



REPORT

**Former Mobil Dunedin Terminal - 199 Fryatt Street,
Dunedin**

Environmental Management Plan - Fryatt Street Adjacent to Former Terminal

Submitted to:

Mobil Oil New Zealand Limited

Law Department, PO Box 1709, Auckland

Submitted by:

WSP New Zealand Limited

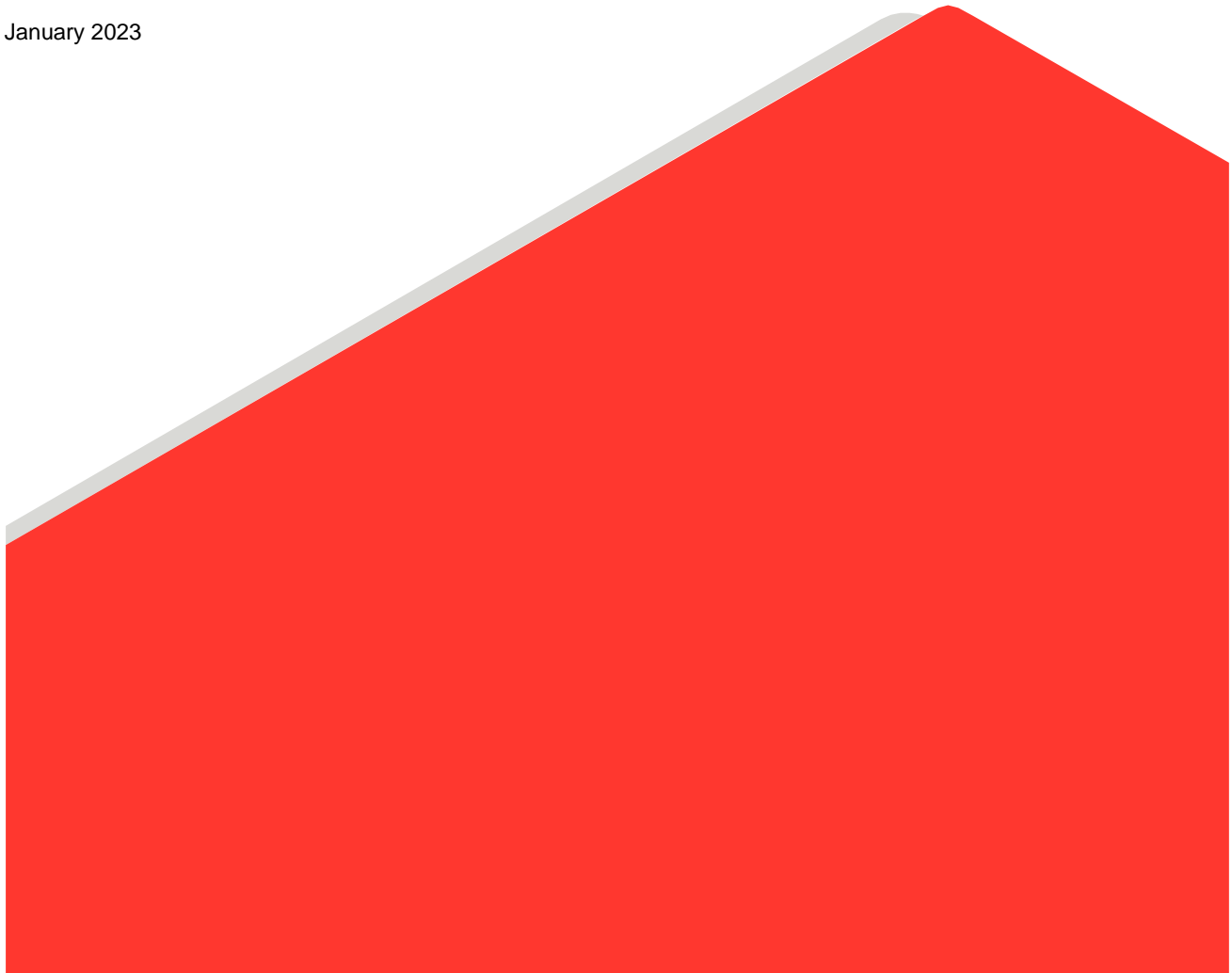
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20449679-008-R-Rev0

January 2023



Revision Status

This Environmental Management Plan (EMP) is a “live” document to be reviewed and amended, as necessary, prior to any future ground disturbance works to ensure any changes to the environmental conditions are recognised and that human health and environmental risks are managed appropriately. If there is a change to a more sensitive land use activity, professional advice should be sought from a suitably qualified and experienced practitioner to reassess the potential risks.

Updates of the EMP will be forwarded to relevant parties listed in Section 1.3 and will be referenced with a successive version number. To comply with this requirement, this EMP is ‘Rev1’ as per below.

Revision	Date of Revision	Revision Author
Rev0	March 2020	Golder
Rev1	January 2023	WSP

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1.0 INTRODUCTION

1.1 Purpose

Mobil Oil New Zealand Limited (Mobil) ceased operation of its former Dunedin Terminal (the site) in 1995 and decommissioned the facility between 1995 and 2007 (Figure 1). Environmental site assessment (ESA) works have been undertaken by Mobil since 1992.

The ESA works have documented the presence of petroleum hydrocarbon impacts extending beneath Halsey Street and Fryatt Street primarily to the south and south-east of the former Mobil terminal. Based on the ESA works, the petroleum hydrocarbon impacts are not considered to represent an unacceptable risk to human health and the environment. The implementation of soil and groundwater management controls under this Environmental Management Plan (EMP) is intended to address the potential risks to future users.

Based on an assessment of soil and groundwater conditions (Golder Associates (NZ) Limited (Golder) 2019a, 2019b), potential risks associated with identified hydrocarbons are anticipated to be:

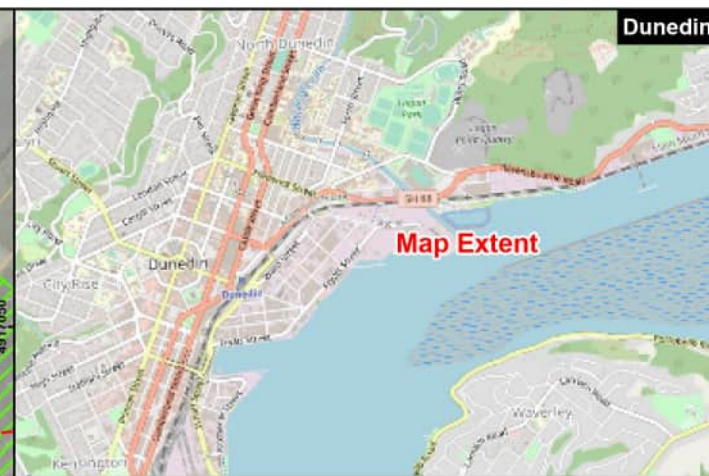
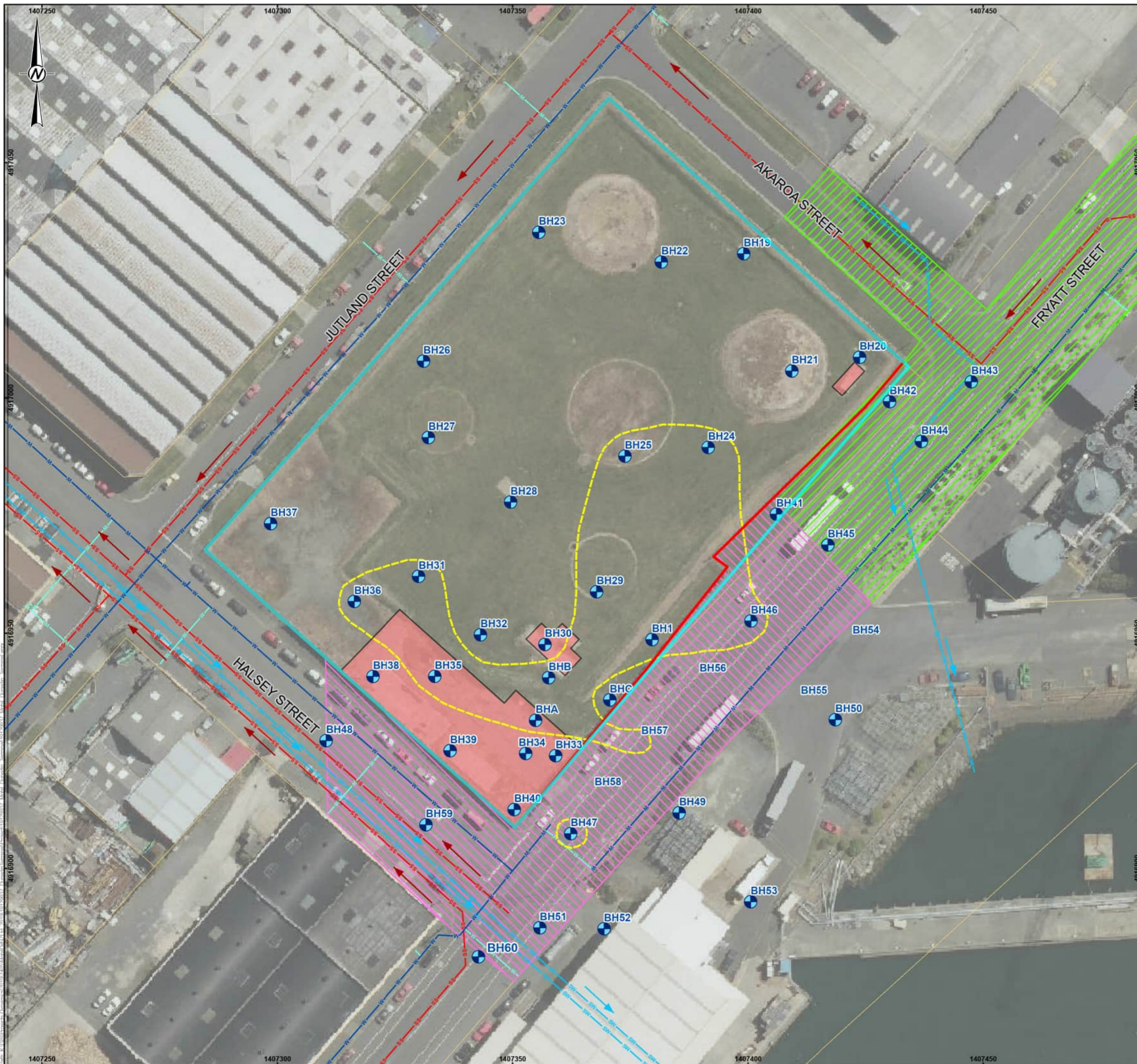
- Workers undertaking subsurface excavation works or working within underground voids in the area of Fryatt Street have a potential exposure risk to petroleum hydrocarbon vapours and dermal contact/ingestion. Appropriate health and safety controls should be in place to manage risks to workers associated with subsurface excavations.
- Inadequate controls during ground disturbance works that result in the discharge of contaminants to the environment.

This EMP has been prepared by WSP New Zealand Limited¹ (WSP) on behalf of Mobil. The objective of this EMP is to set out procedures for the protection of human health and the environment in relation to the identified hazards and risks from petroleum hydrocarbon residues. This EMP is applicable to the 'Management Area' which comprises the road reserve of Fryatt and Halsey Streets adjacent to the site (Figure 1).

This EMP does not cover the entirety of Fryatt Street adjacent to the former Mobil terminal. Z Energy Limited is responsible for a separate Management Area for the road reserve at the intersection of Fryatt Street and Akaroa Street (established under discharge permit RM12.312 issued by Otago Regional Council (ORC)). This EMP is intended to complement the Z Energy Long Term Monitoring and Management Plan (URS New Zealand Limited (URS) 2013) prepared under RM12.312.

This EMP is a "live" document to be reviewed and amended, as necessary, prior to any future redevelopment works to ensure any changes to the environmental conditions are recognised and that human health and environmental risks are managed appropriately. If there is a change to a more sensitive land use activity, professional advice should be sought from a suitably qualified and experienced practitioner to reassess the potential risks.

¹ In April 2021 Golder Associates Inc. and its subsidiaries and affiliated companies, including Golder Associates (NZ) Limited ('the Company') was acquired by Canadian listed company, WSP Global Inc. As part of that acquisition, in January 2022 the Company amalgamated with WSP New Zealand Limited (ultimately owned by WSP Global Inc.) under Part XIII of the Companies Act 1993. On 1 January 2022 the Company changed its legal name to "WSP New Zealand Limited". Golder Associates (NZ) Limited was amalgamated into WSP New Zealand Limited as of 1 January 2022.



LEGEND

- Site boundary
- Groundwater monitoring wells
- Inferred LNAPL extent - April 2017
- Water pipe
- Water service pipe
- Stormwater pipe
- Sewer pipe
- Z Energy Management Area*
- Mobil Management Area
- Concrete pad / surface structure
- Parcel boundaries

NOTES

1. Aerial: LINZ and Eagle Technology, CC-BY-3.0-NZ.
2. Map image: OpenStreetMap: © OpenStreetMap (and) contributors, CC-BY-SA
3. Schematic only, not to be interpreted as an engineering design or construction drawing.

* Z Energy Management Area defined by ORC Permit RM12, 312 (refer Figure 5-2 of URS (2013)).

REFERENCE SCALE: 1:800 (at A3)

PROJECTION: NZGD 2000 New Zealand Transverse Mercator

CLIENT
MOBIL OIL NEW ZEALAND LIMITED

PROJECT
FORMER MOBIL DUNEDIN TERMINAL

TITLE
OFF-SITE MANAGEMENT AREA

CONSULTANT	YYYY-MM-DD	2023-01-26
	PREPARED	ZJ
	REVIEW	DD
	APPROVED	AH

1.2 Document Structure

The EMP is structured as follows:

- Section 1.0 – Information on the Management Area and relevant parties.
- Section 2.0 – Summarises the potential risks to human health, the environment and infrastructure associated with the documented contaminant conditions.
- Section 3.0 – Documents the site management approach and generic controls to be implemented.
- Section 4.0 – Summarises the current and future site usage for which this EMP is intended to apply.
- Section 5.0 – Documents generic procedures intended to mitigate the potential human health and environmental risks associated with ground disturbance works in the Management Area.

1.3 Relevant Parties

A copy of the EMP will be held by the following parties as detailed in Table 1.

Table 1: Relevant parties.

Owner/Occupier/Authority	Relevant Party ⁽¹⁾	Contact
Consent Holder	Mobil Oil New Zealand Limited	PO Box 1709, Auckland 1140 Phone: 0800 880 361
Management Area Landowner	Dunedin City Council (DCC)	50 The Octagon Dunedin 9016 Phone: 03 477 4000
Regulatory Authority	Otago Regional Council (ORC)	70 Stafford Street Dunedin 9054 Phone: 0800 474 082
Territorial Local Authority	Dunedin City Council	50 The Octagon Dunedin 9016 Phone: 03 477 4000

Note: ⁽¹⁾ Relevant parties at the time of preparing this EMP.

1.4 General Management Area Details

A summary of general Management Area information is given in Table 2.

Table 2: Management Area details.

Site Address	199 Fryatt Street, Dunedin
Management Area address	Road reserve of Fryatt Street and Halsey Street adjacent to 199 Fryatt Street, Dunedin (Figure 1).
Co-ordinates (NZTM)	1407388 E, 4916930 N.
Regulatory agency	Dunedin City Council Otago Regional Council
Zoning	'Port 2' under Dunedin City District Plan (2006) and 'Industrial Port' under Dunedin City Proposed Second Generation Plan (2018).
Proposed future use	Continued usage as a road reserve.

2.0 SUMMARY OF CONTAMINATION RISKS

2.1 Overview

Based on the ESA works undertaken up until April 2017 (Golder 2019a, 2019b), the following summarises potential risks to human health and the environment.

Petroleum hydrocarbon compounds have been documented to be present within the Management Area in the following phases:

- Residual soil contamination where contamination is adsorbed onto the soil. Soil contamination typically comprises total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, total xylenes and naphthalene (BTEXn).
- As light non-aqueous phase liquid (LNAPL) which tends to occur at the top of the groundwater table.
- Dissolved phase contamination, where contaminants are dissolved within groundwater. Dissolved phase contaminants primarily comprise TPH and BTEXn.
- As a vapour, due to volatile compounds present in LNAPL, dissolved phase and/or residual soil contamination volatilising into the vapour phase.

2.2 Soil

Previous investigations have documented the nature and extent of soil impacts associated with historical bulk fuel storage activities at the former Mobil terminal (PDP 2011, Golder 2019a). The investigations have documented the presence of petroleum hydrocarbons compounds including TPH, BTEX and naphthalene.

Soil quality data from locations along Fryatt Street documents the presence of low-level concentrations of petroleum hydrocarbons in soils between 0.5 metres (m) and 1.0 m below ground level (bgl). Petroleum hydrocarbon concentrations within the upper 1 m of the soil profile were below Ministry for the Environment (MfE 2011) Tier 1 acceptance criteria for commercial/industrial land use.

Higher concentrations exceeding MfE (2011) Tier 1 acceptance criteria for commercial/industrial land use were identified in soil samples collected below 1.5 m bgl (PDP 2011). These exceedances have primarily been identified for C₇-C₉ TPH and for specific criteria for the protection of excavation workers based on the inhalation pathway.

2.3 Groundwater

Groundwater monitoring has identified the presence of LNAPL in a select number of monitoring wells installed within Fryatt Street (Figure 1). Monitoring over time has documented a reduction in the extent and measured in-well thickness of LNAPL beneath Fryatt Street and based on April 2017 monitoring data is generally only millimetres thick.

Dissolved phase hydrocarbons, primarily comprising C₇-C₉ TPH, ethylbenzene, xylenes and naphthalene are present across the Management Area. Groundwater monitoring in April 2017 identified concentrations of naphthalene, and to a lesser extent m&p-xylene and ethylbenzene exceeding ANZG (2018) guideline values for marine ecosystems. These exceedances were identified in wells (BH51, BH49, BH56 and BH41) located within the Fryatt Street road reserve. Concentrations in monitoring wells located adjacent to Otago Harbour did not exceed ANZG (2018) guideline values.

Dissolved phase hydrocarbon concentrations are below MfE (2011b) Tier 1 route specific groundwater acceptance criteria via the indoor and outdoor inhalation pathways.

2.4 Soil Vapour

Soil vapour monitoring has been undertaken across the southern and western areas of the former Mobil terminal and adjacent to the HarbourCold cold storage facility located at 142 Fryatt Street (between Fryatt Street and Otago Harbour).

Concentrations of primary contaminants of interest (COIs) (BTEXn) within the shallow soil vapour sample collected on the HarbourCold property were below the laboratory limits of reporting (LORs) (PDP 2013; Golder 2014, 2019a). The laboratory LORs for the compounds included in the analytical suite are below the Tier 1 acceptance criteria and vapour intrusion screening criteria (where derived).

The presence of LNAPL in the Management Area is a source of soil vapour which may represent a risk to workers during ground disturbance works. Potential risks can be managed through the implementation of controls and gas/vapour monitoring (refer Section 5.0).

3.0 MANAGEMENT REQUIREMENTS

This section sets out general management requirements under this EMP. The key requirements comprise the following:

- 1) It is recommended that this EMP is implemented during any future ground-disturbance works in the Management Area.
- 2) This plan applies to Management Area which comprises the areas of Fryatt Street and Halsey Street adjacent to 199 Fryatt Street, Dunedin, as presented on Figure 1.
- 3) All personnel carrying out or controlling redevelopment and/or subsurface maintenance in the Management Area should be familiar with this EMP and responsible for ensuring that the requirements of this EMP have been followed.
- 4) A copy of this EMP should be available at all times so that reference can be made to the EMP when undertaking any excavation works within the Management Area.

- 5) The EMP is intended to assist the owner(s) or site supervisor(s) in mitigating risks related to potentially contaminated soils and/or groundwater with respect to health, safety and the environment. It is not intended to cover the general site safety procedures required for a typical excavation, demolition and construction activities at the site.
- 6) Ground disturbance works in the Management Area may be subject to other controls/rules/policies under the relevant district and regional plans, including but not limited to, the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 and ORC's Regional Plan – Waste for Otago. Any conditions imposed by the regulatory authorities should be adhered to. However, it is expected that this EMP will be incorporated into any consent/permit involving excavation work to ensure the risks associated with remaining petroleum hydrocarbon residues are managed appropriately.
- 7) Overall responsibility for the implementation of this EMP will be held by the landowner. However, the specific requirements and provisions of the EMP will be under the control of the site supervisor. This EMP should be considered a "live" document and updated to reflect any changes in contaminant sources or site usage.

4.0 MANAGEMENT AREA USE

The current use of the area as a road reserve is not expected to present significant human health or environmental risks associated with petroleum hydrocarbon residues in soil, soil vapour and groundwater provided following conditions are adhered to:

- The usage of the Management Area remains as a road reserve.
- The procedures within this EMP are adhered to.
- All excavation activities are undertaken in accordance with the procedures outlined in Section 5.0 below.
- No groundwater monitoring wells are disturbed/removed without the prior approval of the landowner.
- No groundwater bores are installed at the site for abstractive purposes unless further investigations are undertaken.

The provisions of this plan should be adhered to during any future redevelopment, subsurface maintenance activities or infrastructure related activities (e.g., roading activities, utility service installation, etc) within the Management Area.

5.0 EXCAVATION PROCEDURES

5.1 General

This section discusses safety in relation to potential human and environmental hazards associated with exposure to petroleum hydrocarbon contaminated soil or groundwater. It is not intended to cover the general site safety procedures required at any site where such work is carried out. In addition to standard health and safety measures the following procedures should be strictly adhered to by all workers during excavation work at the Management Area.

5.2 Site Control

Excavation works undertaken in the Management Area should be placed under the control of a responsible person who should ensure that the requirements for excavation work contained within this plan are adhered to. This person should be aware of the groundwater, soil and soil vapour conditions (as summarised in Section 2.0) likely to be encountered.

Given ground disturbance works are likely to encounter petroleum hydrocarbon impacts, the landowner or principal contractor should engage a suitably qualified and experienced contaminated land professional² to provide advice in relation to handling contaminated soils and groundwater.

5.3 Hazard Control Procedures

5.3.1 Overview

The main hazards associated with excavating into contaminated soils and groundwater in the Management Area are the inhalation of dust and vapours by workers and the release of contaminants into the environment.

Any work in confined spaces should be carried out in accordance with Australian/New Zealand Standard AS/NZ2865:2001 'Safe Working in a Confined Space' which outlines requirements for risk assessment, securing a safe atmosphere, respirators, work permits, standby persons, rescue, retrieval, equipment, communications, and training.

No flames, smoking or sparking equipment are to be permitted within 11.0 m of excavations. Any hot work activities or work that involves an ignition source within 11.0 m of an excavation can only be carried out in conjunction with appropriate atmosphere testing (see Section 5.3.4).

5.3.2 Personal protective equipment (PPE)

The nature of the chemicals present in soil and groundwater indicates that there is a potential hazard from exposure to these chemicals via inhalation, ingestion and skin absorption. Where the work methods cannot be modified to mitigate the risk of skin contact, workers should wear appropriate PPE to minimise contact with impacted soils. Minimum PPE requirements should include:

- Wrist-to-neck-to-ankle cover (long sleeve shirt and pants or equivalent).
- Impermeable gloves, for example nitrile, however, the resistance of the gloves to the contaminants encountered on site should be confirmed prior to use.

² In the absence of a definition for a SQEP in the NES_{soil}, guidance on the minimum requirements for a SQEP are provided in the MfE (2012) Users' Guide - National Environmental Standard for Assessing Contaminants in Soil to Protect Human Health'.

- Eye protection.
- Gumboots or similar footwear.

Where the risk of exposure to dust or vapours cannot be mitigated, workers should consider the use of appropriate respiratory equipment (i.e., respirators fitted with volatile organic compound (VOC) filter cartridges).

5.3.3 Personal hygiene

Personnel undertaking any subsurface works should be made aware of the importance of personal hygiene. Direct skin contact with petroleum hydrocarbon impacted soils, dust and groundwater should be avoided but if contact does occur, the area should be washed immediately. The following measures should be implemented:

- The designation of separate areas for eating, located away from the area of works, should be clearly delineated; and
- Eating or drinking should not be allowed on the work site outside of the designated eating areas; and
- Protective gloves should be removed prior to eating, drinking or smoking; and
- Hands and other exposed parts of the body should be washed prior to entering the eating area and on leaving the work site.

5.3.4 Gas and vapour monitoring

If contaminated soil or groundwater is encountered during excavation or subsurface work, the advice of a suitably qualified health and safety advisor should be sought to assess whether any extra precautions are necessary. A suitable monitor such as a photo-ionisation detector (PID) should be used to detect petroleum vapours – soil should not be sniffed.

The site supervisor will be responsible for monitoring of ambient air within the works area during excavation works to assess air quality. Where available, information on the potential levels of vapours along the excavation should be reviewed in advance and the need for third party monitoring evaluated.

It is noted that where the work area will include a deep excavation this would effectively be a confined space. Any works carried out in a subsurface confined space should be undertaken in accordance with 'AS 2865 Confined Spaces' as documented in WorkSafe New Zealand guidance "Confined Spaces: Planning Entry and Working Safely in a Confined Space³".

In the event ambient air quality within the works area requires monitoring, it should be undertaken using a calibrated gas meter able to measure VOCs, lower explosive limit (LEL), oxygen (O₂), carbon dioxide (CO₂), carbon monoxide (CO) and hydrogen sulfide (H₂S). Monitoring instruments should be bump tested prior to commencement of works each day using a suitable standard of known concentration. As exposure standards are subject to change and response factors vary between instrument makes and models, the operator shall ensure that these factors are current and applicable at the time of the work.

³ WKS-5 - Confined spaces: planning entry and working safely in a confined space (March 2020).

Atmosphere testing with a LEL meter should be undertaken for the duration of works. If LEL concentrations are identified above 1 % LEL, then the source of this concentration is to be either isolated or controlled and re-tested prior to commencing works. At 5 % LEL, work should be stopped and the site supervisor informed.

The gas meter may also measure concentrations of O₂, H₂S and CO, which can cause potential hazards in confined spaces and H₂S and CO can result in asphyxiation. Ambient air is considered to be oxygen-deficient when the O₂ concentration is less than 19.5 % by volume, which should be used as an action level for O₂.

For H₂S, respiratory tract irritation and eye inflammation occurs at around 200 parts per million (ppm). National occupational exposure limits⁴ for H₂S are 10 ppm for short term exposure (15-minute average) and 5 ppm for long term exposure (8-hour average). However, H₂S, which can be smelt (rotten eggs) between 0.01 ppm and 1.5 ppm, can cause acute health problems between 2 ppm and 5 ppm; therefore, H₂S greater than 2 ppm should be used as the action level for stopping work and re-assessing conditions. Respirators are available to prevent exposure to H₂S.

CO is an asphyxiant and is combustible, with a national occupational exposure limit of 20 ppm for long term exposure (8-hour average). An action level of 10 ppm for CO should be used.

In summary the action levels are:

- LEL:
 - 1 % triggers isolation and re-assessment of work environment and controls; and
 - 5 % triggers stop work.
- VOCs, as a measure of total hydrocarbons, greater than 100 ppm trigger stop work and re-assessment of work environment and controls.
- O₂ less than 19.5 % trigger stop work and re-assessment of work environment and controls.
- H₂S greater than 2 ppm triggers stop work and re-assessment of work environment and controls.
- CO greater than 10 ppm triggers stop work and re-assessment of work environment and controls.

Work should only recommence when conditions are below the limits defined above and suitable mitigation measures have been implemented.

Personnel should not enter excavations or subsurface confined space where petroleum hydrocarbons odours are present without approval/permission by a person qualified to issue permits, and:

- Designated assessment parameters fall within the appropriate safety ranges; or
- Ventilation of the area maintains these parameters; or
- Suitable PPE including breathing apparatus provides the level of protection required.

Any groundwater pumping used to control groundwater at the site should be managed so that petroleum hydrocarbon residues in the ground drawn towards the pumping position do not present an explosion hazard.

Changes in procedures or the use of additional controls may be considered but should be addressed in revised work procedures.

⁴ WorkSafe New Zealand (2022) Workplace exposure standards and biological exposure indices, Edition 13, April 2022.

5.4 Control of Excavation

The following general and physical controls of site works are considered necessary when dealing with any potentially contaminated soils and/or groundwater that may be encountered.

- a) Where excavation work is being conducted, public access should be prevented using barricades (commensurate with the scale of the works whilst still allowing for vehicle access) and warning signs.
- b) All excavation work undertaken at the site should be carried out in such a way that the generation of dust is kept to a minimum. This will be achieved by:
 - dampening down of soils, including stockpiled soils, on a regular basis, particularly during hot/dry and windy periods;
 - limit vehicle access and speed (<15 kilometres per hour (km/hr)) and control traffic movements to minimise dust generation and transport of affected soil on vehicle tyres;
 - advise all site workers of the need to minimise dust by the responsible operation of machinery;
 - suspend dust generating activities when dust control measures become ineffective due to increased wind speed. The objective of these measures is to prevent visible dust emissions beyond the site boundary; and
 - daily tidying-up of the site area and excavations to minimise the potential for any leaching or erosion of excavated material by wind or water.
- c) Maintain a water supply on site (e.g., hose and garden sprinkler) to keep soils, including any stockpiled soils, damp during dry conditions.
- d) Erosion and sediment control measures should be established to minimise stormwater entry into the excavations and control surface water and sediment run-off from excavations and stockpiles.
- e) Excavated soil that is obviously impacted with petroleum hydrocarbon residues should be covered to prevent transport of the soil off site by wind or rain.
- f) Run-off from an open excavation or uncovered stockpile (resulting from events such as rainfall, dust suppression or stockpiling of wet excavated ground) should be restricted to within the site boundary.
- g) It is important to prevent the spread of any soil across the roads. This should be inspected daily and if vehicles are found to be tracking affected soil beyond the work area then other dust removal arrangement will be required. Any tracked soil observed beyond the work area should be removed and disposed of to an appropriately licensed disposal facility.
- h) Any conditions imposed by the regulatory authorities associated with the excavation works (e.g., as part of a resource consent) should be adhered to.

5.5 Disposal of Surplus Soil

Given the likelihood of encountering impacted soils during maintenance/excavation works, a suitably qualified and experienced environmental consultant should be contacted to identify the appropriate environmental requirements (e.g., soil sampling). As a general principle, excavation activities should be carried out in such a way as to minimise the generation of surplus soil.

Material to be removed off site should be tested by a suitably qualified and experienced environmental consultant to identify the best disposal option. Materials being disposed off-site should only be taken to a

facility holding the appropriate licence to accept that material. Based on soil quality data collected during the ESA works, surplus material is likely to be accepted for disposal at the Burnside Dunedin 2018 Ltd operated Burnside Landfill. A review of appropriate disposal facilities should be undertaken at the time of ground disturbance works and approval for disposal obtained from the operator of the identified disposal facility.

The site supervisor for the redevelopment site works should ensure that records are kept of all excavation works associated with contaminated soils. These should include the location and dimensions of the excavation, the ground conditions (e.g., the presence of petroleum hydrocarbon impact, i.e., staining and odour). Copies of the completed waste manifest documentation should be forwarded to the environmental consultant, ORC and DCC for their records.

5.6 Management of Groundwater

If an excavation intercepts groundwater, groundwater pumped from the excavation should not be disposed to stormwater or sanitary sewer receptors, without the approval of DCC and ORC.

5.7 Contingency Measures

If potentially contaminated materials are encountered outside of documented areas of residual petroleum hydrocarbons during ground-breaking activities, the following should be undertaken:

- Cease earthwork activities, isolate, secure and stockpile soil as necessary. Temporary stockpiled materials should be managed in accordance with industry best practice guidelines.
- Contact the landowner or principal contractor who should in turn engage a suitably qualified and experienced contaminated land professional.
- The suitably qualified and experienced contaminated land professional should be engaged to undertake a visual assessment, collect soil samples (if required) and provide guidance as to appropriate mitigation or contingency measures.
- ORC and DCC should be notified by the landowner or principal contractor within one week of the identification of any contamination identified during the earthworks.

6.0 LIMITATIONS

Your attention is drawn to the document 'Report Limitations' as attached (Appendix A). The statements presented in that document are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks to which this report relates which are associated with this project. The document is not intended to exclude or otherwise limit the obligations necessarily imposed by law on WSP New Zealand Limited, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

7.0 REFERENCES

- ANZG 2018. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.
- Golder 2014. Former Mobil Dunedin Terminal – Groundwater Monitoring Event. Report prepared by Golder Associates (NZ) Limited for Mobil Oil New Zealand Limited, August 2014.
- Golder 2019a. Former Mobil Dunedin Terminal – 199 Fryatt Street, Dunedin: Supplementary Environmental Site Assessment. Report prepared by Golder Associates (NZ) Limited for Mobil Oil New Zealand Limited, May 2019.
- Golder 2019b. Former Mobil Dunedin Terminal – 199 Fryatt Street, Dunedin: Closure Report. Report prepared by Golder Associates (NZ) Limited for Mobil Oil New Zealand Limited, May 2019.
- MfE 2011. Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated sites in New Zealand. Ministry for the Environment, Wellington.
- MfE 2012. Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Ministry for the Environment, Wellington.
- PDP 2011. Preliminary Site Investigations at the Former Mobil Dunedin Terminal, Fryatt Street, Dunedin (410-350). Prepared by Pattle Delamore Partners (PDP) for Mobil Oil New Zealand Limited. Ref: AJ24704R001.
- PDP 2013. Additional Site Investigations at Former Mobil Dunedin Terminal, Fryatt Street, Dunedin (410-350). Prepared by PDP for Mobil Oil New Zealand Limited. Ref: AJ24710R001.
- URS 2013. Long Term Monitoring and Management Plan – Chevron Dunedin Terminal. Report prepared by URS New Zealand Limited for Chevron New Zealand, June 2013.

Signature Page

WSP New Zealand Limited



Andrew Hart

Technical Principal - Contaminated Land

[https://golderassociates.sharepoint.com/sites/139835/project files/6 deliverables/008-r off-site emp/20449679-008-r-rev0.docx](https://golderassociates.sharepoint.com/sites/139835/project%20files/6%20deliverables/008-r%20off-site%20emp/20449679-008-r-rev0.docx)

APPENDIX A

Report Limitations

Report Limitations

This report has been provided by WSP New Zealand Limited (“WSP”) subject to the following limitations:

- i) The purpose for which the works were performed is set out in the report.
- ii) The scope of the works to be performed and described is in accordance with Purchase Order No. 4410977096. A description of the work done is set out in the report. If a matter is not addressed, do not assume that any determination has been made by WSP in regards to it.
- iii) This report is prepared based on the information reviewed at the time of preparation of the report.
- iv) WSP did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the report. If a service is not expressly indicated, do not assume it has been provided. Conclusions from field work are an expression of opinion based on samples or locations at the site. The report accordingly is not operating as a guarantee that the condition of the site could not be different at points between sampling locations or at different parts of the site. Thus, due to the inherent variability in natural soils and subsurface conditions it is therefore unlikely that the results, assumptions and conclusions set out in this report will represent the extremes of conditions at any location removed from the specific points of sampling.
- v) Where this report indicates that information has been provided to WSP by Mobil Oil New Zealand Limited or by third parties, WSP has made no independent verification of this information except as expressly stated in the report.
- vi) The analysis and conclusions presented in this report are applicable as at the date of this report. WSP does not make any representation or warranty that the conclusions in the report can be extrapolated for future use as there may be changes in the conditions of the site, applicable legislation or other factors that would affect the conclusions contained in this report.
- vii) All relevant legislation in the jurisdiction in which the site is located and relating to the works has been complied with by WSP as at the date of this report.
- viii) The report should be read in full and no excerpts are to be taken as representative of the conclusions. The report should not be used or relied upon for any purpose except as defined in the report and subject to the limitations set out in this section.
- ix) This report has been prepared on the instruction of Mobil Oil New Zealand Limited and may be used and relied on by Mobil Oil New Zealand Limited and its Affiliates, and other entities contemplated in the agreement between WSP and Mobil Oil New Zealand Limited, such as purchasers of the site, lenders to purchasers, property owners, purchasers from property owners, lessees from property owners and assignees of lease from lessees of property owners.
- x) WSP accepts no responsibility for damages, if any, suffered by any other third party as a result of decisions made or actions based on this report.
- xi) Affiliates means (a) Exxon Mobil Corporation or any parent of Exxon Mobil Corporation, (b) any company or partnership in which Exxon Mobil Corporation or any parent of Exxon Mobil Corporation now or hereafter(1) owns or (2) controls, directly or indirectly, more than fifty percent (50%) of the ownership interest having the right to vote or appoint its directors or functional equivalents (“Affiliated Company”), (c) any joint venture in which Exxon Mobil Corporation, any parent of Exxon Mobil Corporation, or an Affiliated Company is the operator, and (d) any successor in interest to (a) and (c) above.

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