MARINE DISCHARGE CONSENT

OMV New Zealand Limited

Consent to discharge harmful substances from the Maari offshore facilities
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MARINE DISCHARGE CONSENT EEZ300004

Pursuant to section 87F(1) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) 2012 (the EEZ Act), the application for marine discharge consent by OMV New Zealand Limited to discharge harmful substances from the Floating Production Storage and Offloading facility, the Raroa, and the Wellhead Platform, Tiro Tiro Moana, within the Maari production field, Petroleum Mining Permit 38160 was granted on 24 April 2017, subject to conditions (listed in Schedule 2).

Pursuant to section 71(2) of the EEZ Act this marine discharge consent commenced on 26 July 2017.

On 28 March 2018, an amended consent was issued pursuant to section 84 of the EEZ Act correcting minor mistakes or defects.

On 26 April 2018, an amended consent was issued pursuant to section 87(1) of the EEZ Act to allow for the discharge of XC29548.

On 6 June 2018, an amended consent was issued pursuant to section 87(1) of the EEZ Act to allow for the discharge of Kinetic 311 and Nuosept 78.

On 2 August 2018, an amended consent was issued pursuant to section 87(1) of the EEZ Act to allow for the discharge of CRW29507, CGW29013, and CORR12685A.

On 22 November, an amended consent was issued pursuant to section 87(1) of the EEZ Act to allow for the discharge of T-803 Aqueous Solution, ACPC11340A, PARA11190A, and EMBR11720A.

On 12 April 2019, an amended consent was issued to correct three instances of misspelling of the product XC29548 under section 84 of the EEZ Act. To allow for the corrections to be made under section 84, a time waiver was issued under section 159 of the EEZ Act.

Marine discharge consent EEZ300004 expires on 1 December 2027.

Dated this 22 day of November 2018.

[Signature]

General Manager Climate, Land & Oceans

Environmental Protection Authority
SCHEDULE 1: AUTHORISED RESTRICTED ACTIVITIES

This marine discharge consent authorises the following activities that are restricted under section 20B of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012, subject to the conditions listed in Schedule 2.

The discharge of harmful substances described in regulation 4(a) and (b) from offshore processing drainage, displacement water, and production water from an existing structure - Regulation 16(3) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015.

The discharge of seawater used for operational purposes that is contaminated with oil from an existing floating production storage and offloading facility that exceeds 15 parts per million, without dilution – Regulation 18(3) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015.

The discharge of harmful substances from mining activities - Regulation 20 of the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015.
SCHEDULE 2: MARINE DISCHARGE CONSENT

CONDITIONS

DEFINITIONS

Terms used in this schedule have the following meanings:

ANZECC  Australia and New Zealand Environment and Conservation Council.

bbl  A standard United States barrel of oil. Conversion factors are as follows:

One US oil barrel = 158.987 litres

or

1 cubic metre = 6.2898 oil barrels

BTEX  The chemicals benzene, toluene, ethylbenzene and isomers of xylene.

Contaminant  Any physical, chemical, biological or radiological substance or matter in water or sediment.

Cooling water  Cooling water contains seawater and sodium hypochlorite, and is discharged at typical vessel cooling outlets around the FPSO.

DCC  Discharge Chemical Composition

Discharge and Dumping Regulations  Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015

Dose  A portion of a substance added during a process

DTA  Direct Toxicity Assessment

EEMP  Ecological Effects Monitoring Plan

EPA  Environment Protection Authority

Excess treated seawater  Excess seawater that is diverted overboard, which contains sodium hypochlorite generated by electrolysis and is treated intermittently with biocides, from a vertical caisson on the FPSO port side.

EEZ Act  Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012

Dose event  A single period of time over which a substance is dosed. A dose event may occur over multiple days and involve the treatment of multiple wells. For example, a dose event may incorporate a single campaign to treat multiple wells with a given harmful substance over multiple days.

FPSO  Floating Production Storage and Offloading facility

Harmful substance  Has the meaning as defined in regulation 4 of the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015.
CONDITIONS

Pursuant to sections 63 and 87F(4) of the EEZ Act, this marine discharge consent authorises the discharge of the harmful substances applied for in application EEZ300004, listed in Table 1 of Schedule 2, subject to the following conditions:

General conditions

1. This marine discharge consent must be exercised in general accordance with the application for marine discharge consent dated 16 December 2016 and the further information provided by the Consent Holder to the EPA dated 2 February 2017, 28 February 2017, 6 March 2017, 16 March 2017 and 31 March 2017, except where modified by the conditions below.

Where there is a conflict between the application material and/or supporting documents and these conditions, the conditions prevail.

2. This marine discharge consent expires 1 December 2027.

3. The Consent Holder must ensure that a copy of this marine discharge consent and any variations are available for inspection at the following locations until its expiry date:

   a. The Consent Holder’s head office in New Zealand.
   
   b. On-board the FPSO Raroa.
   
   c. On-board the wellhead platform Tiro Tiro Moana.
4. i. The Consent Holder must ensure all relevant personnel, including but not limited to contractors, involved in the activities authorised by this marine discharge consent, are informed of their obligations and required actions and responsibilities under this marine discharge consent.

   ii. The Consent Holder must keep a record to show that all relevant personnel have been informed of their obligations and required actions and responsibilities under this marine discharge consent.

5. The Consent Holder must ensure that at least one senior employee or suitably qualified or experienced contractor is formally allocated responsibility for compliance management, collating information and reporting in accordance with the requirements of this marine discharge consent. The name and contact details of this person(s) shall be provided to the EPA in writing within five working days of the date of commencement of this marine discharge consent and updated within five working days of any change in personnel.

Discharge conditions and recording

6. i. The Consent Holder must ensure the discharges authorised under this consent do not exceed:

   a. A total discharge volume of 45,000 bbl/day of production discharge.

   b. A total discharge volume of 20,000 bbl/day of excess treated seawater discharge.

   c. A total discharge volume of 546,000 bbl/day of cooling water discharge.

   ii. The Consent Holder must keep a record to show that the volumes in conditions 6(i)(a) and 6(i)(b) have not been exceeded.

   iii. The Consent Holder must keep any records of production discharge and excess treated seawater discharge volumes for at least 12 months from the date on which the discharges occurred.

   iv. The production discharge and excess treated seawater volume records must be made available to the EPA upon request.

7. i. The Consent Holder must comply with the dosage parameters detailed in Table 1, including for every harmful substance:

   a. Maximum concentration in ppm.

   b. Maximum volume per dose event in litres (L).

   c. Maximum number of doses and the dosage intervals.

   ii. The Consent Holder must keep a record of the use of harmful substances detailed in Table 1 in accordance with condition 13 of this consent

8. The Consent Holder must, by the use of the oil in water analyser, ensure that the oil in water content of the production discharge before dilution:

   a. Does not exceed 50 ppm (instantaneous).

   b. Averages less than 30 ppm every calendar month.
9. i. The Consent Holder must continuously measure, by the use of the oil in water analyser, the oil in water content of the production discharge at least every 20 seconds.

ii. The Consent Holder must maintain a record of these continuous measurements.

iii. The Consent Holder must keep the records of continuous oil in water measurements for at least 12 months from the date on which the measurements were taken.

iv. The oil in water record must be made available to the EPA upon request.

10. The Consent Holder must immediately, and by automatic mechanism, stop production discharges going overboard if, at any time, the oil in water content of the production discharge exceeds 50 ppm.

11. i. The Consent Holder must notify the EPA as soon as practicable, but not later than 24 hours, after an exceedance of the limits in condition 8 becomes known to the Consent Holder.

ii. Subsequent to the detection of the exceedance, the Consent Holder must, within five working days or, within a timeframe as agreed in writing by the EPA, provide a report to the EPA that outlines:

   a. The reasons for the exceedance of the limits identified in condition 8.
   b. Any further monitoring, testing or analysis undertaken to verify the exceedance.
   c. The remedial measures that have been, or will be, taken to ensure compliance with the limits in condition 8 is achieved, including the timeframe for achieving compliance.

12. i. The Consent Holder must maintain a daily electronic record of the production discharge, in a form approved by the EPA, including the following:

   a. For each 24 hour period, the daily average oil in water readings of the production discharge entering the sea.
   b. The total volume of oil discharged in the production discharge every 24 hours, based on continuous monitoring of oil in water concentrations by the oil water analyser.
   c. The monthly total volume of oil discharged in the production discharge.
   d. The total volume of production discharge discharged every 24 hours.

ii. The record must be submitted to the EPA for each three month period (or any part thereof) ending 31 March, 30 June, 30 September and 31 December, within 15 working days after the end of each period.

13. i. The Consent Holder must maintain an electronic record of the use and discharge of the harmful substances outlined in Table 1 in a form approved by the EPA. The record must include for each harmful substance, the following:

   a. Details of the person undertaking the discharge activity.
   b. Details of the offshore installation from which discharges take place.
   c. Dates over which dosing occurred.
   d. Description of the discharges, including for each substance discharged:
1. Its brand name.
2. Its HSNO ecotoxicity classification.
3. Purpose of each substance.
4. The quantity (in litres) of substance dosed in each dosing event.
5. Quantity of substance discharged (in litres) to sea.
6. Location of each discharge.
   e. Explanation of how the quantity (in litres) of the substance discharged to sea was obtained for each dosing event.

ii. The record must be submitted to the EPA for each three month period (or any part thereof) ending 31 March, 30 June, 30 September and 31 December, within 15 working days after the end of each period.

iii. The Consent Holder must provide within the Annual Report required by condition 22 of this Consent for each harmful substance discharged:
   a. The number of doses per year of the substance, unless the substance was continuously dosed.
   b. The quantity (in litres) of each substance discharged to sea in each dosing event and per annum, including an explanation of how the discharge quantities were obtained.

Environmental management

14. i. The Consent Holder must submit for approval by the EPA, within three months of the commencement of this consent, an Ecological Effects Monitoring Plan. The purpose of the plan is to enable the Consent Holder to monitor the effects of the consented discharges and to comply with the environmental thresholds specified in condition 15 of this consent.

ii. The EEMP must be prepared by a suitably qualified and experienced person(s).

iii. The Consent Holder must operate in accordance with, and comply with, the approved EEMP.

iv. The EEMP must:
   a. Specify the environmental monitoring that will be undertaken to assess the potential effects of the consented discharges in the water column and at the seabed including, at a minimum, the monitoring that must be undertaken in accordance with conditions 17, 18, 19 and 20 of this consent.
   b. Specify the methodology and sampling techniques that will be used to monitor the potential effects of the consented discharges including, but not necessarily limited to, the collection methods and procedures, the frequency of sampling, and the monitoring stations that will be sampled in the water column and at the seabed.
c. Detail the parameters to be measured including, at a minimum, the physicochemical and biological parameters and the measures that will be used to identify changes to benthic ecology in accordance with condition 15(ii) of this consent.

d. Detail the testing methodology and the data analysis procedures that will be used to test and analyse any samples collected.

e. Outline the environmental reporting that will be undertaken, and when the report(s) will be provided to the EPA.

f. Specify the procedures to be followed in the event that an exceedance of a limit in condition 15 is detected, including any further monitoring, testing or analysis that will be undertaken, and any potential remedial measures that could be employed.

v. The Consent Holder may review the EEMP annually to take into account any recommendations made in the Annual Report in relation to the environmental monitoring regime including, but not necessarily limited to, any recommended changes to the monitoring methodology, and any changes to sampling stations or analytical procedures.

vi. The outcomes of any review under condition 14(v) must be provided to the EPA, and any proposed changes to the EEMP, as a result of any review, must be submitted to and approved by the EPA prior to their implementation.

15. i. The Consent Holder must ensure that the consented discharges do not result in an exceedance of the current ANZECC Guideline Values, specified below, 250 m or more from the point of discharge:

   a. Water Quality Guideline 95% LOP thresholds (where a value exists)
   b. Sediment ISQG-Low criteria (where a value exists).

ii. The Consent Holder must ensure the consented discharges do not result in any significant changes to the benthic ecology, as defined in the EEMP, 250 m or more from the point of discharge.

16. i. The Consent Holder must notify the EPA, as soon as practicable but not later than 24 hours, after an exceedance of any one of the limits in condition 15 becomes known to the Consent Holder.

ii. Subsequent to the detection of the exceedance, the Consent Holder must, within thirty working days or within a timeframe as agreed in writing by the EPA, provide a report to the EPA that outlines:

   a. The reasons for the exceedance of the limits identified in condition 15.
   b. Any further monitoring, testing or analysis undertaken to verify the exceedance.
   c. The remedial measures that have been, or will be, taken to ensure compliance with the limits in condition 15 will be achieved, including the timeframe for achieving compliance.
17. i. The Consent Holder must collect, at a minimum, composite discharge samples from the production discharge stream every 3 months, within a single 24 hour period, for the purpose of DCC.

ii. The collection of composite discharge samples must be carried out in accordance with the methods and procedures outlined in the EEMP by a suitably qualified and experienced person(s).

iii. The Chemical Composition of the composite discharge samples must be analysed for the parameters specified in the EEMP, including but not limited to:

   a. metals/metalloids (As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Zn)
   b. BTEX
   c. TPH
   d. PAHs
   e. Any additional contaminants that have been specified within the EEMP.

iv. All testing and analyses of DCC samples must be undertaken by an independent and suitably qualified and experienced laboratory.

v. The raw results of the DCC analysis must be provided to the EPA with the Annual Report required under condition 22. The raw results must be provided in the form of analytical certificates under the letterhead of the laboratory which carried out the analysis and bear authorised signatures.

18. i. The Consent Holder must collect, at a minimum, every 6 months for the purpose of DTA:

   a. One composite discharge sample from the production discharge stream, within a single 24 hour period.
   b. One near-surface composite discharge sample of receiving water at far-field ‘control’ stations outside the zone of influence of the consented discharges, and immediately after the composite discharge sample from the production discharge stream was taken.

ii. The composite discharge sample collected for the purpose of DTA analysis, from the production discharge stream, must be collected within the same 24 hour period that composite discharge samples for DCC analysis are collected.

iii. The collection of composite discharge samples must be carried out in accordance with the methods and procedures outlined in the EEMP by a suitably qualified and experienced person(s).

iv. All testing and analyses of DTA samples must be undertaken by an independent and suitably qualified and experienced laboratory.

v. The raw results of the DTA analysis must be provided to the EPA with the Annual Report required under condition 22. The raw results must be provided in the form of analytical certificates under the letterhead of the laboratory which carried out the analysis and bear authorised signatures.
19. i. The Consent Holder must collect representative receiving water samples annually for the purpose of RWCC.

ii. The collection of receiving water samples must be carried out in accordance the methods and procedures outlined in the EEMP by a suitably qualified and experienced person(s).

iii. The Consent Holder must collect receiving water samples at the locations specified in the EEMP. The locations in the EEMP must, at a minimum, include:
   a. Near-field stations, within 1,000 m of the point of discharge, on the down-current axis from the nearest point of discharge.
   b. Far-field ‘control’ stations outside the zone of influence of the consented discharges.

iv. At each sampling location, the Consent Holder must collect receiving water samples at the depths specified within the EEMP. The depths must be representative of the area in which the consented discharges are likely to occur.

v. The following field observations must be recorded at the time of sample collection:
   a. Date and time of sample collection.
   b. Weather conditions.
   c. Wind direction and strength.
   d. Position of the FPSO and the points of discharge relative to the sample locations.
   e. Current conditions at varying levels in the water column.
   f. Comments on any factors present at the site which may influence the results.

vi. The Chemical Composition of the water samples must be analysed for the parameters specified in the EEMP, including but not limited to:
   a. Metals/metalloids (As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Zn).
   b. BTEX.
   c. TPH.
   d. PAHs.
   e. Any additional contaminants that have been specified within the EEMP.

vii. All testing and analyses of RWCC samples must be undertaken by an independent and suitably qualified and experienced laboratory.

viii. The raw results of the RWCC analysis must be provided to the EPA with the Annual Report required under condition 22. The results must be provided in the form of analytical certificates under the letterhead of the laboratory which carried out the analysis and bear authorised signatures.

20. i. The Consent Holder must collect representative sediment samples annually for the purposes of sediment physicochemical characterisation and benthic ecology analysis.
ii. The collection of sediment samples must be carried out in accordance with the methods and procedures outlined in the EEMP by a suitably qualified and experienced person(s).

iii. The Consent Holder must collect sediment samples at the locations specified in the EEMP. The locations in the EEMP must, at a minimum, include:

   a. Near-field stations along the east-west dominant current flow axis out to 2,000 m from the locus of the points of discharge.

   b. Near-field stations along the north-south minor current flow axis out to 500 m from the locus of the points of discharge.

   c. Far-field ‘control’ stations, outside the zone of influence of the consented discharges.

iv. The sediment samples must be analysed for the parameters specified in the EEMP, including but not limited to:

   a. Physicochemical parameters:
      1. Sediment particle size distribution.
      2. Total organic carbon content.
      3. Sediment chemical composition including metals/metalloids (As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Hg, Ni, Zn), TPHs, BTEX, and PAHs.

   b. Benthic ecological parameters:
      1. Macrofaunal abundance, species diversity and species composition.

v. All testing and analyses of sediment samples must be undertaken by an independent and suitably qualified and experienced laboratory.

vi. The raw results of the sediment sample analysis must be provided to the EPA with the Annual Report required under condition 22. The results must be provided in the form of analytical certificates under the letterhead of the laboratory which carried out the analysis and bear authorised signatures.

21. The Consent Holder must notify the EPA of environmental monitoring described in conditions 17, 18, 19, or 20, within 15 working days of the month after it has occurred.

Reporting

22. i. The Consent Holder must prepare and provide to the EPA for the period 1 January – 31 December each year (or any part year thereof) an Annual Report. The Annual Report must be provided by 30 June each year.

ii. The Annual Report must be prepared by a suitably qualified and experienced person(s), where relevant.

iii. The Annual Report must include the following:
Harmful substance discharges

a. An annual record of the harmful substance discharges, including the number of doses per year of each substance and the quantity of each substance discharged per dosing event and per annum in accordance with condition 13(iii).

b. Any measures that have been taken to reduce the adverse effects of harmful substance discharges.

Environmental monitoring results

c. A description of the environmental monitoring undertaken including, but not necessarily limited to, the monitoring undertaken in accordance with conditions 17, 18, 19 and 20 of this consent.

d. An analysis of the environmental monitoring results including, but not necessarily limited to, the monitoring undertaken in accordance with conditions 17, 18, 19, and 20 of this consent to assess the potential effects of the consented discharges in the water column and at the seabed.

e. An evaluation of the environmental monitoring results against environmental guidelines (including, but not necessarily limited to, the ANZECC guidelines), and an analysis of any differences in trends from previous results in preceding months and years. This must include an analysis of the measures identified in the EEMP as being indicative of changes to benthic ecology.

f. A discussion of the key findings of the monitoring undertaken in relation to the environmental impacts and an assessment of whether compliance with the environmental thresholds in condition 15 has, or has not, been achieved.

g. A copy of the raw results for the monitoring undertaken in accordance with conditions 17(v), 18(v), 19(viii), 20(vi).

Compliance monitoring

h. Commentary on compliance with the conditions of this consent, including any instances of non-compliance. If non-compliance has been detected, the report must specify:

1. The reasons for the non-compliance.

2. Any further monitoring, testing or analysis undertaken to verify the non-compliance.

3. The remedial measures that have, or will be, taken to ensure compliance will be achieved, including the timeframe for achieving compliance.

Recommendations

i. Any recommendations, as a result of the monitoring undertaken, for changes to the environmental monitoring regime outlined in the EEMP including, but not limited to, any changes in the monitoring methodology that should be applied or any changes to sampling locations or analytical procedures.

j. Any other relevant issues.
23. i. The Consent Holder must provide to the EPA, a **Monitoring and Technology Review Report** within six months of the 3rd and 6th anniversary of the commencement of this Consent. The purpose of the report is to ensure best practice is applied to the management and monitoring of the environmental effects of the consented discharges.

ii. The Monitoring and Technology Review Report must be prepared by a suitably qualified and experienced person(s).

iii. The report must address, but not necessarily be limited to, the following:

   a. An assessment of the adequacy of the conditions and monitoring measures in place for the purpose of managing the effects of the consented discharges.

   b. A summary of any improvements made to the environmental management measures, including monitoring techniques, specifically designed to manage the effects of the consented discharges since the granting of the consent.

   c. An outline of technological changes and advances in relation to managing the effects of harmful substance discharges from offshore oil and gas facilities, including any advances in environmental monitoring techniques.

   d. An assessment of whether the Consent Holder intends to incorporate any technological changes or advances into its operations, including changes to the monitoring techniques, for the purpose of avoiding, remedying or further mitigating the effects of the consented discharges.

**Emergency preparedness and response**

24. The Consent Holder must, within 20 working days of acknowledgement by Maritime New Zealand of its acceptance of the Oil Spill Contingency Plan, provide the EPA with an electronic copy of the current Oil Spill Contingency Plan.

*Advice note:* Immediately after any oil spill, the Consent Holder, must report the spill to the EPA in accordance with Part 131.41 of the Marine Protection Rules Part 131: Offshore Installations – Oil Spill Contingency Plans and Oil Pollution Prevention Certification.

25. The Consent Holder must operate in accordance with and comply with the approved Emergency Spill Response Plan.

26. The Consent Holder must notify the EPA, as soon as practicable but not later than 24 hours, after a spill into the sea of any harmful substances described in regulation 4(a) of the Discharge and Dumping Regulations becomes known to the Consent Holder.

*Advice note:* In addition to the notification requirement under condition 26 of this consent, the Consent Holder must after any spill of a harmful substance, described in regulation 4(a) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations, provide a report to the EPA in accordance with regulation 25 of the Discharge and Dumping Regulations.
27. i. In the event of a spill of any harmful substances described in regulation 4(a) of the Discharge and Dumping Regulations into the sea, the Consent Holder must liaise with the EPA to determine whether monitoring is likely to detect any environmental effects and, if so, agree on appropriate monitoring (if any) and timeframes and whether any other relevant authorities should be notified. Other relevant authorities may include Maritime New Zealand, regional councils, iwi entities or the Department of Conservation.

ii. The results of the monitoring must be provided to the EPA on request and in a written summary report within three months of OMV’s receipt of the results.

Advice notes:

The Consent Holder may, under section 87J of the EEZ Act, request the EPA to change or cancel a condition of the consent.

The EPA may serve notice on the Consent Holder of its intention to review the duration of a marine consent or the conditions of the consent at any time for the purposes specified in section 76 of the EEZ Act.
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<td>1,000</td>
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<td>Musol A solvent</td>
<td>HSR002649</td>
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<td>Mutual solvent pure</td>
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<td>CI-11*</td>
<td>HSR002496</td>
<td>9.1D</td>
<td>Corrosion inhibitor</td>
<td>8,000</td>
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<tr>
<td>PFR7703 - SOLVESCO 150</td>
<td>HSR002513</td>
<td>9.1A</td>
<td>Wax solvent pure</td>
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<td>CI-111*</td>
<td>HSR002496</td>
<td>9.1A</td>
<td>Corrosion inhibitor</td>
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<td>XC29548</td>
<td>HSR002681</td>
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<td>HSR002549</td>
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<td>Corrosion and scale inhibitor</td>
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<td>116,055</td>
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<td>Product name</td>
<td>HSNO Approval</td>
<td>Aquatic ecotoxicity classification</td>
<td>Use</td>
<td>Dose concentration PPM</td>
<td>Max volume per dose event (litres)</td>
<td>Number of dose events per</td>
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<tr>
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<td>Week</td>
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<td>CGW29013**</td>
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<td>Corrosion inhibitor</td>
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<td>CORR12685A*</td>
<td>HSR002546</td>
<td>9.1A</td>
<td>Acid corrosion inhibitor</td>
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<td>T-803 Aqueous Solution (Tracerco)</td>
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<td>Wax dispersant</td>
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<td>Demulsifier</td>
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<td>130,579</td>
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**Advice note:** The maximum volume per dose and the period at which this dose can be applied. For example, if the maximum allowable volume is 130,562 litres and number of allowable doses is 1 per year, this means that up to 130,562 litres may be added to the discharge system over 1 year, not that 130,562 litres can be added just once per year.

* The transition from the use of the substances CI-11, CI-111 to CORR12685A should be carried out in general accordance with the conditions in Schedule 2 of the Marine Discharge Consent EEZ300004 for the Maari facilities. Specifically, during the transition the total dose volume for these substances shall not exceed the maximum amount stated in this application (maximum total combined dose volume for the three substances is 2500L per year, which occurs over a maximum of ten dose events at a maximum of 250L per event).

** The transition from the use of the substance CRW29507 to CGW29013 should be carried out in general accordance with the conditions in Schedule 2 of the Marine Discharge Consent EEZ300004 for the Maari facilities. Specifically, the total dose volume for these substances shall not exceed the maximum amount stated in this application (116,055L per year).
*** The dosing of EMBR and DMO86277 should be carried out in general accordance with the condition in Schedule 2 of the Marine Discharge Consent EEZ300004 for the Maari facilities. During the testing period carried out to assess EMBR’s suitability as a replacement for DMO86277, and any subsequent transitional periods, the total combined dose volume for these substances shall not exceed the maximum amount stated in application EEZ300004-4 (maximum total combined dose volume for EMBR and DMO86277 is 130579 L per year).
DECISION ON MARINE DISCHARGE CONSENT APPLICATION

Background

1. The Environmental Protection Authority (EPA) is the consent authority for activities within the Exclusive Economic Zone (EEZ) and continental shelf beyond the 12 nautical mile limit from New Zealand’s coastline. One of the EPA’s functions, pursuant to section 13(1)(a) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (the ‘EEZ Act’), is to decide applications for marine discharge consents.

2. OMV is the operator of the Maari Field in the South Taranaki Bight under Petroleum Mining Permit (PMP) 38160. On 31 October 2015, some of the provisions of OMV’s Discharge Management Plan (DMP), which authorised OMV’s permitted discharges, and contained its emergency spill response plan and environmental monitoring requirements, were deemed a marine discharge consent granted under section 87F of the EEZ Act (by virtue of section 164B of the EEZ Act).

3. OMV’s deemed marine discharge consent (now known as EEZ900004) expires on 25 July 2017. Once the deemed consent expires, OMV will require a new marine discharge consent to authorise the discharge of harmful substances.

4. OMV is now seeking a marine discharge consent from the EPA to replace its existing deemed marine discharge consent prior to its expiry on 25 July 2017.

The Application

5. On 16 December 2016, OMV lodged an application for a marine discharge consent to discharge harmful substances from its oil production facilities in the Maari Field.

6. The application for a marine discharge consent from the EPA is to replace OMV’s existing Maari Field Discharge Management Plan (DMP) prior to its expiry on 25 July 2017. OMV has applied for a 35 year duration of consent.

7. The EPA’s experts determined that 22 of OMV’s products proposed for discharge are harmful substances under the Exclusive Economic Zone and Continental Shelf (Environmental Effects – Discharge and Dumping) Regulations 2015 (the ‘Discharge and Dumping Regulations’). The discharges of these harmful substances is the subject of this consent application.

8. On 23 January 2017, the EPA informed OMV of its decision not to return the application as incomplete under section 41 of the EEZ Act.
OMV’s facilities

9. OMV’s Maari Field includes ten production wells and has been producing crude oil since February 2009. Its facilities include:
   a. **The Floating Production and Storage and Offtake Vessel (FPSO Raroa):** The FPSO is a converted tanker that is used for production processing, oil separation, oil storage, and produced water treatment.
   b. **The Wellhead Platform (WHP) structure (Tiro Tiro Moana):** The WHP supports the wellheads, production equipment and removable workover unit for well intervention and maintenance.
   c. **Subsea facilities:** The subsea system is made up of pipelines that transport production fluids and production chemicals, including harmful substances, between the WHP and FPSO.

10. Crude oil from the subsea reservoirs are produced to the WHP, and piped via the subsea facilities to the FPSO Raroa, anchored approximately one kilometre away. Production fluids containing oil, water and gas, are separated aboard the FPSO and produced water is treated and discharged overboard. All operational discharges are released into the environment from the FPSO.

Activities subject to approval

11. OMV is applying for:
   a. The discharge of harmful substances from petroleum extraction activities (offshore processing drainage, displacement water and production water) from an existing structure (regulation 16 (3) of the Discharge and Dumping Regulations)
   b. The discharge of seawater used for operational purposes that is contaminated with oil from an existing floating production storage and offloading facility that exceeds 15 parts per million, without dilution (regulation 18 (3) of the Discharge and Dumping Regulations)
   c. The discharge of harmful substances from mining activities (regulation 20 of the Discharge and Dumping Regulations), including the discharge of cooling water, harmful substances in excess treated seawater, and the discharge of firefighting foam.

12. The proposed discharges are classified as non-notified activities under the Discharge and Dumping Regulations.

13. The substances subject to this application fall within the scope of the Discharge and Dumping Regulations because they fall within the definition of ‘harmful substance’, being substances that are ecotoxic to aquatic organisms, and are hazardous for the purposes of the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001 or because they are oil (regulation 4(a) and (b) of the Discharge and Dumping Regulations).

Harmful substance discharges

14. Twenty of the 22 substances proposed for discharge are used in the petroleum production process, and to ensure the integrity of the wells and the facilities associated with the Maari Field. Of these twenty substances:
   a. Three of the proposed substances are continuously dosed to the production system.
b. One biocide is dosed on a regular, albeit intermittent, basis to kill sulphate reducing bacteria that produce hydrogen sulphide resulting in microbiologically induced corrosion in production equipment.

c. Sixteen of the proposed substances are used in workover treatments, three to six times per year.

15. All substances used in the petroleum production process and in workover treatments will be discharged to sea in a single discharge stream, after treatment, from the FPSO’s produced water systems. The production discharge stream from the produced water system contains produced water\(^1\), offshore processing drainage\(^2\), OMV’s added harmful substances, naturally occurring contaminants, and seawater contaminated with oil\(^3\) from the WHP and FPSO.

16. OMV has also applied to discharge cooling water that contains sodium hypochlorite and fire-fighting foam that may be discharged during tests or drills. In addition, OMV will discharge excess treated seawater that contains sodium hypochlorite and is intermittently dosed with two biocides\(^4\) that are also used in the petroleum production process.

17. The production discharge stream also contains naturally occurring contaminants that originate from the production reservoir such as polycyclic aromatic hydrocarbons (PAHs), specific monoaromatic hydrocarbons (MAHs), metals and metalloids, as well as residual oils that have not been extracted through the production water treatment system.

18. The use of the 22 added harmful substances that are the subject of this application are described in more detail below.

**Production products**

19. DMO 29726 is a demulsifier used in production operations (topsides) and is applied continuously to the production discharge stream at a dosage of 40 mg/L. A total maximum volume of 104,450 litres will be used annually.

20. XC29040 is used as a biocide in production operations (topsides) to control sulphate reducing bacteria. It is dosed on a fortnightly basis at approximately 500mg/L over three hours. Up to 527 litres is dosed, per event, with a maximum annual volume of 13,705 litres used. Forty litres of XC29040 is also added, on a weekly basis, to the open drains tank and the second stage separator.

21. Biocides XC29040 and XC29102 are both used in the seawater injection system. The products are dosed fortnightly, on an alternating basis, for three hours at 500 mg/L. A total volume of up to 199 litres, of either product, is added per dosing event. A maximum annual volume of 5,167 litres is used per product.

22. PAO82004 is used as a pour point depressant in production operations. It is continuously injected downhole at 500 mg/L. A total maximum volume of 1,305,623 litres is used annually. PAO82004 is a

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\(^1\) Water originating from inside the geological reservoir, and also contains injection water that is used to increase well pressure.

\(^2\) Contains water from offshore processing systems (including deck drains) as well as treated seawater with residual workover chemicals from flushing the wells in workovers and stimulations. Also contains other substances from hazardous and non-hazardous deck drains including water from the FPSO and WHP.

\(^3\) OMV has also identified the discharge of seawater contaminated with oil, as a result of cleaning and maintenance activities, as a harmful substance discharge.

\(^4\) The biocides used to treat seawater are also used in production and workover operations.
solvent based chemical and the vast majority of this product will partition into the oil phase prior to discharge overboard.

23. DMO86277 is used as a demulsifier in production operations (topsides) and is applied continuously to the production stream at a dosage of 50 mg/L. A total maximum volume of 130,562 litres is used annually.

Workover products

24. Biocide XC29102 may be injected downhole as a well stimulation chemical during workover operations. XC29102 is injected downhole at a concentration of 500 mg/L in a dilution of 795,000 litres. A total maximum product volume of 3,975 litres will be used in any single event, and OMV expects that up to six treatments per year will be required.

25. CI-30 may be injected downhole during workover operations as a corrosion inhibitor. It is injected downhole, up to six times per year, in a dilution of up to 795,000 litres at a concentration of 10,000 mg/L. A total maximum product volume of 7,950 litres will be used in any single event.

26. EC6145A may be injected downhole during workovers as a scale inhibitor. EC6145A may be injected downhole, up to three times per year, in a dilution of up to 57,150 litres at a concentration of 150,000 mg/L. A total maximum product volume of 8,528 litres will be used in any single event.

27. FR-46 may be injected downhole as a friction reducer up to three times per year. It is used as a lubricant during coil tubing operations and is expected to adhere to the metal surfaces of well pipework and equipment that is inserted downhole. FR-46 is injected at a concentration of 10,000 mg/L in a dilution of up to 795,000 litres. A total maximum product volume of 7,950 litres will be used in any single event.

28. FE-1A Acidising Composition may be injected downhole as a well stimulation chemical to clean particulates from the reservoir and downhole equipment. It is injected at a concentration of 10,000 mg/L in a dilution of up to 16,000 litres. A total maximum product volume of 160 litres will be used in any single event, and OMV expects that up to three treatments per year will be required.

29. HAI-404M may be injected downhole during workover operations as a corrosion inhibitor up to six times per year. It is injected downhole at a concentration of 10,000 mg/L in a dilution of up to 16,000 litres. A total maximum product volume of 160 litres will be used in any single event.

30. Hydrochloric acid may be injected downhole as a well stimulation chemical to clean particulates from the reservoir and downhole equipment. It is injected at a concentration of 100,000 mg/L in a dilution of up to 16,000 litres. A total maximum product volume of 1,600 litres will be used in any single event, and OMV expects that up to six treatments per year will be required.

31. OS-1L may be injected downhole during workover activities as an oxygen scavenger. It is injected at a concentration of 2,000 mg/L in a dilution of up to 16,000 litres. A total maximum product volume of 32 litres will be used in any single event, and OMV expects that up to six treatments per year will be required.

32. Safe-Cide is used in workover operations as a biocide. It is injected at a concentration of 1,000 mg/L in a dilution of up to 795,000 litres. A total maximum product volume of 7,950 litres will be used in any single event, and OMV expects that up to six treatments per year will be required.
33. Safe-Scav HS is injected downhole during workover operations as a hydrogen sulphide scavenger. It is injected at a concentration of 1,000 mg/L in a dilution of up to 16,000 litres. A total maximum product volume of 16 litres will be used in any single event, and OMV expects that up to six treatments per year will be required.

34. SCA-130 is injected downhole during workover operations as a hydrogen sulphide scavenger. It is injected at a concentration of 10,000 mg/L in a dilution of up to 31,800 litres. A total maximum product volume of 318 litres will be used in any single event, and OMV expects that up to three treatments per year will be required.

35. Magnacide 575 is injected downhole as a biocide. It is injected at a concentration of 1,000 mg/L in a dilution of up to 795,000 litres. A total maximum product volume of 795 litres will be used in any single event, and OMV expects that up to six treatments per year will be required.

36. Musol A Solvent may be injected downhole during workover activities as a mutual solvent to clean the well before it restarts. It may be used up to three times per year, with a total maximum product volume of 31,800 litres used in any single event.

37. CI-11 is injected downhole during workover operations as corrosion inhibitor. It is injected downhole at a concentration of 8000 mg/L. A total maximum product volume of 250 litres will be used in any single event, and OMV expects that up to five treatments per year will be required.

38. PFR7703 Solvesso 150 is used during workover operations to clean waxy solids from the well and downhole equipment. It is injected downhole as a pure product with a total maximum product volume of 8,000 litres being used in any single event, and OMV expects that up to six treatments per year will be required.

39. CI-111 is injected downhole during workover operations as corrosion inhibitor. It is injected downhole at a concentration of 8,000 mg/L. A total maximum product volume of 250 litres will be used in any single event, and OMV expects that up to five treatments per year will be required.

**Cooling water, excess treated seawater, and fire-fighting foam**

40. Seawater used for cooling on the FPSO Raroa is chlorinated via electro-chlorination to prevent marine growth in the piping system. Chlorine Generator Units aboard the FPSO are used to generate sodium hypochlorite, continuously, at up to 0.6 ppm. The generators operate on the principle of electrolysis of seawater. Cooling water is discharged from typical vessel cooling outlets at several locations around the FPSO. Typically less than 273,000 bbl/day of cooling water is discharged.

41. Treated seawater is injected into existing production reservoirs to optimise oil recovery and maintain pressure in the reservoir. Seawater is intermittently treated with two biocides (XC29040 and XC29102) used to inhibit the production of hydrogen sulphide, and also contains sodium hypochlorite generated by electrolysis. The water injection system pumps the required volume of treated seawater downhole with the excess being discharged overboard. Up to 20,000 bbl/day of excess treated seawater is discharged overboard.

42. Firefighting foam is potentially discharged overboard from the WHP and the FPSO in the event of a fire or during tests and drills. The foam (Re-Healing Foam 3x6 ATC) is discharged in a water-based solution.
of 3% concentrate to 97 parts water. A maximum of three tests or drills occur per year on each facility and the maximum quantity of concentrate discharged at any one time is 680 L.

**Statutory framework**

43. As set out previously the EPA is the consent authority for activities within the Exclusive Economic Zone (EEZ) and continental shelf beyond the 12 nautical mile limit from New Zealand’s coastline. The authority to decide non-notified marine discharge applications has been delegated to me, the Chief Executive of the EPA, by the EPA Board. In the following sections, I discuss the statutory framework and the decision making matters that I, the Chief Executive of the EPA, must consider when making a decision on a non-notified marine discharge consent application on behalf of the EPA.

44. Section 10(1) of the Act states:

   “The purpose of this Act is -

   (a) to promote the sustainable management of the natural resources of the exclusive economic zone and the continental shelf; and

   (b) in relation to the exclusive economic zone, the continental shelf, and the waters above the continental shelf beyond the outer limits of the exclusive economic zone, to protect the environment from pollution by regulating or prohibiting the discharge of harmful substances and the dumping or incineration of waste or other matter.”

45. Section 20B of the EEZ Act restricts the discharge of harmful substances from a New Zealand structure into the sea or into or onto the seabed of the EEZ unless the discharge is a permitted activity or authorised by a marine discharge consent or section 21, 22 or 23 of the EEZ Act.

46. Section 87F provides me with the power to refuse an application for a marine discharge consent, or grant, in whole or in part, subject to conditions.

**Best available information and requests for further information**

47. In accordance with section 87E of the EEZ Act, when considering an application for a marine discharge consent, I must:

   a. Make full use of my powers to request information from the applicant, obtain advice, and commission a review or a report.

   b. Base decisions on the best available information.

   c. Take into account any uncertainty or inadequacy in the information available.

48. Under section 87E(2), if, in relation to making a decision on the application, the information available is uncertain or inadequate, I must favour caution and environmental protection. It is important to note that section 87E(3) provides that “best available information” does not mean “all information” and that I must exercise judgement having regard to issues of cost, effort and time in obtaining information.

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5 Section 10 of the EEZ Act. “Sustainable management” is defined in section 10(2).
49. I consider there is sufficient information provided in the application form, Safety Data Sheets (SDS), Impact Assessment and accompanying documents, and in OMV’s responses to our requests for further information, to make an assessment of the risks of discharging each of the substances. To deal with the adverse effects of OMV’s activities I am also able to impose conditions under section 87F(4) of the EEZ Act.

50. In my opinion, the information supplied by OMV is the best available without unreasonable cost, effort or time in the circumstances. The information provided is sufficient for me to be confident that seeking more information about the substances or OMV’s activities would be unlikely to yield significantly different findings as to potential effects.

51. Therefore, I do not consider it necessary to request any further information⁶, in addition to what has already been requested and supplied, or to commission independent reviews or advice.⁷

52. In reaching my decision on OMV’s application, I have also relied on advice received from experts at the EPA. These experts have assessed the environmental risks from discharging the harmful substances and evaluated the application against the relevant legislative matters.

Hearing on the application

53. Under section 44B, the EPA may conduct a hearing on an application for a marine consent for a non-notified activity if I consider it necessary or desirable, and must hold a hearing if the applicant requests one.

54. A hearing was not held, because I did not consider one necessary or desirable for this application, and the applicant did not request one.

Decision-making criteria

55. Section 87D(2)(a) of the EEZ Act sets out the matters that I must consider in coming to a decision on an application for a marine discharge consent. These include:

“(i) the matters described in section 59(2), except paragraph (c); and

(ii) the effects on human health of the discharge of harmful substances if consent is granted.”

56. Section 87D(3) of the EEZ Act also requires that I have regard to the sources of information listed at section 59(3).

Assessment

57. The EPA’s experts have carried out:

a. An assessment of the application in which the effects of the harmful substance discharges were considered in relation to all of the relevant matters listed under sections 59 and 87D of the EEZ Act. The assessment provided a recommendation to grant the application subject to conditions.

b. An Environmental Risk Assessment (ERA) which characterises the environmental risk associated with the discharge of OMV’s added harmful substances.

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⁶ Section 42 of the EEZ Act
⁷ Section 44 of the EEZ Act
58. I have considered the advice from the EPA’s experts and the information provided by OMV in my assessment of its application. Appendix 1 details the EPA expert’s evaluation of the application against all the matters under section 87D(2)(a) of the EEZ Act. I have reviewed this assessment and adopt it as the basis of my assessment and decisions on the application. The sections below only discuss matters that I consider warrant further discussion in relation to the application.

Section 87D(2)(a)(i): relevant section 59 matters

Section 59(2)(a) effects on the environment and existing interests, including cumulative effects

59. When considering whether to grant the application, I must, under section 59(2)(a) of the EEZ Act, take into account any effects on the environment or existing interests including cumulative effects and effects in the waters above or beyond the continental shelf.

60. The conclusion of the EPA expert’s ERA, is that the majority (18 of 22) of OMV’s substances proposed for discharge present a negligible or very low risk to the environment. Four of the harmful substances posed a low risk to the environment suggesting a potential for short-term, localised adverse effects. Adverse effects as a result of the discharge of these added substances are not anticipated beyond 500 m from the point of discharge. I agree with this assessment.

61. OMV has identified naturally occurring compounds and contaminants that present a potential risk to the environment including PAHs, specific MAHs, residual oils, and metals that originate from the production reservoir. The environmental risk associated with these contaminants was not considered in the ERA because the methodology employed by the EPA’s experts was not applicable for naturally occurring contaminants. However, I consider the risk has been adequately characterised in OMV’s application for the reasons set out below.

62. OMV has provided results of analyses undertaken on its production discharge stream including Direct Toxicity Assessments (DTA) and Discharge Chemical Composition (DCC) analyses. MetOcean Solutions has modelled the production discharge stream to calculate dilution characteristics under various environmental scenarios (calm, typical, stormy) assuming maximum discharge rates (45,000bbl/day). The modelling study, in combination with the DTA and DCC analyses, has been used to infer the spatial extent of the environmental risk associated with the discharge of the naturally occurring contaminants. The two key findings of these analyses are:

a. The dilution (1:141) required to achieve no toxicity (based on DTA) would be reached within 200 m of the point of discharge under standard environmental conditions.

b. Naturally occurring contaminants present in the production water would be diluted (1:61) to levels that meet 95% Level of Protection ANZECC (2000) Water Quality Guideline Values (based on DCC) within 50 m of the point of discharge under standard environmental conditions.

63. I note that the modelled levels of dilution are similar to the assumed dilution rates applied to the CHARM model (1:1000 within 500 m) which has been used by the EPA’s experts to undertake their environmental risk assessment.

64. I also consider that the results from OMV’s sediment monitoring programmes are pertinent to a consideration of the effects of the discharges on the environment. These results were summarised in
OMV’s Impact Assessment (IA), and suggested that contaminants and naturally occurring compounds such as PAHs are not accumulating in the sediments surrounding the FPSO.

65. Based on the information provided in OMV’s application, its responses to the EPA’s information requests, and the ERA, the EPA’s experts concluded that organisms in the immediate vicinity of the FPSO (< 500 m) will be exposed to elevated and potentially toxic concentrations of added harmful substances and naturally occurring contaminants. These effects will take place in an area that has been impacted by the presence of Maari’s facilities and its associated activities, including harmful substance discharges, since 2009. The effects will occur over the term of the consent and for a period of time following the cessation of discharges, as the benthic environment in the immediate vicinity of the FPSO recovers.

66. While some of the naturally occurring contaminants present in the discharges have the potential to accumulate in sediments, the monitoring to date has provided no evidence that such accumulation has occurred. The EPA’s experts considered it unlikely that OMV’s added harmful substances present a long-term risk to organisms in the vicinity of the FPSO given the calculated low to negligible risks, and because these substances will degrade over time. Therefore, given the nature of the discharges, the predicted levels of dilution (from DTA and modelling) and the monitoring data collected to date, the EPA’s experts concluded that the discharges will not result in more than temporary and localised adverse effects over the term of the consent, with recovery expected to commence after the discharges cease. I agree with this conclusion.

67. I adopt the conclusions of the EPA’s experts that cumulative effects, arising as a result of the discharges and other offshore activities, including discharges from other offshore installations and the effects of fishing, will not occur. I also consider that the results of DTA demonstrate the cumulative synergistic effect of multiple harmful substances as DTA analysis measures the whole of effluent toxicity. The results of DTA suggest that cumulative ecotoxic effects are unlikely to occur beyond the immediate vicinity of the FPSO, given the level of dilution (1:141) that was required to achieve no toxicity.

68. The EPA’s Evaluation Report identifies iwi and customary marine title groups near the discharge site, as well as Mandated Iwi Organisations that hold fishing quota or fishing rights, as the most likely existing interests that may be affected from granting this application. I note that the Continental Continental Shelf (Maari Development Safety Zones) Regulations 2008 (Safety Zone Regs) establish a 500 m exclusion zone around the Maari facilities. This zone prohibits the entry of unauthorised vessels within 500 m of the facilities and is likely to minimise the potential for direct effects on fishing activities by creating a buffer around the area in which the discharges will have the greatest effect. Therefore, I agree with the EPA’s experts that the effects on fishing interests are limited to effects that may occur beyond the exclusion zone, as a result of catching fish that have been exposed to harmful substance discharges.

69. As described previously, organisms in the immediate vicinity of the FPSO will be exposed to elevated and potentially toxic concentrations of added harmful substances and naturally occurring contaminants. Some of these substances have the potential to accumulate in tissue and travel through the food web. The significance of this impact on fish species and thus fish stocks and existing interests, depends on the area of exposure to the discharges and the proportion of a given fish population that is affected. Studies have found that accumulation of contaminants from production discharges is limited to the
immediate vicinity of platforms and indistinguishable in fish tissue at distances of 1-2 km away from a platform\(^8\). Given the results of these studies and the EPA experts’ conclusions that discharges will only result in localised and temporary adverse effects, I consider that population level effects on commercially relevant fish species are unlikely to occur. I consider the low level of fishing in the area surrounding the FPSO\(^9\) also reduces the level of risk. Therefore, I consider the discharges present a very low risk to existing fishing interests.

Section 59(2)(d) and (e) matters

70. Section 59(2)(d) and (e) require that I take into account the importance of protecting the biological diversity and integrity of marine species, rare and vulnerable ecosystems and habitats of threatened species.

71. The EPA’s experts have concluded that the discharges will not result in more than medium-term localised adverse effects. Given this conclusion I accept that the biological diversity of the South Taranaki Bight and the integrity of marine species, ecosystems and processes will be adequately protected. I also consider that rare and vulnerable ecosystems are unlikely to be affected given that they have not been detected within the area of predicted effects.

72. I agree with the conclusion in the EPA’s Evaluation Report that the habitats of threatened species are unlikely to be affected. Threatened species that frequent the area, including some species of cetacean, are most likely transient visitors with an extensive natural range and habitats. Discharges would affect an insignificant proportion of their overall habitat.

73. I have concluded that granting OMV’s application is unlikely to have an effect on the biological diversity, and integrity of marine species, rare and vulnerable ecosystems and habitats of threatened species.

Section 59(2)(g) matters

74. Section 59(2)(g) of the EEZ Act requires that I take into account the efficient use and development of natural resources when deciding to grant or refuse an application for a marine discharge consent.

75. Granting this application would enable OMV’s continued efficient use and development of natural resources as required by its petroleum mining permit PMP38160 and minimise disruption to the production from the Maari Field. Maximising the life of field assets will ensure more efficient production as measured in costs against returns.

76. I conclude that granting the application will help ensure the most efficient use and development of the natural resources of the Maari Field.

Section 59(2)(h) matters

77. Section 59(2)(h) of the EEZ Act requires that I consider the nature and effect of other marine management regimes when deciding to grant or refuse OMV’s request. I note that OMV must comply with a number of different marine management regimes, including those administered by WorkSafe New Zealand, the Maritime Safety Authority of New Zealand, and the Regional Councils.

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\(^9\) MPI has provided information, in the form of maps, that only one commercial fishing event started, and two ended, within a 6 km radius of the FPSO over the last five years.
Zealand and Maritime New Zealand. These regimes impose standards and requirements that are relevant to the environmental matters I must consider under section 59 of the EEZ Act.

78. I consider that any requirements under these regimes do not directly impact on my decision for the reasons set out in Appendix 1.

Section 59(2)(j) matters

79. Section 59(2)(j) of the EEZ Act requires that I consider the extent to which imposing conditions under section 63 might avoid, remedy, or mitigate the adverse effects of the harmful substance discharges, when deciding to grant or refuse OMV's application.

80. To manage the potential effects of the discharge on the environment and existing interests, I have imposed conditions to manage the potential effects of the discharges on the environment and existing interests. I propose conditions that:
   a. Limit the use and discharge of harmful substances, including oils.
   b. Require the preparation and approval of an Ecological Effects Monitoring Plan.
   c. Prescribe environmental thresholds that must be achieved.
   d. Require OMV to report any exceedances of thresholds or condition limits.
   e. Require water quality monitoring at the point of discharge and in the receiving water column.
   f. Require monitoring of sediment quality and the macrobenthic (seabed) community.
   g. Provide for reporting to ensure harmful substances are used as specified in the consent conditions and that environmental objectives and monitoring are achieved.

81. I consider that the conditions listed in Schedule 2, of the marine discharge consent prefacing this decision, are appropriate to manage any potential adverse effects, on the environment and existing interests, resulting from granting OMV’s application.

Section 87D(2)(a)(ii): Effects on Human Heath

82. Section 87D(2)(a)(ii) requires that I must take into account the effects on human health, of the discharge of harmful substances.

83. The EPA's Evaluation Report concludes, apart from workers aboard the FPSO, people will come into contact with the harmful substance discharges and the most likely exposure pathway is through the consumption of fish. The collection of shellfish occurs in coastal areas tens of kilometres from where effects associated with the discharges are likely to occur. Therefore, I do not consider the collection of shellfish as a relevant exposure pathway.

84. For an effect on human health to occur, a consumer would have to eat fish that have been exposed to the discharges for a sufficient length of time to accumulate contaminants to concentrations that present a toxic risk. This scenario seems unlikely given the localised zone of influence (< 500 m from the point of discharge) and the limited fishing activity in the area surrounding the FPSO. I agree with the conclusion.

10 Health of workers is subject to the requirements of the Health and Safety at Work (Petroleum Exploration and Extraction) Regulations 2016, which is monitored and enforced by WorkSafe New Zealand.
of the EPA’s experts that if the risk to fish and fishing interests is very low then there is a similar or lesser risk to human health from granting this application.

85. On this basis I consider that there are unlikely to be adverse effects on human health from granting this application.

Conclusion

86. I conclude that the application, for a marine discharge consent, may be GRANTED, subject to conditions listed in Schedule 2, on the basis that:

a. All relevant matters under sections 87D and 87E have been considered and there is sufficient information to confirm that there are likely to be no more than temporary and localised adverse effects on the environment or existing interests resulting from granting this application.

b. Granting the application accords with the purpose of the EEZ Act.

c. Any potential effects can be managed by the conditions in Schedule 2 of the decision.

Duration of consent

87. Section 87H of the EEZ Act sets out the matters relevant to determining the duration of the consent. It states:

“(1) The duration of a marine discharge consent or a marine dumping consent is the term specified in the consent.

(2) However, the duration must not be more than 35 years.

(3) If no duration is specified in a consent, its duration is 5 years.

(4) When determining the duration of a consent, the EPA must comply with sections 73(2)(b) and (c), 87D, and 87E.”

88. Pursuant to section 73(2)(b) of the EEZ Act, in determining the duration of the consent, I must take into account the duration sought by OMV. OMV have sought a duration of 35 years to discharge the harmful substances outlined in Table 1 of the conditions.

89. I consider a 35 year duration is unnecessary given OMV’s expectations for the end of life of the Maari Field, which it anticipates will occur somewhere between 2023-2027.

90. Pursuant to section 73(2)(c) of the EEZ Act, I must also take into account the duration of the legislative authorisations associated with the discharge activity that is the subject of this application. The legislative authorisation of relevance is the permit PMP38160, which is due to expire on 1 December 2027. I consider that there is no advantage in applying a duration that would exceed the duration of the relevant mining permit.

91. In determining the duration, I must also consider the decision making matters outlined in section 87D and the information principles under section 87E. I have previously provided my assessment of the
application against these sections of the EEZ Act, and I will not repeat that assessment here. In setting the duration, I consider it relevant that my decision has benefited from the use of the best available information, and that there are anticipated to be no more than medium-term localised adverse effects. Therefore, I consider it appropriate to set a duration of consent that aligns with the expected life of the field and OMV’s petroleum mining permit PMP38160.

92. Having considered the requirements set out in section 87H, and in light of the purpose of the EEZ Act, I have determined that this marine discharge consent, EEZ300004, should expire on 1 December 2027.

End of Decision
APPENDIX ONE – Staff assessment of the application against the matters under section 87D(2)(a) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012

Information taken into account under section 87D(2)(a) of the EEZ Act

<table>
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<th>Assessment</th>
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<td>Effects on the environment</td>
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OMV’s IA describes potential water column and benthic impacts associated with its harmful substance discharges and the potential for these impacts to affect plankton, fish, marine mammals and seabirds. OMV considers, and based on the information provided, I agree, that these environmental effects present a very low level of risk. The primary effects associated with the discharges are effects as a result of increased levels of contaminants within the discharge streams and near to the FPSO.

The IA concludes that any adverse ecological effects are considered to be at worst moderate and more typically low. Effects are likely to be localised although there is some potential for bioaccumulation in the foodweb. Data obtained in the northeast Atlantic shows that some components in produced water (i.e. polycyclic aromatic hydrocarbons and alkyl phenols) have been detected in fish and mussels caged near offshore oil and gas facilities. These studies also conclude that significant biological effects are likely to be limited to within a kilometre of offshore oil and gas platforms, and the potential for population wide impacts is likely to be low.

OMV has provided a report that models the discharge plumes resulting from the discharge of production water and excess treated seawater. Modelling results are provided for a variety of scenarios and assume a maximum rate of discharge based on OMV’s future projections (production water @ 45,000 bbl/day and excess treated seawater @ 20,000 bbl/day). The results suggest rapid dilution of discharges within a few hundred metres of the FPSO Raroa. Modelling of the dispersal of the discharge in

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11 The definition of existing interests is as defined in the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012.


13 Current produced water discharge rates are approximately 5,000 bbl/day. The volume of produced water discharged is expected to increase over the lifetime of the field.
combination with Direct Toxicity Assessment (DTA) data and Discharge Chemical Composition (DCC) data obtained from OMV’s monitoring programme have been used to infer the levels of dilution that would be required to ensure that marine species in the path of the discharges would not be exposed to toxic effects. DTA analysis suggests that dilution levels that would be required to ensure ‘no toxic’ effects would be reached within 200 m of the point of discharge, and ANZECC water quality guideline values would be achieved within 50 m for naturally occurring contaminants (Polycyclic Aromatic Hydrocarbons, Monoaromatic Hydrocarbons, metals and metalloids). In addition, OMV’s previous monitoring indicates that contaminants in sediments have not increased significantly over time, although data is lacking for sites near to the discharge source (<250m). These results suggest that discharges will result in no more than medium term localised adverse effects.

We undertook a quantitative environmental risk assessment to assess the risk posed by harmful substances that OMV has applied to discharge. The outcome of the assessment suggested that the risk associated with the majority of these substances is likely to be negligible or very low. Our modelling initially identified two harmful substances (PFR7703 Solvesso 150 & Musol A Solvent) that were considered to pose a very high risk to the environment. Further information provided by OMV resulted in a revision of our assessment which took into account OMV’s estimated concentrations of the substances that would enter the environment. The revised assessment concluded that the discharge of Musol A Solvent and PFR7703-Solvesso 150 would pose a low to very low risk to the marine environment (further detail is provided in the Environmental Risk Assessment report).

Given the information provided in OMV’s IA, OMV’s responses to our requests for further information, and our environmental risk assessment, I consider that organisms in the immediate vicinity of the FPSO will be exposed to elevated and potentially toxic concentrations of added harmful substances and naturally occurring contaminants.

The area in which the effects will occur, is one that has been impacted by the presence of Maari’s facilities and its associated activities, including harmful substance discharges since 2009. The effects will continue to occur over the term of the consent and following the cessation of activities, as the environment in the
immediate vicinity of the FPSO recovers. Although some of the naturally occurring contaminants present in the discharges have the potential to accumulate in sediments, the monitoring to date has provided no evidence that such accumulation has occurred. It is also unlikely that OMV’s added harmful substances will present an ongoing long-term risk to organisms in the vicinity of the FPSO given the calculated low levels of risk and the fact that these substances will degrade over time. This suggests the benthic environment, in the immediate vicinity of the FPSO, will start to recover once the source of impact (the discharges) ceases. Therefore, given nature of the discharges, the predicted levels of dilution (from DTA and modelling) and the monitoring data collected to date, I consider that the discharges will result in no more than temporary and localised adverse (within 500 m of the discharge) effects over the duration of the consent with recovery expected to commence after the discharges cease.

**Effects on existing interests**

We have notified 76 iwi organisations that we consider may be affected by the activities (the applied for discharges). The decision to notify these groups was made because of the potential for bioaccumulation in the food web and in the tissue of fish species that may be targeted by fishing activity. OMV has also identified commercial fishers and quota holders as existing interests in its IA. OMV considers, and I agree, that the potential for direct effects on fishing activity is negligible given the 500 m exclusion zone around the FPSO and the wellhead platform and the small amount of fishing in the general area. Information provided by the Ministry for Primary Industries, in the form of maps, shows only one commercial fishing event started, and two ended, within a 6 km radius of the FPSO over the last five years.

The more likely source of impact is the indirect risk posed by the bioaccumulation of contaminants in fish tissue. As discussed previously, the risk of bioaccumulation is greatest in the immediate vicinity of the FPSO and there is the potential for contaminants to accumulate in fish that spend time within the discharge’s zone of influence. The significance of this impact on fish species and thus fish stocks and existing interests, depends on the area of exposure to the discharges and the proportion of a given fish population that is affected. However, the risk associated with the discharge is localised and I consider population level effects on commercially relevant fish species are unlikely to occur,
and there is limited overlap between OMV’s activities and fishing. I agree with OMV’s conclusion that contaminants in the discharge that have a bioaccumulative potential present a low risk to fish and therefore iwi organisations with fishing interests and other fishers.

**Cumulative effects**

The potential for cumulative effects is described in section 7.6 of OMV’s IA. I agree with OMV’s conclusion that the potential for cumulative effects as a result of other offshore hydrocarbon activities is likely to be negligible. The geographic separation between these activities and the levels of dilution will ensure that cumulative effects as a result of discharges or other activities from these separate installations are unlikely to occur. I also consider it unlikely that other activities such as fishing will result in cumulative impacts given the low levels of fishing in the vicinity of the Maari Field.

Cumulative synergistic effects as a result of the discharge of multiple harmful substances and other effects associated with OMV’s operations, such as physical effects associated with the dragging of anchors from the FPSO, have not been described. Nevertheless, a description of these effects is unlikely to alter the conclusion that the discharges will result in no more than medium-term localised (within 500 m of the discharge) adverse effects. I also consider the proposed conditions will enable the detection of unanticipated effects through monitoring of the water column, sediments and benthic environment.

<table>
<thead>
<tr>
<th>Section 59(2)(a)(ii) any effects on the environment or existing interests of allowing the activity including effects that may occur in New Zealand or in the waters above or beyond the outer limits of the exclusive economic zone</th>
<th>My consideration of the effects on the environment and existing interests is set out above. I do not consider there will be any effects associated with the activities in New Zealand or beyond the outer limits of the EEZ. Effects associated with the discharges will be concentrated in a localised area around the FPSO Raroa. The FPSO is approximately 80 km off the Taranaki coast and over 100 km from the outer boundary of the EEZ.</th>
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<tr>
<td>Section 59(2)(b)(i) the effects on the environment or existing interests of other activities undertaken in the area covered by the application or in its vicinity including the effects of</td>
<td>As described previously other hydrocarbon activities are sufficiently separated from OMV’s activities that effects from those activities are unlikely to result in cumulative impacts on marine species or existing interests. In addition, there are low levels of fishing in the area covered by application or in its vicinity.</td>
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14 New Zealand is defined in the Interpretation Act (1999) as “the islands and territories within the Realm of New Zealand”
<table>
<thead>
<tr>
<th>Activity/Section</th>
<th>Description</th>
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<tr>
<td>activities that are not regulated under this Act</td>
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<tr>
<td>Section 59(2)(b)(ii) the effects on the environment or existing interests of</td>
<td>As previously stated, I do not consider there will be any effects in New Zealand or beyond the outer limits of the EEZ.</td>
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<tr>
<td>other activities undertaken in the area covered by the application or in its</td>
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<tr>
<td>vicinity including effects that may occur in New Zealand or in the waters or</td>
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<td>beyond the continental shelf beyond the outer limits of the exclusive economic</td>
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<tr>
<td>zone</td>
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<tr>
<td>OMV’s discharges will expose organisms to elevated and potentially toxic</td>
<td>OMV’s discharges will expose organisms to elevated and potentially toxic concentrations of added harmful substances and naturally occurring contaminants. The significance of this impact will decrease sharply as the discharges are diluted in the marine environment, and it is expected by the applicant (modelled) that no toxic effects will occur beyond 200 m from the point of discharge.</td>
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<tr>
<td>concentrations of added harmful substances and naturally occurring contaminants.</td>
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</tr>
<tr>
<td>The significance of this impact will decrease sharply as the discharges are</td>
<td>Sediment monitoring results described by OMV suggest that contaminants have not accumulated to levels that will have an impact on benthic organisms 250 m or more from the point of discharge. These monitoring results, the modelling provided by OMV, and our own risk assessment suggest that any effects associated with these discharges will be localised in nature. This would suggest that OMV’s activities are unlikely to adversely affect the biological diversity of the South Taranaki Bight (STB) and the integrity of marine species, ecosystems and processes in the STB.</td>
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</table>
and vulnerable species are known to frequent the Taranaki area including some species of whale and dolphin. These species may come into contact with harmful substance discharges if they traverse the area where the plumes are likely to occur (i.e. within a few kilometres of the FPSO). In addition, these predators may feed on fish that have been exposed to harmful substance discharges.

I consider that OMV’s activities are unlikely to affect rare and vulnerable ecosystems and the area affected by discharges represents a tiny fraction of the habitats of the threatened species described. Threatened species known to frequent the area are highly mobile and transient visitors. I note that fur seals are often seen on the stern of the FPSO but are not considered a threatened species.

OMV’s IA states that up until December 2015, the Maari Joint Venture has contributed approximately NZ$550 million in royalties and taxes to the New Zealand Government. The life of field contribution is expected to be in the vicinity of NZ$800 million. There are other economic benefits associated with OMV’s operation including employment and through the development of associated infrastructure such as the Taranaki Port. I consider that allowing the application will enable the continued extraction of petroleum resources, and in doing so, will continue to result in economic benefit to New Zealand through the payment of royalties and taxes as described by OMV.

OMV has been producing crude oil from the Maari Field since 2009. Granting this application would enable OMV’s continued use and development of the natural resources as required by its petroleum mining permit PMP38160.

OMV must comply with a number of different marine management regimes managed by WorkSafe NZ and Maritime NZ that impose standards and requirements that are relevant to the environmental matters that must be considered under section 59 of the EEZ Act. The Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations, requires OMV to have a Safety Case submitted and approved by WorkSafe NZ. The Safety Case requires OMV to reduce the risk from wells to as low as reasonably practicable.
The Maritime Transport Act 1994 and its associated regulations, administered by Maritime NZ, also require the preparation of an Oil Spill Contingency Plan that manages the risk of an oil spill occurring.

While I do not consider that any of the requirements under these regimes are directly relevant to the application they do reduce the likelihood of unanticipated events occurring, which in turn would increase the risk of an unplanned discharge of harmful substances.

The Continental Shelf (Maari Development Safety Zones) Regulations 2008 establishes a 500 m exclusion zone around the Maari facilities. This exclusion zone prohibits the entry of unauthorised vessels within 500 m of the facilities and limits the potential for adverse effects on iwi organisations with fishing rights and other fishers.

OMV states that it seeks to implement industry best practice, including undertaking annual monitoring in accordance with the Offshore Taranaki Environmental Monitoring Protocol and operating in accordance with the Ministry for Environment’s “Environmental Best Practice Guidelines for the Offshore Petroleum Industry”. OMV also states that it works closely with international chemical suppliers to ensure the least ecotoxic or harmful production and workover chemicals are used in the Maari Field. Our risk assessment initially identified two chemicals, which are harmful substances that we considered posed a very high risk to the environment. Following the provision of further information we concluded that these substances were unlikely to present a significant risk to the environment. In relation to the use of harmful substances, I understand this is an integral component of the production process and to ensure the ongoing integrity of the wells and associated production facilities. The use of such substances ensures efficiency of production and also serves to mitigate the potential for unplanned discharges.

OMV continuously measures the oil in water content of its production discharge and has measures in place to automatically prevent discharges overboard if oil in water readings exceed a monthly average of 30 ppm or an instantaneous measure of 40 ppm.

I note that best practice internationally, in the northeast Atlantic, provides regional goals including a ‘zero discharge’ goal for oil,
added process chemicals and naturally occurring substances in produced water. Zero discharge in practice means banning substances that are likely to present a risk to the marine environment. In Norway, operators are required to report to regulators regarding the progress of their zero discharge work on an annual basis. There is no parallel regulatory requirement in New Zealand.

We have included within the conditions the requirement for an annual report including a clause that requires OMV to describe any measures that have been undertaken to reduce the adverse effects of harmful substances. The conditions also provide for the preparation of a Monitoring and Technology Review Report, the purpose of which is to ensure that best practice is applied to the management and monitoring of the environmental effects of the consented discharges. The intent is to ensure continual improvement is considered by the operator.

| Section 59(2)(j) the extent to which imposing conditions under section 63 might avoid, remedy, or mitigate the adverse effects of the activity | I consider the conditions as proposed will operate to avoid, remedy or mitigate the adverse effects of the activity. Conditions require environmental monitoring, set thresholds and prescribe that notification to the EPA is required if thresholds are exceeded and remedial action must be taken to ensure compliance.

I consider that the provision of an Ecological Effects Monitoring Plan, monitoring results, and an annual report will enable the EPA to monitor OMV's environmental performance. The EPA has the right, under s 76 of the Act, to review the duration and conditions of consent to deal with any adverse effects on the environment that were not anticipated when the consent was granted. |
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<tr>
<td>Section 59(2)(k) relevant regulations</td>
<td>I have given consideration to the Continental Shelf (Maari Development Safety Zones) Regulations 2008 and consider that this regulation contributes to minimising the effects on existing interests by imposing a 500 m exclusion zone around the Maari facilities.</td>
</tr>
<tr>
<td>Section 59(2)(l) any other applicable law</td>
<td>No other laws are likely to be directly applicable to this application.</td>
</tr>
<tr>
<td>Section 59(2)(m) any other matter the EPA considers relevant and reasonably necessary to determine the application</td>
<td>I do not consider there are any other matters that are relevant and <em>reasonably necessary</em> to determine the application.</td>
</tr>
</tbody>
</table>
I consider there are no direct effects associated with the harmful substance discharges on human health. The activities will occur approximately 80 km off the coast of Taranaki where people are unlikely to come into contact with the discharges. The risk is further mitigated by Regulation 4 of the Continental Shelf (Maari Development Safety Zones) Regulations 2008 (Safety Zone Regs), establishes safety zones comprising an area extending to a distance of 500m from the wellhead installation and FPSO.

There may be some risk of exposure to workers handling the harmful substances. However, I acknowledge the health of workers is subject to the requirements of the Health and Safety at Work (Petroleum Exploration and Extraction) Regulations 2016, which is monitored and enforced by WorkSafe New Zealand.

Indirect effects through the consumption of contaminated seafood present a more likely pathway to human health effects. Shellfish consumption is an unlikely pathway as shellfish collection occurs near the shore and in shallow water many tens of kilometres from OMV’s activities. OMV has identified the potential for bioaccumulation to occur in fish exposed to discharges, however the zone of influence where accumulation may occur is highly localised (within a few hundred metres of the discharge). Fishing boats are not able to fish in the immediate vicinity of the platforms and only one commercial fishing event started, and two ended, within a 6 km radius of the FPSO over the last five years.

Based on the information provided I consider the potential for adverse effects on human health, as a result of consuming fish that contain elevated and potentially toxic concentration of contaminants, highly unlikely.