FORM

Application for an enforceable undertaking

June 2019

Part 4, Health and Safety at Work Act 2015

The commitments in this application are offered to WorkSafe New Zealand by

Name of entity or, partnership or individual applying for this undertaking

Mercury NZ Limited

New Zealand Government

WORKSAFE
Mahi Haumaru Aotearoa

WORKSAFE
Mahi Haumaru Aotearoa

FORM

Application for an enforceable undertaking

Part 4, Health and Safety at Work Act 2015

The commitments in this application are offered to WorkSafe New Zealand by

Name of the person or persons who will be signing this undertaking in section 4:

Stewart Hamilton (General Manager, Generation)

On behalf of:

Mercury NZ Limited

Name of the entity giving this undertaking (if an individual or sole trader, leave blank – complete in all other cases)

Mercury NZ Limited

This enforceable undertaking is given on the day and date that it is accepted and signed by WorkSafe. The undertaking and its enforceable terms will operate as a legally binding commitment on the part of the person from the date it is given.

Do not refer to the victim by name in this document. Please refer to the victim/worker/employee/volunteer/or other term as appropriate.

WorkSafe respects your privacy and is committed to protecting personal information. The information provided in this document is for the purpose of an undertaking given to WorkSafe under Part 4 of the *Health and Safety at Work Act 2015*. This information will be managed within the requirements of both the *Privacy Act 1993 and the Official Information Act 1982*.

There is an expectation that WorkSafe will generally publish the undertaking in full on its website.

TERM	DEFINITION
Contravention	An action which offends against the *Health and Safety at Work Act 2015* and/or any Regulations made under it. It includes both health and safety contraventions. A contravention also includes an alleged contravention.
HSMS	A Health and Safety Management System.
Person	An individual who or a legal entity which has a duty under the *Health and Safety at Work Act 2015* and can give a written undertaking. The term includes individuals, each partner in a partnership, corporations, trustees of trusts, and crown organisations.
Health and Safety legislation	*Health and Safety at Work Act 2015* and associated regulations.
Enforceable undertaking	An enforcement pathway that allows a duty holder to voluntarily enter into a binding agreement with WorkSafe. The agreement outlines actions the duty holder will undertake to address the contravention. It is expected to deliver activities which benefit workers, the wider industry or sector and/or the community as well as acceptable amends to any victim(s).

WSNZ_2483_JUN19

1. General information

1.1 Details of the person/persons/entity giving the undertaking

Name of person(s) making this undertaking: (in all cases complete with the name(s) of those who are signing this undertaking under Section 4)

Stewart Hamilton (General Manager, Generation)

Name of entity: (if applicable, leave blank if an individual)

Mercury NZ Limited ('Mercury')

Type of legal entity: (complete in all cases, for example individual, sole trader, partnership, trust, company, etc)

Company

Nominated contact person: (the same person listed above/one of those listed above)

As above

Physical address:

Mercury NZ Limited
33 Broadway
Newmarket
Auckland 1023
New Zealand

Postal address: (if different from physical address)

Work phone: [redacted]

Mobile phone: [redacted]

Email: stewart.hamilton@mercury.co.nz

Industry: Electricity generation and retail

Workers (enter numbers):

Full-time: 300 Part time: Casual:

Description of the products and services provided by the business or undertaking:

Mercury NZ Limited (Mercury) is an electricity generator and multi-product retailer of electricity, gas, broadband and mobile telephone utilities.

Mercury generates electricity from 100% renewable sources: hydro, geothermal and wind. Its electricity generation sites are located along the Waikato River (hydro), in the steamfields of the northern part of the Central Plateau (geothermal), and in the Manawatū, South Taranaki and Otago regions (wind).

Mercury's retail operations serve residential and small to medium sized business customers. Mercury sells electricity, gas, LPG, broadband and mobile services. It sells a pre-pay electricity product through its sub-brand GLOBUG.

Comments:

NB the full time worker number in the bottom left hand side of this page relates to the Generation part of Mercury's business.

1.2 Detail of the contravention

Mercury has been charged with one offence under sections 48(1), 48(2)(c) and 36(1)(a), and one offence under sections 48(1), 48(2)(c) and 43(2)(d) of the Health and Safety at Work Act 2015 in relation to an incident at its Rotokawa geothermal power station (Rotokawa) on 7 July 2021.

WorkSafe alleges that Mercury failed to comply with its duty as a Person Conducting a Business or Undertaking (PCBU) to ensure, so far as is reasonably practicable, the health and safety of workers who work for it, and that the failure exposed the workers to risk of death or serious injury.

WorkSafe considers that it was reasonably practicable for Mercury to take the following steps:
- undertake effective risk assessments as part of the commissioning work at Rotokawa, in particular by adequately assessing what constituted excessive steam hammering;
- undertake effective risk assessments as part of the commissioning work, in particular by reassessing risk controls following material deviations from earlier risk assessments; and
- ensure effective communication protocols between the control room operators and the facility commissioning team during the commissioning works.

WorkSafe also alleges that Mercury failed to comply with the duty to ensure, so far as is reasonably practicable, that the way items of plant were installed at Rotokawa was without risks to the health and safety of persons at or in the vicinity of the workplace, whose health could be affected by use of those items, and that this failure exposed those persons to a risk of death or serious injury.

WorkSafe considers that it was reasonably practicable for Mercury to take the following steps:
- commission a mixing tee designed to minimise the risk of steam “flashing” in the piping at Rotokawa;
- commission a smaller brine bypass valve with better flow control; and
- apply a double-block-and-bleed isolation method to separate OEC21 from OEC01 and reduce the risk of fluid flowing into the area being worked on in the event of a valve failure.

1.3 Detail the events surrounding the contravention

A loss of containment (brine and flash steam) occurred at Rotokawa on 7 July 2021 during commissioning activities following a planned outage and upgrade. At the time, Mercury was undertaking a multi-year rebalancing project to increase the output of the Rotokawa and the nearby Nga Awa Purua station by improving plant efficiency. The purpose of the day's commissioning work was to test control valve tuning for separator level control.

Although Rotokawa is usually operated remotely from a control room at nearby Nga Awa Purua station (NAP), there were personnel on site on the day of the incident as part of the commissioning works. However, onsite personnel were on morning tea break outside of the site fence and away from the vicinity at the time of the loss of containment of steam.

At 9.27am, the primary Programmable Logic Controller (PLC) (an industrial computer control system that monitors the state of input devices) failed and the backup PLC took on the duty. However, the forces that had been in place on the primary PLC to override the off-spec brine control did not transfer across to the backup PLC. This had the effect of closing the reinjection dump valves which were in manual mode and had not yet been commissioned. Pressure built up in the brine system on the downstream side of the station until an equilibrium was reached and brine flow through the station stopped.

To regain production from the unit, the brine reinjection dump valves were manually opened by the control room operator and brine began to flow. During this process a cooled slug of brine encountered hot brine from the brine bypass valve and the mixing of the two significantly different temperature fluids caused a severe steam hammer event. This resulted in damaged valves and pipework, a breach of a permitted isolation point and loss of containment of steam. The steam leak began at 10:13am. At approximately 10:20am, onsite personnel reported hearing hammering and steam discharge. Evacuation alarms were activated at 10:36am and, by 10.47am, the area was cordoned off and the station was shut down safely.

No one was injured or harmed.

1.4 Detail any enforcement notices issued that relate to the contravention as detailed in term 1.2

DATE	NOTICE TYPE	NOTICE NUMBER	CONTRAVENTION OR PROHIBITED ACTIVITY	ACTION TAKEN IN RESPONSE TO NOTICE
DD / MM / YEAR	SEE APPENDIX A			
DD / MM / YEAR				
DD / MM / YEAR				

1.5 Detail the rectifications to the workplace or work practices made as a result of the contravention (1.2), events (1.3) and the enforcement notices issued (1.4)

Since the incident, Mercury has engaged and collaborated with external and internal experts to progress design enhancements to maximise long-term safety and efficiency. Following the detailed reviews carried out since the incident, recommendations were made for future improvements in these areas.

1. Following the incident and before the Rotokawa plant was re-started

Before restarting the plant following the incident, Mercury undertook a thorough return-to-service process and remedial work to minimise residual risk.

Mercury took the brine bypass valve out of service, re-allocating the fluid flow to the pond, thereby eliminating the risk of a severe hammer event and ensuring the plant would be safely commissioned. A number of steps were taken prior to making this design change, which included:

- On 12 July 2021, Mercury carried out relevant research for and authored an internal paper titled Steam Hammer – Design Review.
- On 13 July 2021, Mercury carried out a Hazard and Operability Study and Risk Assessment facilitated on-site by external process safety experts, Safety Solutions. Representatives from Mercury, MB Century and Tesla Consultants participated.
- On 14 July 2021 Mercury conducted a Root Cause Analysis workshop facilitated by engineer Kate Williamson of consultancy firm ReEngineering where it was concluded that the most likely cause of the loss of containment was localised steam hammer due to “cold” brine mixing with hot (flashing) brine from the brine bypass line.
- The design changes required to operate the plant without the brine bypass valve were peer reviewed internally by Mercury staff and externally by Michael Rock from Thermarock Engineering. Mr Rock visited the site on 19 July 2021 and subsequently confirmed that it would be safe to commission the plant with the bypass disabled, provided that certain other steps be carried out.
- On 21 July 2021, following the necessary reviews, a Management of Change Approved Change Request was made, assessed, and approved to remove the brine bypass from service. This request was supported by internal memos and the external review from Mr Rock.

The design change was tested and checked for safety while in service. It remains in place while future design improvements were considered, until Mercury had the necessary assurance that the hammer events were understood, and while permanent changes are made.

CONTINUED IN APPENDIX A

1.6 Total amount of money spent on rectifications

The estimated cost of rectification to date is $800k. This includes internal and contractor time to complete the improvement notices and estimated spend on ongoing workstreams relating to the reliability/safety of Rotokawa and the brine bypass remedial works.

1.7 Detail the injury sustained or illness suffered by victim(s) or other(s) as a consequence of the contravention or, (as applicable) the *potential* for fatal injury or future fatal illness

No one was injured (fatally or otherwise) as a consequence of the loss of containment.

WorkSafe alleges the risk and consequences of the loss of containment were a severe burn injury or death to workers onsite in the vicinity of the OEC21 valve arising from contact with released, uncontrolled geothermal fluids at high temperatures and pressures.

Mercury acknowledges that WorkSafe considers there was the potential for fatal injury arising from the incident. Mercury accepts that a loss of containment of steam may pose risk to those in the vicinity close to the relevant pipework openings.

Mercury is thankful that no one was in the vicinity of the plant at the time of the loss of containment to be exposed to any potential risk of harm.

1.8 Detail any offer of amends or payments made to the victim(s) who sustained injury or suffered illness (the total monetary amount here is also to be included in the table at 3.12.3)

Describe the victim(s) relationship to you/the entity in question: (eg employee(s)/shareholder/director/family member/contractor, etc. If the relationship has more than one dimension, for example a family member who is also an employee and a director and/or shareholder of the business, or an employee who is a shareholder (etc) – then please describe this)

Not applicable.

Detail offer of amends or payments:

Not applicable.

1.9 Detail any consultation with the victim(s) as to their views on whether an enforceable undertaking would be an acceptable alternative to prosecution

Not applicable.

1.10 Detail any consultation with unions/sector/industry as to their views on whether an enforceable undertaking would be an acceptable alternative to prosecution

Mercury has not consulted externally on whether an enforceable undertaking would be an acceptable alternative to prosecution given that it does not have a unionised workforce, it operates bespoke equipment, and there was no victim. However, as explained at section 1.14, Mercury has undertaken extensive internal consultation in preparing this enforceable undertaking application and has also consulted widely with key industry stakeholders in relation to the activities that it proposes undertaking (and received positive feedback).

1.11 Detail the support provided or proposed by the person to the victim(s), other(s)

DATE	DESCRIPTION OF SUPPORT	COMMENTS
DD / MM / YEAR	Not applicable.	
DD / MM / YEAR		
DD / MM / YEAR		
DD / MM / YEAR		
DD / MM / YEAR		
DD / MM / YEAR		
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DD / MM / YEAR		
DD / MM / YEAR		
DD / MM / YEAR		
DD / MM / YEAR		
DD / MM / YEAR		

1.12 Detail any current HSMS implemented and maintained by the person

Describe how health and safety risks are managed, including types of procedures or policies or standards:

Mercury cares about the health, safety and wellbeing of its people, partners, customers and communities. Mercury recognises that a safe and healthy culture is more than just the absence of harm; it also requires growing the capability of its people and systems to enable safe and healthy outcomes.

1. Comprehensive HSMS

Mercury has a comprehensive health and safety management system (HSMS) that encompasses a suite of policies and procedures for the management of health and safety across its sites. Mercury's Health, Safety and Wellbeing Policy (HSW Policy) is the foundation of its HSMS and provides that Mercury:

- is committed to creating an environment where people can thrive in their work, where physical wellbeing is enhanced, and mental wellbeing is supported; and
- has values of: Curious and Original, Commit and Own it, and Share and Connect; to support and enable this commitment.

Mercury's HSW Policy sets out responsibilities and commitments required of: everyone who undertakes work or visits Mercury sites; leaders and managers; and Mercury as a PCBU to ensure successful health and safety outcomes throughout the organisation.

2. Safety in Design processes

Mercury has effective and robust Safety in Design (SiD) processes which are used when commissioning its plant. Mercury's SiD processes implement and align with good industry practice, New Zealand regulations and external audits, and is consistent with the Electricity Engineers' Association Safety in Design guide and the principles of the International Standard IEC 61160 "Design Review".

When recommissioning the Rotokawa plant, Mercury undertook a thorough SiD process, consistent with its usual practices. All Design Reviews, Management of Change, HAZOPs and Risk Assessments required for the project were completed. The SiD process for Rotokawa involved:

- Detailed Design Review: this review was performed over five sessions in June and July 2020 and was facilitated by the designer, MB Century. The personnel present included: the Mercury project team; Mercury Operations and Engineering personnel independent from the project team (including technical approvers); and the contracted design team (MB Century and their engaged subcontractors, Tesla and Sigma Consultants).
- Hazard and Operability Study (HAZOP): this study was held over three days in August 2020 and was independently facilitated by Safety Solutions Limited. The personnel present included: the Mercury project team; Mercury Operations and Engineering personnel independent from the project team (including technical approvers); and the contracted design team (MB Century (both core and non-core design personnel) and their engaged subcontractors, Tesla and Sigma Consultants). The study resulted in the HAZOP report.
- Operability and Maintainability Review: this review was completed on 21 August 2020 and was facilitated by the designer, MB Century. The personnel present included: the Mercury project team; Mercury Operations and Engineering personnel independent from the project team (including technical approvers); and the contracted design team (MB Century and their engaged subcontractors, Tesla and Sigma Consultants).
- Constructability Review: this review was facilitated by the designer, MB Century, on 23 September 2020. The personnel present were the Mercury project team; site operations team members; the contracted design team (MB Century and Sigma Consultants); and the primary contractor for construction, Steiner and Moses.
- Management of Change (MoC): the MoC was undertaken in accordance with Mercury's management of change process (QM70) and completed on 27 May 2021.

In February 2019, MB Century also completed a Project FEED – the Rotokawa Rebalancing Project Mechanical and Structural Front End Engineering Design Report – which outlines the engineering details, technical challenges and estimated investment to modify the Rotokawa Steamfield and the Rotokawa Power Station and assessed from an engineering perspective the proposed design of the Rotokawa plant in the upgrade project.

CONTINUED IN APPENDIX A

1.13 Detail the level of auditing undertaken on the HSMS, including compliance audits and audit frequency

Among other things, Mercury undertakes auditing in accordance with QM52 Audits and Process Reviews. This quality management standard outlines the program of audits and reviews to ensure that management processes, activities and results meet required standards of business performance, management of risk, and legal compliance. QM52 ensures continuous monitoring and improvement of Mercury's HSMS processes.

Mercury's health and safety audits of note during the past 12 months include:
1. Annual, external H&S Management Systems Compliance Audits. Last undertaken in August 2022, next audit due in July 2023. These audits are undertaken by Telarc, to the following standards:
- Occupational Health & Safety Management System is audited to standard ISO45001
- Safety Management System for Public Safety is audited to standard NZS7901
- Quality Management System is audited to standard ISO9001.

2. Annual, external ACC Partnership Programme Compliance Audit. Last completed October 2022, next audit due September 2023. Undertaken by an ACC-approved auditor.

3. H&S Critical Risk Assurance Audit (initiated by the Risk Assurance Audit Committee). Included site visits to two of Mercury's power stations, Aratiatia and Ngatamariki. The Audit was carried out by an independent reviewer from Manawa Energy Ltd and was completed from 1-4 May 2023. The draft report is still pending at the time of submitting this application.

4. Generation Site Work Controls Audits. These are undertaken internally by work controls competent staff. There are two types:
- Monthly site audits (work controls documentation reviews); and
- In-progress audits (of work tasks).

5. Contractor Project Audits. These are usually undertaken by an independent contractor, e.g. Edison Group, and are carried out as per the applicable contract's agreed audit schedule.
Mercury records its compliance audits in Synergi Life.

1.14 Detail the consultation undertaken or proposed to be undertaken, in relation to this undertaking

Mercury has undertaken wide internal consultation in preparing this application:
- All workstream leads have been consulted on their relevant activities.
- The Generation Leadership Team has been consulted extensively in the preparation of this application.
- The Executive team and the Board have been briefed.

Mercury has also consulted with a number of key stakeholders in relation to the activities proposed to be undertaken as part of this undertaking, with a view to ensuring the proposed activities will result in a substantial uplift to workers and the industry, including:
- MB Century - energy solutions provider and the designer of the upgrade works for the Rotokawa power station
- Ngti Twharetoa Geothermal Assets (NTGA) - operator of a geothermal power station in the Bay of Plenty
- Ngwh Generation - operator of the Ngwh geothermal power station in the far North
- Eastland Generation - operator of the Te Ahi O Maui Geothermal power station in the Bay of Plenty
- Contact Energy - operator of five geothermal power stations in the North Island and currently building a sixth (Tauhara).

This consultation was positive. MB Century, NTGA, Ngwh and Eastland in particular indicated a strong desire to engage with Mercury during the proposed undertaking including to share lessons learned. Mercury has used this feedback to develop the activities proposed for the benefit of the industry that are set out in section 3.4 of the application..

Mercury has also contacted, but had not at the time of submitting this application, heard back from the following:
- Genesis Energy - has a supply contract with Contact for electricity that will be generated from the Tauhara power station.
- Fonterra - generates and uses steam at its processing sites to dry dairy ingredients when producing milk powder.

2. General terms

The person acknowledges and commits to the general terms set forth in the sub-terms below.

2.1 Acknowledgement that WorkSafe alleges a contravention occurred as detailed in term 1.2

Mercury acknowledges that WorkSafe alleges Mercury has contravened sections 36(1)(a) and 43(2)(d) of the Health and Safety at Work Act 2015 in the manner detailed in section 1.2 above.

Mercury has taken the incident and WorkSafe's allegations seriously. Mercury has responded accordingly with a thorough investigation into the incident, keeping the plant offline until it could be certain it was safe to restart operations, and with the remedial steps outlined in section 1.5 above.

The further actions proposed by Mercury in this application demonstrate the seriousness with which Mercury is responding to the incident and WorkSafe's allegations.

2.2 Statement of regret that the contravention occurred

Mercury regrets that a loss of containment of steam occurred at Rotokawa. Mercury is committed to making the improvements detailed in this application to mitigate the risk of such an incident taking place at any of its sites in the future.

2.3 Statement of the reasons why, on balance, the person considers this undertaking is the most appropriate response to the contravention

Mercury considers that an enforceable undertaking would be the most appropriate response to the contravention. There would be significant health and safety benefits from such an undertaking, meaning better outcomes for WorkSafe, the geothermal industry and Mercury than the parties continuing with and devoting their resources to the ongoing prosecution.

Mercury occupies an industry leading position and therefore is able to raise health and safety standards and drive long-term, sustainable improvement across the industry. Mercury already seeks to do this through a number of initiatives including its membership of StayLive (the electricity industry health and safety group). Mercury can leverage and utilise these pre-existing networks to make targeted and effective impact on health and safety standards within the industry and drive sustainable change.

Mercury has mature health and safety processes meaning it starts from a strong position to implement the activities proposed in this undertaking. Given its size and role in the industry, Mercury has the resource to make real change. This application demonstrates Mercury's willingness to commit significant resource to the proposed activities listed in this undertaking. Mercury has carefully considered these proposed activities for where they may have most impact and value.

Further, given there was no victim (fatal or otherwise) arising from this incident, any closure or reparative value a conviction may otherwise have to a victim and/or their family does not apply. In these circumstances, Mercury considers an enforceable undertaking a more appropriate, beneficial and effective use of resource, improving standards in the industry, as opposed to a court-ordered fine which would result in a monetary penalty alone imposed on Mercury.

Finally, Mercury is aware that the contravention meets WorkSafe's suitability assessment for an enforceable undertaking. Mercury understands that if two or more of the suitability factors listed in WorkSafe's Enforceable Undertaking Operational Policy apply, WorkSafe considers an enforceable undertaking an unsuitable outcome from an incident. This is not the case in relation to this incident.

2.4 Statement of commitment that the behaviour, activities and other factors which caused or led to the contravention has ceased and will not reoccur

It is hopefully clear from the information detailed above that Mercury will always strive to ensure that any behaviours, activities, and other factors which could cause or lead to any contravention will not reoccur. Since the incident, Mercury has taken significant steps (as detailed at section 1.5) to mitigate the risk of such an incident taking place again at Rotokawa or any of its other geothermal sites.

Mercury takes its health and safety responsibilities seriously and is dedicated to reducing risks to the health and safety of all people. Mercury understands the importance of learning from this incident. It has done so, and will continue to do so, in the implementation of the activities proposed in this enforceable undertaking.

2.5 Acknowledgment of the policy published by WorkSafe for the acceptance of an undertaking

(write the name of the person(s) or entity giving the undertaking)

Mercury NZ Limited

has read and understood the Enforcement Undertaking Operational Policy.

2.6 Acknowledgement that this undertaking will be published and publicised in full

(write the name of the person(s) or entity giving the undertaking)

Mercury NZ Limited

acknowledges that the undertaking will, if accepted, be published on WorkSafe's website in full and referenced in WorkSafe material.

2.7 Statement of the person's ability to comply with the terms of this undertaking and meet the projected costs of the activities

(write the name of the person(s) or entity giving the undertaking)

Mercury NZ Limited

has the financial ability to comply with the terms of this undertaking and have provided evidence by way of

(type of evidence provided)

Mercury NZ Limited is a publicly listed company in New Zealand with publicly available financial information.

with this undertaking to support this declaration.

In the event of impending receivership, liquidation or sale of the entity, (write the name of the person(s) or entity giving the undertaking)

Mercury NZ Limited

will advise WorkSafe of the relevant circumstances and its capacity to comply with the outstanding terms of this undertaking.

2.8 Statement outlining any relationship between the person and any corporations, officers, employees, contractors, proposed beneficiaries of donations or scholarship or other recipient of financial benefit contained in this undertaking

Mercury is not aware of any relationships with proposed beneficiaries of activities contained in this undertaking.

2.9 Statement regarding Intellectual Property

(write the name of the person(s) or entity giving the undertaking)

Mercury NZ Limited

grants WorkSafe a perpetual, non-exclusive, worldwide and royalty-free licence to use, for any purpose, all Intellectual Property Rights in relation to any material developed as a result of this undertaking. This licence includes the right to use, copy, modify and distribute the materials.

2.10 Acknowledgement that the person may be required to provide a statutory declaration

(write the name of the person(s) or entity giving the undertaking)

Mercury NZ Limited

acknowledges that it may be necessary for WorkSafe to obtain a statutory declaration outlining details of any prior convictions (safety related) outside of New Zealand and that it will provide such declaration if required by WorkSafe

2.11 Statement of commitment from the person to participate constructively in all compliance monitoring activities for this undertaking

1. It is acknowledged that responsibility for demonstrating compliance with this undertaking rests with the person.
2. Evidence to demonstrate compliance with the terms will be provided to WorkSafe by the due date for each term.
3. The evidence provided to demonstrate compliance with this undertaking will be retained by the person until advised by WorkSafe, that this undertaking has been completely discharged.
4. It is acknowledged that any failure to meet the due date for an enforceable term will result in the matter being escalated and may lead to enforcement action.
5. It is acknowledged that WorkSafe may undertake other compliance monitoring activities to verify the evidence and compliance with an enforceable term, and cooperation will be provided to WorkSafe.
6. It is acknowledged that WorkSafe may initiate additional compliance monitoring activities, such as inspections, as considered necessary at WorkSafe's expense.
7. It is acknowledged that details of all seminars, workshops and training conducted by a non-registered training provider must be notified to WorkSafe, by email, at least one week prior. Notification should include time, date, location and the trainer/facilitator.

(write the name of the person(s) or entity giving the undertaking)

Mercury NZ Limited

3. Enforceable terms

The person acknowledges all activities set forth in the enforceable terms below must be auditable and include a date for completion and an estimated cost for each activity.

The person commits to performing the activities below diligently, competently and by the respective completion date.

3.1 A commitment by the person to perform activities that will ensure the ongoing effective management of risks to health and safety in the future conduct of its business or undertaking

Detail the management strategies to be employed that will satisfy and demonstrate to officer/s of the person that this commitment is being met:

Mercury is committed to ensuring the ongoing effective management of risks to health and safety in all branches of the organisation. Mercury commits to taking all reasonably practicable steps to effectively manage risks to health and safety in its current and future operations.

In addition to the HSMS and auditing initiatives already in place (as set out in 1.12 and 1.13 above), through which Mercury ensures the ongoing effective management of risks to health and safety, Mercury will appoint a programme manager responsible for the proposed activities for this enforceable undertaking (as set out in 3.3 to 3.5 below), to ensure that these activities are properly resourced and completed. The programme manager will report to Mercury's Generation Lead Team monthly and to the Mercury Board periodically.

3.2 A commitment by the person to disseminate information about this undertaking to workers, and other relevant parties

(this may include to work health and safety representatives and in the organisation's annual report, if applicable)

Dissemination will be achieved by doing the following:

Mercury commits to disseminating information about this enforceable undertaking with its workers and other relevant parties. It will do so by:
- Preparing an alert summarising the enforceable undertaking, the agreed activities within, and Mercury's plan to implement the undertaking. This alert will be published on Mercury's internal Sharepoint site, will be emailed to all staff with a Mercury email address in the Company-wide weekly 'Team Talk' email, and will be circulated in Mercury's Monthly Generation Newsletter (Gen Buzz).
- Publishing a copy of the full enforceable undertaking on Mercury's internal intranet site which is accessible by all employees.
- Briefing all Health and Safety Staff Representatives and the Health and Safety Committee about the undertaking and its implementation so that they may be a touchpoint for staff.

Dissemination will occur by: 19 / 04 / 2024

3.3 Activities to be undertaken to promote the objectives of the health and safety legislation that will deliver benefits for workers and/or work and/or the workplace

ACTIVITIES Outline the activity and the expected outcomes	COST ($)	TIMEFRAME
3.3.1 Leader Routines for Safer Outcomes: Coaching Program and Tools	200,000	24 months
3.3.2 Process Safety Fundamentals Program	200,000	24 months

Reflecting earlier Panel feedback, internal costs have been excluded from these amounts.

The estimated internal cost of delivering the proposed activities would also be significant.

SEE APPENDIX A FOR FURTHER DETAILS

Total estimated cost of benefits for workers/others	$ 400,000

3.4 Activities to be undertaken to promote the objectives of the health and safety legislation that will deliver benefits for the wider industry or sector

ACTIVITIES Outline the activity and the expected outcomes	COST ($)	TIMEFRAME
3.4.1 Hazards Awareness Training Program	300,000	24 months
3.4.2 Autonomous Inspection for Power Plants	300,000	24 months
3.4.3 Lessons Learned - Rotokawa Steam Hammer	50,000	12 months

These amounts exclude internal resources which would also be significant.

SEE APPENDIX A FOR FURTHER DETAILS

Total estimated cost of benefits for industry	$ 650,000

3.5 Activities to be undertaken to promote the objectives of the health and safety legislation that will deliver benefits for community

ACTIVITIES	COST ($)	TIMEFRAME
3.5.1 Donation to Emergency Service Organisations	50,000	6 months
3.5.2 Health & Safety Professional Scholarship	50,000	12 months

SEE APPENDIX A FOR FURTHER DETAILS

Total estimated cost of benefits for the community	$ 100,000

3.6 Where WorkSafe considers appropriate in the circumstances, undertaking a SafePlus Onsite Assessment

Further information about SafePlus can be found here: worksafe.govt.nz/about-us/who-we-are/our-priorities/safeplus/about-safeplus

3.6.1 The suitability of a SafePlus assessment will be determined by the Enforceable Undertakings Panel when your application is considered.

3.6.2 In addition to the total cost below (3.7) all costs of a SafePlus Onsite Assessment will be met by the person making this undertaking. The fee charged for an Onsite Assessment is a commercial matter between your business and the SafePlus Accredited Assessors that you commission.

3.7 Minimum spend

(write the name of the person(s) or entity giving the undertaking)

3.7.1 Mercury NZ Limited

commits to a minimum spend of $ 1,150,000 for this undertaking.

(write the name of the person(s) or entity giving the undertaking)

3.7.2 Mercury NZ Limited

agrees to spend any residual amount arising from an original term not being completed or being less costly than estimated in this undertaking. Agreement on how to spend this residual amount will be sought from WorkSafe

(write the name of the person(s) or entity giving the undertaking)

3.7.3 Mercury NZ Limited

Acknowledges the minimum spend comprises of the:

TOTAL COST	MINIMUM SPEND
Financial amends paid to victims (if applicable)	n/a
Benefits to workers/others	400,000
Benefits to industry	650,000
Benefits to community	100,000
Estimated cost of the undertaking Plus GST (if any)	$ 1,150,000

4. Execution

Authorised representative of an organisation

Undertaking given by (name of authorised representative)
Stewart Hamilton

In my own right and in my capacity as (eg President, Chairperson, etc)
General Manager, Generation

of (eg organisation name) Mercury NZ Ltd

On the (day) 21st day of (month) February , 2024 (year).

Signatu [redacted]

Undertaking given before me:

Witness name: Kirsty-Anne Singleton

Witness address:
[redacted]

W [redacted]

5. Acceptance

This undertaking is accepted by WorkSafe.

On the (day) 1st day of (month) March , 20 24 (year).

Signature of person accepting the undertaking: [redacted]

Name of WorkSafe representative: (General Manager, WorkSafe (or delegate))
Kane Patena

Undertaking given before me:

Witness name: Mark Horgan

Witness address: [redacted]

Witness signature: [redacted]

Appendix A – Additional Information for Enforceable Undertaking Application

Additional information in respect of certain sections of Mercury's enforceable undertaking application is set out in the table below.

1. GENERAL INFORMATION				
1.4 Detail any enforcement notices issued that relate to the contravention as detailed in term 1.2				
Date	**Notice type**	**Notice number**	**Contravention or prohibited activity**	**Action taken in response to notice**
15/12/21	Improvement	151221.1	Failing to have, or act on, a standard operating procedure for permit to work (**PTW**) which includes the requirement for the suspension of all active PTW in the event of an emergency, and the revalidation of PTW, as applicable, following the all-clear decision.	See section 1.5
15/12/21	Improvement	151221.2	Failing to have clear, documented, trained, and practiced emergency response procedures in place for all workers and contractors.	See section 1.5
15/12/21	Improvement	151221.3	Failing to: • determine what constitutes severe or potentially damaging steam hammer in relation to the process and provide direction for operations and process personnel on how to address it; • implement a system at Rotokawa to determine steam hammer events and their magnitude remotely from NAP station; and • provide information, training, instruction, or supervision that is necessary to protect all persons from risks to their health and safety at a sufficient level to embed knowledge of the hazard and controls of condensate-induced water hammer.	See section 1.5
15/12/21	Improvement	151221.4	Failing to: • fully determine the potential risks of utilising a repurposed brine bypass valve in relation to the revised plant design; and • manage the change to reduce the risk to commissioning and normal production operations.	See section 1.5

1.5 Detail the rectifications to the workplace or work practices made as a result of the contravention (1.2), events (1.3) and the enforcement notices issued (1.4)

CONTINUED FROM APPLICATION FORM

2. Investigation into the incident

Mercury undertook a detailed internal investigation into the incident. On 8 September 2021, Mercury completed an ICAM Report which identified key learnings and recommended corrective actions. Corrective actions were assigned to a responsible person and given an expected completion date. All corrective actions, bar one, were completed by June 2022. The remaining corrective action is now complete.

Mercury also commissioned AECOM, a multi-national infrastructure consulting firm, to complete an investigation into the brine reinjection pipework systems at Rotokawa with a particular focus on the risk of steam hammer events. AECOM reviewed data from the event and carried out a site visit as part of its investigation. It also compared the system operation and process design with a number of other similar plants located in New Zealand and worldwide. This review led to a project to redesign a brine bypass system. The redesigned brine bypass is now in service and there is an ongoing steam hammer monitoring program for this piping system.

3. In response to the improvement notices

Mercury has implemented the remedial actions detailed below across all its generating sites.

Improvement Notice 151221.1: Permit to Work system updates following an emergency

(i) Develop, or update, and implement a standard operating procedure for Permit to Work (PTW) which includes the requirement for the suspension of all active PTW in the event of an emergency, and
(ii) Include in the above procedure, the requirement for revalidation of PTW, as applicable, following the all-clear decision

- Mercury has updated Procedure HS008: Generation Plant Work Control Procedures. Mercury has inserted a new section to manage Work Controls documentation in the event of an Emergency or Site Evacuation.
- Mercury has updated Procedure BC211Z: Evacuation Roll Call and Missing Person Procedure This document has been updated to include additional detail to step 11 of the 'Site Incident Controllers Actions' to ensure work controls are revalidated following an emergency evacuation.

(iii) As part of the implementation of the updated procedure, ensure the provision of information, training, instruction, and supervision to workers relating to the procedure is adequate.

- Site Field/Regional managers have rolled out the updated procedure referred to above to each of their site staff that conduct the roles of incident controller and work control issuer. In addition, this communication has been discussed at the site toolbox meetings and Work Controls issuer and recipient training has been updated to include this new return from site evacuation step.

This Improvement Notice was closed March 2022

Improvement Notice 151221.2: Emergency Response Plan Updates

i*) Revisit site emergency response plans and update to include the event scenario of a significant loss of containment of steam/brine from process equipment.*

- Mercury has updated its emergency response procedure – BC211K – to include an event scenario of significant loss of containment of steam/brine from process equipment.

(ii) Strengthen the process for mustering and accounting for personnel for individual and multiple sites in order to minimise time needed to account for all personnel.

- Procedure BC211Z: Evacuation Roll Call and Missing Person Procedure has been updated to strengthen the process for mustering and accounting for personnel.

(iii) Include in emergency procedures response actions that are in line with, for example, the priority hierarchy of People, Environment, Asset, and lastly Reputation, and

- Procedure BC211Z: Evacuation Roll Call and Missing Person Procedure has been updated to ensure emphasis of the hierarchy of People, Environment, Assets/Production and Reputation.

(iv) Drill emergency procedures thoroughly and if poor or unsatisfactory results are obtained then drill more frequently. Record outcomes and embed learning for continuous improvement.

- The schedule of future emergency procedures has been added to Mercury's risk management system, Synergi Life, and will trigger the sites to carry out their required exercises. Any actions which are created as a result of this emergency exercise will also be captured in Synergi as part of the original case that triggered the exercise.

This Improvement Notice was closed June 2022.

Improvement Notice 151221.3: Steam Hammer

(i) Determine what constitutes severe or potentially damaging system hammer and introduce a procedure to provide direction for operations and process personnel on how to recognise and address it.

- An Operational Guide for Steam Hammer Events (OM102 Steam Hammer Event Process) has been developed.

(ii) Design and implement a method to determine system hammer events and their magnitude remotely.

- This item is still open – a trial of remote monitoring is in execution phase. The due date for completion is December 2023

(iii) Conduct a training programme for Mercury staff at a sufficient level to embed knowledge of the hazard and controls of condensate-induced water hammer.

- A training module for steam hammer has been developed.

Improvement Notice 151221.4: Management of Change

(i) Strengthen management of change procedures and the approval process for change requests to ensure requirements for suitability checks of reintroduced equipment into a revised plant design.

- QM70 Management of Change procedure has been updated to provide more guidance on what type of operational plant changes require a management of change.

(ii) Refresh staff understanding of the management of change process and its importance especially when challenged by work programme constraints.

- To strengthen the understanding of management of change requirements across the engineering and operations teams, a training presentation was created and rolled out across the teams.
- A communications email was issued to operations and engineering management including Engineering Team Leaders and Station Managers on 29 March 2022. This communications email included a copy of the revised QM70 Management of Change Process, the refresher presentation and a toolbox prompt sheet.

This item was closed March 2022.

1.12 Detail any current HSMS implemented and maintained by the person

CONTINUED FROM APPLICATION FORM

3. Mercury's internal quality management standards and procedures

Mercury has a range of internal quality management (**QM**) standards and procedures which provide the framework for the management and mitigation of risks and hazards in its operating environments. These relevantly include:

- **QM70 Management of Change (Operational Plant) Process**: This document outlines the process for making any change (either directly or relatedly) to the physical state or operation of any existing or new operational plant that is owned or controlled by Mercury.

- **QM72 Restoration from Critical Trip and Significant Event**: The purpose of this process is to ensure that any risks associated with restoring plant to service following a trip or significant event are clearly identified and managed to prevent harm to people, additional damage to equipment, consequential damage to other plant, environmental damage or a breach of compliance.

- **QM73 Commissioning Process:** This document outlines the requirements of commissioning plant to ensure safety of staff, safe and correct operation of plant and equipment.

- **QM75 Design Process:** The purpose of this document is to ensure all engineering design work associated with operational plant that is owned or controlled by Mercury is fit for purpose, functional, and safe throughout all stages of an asset's lifecycle. This is achieved by providing a framework for the entire design process, clearly identifying roles and responsibilities for each activity, ensuring that a consistent approach is undertaken.

4. Recent health and safety-led programmes and initiatives

Since the incident, Mercury has rolled out and/or is in the process of rolling out the following other health and safety-led programmes and initiatives:

- **ZIP Essentials:** Mercury is on a journey to achieve safety citizenship where safety is a core part of everyone's role and shared responsibility. Our culture is centred around active care, safety leadership, making safety engaging, and striving to improve and learn from our collective mistakes. Zero Incident Potential (**ZIP**) training builds awareness and drives action to achieve safety citizenship through psychology-based training that helps teams and leaders – from executive to frontline level – to model and promote a mature safety culture. Training involves eight online modules followed by a seminar which began in April 2022. As at April 2023, over 90% of the Generation team have completed the ZIP essentials training. This is kept alive through focus material that is utilised in ongoing safety conversations throughout Generation workplaces.

- **Safety Interactions and Cascade coaching:** The importance of engaged leadership in developing a strong safety culture has been identified as a key ingredient for safety citizenship. Over 40 leaders across Mercury have been training in effective safety interactions and cascaded coaching, which provides the skills and framework to support positive and constructive feedback when interacting with front line staff in their place of work. The framework is built on establishing agreement between front line workers and leaders to enable action to be taken with confidence in a timely manner.

- **Critical Risks:** At Mercury we work in high-risk environments every day. Our Lifesaving Controls establish the essential requirements for managing the 11 Critical Safety Risks that are prominent in our workplace. The Lifesaving Controls set requirements for reducing the risk to our teams focused on activities with the greatest potential for serious injuries or fatalities. These sets of requirements will be integrated into our permit systems, form part of induction processes and act as reminders for the key elements of safe work. The Lifesaving Controls will be rolled out in July 2023 across generations sites.

- **Morning Meeting reboot:** As part of Mercury's Operational Excellence improvement journey, our operational site morning meetings were reviewed and enhanced to improve visibility, engagement and communication. This resulted in using a common template and links to reports between sites, which enables each site to run a meeting with the same format to cover key operational aspects with

up-to-date data and information. The topics discussed include site attendees, health and safety matters arising, current site hazardous areas, plant performance and issues in the last 24hrs, maintenance schedule, and alarm management. This new format was rolled out to site in April 2023, with a 2-month trial before feedback is sought for continuous improvements.

3. ENFORCEABLE TERMS		
3.3 Activities to be undertaken to promote the objectives of the health and safety legislation that will deliver benefits for workers and/or work and/or the workplace		
ACTIVITIES Outline the activity and the expected outcomes	Cost ($)	Timeframe
3.3.1 Leader Routines for Safer Outcomes: Coaching Program and Tools **Summary** Mercury is of the view that the pathway to safer operation is through uplifting the capability of our frontline people leaders. This activity combines coaching with a set of tools and resources to support leader routines. The routines are designed to develop consistency to achieve: 1) sustainable change through uplifting leadership capability; 2) improved operational problem-solving enabling process stability; 3) confidence that leader routines include critical checks of core system health at a granular level; and 4) a proactive culture so that issues are recognised and actioned in real-time resulting in safer outcomes **Delivery** Mercury will engage an organisational consultant familiar with working in high-risk industries to work with senior leaders and change agents within the business. Adaptive strategies and agile techniques will be used to establish a portfolio of strategies to execute a program of routines within the business. The program will include leadership coaching, design of communication techniques and tools including a focus on improving toolbox meetings and short interval controls. The routines will be designed to encourage preventative safety discussions through linking safety discussion to the scheduled work for the day, create a visual board that simplifies the meeting template and provides guidance for the shift and introduction of production based KPI's or scheduled work completed. The program will be piloted a two Mercury sites which allows an 'adapt and improve' approach before rolling out to the wider Generation business. **Outcome** Ultimately the outcome of this activity is to deliver sustainable change and uplift to people leaders within the Generation business. The results of this will be tracked through metrics to ensure quality and consistency throughout the business. We are of the view that it will improve safety discussions, mindset and ultimately safety performance.	$200,000 Consultants and supporting resources	• ***6-month milestone***: consultation and design of program • ***12-month milestone****:* completion of pilot program at two sites, metrics designed • ***24-month milestone****:* program is established at all Mercury Hydro and Geothermal facilities

3.3.2 Process Safety Fundamentals Program **Summary** At Mercury we have a Critical Risks program which has a focus on personal safety – "What can kill me". Mercury will complement this program by designing a set of Process Safety Fundamentals to support a reduction of high-severity process safety events – "What can kill us". The Mercury Process Safety Fundamentals will be designed to support those working in front-line operations and maintenance roles. They will be informed by data and designed to draw attention to situations that are most likely to lead to process safety event fatalities at Mercury facilities. Iterations of these programs are common and have been used successfully internationally in particular in the oil & gas and petrochemical industries (e.g., the International Association of Oil & Gas Producers, Shell, Conoco Phillips and the European Process Safety Centre). This is a proven model to uplift process safety awareness within a workforce. The oil & gas industry is anecdotally recognised in New Zealand as having a more developed health and safety culture when compared to the geothermal industry. The activity therefore involves taking a concept that has been successfully applied in this more mature context and using it to help uplift health and safety standards in the geothermal industry. **Delivery** Mercury will design a set of process safety fundamentals relevant to its geothermal and hydro operations. These are expected to be a set of eight to 12 principals that will form an enduring concept at Mercury. Supporting information and resources for each fundamental will be designed to target all levels within the organisation, including at board and executive level, people leaders in operational roles, and front-line workers in our facilities. The resources will also be designed to aid safety discussions in both ad-hoc and more formal situations including, for example, during toolboxes, team meetings and pre-start work meetings. Roll out of the fundamentals will be through several different media and forums. These may include: visual graphics available for online and print use, online material, hard copy media (e.g. booklets, flash cards and posters), eLearning and in-person training. Delivery will be led through a Mercury lead engineer who will ensure engagement with Operations throughout the design and delivery phase. Communication and design consultants will be engaged to ensure visual design achieves the desired impact. **Outcome** The Mercury Process Safety Fundamentals program aims to enable front-line workers to raise concerns openly and transparently. Leaders are expected to leverage the Process	$200,000 Consultants, training and program resources (e.g. print)	• ***6-month milestone***: engage delivery consultant, define Mercury Process Safety Fundamentals • ***12-month milestone***: complete design of graphics and materials, complete supporting material and finalise roll out plan • ***24-month milestone***: six-month roll out plan complete.

Safety Fundamentals as a tool to drive safety from a position of care, be visible in the field and have regular dialogue on process safety. This activity will raise awareness of high-risk activities and process safety controls within Mercury. This will increase process safety performance, result in safer operation and ultimately a reduction in high severity process safety events.		

3.4 Activities to be undertaken to promote the objectives of the health and safety legislation that will deliver benefits for the wider industry or sector		
ACTIVITIES Outline the activity and the expected outcomes	Cost ($)	Timeframe
3.4.1 Thinking About Hazards Differently - Training Program for Industry **Summary** Mercury has the desire to improve industry competency in the area of hazard awareness. Mercury owns and operates Geothermal Power plants that include three Major Hazard Facilities (**MHFs**) and two High Hazard Unit facilities (**HHUs**). In the wider Geothermal industry there are at least another five MHFs and two HHU geothermal facilities located in the North Island. In addition to this, Mercury and the wider electricity industry in New Zealand operate other high hazard operations and facilities, predominantly Hydro Power Plant. During the consultation process for this EU application it became apparent that other operating companies and sector service providers find it challenging to provide high hazard specific training to develop competencies in these areas among their workers. This challenge is further exacerbated by a generally ageing workforce and the limited availability of skilled workers to recruit into new roles. This can lead to workers not recognising or having familiarity of hazards in a facility and to the normalisation of unsafe or potentially unsafe practices. Mercury would like to enhance existing training programs available to the electricity industry as a whole by providing a re-think on how we think as an industry about hazards with practical and engaging sessions that build on existing, more theoretical training. **Delivery** Mercury will work with an organisational psychologist to design and execute a training program and supporting training material. The training will apply mindfulness techniques to high hazard operating environments with key themes of “What can kill me” and “What can kill us”. The key principal of “staying present” as you carry out your work will be used to rebuild hazard awareness training programs. The training will be piloted at one Mercury power plant and tailored following feedback and results before being rolled out over a 12-month period. Other industry participants will be invited to take part in and/or to observe this pilot. Training will be provided through in person training which will be made available, free of charge, to all industry participants. The training will be repeated throughout the year to ensure that as many participants from as many companies as wish to can take part. All training material will be made available to those in the industry and training providers to continue and improve on training within the industry.	$300,000 Consultants, supporting resources	• ***6-month milestone***: define scope, industry consultation and engage a training provider, Pilot program starts • ***12-month milestone***: pilot program and feedback complete, Training material and format designed, delivery plan in place • ***24-month milestone***: execution complete.

Outcome The outcome for this work is a large cohort of electrical industry workers will have fresh and relevant training knowledge which will improve hazard awareness and uplift competency within the industry. The impact of this will be sustained by the training material being made available to all free of charge to continue training programs as required.		
3.4.2 Autonomous Inspection for Power Plants **Summary** By applying Industry 4.0 practices and principals within its organisation, Mercury aims to build resilient, people-focused solutions that deliver value and result in safer operations. Under this umbrella, Autonomous Inspection Vehicles (**AIVs**) have the potential to complement in-person operator rounds at any industrial plant. The potential advantages for safer workplaces are significant – through reducing personnel exposure to high hazard sites and through providing a rich data source from the plant environment to enable better decisions to be made, and pre-emptive workstreams to be developed, to avoid potentially high hazard plant conditions. Mercury's vision is that in-person operator rounds are complemented through more frequent autonomous inspections using AIVs that can aid better decision making and result in safer operations. Of particular interest is monitoring the plant during higher hazard transient states – for example, during start up and shut down. The 'big data' capture that autonomous inspections using AIVs can provide will allow trending of plant and event framing of transient events. Analysis of this data has the potential to aid better decision making, early identification of issues, and continuous improvement of operating processes and procedures. **Delivery** Mercury will partner with a technology provider to deploy an AIV at a geothermal power plant to undertake plant surveillance. Two workstreams will be established: 1) Establishment of parameters and mode of operation of AIV in the plant, safety and risk reviews to optimise deployment opportunities (when and where the AIV needs to be); and 2) Capture and processing of data, and presentation of this data in a format that workers can use for decision making. Mercury will take a leadership role in sharing the learnings widely with the New Zealand industry, both though geothermal industry specific forums and through a publication of the trial to allow deployment and ensure lessons learned are captured in other industries also. Mercury intends to engage with Operations on integration of the use of AIVs in the plant and into their workstreams to	$300,000	• ***6-month milestone:*** define scope, engage a technology provider and deploy technology at one power plant facility • ***12-month milestone:*** interim update to industry on the trial to date, feedback and adjustments to the trial • ***24-month milestone*****:** results of the trial are summarised and presented

support their daily activities. It is important to ensure that there are no negative unintended consequences. **Outcome** Mercury has a desire to improve safety outcomes from this demonstration of AIV use within its power plants. Further to this Mercury would like to play a leading role in sharing and aiding others within industry to achieve their safety goals through sharing of this knowledge. The outcomes we want to explore from this workstream are: 1) the capabilities of AIVs in an operating plant environment for day-to-day monitoring and for monitoring of transient operations; 2) approaches for deploying and managing AIVs within a high hazard facility; and 3) the interactions between workers and AIVs to improve safety in high hazard facilities.		
3.4.3 Lessons Learned – Rotokawa Steam Hammer **Summary** The consultation Mercury has undertaken for this EU has indicated there are limited resources available to the industry in relation to steam hammer and a real desire among other significant stakeholders to share and have the benefit of learnings from this incident and any activities that Mercury would undertake as part of the EU process. Mercury is eager to share lessons learned from the Rotokawa incident with the wider industry to help others improve safety of their designs and operations. **Delivery** Delivery of lessons learned will be through several channels and formats: 1) A one-page lessons learned summary of the incident, presented to StayLive (the industry safety group) member representatives. Mercury would also share the alert with the health and safety managers of the other industry participants that it consulted with or reached out to in relation to this application (i.e. where they are not StayLive members). 2) Roadshow sessions on steam hammer to share initial learnings and the activities proposed as part of this EU. During these sessions, Mercury would: • receive feedback from other key industry stakeholders on the proposed activities; • report back to the stakeholders on the outcome of the proposed activities and share learnings and new resources towards the end of the proposed workstreams.	$50,000 Travel and conference/road show expenses	• ***6-month milestone:*** engage industry and hold first roadshow sessions, issue StayLive Safety Alert • ***12-month milestone:*** hold the NZ Geothermal Week Conference and present at the NZGW Conference • ***24-month milestone:*** hold second roadshow sessions

3) A workshop at the New Zealand Geothermal Week specifically on the Rotokawa incident and select activities of this EU application. 4) A conference paper and presentation to share with peers in the wider industry. This paper/presentation will be presented at the New Zealand Geothermal Workshop. (The New Zealand Geothermal Workshop is an opportunity for professionals, researchers and students interested in geothermal energy to discuss and share their experiences. It is held annually. Papers that are presented are published and provided to all registered attendees, and available online in the International Geothermal Institute's (**IGA**) database.) **Outcome** The learnings and resources developed through the EU process would be shared with a wide audience to substantially uplift the industry understanding in relation to the identification, prevention and management of steam hammer and associated health and safety risks. The process would also lead to improved networks and collaboration within the industry on steam hammer and other health and safety related issues.		

3.5 Activities to be undertaken to promote the objectives of the health and safety legislation that will deliver benefits for community		
Mercury has given careful consideration to activities that could be undertaken to promote the objectives of health and safety legislation that will deliver benefits for the community. It has included one activity which it considers will promote such objectives and deliver benefits to the community through health and safety study and another to support rescue services.		
ACTIVITIES Outline the activity and the expected outcomes	Cost ($)	Timeframe
3.5.1 Donation to the Emergency Service Organisations Whilst no one was harmed during the incident, Mercury recognises the importance of emergency services to the health and safety of the community generally (particularly in the regions where many work and adventure activities are conducted in remote locations). Mercury will make donations to support the work of the Westpac Helicopter Service of New Zealand and the Hato Hone St John Ambulance Service.	$50,000	Within 6 months
3.5.2 Health & Safety Professional Scholarship To ensure better health and safety outcomes in New Zealand that reflect continuous improvement and progressively higher standards of work health and safety, the industry needs to encourage high-performing individuals into the field. Mercury will provide a targeted scholarships for a student from the Taupō and Rotorua region to the value of $50,000. This includes funding to cover health and safety course costs and two summer internships at Mercury working within the Health, Safety & Wellness team. Scholarships will be awarded to a graduate who submit the best essay on the importance of progressively higher standards of work health and safety and their desire to be part of this in New Zealand. Further detail on the form of scholarship would be determined following consultation.	$50,000	24 months