Preliminary and Detailed Site Investigation – 5 Semple Street, Porirua

* Prepared for

Nelson Petroleum Distributors Ltd

* February 2021

**Quality Control Sheet**

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Document contributors

Prepared by

Signature

Joshua Hawkes

Reviewed by Approved by

Signature

Rachel Millar Scott Wilson

**Limitations:**

See Section 14.0 for Report Limitations.

# Executive Summary

PDP has undertaken a Preliminary and Detailed Site Investigation (PSI and DSI) for the site of the proposed NPD unmanned service station located at 5 Semple Street, Porirua (i.e., the site) in order to provide information concerning the ground contamination status, and to assist with the resource consenting process for the proposed development. The wider site area is currently occupied by Repco, Number One Shoes, Burger King, and associated parking space. The ‘Investigation Area’ is defined in this report as the car parking area immediately north of Semple Street servicing Repco and Number One Shoes. The PSI and DSI included a review of available site history information and a test pit soil sampling investigation.

The historical information suggests that the Investigation Area was originally part of the Porirua Harbour until sometime between 1941 and 1959 when the area was reclaimed. The wider area was developed for commercial retail activity, although the Investigation Area has only ever been part of a car parking area from the retail shops. There is no evidence of any structures being constructed on the Investigation Area. No council records were obtained which would indicate that an activity covered by the HAIL occurred at, or is present at, the Investigation Area.

A test pitting and soil sampling investigation was undertaken by PDP on   
14 January 2021 to characterise soil conditions for off-site disposal in those areas of the Investigation Area where the bulk of the earthworks are proposed, and to support the outcomes of the desktop assessment of potential contamination sources.

The test pitting investigation identified gravel fill underlain by inferred reclamation material (which included rare anthropogenic materials such as bricks) to depths of between 2.0 and 2.6 m bgl underlain by natural beach deposits of sands to at least 3.0 m bgl.

Soil sampling showed no signs of any contamination sources or contamination with concentrations of heavy metals recorded at or around background levels. All concentrations were recorded below the applicable soil acceptance criteria for commercial/industrial land use. On the basis of these soil sample results, there is considered to be no risk to site workers involved with the excavation/disturbance of the soils across the site. The results were consistent with and supported the desktop investigation outcomes that there was a low potential for any contamination across the site.

On the basis of the information obtained for this investigation, the past and current land use activities are not considered to fall under any of the categories defined in the HAIL (MfE 2011). The **NESCS is therefore not applicable** for this redevelopment.

**Table of Contents**

Section Page

[Executive Summary ii](#_Toc63331981)

[1.0 Introduction 1](#_Toc63331982)

[2.0 Site Details 2](#_Toc63331983)

[2.1 Site Identification 2](#_Toc63331984)

[2.2 Environmental Setting 2](#_Toc63331985)

[3.0 Proposed Investigation Area Development 3](#_Toc63331986)

[4.0 Desktop Review of Investigation Area History (PSI) 4](#_Toc63331987)

[4.1 Historical Aerial Photographs 4](#_Toc63331988)

[4.2 Porirua City Council Information 5](#_Toc63331989)

[4.3 Greater Wellington Regional Council Information 6](#_Toc63331990)

[4.4 Previous Reports/Investigations at the Site 6](#_Toc63331991)

[4.5 Site Inspection 6](#_Toc63331992)

[5.0 Summary of Site History and Potential Sources of   
 7](#_Toc63331993)

[6.0 Preliminary Regulatory Assessment 7](#_Toc63331994)

[7.0 Detailed Site Investigation 8](#_Toc63331995)

[7.1 Sampling Strategy 8](#_Toc63331996)

[7.2 Soil Sample Collection 8](#_Toc63331997)

[7.3 Field Observations 9](#_Toc63331998)

[7.4 Laboratory Analysis 9](#_Toc63331999)

[8.0 Selected Soil Criteria and Soil Sample Results 10](#_Toc63332000)

[8.1 Selected Soil Guidelines 10](#_Toc63332001)

[8.2 Soil Sample Results and Comparison to Applicable  
Criteria 11](#_Toc63332002)

[9.0 Human Health Risk Assessment 11](#_Toc63332003)

[10.0 Waste Disposal Assessment 11](#_Toc63332004)

[11.0 Final Regulatory Assessment 12](#_Toc63332005)

[11.1 Consideration of the NESCS 12](#_Toc63332006)

[12.0 Summary and Conclusions 12](#_Toc63332007)

[13.0 References 13](#_Toc63332008)

[14.0 Report Limitations 13](#_Toc63332009)

**Appendices**

[Appendix A: Figure](#_Toc63332010)

[Appendix B: Site Development Plan](#_Toc63332011)

[Appendix C: Historical Aerial Photographs](#_Toc63332012)

[Appendix D: Porirua City Council Information](#_Toc63332013)

[Appendix E: Site Photographs](#_Toc63332014)

[Appendix F: Test Pit Logs](#_Toc63332015)

[Appendix G: Laboratory Results and Chain of Custody Documentation](#_Toc63332016)

[Appendix H: Soil Sample Results](#_Toc63332017)

# Introduction

Pattle Delamore Partners (PDP) has been engaged by Nelson Petroleum Distributors Limited (NPD) to undertake a review of the site history (i.e., preliminary site investigation; PSI) and a detailed site investigation (DSI) for the site of the proposed NPD service station at 5 Semple Street, Porirua (i.e., the site). The wider site area is currently occupied by Repco, Number One Shoes, Burger King, and associated parking area. The ‘Investigation Area’ defined in this report comprises the parking area for Repco and Number One shoes, located north of Semple Street. It is understood the Investigation Area is being considered for redevelopment into an unmanned service station, which will comprise a canopy covered forecourt and associated site infrastructure. The NPD development will result in most of the area being covered with asphalt / concrete with some perimeter planting.

The objectives of this investigation are to:

* Review the site history to identify HAIL[[1]](#footnote-1) activities, the potential sources of contamination and the principle contaminants of concern;
* Determine the contamination status of the soils through an intrusive soil sampling investigation;
* Assess compliance and requirements under the NESCS[[2]](#footnote-2) for the proposed development;
* Provide a risk assessment for any soils remaining at the site with regard to the future use of the Investigation Area; and,
* Provide recommendations for soil disposal, if required.

A PSI has initially been undertaken to identify HAIL activities over the Investigation Area and the likely contaminants of concern. Following the PSI, an intrusive soil sampling investigation (i.e., DSI) has been undertaken to determine the contamination status of the soils. The DSI has been undertaken through the excavation of a series of test pits excavated on a general judgemental (i.e., targeted) pattern across the Investigation Area, based on the results of the PSI.

The investigation has been undertaken in general accordance with MfE guideline documentation (MfE, 2011a; MfE, 2011b) and has been approved by a suitably qualified and experienced practitioner (SQEP), as outlined by the NESCS.

# Site Details

## Site Identification

The details of the Investigation Area are provided in Table 1, below, while a location map and Investigation Area layout identifying the site-specific features is presented as Figure 1. Photographs of the Investigation Area are presented in Appendix E.

|  |  |
| --- | --- |
| Table 1: Investigation Area Details | |
| **Address** | 5 Semple Street, Porirua |
| Legal Description | Lot 3 Deposited Plan 50123 |
| Owner | Mega Properties Porirua Limited |
| Grid Reference | 41 7 46.22S / 174 50 16.11E |
| Land parcel area | 4,434 m2 |
| Investigation Area / Development Area | 792 m2 |
| Zoning | City Centre Zone |
| Current Land Use | Car Parking |
| Surrounding Land Use | West, north and east – General Business Zone  South – Semple street with general business beyond |

At the time of the PDP site investigation undertaken on 14 January 2021, the Investigation Area comprised a car park. The Investigation Area is bounded by the carparking space for Mitre 10 Mega to the west, Repco and number one shoes to the north, Burger King to the east, and Semple Street, along with the site entrance to the south.

## Environmental Setting

The geological map for the area (Begg and Johnston (compilers), 2000; 1:250,000 scale) reports that the Investigation Area is underlain by ‘ocean beach deposits’ of Holocene age.

The nearest water body to the Investigation Area is the Porirua Harbour located approximately 250 m east of the Investigation Area.

A bore search, completed along with the site contamination enquiry, showed that no bores were located within a 200 m distance of the Investigation Area. Based upon the proximity of the site to the Porirua Harbour, groundwater is expected to be present at shallow depths of approximately 1 – 2 m below ground level (bgl), its flow direction predominantly east or north east.

An assessment of the groundwater sensitivity beneath the site has been carried out in accordance with Section 5.2.3 of the MfE Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (revised 2011) (MfE, 2011e):

* The shallow aquifer beneath the site is not artesian;
* The depth to the water bearing unit is less than 10 m below a potential contaminant source; and
* Based on the lack of registered shallow groundwater users and the presence of a reticulated water supply, the site is not located in an area where shallow groundwater use may be reasonably foreseen now or in the future, which also suggests that it is unlikely to be of a quality and yield suitable for use (the geology beneath the site is comprised of relatively impermeable sandy silts).

Therefore, on the basis of the above assessment, the underlying shallow groundwater aquifer is not considered to be sensitive with respect to groundwater use.

In relation to Section 5.2.3 of the MfE (2011e) guidelines, a surface water body closer than 100 m to a contaminant source is considered likely to be sensitive. Therefore, owing to the distance to this surface water body (250 m), surface water is not considered to be sensitive with respect to hydrocarbon migration in groundwater towards Porirua Harbour.

# Proposed Investigation Area Development

The site is earmarked for redevelopment into an NPD branded service station. Preliminary plans show the forecourt with two rows of dispenser islands and a covering canopy, which is proposed to be constructed over the central portion of the site, while the tank pit containing two 90,000 L underground storage tanks (USTs) is proposed to be located to the immediate east of the forecourt.

The current intention for earthworks is to limit excavation works to those areas that require excavation for the purposes of the installation of site infrastructure as opposed to a site wide scrape. Deeper excavations (up to 5 m below ground level (bgl)) are required for the installation of the USTs, stormwater treatment device (i.e., SPEL Puraceptor) and associated services. The majority of the site will be covered by hardstand post-development, with the exception of planted areas along the site boundary.

The latest set of design plans for the new NPD unmanned service station is presented in Appendix B (note these are not final plans and may change).

# Desktop Review of Investigation Area History (PSI)

A desktop assessment was undertaken to provide an overview of any potential contaminants of concern that may be present within the Investigation Area as a result of any documented past and present activities. The following information was sourced in order to establish the history of the site and in particular within the Investigation Area:

* Historical aerial photographs;
* Porirua City Council (PCC) information;
* Greater Wellington Regional Council information (GWRC); and,
* Investigation Area inspection.

## Historical Aerial Photographs

Selected historical aerial photographs between 1941 and 2018 have been reviewed for the Investigation Area. The reviewed aerial photographs are presented in Appendix C.

| Table 2: Historical Aerial Photographs | |
| --- | --- |
| **1941** | The Investigation Area is shown as being located in the tidal area of Porirua Harbour, with the foreshore located west of the Investigation Area. |
| **1959-1969** | The area has been reclaimed (sometime between 1941 and 1959). The eastern portion of the Investigation area appears to be located on the edge of an embankment used for the reclamation process. Large towers (possible radio towers) are present in the immediate area. No activity, HAIL or otherwise, is identified on site in these aerials. |
| **1973 - 1980** | The area is being developed for commercial subdivision with roads now evident. There is no sign of any construction activities within the Investigation Area. |
| **1984** | The Investigation Area is now part of a wider car parking area with associated soft landscaping for a commercial building located within the wider land parcel, to the north of the Investigation Area. Commercial development is seen in the surrounding area to the east and south. |
| **1988** | The Investigation Area has not changed since the 1984 aerial photograph. Commercial development has continued to the immediate west and north of the land parcel. |
| **1996-2000** | The Investigation Area has not changed since the 1984 aerial photograph. Development has continued in the wider area to the south and west. |
| **2018** | The majority of the Investigation Area is unchanged since the 2000 aerial photograph with the exception of the removal of the soft landscaped area in the middle section. The buildings located north and west of the Investigation area have been replaced by commercial buildings and car parking. To the east of the Investigation Area a small commercial building (Burger King) has been built, with a larger commercial development beyond. |
| *Notes:*  *1. Historical aerial photographs sourced from Retrolens and Google Earth Pro*  *2. It should be noted that some aerial images area at a large scale and therefore of relatively low quality* | |

## Porirua City Council Information

### Land Information Memorandum

The LIM has been provided by NPD for the investigation area, which also covers the wider site. The following information relevant to contamination or development within the wider site is noted:

* A site plan approved for building consent (date unknown) shows that the grass and topsoil was to be removed and replaced by asphalt in the Investigation Area.
* An additional site plan (date unknown) indicates the existing building was to be demolished and replaced by another commercial building.
* Consents:
* 1998 land use consent to establish a retail development;
* 2001 land use consent to increase the floor area of the commercial development and reduce the number of car parks;
* 2001 land use consent to construct new vehicle access resulting in reduction of car parks;
* 2000 building consent for Mega Centre Stage 4;
* 1993 building consent to erect a sign.

### Property File

A property file was obtained from PCC for the Investigation Area, which also covers the wider site. The following information relevant to contamination or development within the wider site is noted:

* Plans dated March 1981 show the building to the north of the Investigation Area to be a skating rink, with plans to repurpose the building to become a fitness centre.
* Proposed Plans dated to April 1981 for the same skating rink show Hardies fibrolite shingles and fibrolite soffits on the exterior of the building.
* Plans dated to September 2000 show the layout of the site and the surrounding businesses. They indicate that a Placemakers was located west of the site and an Inland Revenue was located north of the site. The commercial building located north of the Investigation Area was to be replaced by another commercial building containing a Craftworld.

In summary, there is no information in the property file that indicates there has been any activities on the Hazardous Activities and Industries List (HAIL) occurring within the Investigation Area.

## Greater Wellington Regional Council Information

The GWRC Selected Land Use Register (SLUR) was accessed to determine if there was any record of HAIL activities for the site. The SLUR indicates no HAIL land use or pollution incidents have been recorded for the site, including the Investigation Area.

## Previous Reports/Investigations at the Site

No previous contaminated land site investigations were available for the Investigation Area or the wider site area.

## Site Inspection

PDP field staff visited the Investigation Area on 13 January 2021 with the objective of identifying any potential sources of land contamination. An aerial photograph showing the current Investigation Area layout is attached in Appendix A, and photographs of the Investigation Area are attached in Appendix E.

* The majority of the Investigation Area, aside from small areas of landscaping is car parking for Repco and Number One Shoes located north of the Investigation Area and is finished to ground level with asphalt.
* Lighting poles are present along the western boundaries of the Investigation Area.
* No visual or olfactory indicators of contamination were noted at the site (e.g. no staining, no areas of dead or stressed vegetation, no odours).

# Summary of Site History and Potential Sources of Contamination

The desktop assessment indicated that the site was located in the tidal area of Porirua Harbour prior to reclamation works occurring. Upon completion of reclamation works the wider site was used for commercial purposes up to the present time, with demolition and replacement of the original commercial building occurring concurrently with the expansion of the commercial activities within the wider area. The investigation area has had no buildings constructed on it in the past and has been part of a sealed car parking area only.

No council records were obtained which would indicate that an activity covered by the HAIL occurred at or is present within the Investigation Area and there is no evidence of infilling the site with hazardous materials within council records.

On the basis of the information obtained for this investigation, the past and current land use activities are not considered to fall under any of the categories defined in the MfE (2011) Hazardous Activities and Industries List (HAIL).

# Preliminary Regulatory Assessment

The NESCS applies to any “piece of land” on which:

* An activity or industry described in the current edition of the HAIL (MfE 2011) is being undertaken, has been undertaken or is more likely than not to have been undertaken; and
* One of the five activities defined in regulation 5 of the NESCS is also to be undertaken (removing a fuel tank, soil sampling, disturbing soil, and or subdividing land).

No HAIL or potentially contaminating activities have been identified to have occurred (or more likely than not to have occurred) within the Investigation Area, and therefore the NESCS is not considered to be applicable to the Investigation Area or the redevelopment activities that are proposed.

# Detailed Site Investigation

A soil sampling exercise has been undertaken to compliment the outcomes of the PSI and to characterise site soils for the purposes of off-site disposal of surplus soils during the redevelopment works.

A borehole (BH01) was also advanced for geotechnical purposes and a standpipe piezometer installed to provide more detail of the groundwater level and whether or not there is any tidal effect in the area. The standpipe was installed to 8 m bgl and screened between 1 m and 8 m bgl (bore log and installation details attached).

Prior to intrusive works, a review of the local utility service plans was undertaken, and the locations were checked by an underground service location contractor for the presence of underground services using electromagnetic detection.

## Sampling Strategy

A total of 4 test pits (TP01 – TP04) were excavated to depths between 0.8 m and 3.0 m bgl with the aid of a mechanical excavator under the supervision of PDP on 14 January 2021 at the site. Refer to Figure 1 in Appendix A for test pit locations.

The sampling investigation was designed to assess the soils in the key areas of the proposed redevelopment area to observe underground ground conditions and collection of soil samples. The actual locations of the pits were restricted due to the density of services/utilities that were discovered during the GPR and service scan. Following soil sampling, the soils were backfilled into the test pits in the same manner as they were removed.

Photographs of the recent investigation works are presented in Appendix E.

## Soil Sample Collection

A total of 15 samples were collected at varying depths between the site surface and 3.0 m bgl from the four test pits. A clean pair of nitrile gloves was used for each sample to prevent cross contamination between samples and to protect the PDP site worker during sample collection and on each occasion, the samples were collected from the centre of the excavator bucket. All samples were placed into glass jars with food grade plastic sealed lids supplied by the analytical laboratory. Following collection, the samples were placed immediately into chilly-bins containing frozen ice packs. The chilly-bins were sent with chain of custody documentation to Analytica Laboratories Limited in Hamilton for sample analysis. The samples were received by the laboratory the following day after shipment.

## Field Observations

A summary of the field observations are as follows:

* The soil stratigraphy observed in all test pits generally comprised of a surface/near surface layer of sandy gravel fill, to depths ranging from 0.3 (TP01 and TP02) to 0.4 (TP03 and TP04) m bgl. A layer of fill, comprising clayey silt, sandy silt and silty fine sand, imported during the process of reclamation was encountered, with the amount of fill increasing towards the eastern side of the site (2.0 m in TP01 and 2.5 m in TP03/TP04). Rare wood and brick fragments were observed in the fill material.
* Natural soils inferred to be ocean beach deposits were found to be present in all locations beneath fill material encountered in test pits TP01, TP03 and TP04 which comprised of sand containing sea shells (as consistent with published geology for the site). The borehole drilled to 10.45 m bgl identified underlying layers of silty sand, clayey silt and sandy gravels.
* No evidence of ACM fragments was noted in any test pit.
* PVC pipes servicing the commercial buildings north of the Investigation Area were encountered in TP02 at 0.8 m bgl. As a result, location TP02 had to be abandoned.
* Standing groundwater was not observed in any test pits during excavation. However, a depth to water of 1.98 m below top of casing (TOC) was recorded three days after installation within the installed standpipe. A transducer installed in the standpipe for a period of seven days indicated a negligible variation due to tidal fluctuations.
* No hydrocarbon odours were noted during the intrusive investigation with PID readings ranging between 0.1 to 0.7 ppm.

## Laboratory Analysis

Based on site observations and to provide coverage both spatially and over the vertical profile, 12 samples were selected for analysis. Selected samples were analysed variably for the suite of seven heavy metals (arsenic, cadmium, chromium, copper, lead, nickel and zinc) and Polycyclic Aromatic Hydrocarbons (PAHs). Given the presence of brick fragments in the fill (reclamation material), three samples collected from TP04 (one from the surface fill, one from the inferred reclamation material and one at the termination of the hole) were analysed for asbestos presence/absence. These are considered key indicator parameters for any possible contamination that may be present on site.

The chain of custody documentation for this analysis is presented in Appendix G.

# Selected Soil Criteria and Soil Sample Results

In accordance with MfE’s *Contaminated Land Management Guidelines No. 2 – Hierarchy and Application in New Zealand of Environmental Guideline Values (2011c)*, New Zealand risk-based standards or guidelines should be used where the exposure assumptions and exposure scenarios are relevant to the site. Where New Zealand guidelines do not exist overseas risk-based guidelines may be used.

## Selected Soil Guidelines

The results of the laboratory analyses have been compared to the following screening criteria:

**Human health assessment:**

* The Soil Contaminant Standards to Protect Human Health (SCSs), from the ‘*Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health*’ (MfE, 2011d) as referenced by the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations 2011 (the NESCS). While it has been concluded that the site is not HAIL, and therefore the NESCS does not apply, the SCSs from the NESCS have been utilised to confirm whether hazardous substances are present in sufficient quantity to present a risk to human health. The applied SCSs are for the commercial/industrial land use scenario;
* In accordance with MfE’s *Contaminated Land Management Guidelines No. 2 – Hierarchy and Application in New Zealand of Environmental Guideline Values* (2011c), for contaminants for which there is not an SCS provided in MfE (2011d) (nickel and zinc), soil guideline values from the Australian National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (NEPC, 2013), for commercial/industrial land use;
* For petroleum hydrocarbons, the ‘*Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand*’, (MfE, 2011e). In addition to site usage, the Tier 1 acceptance criteria take into consideration the environmental settings, including soil type (permeability) and depth to contamination. Therefore, based on the Investigation Area’s current and expected future use, the MfE (2011e) Tier 1 soil acceptance criteria (All Pathways) for commercial/industrial land use have been applied for the comparison of the results of PAH analysis. The ‘Sandy Silt’ and ‘Sand’ soil types have been applied for soils collected at <1 m bgl; and between 1-4 m bgl. These soil types are considered to be most representative of the soils encountered during the site investigation and the soil samples analysed.

**Soil disposal assessment:**

* To assist with determining the suitability of soils for the purposes of off-site disposal the results have been compared to the ‘Determination of Common Pollutant Background Soil Concentrations for the Wellington Region (URS, 2003)’ using the ‘Greywacke’ soil type. These values were derived from analysis of samples taken from 10 sample sites across the region, from Wellington to Pukerua Bay.

## Soil Sample Results and Comparison to Applicable Criteria

The results of the soil sample analysis are presented in Table A, Appendix H and the laboratory reports are presented in Appendix G.

In summary:

* Heavy metal concentrations were recorded at concentrations within or around the range of background concentrations and considered typical of background level for soils in the Wellington region. There was no evidence of any heavy metal contamination within the samples analysed.
* Non-detectable to trace level PAH compounds were detected in the samples analysed with concentrations recorded up to 0.05 mg/kg (pyrene). The trace level PAH concentrations recorded were within the range of background concentrations for the Wellington Region.
* Heavy metal and PAH concentrations were recorded below the applicable SCS for commercial/industrial land use in all samples analysed.
* No asbestos was detected in the three samples collected from TP04.

# Human Health Risk Assessment

Based on the soil sampling results showing concentrations of heavy metals and PAHs at low-levels, or around typical background levels, a detailed human health risk assessment is not required. There is considered to be no risk to site workers involved with the excavation/disturbance of the soils across the Investigation Area with respect to the potential for contaminants being present at the Investigation Area.

# Waste Disposal Assessment

The proposed development will require earthworks for the tank pit, dispenser area, canopy foundations and fill points and other underground services (including re-surfacing works to grade and level the Investigation Area). There is no restriction from a contamination perspective for the reuse of the soils at the Investigation Area. Any reuse of soils would however require geotechnical approval. Disposal of surplus soils will require authorisation from the disposal facility prior to disposal to confirm they meet their acceptance criteria. Based on the soil sampling results and fact no HAIL activities have been identified to have occurred on the site, the soils should be considered cleanfill, however individual facilities have their own acceptance criteria that will need to be met prior to disposal.

# Final Regulatory Assessment

## Consideration of the NESCS

The fill material identified at the Investigation Area was confirmed through sampling to have no contamination sources. This supports the preliminary regulatory assessment that no HAIL activities have been identified to have occurred within the Investigation Area so the NESCS is not applicable and does not need to be considered for the redevelopment.

# Summary and Conclusions

PDP has undertaken a PSI and DSI for the site of the proposed unmanned NPD service station at 5 Semple Street, Porirua in order to provide information to confirm the contamination status of the Investigation Area, to assist with the resource consenting process for the proposed Investigation Area development, and to assess disposal locations for surplus soils.

The historical information suggests that the Investigation Area was originally part of the Porirua Harbour until sometime between 1941 and 1959 when the area was reclaimed. The wider area was developed for commercial retail activity, although the Investigation Area has only ever been part of a car parking area from the retail shops. There is no evidence of any structures being constructed on the Investigation Area. No council records were obtained which would indicate that an activity covered by the HAIL occurred at, or is present at, the Investigation Area.

The test pitting investigation identified gravel fill underlain by inferred reclamation material (which included rare anthropogenic materials such as bricks) to depths of between 2.0 and 2.6 m bgl underlain by natural beach deposits of sands to at least 3.0 m bgl. This was underlain by layers of silty sand, clayey silt and sandy gravels to depths of at least 10.45 m bgl.

Soil sampling showed no signs of any contamination sources or contamination with concentrations of heavy metals recorded at or around background levels. All concentrations were recorded below the applicable soil acceptance criteria for commercial/industrial land use. On the basis of these soil sample results, there is considered to be no risk to site workers involved with the excavation/disturbance of the soils across the site with respect to the potential for contaminants being present at the site. The results were consistent with and supported the desktop investigation outcomes that there was a low potential for any contamination across the site.

With regards to the NESCS, given there were no HAIL activities identified to have occurred within the investigation area, the **NESCS is not applicable** and does not need to be considered for the redevelopment.

# References

Begg, J.G.,Johnston, M., R.*Geology of the Wellington area*: Institute of Geological and Nuclear Sciences 1:250,000 Geological Map 10. Map (1 sheet) and text (64 p.), Institute of Geological and Nuclear Sciences Limited.

Ministry for the Environment, 2011. *Hazardous Activities and Industries List*. Ministry for the Environment, Wellington.

Ministry for the Environment, 2011a. *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand*. Ministry for the Environment, Wellington.

Ministry for the Environment, 2011b. *Contaminated Land Management Guidelines No. 5: Site Investigation and Analysis of Soils (Revised 2011).* Ministry for the Environment, Wellington.

Ministry for the Environment, 2011c. *Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values Revised 2011)*. Ministry for the Environment, Wellington.

Ministry for the Environment, 2011d. *Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health*. Ministry for the Environment, Wellington.

Ministry for the Environment 2011e. *Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand (Revised 2011) .* Ministry for the Environment, Wellington.

NESCS, 2011. Resources Management (National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations.

URS, 2003. *Determination of Common Pollutant Background Soil Concentrations for the Wellington Region.* URS, Wellington.

# Report Limitations

This report has been prepared based on visual observations of the site vicinity, and analysis of up to 12 soil samples from four test pits.  Soil samples were analysed by an analytical laboratory for a range of contaminants including a suite of seven heavy metals, asbestos presence/absence and polycyclic aromatic hydrocarbons. The site conditions as described in this report have been interpreted from, and are subject to, this information and its limitations and accordingly PDP does not represent that its interpretation accurately represents the full site conditions.

This report is based on the observation and sampling of a series of test pits at the site.  The environmental conditions have been interpolated between the test pits based on geological experience, and accordingly the interpolated conditions cannot be guaranteed to be accurate.

The laboratory test results provide an approximation of the concentration of the tested parameters and are subject to the inherent limitations of the laboratory techniques used for the tests.

This report has been prepared on the basis of information provided by NPD and others (not directly contracted by PDP for the work) including Porirua City Council, Greater Wellington Regional Council and Petroleum Solutions Limited. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the report. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This assessment is limited to collection and analysis of soil samples from sampling locations that have been selected based on underground and above ground infrastructure constraints, and the comparison of laboratory test results with environmental and health guidelines.  Subsurface conditions, including contaminant concentrations, can vary in time and distance so that conditions found at any specific point of sampling might not be representative of subsurface conditions that could occur away from the specific point of sampling.

PDP has sampled and tested only for those chemicals that are described in this report.  The presence or absence of other chemicals at the site is not considered in this report.

If contaminants have been found at the site, it is possible that the contaminants could extend off-site, or that any contaminants existing on neighbouring sites might have contributed to the contamination that exists at the site.  The presence or absence of contaminants off-site, and risks associated with any off-site contaminants, are not considered by this report.

The information contained within this report applies to sampling soil undertaken on the date stated in this report, or if none is stated, the date of this report. With time, the site conditions and environmental standards could change so that the reported assessment and conclusions are no longer valid.  Accordingly, the report should not be used to refer to site conditions and environmental standards applying at a later date without first confirming the validity of the report’s information at that time.

This report has been prepared by PDP on the specific instructions of NPD for the limited purposes described in the report. PDP accepts no liability to any other person for their use of or reliance on this report, and any such use or reliance will be solely at their own risk.

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1. Figure
2. Site Development Plan
3. Historical Aerial Photographs
4. Porirua City Council Information
5. Site Photographs
6. Test Pit Logs
7. Laboratory Results and Chain of Custody Documentation
8. Soil Sample Results

1. Hazardous Activities and Industries List (Ministry for the Environment; MfE, 2011). [↑](#footnote-ref-1)
2. *Resource Management (National Environment Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.* [↑](#footnote-ref-2)