IN THE MATTER OF	the Fast-track Approvals Act 2024 ("FTAA")
AND	
IN THE MATTER OF	an application for approvals by **NZ Transport Agency Waka Kotahi** to construct, operate and maintain the State Highway 1 Wellington Improvements project

STATE HIGHWAY 1 WELLINGTON IMPROVEMENTS PROJECT
TECHNICAL REPORT #16
CONTAMINATED LAND ASSESSMENT

Table of Contents

1. INTRODUCTION

1. My name is Kevin William Tearney.

2. I hold the role of Technical Director, Land Quality and Remediation (LQR) at SLR Consulting New Zealand Limited (SLR). I am the Contaminated Land Technical Specialist for the State Highway 1 (SH1) Wellington Improvements Project (the Project). I am the primary author responsible for this assessment prepared for the New Zealand Transport Agency Waka Kotahi (NZTA).

3. I have been assisted with preparation of this assessment by James Blackwell, Technical Director of SLR, contaminated land specialist Michael King and SLR GIS consultant Fraser Philip.

4. Previous contaminated land investigation works by others used to inform my assessment are acknowledged within this assessment report.

Qualifications and experience

5. I have a Bachelor of Science in Geology and a Master of Science (1st Hons) in Geology (with Geophysics) from the University of Auckland. I am a full member of the Environmental Institute of Australia and New Zealand (EIANZ), member of the Australasian Land and Groundwater Association (ALGA) and an SLR company representative in the Waste Management Institute of New Zealand (WasteMINZ). I hold Certified Environmental Practitioner Site Contamination (CEnvP SC) # SC41072 certification under the EIANZ sponsored Certified Environmental Practitioner Scheme. I am also a Suitably Qualified and Experienced Practitioner (SQEP) as referenced in the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES-CS).

6. I am currently employed as Technical Director at SLR, based in Wellington. I have over 40 years of environmental consulting experience gained mainly within New Zealand, Australia and the United Kingdom. I am an experienced contaminated land professional who has provided advice and expertise for brownfield assessment and remediation, including for urban land redevelopment and linear infrastructure in New Zealand under the NES-SC and District and Regional Planning frameworks and fast track legislation. My recent and current work portfolio includes specialist contaminated land advice for Porirua City Council (PCC), Horizons Regional Council (HRC), Greater Wellington Regional Council (GWRC), Wellington City Council (WCC), Nelson City Council (NCC) and the New Zealand Transport Agency Waka Kotahi (NZTA). Specifically, my role involves specialist technical input on matters affecting contaminated land, including oversight and certification of technical reports as a SQEP. I am also co-author of the first edition of the Ministry for the Environment (MfE) Contaminated Land Management Guideline
No. 5: Site Investigation and Analysis of Soil 2004 and an MfE working group member for updates of CLMG N0.5 in 2011 and 2016. I was also a peer reviewer of the NES-CS User's Guide 2012.

7. I am thoroughly familiar with the Project alignment, having lived and worked in Wellington City for some 25 years. I have been involved in all aspects of the Contaminated Land Assessment assisted by my Wellington based team. I have also undertaken visual inspections of selected properties within the Project alignment to review current land use as part of this Contaminated Land Assessment.

Code of conduct

8. I confirm that I have read the code of conduct for expert witnesses contained in the Environment Court Practice Note 2023. This report has been prepared in compliance with that code, as if it were evidence being given in Environment Court proceedings. In particular, unless I state otherwise, this contaminated land assessment is within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Project description

9. A full description of the Project is provided in the substantive application.

10. In overview, the Project comprises the construction of improvements to SH1 within Wellington City, extending over 5 km through the city from north of the Terrace Tunnel to south of the Mount Victoria Tunnel, and beyond to Kilbirnie Park.

11. For description purposes, the Project has been divided into the following five sections:
    i. Terrace Tunnel (Section 1)
    ii. Te Aro (Section 2)
    iii. Basin Reserve (Section 3)
    iv. Mount Victoria Tunnel (Section 4)
    v. Eastern Connections (Section 5)

Scope of assessment

12. My assessment addresses the following matters in relation to contaminated land:
    i. The methodology I have used to assess the effects of the Project
    ii. The existing environment
    iii. The planning assessment framework comprising the NES-CS and the GWRC Natural Resources Plan (NRP)
    iv. Effects of the Project during construction
    v. Effects of the Project during operation
    vi. Benefits of the Project
    vii. Recommended measures to avoid, remedy or mitigate adverse effects

13. The following supporting information is attached to this report:
    i. **Annexure A** Preliminary Site Investigation (PSI) Report State Highway One (SH1) Wellington Improvements Project Ref 820.030609.00001_R01_V3.0_SH1 Improvements PSI_20260603

14. The PSI provides a detailed assessment of contaminated land present within the Project alignment; a description of the ground disturbance works within each Project section, and the likely effects of contaminated land on human health and the environment associated with the disturbance of contaminated land.
    i. **Annexure B** Kilbirnie Park – Detailed Site Investigation (DSI) Report State Highway 1 (SH1) Wellington Improvements Project Ref 820.030609.00001_R02_V3.0_SH1 Wellington Improvements DSI_20260619:
        - The DSI presents an assessment of the nature and extent of contaminants of potential concern (CoPC) in soil and groundwater within the northern part of Kilbirnie Park which will be affected by the Project, based on sampling and analysis of soil and groundwater samples

ii. **Annexure C** Gazley Mitsubishi – Detailed Site Investigation (DSI) Report State Highway 1 (SH1) Wellington Improvements Project Ref 820.030609.00001_R03_V3.0_SH1 Wellington Improvements DSI_20260619:

- The DSI presents an assessment of the nature and extent of CoPCs in soil and groundwater immediately adjacent to the Gazley Mitsubishi property which be affected by the Project, based on sampling and analysis of soil and groundwater samples

15. The PSI report presents details of the investigation methodology I have used to identify contaminated land and to assess the potential effects of contaminated land on human health and the environment for the Project, the results of these investigations, and recommendations aimed at mitigating effects. Photographs, drawings and document extracts are attached in the PSI.

16. The PSI also identified HAIL land at Kilbirnie Park in Project section 5 and in the Gazley Mitsubishi property in Project section 3 as requiring further investigation to support my assessment.

17. Detailed Site Investigations (DSIs) have been undertaken at these locations. The DSI reports are presented in **Annexure B** and **Annexure C** of this report. They present quantitative, site specific information on the soil and groundwater contamination at Kilbirnie Park and at the Gazley Mitsubishi property.

18. The PSI and DSIs have been used to inform the assessment presented in this statement, and form part of this report.

Contaminated land terminology

19. A full description of the terminology used for describing types of contaminated land referenced in this assessment report is presented in the PSI. Summary information is presented below.

20. The Hazardous Activities and Industries List (HAIL) is a compilation of 53 activities and industries prepared by MfE that are considered likely to cause land contamination resulting from hazardous substance use, storage or disposal. The HAIL is intended to identify most situations in New Zealand where hazardous substances could cause, and in many cases have caused, land contamination, and serves as an indicator of the potential for contaminated land. The activities and industries are grouped into nine categories (A-I):

i. Categories A to G group together broadly similar industry and activity types. Land categorised as HAIL A to G is land that at some time, has more likely that than not, hosted the activities or industries associated with their respective categories

ii. HAIL categories H and I cover land subject to the migration, or the intentional or accidental release of hazardous substances. These categories apply where no defined site use, activity or specific hazardous substance is identified as a common cause of contamination. HAIL Category H and I also include the requirement that the presence of hazardous substances in the land is in sufficient quantity that it could be a risk to human health or the environment

21. The GWRC Selected Land Use Register (SLUR) is a database of HAIL sites within the Wellington Region compiled by GWRC, where hazardous substances are or have been used, stored or disposed of. SLUR site extent is linked to individual property identifiers and not necessarily the contaminating activity or industry. There are five SLUR categories:

i. I - Verified History of Hazardous Activity or Industry

ii. II - Unverified History of Hazardous Activity or Industry

iii. III - Contamination Confirmed

iv. IV - Contamination Acceptable, Managed/Remediated

v. V - No Identified Contamination

22. Other contaminated land referenced in the PSI is land contaminated by hazardous substances that does not classify as HAIL land owing to:

    i. Activities and industries identified in the HAIL have not occurred within the land

    ii. The quantity of hazardous substances within the land is not sufficient to pose a risk to human health or the environment (HAIL H and I)

23. This land potentially includes:

    i. Land contaminated by lead and asbestos, commonly associated with the presence of asbestos in older residential and commercial properties (circa 1940 to 2000)

    ii. Grassed road berms impacted by metals and petroleum hydrocarbons for example from vehicle exhausts and tyre and brake wear

    iii. Land containing unclassified fill

    iv. Land contaminated by minor discharges, for example from migration of contaminants along preferential pathways

    v. Roading materials containing coal tar

    vi. Land impacted by Per- and Polyfluoroalkyl Substances (PFAS)

24. Other potentially contaminated land is also referred to as non-HAIL contaminated land.

Assumptions and exclusions

25. This assessment report uses information on the location and nature of contaminated land within the Project alignment and within 100 m of the Project alignment (which I also refer to as the Project area). Based on the location of the Project alignment and my knowledge of the scale and nature of hazardous substance storage and use within Wellington, I assume that contaminated land located greater than 100 m from the boundaries of the Project alignment would be unlikely to affect land within the Project alignment. Further discussion is presented in Section 4.

26. I also note that not all contaminated land within the Project alignment and within 100 m of the Project alignment will be affected by the Project.

27. I have identified the location of contaminated and potentially contaminated land through extensive review of available information including; GWRC SLUR maps and reports, provided and publicly available environmental reports and publications, historical aerial imagery, property file records held by WCC and Environmental Protection Authority (EPA) records available for the period July 2006 to December 2011 of reported incidents involving hazardous substances. I have also taken advice from NZTA on the likely presence of coal tar within SH1 roading materials within the Project and the use PFAS based fire fighting foams within the Terrace and Mount Victoria tunnels. I judge the quality of this information to be reasonable, and I assume that these information sources are suitable for use in my Contaminated Land Assessment.

28. I accept that not all contaminated land may be captured on the SLUR, visible on aerial photographs, or evident from current visual assessment of the physical area that the Project will traverse. Based on my knowledge of the scale and nature of hazardous substance storage and use within Wellington, and volume and the quality of the information reviewed, I assess that any contaminated land not identified during my assessment would be unlikely to have a material effect on the findings and recommendations presented in this Contaminated Land Assessment.

29. Intrusive site investigations have been undertaken to investigate HAIL land at two properties (Kilbirnie Park and Gazley Mitsubishi) as part of this Contaminated Land Assessment.

2. EXECUTIVE SUMMARY

Existing environment

30. The Project comprises improvements to the existing Wellington Urban Motorway (SH1), including the duplication of the Terrace Tunnel and Mount Victoria Tunnel and SH1 through the city center to Kilbirnie Park. Adjacent land uses include well established commercial, recreation and residential occupation. Evans Bay lies at the southern end of the Project. This environment is currently modified by the presence of the existing SH1 road and residential and commercial activities within Wellington City and suburbs.

31. Groundwater is not abstracted for public water supply within the Project area owing to generally low yields from the underlying Mesozoic greywacke basement rock, and quality issues, including the presence of contaminants in shallow groundwater within made ground and in natural sedimentary deposits underlying some developed areas of the central city. There are no open streams within the Project Alignment, with existing streams piped through parts of the Project area, discharging to Wellington Harbour or Evans Bay.

32. Contaminated land is present in parts of the Project alignment, primarily associated with activities and industries involving the storage and use of hazardous substances (HAIL land).

33. I have identified HAIL land at 65 locations within the Project alignment and within 100 either side of the alignment.

34. Of this HAIL land, I have identified confirmed HAIL land at two locations that will be disturbed by earthworks for the Project:

    i. SLUR site SN/05/230/02 Kirk Motors Ltd (currently Gazley Mitsubishi), based on the PSI, which will be disturbed for the Sussex Street to Cambridge Terrace extension within the Basin Reserve section of the Project. An underground storage tank (UST) for fuel storage was formerly located at this site. The site is currently used for vehicle sales and servicing. SLUR site SN/05/230/02 is more likely than not associated with HAIL F4 and F7 involving the storage and use of petroleum hydrocarbons:

        - The DSI indicated that the surficial fill across the site is contaminated by polycyclic aromatic hydrocarbons (PAH), potentially derived from coal tar, but does not appear to be contaminated by CoPC from activities associated with HAIL F4 and HAIL F7. The fill soils are accordingly classified as non-HAIL unclassified fill. Soil disturbance is assessed as a controlled activity in accordance with Regulation 9(1) of the NES-CS
        - The DSI also indicated groundwater below the site is not contaminated by CoPC associated with HAIL F4 and HAIL F7 or from surrounding land uses, with groundwater quality compliant with New Zealand Maximum Acceptable Values (MAV) for drinking water. Exceedances of Australian and New Zealand Guidelines (ANZG) Ecological Default Guideline Values (DGVs) for Marine Water at 95% species protection were recorded for dissolved copper and zinc. These DGVs are thresholds designed to protect receiving environments and are applied at the receiving environment of groundwater discharge (Wellington Harbour), which is 900 m away from the site and subject to the attenuation of metals and dilution in Wellington Harbour
        - Potential passive discharges of contaminants in groundwater from the site are considered unlikely to pose an unacceptable risk to Wellington Harbour, and therefore appear to be permitted under Rule R82 of the GWRC NRP
        - Dewatering in relation to Rule R159 of the GWRC NRP is potentially a permitted activity, owing to the available dilution in Wellington Harbour. Pretreatment to remove sediment from dewatered groundwater would likely be required

    ii. The findings of the DSI are constrained by soil and groundwater data only being available from two locations (GM01 and GM02) only, which are adjacent to the Gazley Mitsubishi site

iii. SLUR site (SN/05/012/02 Kilbirnie Park) in the Eastern Connections section which will be disturbed for widening of SH1 at Wellington Road, affecting part of the northern area of the park. SLUR (SN/05/012/02) is a closed landfill and is more likely than not associated with HAIL G3 involving waste disposal to land:

- The DSI indicated that the disposal of anthropogenic wastes to land did not occur within the northern area of the park that will be directly affected by the Project. Soil disturbance is assessed as a controlled activity in accordance with Regulation 9(1) of the NES-CS
- The DSI also indicated groundwater below the northern part of the park affected by the Project is not contaminated by landfill leachate associated with HAIL G3, with groundwater quality compliant with MAVs for drinking water. Exceedances of ANZG DGVs for Marine Water at 95% species protection were recorded for dissolved copper and zinc. These DGVs are protective of receiving environments and are applied at the receiving environment of groundwater discharge (Evans Bay)
- Potential passive discharges of contaminants in groundwater from the site are considered unlikely to pose an unacceptable risk to Evans Bay, and therefore appear to be permitted under Rule R82 of the GWRC NRP
- Dewatering in relation to Rule R159 of the GWRC NRP is potentially a permitted activity, owing to the available dilution in Evans Bay. Pretreatment to remove sediment from dewatered groundwater would likely be required

35. I have also identified non-HAIL and other potentially contaminated land within parts of the Project Alignment that will be disturbed by the Project. This includes land associated with buildings scheduled to be demolished that contain asbestos and lead based paint, grass road berm soils potentially contaminated by metals and petroleum hydrocarbons from passing vehicles, the potential for localised contamination from discharges via preferential migration pathways and the potential for unclassified fill of unknown contamination status which occurs in parts of the Project alignment affected by earthworks. I also conclude from an assessment based on NZTA guidance, that coal tar may also be present within roading materials in parts of the existing SH1 road within the Project. PFAS does not appear to be a CoPC for the Project.

Potential benefits of the Project

36. The Project will involve further investigation of HAIL land and other contaminated land, increasing the body of knowledge about the location and nature of contaminated land within the Project alignment.

37. The Project will provide an opportunity to lower the current risk to human health and the environment through the removal, encapsulation or other form of remediation of the contaminated land.

38. I consider these benefits will be of local significance.

Potential adverse effects without mitigation

Operational

39. Operational effects of the Project in relation to contaminated land primarily relate to the discharge of contaminants to the environment from disturbance of contaminated land during periodic maintenance works. Potential receptors include construction workers, the public, groundwater and surface water.

40. My qualitative assessment of the effects of operational discharges on human health and the environment without mitigation is Low for the two HAIL land sites and Negligible to Low for

roading materials affected by coal tar and for identified non-HAIL and other potentially contaminated land.

Construction

41. Construction effects of the Project in relation to contaminated land primarily relate to the discharge of contaminants to the environment from disturbance of contaminated land during construction works. Potential receptors include construction workers, the public, groundwater and surface water.

42. My qualitative assessment of the effects of construction discharges on human health and the environment without mitigation is Negligible to Low for the two HAIL land sites, Low to Moderate for roading materials affected by coal tar and Negligible to Low for identified non-HAIL and other potentially contaminated land.

Proposed measures to avoid, remedy or mitigate adverse effects, including conditions

Operational

43. I recommend Long Term Site Management Plans (LTSMP) be prepared to avoid, remedy or mitigate effects during operational maintenance works affecting the two affected HAIL sites. The LTSMPs should be based on accepted best practice industry guidance.

    i. For the Gazley Mitsubishi site, the LTSMP should address residual contaminated soil and / or groundwater and include sediment removal from groundwater during dewatering. The additional mitigation afforded by the LTSMP would reduce the operational effects to Negligible

    ii. For Kilbirnie Park, the LTSMP should address sediment removal from groundwater during dewatering and include an unexpected discovery of contamination protocol. The unexpected discovery of contamination protocol should include the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and unexpected soil contamination. The additional mitigation afforded by the LTSMP would reduce the operational effects to Negligible

    iii. The requirement for and scope of the LTSMPs should be assessed following completion of Project construction

44. I recommend that coal tar in roading materials is managed by an unexpected discovery of contamination protocol. If coal tar is discovered in existing roading materials within the Project area during Project operation, then I recommend the preparation of a coal tar management plan based on accepted best practice industry guidance. The additional mitigation afforded by the management plan would reduce the operational effects of coal tar to Negligible.

45. If residual asbestos and / or lead are present in soil above background levels and / or human health soil contaminant standards (SCS) at building demolition sites, I recommend site specific Site Management Plans (SS-SMPs) be prepared to manage residual contamination during operational maintenance or ongoing use. I assess the effects of asbestos and lead in soil with mitigation afforded by the SMPs is Negligible. SMPs should be provided to affected parties, as required.

46. I assess that no mitigations in addition to NZTA standard work practices are required for other non-HAIL and other contaminated land during operation of the Project.

Construction

47. I recommend a supplementary contamination assessment investigation to collect soil and groundwater samples should be undertaken in advance of the works at the Gazley Mitsubishi

property, following demolition of the existing buildings. Information from the investigation should be used to develop a Contaminated Site Management Plan (CSMP) for the Gazley Mitsubishi property, setting out requirements for soil and groundwater management during construction phase soil disturbance works. The CSMP should include an unexpected discovery of contamination protocol.

48. If dewatering is required, I recommend a CSMP should be prepared in advance of works at Kilbirnie Park setting out dewatering management procedures. The CSMP should cover the removal of sediment from groundwater during dewatering and include an unexpected discovery of contamination protocol, including for the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and unexpected soil contamination.

49. I assess the effects during construction with mitigation afforded by the CSMPs for the two HAIL sites is Negligible.

50. I recommend that coal tar in roading materials is managed by an unexpected discovery of contamination protocol. If coal tar is discovered in existing roading materials within the Project area during Project construction, then I recommend the preparation of a coal tar management plan based on accepted best practice industry guidance. The additional mitigation afforded by the management plan would reduce the construction effects of coal tar to Negligible.

51. I recommend that the concentrations of asbestos and lead in soils should also be assessed post demolition of buildings containing asbestos building materials. The requirement for SS-SMP to manage residual asbestos and lead in soils during earthworks for the Project should be assessed on completion of the assessments. I assess the effects with mitigation afforded by the SS-SMP is Negligible.

52. I recommend that the Project Constructor's general works plan include a SMP setting out measures for identifying other contaminated or potentially contaminated soils, including potentially contaminated berm soils, localised contamination from minor discharges of contaminants and unclassified fill soils. The SMP should provide measures to manage the soils to mitigate adverse effects of offsite discharges. Adverse effects in relation to human health are not anticipated from the disturbance of these soils.

3. ASSESSMENT FRAMEWORK

Planning context

53. The planning context for Project is described in full in the substantive application for the Project.

54. The planning context for my Contaminated Land Assessment includes objectives and policies set out in the following:

Table 1: Planning context

Source	Provisions
NRP Operative[1]	Objective O41 - The environment is protected from the adverse effects of discharges of hazardous substances and the creation of contaminated land is avoided.
	Objective O42 - Contaminated land is identified and the discharges of contaminants are managed to protect the environment.
	Policy P99: The discharge of hazardous substances from contaminated land is managed so that significant adverse effects on fresh water, including groundwater, coastal water, and air are avoided, remedied or mitigated to the extent practicable.
WCC Contaminated Land[2]	Objective CL-01: Protection of human health Recognise and provide for the benefits of remediation and site management in enabling development opportunities that can contribute to social, economic, and health benefits for people and communities.
	Policies CL-P3: Management of contaminated land Minimise the risk to human health from the subdivision, change of use or specified development of contaminated land by: 1. Encouraging a best practice approach to site management for sites with elevated contaminant levels, which may include remediation, containment, and/or the disposal of contaminated soil; 2. Ensuring the land is safe for its intended use; and 3. Ensuring that land containing elevated levels of contaminants is managed to protect mana whenua's significant sites, waterways, natural resources and associated values and relationships, as well as the general health and wellbeing of their people and rohe including through partnership opportunities for remediation and/or site management.

[1] Greater Wellington Natural Resources Plan

[2] Wellington City Council 2024 District Plan Appeals Version

55. NRP Rules R82 (Discharges from contaminated land – permitted) and R83 (Investigation of, or discharges from contaminated land – discretionary activity) control discharges of hazardous substances from contaminated land including:

i. Rule R82 (c) the discharge from SLUR Category III land or SLUR Category IV land does not, or is not likely to, result in:

- Water quality exceeding the maximum acceptable value (MAV) in the Drinking-Water Standards New Zealand 2005 (Revised 2008) or 50% of the MAV in a community drinking water supply protection area shown on Maps 39, 40, 41, 42 or 43 at the following locations:

- At the property boundary, or within 50m from the source of the discharge, whichever is the lesser distance
- In an existing bore within the property boundary or within 50m from the source of the discharge, whichever is the lesser distance, used to abstract water for any use other than water quality monitoring

- Water quality in a surface water body within the property boundary or within 50m from the source of the discharge, whichever is the lesser distance, exceeding a value in Schedule V for the protection of 95% of species

ii. Rule R83 The use of land to undertake a detailed site investigation of contaminated land that is not permitted by Rule R81, or the discharge from SLUR Category III land or SLUR Category IV land where a contaminant may enter water, that is not permitted by Rule R82 is a discretionary activity

56. NRP Rules R159 (Dewatering - permitted activity) and R160 (Dewatering - restricted discretionary activity) control discharges from dewatering, including:

Rule R159

[…]

(c) the take and diversion and discharge is not from, onto or into:

(i) SLUR Category III land, or

(ii) within a community drinking water supply protection area shown on Maps 40, 41, 42 or 43, or

(iii) land where an activity or industry described in the Ministry for the Environment Hazardous Activities and Industries List 2011 is, or has been undertaken, and

(d) the take does not cause ground subsidence, and

(e) the take does not deplete water in a surface water body, and

(f) there is no flooding beyond the boundary of the property, and

(g) where a discharge is to water, or to land where it may enter a surface water body:,

(i) at the point of discharge the quality of the discharge shall not exceed:

1. 50g/m^3 of total suspended solids where the discharge is to a site or habitat identified in Schedule A (outstanding water bodies), Schedule C (mana whenua), Schedule F1 (rivers/lakes), Schedule F3 (identified natural wetlands), Schedule F4 (coastal sites) or Schedule H1 (contact recreation); or

2. 100g/m^3 of total suspended solids where the discharge is to any site or habitat not referred to in condition (i); or

3. the maximum acceptable value (MAV) for any determinand in the Drinking-Water Standards New Zealand 2005 (Revised 2008) in a community drinking water supply protection area shown on Map 39, and

(ii) after the zone of reasonable mixing, the discharge shall not cause:

1. a value in Schedule V for the protection of 99% of species to be exceeded in a river identified in Schedule F1 (rivers/lakes) having macroinvertebrate community health; or

2. a value in Schedule V for the protection of 95% of species to be exceeded in any other river or lake; and

(h) where a discharge is onto or into land where it may enter groundwater within a community drinking water supply protection area shown on Maps 40, 41, 42 or 43, the quality of the

discharge at the discharge point shall not exceed the maximum acceptable value (MAV) for any determinand in the Drinking-Water Standards New Zealand 2005 (Revised 2008), and

(i) where the dewatering is located within the Hutt Valley Aquifer Protection Zone shown on Map 49, any construction or removal of building foundations or earth retention structures or excavation (permanent or temporary) associated with the dewatering does not exceed a depth of 5m below the natural ground level.

57. The Planning context for my Contaminated Land Assessment also includes consideration of the NES-CS. The NES-CS sets out nationally consistent planning controls appropriate to territorial authorities for assessing and managing risks to human health from contaminants in soil on HAIL land. The WCC District Plan 2024 Appeals Version contains objectives and policies but no rules for contaminated land as the NES-CS prevails over the rules in the District Plan.

58. The NES-CS applies to specific activities on land where it is more likely than not that an activity or industry described in the HAIL is being or has been undertaken on it. Activities covered under the NES-CS include soil disturbance, soil sampling, fuel systems removal, subdivision and land use change.

NZTA technical publications or guidance documents

59. I have assessed consistency of my Contaminated Land Assessment methodology with the high-level guidance provided in NZTA technical publication Whenua parakino – contaminated land guidance, May 2023, Version 1.0. I consider that my Contaminated Land Assessment methodology is consistent with the NZTA guidance document.

Industry best practice or management guidance

60. Key industry best practice and management guidance that apply to my Contaminated Land Assessment are listed below:

    i. Contaminated Land Management Guideline (CLMG) No. 5 Site investigation and analysis of soils. Ministry for the Environment (MfE), June 2021 (ISBN: 978-1-98-857960-3) (CLMG No.5)

    ii. Contaminated Land Management Guideline (CLMG) No. 1 Reporting on contaminated site in New Zealand. Ministry for the Environment, June 2021 (ISBN: 978-1-98-857958-0) (CLMG No.1)

    iii. User's Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. Ministry for the Environment, April 2012 (ISBN: 978-0-478-37281-6 (print), ISBN: 978-0-478-37282-3 (electronic))

    iv. Waste Management Institute New Zealand, 2023. Guidelines for Assessing and Managing Coal Tar Contamination in Roading

61. My Contaminated Land Assessment has been undertaken in accordance with the key industry best practice and guideline documents listed above. This assessment report includes (as Annexures A – C) a PSI and includes DSIs for HAIL land associated with Kilbirnie Park and the Gazley Mitsubishi property, as described in CLMG No.1 and CLMG No.5 and as referenced in the NES-CS.

Relevant consents

62. I am not aware of any existing resource consents that are relevant to my Contaminated Land Assessment.

4. ASSESSMENT METHODOLOGY

Introduction

63. My Contaminated Land Assessment methodology for the PSI comprised a desk top review of information and walkover/drive by inspections of the Project Alignment, to meet the following objectives:

    i. Identify the location, extent and nature of contaminated land affected by the Project

    ii. Assess the potential risk to human health and the environment from contaminated land affected by the Project during and following construction

    iii. Provide recommendations for the further assessment and management of risk

64. Project layout plans with various overlays provided by NZTA were used for spatial display of information and are presented in the PSI (**Annexure A**).

65. My Contaminated Land Assessment methodology for the DSIs at Kilbirnie Park and the Gazley Mitsubishi property comprised targeted soil and groundwater assessments, targeting the two pieces of HAIL land that will be subject to bulk earthworks for the Project:

    i. SH1 at Wellington Road will be widened and permanently extended to the south beyond the existing northern Kilbirnie Park boundary by approximately 8 m

    ii. The Gazley Mitsubishi property will form part of the Sussex Street to Cambridge Terrace connection and will require the demolition of the current building as well as bulk earthworks within the site and within adjoining land to the south, to establish the Sussex Street to Cambridge Terrace connection, part of which will be placed in a trenched section tying into Cambridge Terrace

66. The objectives of the DSIs were to:

    i. Assess the nature and extent of CoPC in soil and groundwater within land at Kilbirnie Park and the Gazley Mitsubishi property affected by the Project

    ii. Assess the effects of ground disturbance works on human health and environment in relation to the CoPC as a result of the Project

    iii. Provide a preliminary assessment of the proposed works in relation to applicability of the NES-CS and GWRC NRP

Scope

67. The scope of my PSI included:

    i. Review of information provided by NZTA on the Project layout and extent

    ii. Review of the environmental setting of the Project based on publicly available information and information contained in other Technical Specialist Reports

    iii. Site walkover/drive by inspection of the Project alignment

    iv. Identification of HAIL land within the Project alignment and within 100 m of either side of the Project Alignment based on review of SLUR web map produced by GWRC

    v. Review of SLUR records obtained from GWRC to assess contamination history and likely CoPCs in each SLUR site

    vi. Review of publicly available historical aerial imagery, typically available from about 1940 to current, to identify potential HAIL land not captured on the GWRC SLUR, and other potentially contaminated land, based the interpreted development history of land within the Project area

    vii. Review of further information including historical development plans and previous site investigation and other information, as available, for selected sites, obtained from NZTA, WCC and GWRC and publicly available sources

viii. Review of information on the likely presence, location and nature of coal tar in existing roading materials within the Project, based on publicly available information and advice provided by NZTA

ix. Assessment of the likelihood of contamination of soil and groundwater within the Project PFAS from the use of PFAS containing fire fighting foams within the Terrace and Mount Victoria tunnels and other parts of the Project Alignment, based on advice from NZTA following consultation with Fire and Emergency New Zealand (FENZ) and review of EPA records available for the period July 2006 to December 2011, of reported incidents involving hazardous substances within the Project Alignment or within 100 m of either side of the Project Alignment

x. Site walkover inspections of selected sites

xi. Review of the location and nature of HAIL land and other potentially contaminated land likely to be affected by the Project

xii. Assessment of the likely effects of HAIL land or other potentially contaminated land affected by the Project on human health and the environment from soil disturbance associated with the Project

xiii. Provision of recommendations for the further assessment and management of effects of HAIL land or other potentially contaminated land on human health and the environment from soil disturbance associated with the Project

68. The distance of 100 m either side of the Project Alignment was selected to account for the possible presence of contamination in soil or groundwater below the Project Alignment from the migration of contaminants in groundwater from HAIL sites not directly within the Project Alignment. Losses of petroleum hydrocarbons was considered to be the most likely and significant source of offsite contamination. Owing to its high mobility in groundwater and its low Maximum Acceptable Value (MAV) in drinking water (0.01 mg/L in New Zealand), benzene was considered to be primary risk driver associated with such losses. Numerous studies (e.g., Concawe 2018) have shown median plume lengths of about 45 m for benzene plumes at 0.01 mg/L and 105 m at the 90th percentile. The 100 m buffer zone is therefore considered to be a reasonable assumption when considering the potential for contamination within the Project alignment from HAIL sites not directly within the Project alignment.

69. The scopes of the DSIs were based on the findings of the PSI and included:

70. Borehole advancement, logging and sampling of soil and groundwater from two groundwater monitoring well boreholes installed to 6 m depth within the northern end of Kilbirnie Park (see Figure 8).

71. Borehole advancement, logging and sampling of soil and groundwater from two groundwater monitoring well boreholes installed to 10 m depth within the asphalt vehicle storage and display carpark immediately to the south of the Gazley Mitsubishi offices, showroom and workshop (see Figure 7).

i. Analysis of soil and groundwater samples for CoPCs based on the specific hazardous activities and industries being undertaken and / or previously undertaken at each site

72. The results of the DSIs were used to:

i. Reassess the likely adverse effects on human health and the environment from soil disturbance of HAIL land at Kilbirnie Park and the Gazley Mitsubishi property

ii. Assess the applicability of the NES-CS and GWRC NRP in relation to the proposed ground disturbance works

iii. Update the recommendations presented in the PSI for the further assessment and management of adverse effects of HAIL land or other potentially contaminated land on human health and the environment from soil disturbance associated with the Project

73. I acknowledge that the findings of the DSI at the Gazley Mitsubishi property are constrained by soil and groundwater data being available only from two investigation locations adjacent to the Gazley Mitsubishi property. Monitoring well bores were not drilled within the Gazley Mitsubishi property itself owing to access constraints. Findings may therefore not be fully representative of the whole Gazley Mitsubishi property. Further investigations following removal of the Gazley Mitsubishi offices, showroom and workshop are recommended to provide additional information.

Approach to assessing effects

74. The assessment of adverse effects on (and potential risk to) human health and / or the environment from HAIL land and other contaminated land affected by the Project was undertaken using the qualitative effects assessment terminology presented in Table 2**.** The assessment was informed by a generalised Conceptual Site Model (CSM) which considered the following key source-pathway-receptor (SPR) linkages:

Source:

75. The location, nature and concentration of contaminants in HAIL land and other contaminated land that will be subject to ground disturbance by the Project. This includes land contaminated as the result of the migration of contaminants from contaminated land adjacent to the Project alignment into the Project alignment, which includes HAIL H land.

Pathway:

76. Migration pathways to people and the environment arising from ground disturbance within HAIL land and / or other contaminated land within the Project alignment. Pathways include dermal contact, ingestion and inhalation of contaminants in soil, groundwater and air by human receptors, and the discharge/migration of contaminants to the environment via groundwater, stormwater and streams. A pathway exists only where ground disturbance for the Project occurs within affected HAIL land or other contaminated land and receptors are present.

Receptor:

77. Location and nature of human and environmental receptors that could be exposed to contaminants mobilised during ground disturbance for the Project. Human receptors principally comprise Project construction workers, with secondary receptors comprising members of the public in the vicinity of ground disturbance works. Environmental receptors principally comprise streams, Wellington Harbour and Evans Bay from the discharge of contaminants in stormwater runoff or from discharges to the ground, passive discharges of contaminants in groundwater and stormwater from dewatering activities as part of the Project.

78. Groundwater is not abstracted for potable use in the Project area. As there is no receptor in this context, groundwater is not considered to be a potential source and or migration pathway in relation to potable water use and consumption.

79. A complete SPR linkage requires the presence of all of the SPR elements and indicates potential effects on (risk to) human health and / or the environment. These effects are categorised as Negligible to Very High as per Table 2. An incomplete pathway indicates Negligible effects.

80. Section 3 in the PSI (**Annexure A**) provides detailed information for each Project section on contaminant sources based on Council records and other information, and potential pathways to human and environmental receptors based on the nature of planned ground disturbance

activities and the potential for contaminant migration to areas of ground disturbance via groundwater and / or preferential pathways

Table 2: Qualitative assessment of effects terminology (adapted from NZTA)

Effect	Description of effects
Very High	Total loss of, or very major alteration to, the existing baseline conditions, such that the environment post-development will be fundamentally changed. Longterm impacts that may be irreversible.
High	Major loss or major alteration to the existing baseline conditions such that the post-development environment will be fundamentally changed compared to the pre-development environment.
Moderate	Material change from existing baseline conditions in the short, medium or long term.
Low	Minor change from existing baseline conditions. Temporary or short-term impacts or long term change will be noticeable but environment will be general similar to pre-development conditions.
Negligible	Very slight change from the existing baseline conditions. Change not (or barely) discernible.

5. EXISTING ENVIRONMENT

Introduction

81. The existing environment and the nature of location of contaminated land within the Project are described in full in the substantive application for approvals and are summarised in the PSI (**Annexure A**).

82. For each Project section, I have also summarised predominant land uses, principal ground disturbance works proposed for the Project improvements, the location and nature of contaminated land and the likely effects of ground disturbance. The PSI (**Annexure A**) presents these matters in full for all HAIL land and other contaminated land identified.

Site description

83. The Project comprises improvements to the existing Wellington Urban Motorway (SH1), including the duplication of the Terrace Tunnel and Mount Victoria Tunnel and SH1 through the city center to Kilbirnie Park. Adjacent land uses include well established commercial, recreation and residential land. Evans Bay lies at southern end of the Project.

84. The Project area is underlain by Mesozoic greywacke basement, which is overlain in parts of the Terrace Tunnel, Te Aro, Basin and Eastern Connections sections by Pleistocene to Holocene sedimentary deposits and Holocene human-made deposits (made ground) including reclamation fill, of varying thickness. Groundwater is present within the greywacke basement and the overlying sediments at varying depths below the Project Alignment. Groundwater from these sources is not abstracted for public water supply owing to generally low yields from the greywacke, and quality issues, including the presence of contaminants in shallow groundwater within made ground and in natural sedimentary deposits underlying some developed areas of the central city.

85. There are four piped freshwater streams (awa) within the Project area discharging to Wellington Harbour and one piped stream (awa) discharging to Evans Bay. The freshwater environment is considered to be highly modified.

Terrace Tunnel section (Section 1)

86. The **Terrace Tunnel** section includes the Wellington Urban Motorway (SH1) from approximately the Aurora Terrace overbridge in the north, through the Terrace Tunnel, to Vivian Street within the suburb of Te Aro to the south. The northern extent of SH1 to Boulcott Street SH1 forms the boundary between the central city to the east and the elevated residential suburb of Kelburn to the west. Land use in the central city includes commercial properties, comprising mainly multistorey offices between Aurora Terrace and Everton Terrace, also including Clifton Carpark adjoining SH1 immediately north of Everton Terrace. This part of the Project lies predominantly within the existing SH1 designation, with NZTA and WCC owned land subject to temporary occupation on the eastern side of the existing corridor affecting Clifton Carpark.

87. Mainly residential properties are located on the elevated section of The Terrace to the east of SH1 from Everton Terrace to the northern portal of the Terrace Tunnel. Open Space zoning applies to Kelburn Park which adjoins the Project in the west and some land directly above the existing and proposed duplicate tunnels. South of Boulcott Street to the entrance of the Terrace Tunnel, proposed works are predominantly within the existing SH1 designation.

88. The Project lies outside the SH1 designation between the northern portal of the Terrace Tunnel and MacDonald Terrace at the southern end of the proposed duplicate tunnel

associated with the proposed duplicate tunnel, with sub-strata property impacts below residential land use on The Terrace, Salamanca Road and MacDonald Terrace.

89. Principal ground disturbance works in Section 1 comprise duplication of the Terrace Tunnel to the east of the existing tunnel to provide two southbound traffic lanes into the city. Works will include tunnelling through natural ground. Disturbance of existing berms soils at the northern and southern portals will occur in conjunction for the construction of tunnel control buildings, water tanks and pump buildings. The works also include new stormwater services within existing road berm and part of the Upper Willis Street carpark connecting to existing services in SH1 and in Willis Steet. Disturbance of berm soils and potentially fill soils and underlying natural ground below part of the Upper Willis Street carpark and Willis near Ghuznee Street will be required. Disturbance of berm soils will also be required for the addition southbound lanes beneath the extended or new Ghuznee Street bridge.

Te Aro section (Section 2)

90. The Te Aro section encompasses the Te Aro City centre and includes Vivian Street (SH1) to Cambridge Terrace and part of Karo Drive / Arthur Street (SH1) east of Cuba Street. Te Aro is a commercial centre that was well established by the turn of the 20th century, with predominant land uses comprising commercial and light industrial and residential land use, with increasing intensification to high density residential over time. Existing SH1 runs along Vivian Street and Karo Drive, which established as part of the Inner City Bypass project in about 2006.

91. Proposed works within the Te Aro section of the Project are mainly within the existing SH1 designation and are associated with widening the carriageway within the existing SH1 designation, predominately comprising shallow kerb works and alteration of existing verandas.

Basin Reserve section (Section 3)

92. The **Basin Reserve** section includes the Basin Reserve and SH1 including Buckle, Sussex and Rugby Streets and the southern parts of Cambridge Terrace and Kent Terrace (SH1). In addition to the recreational land associated with the Basin Reserve, land uses comprise predominantly mixed use and commercial, being the southern end of Wellington central city. On the eastern side of the Basin Reserve there are three schools and the southern end of the Mount Victoria suburb. Residential housing is present adjacent to Sussex Street and Pukeahu National War Memorial Park lies to the west. The northern side of Buckle Street adjoins green space.

93. Proposed works within the Basin Reserve section will primarily affect land owned by NZTA and WCC. The Project designation lies in part outside the existing SH1 designation, encompassing residential properties bounding Sussex Street on the west and open space and commercial land to north, including the Gazley Mitsubishi property, which will be disturbed for construction of the Sussex Street extension to Cambridge Terrace. Sussex Street will be placed in a trenched section west of the Basin Reserve that will tie into Cambridge Terrace south of Barker Street. The trench will extend beyond the current designation to the north. It will pass below currently publicly accessible land in hard and soft landscaping at the eastern end of Pukeahu War Memorial Park, including the current location of part of the Commonwealth Walkway and the Queen Elizabeth II Education Centre.

Mount Victoria Tunnel section (Section 4)

94. The **Mount Victoria Tunnel** section includes SH1 from east of the Basin Reserve through the Mount Victoria Tunnel to the suburb of Hataitai in the east. On the western side of the tunnel, the Project area includes predominantly residential properties on the northern side of Paterson

Street, two properties with frontage to Brougham Street and one property with frontage to Austin Street. Wellington College lies to the south of SH1.

95. The Mount Victoria Tunnel passes below green belt (zoned Town Belt) emerging into the residential suburb of Hataitai. Hataitai Park lies immediately to the south of the eastern tunnel portal.

96. Proposed works include duplicating the Mount Victoria Tunnel to provide two southbound lanes and a separated shared use path on the northern side of the new tunnel. The tunnel duplication works lie outside the current SH1 designation. Works will include tunnelling through natural ground requiring dewatering, which will progressively increase as the tunnel construction advances. Permanent drainage will be installed during construction and will take over the dewatering post-construction. Improvements also include the construction of tunnel control buildings, water tanks and pump buildings. Disturbance of fill soil, existing berms soils and natural ground at tunnels portals will occur in conjunction with other works.

Eastern Connections section (Section 5)

97. The **Eastern Connections section** follows SH1 from eastern portal of the Mount Victoria Tunnel to east of Kilbirnie Park. Predominately residential properties lie on the eastern side of SH1, from the tunnel portal to the intersection with Wellington Street in the south. Mixed commercial and residential land use is present on Taurima Street in the north. Hataitai Park lies on the western side of SH1 to the intersection with Wellington Road.

98. Residential housing is also located to the north and south of SH1 from the SH1/Wellington Street intersection to Kilbirnie Crescent. To the east of Kilbirnie Crescent, residential housing lies to the north of SH1 and Kilbirnie Park lies to the south. Evans Bay and St Patrick's College lie to the north and south, respectively, at the eastern extent of Eastern Connections section.

99. Principal ground disturbance works in Project Section 5 include corridor widening along Ruahine Street into the Town Belt to provide two lanes of general traffic in each direction between the Mount Victoria tunnels and Wellington Road, construction of a grade separated local road connection across SH1 south of Goa Street from Moxham Avenue to Hataitai Park to provide access to the park, including northbound off-ramps between SH1 and the new grade separated connection to provide improved access into and out of Hataitai and the park.

100. The improvements also include widening of the road corridor along Wellington Road into the properties south of SH1 and Kilbirnie Park to provide two or more lanes of general traffic in each direction between Ruahine Street and Cobham Drive. The works will be constructed over land currently in residential use, requiring demolition of existing residential buildings and also over potential fill soils in the northern part of Kilbirnie Park. The current cricket pavilion will also be demolished. A new stormwater pipe beneath Ruahine Street and Wellington Road from near the eastern portal of the Mount Victoria Tunnel will be constructed within the carriageway, discharging to Evans Bay via an upgrade of the existing outfall to Evans Bay.

Contaminated land within the Project area

HAIL land

101. I have identified HAIL land at 65 locations in the Project area, being 58 locations based on SLUR records, two locations from historical aerial photographs not recorded on the SLUR, two locations based on advice from NZTA, two locations from the walkover/drive by inspection and one location from the review of previous environmental investigation reports.

Terrace Tunnel section

102. HAIL land was identified at 13 locations within The Terrace Tunnel section:

   i. Ten SLUR category I (Verified HAIL) and one category IV (Contamination acceptable, managed/remediated)

   ii. Six locations on The Terrace documenting the presence or former presence of an above storage tank (AST) or UST for the storage of hydrocarbons, likely as a source of fuel for a building boiler or backup generator for offices and the James Cook Hotel (HAIL A17)

   iii. One slurry filled UST location located at the intersection of SH1 southbound with Willis Street (A17)

   iv. Three locations to the west of SH1 in Kelburn comprising a bowling green adjacent to Kelburn Park, the Mount Street cemetery and a former landfill below part of Kelburn Park

   v. One location on Allenby Terrace relating to Fire damaged property and the presence of asbestos within the damaged property

   vi. Two locations comprising electrical transformers (HAIL B2) located within the northern and southern tunnel control buildings, not listed on the SLUR

103. No HAIL land will be directly disturbed by the Project.

Te Aro section

104. HAIL land within the Te Aro section was identified at 24 locations from SLUR records, one location based on historical aerial photographs and two locations from the walkover/drive by inspection:

   i. Vehicle mechanics workshops, depots or metal fabrication at 15 locations, with one site including HAIL B2 (electrical transformers)

   ii. One current and two former fuel service stations

   iii. Bulk storage of chemicals and/or petroleum hydrocarbons at eight locations

   iv. Land contaminated by accidental release of asbestos at one location

   v. Former outdoor storage of timber / potential timber treatment not listed on the SLUR

105. Berm side electrical transformers located adjacent to apartment / high density residential buildings at two locations not listed on the SLUR, although one of these locations was listed on the SLUR in relation to previous petroleum hydrocarbon storage.

106. No HAIL land will be directly disturbed by the Project.

Basin Reserve section

107. HAIL land within the Te Aro section was identified at 18 locations from SLUR records and at one location based on previous environmental investigation reports:

   i. Motor vehicle workshops and the current or former bulk storage of hydrocarbons and/or chemicals at nine locations in the block between Fifeshire Avenue, Tory Street, Cambridge Terrace and Buckle Street, including the current Gazley Mitsubishi

   ii. Five locations to the northeast of the Basin Reserve relating to vehicle maintenance workshops or bulk hydrocarbon fuel storage

   iii. The remaining four SLUR sites are not located near any proposed bulk earthworks

   iv. The location of an underground storage tanks (UST) removed in 2012 at Bogarts Corner not listed on the SLUR

108. SLUR site SN/05/230/02 (currently Gazley Mitsubishi) will be directly disturbed by bulk earthworks for the Project (Sussex Street extension to Cambridge Terrace). Minor soil disturbance will be undertaken at Bogarts Corner.

Mount Victoria Tunnel section

109. No SLUR sites or HAIL land were identified within the Mount Victoria Tunnel section.

Eastern Connections section

110. HAIL land within the Eastern Connections section was identified at five locations from SLUR records and at one location based on historical aerial photographs:

   i. Current or former bulk storage of hydrocarbons at three locations including former bulk storage of hydrocarbons at the Church of Latter Day Saints

   ii. Former timber treatment at one location that has since been developed into medium density residential housing

   iii. Land reclamation and filling of Kilbirnie Park

   iv. Market gardens, a previous land use at the Church of Latter Day Saints not on the SLUR

111. HAIL land at SLUR site SN/05/012/02 Kilbirnie Park (Kilbirnie Park) will be disturbed by the Project for the widening of SH1.

PSI and DSI findings - Likely effects of ground disturbance

112. I have undertaken a qualitative assessment of the effects on human health and the environment of the HAIL land affected by the Project identified by the PSI using the SPR process described in Section 4. Details of the assessment are presented for each of the Project sections in Tables 3 to 8 in the PSI (**Annexure A**) and a summary is presented in Table 9 in the PSI (**Annexure A**).

113. From the PSI, I identified HAIL land at 65 locations within the Project area which I assess as having Negligible effect on human health or the environment as a result of the Project, in all cases being HAIL land not subject to ground disturbance works for the Project. I consider there is no ground disturbance directly within the HAIL land or potential for contaminant migration to areas of ground disturbance via groundwater and / or preferential pathways.

114. I also identified HAIL land at two locations comprising HAIL land that will be disturbed during construction of the Project that could result in adverse effects on the environment:

   i. SLUR site SN/05/230/02 Kirk Motors Ltd (currently Gazley Mitsubishi), Lot 1 DP 63531, located at 76 Cambridge Terrace (Basin Reserve section)

   ii. SLUR site SN/05/012/02 Kilbirnie Park, 55 Kilbirnie Crescent, Wellington City Pt Lots 2 3 4 DP 11975 Pt Lots 1-5 DP 6069 – Subj To Electricity Supply Easement On DP 78340 (Eastern Connections section)

SLUR Site SN/05/230/02 Kirk Motors Ltd (currently Gazley Mitsubishi)

115. The location of SLUR Site SN/05/230/02 Kirk Motors Ltd is presented in Figure 1 in relation to proposed improvements within the Basin Reserve section associated with the Sussex Street to Cambridge Terrace connection. These works will require the demolition of the current Gazley Mitsubishi property and bulk earthworks to establish the extended Sussex Street, part of which will be placed in a trenched section that will tie into Cambridge Terrace south of Barker Street. Dewatering of the trench excavation will be required. A current photograph of the site, looking northeast from SH1 (Kent Terrace) is presented in Figure 2.

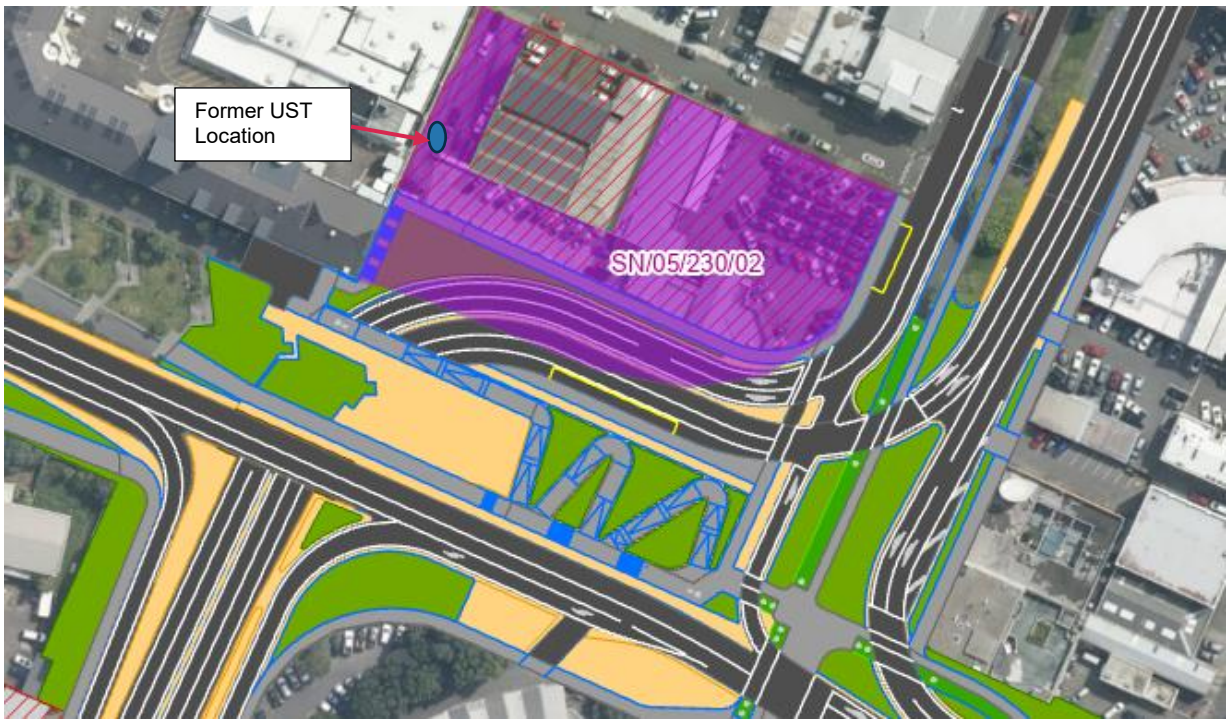

Figure 1 – Plan of the Sussex Street to Cambridge Terrace Connection through Gazley Mitsubishi

Figure 2 – Gazley Mitsubishi facing northwest towards Sussex Street 20-10-2025

116. SLUR records document a fuel service station, presumed to be Kirk Motors, established by 1985 with the balance of what became Gazley Mitsubishi developed by 1996. Based on information in WCC files, it appears that a UST was located below the northwestern access to the building, with a pump/bowser located next to the western wall of the workshop building inside the workshop building. The assessed location of the UST is indicated on Figure 1. A current (22 January 2026) photograph of the likely former UST location (external to the building on the righthand side of the driveway) is presented in Figure 3.

Figure 3 – Gazley Mitsubishi - Former UST location 22-01-2026

117. A site walkover of the property was conducted on 22 January 2026. The current land use is a car dealership and associated vehicle workshop. The workshop activities include the storage and use of new and used oils in above ground drums and tanks. Used oil is removed from site for treatment/disposal. The concrete flooring of the workshop appeared to be in good order with no excessive cracking or staining. No evidence of the UST or associated infrastructure was observed. The dealership owner was interviewed as part of the walkover. They were not aware of a UST or fuel bowser ever being present within or around the workshop during their occupation (post 1998) (Figure 4).

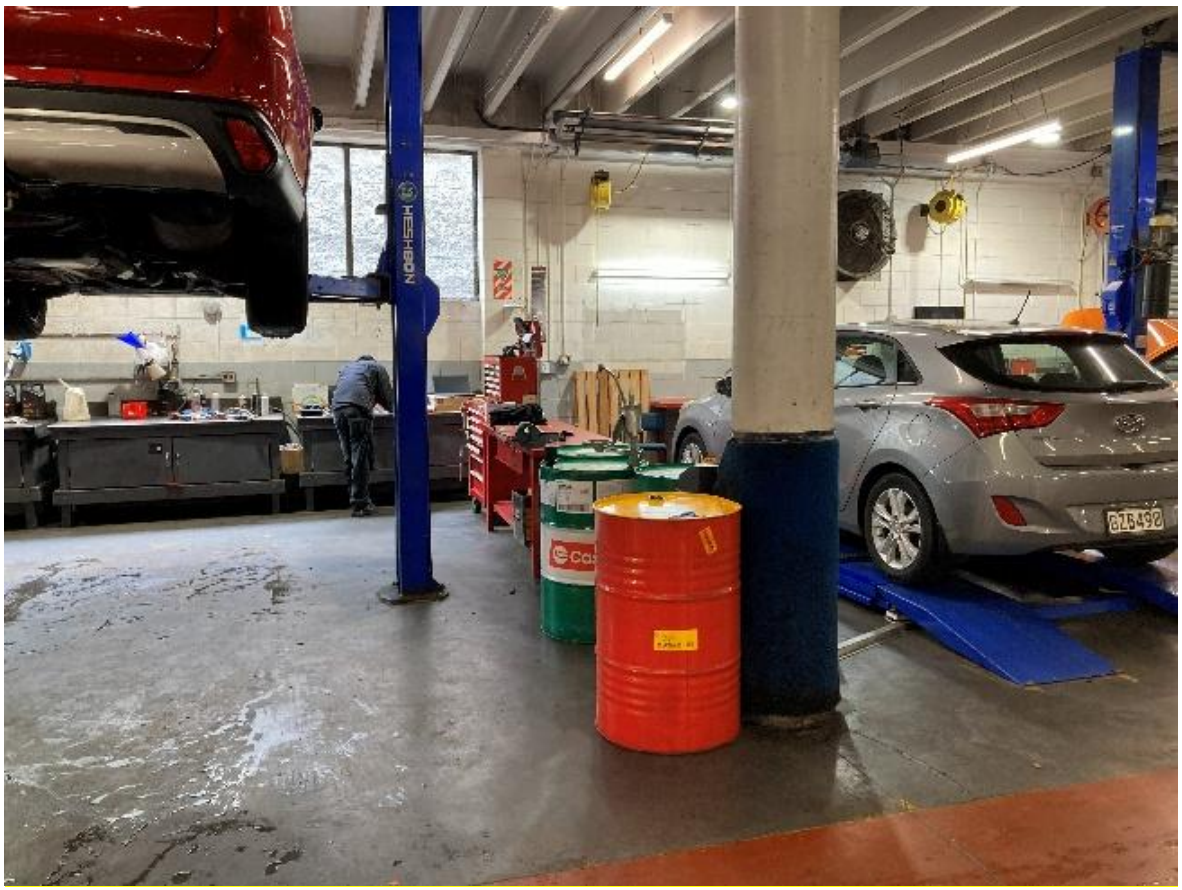

Figure 4 – Gazley Mitsubishi workshop 22-01-2026

118. Present day operations at Gazley Mitsubishi include vehicle sales, maintenance and refurbishment.

119. I assess that SLUR site SN/05/230/02 is more likely than not associated with HAIL F7: *Vehicle refuelling, service and repair - Service stations, including retail or commercial refueling facilities and HAIL F4: Vehicle refueling, service and repair - Motor vehicle workshops*. CoPC associated with these HAIL activities and industries include heavy metals, petroleum hydrocarbons and volatile and non-volatile organic compounds.

120. It is expected that earthworks for the Project will require soil disturbance and dewatering within the Gazley Mitsubishi property. Contaminated soil and groundwater may be encountered during earthworks, resulting in potential discharges of contaminants to land and water and human exposure to contaminants. On the basis of the PSI, I assessed that SPR linkages at SLUR site SN/05/230/02 were potentially complete.

SLUR Site SN/05/012/02 Kilbirnie Park

121. The realignment and widening of SH1 to the west of Cobham Drive will encroach onto the northern extent of Kilbirnie Park, including the demolition of the existing cricket club rooms. The location of the northern part of SLUR Site SN/05/012/02 Kilbirnie Park is presented in Figure 5 (solid pink) in relation to proposed improvements within the Eastern Connections at Kilbirnie Park.

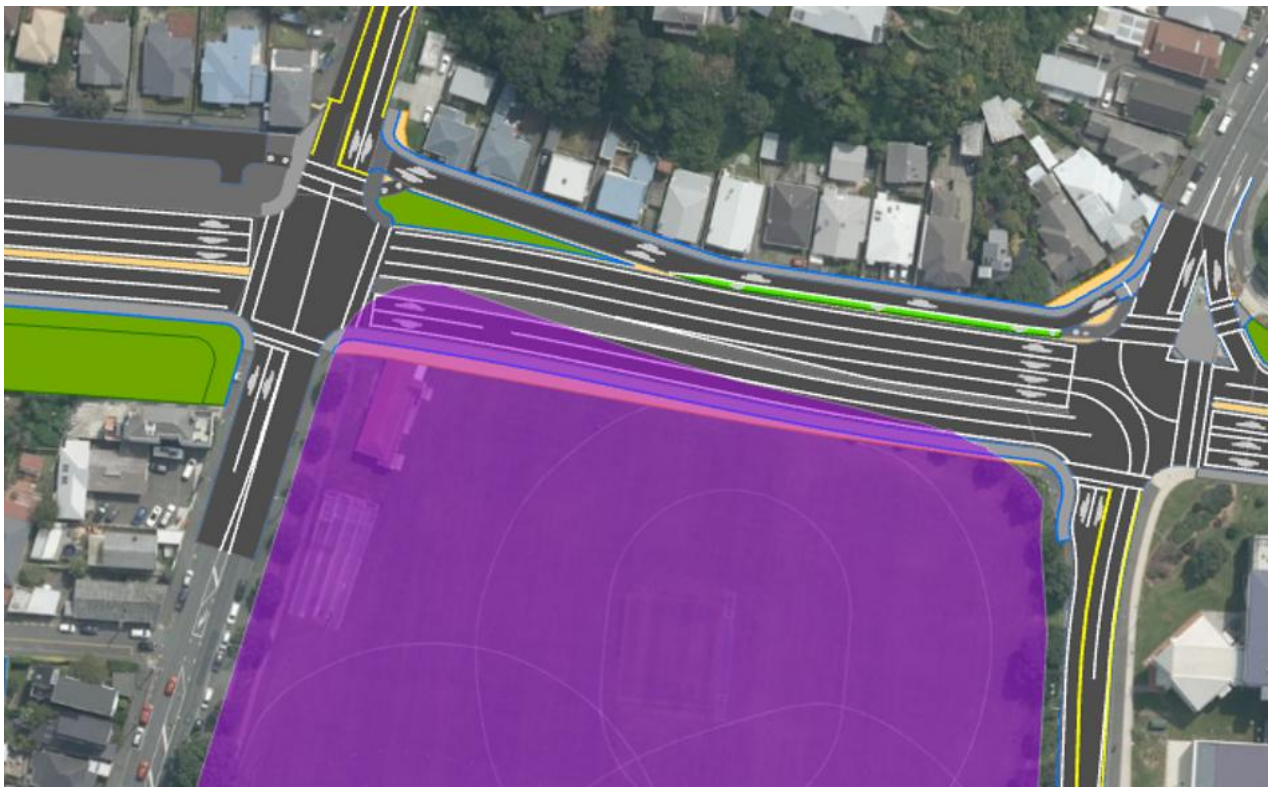

Figure 5 – Plan of SH1 improvements at Kilbirnie Park

122. A current photograph is presented in Figure 6.

Figure 6 – Kilbirnie Park and SH1 facing east 20-10-2025

123. Kilbirnie Park is listed on the GWRC SLUR (SN/05/012/02) under HAIL G3. I understand that the landfill operated between 1937 and 1939, with aerial photographs showing the site as formed park land by 1940. The types and location of filling activities are not well documented.

124. Site investigations in 2005 on behalf of WCC in the northern and central parts of Kilbirnie Park encountered fill material underlying natural ground (estuarine / marine sediment) which were encountered between 2.0-2.7 m bgl. Investigation locations are uncertain owing to unavailability of a sample location plan in the copy of the report reviewed. However, it is inferred from the report that investigation focused on the northern and central parts of Kilbirnie Park.

125. Fill materials were encountered and were classified as silty clay with siltstone gravels indicative of weathered greywacke. The estuarine / marine deposits comprised shelly sand and sandy gravel. No refuse material was encountered during the investigation.

126. I have compared the analytical results for soil sampling with Wellington background soil concentrations for Type 2 greywacke soils established for GWRC in 2003. This comparison shows that background concentrations for metals (chromium, copper, lead, nickel and zinc) in some samples exceeded their respective background soil concentration values. Exceedance of background soil concentration values on HAIL land is a trigger for consideration of the applicability of the NES-CS.

127. Groundwater sample results for at least one borehole (BH2) inferred to be located on the eastern boundary of the park, approximately 100 m to the south of SH1, indicated elevated concentrations of heavy metals, particularly iron, arsenic, nickel, lead and zinc, indicating the potential for leachate generation from unidentified contaminated fill not found during the intrusive investigation.

128. Other investigations in the southern area of Kilbirnie Park have identified contamination of deeper fill and the presence of general refuse (bricks, glass bottles, scrap metal). These site investigations have established that anthropogenic fill has been used in the land reclamation in at least the southern part of Kilbirnie Park.

129. I assess SLUR (SN/05/012/02) Kilbirnie Park is more likely than not associated with HAIL G3: *Cemeteries and waste recycling, treatment and disposal - Landfill sites*. CoPCs associated with this HAIL are variable and would depend on the nature of material buried but would typically include heavy metals, polycyclic aromatic hydrocarbons and asbestos in soils. Bulk earthworks will be required for widening of SH1 which will encroach on the northern area of Kilbirnie Park. Contaminated soil, including anthropogenic wastes, and contaminated groundwater may be encountered during earthworks, resulting in potential discharges of contaminants to land and water and human exposure to contaminants.

130. On the basis of the PSI, I assessed that SPR linkages at SLUR site **SN/05/012/02 Kilbirnie Park** were potentially complete.

Detailed Site Investigation SLUR Site SN/05/230/02 Kirk Motors Ltd (currently Gazley Mitsubishi)

131. The DSI investigation for the Gazley Mitsubishi property was undertaken between 29 March and 19 April 2026. It comprised the borehole advancement, logging and sampling of soil and groundwater from two groundwater monitoring wells (GM01 and GM02) installed within an asphalt vehicle storage and display carpark on the southern boundary of the Gazley Mitsubishi property. The groundwater monitoring well locations are shown on. No boreholes were advanced within the Gazley Mitsubishi property owing to access restrictions.

132. The drilling encountered soils interpreted as fill to approximately 1.6 m below ground level (bgl), underlain by sandy and gravely silt to total depth (10 m), inferred to be natural ground. No visual or olfactory indicators of contamination were encountered.

133. A groundwater monitoring event was undertaken on 19 April 2026 following well development. Sampling was completed by low-flow micro-purge techniques using a peristaltic pump. Groundwater was recorded at 0.96 m bgl in GM01 and 1.71 m bgl in GM02. No visual or olfactory indicators of contamination were noted in groundwater.

134. Soil and groundwater sample analysis results were compared to background soil concentrations and human health and environmental guidelines, including soil SCS, and the New Zealand Maximum Acceptable Values (MAV) for drinking water and the Australian and New Zealand Guidelines (ANZG) Ecological Default Guideline Values (DGVs) for Marine Water at 95% species protection for assessment of groundwater. These DGVs are protective of receiving environments and are applied at the receiving environment of groundwater discharge and are not a measure of groundwater contamination.

135. Observations and analysis results for soils indicate that:

i. Fill soils below the asphalt within the vehicle storage and display carpark are contaminated by polycyclic aromatic hydrocarbons (PAH), potentially derived from coal tar. The contamination of the fill does not appear to be linked to the storage and use of hazardous substances at the Gazley Mitsubishi property

ii. Some CoPC are present in soil at concentrations exceeding background values

iii. All CoPC concentrations were less than human health SCS

iv. The underlying natural ground soils do not appear to be contaminated by CoPCs associated with the storage and use of hazardous substances at the Gazley Mitsubishi property

136. The DSI also indicates that groundwater below the site is not contaminated by CoPC associated with HAIL F4 and HAIL F7 or other from surrounding land uses, with groundwater quality compliant with MAVs for drinking water.

137. Concentrations of dissolved copper, and zinc in groundwater exceeded their respective ANZG DGVs for 95% marine species protection. As noted above, these DGVs are not a measure of groundwater contamination and the results indicate that the storage and use of hazardous substances at the Gazley Mitsubishi property and at surrounding land, have not resulted in groundwater contamination.

138. A CSM was also prepared for the qualitative assessment of effects of the contaminants in soil and groundwater on construction workers and surface water comprising the Waitangi Awa and Wellington Harbour. My key conclusions based on the CSM are as follows:

i. The PAH detected in fill soils do not indicate a significant effect on human health from disturbance of these soils during road construction works. These soils are therefore considered to be non-HAIL unclassified fill

ii. Fill below the Gazley Mitsubishi property is likely to contain non-HAIL unclassified fill potentially contaminated by PAH. Management of these soils during ground disturbance will be required

iii. No additional management of underlying natural soils during ground disturbance will be required

iv. Potential passive discharges from the Gazley Mitsubishi property are unlikely to pose an unacceptable risk to the Waitangi awa, which is piped in the vicinity of the Gazley Mitsubishi property, or to Wellington Harbour which is located some 900 m from Gazley Mitsubishi property, owing to expected attenuation in groundwater between the site and

Wellington Harbour and the available dilution in the receiving environment (Wellington Harbour)

139. I also conclude the following:

i. Soil disturbance for the Project will not meet the Permitted Activity requirements of Regulation 8(3) of the NES-CS owing to the presence of PAH and some metals above background concentration values, and soil disturbance is assessed to be a controlled activity in accordance with Regulation 9(1) of the NES-CS

ii. Potential passive discharges in groundwater from the Gazley Mitsubishi property appear to be permitted under Rule R82 of the GWRC NRP

iii. Dewatering in relation to Rule R159 of the GWRC NRP is potentially a permitted activity, owing to the available dilution in the receiving environment, Wellington Harbour. Pretreatment to remove sediment from dewatered groundwater would likely be required

iv. Dewatering, and excavation and management of fill, without mitigation, are qualitatively assessed as Negligible to Low

140. I acknowledge that the DSI is constrained by soil and groundwater data available only from locations GM01 and GM02. It may therefore not be fully representative of the whole Gazley Mitsubishi property. Further investigations following demolition of the Gazley Mitsubishi premises would address this current constraint.

141. The DSI is presented in **Annexure C**.

Figure 7 – Gazley Mitsubishi Investigation Locations

Detailed Site Investigation SLUR Site SN/05/012/02 Kilbirnie Park

142. The DSI investigation at Kilbirnie Park was undertaken between 9 and 17 February 2026. It comprised the advancement, logging and sampling of soil and groundwater from of two groundwater monitoring wells (KP01 and KP02) installed within grassed playing fields in the

northern part of the park that will be directly affected by bulk earthworks for the Project. The groundwater monitoring well locations are shown on Figure 8.

143. The drilling encountered sandy gravel soils interpreted as fill to approximately 1.5 m below ground level (bgl), underlain by silt with minor gravel and sand to approximately 3 m bgl, underlain by sandy and gravely silt to total depth (6 m), inferred to be natural ground. No anthropogenic fill or visual or olfactory indicators of contamination were encountered.

144. A groundwater monitoring event was undertaken on 17 February 2026 following well development. Sampling was completed by low-flow micro-purge techniques using a peristaltic pump. Groundwater was recorded at 1.8 m bgl in KP01 and 1.7 m bgl in KP02. No visual or olfactory indicators of contamination were noted in groundwater. Groundwater flow is expected to be to the north and northeast, with discharge to Evans Bay located some 130 m northeast of the Project works within Kilbirnie Park.

145. Soil and groundwater sample analysis results were compared to background soil concentrations and human health and environmental guidelines, including soil SCS, and the MAV for drinking water and ANZG DGVs for Marine Water at 95% species protection for assessment of groundwater. Human health guidelines considered both road construction workers during the construction works, and the public in relation to the temporary construction area of the site that will be returned to recreational land use post construction.

146. Observations and analysis results for soils indicate that:

i. Concentrations of CoPC from fill and natural ground soils within the proposed development area for the Project exceed background soil concentrations but do not exceed SCS for human health

ii. The underlying natural ground soils do not appear to be contaminated by CoPCs associated with landfilled materials

iii. The concentrations of CoPC recorded in groundwater from monitoring wells KP01 and KP02 do not indicate the presence of landfill leachate below the development area for the Project, with groundwater quality compliant with MAV for drinking water

147. Concentrations of dissolved copper, and zinc in groundwater exceeded their respective ANZG DGVs for 95% marine species protection. These DGVs are protective of receiving environments and are applied at the receiving environment of groundwater discharge (Evans Bay). As noted above, these DGVs are not a measure of groundwater contamination, with no indication of groundwater contamination from the closed landfill based on the groundwater data.

148. A CSM was also prepared for the qualitative assessment of effects of the contaminants in soil and groundwater on construction workers and park users post works, and surface water comprising the Waipapa Awa and Evans Bay. My key conclusions based on the CSM are as follows:

i. Concentrations of CoPC from soil samples collected within the proposed development area for the Project are highly unlikely to pose a significant risk to human health from disturbance of these soils during and following road construction works

ii. Potential passive discharges from the area affected by the Project are unlikely to pose an unacceptable risk to the Waipapa Awa, which is piped in the vicinity of Kilbirnie Park property, or to Evans Bay which is located some 130 m from the Park, owing to expected attenuation in groundwater between the park and Evans Bay and the available dilution in the receiving environment (Evans Bay)

149. I also conclude the following:

i. Soil disturbance for the Project will not meet the Permitted Activity requirements of Regulation 8(3) of the NES-CS owing to the presence of some metals above background

concentration values, and is assessed to be a controlled activity in accordance with Regulation 9(1) of the NES-CS

ii. Potential passive discharges in groundwater from the area of Kilbirnie Park affected by the Project appear to be permitted under Rule R82 of the GWRC NRP

iii. Dewatering in relation to Rule R159 of the GWRC NRP, if required, is potentially a permitted activity, owing to the available dilution in Evans Bay, considered to be the receiving environment. Pretreatment to remove sediment from dewatered groundwater would likely be required

iv. Except for discharges associated with dewatering, effects of the ground disturbance works on human health and the environment are assessed as Negligible

v. Effects of dewatering on Evans Bay, if required, without mitigation, are qualitatively assessed as Negligible to Low. These effects are associated with potential discharge to stormwater during dewatering, with discharge of stormwater to Evans Bay

150. The DSI is presented in **Annexure B**.

Figure 8 – Kilbirnie Park Investigation Locations

Non-HAIL and other potentially contaminated land

151. The proposed Project alignment will require the demolition of a range of commercial and residential buildings. This is described in detail in Section 12 of the PSI (**Annexure A**). These buildings include medium-density residential properties on Sussex Street in the Basin Reserve section and low-density residential buildings on Paterson Street in the Mount Victoria section and in the Eastern Connections sections on Moxham Avenue, and Wellington Road/SH1 west of Kilbirnie Park (Figure 9).

Figure 9 – Residential houses to be demolished on southern side of Wellington Road/SH1 20-10-2025

152. Some of these buildings were built in the early to mid 20th century and could include asbestos, which was used widely in buildings up to about 2000. Lead based paints were also commonly used on buildings until about the 1970s. I consider that soils associated with these older properties could contain lead from the use of lead based paints and from asbestos containing materials in building fabric. I therefore assess the SPR linkage for land disturbed at building demolition sites as potentially complete.

153. My qualitative assessment of effects of the discharge of contaminants associated with building demolition, with mitigation, is Negligible to Low.

154. Permeable surfaces such as unsealed berms provide a receptor for the buildup of vehicle particulates from exhausts, tyre and brake wear which can contain a range of contaminants including heavy metals and PAH. Previous soil sampling along the Ruahine Street berm identified concentrations of most heavy metals and PAHs above published background concentrations, with concentrations of all CoPC below the NES-CS SCS for commercial / industrial land use. These soils include:

    i. Berm soils at the northern and southern portals of the Terrace Tunnel
    ii. Berm soils to be removed for the Ghuznee Street bridge
    iii. Berm soils at the western and eastern portals of the Mount Victoria Tunnel
    iv. Berm soils on the western elevation of Ruahine Street to accommodate the re-alignment of SH1 along Ruahine Street and the Hataitai Park access improvements

155. The berm soils are not considered to be HAIL land and the concentrations of contaminants in the soils are unlikely to pose a significant risk to human health or preclude their reuse for the Project.

156. I assess the SPR linkage for disturbed berm land as potentially complete. My qualitative assessment of effects associated with discharge of contaminants to the environment associated with disturbance of berm soils is Negligible to Low. Notwithstanding, berm soils disturbed by the Project will need to be subject to earthworks management controls to minimise discharges to environment from stormwater runoff and dust and to ensure disposal to appropriately licensed waste disposal sites. Management controls should include further assessment of the locations of affected berm soils.

157. I also expect the presence of unclassified fill at various locations within the Project Alignment associated with backfill for retaining walls and below pavements. The locations and contamination status of this type of unclassified fill have not been established although I consider that they are unlikely to be HAIL, and generation of large volumes of unclassified fill of this nature is unlikely.

158. Unclassified fill also includes reclamation fill, including reclamation fill within Evans Bay in the Eastern Connections section (Feature 5-10 in Figure 10). Contaminated soils could therefore be encountered during the stormwater realignment works to connect into the existing outfall at Evans Bay.

Figure 10 – 1968 image reclamation fill within Evans Bay (location of proposed realigned stormwater line to outfall)

159. I assess the SPR linkage for land disturbed containing unclassified fill is potentially complete. My qualitative assessment of effects associated with discharge of contaminants to the environment associated with the soil disturbance is Negligible to Low. Notwithstanding, unclassified fill disturbed by the Project will need to be subject to earthworks management controls to minimise discharges to the environment from stormwater runoff and dust and to ensure disposal to appropriately licensed waste disposal sites. Management controls should include further assessment of the locations of unclassified fill. Chemical testing of fill samples for CoPCs prior to disturbance may be required in some cases.

160. No other contaminated land arising from minor discharges into the Project alignment that could be affected by proposed ground disturbance works for the Project, for example from migration of contaminants along preferential pathways (services trenches), were identified from the information reviewed. However, the presence of additional localised ground contamination from minor discharges within area of proposed ground disturbance cannot be ruled out. A qualitative assessment of effects associated with minor discharges is Negligible. An unexpected discovery protocol will be required to facilitate the identification and management of minor discharges.

161. Roading, pavements, and surfacing construction will be undertaken across the Project. Generally, these works will see milling back of the existing surfacing before any new pavement, kerbs, services etc. are installed before the surfacing and line marking is re-applied. Coal tar was used in road surface binders and road surface treatments around New Zealand until the 1970s and as up to as late as the 1980s. Coal tar contains high levels of PAH compounds and these can present risks to human health and the environment if not managed appropriately when disturbed. The key risk of coal tar to the environment is the discharge of particles of coal tar as sediment and deposition in streams, rivers and harbours.

162. I have assessed the likely presence and significance of coal tar in roading materials within the Project in accordance with NZTA guidance referenced earlier in this report . I used publicly available information which indicated the presence of coal tar derived PAH in sediments in Wellington Harbour, assumed to be sourced from stormwater runoff from roads in Wellington. No specific information on coal tar within existing roading materials in the Project is available.

163. On this basis, and using the NZTA methodology, I consider that coal tar could possibly be present in parts of SH1 within the Project and the distribution of coal tar may be inconsistent. PAH in coal tar is therefore a CoPC for the Project. The SPR linkage for disturbed roading materials containing coal tar is therefore assessed as potentially complete. My qualitative assessment of effects associated with discharge of contaminants to the environment associated with coal tar is Low to Moderate.

164. I recommend that coal tar in roading materials is managed by an unexpected discovery of contamination protocol. If coal tar is discovered in existing roading materials within the Project area during Project construction or operation, then a Coal Tar Management Plan should be prepared based on accepted best practice industry guidance. PFAS are emerging contaminants sometimes present in soil and groundwater. PFAS contamination is derived from many industrial sources and is commonly associated with the use of Class B firefighting foams previously used for extinguishing oil-based fires. Owing to the developing situation in respect of PFAS contamination, PFAS has been incorporated into the HAIL activity profiles by MfE. On the basis of the information reviewed for this PSI, including the scale and nature of hazardous substance storage and use within the Project, and no fire related incidents recorded in the EPA records reviewed, I assess that PFAS is unlikely to be a significant contaminant within the Project. NZTA also confirmed that the Terrace and Mount Victoria tunnels have water-based fire fighting systems and PFAS based foams have not been used. I therefore assess that the SPR linkage for PFAS in soil and groundwater is incomplete.

6. BENEFITS OF THE PROJECT (POSITIVE EFFECTS)

165. Benefits of the Project (Positive effects) include the following:

i. The Project will involve the further investigation of HAIL land and other contaminated land, increasing the body of knowledge about the location and nature of contaminated land including coal tar within the Project alignment

ii. Earthworks undertaken for the Project within HAIL land and non-HAIL contaminated land will require the management of contaminants in soil and groundwater. These works provide an opportunity to lower the current risk to human health and the environment through the removal, encapsulation or other forms of remediation of contaminated land including pre-existing coal tar, if present

iii. I consider these benefits will be of local significance

7. ASSESSMENT OF OPERATIONAL EFFECTS

166. Operational effects of the Project in relation to contaminated land primarily relate to the discharge of contaminants to the environment from disturbance of contaminated land during periodic maintenance works. Contaminant discharges to the environment include:

i. Discharge to land and / or water of contaminated soil or groundwater

ii. Discharge of contaminants to stormwater and the receiving environment (Wellington Harbour)

iii. Discharge to air of contaminated dust and/or vapour

167. Potential receptors include:

i. Operational construction workers and the public in the vicinity of the works

ii. Public with access to unpaved areas post construction

iii. Groundwater

iv. Surface water

168. The operational effects of the Project on contaminated land apply to post Project completion of soil disturbance works within the HAIL land identified in the Basin Reserve section (**SLUR site SN/05/230/02)** Gazley Mitsubishi and (**SLUR site SN/05/012/02**) Kilbirnie Park in the Eastern Connections section. They relate principally to discharges from dewatering and potential effects of contaminated land within the Gazley Mitsubishi property, noting that further investigation of the Gazley Mitsubishi property is recommended as the Project progresses. Contaminated land may still be present at the Gazley Mitsubishi property post construction, although I would expect that the nature and extent of remaining contamination will have been established as part of the Project construction and documented in Works Completion Report. On this basis, I consider that the operational effects on human health and the environment without additional mitigation would be Low.

169. I note that Technical Assessment #14 Groundwater Assessment prepared by Mr Eric van Nieuwkerk states that the existing and new Terrace Tunnels will intercept groundwater. The tunnels are free draining and groundwater will discharge to tunnel stormwater systems and subsequently discharge with stormwater. Mr van Nieuwkerk has identified a theoretical effect on the quality of groundwater draining into the tunnels during operation of the tunnels from contaminants in groundwater associated with SLUR sites in Kelburn, principally the closed Mount Street Cemetery and a former landfill below part of Kelburn Park. The Mount Street Cemetery and the former landfill closed in 1954 and 1935, respectively. Mr van Nieuwkerk has identified three existing groundwater monitoring wells (INE1, TD1 and TD2) located on or near The Terrace that he considers are suitably located to assess the presence of contaminants derived from the two SLUR sites in relation to the operating tunnels. These wells were flushed and sampled in April / May 2026 to determine groundwater quality and to assess the likely effects on stormwater discharged from the tunnels during operation. My current assessment based on my findings presented in the PSI (**Annexure A**) is that a significant offsite discharge of contaminants in groundwater from the two SLUR sites is unlikely and the operational effects on the Project are likely to be Negligible. Mr van Nieuwkerk has confirmed this assessment in his Technical Assessment #14 Groundwater Assessment based on the groundwater analysis results.

170. As discussed above, based on current information, the presence of **coal tar** in roading materials within parts of SH1 not fully replaced following the Project improvements cannot be discounted, and therefore some coal tar may remain post construction. However, I expect that works carried out for the Project will provide further information on the likelihood and

distribution of coal tar remaining in SH1 in the Project alignment. Distribution is currently assessed in accordance with NZTA guidelines as inconsistent. On this basis, I assess the operational effects of coal tar, without additional mitigation, to be Negligible to Low.

171. I expect that asbestos and lead in soils at building demolition locations would be assessed by post demolition surveys. Residual asbestos and lead, if present, could present risk to operational construction workers and members of the public with access to soft landscaped area such as public open space. I assess the operational effects of residual asbestos and lead, without additional mitigation, is Negligible to Low.

172. I assess the operational effects of the Project from other non-HAIL and other potentially contaminated land on human health and the environment across the balance of the Project area will be Negligible, as these works are likely to be infrequent and localised, and subject to NZTA standard work practices. An unexpected discovery protocol will be required to manage unexpected discoveries including minor discharges.

8. ASSESSMENT OF CONSTRUCTION EFFECTS

173. Construction effects of the Project in relation to contaminated land primarily relate to the discharge of contaminants from the disturbance of contaminated land during construction works. Contaminant discharges to the environment include:

    i. Discharge to land and / or water of contaminated soil or groundwater

    ii. Discharge of contaminants to stormwater and the receiving environment (Wellington Harbour/Evans Bay)

    iii. Discharge to air of contaminated dust and/or vapour

174. Potential receptors comprise:

    i. Project construction workers and the public in the vicinity of the works

    ii. Groundwater and surface water

SLUR Site SN/05/230/02 Gazley Mitsubishi

175. Construction works associated with the Project affecting HAIL land at Gazley Mitsubishi will require significant soil disturbance in the Basin Reserve section for the extended Sussex Street, part of which will be placed in a trenched section that will tie into Cambridge Terrace. Dewatering will also be required during construction, resulting in potential discharges of contaminated groundwater. These works will generate potentially contaminated soil and groundwater. Based on the type of contamination detected (principally PAH) during the DSI (**Annexure C**) and the nature and scale of operations at the site, I assess the risk to human health and environment during construction without mitigation, is Negligible to Low.

176. I note investigation of the Gazley Mitsubishi property has been limited by current site access constraints, and further investigation following removal of the buildings is recommended to provide additional information.

177. Ground disturbance works at Gazley Mitsubishi also require consideration under the NES-CS for activities on HAIL land and the NRP in relation to discharges from dewatering from HAIL land.

SLUR Site SN/05/012/02 Kilbirnie Park

178. Improvement works at Kilbirnie Park comprise widening the section of SH1 between Kilbirnie Crescent and Evans Bay Parade, within a section of the northern part of Kilbirnie Park. Works will include ground preparation including removal of unsuitable in situ soils and placement of road construction fill to achieve design levels for the extended highway.

179. On the basis of the DSI (**Annexure B**), these works are unlikely to generate contaminated soils and I assess the risk to human health during construction without mitigation, is Negligible. Effects associated with dewatering, if required, are assessed as Negligible to Low.

180. Ground disturbance works at Kilbirnie Park also require consideration under the NES-CS for activities on HAIL land and the NRP in relation to discharges for that may enter water from HAIL land.

Terrace Tunnel Dewatering

181. I note that Technical Assessment #14 Groundwater Assessment prepared by Mr Eric van Nieuwkerk states that the existing and new Terrace Tunnels will intercept groundwater. Dewatering will be required during construction of the proposed duplicate tunnel. Mr van Nieuwkerk has identified a theoretical effect on the quality of dewatered groundwater from contaminants in groundwater associated with two SLUR sites in Kelburn, principally the closed

Mount Street Cemetery and a former landfill below part of Kelburn Park. The Mount Street Cemetery and the former landfill closed in 1954 and 1935, respectively. Mr van Nieuwkerk has identified three existing groundwater monitoring wells (INE1, TD1 and TD2) located on or near The Terrace that he considers are suitably located to assess the presence of contaminants derived from the two SLUR sites in relation to dewatering for the tunnel duplication. These wells were flushed and sampled in April / May 2026 to determine groundwater quality and to assess the likely effects on groundwater quality during dewatering. My current assessment based on my findings presented in the PSI (**Annexure A**) is that the likelihood of significant contamination of groundwater associated with these two SLUR sites is very low and the construction effects on the Project are likely to be Negligible. Mr van Nieuwkerk has confirmed this assessment in his Technical Assessment #14 Groundwater Assessment based on the groundwater analysis results.

Coal Tar

182. Coal tar distribution within SH1 within the Project area is currently assessed in accordance with NZTA guidelines as inconsistent. Some coal tar could be present in roading materials pre- construction in some locations. Coal tar contains high concentrations of PAH which may be mobilised when disturbed. I assess the construction effects of coal tar without mitigation to be Low to Moderate.

Non-HAIL and other Potentially Contaminated Land

183. I assess the effects to human health and the environment associated with the discharge of contaminants associated with building demolition, soil disturbance berm soils and unclassified fill, without mitigation, is Negligible to Low.

184. The presence of localised ground contamination from minor discharges within areas of proposed ground disturbance cannot be ruled out. A qualitative assessment of effects associated with minor discharges is Negligible. An unexpected discovery protocol will be required to facilitate the identification and management of minor discharges.

185. My assessment of effects associated discharge of PFAS to the environment is Negligible. Notwithstanding, owing to its emerging ubiquitous nature, low concentrations (including anthropogenic background concentrations) of PFAS within parts of the Project cannot be ruled out.

9. MEASURES TO AVOID, REMEDY OR MITIGATE ACTUAL OR POTENTIAL ADVERSE EFFECTS

Measures to avoid, remedy or mitigate effects during operation

HAIL land and coal tar

186. Long Term Site Management Plans (LTSMP) may be required to avoid, remedy or mitigate effects during operational maintenance works affecting HAIL Land at Gazley Mitsubishi **SLUR Site SN/05/230/02** and Kilbirnie Park **SLUR Site SN/05/012/02**. These operational effects relate principally to discharges from dewatering, at both sites and the presence of potential residual soil contamination at Gazley Mitsubishi **SLUR Site SN/05/230/02**.

   i. For the Gazley Mitsubishi site, the LTSMP should address residual contaminated soil and / or groundwater and include sediment removal from groundwater during dewatering and the unexpected discovery of soil contamination. The additional mitigation afforded by the LTSMP would reduce the operational effects to Negligible

   ii. For Kilbirnie Park, the LTSMP should address sediment removal from groundwater during dewatering and include an unexpected discovery of contamination protocol. The unexpected discovery of contamination protocol should include the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and the unexpected discovery of soil contamination. The additional mitigation afforded by the LTSMP would reduce the operational effects to Negligible

   iii. The LTSMPs should be based on guidance provided in NZTA technical publication Whenua parakino – contaminated land guidance, May 2023, Version 1.0. Maintenance teams should be provided with the LTSMPs prior to undertaking operational maintenance works

187. The requirements for and scope of the LTSMPs should be assessed following completion of Project construction works.

188. I consider that the operational effects on human health and the environment at Gazley Mitsubishi and Kilbirnie Park with additional mitigation afforded by the LTSMPs is Negligible.

189. I recommend that encountering coal tar should be included in the unexpected contamination discovery protocol within operational maintenance plans. Where coal tar is encountered, aA management plan will be required to manage the effects of contaminant discharges from coal tar where encountered. If required, the management plan should be based on guidance provided in NZTA technical publication Whenua parakino – contaminated land guidance, May 2023, Version 1.0. and guidance presented in Guidelines for Assessing and Managing Coal Tar Contamination in Roading, Waste Management Institute New Zealand (WasteMINZ) December 2023. I assess the effects of coal tar with mitigation afforded by operational maintenance plans to be Negligible.

Non-HAIL and other potentially contaminated land

190. If residual asbestos and / or lead are present above background levels and / or human health SCS at building demolition sites, Site Specific Contaminated Site Management Plans (SS-SMP) should be prepared setting out management of residual contamination and distributed to affected parties, as required. Maintenance teams should be provided with the SS-SMPs prior to undertaking operational maintenance works. I assess the effects of asbestos and lead in soil with mitigation afforded by the SS-SMPs to be Negligible.

191. I assess that no mitigations in addition to NZTA standard work practices are required for other non-HAIL and other contaminated land identified in this Contaminated Land Assessment, during operation.

Measures to avoid, remedy or mitigate effects during construction

HAIL land

192. I recommend a Contaminated Site Management Plan (CSMP) be prepared to avoid, remedy or mitigate effects during construction works affecting HAIL Land at Gazley Mitsubishi **SLUR Site SN/05/230/02**. The CSMP should be based on guidance provided in CLMG No.1 *Reporting on contaminated sites in New Zealand* and CLMG No.5 *Site investigation and analysis of soil.* Construction teams should be provided with the CSMP prior to undertaking construction works.

193. The CSMP should include:

i. The nature and extent of contaminated land

ii. Site specific procedures for managing contaminated land associated with works to be undertaken, including dewatering

iii. Procedures for managing unexpected discoveries during construction works

iv. Roles and responsibilities of parties to the CSMP

v. Requirement for post construction soil validation and production a Soil Validation Report (SVR) documenting the likely nature and location of residual contamination at the Gazley Mitsubishi property

194. The CSMP should be informed by further site investigations that I recommend be undertaken at the Gazley Mitsubishi property following removal of the existing buildings.

195. I assess the effects during construction with mitigation afforded by the CSMP at Gazley Mitsubishi **SLUR Site SN/05/230/02** is Negligible.

196. If dewatering is required for Project works within Kilbirnie Park **SLUR Site SN/05/012/02**, I recommend a CSMP be prepared in advance of works to avoid, remedy or mitigate effects from discharges from dewatering during construction works. The CSMP should include procedures for managing unexpected discoveries during construction works, including the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and the unexpected discovery of soil contamination.

197. I assess the effects during construction with mitigation afforded by the CSMP at Kilbirnie Park **SLUR Site SN/05/012/02** is Negligible.

Coal tar

198. I recommend that encountering coal tar should be included in the unexpected contamination discovery protocol for the Project. Where coal tar is encountered, a post-construction management plan will be required to manage the effects of contaminant discharges. The management plan should be based on guidance provided in NZTA technical publication Whenua parakino – contaminated land guidance, May 2023, Version 1.0. and guidance presented in Guidelines for Assessing and Managing Coal Tar Contamination in Roading, Waste Management Institute New Zealand (WasteMINZ) December 2023.

199. I assess the effects of coal tar with mitigation is Negligible.

Non-HAIL and other potentially contaminated land

200. All structures built prior to the year 2000, or where asbestos are likely to be present, requiring demolition as part of the Project are required to be surveyed for the presence of asbestos by a licensed asbestos assessor to meet statutory obligations set out in the Health and Safety at Work (Asbestos) Regulation 2016. The concentrations of asbestos in soils from buildings and lead in soils derived from lead based paints, post demolition, should also be assessed at these locations. The requirement for SS-SMPs to manage residual asbestos and lead in soils during earthworks for the

Project should be assessed on completion of the assessments. SS-SMPs should be provided the construction team. I assess the effects with mitigation afforded by the SS-SMPs as Negligible.

201. Berm soils and unclassified backfill for retaining walls and below pavements are unlikely to present significant risk to human health. Effects from these soils relate to discharges to the environment associated with excavation, stockpiling and offsite disposal, if required. I recommend that the Project Constructor's general works plan include a SMP setting out measures for identifying other contaminated or potentially contaminated soils, including the berm soils and unclassified fill soils. The SMP should provide general measures to manage the soils to manage effects of offsite discharges and include an unexpected discovery protocol. I assess the effects with mitigation afforded by the SMP as Negligible.

202. Potential effects of contaminated land, suggested mitigations and residual effects are summarised in Table 3.

Table 3: Summary of potential contaminated land effects, mitigations and residual effects

Effect	Contaminant Source area / type	Receptors	Magnitude of effect (unmitigated)	Proposed effects management (avoid, remedy, minimise)	General level of effect (mitigated)	Comment
Discharge of contaminants to the environment from HAIL land and non-HAIL and other contaminated land **during operation**	**HAIL land** at Gazley Mitsubishi SLUR site SN/230/02: principally petroleum hydrocarbons	▪ Maintenance workers ▪ Public in vicinity of the works ▪ Groundwater ▪ Surface water	Low	Long Term Site Management Plan (LTSMP) setting out management procedures for contaminated soil and / or groundwater encountered. Including dewatering. LTSMP to be informed by SVR prepared following construction works documenting the likely nature and location of residual contamination. To include an unexpected contamination protocol.	Negligible	The nature and extent of remaining contamination will have been established as part of the Project construction. Maintenance teams should be provided with the LTSMP prior to undertaking operational maintenance works for additional mitigation. Plan to be prepared following completion of Project construction works.
	HAIL land at Kilbirnie Park SLUR site SN/05/012/02: mixed including metals, petroleum hydrocarbons	▪ Surface water.	Low	If dewatering is required, a LTSMP setting out management procedures for dewatering, should be prepared, to include an unexpected discovery of contamination protocol. The unexpected discovery of contamination protocol should cover the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and the discovery of unexpected soil contamination.	Negligible	Maintenance teams should be provided with the LTSMP prior to undertaking operational maintenance works for additional mitigation. Plan to be prepared following completion of Project construction works.
	Coal Tar in roading materials: high concentrations of PAH	▪ Maintenance workers ▪ Groundwater ▪ Surface water.	Negligible to Low	Coal tar should be included in the unexpected contamination discovery protocol within operational management plans. Where coal tar is encountered, I recommend the preparation of a coal tar management plan based on accepted best practice industry guidance.	Negligible	Works carried out for the Project will provide some information on likelihood and distribution of coal tar in SH1 in the Project. Distribution is currently assessed in accordance with NZTA guidelines as inconsistent. Maintenance plans to be prepared following completion of Project construction works
	Building demolition locations: ACM and lead	▪ Maintenance workers ▪ Public using unpaved land post construction.	Negligible to Low	Preparation of post construction works validation reports. If residual asbestos and lead are present above background levels and / or human health SCS, SS-SMP should be prepared setting out management of residual contamination.	Negligible	SMP to be distributed to affected parties, as required.
	Berm soils and unclassified fill: including metals, PAH	▪ Maintenance workers ▪ Public in the vicinity of the works.	Negligible	Works are likely to be infrequent and localised, and subject to NZTA standard work practices.	Negligible	Effects from these soils relate to discharges to the environment associated with excavation, stockpiling and offsite disposal. Effects on maintenance workers and the public are expected to be at nuisance levels only (principally dust).
Discharge of contaminants to the environment from HAIL land **during construction**	**HAIL land** at Gazley Mitsubishi SLUR site SN/230/02: principally petroleum hydrocarbons	▪ Construction workers ▪ Public in vicinity of the works ▪ Groundwater ▪ Surface water.	Negligible to Low	Preparation of Contaminated Site Management Plan (CSMP) based on current DSI results and results of additional investigations recommended following building demolition as part of the Project works. The CSMP fshould set out requirements for soil and groundwater management during construction phase soil disturbance works. The CSMP should include an unexpected discovery of contamination protocol.	Negligible	The CSMP to be prepared in accordance with industry guidelines including CLMG No1 and CLMG No.5.
	HAIL land at Kilbirnie Park SLUR site SN/05/012/02: mixed including metals, petroleum hydrocarbons	▪ Surface water.	Negligible to Low	If dewatering is required, I recommend a CSMP should be prepared in advance of works at Kilbirnie Park setting out dewatering management procedures. The CSMP should cover the removal of sediment from groundwater during dewatering and include an unexpected discovery of contamination protocol covering the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and the discovery of unexpected soil contamination.	Negligible	The 2026 DSI did not identify significant concentrations of contaminants in soil. The CSMP to be prepared if dewatering is required, in accordance with industry guidelines including CLMG No1 and CLMG No.5.
	Coal Tar in roading materials: high concentrations of PAH	▪ Construction workers ▪ Groundwater ▪ Surface water.	Low to Moderate	Encountering coal tar to be included in the unexpected contamination discovery protocol for the Project. Where coal tar is encountered, I recommend the preparation of a coal tar management plan based on accepted best practice industry guidance.	Negligible	Coal tar distribution in SH1 within the project is currently assessed in accordance with NZTA guidelines as inconsistent.
	Building demolition locations: ACM and lead	▪ Construction workers ▪ Public in vicinity of the works.	Negligible to Low	Assessment of asbestos and lead in soils following demolition, followed by SS-SMP to be prepared if significant concentrations of asbestos and lead remain.	Negligible	Requirement for SMP will be site specific and may not be required at all or any demolition sites.
	Berm soils and unclassified fill: including metals, PAH	▪ Construction workers ▪ Public in the vicinity of the works ▪ Surface water.	Negligible to Low	SMP covering procedures for identifying and managing these soils when encountered to be prepared as part of the Constructor's general works plan.	Negligible	Effects from these soils relate to discharges to the environment associated with excavation, stockpiling and offsite disposal. Effects on construction workers and the public are expected to be at nuisance levels only (principally dust).

10. COMMENTS ON ENGAGEMENT RESPONSES

203. I have been provided with NZTA's overall summary of the feedback received on the Project during the community engagement period which ran from 17 November to 14 December 2025. No comments specific to contaminated land were raised.

204. A pre-application review of the PSI issued at Design Freeze 2 (DF) was undertaken by reviewers engaged by WCC and GWRC. While my pre-application draft assessment report was not specifically reviewed, various requests for additional information and clarification of specific issues relevant to this report were received. Key themes are summarised below:

i. Provide a Suitably Qualified Experienced Practitioner (SQEP) certification statement

ii. Provide further explanation of the risk assessment methodology and include further details on specific pathways and receptors including culverted streams and update the conceptual site model accordingly

iii. Provide additional details about what soil disturbance works will be undertaken in each section

iv. Review/reference other property file documents and reports, including previous investigation reports covering upgrades and proposed upgrades to the State Highway network in Section 3 and Section 4, to provide greater confidence about the location and nature of HAIL sites I have identified

v. Explicitly consider contaminant migration through preferential pathways such as services, in particular for sites using petroleum hydrocarbons immediately adjacent to Vivian Street

vi. Provide information about any new services to be installed and associated risks

vii. Consider the presence of roadside electrical transformers and transformers in the tunnel control buildings and risk associated with these

viii. Assess whether Basin Reserve, Kelburn and Hataitai Parks are HAIL and their effects if so

ix. Consider the potential for leachate derived from the closed landfill below Kelburn Park to enter the Terrace Tunnel during dewatering

x. Provide advice on management of unclassified fill

xi. Discuss consent requirements under the NES-CS and NRP

205. These key theme requests, in addition to site specific requests based on the key themes, attached as sticky notes in the review copy, have been addressed in the PSI (**Annexure A**) and are also discussed in further detail for HAIL land at Kilbirnie Park SLUR site SN/05/012/02 and Gazley Mitsubishi SLUR site SN/230/02 in the DSI reports presented in **Annexures B and C**, respectively, in this assessment report. Consent requirements under the NES-CS and NRP are also discussed in further detail in this assessment. Also refer to the responses to pre-lodgement feedback from GWRC included in Appendix F of Part B of the substantive application. All substantive issues appear to have been addressed.

11. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

206. I have identified HAIL land at 65 locations within the Project Alignment and within 100 m of the Project Alignment based on the PSI.

207. I have identified HAIL land at the following two locations where soil disturbance for the Project is likely to cause discharges of contaminants to the environment:

i. SLUR site SN/05/230/02 Kirk Motors Ltd (currently Gazley Mitsubishi), located at 76 Cambridge Terrace (Basin Reserve section), principally petroleum hydrocarbons

ii. SLUR site SN/05/012/02 Kilbirnie Park, located at 55 Kilbirnie Crescent, Wellington City (Eastern Connections section), comprising mixed contaminants including metal and petroleum hydrocarbons

208. Investigations (DSI) at the Gazley Mitsubishi property indicate:

i. Surficial fill below the Gazley Mitsubishi property is likely to contain non-HAIL unclassified fill potentially contaminated by PAH. Management of these soils during ground disturbance will be required. No additional management of underlying natural soils during ground disturbance will be required

ii. Potential passive discharges from the Gazley Mitsubishi property are unlikely to pose an unacceptable risk to the Waitangi awa, which is piped in the vicinity of the Gazley Mitsubishi property, or to Wellington Harbour which is located some 900 m from Gazley Mitsubishi property, owing to expected attenuation in groundwater between the site and Wellington Harbour and the available dilution in Wellington Harbour, considered to be the receiving environment

iii. Soil disturbance for the Project will not meet the Permitted Activity requirements of Regulation 8(3) of the NES-CS owing to the presence of PAH and some metals above background concentration values, and I assess that soil disturbance will be a controlled activity in accordance with Regulation 9(1) of the NES-CS

iv. Potential passive discharges from the Gazley Mitsubishi property appear to be permitted under Rule R82 of the GWRC NRP

v. Dewatering in relation to Rule R159 of the GWRC NRP is potentially a permitted activity, owing to the available dilution in Wellington Harbour, considered to be the receiving environment. Pretreatment to remove sediment from dewatered groundwater would likely be required

vi. Dewatering, and excavation and management of fill, without mitigation, are qualitatively assessed as Negligible to Low

209. The DSI is constrained by soil and groundwater data available only from locations GM01 and GM02. Further investigations following demolition of the Gazley Mitsubishi premises are recommended.

210. Investigations (DSI) at Kilbirnie Park indicate:

i. Concentrations of CoPC from soil samples collected within the proposed development area for the Project are highly unlikely to pose a risk to human health from disturbance of these soils during and following road construction works. No additional management of these soils during ground disturbance will be required

ii. Potential passive discharges from the area affected by the Project are unlikely to pose an unacceptable risk to the Waipapa Awa, which is piped in the vicinity of Kilbirnie Park property, or to Evans Bay which is located some 130 m from the park owing to expected attenuation in groundwater between the site and Evans Bay and the available dilution in Evans Bay, considered to be the receiving environment

iii. Soil disturbance for the Project will not meet the Permitted Activity requirements of Regulation 8(3) of the NES-CS owing to the presence of some metals above background concentration values, and I assess that it will be a controlled activity in accordance with Regulation 9(1) of the NES-CS

iv. Potential passive discharges from the area of Kilbirnie Park affected by the Project appear to be permitted under Rule R82 of the GWRC NRP

v. Dewatering in relation to Rule R159 of the GWRC NRP, if required, is potentially a permitted activity, owing to the available dilution in Evans Bay, considered to be the receiving environment. Pretreatment to remove sediment from dewatered groundwater would likely be required

211. Except for discharges associated with dewatering within Kilbirnie Park, effects of the ground disturbance works on human health and the environment are assessed as Negligible.

212. Effects of dewatering from Kilbirnie Park on Evans Bay, if required, without mitigation, are qualitatively assessed as Negligible to Low. These effects are associated with potential discharge to stormwater during dewatering, including the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream with discharge to Evans Bay.

213. I have also identified non-HAIL land and other potentially contaminated land where soil disturbance for the Project may cause discharges of contaminants to the environment, comprising:

i. Coal tar containing elevated concentrations of PAH in roading materials within SH1, currently assessed as having inconsistent presence in accordance with NZTA guidelines

ii. Asbestos and lead in soils at site where buildings that could contain asbestos containing materials and lead based paint are scheduled to be demolished

iii. Road berms soils which are potentially contaminated by metals and petroleum hydrocarbons from passing vehicles

iv. Potential soil contamination from minor discharges of contaminants via preferential pathways

v. Unclassified fill comprising backfill for retaining walls and below pavements and reclamation fill

214. I assess that PFAS is unlikely to be a significant contaminant within the Project.

215. I consider that the operational effects on human health and the environment from soil disturbance without mitigation will be Negligible to Low; implementation of suggested mitigation measures will reduce operational risks to Negligible.

216. I consider that the construction phase effects at the two identified HAIL sites that will be disturbed by the Project, without mitigation, ranges between Negligible to Low; implementation of suggested mitigation measures will reduce construction effects from soil disturbance to Negligible.

217. I consider that the construction phase effects for coal tar in roading materials with the Project without mitigation will be Low to Moderate; implementation of suggested mitigation measures will reduce construction effects to Negligible.

218. I consider that the construction phase effects associated with other non-HAIL contaminated land, without mitigation, be Negligible to Low; implementation of suggested mitigation measures will reduce construction effects for these materials to Negligible.

Recommendations

HAIL land

219. I recommend the following actions to further quantify and mitigate the effects of HAIL land on the Project:

i. A supplementary contamination assessment investigation to collect soil and groundwater samples should be undertaken in advance of the works at the Gazley Mitsubishi property, following demolition of the existing buildings

ii. Information from the investigation should be used to develop a CSMP for the Gazley Mitsubishi property, setting out requirements for soil and groundwater management during construction phase soil disturbance works

iii. A CSMP setting out management procedures for dewatering, if required, should be prepared in advance of construction works within Kilbirnie Park. The CSMP should cover the removal of sediment from groundwater during dewatering and include an unexpected discovery of contamination protocol covering the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and the unexpected discovery of soil contamination

iv. The CSMPs should be informed by the final design and be prepared in accordance with CLMG No.1 Reporting on contaminated sites in New Zealand and CLMG No.5 Site investigation and analysis of soil, with input from the Project Constructor with reference to the Constructor's general works plan

v. Preparation of a LTSMP setting out management procedures for contaminated soil and / or groundwater likely to be encountered during operations at the Gazley Mitsubishi property should be prepared to mitigate effects of operation of the Project, to be prepared following construction of the Project

vi. Preparation of a LTSMP setting out management procedures for operational dewatering, if required, at Kilbirnie Park, and include an unexpected discovery of contamination protocol covering the potential to draw landfill leachate, present below Kilbirnie Park to the south of the Project area, into the dewatered groundwater stream, and the unexpected discovery of soil contamination

Coal tar

220. I recommend that encountering coal tar should be included in the unexpected contamination discovery protocol within Project construction and operational plans. Where coal tar is encountered, management plan(s) will be required to manage the effects of contaminant discharges. The management plan(s) should be based on industry best practice guidance which includes NZTA guidance on coal tar identification and management.

Non-HAIL and other potentially contaminated land

221. I recommend the following actions to further quantify and mitigate the effects of asbestos and lead in soils on the Project:

i. The concentrations of asbestos and lead in soils should be established at those building demolition sites which are subject to asbestos surveys required by the Health and Safety at Work (Asbestos) Regulations 2016. The assessments should be undertaken following demolition

ii. A SS-SMP should be prepared if significant concentrations of asbestos and lead remain in soils

iii. Any required SS-SMP should be provided to the Project Constructor to inform the Constructor's general works plan

iv. Any required SS-SMP should be provided to the Maintenance team following construction; a SS-SMP may need to be updated following construction and withdrawn in cases where construction works have removed asbestos and / or lead contaminants in soil

222. I recommend that the Project Constructor's general works plan include a SMP setting out measures for identifying other contaminated or potentially contaminated soils, including the berm soils, minor discharges of contaminants and unclassified fill soils. The SMP should provide general measures to manage the soils to manage effects of offsite discharges and include an unexpected contamination discovery protocol.

Kevin Tearney
19 June 2026