera at the September reconvened hearing, para 70.

minor flare. He regarded these fire incidents as minor. It was noted that this issue would be covered in the ERP that is reviewed by FENZ.

137. In response to our directions in Minute 3, the BOPRC officers and peer reviewers advised that the applicant has provided information on the management of hazardous substances and the associated risks, including the storage and operation under the various pieces of legislation. They noted that proposed condition 7.1 requires provision of an ERP to BOPRC for feedback annually. The officers considered that the development of a revised ERP is appropriate to manage the risks associated with the handling and operation of these materials.

138. Having considered the evidence provide by Mr Baker, the BOPRC officers and peer reviewers, we find that the risk of fire associated with ALP use could be adequately managed through the ERP.

Conclusion Regarding Effects of Phosphine

139. The EPA controls on phosphine fumigation and ventilation are less robust than the controls for the other fumigants, reflecting to some extent the timing of the original EPA decisions. Additional controls have now been proposed by the applicant as conditions of consent, to the extent that we are satisfied that the phosphine discharge is not expected to cause any significant adverse effects. Boundary setback distances are included, along with a requirement for further monitoring investigations to confirm that these distances are appropriate. For phosphine, we consider that the requirement for active monitoring at the MSZ (conditions 5.1 and 6.1), with adjustment of the MSZ to meet specified trigger levels, is critical to ensuring that the health of port workers and the public is appropriately protected.

Matters Relevant to all Fumigants

Appropriate Consent Holder

140. Some submitters suggested that the consent sought would be more appropriately held by POT. Mr Kneebone for POT considered that it would be more appropriate for the party undertaking the fumigation activity to obtain consent. We are aware that discharge permits

are commonly granted in circumstances where the applicant is not the owner of the property where the activity occurs. We are not aware of any legal reason why Genera could not be the consent holder in this case.

Need for Controls in Addition to EPA Requirements

141. We have discussed this issue in detail in our evaluation of the effects of MB. For the reasons stated therein, we determine that conditions additional to the EPA requirements for each fumigant can be imposed where there is sound reason to do so. We agree with the applicant that for reasons of efficiency it is appropriate that conditions of any consent generally align with the EPA controls, where these are deemed sufficient to meet the requirements of the RMA. However, we find that there is no restriction on the application of additional controls and monitoring under a discharge permit to ensure that effects on the local community and port workers are adequately mitigated and monitored.

142. Our finding is that effects of the discharge on port workers can and should be taken into account in our decision. Accordingly, we intend to impose conditions that require monitoring at the MSZ to determine that the WES can be achieved beyond this area. Monitoring for MB using FTIR will also be required at Whareroa Marae and Blake Park to provide accurate information to submitters regarding compliance with boundary concentration limits. We note that the applicant has substantially amended the proposed conditions during the hearing process, to the point that the conditions we intend to impose involve relatively minor amendments to the proposal. The most significant amendment to the proposal is the requirement for video monitoring of the log fumigation area, which we determine is necessary to meet the requirements of the RMA and provide for appropriate monitoring.

Cumulative Effects of Simultaneous Discharges of Different Fumigants

143. Mr Cressey provided comment[30] on potential effects of simultaneous fumigations with combinations of MB, phosphine and EDN. He stated that cumulative effects are generally considered when exposure is to multiple chemicals sharing the same mode of action. His opinion was that there is currently no evidence that MB, phosphine and EDN have the same mode of action and substantial evidence that the fumigants act by quite different modes of

[30] Evidence in chief of Peter Cressey for Genera, para 48.

action. On this basis, Mr Cressey considered that the controls separately applied to each fumigant should be sufficient for the protection of public health. His opinion on this issue was not disputed by the T&T peer reviewers or other air quality experts.

144. We accept the expert evidence of Mr Cressey on this matter and find that the simultaneous discharge of the different fumigants is unlikely to cause adverse cumulative effects.

Effects on Cultural Values

145. We acknowledge the whakapapa of Ngai Te Rangi Tauranga moana (the sea) and Tauranga whenua (the land). This is what defines them and to which they are inextricably bound.[31] They have responsibilities as Kaitiaki and retain control and ownership over their Taonga.[32]

146. We also acknowledge that over the years there have been significant impacts by developments within their Rohe, in particular the Port of Tauranga. Ms Bennett stated that *"Sixty plus years ago is more than long enough for any community to put up with being denied their basic human rights to breath clean air, to collect and eat kaimoana safely, to simply live as Maori undisrupted on their traditional lands. The Whareroa community have been patient for longer than any other community impacted by the activities of the industries surrounding them. They have put up with unsafe substandard living conditions for long enough. They have witnessed the desecration of their natural world for long enough. This intergenerational harm and trauma have left a permanent scar. Naturally, it is imprinted in their hinengaro and wairua. It is time they were honoured by the people and businesses of this region for the sacrifices they have made for the region"[33].*

Summary of Issues

147. Written submissions were received from a number of Iwi/Mana Whenua, the majority of whom were members of Whareroa Marae including the Whareroa Kohanga Reo. All opposed the application.

148. Common themes were:

[31] Submission of Pia Bennet on behalf of Te Runanga o Ngai Te Rangi, paras 2.6 and 2.7.
[32] Ibid, paras 2.8 and 2.9.
[33] Ibid, para 4.9.

- Adverse effects on the health of the marae whanau, in particular the tamariki and kaumatua (as well as the wider Mount Maunganui and Tauranga community).
- Impact on seafood gathering and other cultural practices.
- The discharge prevents mana whenua from practicing Kaitiakitanga and Manakitanga by placing manuhiri at risk.
- The history of non compliance operations of the applicant in relation to resource consents.
- The health and safety of port workers .
- That there has been a cessation of the use of MB in other NZ ports and globally due to the effects on the ozone layer.

149. Three mana whenua submitters presented to the panel. Awhina Kimi Pua Ngatauere and Joel Ngatauere in their own right and on behalf of Whareroa Marae, and Pia Bennet on behalf of Ngai Te Rangi. They opposed the application on the same grounds as other submitters with an emphasis on the harmful impacts of MB.

150. The submitters raised with the panel their complete opposition to the use of MB, reiterating the harmful impact on the whanau and the environment. They noted the continuing exposure to Iwi, Hapu and whanau over many years despite their opposition to the use of MB. Pia Bennet told the panel "enough is enough," referring to the application and the wider context of development on their tribal estate.

Consultation

151. We note the applicant's assessment and evidence recorded engagement with Iwi prior to the lodgment of the application through a core liaison group. This engagement is ongoing. The application states that:

"A core liaison group (CLG) was established to develop a collaborative working arrangement between identified stakeholders and to lay the foundation for a long term, enduring relationship with Genera. The CLG would help provide input into the application. The following parties are current members of the CLG:

- *Ngāti Kuku Hapū Trust.*
- *Ngāi Tukairangi Hapū Trust.*
- *Te Runanga O Ngāi Te Rangi Iwi Trust.*
- *Ngāti Ranginui Iwi Society Incorporated.*
- *Ngāti Pūkenga Ki Tauranga Trust.*

The CLG's establishment reflects the results of two workshops held on 22nd February and 22nd March 2019 that involved representatives of each of the parties. The workshops discussed the background to Genera's operation and the pending resource consent applications and explored a possible working approach between the parties that would

result in a 'meaningful relationship'. The immediate focus of the CLG is the collective consideration and development of the application for the discharge of fumigants to air from Genera operations at the Port, in other words "the Port consent". The CLG had numerous meetings together including a visit to the Whareroa Marae."

152. Mitigation and notification were agreed on terms that Whareroa Marae will inform Genera of any activity on the Marae and Genera will inform the Marae when a ship hold fumigation is to take place. With the amended application such notification requirements have been addressed.

153. Mr Ngatuere submitted that engagement with Genera had been token and in fact he considered the notification process was abusive of Marae Kaumātua. Ms Bennet noted the absence of a cultural impact assessment which could be addressed through referring to the Maori Values Assessment. The Ngai Te Rangi submission distances itself from the CLG, stating the assessment by the applicant is an "over reach".

154. Whareroa Marae suggested conditions if the application was granted.

Assessment of Cultural Effects

155. The cultural issues are seen within the history of the Marae and mana whenua; *"Whareroa Marae has been present for around 150 years making it one of the oldest Kainga in the area. The marae and whanau were definitely occupying their traditional lands well before the industries around them sprung up."* The key issues are:

- The potential for adverse effects on the mauri, or life-giving force, of the air and the consequential effects on the health[34]of tangata whenua in the vicinity of the discharge.
- The potential for adverse effects on the use of the area around the discharge (including Te Awanui) for culturally important activities.
- The cumulative effects on cultural and traditional practices.
- The exercise of Kaitiaki to protect the mauri of their taonga is compromised.
- The adverse impacts on the health of whanau and manuhiri.
- "The whole of Te Awanui (Tauranga Harbour) is recognised as an area of significant cultural value."[35]
- The traditional associations of Ngai Te Rangi with their ancestral lands and other Taonga.
- The cultural effects upon mauri of whanau, hapu, taonga and traditions.

[34] Submission of Pia Bennet on behalf of Te Runanga o Ngai Te Rangi, para 2.8.
[35] Ibid paragraph 4.25

- Hauora effects on tinana, wairua, hinengaro, from a Maori perspective.
- The effects upon irirangi and Atua Maori.
- The cultural effects upon paparanga haora.

156. No further or additional evidence on cultural matters was provided by the submitters who appeared at the hearing. We note Ngai Te Rangi's view that decision makers expecting iwi to provide such evidence by way of submissions is unfair and that the absence of a cutural effects assessment has implications for affected iwi, hapu and whanau[36].

157. We have already recognised the undisputed relationship Iwi, Hapu, marae and whanau have with their lands, waters and taonga. We acknowledge that mana whenua have been alienated from their tribal estate through developments, significantly the Port of Tauranga, over many years and that the cumulative effect of development continues to take its toll. We note the mana whenua position that they retain Rangatiratanga over all their taonga.

158. We have made our assessment based on the significant amendments to the application but recognise there is no avoidance of negative effects on cultural matters.

159. In assessing cultural effects we have had regard to the objectives and policies of relevant planning instruments, including the Iwi Management Plans. We have taken on board the submissions of Mana Whenua. We accept that the cultural effects of this application and other discharges in the port area are cumulatively more than minor given the history of significant cultural, physical, environmental, economic and social impacts on Iwi.

160. We accept Mana Whenua have a long and uninterrupted association with their Taonga. We accept those associations are recognised under Part 2 of the Act and should be recognised, given particular regard, and taken into account. We have taken into account the evidence and submissions made.

161. Our conclusions regarding cultural effects on Mana Whenua are found below at paragraphs 196 - 198 in relation to relevant objectives and policies. We arrive at the conclusion that with the changes to fumigation activities now proposed, and the conditions we intend to impose, the plan provisions relating to the interests of tangata whenua are given due regard. In stating that, we find that monitoring of the effects of the fumigation discharges should be improved, and we will specifically require monitoring for MB near the Marae area as a condition of resource consent. We expect that this will provide greater certainty to submitters regarding the assessment of effects.

[36] Ibid paragraph 4.47

Positive Effects

162. The fumigation of cargo both being exported and brought into NZ is an essential part of border security to ensure that unwanted pests do not enter and become established in this country or indeed in any other country.

163. China accounts for the bulk of log exports and requires that all log exports from NZ are either debarked or treated (fumigated) with MB or phosphine. Fumigation then becomes a key activity at the Port of Tauranga because some 31% of the total volume of log exports from NZ is through Tauranga. Phosphine is an alternative fumigation treatment to MB, but it cannot be used on top-stowed logs to China. Treatment using phosphine takes some 10 days and is therefore carried out while the vessel is at sea. That then means approximately one-third of the logs on any vessel, those being top-stowed, need to be treated with MB or an approved alternative.

164. The proposal will see an improvement to managing the potential adverse effects from fumigation activities, including ensuring a greater percentage of MB is recaptured following fumigation by treatment with carbon which can then be recycled or destroyed. This reduction in MB emissions is coupled with improved monitoring to ensure that the proposed mitigations are effective at managing the potential adverse effects.

165. Similarly, the proposed controls associated with phosphine and EDN are intended to ensure that the areas being used for fumigation are isolated, non-fumigation workers are protected through the imposition of a boundary setback and MSZ, and the discharge of remaining fumigant will not adversely affect the public. The conditions we impose will require the areas to be used for fumigation to be clearly identified and to be actively monitored at the boundary of the MSZ.

166. The evidence from various parties was that historically fumigation activities were not always well controlled, particularly when large volumes of MB were used for log stack and ship hold fumigations without recapture. However, the applicant's evidence is that the recapture rate for MB has substantially improved in recent years. The current practice, and that required

by the MB reassessment decision[37] of the EPA to meet the proposed setbacks, is for recapture of 90% of MB. The evidence for the applicant is that this recapture rate is being achieved[38]. The additional controls we impose as part of this resource consent will serve to ensure that this percentage rate for recapture is achieved.

167. The conditions of resource consent will also include on-site monitoring cameras covering the area used for log fumigation under tarpaulins. The evidence from the Council's Compliance Monitoring Officer Mr Ede, in reply to questions at the hearing, was that visits to date by Council officers to inspect fumigation activities have been infrequent, being stated as "two or three times a year". That we find, is not sufficient to monitor the fumigation activities being carried out. More regular site visits, supplemented by video monitoring, will provide a substantial improvement in the Council's monitoring of the activity which will assist public confidence that the activity is being carried out as proposed with appropriate controls.

168. We recognise that without the ability to use these fumigants, there would be a significant adverse effect on the timber industry including through loss of employment throughout the supply chain from planting to harvesting to export. Further, any proposal to impose conditions on a grant of resource consent that are not commercially achievable would result in an adverse effect associated with not being able to maintain the commercial viability of the fumigation activity at the port. That was demonstrated in the economic evidence from Mr Murray for the applicant. We agree that conditions could potentially limit the fumigation activity, but we do find that this is an activity that requires detailed conditions in order for it to operate in a manner that addresses public safety and the safety of workers at the port area. In this respect, we have been realistic in our approach to the conditions we have imposed. We note too that the positive effects of the proposal also include the reduction in discharges of MB to the atmosphere as a result of the approval of the use of other fumigants such as phosphine and EDN.

169. More particularly, the current consent decision and associated conditions, provide for a greater range of controls to be imposed, all in the interests of improved management of the fumigation activities at the port.

[37] Environmental Protection Agency decision HSR001635 dated August 2021.
[38] Evidence of Robbie Ramlose, paragraph 23.

170. In all these respects, it is recognised that fumigation activities associated with biosecurity and export are essential for NZ and the ability to carry them out, in a well-managed and cost effective manner, is essential to ensuring any adverse effects are suitably controlled. We are satisfied that the ability to carry out the proposed fumigation activities at the port represents a significant positive effect of the proposal.

171. In conclusion, we recognise that there are significant economic benefits associated with ongoing fumigation operations at the port. We have taken these positive effects into account in evaluating the proposal under section 104(1) of the Act.

Section 104(1)(b) RMA National Environmental Standards

172. The National Environmental Standards for Air Quality (**NESAQ**) include regulations applicable to the processing of resource consents. We accept that the limitations specified in the NESAQ are unlikely to be breached by the discharges and find that the NESAQ does not prevent granting of consent in this case.

Section 104(1)(b) RMA Relevant Objectives and Policies

173. The Regional Natural Resources Plan (**RNRP**) is of relevance to the consideration of this application. We discuss the RNRP below, particularly with reference to the associated Plan Change 13 (**PC13**), that being titled "Air quality". PC13 replaces the Regional Air Quality Plan and aims to protect and improve air quality by setting rules for those who discharge into the air. Mr Greaves confirmed in the s42A Report that Council's decisions on submissions to PC13 were released on 12 March 2019 and that ten appeals had been lodged with the Environment Court. No appeals were lodged against the rules that are relevant to the discharge to air of fumigants. Consequently, PC13 has been made partially operative and incorporated into the RNRP. It is the planning document of particular relevance to the consideration of the application.

174. We note that the relevant provisions of the RNRP relate to both air quality and cultural considerations. Part of our consideration of the application is assessing whether these respective provisions can co-exist with each other.

175. We note too, that the classification of the proposal as a discretionary activity relies on effective recapture being achieved for all MB fumigation activities. Effective recapture is defined in the RNRP as including the fumigant being reduced by 80% prior to ventilation of the fumigation enclosure. The discharge of other fumigants (particularly phosphine and EDN) does not require recapture and thus the use of these also fall for consideration as discretionary activities. In these respects, overall, the application is considered as a discretionary activity.

176. An appraisal of the objectives and policies of the RNRP was provided by Mr Greaves in the s42A Report on the application. That appraisal includes reference to the relevant air quality provisions that seek to:

- Protect air and human health from adverse effects of anthropogenic contaminant discharges.
- Sustainably manage air discharges of contaminants to air according to their adverse effects.
- Avoid adverse effects from discharges of hazardous substances and hazardous air pollutants to air and where avoidance is not practicable, to remedy or mitigate the effects of the discharge using the best practicable option.
- Manage activities that discharge contaminants to air, including by the use of the best practicable option.
- Have particular regard to matters, that are listed, when considering the acceptability of any discharge of contaminants to air, these matters including the proximity to sensitive areas; adverse effects on air quality values identified in the relevant iwi and hapu resource management plans; cumulative effects; and the nature of the background receiving environment.
- Protect human health and the environment from adverse effects from the use of fumigants for quarantine application or pre-shipment application by enforcing the use of the best practicable option for the use of the fumigant, including via the use of effective recapture; ensuring compliance with relevant exposure levels and management regime set by the EPA to protect human health; and having particular regard to protecting the health of persons in sensitive areas from fumigant exposure.

177. The last-mentioned policy AIR-FUME-P6, introduced through PC13, directly addresses fumigation for quarantine or pre-shipment application. It was the evidence of Mr Frentz for the applicant that the proposal gives effect to this policy by:

- *"Undertaking effective recapture of MB in accordance with the controls of the EPA's decision HSR001635 and undertaking fumigation using PH_3 and EDN in accordance with the controls of the EPA's decisions HSR007629, HSR001632, HSR001636 and HSR101529.*

- *Undertaking monitoring and adapting the discharge methodology to ensure the rate of discharge meets the relevant exposure levels and to manage the health risk to workers and bystanders in accordance with those levels (AIR-FUME-P6(3)).”*

178. AIR-FUME-P6 is specifically directed at protecting human health and the environment from adverse effects from using fumigants for quarantine application or pre-shipment application. That includes enforcing the best practicable option for use of the fumigant, including via the use of effective recapture; ensuring compliance with the relevant exposure levels and management regime set by the EPA to protect human health; and having particular regard to protecting the health of persons in sensitive areas from fumigant exposure.

179. The manner in which Genera operates at the port and works to meet the above was described in the evidence of Mr Baker, the Health, Safety and Compliance Manager who was present for the whole of the hearing and able to respond to our questions that arose during the hearing process. He described the manner in which the fumigation activity was carried out to ensure the applicant’s activities are safe and in accordance with the controls and regulations that are relevant to the activities it carries out at the port. That includes recording all fumigation events, monitoring, and providing monitoring reports which demonstrate that the requirements of the EPA controls are met. He stated that as a result of the EPA’s decision HSR001635 reassessing MB controls there had been a ten-fold reduction in the volume of MB discharged to air. He stated that with the proposed consent conditions and the controls already in place, Genera currently complies with, or exceeds, the standards specified by the EPA.

180. Policy AIR-FUME-P6 in the RNRP seeks to enforce the use of the best practicable option for the use of the fumigant. This matter was addressed by Mr Frentz in evidence. He described de-barking as the main non-chemical alternative and the limitations applying to it in terms of available capacity in NZ; the need for further treatment if inspection after de-barking and prior to export found insects; and noted it was not accepted by all export markets. Other chemical treatment options include the use of EDN and Mr Frentz noted that since the application was lodged it had been approved for use in NZ by the EPA under HSNO. Its use however would require the NZ Government to negotiate agreement with NZ’s trading partners that EDN is an appropriate treatment fumigant, noting that China and India have not yet approved it as a treatment for export logs.

181. In respect of recapture, Mr Frentz explained this was only used for MB fumigations because MB is an ozone depleting gas. Further, he noted that all recapturing now uses carbon medium. Mr Frentz stated that Genera is committed to using recapture technology that achieves the requirements of EPA decision HSR001635 but there remains the issue of disposing of carbon medium saturated with MB in a sustainable manner. His conclusion was that the work of Genera and the EPA decision HSR001635

had seen a significant reduction in the quantity of MB used in the POT and nationally and that, while efforts are being made to reduce the amount of MB being used, it is likely to continue for at least another 10 years. Mr Frentz stated that by that time, the practice of recapturing and destroying MB from the saturated carbon medium is expected to eliminate the discharge of 99% of MB applied during fumigation.

182. In all of these respects we find that the best practicable option is being implemented by the applicant but that continuing research into and development of alternatives to MB as a fumigant supports, along with other considerations, a limited duration for the current consent sought by the applicant.

183. In turn, Mr Cressey addressed health considerations as part of this plan policy. He specifically addressed the effects of discharges on human health arising from MB, EDN and phosphine. His detailed evidence led him to the conclusion that the proposed consent conditions from the applicant were appropriate for the protection of public health. Those consent conditions had been informed by conferencing and he stated that the conditions were appropriate for the protection of public health from exposures associated with fumigation activities at the port.

184. We heard from submitters with concerns for human health and the effects of the fumigation activities. We do however find that some of the concerns were unfounded in the light of the more recent changes to the operation of fumigation activities at the port. Having said that, we find that submitters have reasons for concern given the evidence that past practices at the port were not always to a standard that we would expect from the use of highly toxic fumigants such as MB. There is now an opportunity to impose conditions that ensure compliance with controls largely agreed with the EPA and to ensure a greater degree of monitoring that is commensurate with the scale and significance of the discharges. The monitoring regime included in the conditions is particularly important in confirming that fumigation practice is in accordance with the proposal. We impose such conditions accordingly as part of granting consent.

185. As we state above, there are specific provisions in the NRRP in relation to cultural considerations. Under the header of Kaitiakitanga, the objectives and policies include:

KT 03 Consultation with tangata whenua that recognise their societal structures, practices, protocols, and procedures, and status under the Act.

KT P1 To recognise that tangata whenua, as indigenous peoples, have rights protected by the Treaty of Waitangi (Te Tiriti o Waitangi) and that consequently the Act accords Maori a status distinct from that of interest groups and members of the public.

KT P5 To ensure that resource management issues of concern to tangata whenua are taken into account and addressed, where these concerns are relevant and within the functions of the Regional Council.

KT P17 To:

(a) Take into account iwi resource management planning documents, when preparing or changing a regional plan, where such documents exist.
(b) Have regard to iwi resource management planning documents when considering resource consent applications, where such documents exist.

186. We received and heard strongly expressed submissions from Ms Awhina Ngatuere and Mr Joel Ngatuere for the Whareroa Marae and from Ms Pia Bennett for Te Runanga o Ngai Te Rangi in relation to concerns by mana whenua about fumigation activities at the port and to the proposal.

187. Their concerns included the proximity of industrial activities to them and the over spill of the use of chemicals at the port; the long and continued period of the associated effects; the uncertainty of the increased controls proposed in the application; and the less than effective consultation that had occurred.

188. We find these concerns are well founded and given the long-standing nature of the effects of concern occurring, that the applicant could have been expected to have arrived at the hearing having had closer and more effective conference with mana whenua. Too often with resource management matters, applicants are too quick to identify some agreement and move ahead on that basis without ensuring there is fuller support from mana whenua. It should be acknowledged too, that consultation with mana whenua is an on-going process. Given all that we heard, and particularly the proposed improved operational practices, it may well have been that closer agreement could have been achieved rather than mana whenua representatives needing to appear at a resource management hearing to further present their concerns.

189. We do arrive at the conclusion that with the changes to fumigation activities proposed in the application, that the plan provisions relating to the interests of tangata whenua above are given due regard. In stating that, we do find that monitoring of the effects of discharges to air from the activities at the port could be, and should be, improved with monitoring for MB undertaken at an agreed point near the Marae area as a condition of consent. The evidence and submissions are conflicting regarding the effects at this location and although we find any effects at this location are likely to be acceptable, on the evidence, we do find that such monitoring would assist the parties by confirming the assessment.

190. We acknowledge all we heard from mana whenua, and that they would seek more from this decision. However, we are satisfied we have given their concerns due regard, as discussed elsewhere in this decision, and that we have acted in a manner consistent with the above plan provisions. We again highlight the need for effective consultation to occur outside the resource management process without needing mana whenua to appear at hearings. KT P1 above relates and refers to the Act according *"Maori a status distinct from that of interest groups and members of the public"* which we see as providing for conference with Iwi and specific to their interests where these can be wider ranging than environmental effects.

191. In discussing the plan provisions, we record here that we heard from TMFAG, represented by Ms Smith, Mr Sharp and Ms Barry-Piceno and from Ms Jones for Clear the Air. Their concerns were representative of the concerns of the wider community and focussed on MB discharges, and we note the helpful nature of their submissions and evidence. We find that their concerns are largely met with the improved fumigation practices proposed, but that should be confirmed through the conditions we intend to impose.

192. The appropriate duration of consent, whether that be the 5 years requested by some submitters, or the longer period of 10 years sought by the applicant, will be evaluated later in our decision. TMFAG members were of the view that the former period is appropriate for reasons including the availability of new technologies and MB being an ozone depleting toxin used in close proximity to a public area.

193. Then, as we note above, we need to make an assessment of whether these respective provisions relating to air quality and to Kaitiakitanga can co-exist with each other. We find that they can, but our finding relies heavily on the fumigation activities at the port being carried out in a closely managed manner, consistent with current best practice and in accordance with the conditions of consent we intend to impose.

194. In terms of all of the above, it is our finding that the proposal is consistent with the objectives and policies of the RNRP, noting our ability to impose conditions of consent in this respect.

195. The relevant plans for consideration include the relevant Iwi planning documents which were identified in the s42A Report and in the AEE as the Tauranga Moana Iwi Management Plan 2016-2026 (**TMIMP**) and the Ngai Tukairangi and Ngati Tapu Joint Iwi Management Plan 2014 (**JIMP**). The TMIMP is a joint environmental plan for Ngati Ranginui, Ngai Te Rangi and Ngati Pukenga that specifically addresses fumigation activities with associated policies that we quote below, given their specificity to the application and its associated effects.

Policies

4. *For the health of the environment, the community and the staff involved in fumigation processes, to prohibit the use of methyl bromide.*
5. *In the event that methyl bromide is used at the Port of Tauranga, this must be managed in such a way that harmful chemicals are at no time released into the air or the harbour and must have an approved handler.*
6. *That an Emergency Procedures Plan and a Safe Practice Plan is required and followed for any use of methyl bromide.*
7. *Stringent monitoring of the use of methyl bromide must be applied to prevent any occurrences of harmful chemical releases into Te Awanui.*

196. We note the specificity of these plan provisions. Insofar as the proposal includes measures to better manage the use of MB and other fumigants, it can reasonably be concluded that it is consistent with the TMIMP. These measures include use of the recapture technology for MB; setback distances to the port boundary and exclusion zones during fumigation and ventilation events; notification to the Whareroa Marae of fumigation events; and comprehensive monitoring; all of which are directed to managing the use of fumigants in a manner that would provide for their continued use under more stringent controls than have occurred in the past.

197. As explained in the s42A Report, the JIMP does not directly address fumigation activities. However, as the resource management plan of Ngai Tukairangi and Ngai Tapu it provides information on the important values of these groups and of areas of significance. The JIMP highlights the importance of Te Awanui and of the Whareroa Marae, both of which are in proximity to the port activities. There are measures included in the proposal that address these areas of importance and potential concerns. These include the separation of fumigation activities from sensitive areas.

198. In these respects, regard has been given to the Iwi management plans and measures included in the application to address them. We are left in no doubt that the concerns expressed in submissions, and at the hearing, by mana whenua and by the wider community have led to an improved approach being adopted by the applicant, particularly with regard to effects of the proposal.

199. The other plans of relevance are the New Zealand Coastal Policy Statement (**NZCPS**), the NES for Air Quality (**NESAQ**) and the RPS. The NZCPS recognises that there are activities that have a functional need to locate in the Coastal Marine Area and further, that it is essential that as NZ's largest export port that POT can be operated efficiently and safely. With respect to the proposal, the logistics of exporting logs requires the fumigation to take place as close as possible to the embarking ship and there is a limited time after fumigation that the logs need to be despatched. These factors do work against the fumigation being undertaken at a distant location.

200. The RPS has a range of provisions that include managing the effects of discharges; providing for ports; dealing with biosecurity risks to indigenous habitats and ecosystems and, as above, Kaitiakitanga. These were all addressed in the evidence for the applicant along with the NESAQ, noting that the more specific provisions of the RNRP have been discussed above.

201. We have had regard to all the evidence provided in relation to the relevant objectives and policies of the various plans in our consideration of the application. We find that the proposal is consistent with these objectives and policies, that finding relying on the fumigation activity being carried out in accordance with the details in the application and in compliance with the associated conditions we intend to apply to the granting of resource consent.

Section 105(1) RMA Consideration of Alternatives

202. The discharges associated with the proposal means we are required to consider alternatives to the proposed discharge. This consideration is reinforced by Policy AIR-FUME-P6 in the RNRP which seeks to enforce the use of the best practicable option for the use of fumigants.

203. The applicant and Mr Greaves have appropriately addressed section 105 matters. We record that we have had regard to the nature of the discharge and sensitivity of the receiving environment, the applicant's reasons for the proposed choice, and possible alternative methods of discharge in reaching our decision.

204. Mr Baker explained the importance of maintaining a secure "biosecurity pathway" in terms of considering off-site fumigation options. He noted that MPI imposes a time limit between log fumigation and loading on ships of 48 hours in summer and 7 days in winter. We accept that these matters, alongside stresses on the transportation network, would contribute to practical difficulties associated with large scale fumigation in a dedicated off-site facility. We also accept the submissions of Matariki Forests and others that such a facility would result in a significant increase to costs that would be borne by the log exporter.

205. One possible alternative is developing an enclosed fumigation facility on site, particularly for logs. This option was noted in the *Envirofume* decision and would reduce or eliminate the risks associated with tarpaulin use for log fumigation. However, we accept that there are clear practical issues associated with establishing a very large building or enclosure on

a fixed site on land owned by POT. Phytos submitted that they investigated the option of an enclosed facility but found that identifying a suitable location is difficult and the scale would need to be substantial to accommodate logs destined for 3-4 ships. We accept that the size of such a facility would be very large, requiring significant capital funding and long-term certainty for investment.

206. De-barking is an alternative that was discussed in some detail by submitters. A substantial proportion of logs are already being de-barked prior to export and this has significantly reduced MB emissions. However, Genera expressed concern that there is significant risk that countries such as China could cease accepting de-barked logs due to detected insect incursions. The evidence is that not all logs are suitable for de-barking because they are not uniform and cylindrical in shape. We note the submission from ISO regarding de-barking capability, but also are conscious of the concern of the Forest Owners Association regarding the cost constraints of this option.

207. Alternative fumigants to MB are being employed and indeed two currently viable alternatives are included in the application. We accept that there are constraints on the use of specific fumigants for certain QPS purposes and in relation to the requirements of trading partners. The evidence is that there has been a large reduction in MB use at the POT to date, driven by the 2021 EPA MB Reassessment decision that banned MB fumigation of logs in ship holds and required MB recapture. The submission from MPI noted that EDN has potential to replace approximately 90% of current MB use.

208. Submitters in support, including Phytos and MPI, emphasised that a full "basket of tools" is required to provide flexibility for biosecurity control. They expressed concern that loss of fumigation as a QPS option would be catastrophic.

209. We also note that we discuss the alternatives in the section of this decision which addresses the relevant objectives and policies of the statutory plans. In that respect we address de-barking as the main non-chemical alternative; other chemical treatment options including the use of EDN; and the recapture of MB. That discussion, based on the evidence we received, leads us to the conclusion that the best practicable option or alternative is being implemented by the applicant but that continuing research into alternatives to MB as a fumigant is likely to provide the opportunity for it to be replaced in time. We observe that the applicant has been able to recently achieve a significant reduction in the amount of MB released following fumigation.

210. We are satisfied on the evidence that the proposed methods of discharge and treatment are appropriate, having regard to the options available at this time.

Part 2 of the Act

211. We agree with Mr Greaves when he states in the s42A Report that the matters listed in Part 2 of relevance to the application have been given regard in the NRRP and the RPS. Given his view that the proposal is consistent with the policy direction in those documents, he did not consider it necessary to refer to Part 2 matters, in accordance with the Court of Appeal decision in *RJ Davidson*.[39]

212. We find no reasons to conclude that the regional planning documents have been prepared in any less than a competent manner, nor that there is any need to give further consideration to the application in accordance with Part 2 of the Act.

213. We nevertheless record our finding that granting the application would not be inconsistent with Part 2. A grant of consent would achieve the sustainable management purpose of the RMA and meet the associated principles. In these respects, we highlight that we have recognised and provided for the concerns of Maori and have had particular regard to the maintenance and enhancement of amenity values and of the quality of the environment.

Duration of Consent

214. The application seeks consent for a duration of 10 years. We note that the default period under the Act (section 125) is that consent lapses after 5 years if no term is specified.

215. Mr Frentz regarded a 10 year term as appropriate in that it would provide Genera with certainty while also providing for a review of consent conditions which could take account of any advances in treatment technologies that may occur. He stated that the requested duration also aligned closely with the recent EPA decisions authorising the use of MB and EDN in New Zealand.

[39] RJ Davidson family Trust v Marlborough District Council [2018] NZCA 316.

216. Submitters including KiwiRail and TMFAG sought a maximum duration of 5 years if consent was to be granted. They considered that, even if consent was granted with conditions to address the concerns of submitters, a shorter term of consent would be appropriate to recognise the nature of the highly toxic fumigants being used (particularly with regard to MB) and the possibility of alternatives becoming available sooner than 10 years hence.

217. Mr Greaves as the reporting officer for the Council agreed with the term sought by the applicant, noting that a duration of 10 years would provide certainty with regard to the continuation of business activities. He did not regard the duration as "long term". He noted it would likely require the fumigation activities to be reconsidered under new environmental legislation in due course.

218. We are conscious that this is an activity that requires close attention to the manner in which fumigation is managed. Comprehensive and relatively stringent consent conditions are applied accordingly. Many of the submitters pointed to the activity being managed in a less than effective manner in the past, highlighting the need for the applicant to demonstrate it can improve control so that the fumigant discharges do not cause adverse effects. We consider that has been demonstrated during the development of proposed conditions and the FMRP during the hearing process, and also during our visit the port where the fumigation, ventilation and recapture processes were explained.

219. We conclude that the conditions we now intend to impose will adequately address the concerns expressed by submitters whilst also providing for a review of those conditions should any adverse effects arise from the exercise of the consent, in accordance with section 128 of the Act. We also note that the applicant has proposed condition 5.12 requiring an independent expert review of the best practicable option for the fumigation management and monitoring systems, to be undertaken during years 4 and 9 after commencement of consent. We find that this condition is an appropriate means to address the rapid development of alternative options that is occurring, particularly in relation to the use of MB.

220. For these reasons, we find a 10 year duration of consent to be appropriate in all the circumstances.

Conditions of Consent

221. Much discussion occurred during the course of the hearing process regarding the proposed conditions of consent. Expert conferencing occurred between the applicant and the council officers and substantial further refinements to the proposal have been made in response to our questions and directions. At the conclusion of the hearing there was a large degree of agreement between Genera and the officers (including external peer reviewers) regarding the suggested conditions of consent.

222. Comments on the proposed conditions and draft FMRP have been received in writing from submitters prior to the reconvened September hearing. We have considered all that feedback in making our determination on conditions. The majority of matters in dispute regarding conditions have been discussed during our evaluation of effects. Our focus here is on matters not agreed between the parties and/or specific changes we intend to make to the final proposed conditions. We note that these changes are generally minor, with the exception of the requirement for video monitoring of the log fumigation area.

FMRP

The draft FMRP has been developed and amended in response to feedback from the officers and submitters. Further refinement is expected to incorporate the consent conditions we impose, prior to submission of the plan to BOPRC for certification. We have concluded that it is important that key fumigant trigger levels that would achieve the WES at the MSZ should be specified in the FMRP. This finding is consistent with the advice we received from Ms Simpson. Accordingly, the final clause of proposed condition 5.1 is amended to read: *"The monitoring criteria and occupational trigger values used to manage the boundary of the MSZ shall be set at concentrations that are calculated to achieve the current applicable workplace exposure standards and shall be documented in the Fumigation Monitoring and Reporting Plan (**FMRP**)".*

Leak Detection and Pressure Testing of Containers

223. This matter has been traversed in detail in evidence and the parties are now largely agreed on the form of proposed condition 3.6. We determine that this condition is appropriate subject to the following minor amendment: "*For all fumigation events, prior to fumigation*

the enclosure's suitability must be assessed with visible points of leakage remedied to prevent leakage before application commences."

Notification of PCBUs

224. Proposed condition 4.1 requires notification of PCBUs adjacent to scheduled fumigation activities. We accept the submission of KiwiRail that they should be specifically included as a party to be notified where they are working adjacent to a fumigation activity. Given the proximity of KiwiRail operations to the log fumigation areas, we determine that such notice specific to KiwiRail is appropriate and we amend the condition accordingly.

225. The applicant has also now proposed condition 4.1A. This condition is appropriate and will be imposed (renumbered as 4.2) subject to the following minor amendment: "*The Consent Holder shall take immediate action to protect nearby workers and to immediately notify affected PCBUs and the Bay of Plenty Regional Council when other workers in the vicinity of the fumigation event could be ~~potentially~~ exposed to potentially unsafe levels of fumigant that exceed the relevant workplace exposure standards.*

226. ***Boundary Concentrations Limits and Trigger Levels for EDN and Phosphine***

227. As discussed in detail during our evaluation of effects of EDN and phosphine, we determine that the following changes will be made to ensure that the relevant guidelines and triggers are sufficiently protective to prevent adverse health effects beyond the port boundary:

- A 24-hour average boundary limit for phosphine of 0.02ppm is added to condition 10.2;
- The 1-hour average boundary limit for EDN is reduced from 2ppm (suggested) to 1ppm in condition 11.4; and
- The corresponding EDN trigger limit in condition 6.1 is reduced from 20ppm to 10ppm.

Video Camera Monitoring of Log Fumigation Under Tarpaulins

228. We received considerable evidence from the applicant and BOPRC officers regarding the pros and cons of video surveillance of the log fumigation area. There are strongly divergent

views on this issue between the parties. We have considered this matter very carefully in light of our concerns regarding the risks associated with log fumigations under tarpaulins at POT.

229. Mr Baker stated that Genera has concerns regarding the cost of a fixed camera plus the initial and ongoing challenges of installing one, given that Genera neither owns nor leases land in the log yard where a camera would be installed. He stated that the cost of a mobile camera is even more expensive than a fixed camera given it must be able to cope with transport and operation in a marine and log yard environment, transportable and have a mobile power supply. Mr Baker noted that Genera obtained a quote[40] of $40,453.24 for one mobile camera, this excludes servicing, maintenance and video streaming.

230. Mr Baker's opinion is that the cost is *"grossly disproportionate to a physical inspection by BOPRC that can happen randomly and unannounced from a location similar to that of a camera"*. He added that given there is typically only one fumigation and ventilation event in the log yard per week at present, this negates the value of a camera. He observed that a view from a distance, whether by camera or in person, is insufficient to conduct a full compliance inspection and is therefore of limited value. Mr Baker also emphasised the concerns expressed by the forestry sector that additional controls would erode the efficiency of the export supply chain and add to the costs.

231. The BOPRC Compliance Officer, Mr Ede, and the other officers and peer reviewers[41] consider that the use of video monitoring equipment *"is an important tool to assist in managing the potential effects of the fumigation activities".* Mr Ede noted that, given the constraints of the port environment, the ability to remotely monitor the fumigation activities, as well as the ability to review activities following a reported incident, will greatly assist in monitoring and enforcement. He recognised that Council compliance staff are based on the port for the purpose of monitoring the various activities undertaken in the area. However, there are limitations on the ability of compliance staff to be present in multiple locations and the health and safety requirements associated with accessing some locations in the active wharf area are a further restriction. The BOPRC's view is that video monitoring is a practical tool assisting with the wider compliance requirements associated

[40] Further statement of evidence of David Baker for Genera dated 11 September 2023, para 47
[41] Memo to Commissioners Responding to Minute 6, dated 11 September 2023

with this resource consent. They noted that access to cameras as a requirement of a resource consent is not unique to this application.

232. The officers and peer reviewers recommended the following condition of consent[42]:

"x.1 Within six months of the commencement of this resource consent, the Consent Holder shall provide access for Bay of Plenty Regional Council to video monitoring of all log fumigation activities including applying the fumigant, recapturing and venting the log rows. At a minimum, the video monitoring shall meet the following criteria:

1. Ensure that coverage is provided to include all areas where log fumigation could be undertaken, as shown on BOPRC Consent Plan RM19-0663/01;

2. The video feed shall be accessible in real time and remote access shall be provided to Council's Compliance Officers at all times;

3. The video feed shall be time and date stamped;

4. Cameras shall be positioned so as to provide full coverage of the fumigation activities, including the MSZ exclusion area, to the satisfaction of the Bay of Plenty Regional Council;

5. To meet criteria 4, cameras shall be of appropriate number and quality/resolution to ensure that accurate observations of activities are able to occur, including identification of the presence of signage and staff movements;

6. The data/footage captured by this video monitoring shall be stored for a minimum of 3 months, and shall be made available to the Bay of Plenty Regional Council within 5 working days of a request.

Providing all the above criteria is met, video monitoring may be provided by either access to existing Port of Tauranga cameras, the erection of cameras on existing infrastructure, or mobile cameras that are not fixed to Port infrastructure.

Advice Note: The number of cameras provided will depend on their location and factors such as light glare and coverage.

x.2 The cameras must be maintained in good working order to the satisfaction of the Bay of Plenty Regional Council."

[42] Ibid.

233. We have noted that we are cognisant of the strong concerns expressed by several submitters regarding the risks associated with fumigation of logs under tarpaulins. This is a large volume source of high toxicity fumigant (whether it be MB, EDN or phosphine) and loss of integrity of the tarpaulin covering (caused by a high wind event resulting in tearing or removal of the cover, for example) has potential to result in significant adverse effects. Dispersion modelling for the EPA MB Reassessment indicated that separation from sensitive receptors in the order of 700m could be necessary in such a worst-case scenario, much greater than the boundary setbacks of up to 150m proposed that are based on 90% recapture. We find that it is therefore critical that comprehensive monitoring of this activity occurs using the suite of tools available.

234. We note that proposed condition 5.4 requires "periodic" visual inspections of the log rows under sheets to ensure that containment of the fumigant is maintained. This is insufficiently certain in our view and we determine that video monitoring of this activity, in addition to regular monitoring inspections, is a reasonable requirement if it was allowed to proceed. The process of fumigation of logs, recapture and ventilation is logistically complex and it is reasonable to assume that mishaps will occur at times. For example, during the site visit demonstration a large tear occurred as a tarpaulin was being hauled over a log stack. Significant care is required by the team undertaking the process. Our finding is that video monitoring would be of significant assistance to BOPRC in determining compliance with the proposed procedures and also identifying any significant issues that arise. It would also provide the public with certainty that the correct procedures are being followed during fumigation activity that provide protection to the public and port workers.

235. The evidence presented at the hearing was that monitoring undertaken by BOPRC of the conditions of the existing consent has been limited, for various reasons. We heard from Mr Ede that access issues to the port have contributed to the monitoring difficulties experienced by Council staff. Log fumigations occur within the port "red zone" that is a highly hazardous environment with restricted entry (prior authorisation from the relevant log marshalling company is required), making it difficult for BOPRC staff to undertake real time monitoring. Mr Ede further noted that the used of cameras would reduce health and safety risks for officers, with any exposure in the MSZ area being potentially risky. The BOPRC officers have stressed the importance of having access to live video camera footage of the fumigation areas as part of a package of tools to enable effective monitoring. We agree.

236. Mr Frentz contended that there is no clear "rational nexus" connecting the requirement for video monitoring to the discharge (which is not visible) in this case. We disagree. Such monitoring has a clear purpose in enabling constant assessment of the integrity of the tarpaulin covers and compliance with the operational procedures proposed. This is critical for the log fumigation activity under sheets. To be clear, we would not grant consent for this specific activity without video surveillance.

237. Our finding is that the condition proposed by the Council officers at the September reconvened hearing is reasonable and appropriate. The condition provides for a good degree of flexibility in choice of camera options to achieve the intended purpose. The costs indicated by Mr Baker appear high and no breakdown of the costings or supporting information was provided. Mr Ede noted that the stated costs do not align with the Council's own investigations. We note that it may be possible to use existing POT cameras, at least in part, to meet the condition. In any case, we do not consider the costs to be significant in light of the scale of the activity and the significance of the discharge, including the implications of failure of tarpaulin covers. The condition we intend to impose will require Genera to identify the area where log fumigations would be undertaken and establish video monitoring that provides full coverage of that area.

Fixed Monitoring of MB Beyond the Port Boundary

238. Some fixed FTIR monitoring of MB at sensitive receptors beyond the port boundary was suggested by the officers and agreed by Genera. The purpose of such fixed monitoring would be to confirm for submitters and local residents that MB concentrations are consistent with the applicant's assessment. Proposed conditions 5.15 – 5.16 require sampling for MB at or near Whareroa Marae and Blake Park over a 12 month period, starting within 6 months of commencement of consent. We consider that the form and intent of this condition is appropriate.

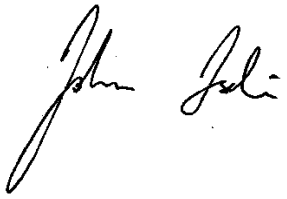
239. At the reconvened hearing, Mr Stacey for KiwiRail suggested that consideration could be given to monitoring at the KiwiRail site closer to the port, rather than Blake Park. Because of proximity of the discharge to the log area, he noted this site would be expected to detect higher off-site MB concentrations. We have considered this matter. Whilst we agree with Mr Stacey's point regarding proximity to the discharge, we find that the key purpose is to

detect MB at locations of concern to submitters where sensitive members of the public could be present. The comprehensive monitoring at the MSZ and port boundary required by other conditions is expected to confirm that the MB limits are met at the KiwiRail site. On this basis our finding is that the condition, as proposed, is suitable.

Decision

240. **For the above reasons, it is the decision of the Bay of Plenty Regional Council, pursuant to sections 104, 104B and 105, and subject to Part 2 of the Resource Management Act 1991, to grant the application by Genera Limited for Discharge Permit RM19-0663 to discharge contaminants into air, for a duration of 10 years and subject to the conditions attached.**

Dated this 5th day of October 2023



John Iseli (Chair)
Alan Watson
Shane Solomon
Hearing Commissioners