Site Audit Report for Stage 2 Audit Area 1 (Proposed Lots 51 to 55) - Remediation and Validation Program

Clyde Western Area Remediation Project

Viva Energy Australia Pty Ltd

23 December 2021



→ The Power of Commitment

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List of Acronyms

Acronym	Description
ACM	Asbestos Containing Material
AEC	Areas of Environmental Concern
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guidelines.
AOC	Accidentally Oil Contaminated
AQIA	Air Quality Impact Assessment
AQMP	Air Quality Management Plan
AS	Australian Standard
ASC	Assessment of Site Contamination
ASS	Acid Sulphate Soil
BGL	Below Ground Level
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CLM	Contaminated Land Management
COC	Chain of Custody
CoPC	Contaminant of Potential Concern
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
CSM	Conceptual Site Model
CTCP	Clyde Terminal Conversion Project
DO	Dissolved Oxygen
DPIE	Department of Planning, Industry, and Environment
DQIs	Data Quality Indicators
DQOs	Data Quality Objectives
EC	Electrical Conductivity
EIL	Ecologically Based Investigation Level
EIS	Environmental Impact Statement
ENM	Excavated Natural Material
EPA	NSW Environment Protection Authority
EPL	Environment Protection License
ERM	Environmental Resources Management
ESA	Environmental Site Assessment
ESL	Ecological Screening Level
eV	Electron Volt
FA	Fibrous Asbestos
GME	Groundwater Monitoring Event
GMP	Groundwater Management Plan
GWMP	Groundwater Monitoring Plan

Acronym	Description
Ha	Hectares
HHERA	Human Health and Ecological Risk Assessment
HIL	Health-Based Investigation Level
HSL	Health Screening Level
IMW	Intrusive Maintenance Workers
km	kilometre
LCS	Laboratory Control Samples
LEP	Local Environment Plan
LGA	Local Government Area
LNAPL	Light Non-Aqueous Phase Liquid
LOR	Limit of Reporting
LTEMP	Long Term Environmental Management Plan
m	metre
m AHD	Metres Australian Height Datum
m bgl	metres Below Ground Level
m btoc	metres Below Top of Casing
m^3	Cubic metres
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
MW	Monitoring Well
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
OCP	Organochlorine Pesticides
OEH	Office of Environment and Heritage
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soils
PCB	Polychlorinated Biphenyls
PID	Photo-Ionisation Detector
POEO	Protection of the Environment Operations
PPE	Personal Protective Equipment
PPM	Parts per million
PSI	Preliminary Site Investigation
QA	Quality Assurance
QC	Quality Control
RAP	Remedial Action Plan
EMP	Environmental Management Plan
RLs	Relative Levels
RPD	Relative Percentage Difference

Acronym	Description
RSI	Remediation Site Investigation
RSW	Restricted Solid Waste
SAQP	Sampling and Analytical Quality Plan
SPOCAS	Suspension Peroxide Oxidation – Combined Acidity and Sulphate
SSD	State Significant Development.
SSTLs	Site Specific Target Levels
SWL	Standing Water Level
SWMP	Soil and Water Management Plan
TP	Test Pit
TRH	Total Recoverable Hydrocarbons
UCS	Unconfined Compressive Strength
USTs	Underground Storage Tank
µg/kg	Micrograms per kilogram
µg/L	Micrograms per litre
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compound
WARP	Western Area Remediation Project
WWTP	Wastewater Treatment Plant

1. Introduction

Mr Andrew Kohlrusch (the auditor) of GHD Pty Ltd (GHD) was commissioned by Viva Energy Australia Pty Ltd (Viva Energy) to conduct an environmental site audit of Audit Area 1 (AA1) within Stage 2 Area of the Western Area Remediation Project (WARP) at Clyde Terminal located at Devon Street, Rosehill NSW. The Clyde Terminal, including the WARP and Stage 2 Area is shown on Figure F1 in **Appendix A-1**.

Viva Energy currently operates the Clyde Terminal on part of the former refinery. However, much of the south-western portion (approximately 40 hectares) is no longer required for operational purposes. Therefore, Viva Energy has commenced remediation of the WARP to facilitate sale and redevelopment for commercial/industrial use in accordance with the site zoning IN3 as per the Parramatta Council Local Environmental Plan (LEP) 2011. This portion of the land that is no longer required is herein referenced as the 'Western Area'.

Given the scale of remedial works, the Western Area was declared State Significant Development (SSD) and as such, to assess the potential environmental impacts from remediation, an Environmental Impact Statement (EIS) containing a Conceptual Remedial Action Plan (RAP) was submitted to Department of Planning, Industry, and Environment (DPIE) in late 2019.

The Consent Conditions for SSD No. 9302 were issued on 7 May 2020. Staging of the remediation of the Western Area is being completed as per Consent Condition A9 of SSD No. 9302.

Viva Energy is staging the remediation of the Western Area as follows:

– Stage 1 – Former Process West – Completed in 2020

– Stage 2 – Former Utilities and Movements – Currently under remediation

– Stage 3 – Former Process East

The Stage 2 Area (the Site) location is shown on Figure F1 in **Appendix A-1** (extracted Validation report). This audit is statutory as per Consent Condition B3 for SSD No. 9302. The site has also been notified to the NSW Environment Protection Authority (EPA) under *Section 60 of the Contaminated Land Management Act 1997*. Remediation of the AA1 of Stage 2 Area had been completed in late 2021.

In consideration of the redevelopment strategy proposed for the Stage 2, Area the auditor notes the proposed lots will be progressively validated such that Section A Site Audit Statements (SAS) will be prepared for each of the audited areas.

1.1 Site Audit Details

The former Clyde Refinery is the subject of NSW EPA Declaration No. 20131110 (Preliminary Investigation Order 20121001), issued under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985.* The audit triggers are further discussed in **Section 1.3**.

This Site Audit Report (SAR) has been prepared for the northern portion of Stage 2 of the WARP (AA1), that incorporates proposed subdivision Lots 51, 52, 53, 54 and 55 and a portion of a Proposed Road alignment to the east of Lot 55. The AA1 location is shown on Figure F3 in **Appendix A-1**.

The auditor understands that these proposed lots have been defined as part of the 'Central Sydney Industrial Estate and Sustainable Road Resource Centre' Project (SSD No. 10459) which details plans for future redevelopment of the WARP for commercial/industrial land use. The Survey Plans of the proposed subdivision are provided as **Appendix A-6.**

This SAR and accompanying SAS have been produced to document the findings of the site audit that incorporated review of the AA1 Validation Report and supporting reports prepared for AA1. The reports reviewed as part of this audit, as well as the relevant background reports are listed in **Sections 1.4** and **1.5**. The site audit details are presented in ***Table 1*.**

Table 1 Site audit details

Information	Details
Site auditor	Mr. Andrew Kohlrusch
NSW EPA site auditor accreditation nº	0403
NSW EPA Site Audit Statement nº	068-2127799
Stage 2 - Legal property description [(1)]	Part Lot 100 in Deposit Plan (DP) 1168951
Council	City of Parramatta Council
Stage 2 Area	28 hectares
AA1	6.793 hectares
Lots and Proposed Road areas	Lot 51 – 8,060 m^2 Lot 52 – 8,060 m^2 Lot 53 – 27,550 $m^{2\backslash}$ Lot 54 – 10,670 m^2 Lot 55 – 10,670 m^2 Proposed Road – 2,922 m^2
Site occupier	Viva Energy
Current land use	Vacant site
Proposed land use	Commercial/Industrial

Previous site audit statement related to the Stage 2 Area was issued as shown ***Table 2***.

Table 2 Previous audit documentation

Information audit	SAR title	SAS No.	SAR/SAS date
Stage 2 RAP	Viva Energy Clyde Western Area Remediation Project - Stage 2 RAP, Durham Street, Rosehill, NSW Site Audit Report	065-2127799	13/08/2021

The auditor concluded in SAS No. 065-2127799 that:

– *It is the auditor's opinion that following remedial and validation activities discussed in the Stage 2 RAP, the lots will be suitable for the proposed future use (commercial and/or industrial).*
– *In consideration of the redevelopment strategy proposed for the Stage 2 area, the auditor noted that as part of SSD 10459, subdivided lots will be progressively validated such that separate SAS will be prepared for each proposed lot or group of lots.*

This site audit has been conducted in accordance with the requirements of *the Contaminated Land Management Act 1997* (the 'Act'). The Act defines site audit as follows:

"site audit" means a review:

– *(a) that relates to management (whether under this Act or otherwise) of the actual or possible contamination of land, and*
– *(b) that is conducted for the purpose of determining any one or more of the following matters:*

(i) the nature and extent of any contamination of the land,

(ii) the nature and extent of any management of actual or possible contamination of the land,

(iii) whether the land is suitable for any specified use or range of uses,

(iv) what management remains necessary before the land is suitable for any specified use or range of uses,

[1] The areas and legal property descriptions for each of the Lots for the AA1 are further discussed in **Section 2.**

(v) the suitability and appropriateness of a plan of management, long-term management plan or a voluntary management proposal.

Furthermore, the Act provides the following definitions:

– *"Site Audit Report" means a site audit report prepared by a site auditor in accordance with Part 4 [of the Act].*
– *"Site Audit Statement" means a site audit statement prepared by a site auditor in accordance with Part 4 [of the Act].*

1.2 Purpose of this report

The purpose of this site audit is to independently review the Validation Report for AA1 of the Stage 2 remediation program, prepared by Environmental Resources Management Australia Pty Ltd (ERM) and assess whether:

– the Validation Report was prepared in a manner consistent with NSW Environment Protection Authority (EPA) made or endorsed guidelines listed in **Section 1.6** of this report
– Consent Condition B3 of SSD No. 9302 was met.
– the site is suitable for commercial/industrial land use.

Details regarding the lots that comprise AA1 are presented in **Section 2.1.** To achieve the audit objective, the auditor has reviewed the works undertaken by ERM in the Validation Report for AA1 and assessed whether information presented can make the land suitable for future commercial/industrial uses.

1.3 Audit Triggers

Following the announcement of the closure of the former Clyde Refinery, on 22 June 2012, the NSW EPA issued a Preliminary Investigation Order to Viva Energy under the CLM Act requesting reports on environmental contamination.

Following receipt of a number of reports, in June 2016, the NSW EPA declared Lot 398 in DP 41324, Lot 2 in DP 224288, Lot 1 in DP 383675, Lot 101 in DP 809340 and, Lot 100 DP in 1168951 (which includes AA1) as contaminated land under the CLM Act (Declaration No. 20131110).

1.3.1 Conditions of Consent SSD No. 9302

The NSW DPIE on 7 May 2020 issued the Conditions of Consent for the remediation of contaminated soils and management of contaminated groundwater to enable future commercial/industrial land uses. Conditions of Consent SSD No. 9302 (from the audit perspective) require the following:

The development may only be carried out:

(a) in compliance with the conditions of this consent;

(b) in accordance with all written directions of the Planning Secretary;

(c) in accordance with the EIS and RtS;

(d) in accordance with the Detailed RAP;

(e) in accordance with the Development Layout in Appendix 1. and

(f) in accordance with the management and mitigation measures in Appendix 2.

Part B of the Conditions of Consent SSD 9302 specified the environmental conditions for the remediation, which included the following:

Prior to the commencement of preparation works, the Applicant must prepare a Detailed RAP for the development, in consultation with the EPA and to the satisfaction of the Site Auditor and the Planning Secretary. The Detailed RAP must:

- *be prepared by a suitably qualified and experienced person in accordance with Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (OEH, 2011). [2]The auditor notes that this Guidelines was updated in April 2020 and are currently referenced as EPA (2020) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.*
- *be reviewed by the Site Auditor in accordance with the requirements of Condition B3.*
- *be approved by the Site Auditor and Planning Secretary, prior to the commencement of preparation works.*
- *be submitted to the EPA for reference once approved and prior to the commencement of preparation works.*
- *detail all final remediation methods and technologies including layouts and design.*
- *detail the decision protocol for determining which remediation method applies to different materials.*
- *incorporate the recommendations of the Air Emissions Verification Report approved in accordance with condition B15.*
- *include triggers for contingency actions and alternate treatment methods to ensure the remediation objectives are achieved.*
- *detail all procedures and plans to be implemented to reduce risks to an acceptable level for the proposed final land use.*
- *The Validation report should be submitted within six months of the completion of demobilisation, or as otherwise agreed with the Planning Secretary, the auditor must submit a Validation Report to the EPA, Council and the Planning Secretary.*
- *The SAR and SAS should be submitted within 12 months of the completion of demobilisation, or as otherwise agreed with the Planning Secretary, the auditor must submit a SAR and Section A, SAS to the EPA, Council and the Planning Secretary. The reports must confirm that the remedial works approved under this consent have been completed in accordance with the remediation objectives listed in the Detailed RAP and the risks to human health and the environment have been addressed in accordance with the objectives of the Detailed RAP.*
- *The Conditions of Consent requires that prior to the finalisation of the SAS and SAR, a Long Term Environmental Management Plan (LTEMP) should be prepared to the satisfaction of the auditor and the Planning Secretary.*

Subsequent to the issue of SSD9302, Viva Energy reviewed its approach to remediating the WARP and resolved to conduct the remediation in three stages based on geographical portions of the WARP. DPIE was informed of the staging of remediation on 19 May 2020. A letter containing relevant documentation required by the Consent Conditions for the WARP was submitted for the stages. DPIE on 3 June 2020 approved the proposed staging of remediation as follows:

- *The Department has carefully reviewed the Staging Plan and is satisfied with the proposed approach.*
- *Accordingly, the Planning Secretary has approved the Staging Plan, dated 19 May 2020. You are advised that if the staged remediation works result in any additional impacts to those assessed under SSD 9302, you may be required to provide further information and additional mitigation controls to demonstrate the impacts can be managed. This may require supporting advice from technical experts.*

1.3.2 Sydney Central Industrial Estate and Downer Sustainable Road Resource Centre (SSD No. 10459)

The Stage 2 Area (including AA1) is within the extent of site redevelopment works proposed to be completed as per SSD No. 10459. ERM reported in the Stage 2 Remedial Action Plan (RAP) that while remedial activities are not subject to the SSD No. 10459 and associated consent conditions,

consideration of the proposed subdivision of the Stage 2 Area for commercial/industrial land used has been incorporated into aspects of remedial planning and approaches outlined within the Stage 2 RAP.

1.4 Audited Documentation

This SAR has been prepared following review of information presented in the following documents:

– ERM (2021d). *Clyde Western Area Remediation Project, Stage 2 – Site Suitability Report (Audit Area 1)*, dated 6 September 2021 (the **SSR AA1**).
– ERM (2021e). *Clyde Western Area Remediation Project Stage 2 - Stage 1 Biopiling Validation Report*, dated 7 September 2021 (the **Stage 1 Biopile**).
– ERM (2021f). *Clyde Western Area Remediation Project - Stockpile SP90 Summary - Movement of excavated soil from Stage 1 to Stage 2 (Audit Area 1)*, dated 8 November 2021 (**the SP90 letter**).
– ERM (2021g). *Clyde Western Area Remediation Project Stage 2 Validation Report (Audit Area 1)*, dated 3 December 2021 (the **AA1 Validation**).
– ERM (2021h). *Clyde Western Area Remediation Project Stage 2 – Audit Area 1 – Long Term Environmental Management Plan*, dated 22 December 2021 (the **AA1 LTEMP**).

The outcome of the reviews of these documents associated with the characterisation and planning for remediation and validation of AA1 was presented in interim audit advice letters (IAA) or tracked in an audit commentary spreadsheet. Copies of IAAs, as well as the consultant's responses (where relevant) are presented in **Appendix B**.

1.5 Background Reports

Given the nature of the works completed at the site, the auditor also considered the following documents as background information.

– AECOM (2019). *Viva Energy Clyde Western Area Remediation Project – Appendix C: Conceptual Remedial Action Plan*, dated 21 January 2019 (the **Conceptual RAP**).
– ERM (2020a). *Clyde Western Area Remediation Project - Remediation Site Investigation*, dated 7 February 2020 (the **RSI**).
– ERM (2020b). *Clyde Western Area Remediation Project, Human Health and Ecological Risk Assessment*, dated 16 February 2020 (the **HHERA**).
– ERM (2021a). *Clyde Western Area Remediation Project – Stage 2 Drainage Decommissioning Validation Report*, dated 17 June 2021 (the **Stage 2 Drainage**).
– ERM (2021b). *Clyde Western Area Remediation Project – Stage 2 Environmental Site Assessment*, dated 17 June 2021 (the **Stage 2 ESA**).
– ERM (2021c). *Clyde Western Area Remediation Project, Stage 2 - Detailed Remediation Action Plan*, dated 9 June 2021 (the **Stage 2 RAP**).

1.6 Regulatory Guidelines

This SAR was prepared with reference to the following statutory legislation, guidelines and/or standards which have been endorsed for use by NSW EPA:

– NSW EPA (2020). Contaminated sites: Guidelines for Consultants Reporting on Contaminated sites (the **Consultant Guidelines**).
– NSW EPA (2020). Assessment and Management of Hazardous Ground Gases (the **Ground Gas Guidelines**).
– ANZAST (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
– NSW EPA (2017). Contaminated Land Management: Guidelines for the New South Wales Site Auditor Scheme (3rd edition) (the **Auditor Guidelines**).
– CRC Care (2015). A Practitioner's guide for the analysis, management and remediation of LNAPL. Technical Report Nº 34.

- NSW EPA (2014). Waste Classification Guidelines Part 1: Classifying Waste, NSW EPA (the Waste Guidelines).
- NEPC (2013). National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended by the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1), National Environment Protection Council, May 2013 (the **ASC NEPM**).
- NHMRC & NRMMC (2004). Guidelines for Drinking Water Quality in Australia, National Health and Medical Research Council and Natural Resource Management Ministerial Council, Canberra.
- WA Department of Health (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (the **Asbestos Guidelines**).
- NSW DEC (2007). Guidelines for the Assessment and Management of Groundwater Contamination (the **Groundwater Guidelines**).
- NSW EPA (1995). Sampling Design Guidelines (the **Sampling Guidelines**).

1.7 Permitted Land Uses

The AA1 is zoned as IN3 – Heavy Industrial under the Parramatta Council Local Environmental Plan 2011. Permissible uses allowed under this zoning (with consent), include: *Agricultural produce industries; Building identification signs; Business identification signs; Depots; Freight transport facilities; General industries; Hardware and building supplies; Hazardous storage establishments; Heavy industries; Horticulture; Kiosks; Medical centres; Offensive storage establishments; Pubs; Roads; Rural supplies; Sawmill or log processing works; Take away food and drink premises; Timber yards; Warehouse or distribution centres; Water storage facilities.*

1.8 Site Auditor Visits

The auditor has undertaken a number of site inspections since being commissioned in 2018. Previous site visit observations were discussed in the SAS No. 065-2127799. The most recent site inspection was undertaken on 4 November 2021, observations from which are summarised below.

AA1 of the Stage 2 Area is vacant and has no current formal use, as shown ***Figure 1***. Access to the Stage 2 Area is restricted and controlled by Viva Energy.

A site walkover within Lots 51 to 55, that comprise AA1, was conducted by GHD (site auditor and auditor assistant), ERM and Enviropacific (EP) and Viva Energy.

The auditor noted that the AA1 is relatively flat with a gradual slope to the south towards Duck River. Apart from some shallow, man-made surface water drainage features, the site no longer contains any infrastructure associated with the former activities conducted at the site as shown ***Figure 3***.

During the inspection of Lot 51 (undertaken following asbestos remediation) the auditor noted that no asbestos was observed at the surface within the footprint of the area excavated as part of the remediation of AEC-1. The auditor also noted that the excavation area had been backfilled with VENM (as further discussed in **Section 10)**. An overall view of the AEC-1 remediated area is shown on ***Figure 2***.



Figure 1 *Overall view of Stage 2 Area*



Figure 2 *AEC-1 excavation footprint*



Figure 3 Overall view of AA1

1.9 Site Audit Report Structure

This report documents the audit of the reports referenced in **Section 1.4.** Where the auditor has provided comments on the work, these are highlighted in blue shaded dialogue boxes. The remainder of this report is organised as follows:

Section 2	Site conditions and environmental setting
Section 3	Historical land use
Section 4	Characterisation reports
Section 5	Stage 1 Biopile validation
Section 6	Stage 1 Material reuse
Section 7	Data quality objectives
Section 8	Remedial action plan
Section 9	Remediation criteria
Section 10	Implementation of RAP and validation program
Section 11	Evaluation of quality assurance and quality
Section 12	control Conceptual site model
Section 13	Long-term environmental management plan
Section 14	Other considerations
Section 15	Compliance with regulatory requirements
Section 16	Audit conclusions
Section 17	Disclaimer

1.10 Site Audit Report Limitations

The information and opinions given in this SAR are based on reviewing information presented in the documentation referenced in **Section 1.4** and other supporting information provided by Viva Energy and the consultant.

The auditor has not carried out any independent investigations in relation to the condition of the site. This audit is subject to the limitations presented in **Section 17**.

The auditor assumes no responsibility or liability for any errors or omissions in the information provided in the reports reviewed or that the consultant did not confer any reliance on the reports to the auditor.

The purpose of this SAR is to assess if the AA1 Validation report was prepared in accordance with the guidelines made or endorsed by the NSW EPA, complied with relevant Consent Conditions required by the DPIE as previously discussed in **Section 1.3** and whether it demonstrated the site was suitable for commercial/industrial land uses. No other warranties, expressed or implied, are made.

This SAR relates only to the subsurface to define the nature and extent of contamination at the site, and related identified off-site impacts from surface water, groundwater, or soil vapour. It does not comment on the evaluation of geotechnical issues, or any other issues associated with the site.

2. Site conditions and environmental setting

2.1 Site Identification

The following section is based on information presented in the AA1 Validation report. The AA1 that forms part of the Stage 2 Area is located in the north-western portion of the WARP and extends from Devon Street in the north to the Duck River to the south boundary.

A site location plan and a site layout are shown on Figures F1 and F2 in **Appendix A-1**. The Site identification information along with the proposed lots is summarised in ***Table 3*****.**

Table 3 Site identification

Information	Details
Site identification:	AA1 in Stage 2
Lots in Stage 2 Area and deposit plan (DP) [3]	Lot 51 in DP 1168951 Lot 52 in DP 1168951 Lot 53 in DP 1168951 Lot 54 in DP 1168951 Lot 55 in DP 1168951 Proposed Road – 2,922 m^2
Site occupier:	Viva Energy
Local Government Authority:	City of Parramatta Council
Current land use:	Vacant site
Proposed land use:	Commercial/industrial
Land use zoning:	IN3 – Heavy Industrial under the *Parramatta Local Environmental Plan 2011.*

2.2 AA1 Pre-Remediation

The AA1 is currently vacant. The following key features were observed by ERM prior to commencement of remediation of AA1 as shown on Figures F3 and F4 in **Appendix A-1**.

– Lot 51: Contained a former administration building containing asbestos (AEC-1). ERM reported that as per the approved Stage 2 RAP, Lot 51 required remediation (asbestos removal and off-site disposal).

– Lot 52: No formal features were presented within Lot 52 and the Stage 2 RAP did not identify the need for remediation. The residual petroleum hydrocarbon impacts in shallow soil were an aesthetic issue that did not pose potential human health risks and were to be managed via a passive LTEMP.

– Lot 53: ERM reported that the temporary site office/amenities were present prior to commencement of remediation. Remediation was not warranted in Lot 53. The residual petroleum hydrocarbon impacts in shallow soil were an aesthetic issue that did not pose potential human health risks and were to be managed via a passive LTEMP.

– Lot 54: Stockpile 29 (SP 29) from the Stage 1 Area was within Lot 54. As documented in the Stage 2 RAP, remediation was not warranted in Lot 54 (only removal of the stockpile and footprint validation).

– Lot 55: No features were presented within Lot 55. Remediation was not warranted in Lot 55. The residual petroleum hydrocarbon impacts in shallow soil were an aesthetic issue that did not pose potential human health risks and were to be managed via a passive LTEMP.

[3] The survey plans showing the lost location are presented in ***Appendix A-6***

– Proposed Road: No features were presented within the Proposed Road. Remediation was not warranted in the Proposed Road.
– The residual petroleum hydrocarbon impacts in shallow soil were an aesthetic issue that did not pose potential human health risks and were to be managed via a passive LTEMP.

2.3 Topography and Drainage

ERM reported that the surface of the Stage 2 Area (which included AA1) was reshaped over time with the use of imported fill to provide a relatively flat site. Until July 2020 rainfall and surface water were collected through the Continuously Oil Contaminated (COC) and Accidentally Oil Contaminated (AOC) drainage systems which diverted the water to the Clyde Terminal Drainage network and Wastewater Treatment Plant (WWTP).

As reported by ERM in the AA1 Validation Report, only clean water drainage network is present, tank farm drainage network was mostly above-ground infrastructure and has been removed, adjoining pits to the east and west were cleaned and decommissioned. Therefore, drainage lines present within AA1 did not form part of the oil contaminated drainage network and did not contain residual sludge following cleaning. As such, drainage line identification is not considered required within the LTEMP. The drainage network is shown on Figure F4 in **Appendix A-1.**

ERM described that the Duck River is lined with mangroves adjacent to the southern margin of the Western Area. The Duck River is considered a moderately disturbed catchment. As reported by ERM in the RSI, the tidal limit of the Duck River extends approximately one kilometre upstream of the site to the Clyde Railway culvert (Cardno Lawson-Treloar, 2008). The upper reaches of the Duck River extend approximately 10 kilometres south to Condell Park, within the Bankstown LGA where stormwater flows in a series of storm water pipes and open concrete drains.

The downstream extent of the Duck River discharges into the Parramatta River to the north-east of the Stage 2 Area. ERM reported that the Parramatta River is the major tributary of Sydney Harbour located approximately 15 kilometres downstream of the site which, in turn, discharges into the Pacific Ocean.

2.4 Geology

ERM documented the following general soil profiles within AA1:

– The average thickness of fill is approximately 0.6 metres in Lots 51 to 53 and between 1.0 to 1.3 metres in the former tank farm areas on Lot 55 and the Proposed Road area.
– Fill material is underlain by high plasticity orange red and grey clay (alluvial sediments) across most of the AA1. Localised areas of backfill sand have been identified surrounding pipework to depths of up to two metres below ground level (mbgl).

There was no proposed disturbance to Potential Acid Sulfate Soils (PASS) present below the level of fill within AA1 and no lowering of the water table was proposed. Therefore, ERM considered that the scope of remedial works did not warrant the preparation of an Acid Sulfate Soils Management Plan (ASSMP).

2.5 Hydrogeology

A summary of the hydrogeology discussed by ERM in the AA1 Validation report is presented in ***Table 4***.

Table 4 Hydrogeology – AA1

Data	Results
Groundwater Depth	A shallow unconfined aquifer is present in AA1 within fill and estuarine-alluvial sediments at depths between 1 mbgl and 3 mbgl. ERM reported that a preferential pathway for groundwater flow had been identified within sandy lenses in the fill and estuarine units along with anthropogenic structures, such as the on-site storm water drainage network.

Data	Results
Groundwater Flow Direction	For the majority of the Stage 2 Area (including AA1), groundwater flow direction was inferred be to the south and south-east towards the Duck River.
Hydraulic Gradient	ERM reported that the average hydraulic gradient ranged between 0.003 along the up-gradient portion of the WARP (including AA1).
Hydraulic conductivity	ERM reported that the hydraulic conductivity has been established to be low across the large majority of the WARP, with estimated hydraulic conductivity values for wells that were screened across clay, sandy clay and gravelly clay typically ranging from $5x10^{-5}$ m/day to $6x10^{-3}$ m/day.

ERM in the AA1 Validation Report discussed two hydrologic aspects that formed key elements of the Conceptual Site Model (CSM) as follows:

– Vertical migration of groundwater is limited by the soil profile which comprises unconsolidated fill underlain by low permeability clay. Industrial infrastructure included aboveground systems as well as pipework and drainage systems installed in the near surface. Therefore, ERM concluded that vertical migration of contaminants in the AA1 is limited by the nature of the soil profile and the aquifer.

– Lateral migration of contaminants of potential concern (CoPC) in groundwater is limited by the low permeability of the lithology and relatively flat hydraulic gradient. ERM reported that this conclusion was supported by the limited lateral extent of impacted groundwater, indicating that, where present, areas of impacted groundwater are stable and do not appear to be migrating.

2.6 Auditor Discussion

The auditor considered that the information presented by ERM in the AA1 Validation report and in the reports reviewed as part of this audit listed in **Section 1.4** and **Section 1.5** provided an appropriate description of the features of AA1. The auditor noted that between 2020 and 2021, additional data was obtained specifically for the Stage 2 Area, including the Stage 2 ESA previously discussed in the SAR No. 065-2127799 and in the most recent AA1 SSR (the outcomes of which are presented in **Section 4.2**).

The lot descriptions and those of the immediate surrounding land uses reported in the AA1 Validation report and background reports were consistent with the auditor's observations made during the site inspection undertaken on 4 November 2021.

The auditor noted that the proposed future commercial/industrial land uses planned for the site are consistent with the Parramatta Council zoning, which allows the further proposed commercial/industrial development.

The auditor considered that the AA1 Validation report and the supporting reports listed in **Section 1.4** and **Section 1.5** provided a detailed summary of site geology and hydrogeology that provided an appropriate basis for understanding these elements of the CSM and their influence on contaminant distribution and mobility. The auditor noted (based on ERM reports and observations of the soil profile in remedial excavations) the following key information regarding the hydrogeological characterisation:

- Vertical migration of groundwater is limited by the soil profile which comprises a thin layer of unconsolidated fill underlain by low permeability clay.

- Lateral migration of CoPC in groundwater is limited by the low permeability of the lithology and relatively flat hydraulic gradient, indicating that where present areas of impacted groundwater are stable and do not appear to be migrating.

It is the auditor's opinion that the site conditions and environmental setting information provided by ERM in the AA1 Validation report together with other reports reviewed as part of this audit were sufficient and documented largely in accordance with the Schedule B2 of the ASC NEPM and the Consultant Guidelines.

3. Historical land use

3.1 Former Clyde Refinery

AECOM in the Conceptual RAP described that the former Clyde Refinery was originally included as part of an 850-acre land grant by the Crown to John Macarthur. In 1908, a parcel of 140 acres of land was transferred to the Commonwealth Oil Corporation (COC). The COC struck financial difficulties and went into receivership. In 1913 the land was then acquired from COC by John Fell and Co.

The new owner began purchasing crude oil to refine at Clyde and refining commenced in 1926. In 1928, Shell Refining Pty Ltd took over as owner and operator of the site. Shell purchased an additional seven acres of land and a further 150 acres in June 1930. The duration of the first stage of expansion of the site was from 1929 to 1939 with the purchase and construction of new equipment and buildings, increasing the crude product intake to approximately 250 tonnes/day by 1934.

The former Clyde Refinery operations primarily comprised the receipt and refining of crude oil and finishing product piped from the Gore Bay Terminal until cessation of refining activities in 2012. Since the completion of refining operations, the former Clyde Refinery has been partially utilised as a terminal, which primarily involves the receipt, storage and distribution of finished petroleum products.

Since the cessation of refining operations in 2012, the Clyde Terminal continues to receive finished petroleum products from the Gore Bay Terminal via an existing product transfer pipeline and distributes the products by separate pipelines from the Clyde Terminal to the adjacent Parramatta Terminal.

A figure showing the Clyde terminal location is presented in Figure F1 in **Appendix A-1.**

3.2 The Western Remediation Area Project

Following completion of the Clyde Terminal Conversion Project (SSD 5147), the WARP was no longer required for operational purposes. Given the identified presence of contaminated soil and groundwater in the WARP, remediation as per conditions listed in SSD 9302, is taking place to enable future commercial and/or industrial land uses.

A figure showing the location of the WARP is presented in Figure F1 in **Appendix A-1**.

3.3 Stage 2 Area

The following features were associated with the former refining operations in the Stage 2 Area from approximately 1960 until their demolition from 2012 to 2020:

– Administration buildings, car parking areas and offices.
– Fuel and product storage infrastructure, including Tank Farm Areas A1, A2, A3, J and above-ground pipe tracks.
– Oil Refining infrastructure, including boilers, Platformer 3 and flare areas to the south
– A water treatment plant and control room.
– Bitumen loading gantry and associated rail sidings.
– Contractor support services buildings, including warehouses and workshops, laboratory and fire station electrical sub-stations and associated transformer yards.
– Underground drainage infrastructure (accidentally oil contaminated and clean water council drainage), Pump House 1 and corrugated plate interceptor unit.
– Southern Buried Waste Area which is known to have been used for the burial of refinery wastes and soil sourced from excavations across the Clyde Refinery footprint.
– Former sub stations – which were cleared of the presence of Polychlorinated Biphenyls (PCBs).

In-situ decommissioning and decontamination of the sub-grade drainage network was undertaken between July 2020 and February 2021 and subsequently has been isolated from the Clyde Terminal Drainage network and WWTP.

A site layout plan showing AA1 is presented in Figure F2 in **Appendix A-1**. The drainage network location is shown on Figure F3 in **Appendix A-1**.

3.4 AA1

ERM reported in the SSR AA1 that the proposed sub divided lots comprised the following historical infrastructure and operations setting within the AA1:

– Lot 51: Visitor car parking areas, administration and office buildings.
– Lot 52: Visitor car parking areas.
– Lot 53: Refueling area (underground storage tank (USTs) and associated infrastructure has been removed and validated previously); administration buildings and offices and car parking areas
– Lot 54 and Lot 55: Fuel and product storage infrastructure, including parts of Tank Farm Areas A2, A3, and aboveground pipe tracks.

A site layout plan showing AA1 is presented in Figure F3 in **Appendix A-1**.

3.5 Auditor Discussion – Historical land use

The auditor noted that investigations over the past 29 years have incorporated a detailed description of the former Clyde Refinery and environmental conditions.

The auditor considered that the primary historical usage of the Stage 2 Area which had the potential to result in soil and groundwater contamination was the storage and processing of petroleum hydrocarbons, the former sub-stations, the drainage systems, former buildings, and fill imported to the Western Area.

In regard to AA1, the current primary uses that could have resulted in contamination are the former administration buildings containing asbestos in Lot 51 (AEC-1) and stockpile SP-29 (derived from remediation of the adjacent Area 1) – also containing asbestos – in Lot 54. The location of AEC-1 and SP-29 is shown on Figure F3 in **Appendix A-1**.

The auditor noted that the former electrical substation #11 within Lot 51 was removed and remaining soils validated. The former refuelling area in Lot 53 was removed, and soil/groundwater validated. The former fuels and product storage in Lots 54 and 55 were also removed and soil/groundwater validated. No former activities that could result in soil and/or groundwater contamination were reported for Lot 52.

The auditor noted that most of the former infrastructure within AA1 was aboveground, including fuel and product storage infrastructure, associated pipe tracks and administration buildings.

The auditor accepted that the information provided by ERM in the AA1 Validation report was sufficiently detailed and adequate for the purposes of identifying potential contamination at AA1 that subsequently formed the scope of additional site characterisation and remedial planning.

4. Characterisation reports

4.1 Historical Reports

ERM reported that investigations across the Clyde Refinery have been conducted since 1991. A summary of the outcomes of the investigations presented in ***Table 5*** are relevant to the Western Area and were utilised in developing the Stage 2 RAP.

Table 5 Historical reports – AA1

Author	Year of assessment	Assessments	Scope of works
Groundwater Technology	1994	Assessment of soil and groundwater conditions	Groundwater monitoring wells installation and sampling
ERM	2009	Shallow soil investigation of 'Old Admin Area'	Soil bores installation and sampling
ERM	2009	Autonexus UST Validation	Soil validation samples
ERM	2008 to 2020	Groundwater monitoring events.	Groundwater sampling events
ERM	2012	Stage 1 and 2 Environmental Site Assessment (ESA)	Soil bores Groundwater monitoring wells Soil and groundwater sampling
AECOM	2018	Targeted Site Investigation (TSI)	Groundwater monitoring wells Soil bores Test pits Soil and groundwater sampling
ERM	2018	PFAS Preliminary Site Investigation and Mass Flux Assessment	Groundwater sampling (existing wells) Hydraulic Testing (existing wells)
ERM	2018	Autonexus – Lease Exit Investigation	Soil bores and soil sampling
ERM	2019	Remediation Site Investigation (RSI)	Test pits Hand auger bores Soil vapour monitoring wells Soil and soil vapour sampling
ERM	2020	Stage 2 Drainage Decommissioning Validation	Test pits Sludge characterisation samples
ERM	2020	Stage 2 – Characterisation of stockpiled material on site	Sampling of soil stockpiles Visual inspection of demolition waste stockpiles on site for presence of ACM
ERM	2021	Stage 2 – Additional ESA for increased sample density for validation of future subdivision	Test Pits Soil sampling Visual observation and field screening

The reports discussed in the following sections were considered by the auditor to be key documents from which information was adopted in preparing the Stage 2 RAP and the subsequent AA1 Validation report.

4.2 AA1 SSR

This section presents the compilation of the results of the assessments completed in AA1 and assesses whether the results could be considered sufficient for characterising AA1 in relation to potential impacts.

4.2.1 Summary of Environmental Works

Assessment works across Stage 2 (as listed in ***Table 5***) were often targeted or assessed the wider area. However, given that Stage 2 is to be sub divided into smaller lots, it was recognised that additional sampling points may be necessary to characterise each. As part of the planning for the works used to characterise Stage 2 (including AA1), ERM documented that the number of sample points per hectare was based on the diameter of the hot spot with 95% confidence. While the equivalent sampling density for most lots was slightly less than the recommendation within the *Sampling Guidelines,* the diameter of hot spots was generally smaller than the guideline recommendation. ERM therefore, considered that the sampling density recommended and subsequently implemented for the proposed lots was appropriate for the assessment of land use suitability.

Soil investigation locations had been spaced to provide an approximate off-set grid across the entirety of the Stage 2 Area (including AA1). The sampling density per lot and discussion on the results of the SSR are presented in ***Table 6***.

Table 6 Data summary AA1

Lot ID	Area (Ha)	No. of soil sample locations	Sample per hectare	Minimum circular hotspot (m)	ERM's comments on sample density
51	0.806	14	17.4	13.4	ERM considered that the sampling density was appropriate based on the former use of this area (administration, car park and inert fill materials identified during previous investigations). The presence of asbestos was believed to be restricted to the footprint of the former building – as defined by TP19/01 (AEC-1). ERM noted that the extent of the asbestos impact was delineated. Remediation was proposed as part of the Stage 2 RAP. Any further unexpected occurrence of asbestos would be managed as per the passive LTEMP. The LTEMP is summarised in **Section 13**. A copy of the LTEMP is presented in **Appendix E**.
52	0.806	15	18.6	12.9	ERM considered the sampling density was appropriate based on-site use for car parking. Based on the historical investigation results, ERM concluded that Lot 52 is suitable for commercial/ industrial land use with a passive LTEMP.

Lot ID	Area (Ha)	No. of soil sample locations	Sample per hectare	Minimum circular hotspot (m)	ERM's comments on sample density
53	2.755	26	7.6	18.3	ERM considered the sampling density appropriate given historical land use was limited to an asphalt carpark. Potential contaminant sources were related only to historical UST (validated and removed 2009) and thin layer of fill underlying asphalt. ERM concluded that Lot 53 is suitable for commercial/ industrial land use with a passive LTEMP.
54	1.067	10	9.4	17.7	ERM considered for this area a uniform contaminant distribution expected from any historical spills. The calculated hotspot size was appropriate for management of residual hydrocarbons subject to protocols listed in an LTEMP (with a 20 metres buffer around sampling locations that had identified hydrocarbon contamination that did not present an unacceptable exposure risk). In addition, the stockpile SP29 within Lot 54 should be removed and the footprint validated. ERM concluded that Lot 54 is suitable for commercial/ industrial land use with a passive LTEMP.
55	1.067	13	11.2	16.2	ERM considered the sampling density appropriate based on the following: Tank bund area - uniform contaminant distribution expected from any historical spills. The calculated hotspot size was appropriate for management of residual hydrocarbons subject to protocols listed in an LTEMP (with a 20 metres buffer around sampling locations that had identified hydrocarbon contamination that did not present an unacceptable exposure risk). ERM concluded that Lot 55 is suitable for commercial/ industrial land use with a passive LTEMP.
Proposed Road	0.292	3	10.3	Not applicable	The proposed road is bordered by Lots 55 and 56 that were both adequately characterised. ERM considered the sampling density within the road area was appropriate for this proposed use.

Lot ID	Area (Ha)	No. of soil sample locations	Sample per hectare	Minimum circular hotspot (m)	ERM's comments on sample density
					ERM concluded that the proposed Road is suitable for commercial/ industrial land use with a passive LTEMP.

4.2.2 Nature and Extent of Impacts – AA1

The Areas of Environmental Concern (AEC) identified by ERM as part of the review undertaken as part of the development of the scope for the assessments works completed to date relevant to AA1 are as follows:

- Lot 51 – AEC-1
- Lot 52 – No AEC was identified
- Lot 53 – Portion of AEC-15
- Lot 54 – Portion of AEC-11, AEC-15 and stockpile SP29
- Lot 55 – Portion of AEC-11 and AEC-15
- Proposed Road – No AEC was identified

The AECs and lots are shown in Figure F3 in **Appendix A-1**.

4.2.3 Soil Characterisation – AA1

ERM reported in the AA1 SSR report that there were few soil samples which recorded CoPC concentrations above the nominated investigation levels (SSTLs presented in the HHERA or NEPM HSLs). These exceedances are summarised in ***Table 7***.

Table 7 Summary of soil exceedances - AA1

Lot ID	CoPC	Soil criteria exceeded	Relevant locations (depth in mbgl)
51	Asbestos	HSL D (asbestos)	TP19/01 (0.1)
52	Not applicable	None	Not applicable
53	TRH >C_{10}-C_{16}	TRH Management Limits - Commercial/Industrial (coarse)	SB11B (0.2) SB13B (0.5 and 1.0)
54	TRH >C_{10}-C_{16} TRH >C_{16}-C_{34}	TRH Management Limits - Commercial/Industrial (coarse)	HA19/04 (0.4 and 1.0) HA19/07 (0.05)
55	TRH >C_{10}-C_{12} Aliphatic TRH >C_{10}-C_{16} TRH >C_{16}-C_{34}	TRH Management Limits - Commercial/Industrial (coarse)	HA19/05 (0.05) HA19/09 (0.8) BH12/33 (0.2 and 0.6) SB18/13 (0.3)
		SSTLS - Vapour Intrusion commercial worker	HA19/05 (0.3) [4]

[4] Vapour intrusion risk for AEC-11 assessed via direct soil vapour measurement (SV19/06).

Lot ID	CoPC	Soil criteria exceeded	Relevant locations (depth in mbgl)
Proposed Road	Nil [5]	None	Not applicable

The location of soil, groundwater and soil vapour investigation locations completed within the Stage 2 Area are shown in Figure F3 in **Appendix A-2.** The analytical results are presented in **Appendix C-2**.

The site plans showing the extent of soil impacts exceeding relevant assessment criteria are presented in the Figures F6A (depths between zero and one metre) and Figure F6B (depths between 1 and 2 metres) in **Appendix A-2**.

4.2.4 Light Non-Aqueous Phase Liquids – AA1

ERM reported in the AA1 SSR that given the difficulty in consistent visual identification and description of LNAPL within the soil profile, (e.g. high viscosity), the ASC NEPM TRH Management Limits for commercial/industrial land use in coarse soils were applied to allow comparison to soil analytical data, noting that soil concentrations greater than these criteria may indicate potential for the formation of LNAPL.

The extent of LNAPL in soils identified, including Management Limit exceedances is provided in Figure F6A and F6B from the AA1 SSR in **Appendix A-2**.

ERM stated that given the low volatility of residual LNAPL identified in soil samples exceeding TRH Management Limits, the potential for pooling of hazardous ground gases or other acute hazards during excavation works were considered unlikely. However, as a conservative measure, a LTEMP is proposed for management of potential odour generation and awareness of aesthetic impacts.

The locations where TRH Management Limits in soils were exceeded are shown on Figure F6A and F6B in **Appendix A-2**.

4.2.5 Groundwater Characterisation – AA1

ERM reported in the AA1 SSR that no COPC have historically been reported at concentrations above the adopted groundwater criteria for human health. Therefore, potential risks to off-site human receptors (i.e. future occasional intrusive maintenance workers and commercial works) have not been identified. There were also no identified risks to the key ecological receptor (i.e. Duck River) from COPC in groundwater within AA1.

The groundwater monitoring well locations are shown in Figure F3 in **Appendix A-2**.

4.2.6 Soil Vapour Characterisation – AA1

ERM reported in the AA1 SSR that analytical results for soil sampling location HA19/05 (within Lot 55) exceeded the SSTLs for TRH >C10-C12 Aliphatic, which triggered further investigation by installing a soil vapour sampling well (SV19/06) and testing for COPC including BTEX compounds and TRH.

Soil vapour results from the sample collected at SV19/06 recorded no exceedances of the adopted soil vapour criteria. Therefore, ERM concluded that soil vapour did not pose inhalation risks to future users of the proposed commercial/industrial development. The soil vapour monitoring well's location is shown in Figure F3 from the AA1 SSR in **Appendix A-2**.

[5] Concentrations of lead in sample HA19/10 (1800 mg/kg) exceeded HIL-D of 1500 mg/kg. Calculation of the 95% UCL of the mean concentration of representative nearby fill locations was undertaken as part of the HHERA (ERM, 2020b). The 95% UCL (453.8 mg/kg) was reported below HIL-D.

4.3 Auditor Discussion – Historical reports

The auditor considered that a significant quantum of works has been conducted over the past 29 years and that these works have appropriately characterised AA1.

The auditor noted that sample locations have been systematically positioned across the AA1 with the collection of samples largely focused on shallow fill, with deeper samples of the underlying natural soils collected sporadically across the AA1, in particular in areas where site observations identified the potential for contamination in the overlying fill.

The auditor noted that both field and laboratory quality assurance/quality control (QA/QC) programs were conducted during the assessments works. The auditor noted that intra-laboratory and inter-laboratory samples were collected and analysed as part of the assessment programs. The rates of collection and analysis demonstrated that the PARCC (Precision, Accuracy Representativeness, Comparability and Completeness) parameters were achieved.

The reported RPDs calculated by ERM were generally within acceptable ranges, with an acceptable number (considering the number of analyses completed) of RPDs exceeding the nominated QC criteria, primarily for samples with concentration of a similar magnitude to the LORs. The auditor concurred with ERM that these did not affect the reliability of the data reported.

The auditor considered that field trip blanks and trip spikes, where analysed, were largely within appropriate acceptance criteria. Matrix spike recoveries and surrogate spike recoveries reported by the laboratories were within the laboratory control limits indicating that the accuracy of the analytical methods was acceptable.

ERM reviewed the laboratory QA/QC results which showed that the laboratory analytical program achieved adequate levels of precision and accuracy for the analyses. While minor non-conformities of some aspects of the QA/QC program were observed, analytical and quality control protocols were considered satisfactory and the data were reliable for the purpose of assessing the contamination status of the site.

The auditor's review of the quality assurance/quality control measures employed by ERM, and the laboratories identified there was adequate information for the purpose of characterising the AA1.

The auditor notes that ERM provided tables that summarised all laboratory results. The reported concentrations of contaminants were reviewed by the auditor and found to be consistent with those presented in the laboratory reports.

Exceedances were highlighted for each medium analysed and SSTLs or adopted criteria were included in tables.

The site plans provided by the ERM were to scale and adequately identified the sampling locations per depth (when applicable) relevant to the main site features such as former buildings, remaining drainages, boundaries, and roads.

The auditor noted that the reports relevant to AA1 were standalone reports, presenting sufficient information for the understanding of the site conditions leading to the preparation of the AA1 SSR. As such, it is the auditor's opinion that the reports reviewed as part of this site audit met the key requirements of the NSW EPA Consultant Guidelines and ASC NEPM.

5. Stage 1 Biopile validation

As reported by ERM, remediation and validation of the Stage 1 Area was completed toward the end of 2020 (reported within the Stage 1 Validation report). Excavated hydrocarbon impacted soils earmarked for remediation were removed from AEC-9 (as shown in Figure F3 in **Appendix A-3**) and stockpiled in Stage 2 for biopiling (SP75, SP76 and SP77). The stockpiles' locations are shown in Figure 4 in **Appendix A-3**.

ERM reported that the objective of the biopiling works were to:

– Complete the biopiling remediation process to limit or eliminate (where possible) adverse effects to human health or ecological receptors.
– Demonstrate that the remediated stockpiles SP75, SP76 and SP77 would be suitable for site re-use as backfill material within the Western Area for ongoing commercial/industrial land use.
– Mitigate potential human health risks to future owners of the Western Area to the extent practicable.

5.1 Biopiles COPC

ERM reported that the driver for remediation of AEC-9 within the Stage 1 Area was the potential for indoor vapour inhalation by future on site commercial workers from hydrocarbon impacted soil and residual LNAPL trapped within shallow fill. The COPC subject to bioremediation included:

– TRH C_8-C_{12} Aliphatic Fractions
– TRH C_8-C_{12} Aromatic Fractions
– TRH C_{10}-C_{16} Aromatic Fractions

5.2 Biopile Construction

ERM reported that a biopile treatment pad at a nominal thickness of 200 mm, was constructed in the former Tank Farm A1 Area using imported (and compacted) clay VENM.

ERM noted that locating the biopiling within Tank Farm 1 was a deviation from Tank Farm A2 as nominated within the Stage 1 Detailed RAP. Tank farm A1 was determined to be a more appropriate location as Tank Farm A2 was subject to surface water inundation and it was situated further from the excavation area (AEC-9).

The location of the biopile treatment area is shown on Figure F4 in **Appendix A-3**.

5.3 Segregation and Management of Biopiles

ERM reported that the soil material segregation process was completed as follows:

– Contaminated soil stockpiles SP69, SP70, SP71 and SP74 were fed through the powerscreen to condition the soils for biopiling, remove oversized materials which can inhibit airflow and biodegradation of petroleum hydrocarbons within biopiles.
– Screened fill materials for biopiling (<50 mm) were added to Stockpile SP72.
– Oversized, predominantly clay materials (>50 mm) which could not be practically broken down were added to stockpile SP73.
– Upon completion of sampling on 17 November 2020, soil stockpile materials unable to be screened to <50 mm (SP73) or deemed not to be contaminated enough to warrant biopiling (PID

headspace screening <100 ppm) were characterised for suitability for on-site re-use. These materials were segregated from ongoing screening process.

– Additional oversized materials (SP73a) generated from the screening completed between 18 and 26 November 2020 (355 m^3) were deemed to require biopiling based on visible staining, the presence of LNAPL and odour.
– Screened stockpiled soil materials (SP72) were selected for biopiling based on field PID screening results >100 ppm indicating the presence of volatile contaminants.

5.4 Biopiling Operation

ERM reported that following completion of screening, material from Stockpile SP72 (1,515 m^3) and SP73 (355 m^3) were transported from the Stage 1 Area to the biopile treatment area in Tank Farm A1, as per the approach outlined in the Stage 1 RAP. The three 'biopiles' were named SP75, SP76 and SP77.

Rows of perforated polyvinyl chloride (PVC) pipe wrapped in geofabric were laid within stockpiles and connected via pipework and a series of valves to a Soil Vapour Extraction (SVE) System, which drew air from the soil within the biopiles through vessels of granular activated carbon prior to discharge of treated air in accordance with an Environment Protection Licence (EPL) 570. This process stripped volatile chemicals (BTEX compounds) from the soils and encouraged aerobic biodegradation of hydrocarbons in soils.

The remediation contractor (EPS) operated the SVE System for seven weeks from 14 December 2020 to 12 February 2021. ERM noted a two-week shutdown of the SVE System from 23 December 2020 to 11 January 2021.

Throughout operation of the SVE System, air monitoring for volatile chemicals was undertaken in accordance with the conditions of EPL 570. Weekly reporting demonstrated no non-compliances with EPL conditions throughout this period. ***Figures 4*** to ***7*** below illustrate the biopiles during the site audit undertaken on 4 November 2021 – this was the same process as used for materials from AEC-9.



Figure 4 ***Stockpile operation and SVE system***



Figure 5 *Detail of screened stockpile material*



Figure 6 *SVE system*



Figure 7 *Boundary between biopiles (Stage 2 Area) and Stage 1 Area (Downer)*

5.5 Wastewater Management

ERM reported that during biopiling works, no dewatering or disposal of wastewater was required. Likewise, no leachate was generated from the biopiles during remedial works and stockpiles were covered, and no moisture was added to stockpiles.

5.6 Biopile Monitoring

As stated by ERM, applicable monitoring requirements as per the Stage 2 Remediation Environmental Management Plan (REMP) and associated sub-plans were completed as per ***Table 8*****.**

Table 8 *Biopile monitoring summary*

Monitoring requirement	Description	Discussion
Ambient Air, Dust and Odour Monitoring	Daily ambient air, dust and odour monitoring during remediation works to assess the effectiveness of the implemented management measures and the potential need for increased management measures.	Reported weekly to the NSW EPA under condition R.1 of EPL 570. No exceedances of action limits for VOCs, or performance criteria for dust or odours were noted.

During treatment of biopiles, SVE System monitoring was undertaken daily on weekdays, in accordance with EPL requirements. During this time, the SVE treatment System operated with effective control of VOC for the duration of the biopiling operations.

A summary of the SVE inlet and EPL discharge monitoring results across the biopile treatment period is presented in ***Figure 8*** below extracted from the Biopile Validation report.

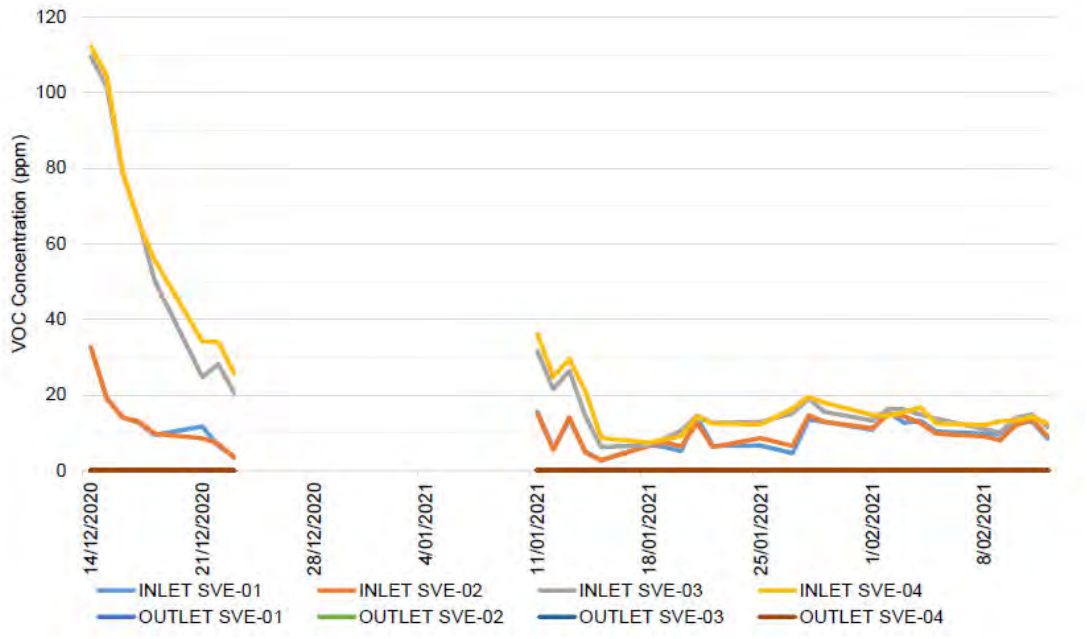


Figure 8 ***Summary of SVE System VOC concentration data***

5.7 Validation Strategy

A summary of the methodology adopted for the validation strategy of the biopiled material is presented in ***Table 9***.

Table 9 ***Biopile validation methodology***

Area / material	Remediation approach	Validation approach	Required analysis	Sampling density
Stockpiled excavated soils	Biopiling to treat soil materials for on-site beneficial re-use	Visual assessment of soil for the presence of LNAPL. Sampling of stockpiled soil to determine suitability for beneficial re-use or if further treatment is required.	BTEXN TRH C_6-C_{40}, TRH Speciation (depending on PID measurements and TRH C_6-C_{40} results)	A minimum number of samples for 95% UCL mean calculation

A summary of the validation sampling program is presented in ***Table 10***.

Table 10 ***Summary of stockpiles and validation sampling program***

Stockpile ID	Source of material	Volume (m^3)	Samples	Highest PID measurement (ppm v)	Material description
SP75	AEC-9 excavated soils (SP72 and SP73)	1,003	10	27.6	Brown sandy silt with gravels

Stockpile ID	Source of material	Volume (m^3)	Samples	Highest PID measurement (ppm v)	Material description
SP76	AEC-9 excavated soils (SP72 and SP73)	944	10	31.3	Brown silty sand with gravels
SP77	AEC-9 excavated soils (SP72)	472	10	3.1	Brown silty sand with gravels

ERM reported that 30 primary soil samples were sent to Eurofins for analysis of the CoPC. It was noted by ERM that analysis of TRH Speciation was not undertaken on samples as listed in ***Table 9***.

Laboratory analytical results for all tested COPC were less than the SSTLs or NEPM HSLs. A summary of the laboratory analyses undertaken for the stockpiles is included in **Appendix C-3**.

Based on the field observations and analytical results of the validation sampling of bioremediated stockpiles SP75, SP76 and SP77, ERM deemed that all three stockpiles were suitable for on-site re-use based on a commercial/industrial land use.

5.8 Auditor Discussion – Biopiles validation

The auditor noted that during treatment of biopiles, monitoring of the SVE system was completed daily during weekdays as per the EPL requirements. The auditor considered that operation of the SVE treatment system effectively controlled generation of volatile compounds for the duration of the biopiling operations and prevented fugitive emissions and breakthrough of contaminants.

The auditor considered that the biopiling remediation process adhered to the applicable regulatory requirements to limit (where possible) adverse effects to human health or ecological receptors.

It is the auditor's understanding that following relocation of stockpiles SP75, SP76 and SP77, the resultant footprints will be sampled in accordance with the approach outlined in the Stage 2 RAP with the results to be discussed within the Stage 2 validation report, following completion of Stage 2 remedial activities. Validation of the suitability of imported VENM for the construction of the biopiling pad is also to be included within the Stage 2 validation report.

Based on the comprehensive QA/QC assessment provided by ERM, the auditor considered that the stockpile characterisation datasets were suitable in demonstrating that remediation of the stockpiles had been successful. Stockpiles SP75, SP76 and SP77 were suitable for beneficial use within the WARP site for commercial/industrial land use.

6. Stage 1 Material reuse

Following completion of the valuation of remedial works and implementation of an LTEMP (as documented in Site Audit Report issued by Andrew Kohlrusch on 18 February 2021 *Viva Energy Clyde Western Area Remediation Project – Stage 1 Remedial and Validation* Works) Downer commenced earthworks on the Stage 1 area. In a letter of 8 November 2021, ERM compiled and reviewed soil classification and material tracking documentation for soil transported between the Stage 1 Area to AA1 – as shown on Figures F1 and F2 in **Appendix A-4**.

The earthworks conducted in the Stage 1 area were related to the redevelopment of Stage 1 area by Downer. Robson Civil Projects Pty Ltd (Robson) was engaged to sample excavated soil from the former pipe track areas due to it being geotechnical unsuitable for its intended use. This material was excavated and transported to AA1.

The sampling and characterisation were completed by Compaction & Soil Testing Services Pty Ltd (CSTS).

As a precaution (given the requirements of the Stage 1 LTEMP), ERM considered that sampling and classification was necessary to monitor unexpected finds within fill and facilitate segregation of material identified as not suitable for reuse.

6.1 Field and sampling methodology

ERM stated in the Stockpile SP90 letter, that prior to removal of the SP90 from the Stage 1 Area, material was assessed as per the below methodology:

– Test pit locations within proposed or potential areas to be excavated.
– Test pit samples checked for the presented of asbestos or residual hydrocarbons impacts, such as odours or staining.
– For fil material gravimetric quantification of ACM, as per the Schedule B2 of ASC NEPM.
– For the proposed re-used material, laboratory analysis of Asbestos (ASC NEPM quantification% w/W), benzene and TRH C_6-C_{34}.

6.2 Sampling and Results

ERM reported that 52 samples were collected from a total of 8,340 m^3 of soils, equating to a sampling rate of one sample per 160 m^3 of predominantly clay materials.

The analytical results are presented in **Appendix C-4**. The sampling detailed for each of the stockpiles of material from Stage 1 Area was as follows:

6.2.1 Stockpile AA

A total of 20 soil samples in-situ (TP1 to TP20) were collected for 2,100 m^3.

Benzene, TRH C_6 -C_{10} and TRH F1 concentrations were reported below LOR for all 20 samples.

TRH C_{16}-C_{34} concentrations ranged from below LOR to a maximum of 450 mg/kg (TP18). However, all TRH C_{16}-C_{34} concentrations when detected were below to the SSTLs for the WARP.

Asbestos was not detected in any sample.

The stockpile AA sampling location is showing in ***Figure 9*** (extracted from CSTS).



Figure 9 Stockpile AA soil sampling plan (extracted from CSTS)

6.2.2 Stockpile AB

A total of eight soil samples in-situ (TP1 to TP8) were collected from Stockpile 1 (900 m^3).

Benzene, TRH C_6 -C_{10} and TRH F1 concentrations were reported below LOR for all eight samples.

TRH C_{16}-C_{34} concentrations ranged from below LOR to a maximum of 460 mg/kg (TP4). However, all TRH C_{16}-C_{34} concentrations when detected were below to the SSTLs for the WARP.

Asbestos was not detected in any sample.

The stockpile AB sampling location is showing in ***Figure 10*** (extracted from CSTS).



Figure 10 Stockpile AB sampling location (extracted from CSTS)

6.2.3 Stockpile AC

A total of four soil samples in-situ (TP1 to TP4) were collected from Stockpile 2 (500 m^3).

Benzene, TRH C_6-C_{10} and TRH F1 concentrations when detected were reported below LOR for all four samples.

TRH C_{16}-C_{34} concentrations ranged from below LOR to a maximum of 260 mg/kg (TP2). However, all TRH C_{16}-C_{34} concentrations when detected were below to the SSTLs for the WARP.

Asbestos was not detected in any sample.

The stockpile AC sampling location is showing in ***Figure 11*** (extracted from CSTS).



Figure 11 ***Stockpile AC sampling location (extracted from CSTS)***

6.2.4 Stockpile AD

A total of four soil samples in-situ (TP1 to TP4) were collected from Stockpile 3 (400 m^3).

Benzene, TRH C_6-C_{10} and TRH F1 concentrations were reported below LOR for all four samples.

TRH C_{16}-C_{34} concentrations ranged from below LOR to a maximum of 640 mg/kg (TP3). However, all TRH C_{16}-C_{34} concentrations when detected were below to the SSTLs for the WARP.

Asbestos was not detected in any sample.

The stockpile AD sampling location is showing in ***Figure 12*** (extracted from CSTS).



Figure 12 ***Stockpile AD sampling location (extracted from CSTS)***

6.2.5 Stockpile AE

A total of four soil samples in-situ (TP1 to TP4) were collected from Stockpile 4 (300 m^3).

Benzene, TRH C_6-C_{10} and TRH F1 concentrations were reported below LOR for all four samples.

TRH C_{16}-C_{34} concentrations ranged from below LOR to a maximum of 440 mg/kg (TP2). However, all TRH C_{16}-C_{34} concentrations when detected were below to the SSTLs for the WARP.

Asbestos was not detected in any sample.

The stockpile AE sampling location is showing in ***Figure 13*** (extracted from CSTS).

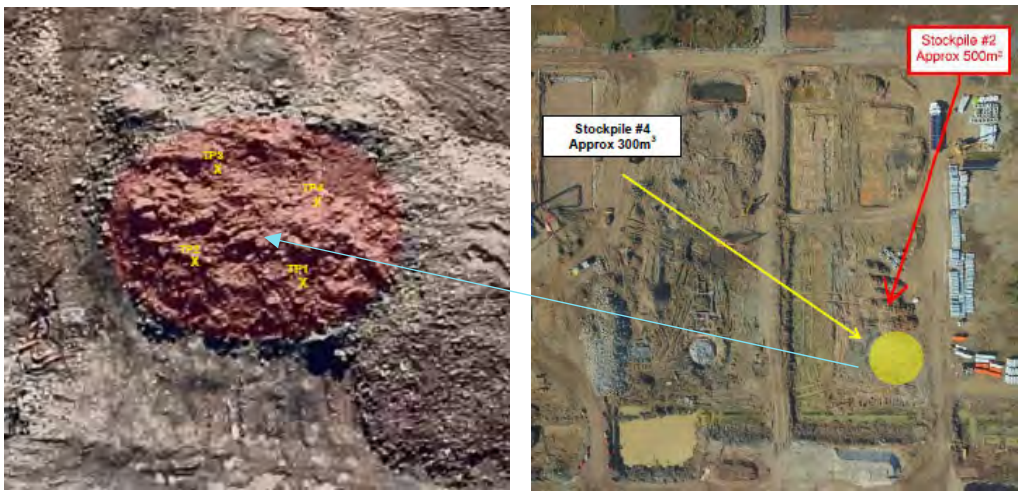


Figure 13 Stockpile AE sampling location (extracted from CSTS)

6.2.6 Stockpile AF

A total of 12 soil samples in-situ (TP1 to TP12) were collected from Stockpile AF (2,700 m^3).

Benzene, TRH C_6-C_{10} and TRH F1 concentrations were reported below LOR for all 12 samples.

TRH C_{16}-C_{34} concentrations ranged from below LOR to a maximum of 190 mg/kg (TP5). However, all TRH C_{16}-C_{34} concentrations when detected were below to the SSTLs for the WARP.

Asbestos was not detected in any sample.

The stockpile AF sampling location is showing in ***Figure 14*** (extracted from CSTS).



Figure 14 Stockpile AF sampling location (extracted from CSTS)

6.2.7 Conclusion

Based on the above, ERM concluded that the approximately 8,340 m^3 of material was considered by ERM suitable for reuse within Stage 2 Area.

6.3 Material Tracking

The material transported from Stage 1 area was consolidated into one stockpile on Stage 2, namely SP90. ERM stated in the SP90 letter that 599 large truckloads (average 10.85 m^3 per load) and 1,253 smaller truckloads (average 5.66 m^3 per load).

Based on the number of truckloads and the average assumed volume per load, the total volume of soil imported to AA1 from Stage 1 was approximately 13,591 m^3, which is consistent with the resultant stockpile surveyed volume of 13,595 m^3.

ERM reported that the surveyed volume is larger than the 8,340 m^3 characterised within reports prepared by CSTS, potentially due to the following factors:

– Approximations in truck load capacities.
– Approximation of the applied bulking factor of 1.3.
– Over-excavation conducted beyond specified depths within in-situ classified areas.

6.4 Auditor discussion – Stage 1 Material reuse

The auditor considered that soils in SP90, sourced from Stage 1 Area earthworks conducted for the redevelopment purposes are suitable for reuse within Stage 2 Area during future redevelopment works.

The material tracking documentation included in ERM's letter provided an appropriate reconciliation of volumes transported from Stage 1 Area to Stage 2 Area.

7. Data quality objectives

ERM documented in the AA1 Validation report that the DQOs (regarding the Validation program) were developed using the guidance in Schedule B(2) of the ASC as summarised in ***Table 11***.

Table 11 ***Data quality evaluation***

Step	Action	Details
Step 1	State the Problem	ERM stated that the remediation objectives were: – To remediate soil within AA1 to enable the land to be used for commercial/ industrial purposes. – To ensure any approved remediation process that is implemented adheres to all applicable regulatory requirements . – To achieve the objectives a soil validation plan was prepared, to assess the remedial works to be conducted within Lot-51 (AEC-1) and footprint of SP29 within Lot 54 (AEC-3).
Step 2	Identify the Decision/Goal of the study	Based on the remediation objectives, the following decisions were to be made: – Has the AEC-1 asbestos hotspot been removed and validated to meet remediation criteria? – Has the SP29 asbestos stockpile been disposed off-site appropriately, and its footprint validated to meet remediation criteria? – Is imported material utilised for backfill suitable for its intended purpose?
Step 3	Identify information inputs	The data necessary to answer the primary study questions identified in Step 2 were as follows: – Historical results. – Field observations made during remediation works for odours, LNAPL, sheens, discoloration, asbestos and other indicators of potential contamination. – Characterisation of the area of interest via visual screening and sampling of soil from excavations and stockpile footprints and subsequent field testing and/or laboratory analysis of selected samples. – Adoption of appropriate assessment criteria. – Evaluation of data quality by assessment of QA/QC.
Step 4	Define boundaries of the study	– Spatial: AA1 as shown in Figure F2 in Appendix A-1. – Temporal: Historical investigation completed until March 2021 (approximately 29 years). – Vertical: Is the depth of groundwater within AA1 (around 2 mbgl).
Step 5	Decision rules	The decision rules outlined by ERM in the AA1 Validation report are as follows: – Has the AEC-1 asbestos hotspot been removed and validated to meet remediation criteria? – Has the SP29 asbestos stockpile been disposed off-site, and its footprint validated to meet remediation criteria? – Is imported fill material suitable for its intended purpose?
Step 6	Specify the performance or acceptance criteria	ERM reported that the data quality assessment should be based on the following: The acceptable limits on decision errors applied during the review of the results will be based on the Data Quality Indicators (DQIs) of precision, accuracy, representativeness, comparability and completeness (PARCC) in

Step	Action	Details
		accordance with the ASC NEPM Schedule B(3) - Guidelines on Laboratory Analysis. ERM considered that the potential for significant decision errors will be minimised by: – Completing a robust QA/QC assessment of the assessment data and application of the probability that 95% of data will satisfy the DQIs, therefore a limit on the decision error would be 5% that a conclusive statement may be incorrect. – Assessing whether appropriate sampling and analytical density (both laterally and vertically throughout the fill and soil profiles) has been achieved for the purposes of meeting the project objectives; and – Ensuring that the criteria set was appropriate for continuing use consistent with current and proposed usage under the IN3 – Heavy Industrial zoning.
Step 7	Optimise the design for obtaining data	ERM reported that the DQOs were developed based on a review of existing data and discussions with relevant project. If data gathered during the remediation and validation program indicated that the objectives of the remediation were not being met, the sampling design would need to be adjusted accordingly.

7.1 Auditor Discussion – Data quality objectives

The auditor considered that the DQOs presented by ERM for the validation program were appropriate for the purposes of collecting data of acceptable quality to validate the AA1 for its proposed commercial/industrial land use.

The auditor noted that the DQOs in the Validation report were consistent with those presented in the Stage 2 RAP.

8. Remedial action plan

The Stage 2 RAP detailed the nature and approximate extent of identified soil contamination, the extent of remediation required, feasible remediation strategies to address the identified contamination, the selected remediation strategy, environmental management requirements and health and safety considerations.

The Stage 2 RAP was reviewed and endorsed by the Site Auditor and issued in JAugust 2021 the SAS No. 065-2127799.

A summary of the selected remedial methodologies outlined in the RAP is presented below.

8.1 AA1 Requiring Remediation

The CoPC within AA1 exceeding the nominated remediation criteria are discussed below. The location of impacts prior to remediation is shown on Figure F3 in **Appendix A-1**.

– Lot 51 (AEC-1) – Asbestos (ACM>7 mm) that exceeded the ASC NEPM HSL D around TP19/01 at 0.1 mbgl.
– Lot 54 (SP29) – stockpile containing asbestos was deemed unsuitable for on-site reuse and required excavation and off-site disposal.

ERM reported that no soil vapour or groundwater SSTLs exceedances had been reported within AA1 and therefore no remediation of these media was required.

8.2 AA1 Requiring Management

Within AA1, where residual hydrocarbon impacts (LNAPL or shallow soil impacts) were identified at concentrations below SSTLs for vapour risk, but exceeding TRH management limits, active remediation was not proposed. This decision was based on the isolated nature of these exceedances and the low potential for these areas of the site to act as an ongoing source of impacts to groundwater. These soil impacts were constrained to the following areas:

– Lot 53 – SB11B and SB13B.
– Lot 54 – HA19/04, HA19/07, SB18/12 and BH12/35.
– Lot 55 – SB18/13, HA19/05, HA19/06, HA19/09, BH12/29, BH12/33 and BH12/34.

The location of these impacts is presented in Figure F7 from in **Appendix A-1**.

8.3 Auditor Discussion – RAP

The auditor considered that ERM had provided sufficient lines of evidence that risks of exposure to the residual hydrocarbons were acceptable including there was no evidence that soil vapours could be generated, there was no demonstration that LNAPL in soils or groundwater had migrated beyond the areas where it was found and the LTEMP had appropriately identified the locations of these areas and the protocols that should be implemented to manage these materials if encountered during development works.

9. Remediation criteria

9.1 Petroleum Hydrocarbons

ERM presented in the AA1 Validation report that SSTLs developed for soil and soil vapour were appropriate for consideration as remediation assessment criteria. The following risk based SSTLs for vapour inhalation and direct contact were developed:

– Direct Contact SSTLs for commercial/industrial land use, construction works and intrusive maintenance workers.
– Vapour Intrusion SSTLs for commercial/industrial land use (specified by depth of impact), construction works and intrusive maintenance workers.

ERM adopted published criteria for site validation that included:

– ASC NEPM – HIL D (commercial/industrial) land uses.
– ASC NEPM Management Limits for petroleum hydrocarbons in soils.

Remediation criteria and on-site re-use soil criteria are presented in **Appendix C-1**.

9.2 Asbestos

Within AEC-1 (Lot 51) and SP29 (Lot 54) the remedial approach was excavation and off-site disposal. Therefore, the remediation criteria for stockpile footprints, excavation bases and walls within asbestos impacted remediation areas was the NEPM HSL-D for asbestos management.

9.3 Off-Site Disposal Criteria

ERM reported in the AA1 Validation report that characterisation of excavated materials disposed off-site was undertaken in accordance with the protocols listed in NSW EPA (2014) *Waste Classification Guidelines: Part 1: Classifying Waste* ('the Waste Classification Guidelines').

9.4 Beneficial On-Site Reuse Criteria

At the time that this SAR was prepared the biopiling was underway within Stage 2 but not within AA1. Once soils have been treated by biopiling reuse will be based on the following:

– Soil SSTLs (Direct Contact) for commercial workers, construction workers and intrusive maintenance workers. Soil SSTLs (Vapour Intrusion) for commercial workers, construction workers and intrusive maintenance workers.

9.5 Auditor Discussion – Remediation criteria

The auditor noted that the criteria adopted by ERM allowed an appropriate assessment of risks to the on-site receptors of AA1 to be made. Given the nature of the land use of Stage 2 Area (industrial), largely covered in hardstand surface, ERM did not consider there to be potential exposure risks to on-site ecological receptors. The auditor agreed with this evaluation and that no remediation of groundwater was necessary.

The auditor considered that the AA1 validation report nominated appropriate target levels based on Schedule B1 and B7 of the ASC NEPM and considered the land use scenarios/activities during and after remediation.

10. Implementation of RAP and validation program

10.1 Remedial Methodology

ERM stated in the AA1 Validation report that the following remediation methods were implemented within AA1:

– Lot 51 (AEC-1) and Lot 54 (SP29): Excavation and off-site disposal of asbestos contaminated soils.
– Lots 52, 53 and 55 (AEC-11 and AEC-15): On-site management of residual hydrocarbons (aesthetic issues) via a passive LTEMP. ERM noted in the AA1 Validation report that LNAPL and TRH management limit exceedances in -Lots 52, 53 and 55 (AEC-11 and AEC-15) did not require remediation as there were no exceedances of risk-based SSTLs.

10.1.1 Lot 51 (AEC-1)

The extent of impacts requiring remediation (as estimated within the Stage 2 RAP) are shown on Figure F3 in **Appendix A-1.** Details of the vertical and lateral extent of remediation undertaken are presented in ***Table 12***.

Table 12 Estimated and completed remediation excavations

Excavation	Area (m^2)	Remediation depth [6] (mbgl)	In-Situ soil remediation volume (m^3)
Stage 2 RAP – Lot 51 (estimated)	113	0.2	23
Lot 51 (final dimensions)	122	0.35	35

10.1.2 Lot 54 (Stockpile 29)

ERM documented in the AA1 Validation report that SP29 had an estimated volume of approximately 55 m^3 and comprised silty brown clay, gravel, concrete, brick, slag fragments. Bonded asbestos found within the stockpile earmarked it for off-site disposal.

SP29 had been sampled and classified as General Solid Waste, Special Waste (Asbestos Waste) as per the NSW EPA (2014) Waste Classification Guidelines.

Following removal, a surface clearance of the footprint of SP29 was undertaken as per the Stage 2 RAP, confirming that no residual asbestos contamination remains.

10.2 Residual Drainage Network

As detailed by ERM in the Stage 2 Drainage Decommissioning Validation Report, the former COC and AOC drainage network remains in-situ within Lots 53, 54 and 55 and the proposed road alignment following decontamination and decommissioning activities.

Clean water drainage lines only (i.e. council stormwater drains) are present only in Lots 51 and 52 and do not represent a source of potential hydrocarbons. ERM stated that an overview of pipework

[6] Average depth of 0.35 metres based on surveyed excavation depth.

containing residual hydrocarbons within the broader Stage 2 Area following completion of decommissioning works is provided as Figure F4 in **Appendix A-1**.

The following conditions are noted by ERM to be present post drainage decommissioning within AA1:

– Sections of previous AOC and COC drainage were flushed to remove residual hydrocarbons within pipes and pits. ERM stated that no significant residual hydrocarbon material remained following cleaning of pipework situated in AA1.
– Gas testing of pipes and pits did not identify residual gas accumulation above relevant health and safety standards following cleaning.
– No compromised pipework was identified during pipe cleaning works within AA1.
– Pits have been filled with stabilised sand or aggregate to prevent lateral migration of residual sludges from other portions of the Stage 2 Area.
– The drainage network has been isolated from the Clyde Terminal wastewater treatment plant and cannot be re-commissioned for future use.

Based on these aspects, ERM concluded that specific management of residual conditions or risks of contaminant exposure associated with the decommissioned drainage network within AA1 are not necessary.

10.3 Wastewater Management

As stated by ERM in the Stage 2 RAP and in the AA1 Validation report, given the maximum depth of the excavation for active remedial works within AA1, no dewatering or disposal of wastewater from remediation activities was necessary.

10.4 Compliance Monitoring

ERM reported that applicable monitoring requirements as per the Stage 2 Remediation Environmental Management Plan (REMP) (AECOM, 2020) and associated sub-plans were completed as follows:

– Remediation of Lot 51 (AEC-1) – Daily airborne asbestos and dust monitoring during remediation works to assess the effectiveness of the implemented management measures and the potential need for increased management measures.

ERM documented in the AA1 Validation report that no exceedances of action limits for asbestos, or performance criteria for dust were noted during excavation of AEC-1 in Lot 51.

10.5 Remediation Validation Program

ERM stated that overall the validation program was completed in accordance with the approved Stage 2 RAP. The program presented in the Stage RAP 2, followed by the sampling program completed within Lots 51 and 54 and deviations (if any) is summarised in ***Table 13***. A summary of the analytical results is presented in **Appendix C-1**.

Table 13 Validation program strategy

Contamination /Area	Validation approach	Required analysis	Excavation extent	Required sampling frequency	Actual sampling frequency	Frequency compliance with the Stage 2 RAP	Number of samples collected	Asbestos quantification/analytical results
Asbestos/Lot 51	Visual assessment of excavation surface and walls for the presence of ACM. Field sieving (to 7 mm) of 10 L samples for gravimetric assessment and calculation of % ACM. Documentation of condition of ACM. Based on the existing dataset, asbestos is expected to be present in the form of bonded ACM. However, should ACM be identified as degraded with potential for AF/FA, collection of a 500 g sample of sieved soil material will be required for quantification of asbestos fines.	Confirmatory laboratory analysis (asbestos ID) of suspected ACM (if identified). If potential for asbestos fines identified: Laboratory quantification for asbestos fines/fibrous asbestos (%).	122 m^2	1 sample / 100 m^2	1 sample / 122 m^2	Overall, yes. The frequency of wall and base validation sampling was less than forecast in the Stage 2 RAP. However, as noted by ERM this was not considered to impact the asbestos validation status of AEC-1 given previous in-situ sampling surrounding the AEC-1 hotspot (TP21/01, TP21/02, TP21/03 and TP21/04), providing a delineation of asbestos exceedances of site criteria along the alignment of the excavation wall.	Base: one Walls: four	Each sample location was subject to gravimetric sieving, as per the Stage 2 RAP. No ACM was identified within material retained above the sieve (>7 mm). Laboratory analysis of asbestos reported concentrations below adopted assessment criteria outlined in **Section 9**. A copy of the results is presented in **Appendix C-1.**
Stockpile (SP29)/ Lot 54	Classification of soil in accordance with the NSW EPA (2014) Waste Classification Guidelines: Part 1: Classifying Waste and Disposal to an appropriately licensed facility.	Use of existing in-situ data, plus the following: BTEXN, TRH C6-C40, VOC, PAHs, Phenols, As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Cr^{6+}, PCBs and OCPs.	42 m	1 sample / 10 m	1 sample / 11 lineal metre	Yes.	Footprint: one	The sample was subject to gravimetric sieving as per the methodology outlined in The Stage 2 RAP. No ACM was identified within material retained above the sieve (>7 mm). Laboratory analysis of asbestos reported concentrations below adopted assessment criteria outlined in **Section 9**. A copy of the results is presented in **Appendix C-1.**

10.6 Field Observations – Lot 51

ERM reported that the AEC-1 excavation was advanced to an approximate average depth of 0.2 mbgl. The geology encountered during excavation was similar to observations made in previous investigations, including the following:

– Fill described as dark brown sandy clay reported to an average depth of 0.1 mbgl.
– Natural red/grey mottled clays to the vertical extent of the excavation (average depth of 0.2 m bgl). Natural clays were generally observed to have no evidence of impact (i.e. staining or odour).

ERM reported that an inspection of AEC-1 on 9 September 2021 following a rainfall event after remedial works had been completed identified potential ACM within the AEC-1 excavation.

Consequently, on 17 September 2021, surface tilling with a hand rake and surface picking of ACM was conducted on two passes, with a 90-degree direction change between each pass and using a grid pattern. The area was then visually cleared by a Licensed Asbestos Assessor on 20 September 2021 to confirm no visible ACM remained within the excavation. The location of validation samples is shown on Figure F6 in **Appendix A-1**.

Figures 15 and **16** extracted the AA1 Validation report are presented below.



Figure 15 *AEC-1 excavation of asbestos impacted soils*



Figure 16 AEC-1 following excavation and removal of asbestos impacted soils.

10.7 Field Observations – Lot 54

The SP29 footprint was observed to consist of fill materials described as dark brown sandy clay. The location of validation samples is shown on Figure F6 in **Appendix A-1.**

10.8 Asbestos Air Monitoring

ERM reported that during excavation and off-site removal of asbestos impacted soils in AEC-1 and SP29, airborne asbestos monitoring was undertaken at four locations surrounding the asbestos removal areas. All monitoring and analysis were conducted in accordance with the *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)].*

Asbestos air monitoring results were summarised as follows:

– The airborne asbestos fibre concentrations recorded for the sampling undertaken on 9 September 2021 were below the limit of detection for the method used. Therefore, asbestos fibres are routinely reported as <0.01 fibres per millilitre of air sampled.
– Monitoring results were acceptable and indicate that the workplace controls were adequate to mitigate the risk to those on-site personnel working outside the set exclusion zone or the nearby identified receptors.

The results of asbestos monitoring conducted during works is presented in **Appendix C-1**.

10.9 Validation of Imported Soil

ERM reported that an estimated volume of 64 tonnes of clay VENM was imported to the site for backfilling of the AEC-1 excavation. The VENM source was from Parramatta, 5-7 Charles Street & 116 Macquarie Street, Parramatta, NSW.

ERM reported that the balance of material imported and compacted (64 tonnes) is consistent with overall excavation volumes considering the bulk density of compacted clay materials (1.8 t/m^3 based on 35 m^3 of excavation filled).

10.10 Waste Management

ERM reported that the stockpile SP29 (Lot 54) and the AEC-1 (Lot 51) excavation stockpile were classified for off-site disposal, as outlined in the corresponding waste classification reports.

Reconciliation of waste volumes tracked from site to licenced waste management facility during the remediation is provided in ***Table 14***.

Table 14 Waste tracking summary

Area ID	Volume of waste (m3)	Classified tonnage (tonnes)[1]	Waste classification	Receiving facility	Mass of material received (tonnes)
AEC-1	57	~ 91.2	Special Waste (Asbestos) – as General Solid Waste	Glenfield Waste Services	Refer to total
SP29	55	~ 88.0	Special Waste (Asbestos) – as General Solid Waste	Glenfield Waste Services	Refer to total
Total	112	**179.2**	-	-	**144.56**

10.11 Ongoing Groundwater Monitoring

ERM reported that previous groundwater monitoring of the well network across the Western Area indicated stable to decreasing concentrations of TRH and BTEX in groundwater over time.

No human health and ecological risks from dissolved phase groundwater concentrations have been identified in AA1. Therefore, as discussed in the Stage 2 Groundwater Monitoring Program (GWMP), no ongoing groundwater monitoring requirements are required within AA1.

10.12 Auditor Discussion – RAP Implementation and validation program

The auditor considered that the number and locations of the samples collected during the validation sampling program was adequate in demonstrating the effectiveness of the remedial works. The samples from the walls and bases of excavations were collected in a manner consistent with standard industry practice and the approach listed in the Stage 2 RAP.

The selection of the soil analytical suite was suitable given that contamination was clearly linked to the historical use of the site and previous investigation results.

The auditor considered that impacted fill/soils within AA1 were remediated in accordance with the Stage 2 RAP. Residual hydrocarbons in soil that were demonstrated to not pose an unacceptable human health risk shall be managed in accordance with the LTEMP to allow the land to be used for commercial/ industrial uses.

The auditor noted during the site inspection conducted on 4 November 2021 that following remediation works, no ACM was observed within the AEC-1 excavation or the footprint of SP29.

Waste disposed off-site was classified as per the Waste Guidelines and tracked to ensure disposal to appropriate waste receiving facilities.

Based on the outcomes of validation activities undertaken by ERM, AA1, including Lots 51, 52, 53, 54, 55 and the adjoining portion of Proposed Roadway, the auditor considered that AA1 is suitable for ongoing commercial/industrial land use, subject to implementation of a legally enforceable LTEMP to manage the following residual impacts:

- Lots 53, 54, 55: Identification of areas of aesthetic impact in shallow soils for appropriate waste - and odour management during potential future excavations
- All of AA1: Preclusion of groundwater extraction for beneficial re-use on-site.
- All of AA1: Unexpected finds.

11. Evaluation of quality assurance and quality control

This section of the SAR provides an evaluation of the QA/QC procedures relevant to the validation program conducted by ERM with reference to ASC NEPM.

The field and laboratory QA/QC measures presented by ERM in its Validation report have been reviewed in accordance with the NSW EPA guidelines to gauge the integrity of the data set used to validate the site.

A copy of the auditor's assessment of QA/QC measures presented by ERM is provided within **Appendix D** of this SAR.

11.1 Auditor Discussion – Evaluation of QA/QC

The auditor considered that an adequate level of QA/QC has been adopted by ERM in the validation program.

Sample locations were appropriate to validate the effectiveness of the remedial excavations as well as characterise portions of the site that could not be accessed when the site was operational. A suitable number and type of samples were selected to characterise the unexpected finds.

The analyses of all soil samples (both as part of the validation of remedial excavations and the validation characterisation program) have been conducted by laboratories certified by the NATA, and the contaminants of concern has been previously identified at the Stage 2 Area.

The auditor considered that the data presented in the validation report was sufficiently precise, accurate, representative, complete and comparable.

The auditor considered that the overall quality of data and their presentation are of an adequate standard to support the conclusions that ERM met regarding the suitability of AA1.

12. Conceptual site model

Based on the outcomes of the HHERA and considering the most recent results from the assessments carried out in 2021, ERM updated the CSM for the AA1 as per discussion bellow.

12.1 Former Potential Sources and CoPc

ERM considered that the primary sources of soil and groundwater impacts formerly included the refinery processing infrastructure which has been decommissioned/removed from the Stage 2 Area.

Potential sources and assessed contaminants of concern considered prior of remediation were:

– Asbestos in Lot 51.
– Stockpile 29 in Lot 54.

Assessment of the presence of PFAS in soils and groundwater had been completed as part of ERM's (2018) preparation of the PFAS CSM and mass flux assessment. The results of this assessment indicated that concentrations of PFAS in soil leachate and groundwater in the WARP were not considered to represent a risk to on- and off-site receptors. Therefore, PFAS was not considered a CoPC for AA1. There was also no evidence in historical records that PFAS containing chemicals had been stored or used in AA1.

12.2 Extent of Residual Impacts

Following completion of the remedial works and validation program ERM reported that the residual petroleum hydrocarbons within soils assessed within AA1 are limited to LNAPL in shallow soil/fill and hydrocarbon concentrations exceeding NEPM management limits for commercial/industrial land use at specified locations, as shown Figure F7 in **Appendix A-1**.

The following key information was noted by ERM in the AA1 Validation report:

Groundwater beneficial use assumption

– Beneficial groundwater users (potable or non-potable) were not considered a potential receptor given the absence of registered extraction bores down gradient of the WARP, poor natural background quality of groundwater and likely low yields.

On-site ecological receptors assumptions

– Given the extensive coverage of the WARP in concrete hardstand and limited available on-site habitat, on-site ecological receptors were not considered further in the CSM. Given the proposed slab- on-grade commercial/industrial future land use, ecological on-site receptors were also not considered in the CSM under future development scenarios.

Off-site ecological receptors assumption

– The nearest off-site ecological receptor is the Duck River, bordering the Stage 2 Area to the south, and the Parramatta River, which adjoins the Duck River to the north-east. Due to the estuarine nature of these river systems and receipt of runoff from multiple industrial catchment areas, these Duck and Parramatta Rivers are consistent slightly to moderately disturbed marine ecosystem, as per the ANZG (2018) Guidance.

12.3 Source Pathway Receptor Linkages

Based on the Tier 2 assessment undertaken in the HHERA and subsequent investigations carried out in 2020 and 2021 the following source pathway receptor (SPR) linkages were considered by ERM to

be relevant to the specific AECs setting in AA1 and may constitute a risk to redevelopment works and future commercial/IMW receptors:

– Inhalation of asbestos fibres by future on site commercial workers, construction workers and intrusive maintenance workers from bonded asbestos fragments that may be identified during future excavation works or exposed at the ground surface.

Residual soil impacts and LNAPL which have been identified to not present a risk to human health are:

– Identification of areas of aesthetic impact (staining, sheen) for appropriate waste management, odour management during future excavations.
– Prevention of groundwater extraction on site.
– Unexpected finds.

ERM reported that while no potential human or ecological risks associated with LNAPL (in soil) were identified, management considerations under a LTEMP shall be to incorporate the identification of the location of identified LNAPL(in soil) for awareness of aesthetic impacts (soil staining, LNAPL) and management of odours during future earthworks.

12.4 Auditor discussion – Conceptual site model

The auditor noted that the identified impacts at the WARP were based on the findings of the prior site assessments and most recent studies undertaken, specifically the Stage 2 ESA.

The auditor considered that the list of potential contaminants was comprehensive noting the site location and history and results of numerous site investigations. Therefore, the auditor was satisfied that the CoPC identified were appropriate for the characterisation of AA1 and for identifying areas warranting remediation and/or management.

The auditor noted that as required by the Auditor Guidelines (Section 2.4.7), contamination by PFAS was considered as part of the audit. PFAS assessment had been undertaken by ERM in preparation of the PFAS CSM and mass flux assessment. The results of this assessment indicated that concentrations of PFAS in soil leachate and groundwater in the WARP were not considered to represent a risk to on- and off-site receptors. Therefore, PFAS was not considered a CoPC for AA1. There was also no evidence in historical records that PFAS containing chemicals had been stored or used in AA1.

It is the auditor's opinion that the refined CSM developed by ERM for AA1 was prepared in a manner consistent with the relevant guidelines considering site investigation and validation data, future site activities and the proximity and type of receptors.

The auditor acknowledged that the key exposure routes to residual contamination would only occur if the areas in which residual contamination are disturbed. The management of these areas is outlined in the LTEMP.

13. Long-term environmental management plan

13.1 Objectives of LTEMP

The objectives of the updated LTEMP are as follows:

– Summarise background environmental information conditions at the site, and provide a mechanism to inform the Land Custodian, workers and managers of the potential risks to human health and / or the environment arising from contact with residual soil contamination.
– Outline methods and procedures that will avoid and/or mitigate adverse effects on human health and/or the environment.
– Provide a methodology for the appropriate environmental management of excavation works that may encounter residual contaminated soil.
– Provide environmental requirements for the sourcing and placement of backfill material.
– Discuss safety measures / considerations for dealing with potentially contaminated soil
– Outline restrictions to potential future land uses.

13.2 Nature of the Residual Contamination

The LTEMP documented that following completion of soil remedial works within AA1 (Stage 2 Area), there may be residual contamination comprising:

– Hydrocarbon impacted soils - *limited to aesthetic considerations (presence of hydrocarbon staining and/or odours) which may be identified during future intrusive works*.
– Asbestos. *Following soil remediation works, asbestos has not been identified above criteria for the proposed land-use. However, given the long history of industrial land use and surrounding industries, the possibility of discovering isolated asbestos as an unexpected find during further intrusive excavations within the Management Area cannot be precluded*. This applies to all proposed Lots subject to this SAR.

The location and extent of residual contamination within AA1 is illustrated on Figure F2 in **Appendix A-5.**

13.3 LTEMP Enforceability

The LTEMP can be legally enforceable via conditions B10(a) and (b) of the Development Consent (State Significant Development 9302), as issued under Section 4.38 of the Environmental Planning and Assessment Act 1979 (the 'EP&A Act'), as outlined below:

– *B10. Upon completion of the Site Audit Statement and Site Audit Report, the Applicant must: (a) Implement the approved LTEMP (b) Provide evidence to the Planning Secretary that the LTEMP is listed on the relevant planning certificate for the land, issued under section 10.7 of the EP&A Act.*

Additionally, as required by condition B10 (b) of the Development Consent, Parramatta Council will be requested to add a notation to the planning certificate for the AA1 (Stage 2 Area) under section 10.7(5) of the EP&A Act that the property is subject to the LTEMP.

13.4 LTEMP Public Notification

Notification of the LTEMP will be placed on the Section 10.7(5) planning certificate. Parramatta Council was requested by email on 22/12/21 to place this notification on the planning certificate and acknowledged via return email on 23/12/21 that this request will be actioned.

13.5 Actions Required Under LTEMP

ERM reported in the LTEMP that based on the nature and extent of residual contamination identified within the AA1 Stage 2 Area, the following management controls are required:

– Non-Intrusive works – No management controls
– Intrusive Excavation Works – Implementation of environmental management controls as detailed in **Appendix C-5**.

13.6 Auditor discussion – LTEMP

The auditor considered that the LTEMP had been prepared in a manner consistent with relevant NSW EPA made or approved guidelines. The LTEMP appropriately identified the residual contamination and provided an adequate description of the objectives, scope of works, roles and responsibilities of parties involved in the implementation and management of the LTEMP.

The auditor concurred that management and mitigation measures associated with residual impacted soils are passive and can be easily managed based on the proposed future proposed commercial/industrial land use scenario.

The auditor noted that the LTEMP is enforceable through condition B10(a) of the Development Consent (State Significant Development 9302). Additionally, Parramatta Council acknowledged that the updated LTEMP will be noted on the planning certificate under section 10.7(5) of the EP&A Act as required by condition B10(b) of the Development Consent.

A copy of the LTEMP prepared by ERM is presented in **Appendix E**.

14. Other Considerations

14.1 Ecological Considerations

Based on the information in the historical reports, it has been adequately demonstrated that off-site migration of residual LNAPL in groundwater or dissolved phase petroleum hydrocarbons was not occurring at levels that could potentially cause risk to the identified environmental/ecological receptors. As previously discussed in the PFAS CSM and mass flux assessment prepared by ERM, testing results for PFAS in soil leachate and groundwater in the WARP were not considered to represent a risk to on- and off-site receptors.

14.2 Aesthetic Impacts

ERM included the TRH Management Limits as trigger levels for future site management considerations (aesthetics impacts). Residual aesthetic impacts will be managed via LTEMP, previously discussed in **Section 13**.

Asbestos from Lot 51 was removed, and an asbestos clearance certificate was presented in AA1 Validation report. The LTEMP acknowledged that given the age of the former buildings in AA1, the identification of ACM fragments cannot be discounted.

14.3 Chemical Mixtures

ERM did not specifically examine potential additive or synergistic effects of chemical mixtures in the AA1 Validation report. This was however evaluated as part of the human health risk assessment used to generate SSTLs.

14.4 Auditor Discussion – Other considerations

The auditor noted that the WARP was a petroleum refinery process area mostly covered in hardstand and it would not be expected that the presence, or protection, of ecological receptors would be relevant at such facilities. Additionally, the primary sources of contamination within the AA1 were aboveground. ERM also reported groundwater concentrations of CoPC generally less than adopted trigger levels for ecological receptors at delineation wells down gradient of AA1.

As noted by ERM, LNAPL is unlikely to be encountered during routine use of AA1 or subsurface maintenance activities. Odours or stained soils may be encountered in some areas of AA1 if excavations are undertaken, as discussed in the LTEMP (a copy is attached in **Appendix E**). The LTEMP provides appropriate notification of the locations of these areas and the steps that should be undertaken if such soils are encountered.

Although not specifically discussed in the AA1 Validation report, potential chemical mixtures are not relevant in relation to human health risks as these were assessed as part of the HHERA used to inform the scope of the remedial works.

15. Compliance with regulatory requirements

The auditor compared the information in all relevant reports prepared for AA1 to the requirements of NSW EPA made or endorsed guidelines. In evaluating the adequacy of the soil remedial and validation works and whether the site is suitable for ongoing commercial/industrial land use, the decision-making process for assessing urban redevelopment sites (Appendix A of the Auditor Guidelines) has been followed. In using this process, the auditor has considered the information presented earlier in the SAR. ***Table 15*** presents this assessment.

Table 15 Decision making process for assessing urban redevelopment sites

EPA's requirements	Auditor 's comments
All site assessment, remediation and validation reports follow the applicable guidelines.	The AA1 Validation report prepared by ERM contained the key elements required by the *Consultant Guidelines* for such reports.
Any aesthetic issues relating to soils have been adequately addressed.	The auditor noted that residual contaminated soils, if encountered, could have a hydrocarbon odour or be stained. However, exposure to odorous soils would only occur if there was an excavation. This situation is not likely to be encountered under general activities at the site and will otherwise be managed under the LTEMP discussed in **Section 13**.
Soils have been assessed against health-based investigation levels and potential migration of contamination from soils to groundwater has been considered.	Soil sampling data was compared to SSTLs (generated as per risk assessment guidelines listed in the NEPM) or NEPM Management Limits.
Groundwater (where relevant) has been assessed against health-based investigation levels and, if required, any potential impacts to buildings and structures from the presence of contaminants considered.	Groundwater monitoring was not conducted as part of the remediation and validation process. Previous data had demonstrated that there were no unacceptable health risks (or ecological risks) posed by the recorded concentrations of the CoPC.
Hazard ground gases (where relevant) have been assessed against relevant health-based investigation levels and screening values.	Hazardous ground gases associated with hydrocarbon contamination were assessed as part of the remedial planning and execution. No ground gases were identified requiring management.
Any issues relating to local area background soil concentrations that exceed relevant investigation levels have been adequately addressed in the site assessment reports.	Not applicable.
The impacts of chemical mixtures have been assessed.	Risks associated with chemical mixtures were not explicitly commented upon by ERM. However, the CoPC were assessed as part of the HHERA (used to identify site specific risks of exposure) which would have considered cumulative risks of exposure to all identified chemicals.
Any potential ecological risks have been assessed.	Ecological risks had previously been evaluated in the groundwater monitoring programs that had been completed leading up to the remedial works. No ecological risks were identified to the key receptor, i.e. Duck River to the south of the WARP. There are not expected to be any on-site ecological receptors given the future use of the site for industrial purposes.
Any evidence of, or potential for, migration of contaminants from the site has been appropriately addressed, including potential risks	The potential migration of contaminants has been assessed (principally via groundwater monitoring). The

EPA's requirements	Auditor 's comments
to off-site receptors, and reported to the site owner or occupier.	risks of exposure were demonstrated and are deemed to be low and acceptable.
The site management strategy (where relevant) is appropriate including post-remediation environmental plans.	Site management protocols were presented and discussed in **Section 13** of this SAR. The auditor considered that the LTEMP is suitable for the proposed industrial/commercial land uses and that there is appropriate public notification and legal enforceability.

16. Audit Conclusions

The objective of the remediation completed within the AA1 Stage 2 was to remove fill impacted by asbestos in Lot 51 and remove the stockpile SP29 in Lot 54 to enable the land to be used for commercial/industrial purposes. The active remediation was complemented by the protocols in the LTEMP for the identification and management of odorous and stained (hydrocarbon) soils and ACM fragments if found during future site earth works.

In the AA1 Validation Report, ERM concluded that:

– *remediated areas of A1 is* (sic) *considered suitable for commercial/industrial land use* and
– *Areas within AA1 identified within the Stage 2 RAP as being impacted with residual hydrocarbons at concentrations appropriate for in-situ management (as per the RAP) will be subject to implementation of a legally enforceable Long Term Environmental Management Plan (LTEMP)*

It is the auditor's opinion that based on the remedial and validation results discussed in this SAR, AA1 within Stage 2 Area is suitable for ongoing commercial/industrial land uses, subject to implementation of the LTEMP, a copy of which is presented in **Appendix E**.

This SAR also confirms, as required by condition B7 of the Development Consent, that:

– the remedial works approved under the Development Consent have been completed in accordance with the remediation objectives listed in the Stage 2 RAP; and
– potential risks to human health and the environment have been addressed in accordance with the objectives of the Stage 2 RAP.

17. Disclaimer

This SAR and accompanying SAS have been prepared in accordance with relevant provisions of the Contaminated Land Management Act 1997.

This Report:

– Has been prepared the auditor and his support team as indicated in the appropriate sections of this SAR ("GHD") for Viva Energy.
– May be used and relied on by Viva Energy.
– May be used by and provided to the NSW EPA and the relevant planning authority for the purpose of meeting statutory obligations in accordance with the relevant sections of the.
– May be provided to other third parties but such third parties use of or reliance on the SAR is at their sole risk, as this SAR must not be relied on by any person other than those listed above without the prior written consent of GHD.
– May only be used for the purpose as stated in **Section 1.2** of the SAR (and must not be used for any other purpose).

GHD and its servants, employees and officers (including the auditor) otherwise expressly disclaim responsibility to any person other than Viva Energy arising from or in connection with this SAR.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the SAR are excluded unless they are expressly stated to apply in this Report.

The services undertaken by the auditor, his team and GHD in connection with preparing this SAR:

– Were undertaken in accordance with current profession practice and by reference to relevant guidelines made or approved by the NSW EPA.
– The opinions, conclusions and any recommendations in this SAR are based on assumptions made by the auditor, his team and GHD when undertaking services and preparing the SAR ("Assumptions"), as specified throughout this SAR.
– GHD and the auditor expressly disclaim responsibility for any error in, or omission from, this SAR arising from or in connection with any of the Assumptions being incorrect.
– Subject to the paragraphs in this section of the SAR, the opinions, conclusions and any recommendations in this SAR are based on conditions encountered and information reviewed at the time of preparation of this SAR and are relevant until relevant legislations changes, at which time, GHD expressly disclaims responsibility for any error in, or omission from, this SAR arising from or in connection with those opinions, conclusions and any recommendations.

The auditor and GHD have prepared this SAR on the basis of information provided by Viva Energy and others who provided information to GHD (including Government authorities), which the auditor and GHD have not independently verified or checked ("Unverified Information") beyond the agreed scope of work.

The auditor and GHD expressly disclaim responsibility in connection with the Unverified Information, including (but not limited to) errors in, or omissions from, the SAR, which were caused or contributed to by errors in, or omissions from, the Unverified Information.

This SAR and SAS should be read in full, and no excerpts are taken to be representative of the findings of this SAR.

The opinions, conclusions and any recommendations in this SAR are based on information obtained from, and testing (if undertaken as specified in this SAR) undertaken at or in connection with SSR AA1.

Although reasonable care has been used to assess the extent to which the data collected from site is representative of the overall site condition and its beneficial uses, investigations undertaken in respect of this SAR are constrained by the particular conditions as discussed in this SAR.

Site conditions may change after the date of this SAR. The auditor and GHD expressly disclaim responsibility:

– Arising from, or in connection with, any change to the site conditions.
– To update this SAR if the site conditions change.

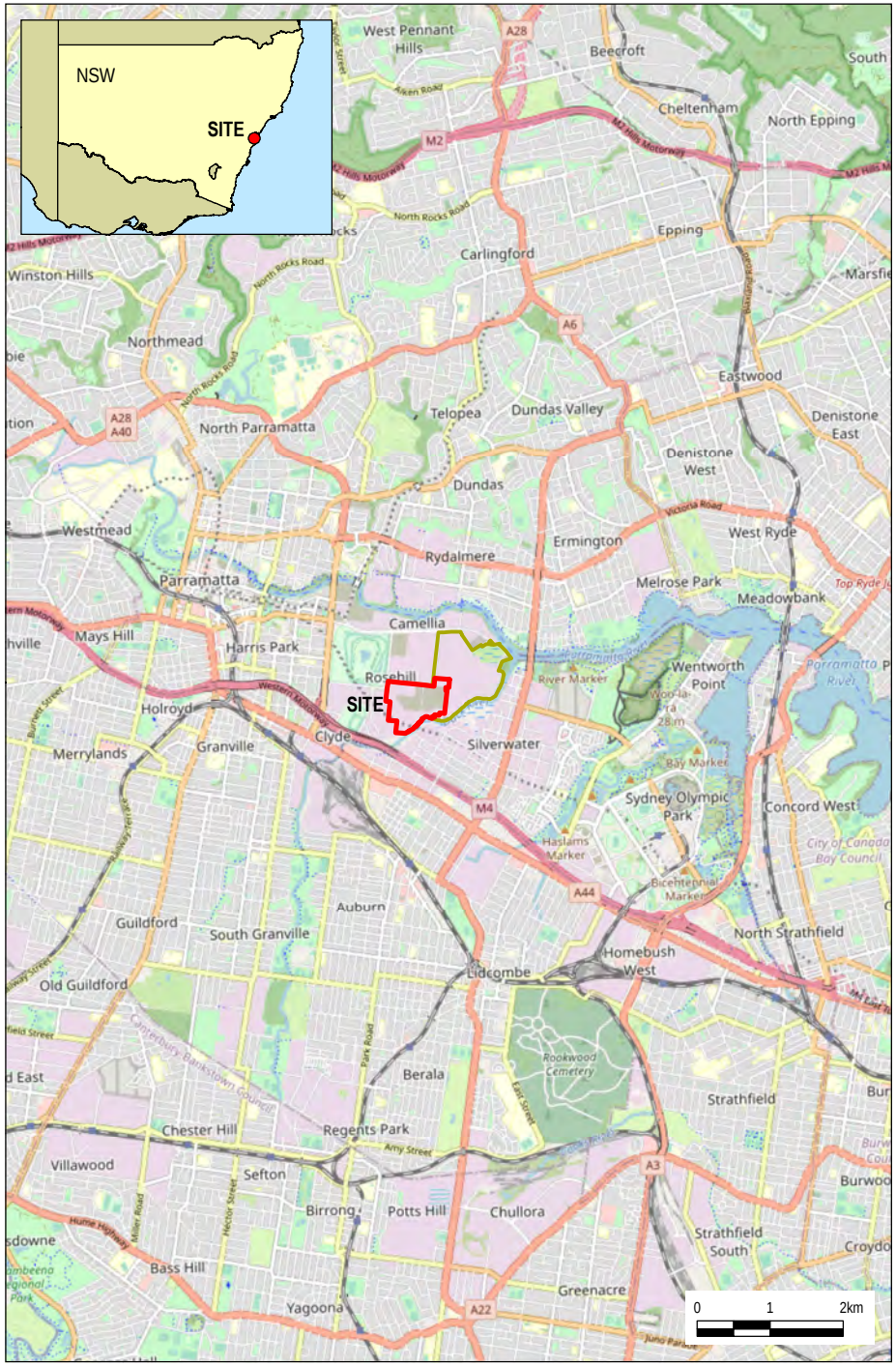
These Disclaimers should be read in conjunction with the entire SAR and no excerpts are taken to be representative of the findings of this SAR.

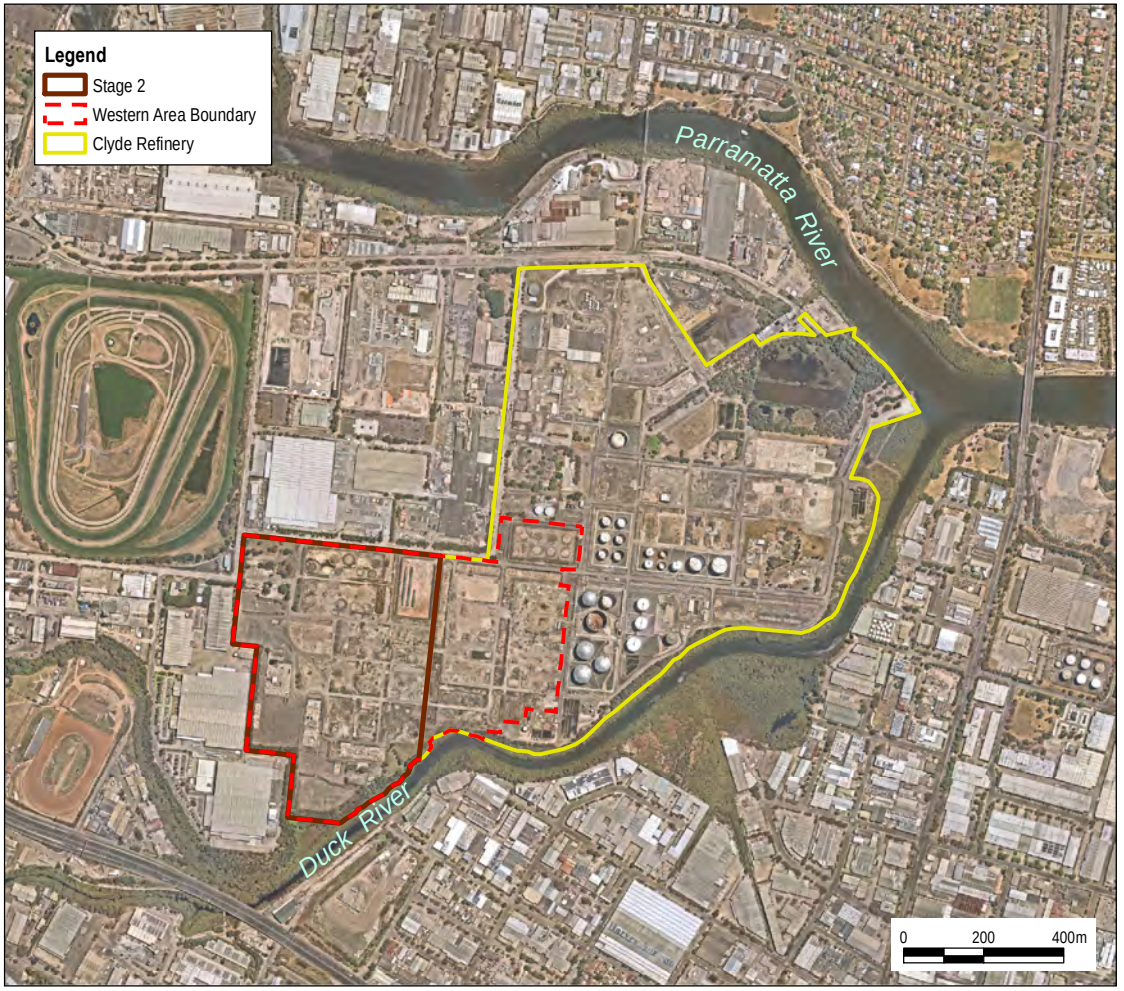
Appendices

Appendix A

Figures

Appendix A-1 Figures (AA1 Validation report)





General Area Land Use:
Industrial
General Hydrogeology of Locality:
1. Soil Type:
Residual clay with minor silt and sand
2. Depth to aquifer:
1.0-3.0m bgs

Aquifer Usage:
Not known beneficial onsite extraction
Potentially Sensitive Receptors:
- Parramatta River (north eastern boundary)
- Duck River (southern boundary)

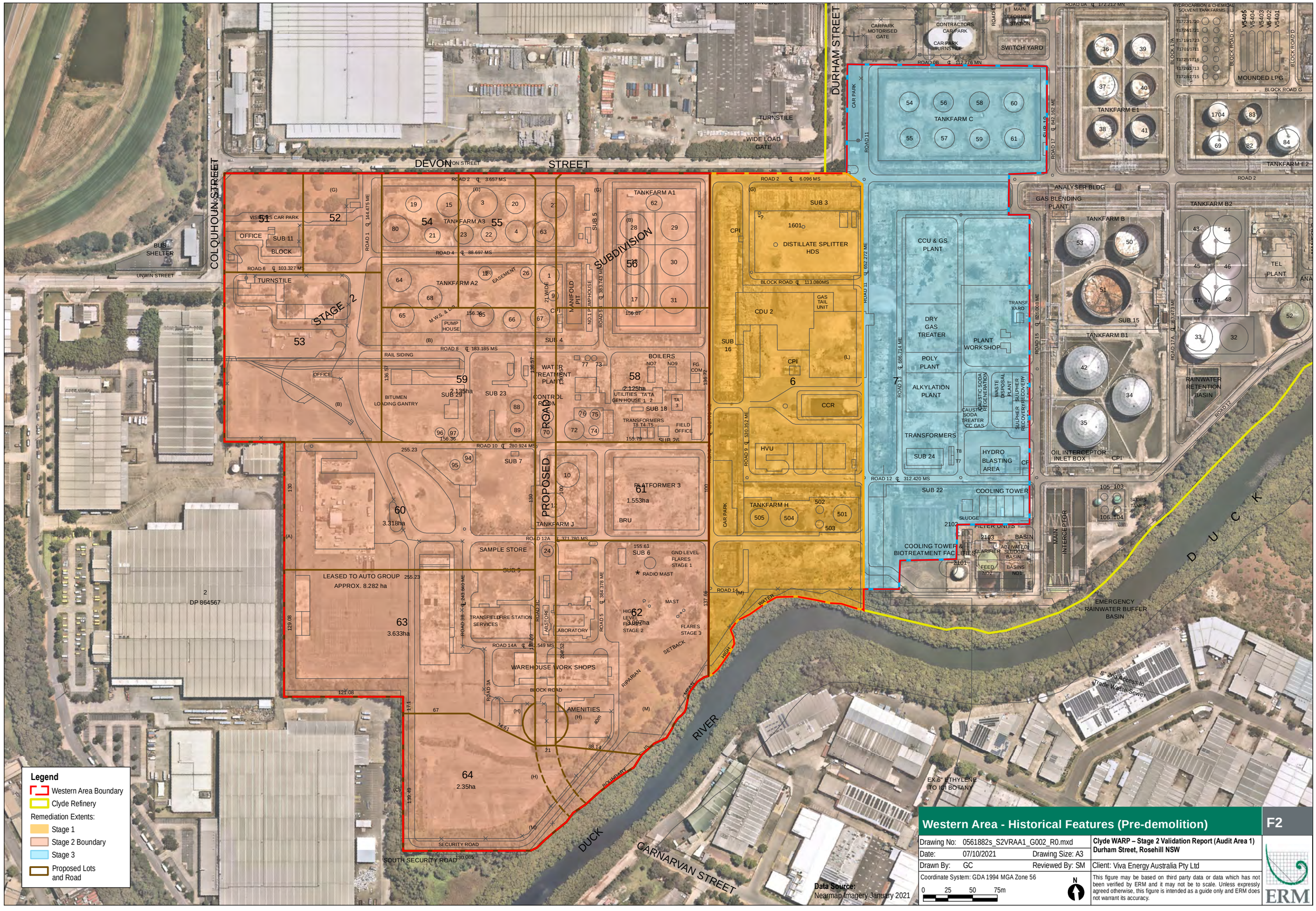
Source:
Nearmap Imagery January 2021
Locality: Esri, OpenStreetMap 2021

Site Locality

F1

Drawing No:	0561882s_S2VRAA1_G001_R0.mxd		**Clyde WARP – Stage 2 Validation Report (Audit Area 1) Durham Street, Rosehill NSW**
Date:	07/10/2021	Drawing Size: A4	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56		N	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM



Western Area - Historical Features (Pre-demolition)

F2

Drawing No:	0561882s_S2VRAA1_G002_R0.mxd		Clyde WARP – Stage 2 Validation Report (Audit Area 1) Durham Street, Rosehill NSW
Date:	07/10/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

Stockpile Location (centroid)		
Stockpile ID	Eastings	Northings
SP29	317926.68	6255206.23

Coord. Sys.: GDA 1994, MGA Zone 56

Remediation Extents			
Area	Point ID	Eastings	Northings
AEC-1	1	317716.05	6255262.49
	2	317716.65	6255271.91
	3	317728.34	6255271.26
	4	317727.75	6255261.49

Coord. Sys.: GDA 1994, MGA Zone 56

DEVON STREET
COLQUHOUN STREET
UNWIN STREET
ROAD 2 ℄ 3.657 MS
ROAD 1 ℄ 144.475 ME
ROAD 4 ℄ 88.697 MS
ROAD 6 ℄ 103.327 MS
ROAD 8 ℄ 183.185 MS
SUB 5
SUB 4
SUB 11
SUB 29
SUB 23
BLOCK
TANKFARM A3
TANKFARM A2
EASEMENT
MANIFOLD PIT
NO.1 PUMPHOUSE
ROAD 5B ℄ 383.743 ME
21 WIDE
AEC-1
SP29
VISITORS CAR PARK
OFFICE
TURNSTILE
STAGE 2
PUMP HOUSE
M.W.S. & D.B.
CPI
RAIL SIDING
BITUMEN LOADING GANTRY
WATER TREATMENT PLANT
CONTROL ROOM
UTILITIES GEN HOUS
TRANS
BUS SHELTER
Asphalt Sealed Mounded Area
51
52
53
54
55
56
58
59
2.135ha
2.125
(G)
(B)
136.57
156.36
255.23

Legend

- Audit Area 1 (AA1)
- Stage 2 Boundary
- Western Area Boundary
- Clyde Refinery
- Biopiling Area (Tankfarm A1)

Stockpile Land Use Suitability:

- Disposal from Site

Revised Extent of Remediation:

- Excavation/Offsite Disposal (asbestos)
- Lot Subdivision Boundaries (SSD 10459)

Data Source:
Nearmap Imagery January 2021

AA1 - Historical Features

F3

Drawing No:	0561882s_S2VRAA1_G003_R0.mxd		**Clyde WARP – Stage 2 Validation Report (Audit Area 1) Durham Street, Rosehill NSW**
Date:	11/10/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 10 20 30m

N

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ERM

DEVON STREET

COLQUHOUN STRE

SUBDIVISION

STAGE 2

STAGE 1 SUBDIVISION

PROPOSED

RIVER

DUCK

WATER

HIGH

MEAN

RIPARIAN

SETBACK

BOUNDARY

51 52 53 54 55 56 58 59 60 61 62 63 64 6 7

2.135ha 2.425ha 3.318ha 1.553ha 3.097ha 3.633ha 2.35ha

2 DP 864567

Legend

- Audit Area 1 (AA1)
- Stage 2 Boundary
- Western Area Boundary
- Clyde Refinery
- Sumps / Drainage Pits
- Drainage Pipelines
- Clean Drain Line (Above ground)
- Clean Drain Line (Underground)
- Residual Sludge within Pipe Network
- Lot Subdivision Boundaries (SSD 10459)

Data Source:
Nearmap Imagery January 2021

Site Drainage Layout

F4

Drawing No:	0561882s_S2VRAA1_G004_R0.mxd		**Clyde WARP – Stage 2 Validation Report (Audit Area 1)** **Durham Street, Rosehill NSW**
Date:	08/10/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

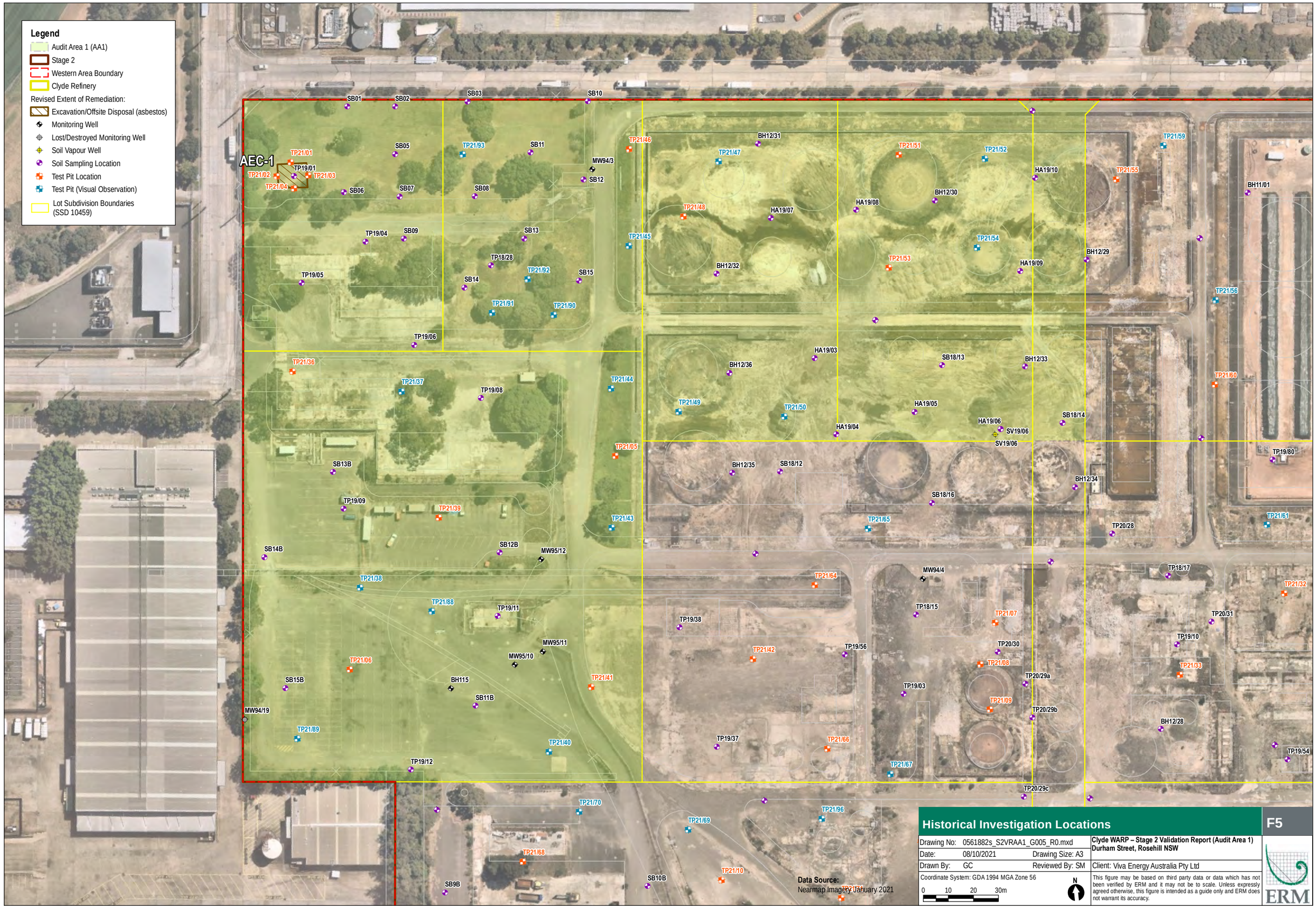
Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

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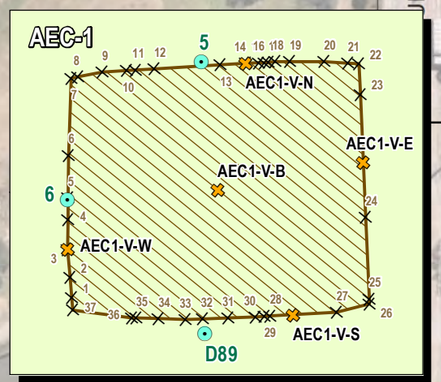
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM


Legend
Audit Area 1 (AA1)
Stage 2
Western Area Boundary
Clyde Refinery
Revised Extent of Remediation:
Excavation/Offsite Disposal (asbestos)
Monitoring Well
Lost/Destroyed Monitoring Well
Soil Vapour Well
Soil Sampling Location
Test Pit Location
Test Pit (Visual Observation)
Lot Subdivision Boundaries (SSD 10459)
AEC-1
SB01
SB02
SB03
SB10
SB05
SB06
SB07
SB08
SB09
SB11
SB12
SB13
SB14
SB15
SB13B
SB14B
SB12B
SB15B
SB11B
SB18/13
SB18/14
SB18/12
SB18/16
SB9B
SB10B
MW94/3
MW95/12
MW95/11
MW95/10
MW94/19
MW94/4
BH115
BH12/31
BH12/30
BH12/32
BH12/29
BH12/33
BH12/36
BH12/35
BH12/34
BH12/28
BH11/01
TP21/01
TP21/02
TP21/03
TP21/04
TP19/01
TP21/93
TP21/46
TP21/47
TP21/51
TP21/52
TP21/59
TP21/55
TP21/48
TP21/45
TP21/54
TP21/53
TP21/56
TP21/60
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TP21/65
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TP21/32
TP21/07
TP21/42
TP21/08
TP21/33
TP21/09
TP21/41
TP21/06
TP21/89
TP21/40
TP21/70
TP21/69
TP21/68
TP21/96
TP21/10
TP21/67
TP19/04
TP19/05
TP19/06
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TP19/09
TP19/11
TP19/12
TP19/38
TP19/56
TP19/03
TP19/37
TP19/80
TP19/54
TP18/28
TP18/17
TP18/15
TP20/28
TP20/31
TP20/30
TP20/29a
TP20/29b
TP20/29c
TP19/10
HA19/10
HA19/08
HA19/07
HA19/09
HA19/03
HA19/05
HA19/04
HA19/06
SV19/06
SV19/06
Data Source:
Nearmap Imagery January 2021
Historical Investigation Locations
F5
Drawing No: 0561882s_S2VRAA1_G005_R0.mxd
Date: 08/10/2021
Drawing Size: A3
Drawn By: GC
Reviewed By: SM
Coordinate System: GDA 1994 MGA Zone 56
0 10 20 30m
N
Clyde WARP – Stage 2 Validation Report (Audit Area 1)
Durham Street, Rosehill NSW
Client: Viva Energy Australia Pty Ltd
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
ERM

Former Stockpile Location (centroid)		
Stockpile ID	Eastings	Northings
SP29	317926.68	6255206.23

Coord. Sys.: GDA 1994, MGA Zone 56



Revised Remediation Extents			
Area	Point ID	Eastings	Northings
AEC-1	1	317715.75	6255263.03
	2	317715.76	6255263.85
	3	317715.78	6255264.97
	4	317715.93	6255266.18
	5	317716.03	6255267.08
	6	317716.23	6255268.81
	7	317716.65	6255271.91
	8	317716.93	6255271.94
	9	317717.94	6255272.03
	10	317718.93	6255271.98
	11	317719.30	6255271.96
	12	317720.07	6255271.93
	13	317722.75	6255271.81
	14	317723.80	6255271.76
	15	317724.32	6255271.74
	16	317724.54	6255271.72
	17	317724.71	6255271.72
	18	317724.99	6255271.72
	19	317725.59	6255271.65
	20	317726.97	6255271.51
	21	317727.93	6255271.34
	22	317728.37	6255271.26
	23	317728.30	6255270.01
	24	317727.99	6255265.02
	25	317727.79	6255261.70
	26	317727.78	6255261.51
	27	317726.41	6255261.31
	28	317723.70	6255261.44
	29	317723.48	6255261.45
	30	317723.11	6255261.46
	31	317721.99	6255261.54
	32	317720.96	6255261.60
	33	317720.26	6255261.65
	34	317719.18	6255261.80
	35	317718.27	6255261.92
	36	317718.09	6255261.95
	37	317715.73	6255262.50

Coord. Sys.: GDA 1994, MGA Zone 56

DEVON STREET
ROAD 2 ℄ 3.657 MS
ROAD 1 ℄ 144.475 ME
ROAD 4 ℄ 88.697 MS
ROAD 6 ℄ 103.327 MS
ROAD 8 ℄ 183.185 MS
SUB 5
SUB 11
SUB 4
SUB 23
SUB 29
BLOCK
TANKFARM A3
TANKFARM A2
VISITORS CAR PARK
OFFICE
TURNSTILE
STAGE 2
RAIL SIDING
BITUMEN LOADING GANTRY
PUMP HOUSE
M.W.S. & D.B.
EASEMENT
21 WIDE
MANIFOLD PIT
NO.1 PUMPHOUSE
℄ 383.743 ME
ROAD 5B ℄
CPI
WATER TREATMENT PLANT
CONTROL ROOM
SP29-V-FP
AEC-1
2.135ha
156.36
136.57
255.23

Legend
- Audit Area 1 (AA1)
- Stage 2 Boundary
- Western Area Boundary
- Clyde Refinery
- Biopiling Area (Tankfarm A1)

Stockpile Land Use Suitability:
- SP29 Footprint (Removed)

Revised Extent of Remediation:
- Excavation/Offsite Disposal (asbestos)
- Validation Sample
- Airborne Asbestos Monitoring Location (AAM)
- Lot Subdivision Boundaries (SSD 10459)

Data Source:
Nearmap Imagery January 2021

Validation Sampling Locations

F6

Drawing No:	0561882s_S2VRAA1_G006_R0.mxd		**Clyde WARP – Stage 2 Validation Report (Audit Area 1)**
Date:	11/10/2021	Drawing Size: A3	**Durham Street, Rosehill NSW**
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

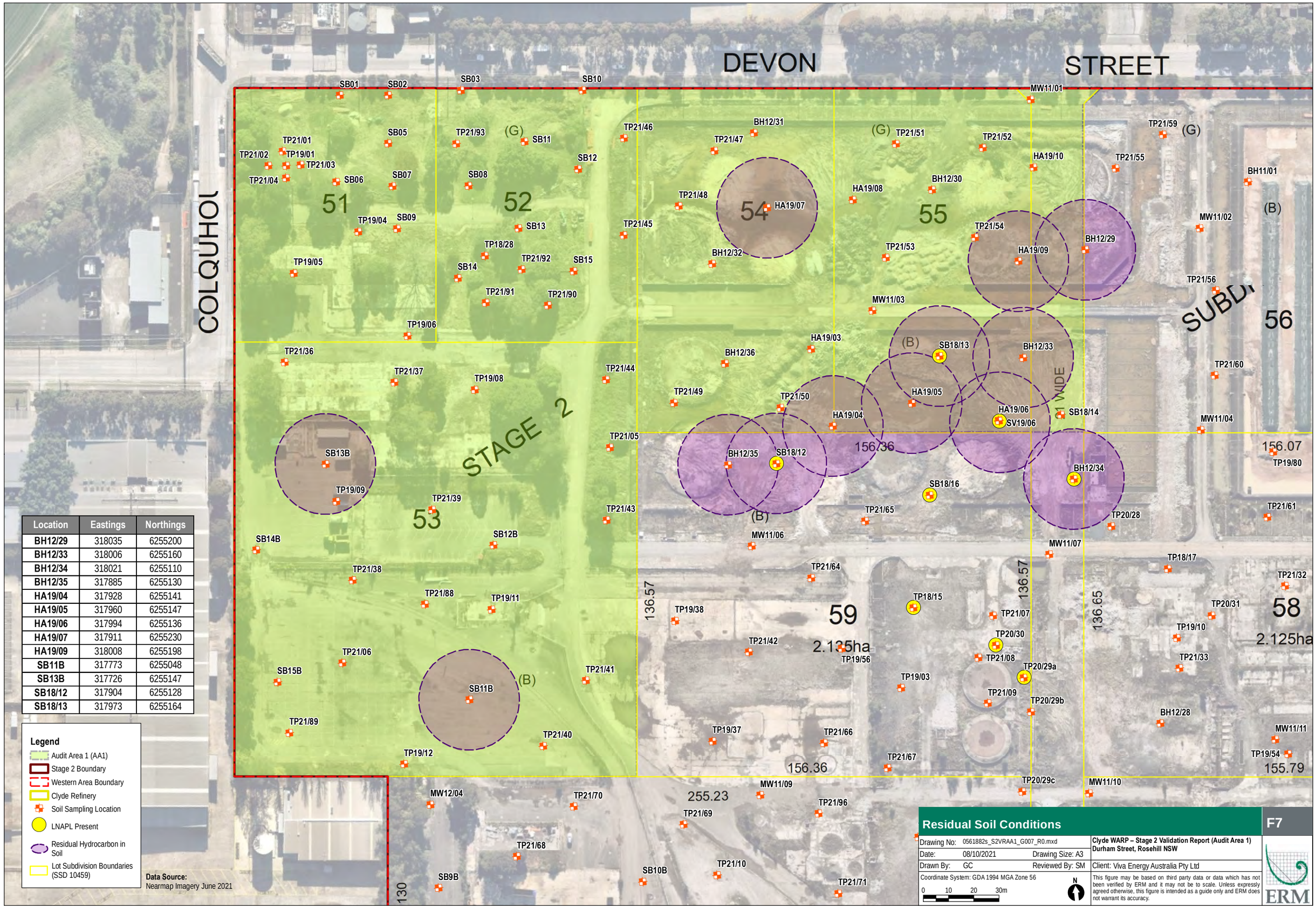
Coordinate System: GDA 1994 MGA Zone 56

0 10 20 30m

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ERM



Location	Eastings	Northings
BH12/29	318035	6255200
BH12/33	318006	6255160
BH12/34	318021	6255110
BH12/35	317885	6255130
HA19/04	317928	6255141
HA19/05	317960	6255147
HA19/06	317994	6255136
HA19/07	317911	6255230
HA19/09	318008	6255198
SB11B	317773	6255048
SB13B	317726	6255147
SB18/12	317904	6255128
SB18/13	317973	6255164

Legend

- Audit Area 1 (AA1)
- Stage 2 Boundary
- Western Area Boundary
- Clyde Refinery
- Soil Sampling Location
- LNAPL Present
- Residual Hydrocarbon in Soil
- Lot Subdivision Boundaries (SSD 10459)

Data Source:
Nearmap Imagery June 2021

Residual Soil Conditions

F7

Drawing No:	0561882s_S2VRAA1_G007_R0.mxd		Clyde WARP – Stage 2 Validation Report (Audit Area 1) Durham Street, Rosehill NSW
Date:	08/10/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

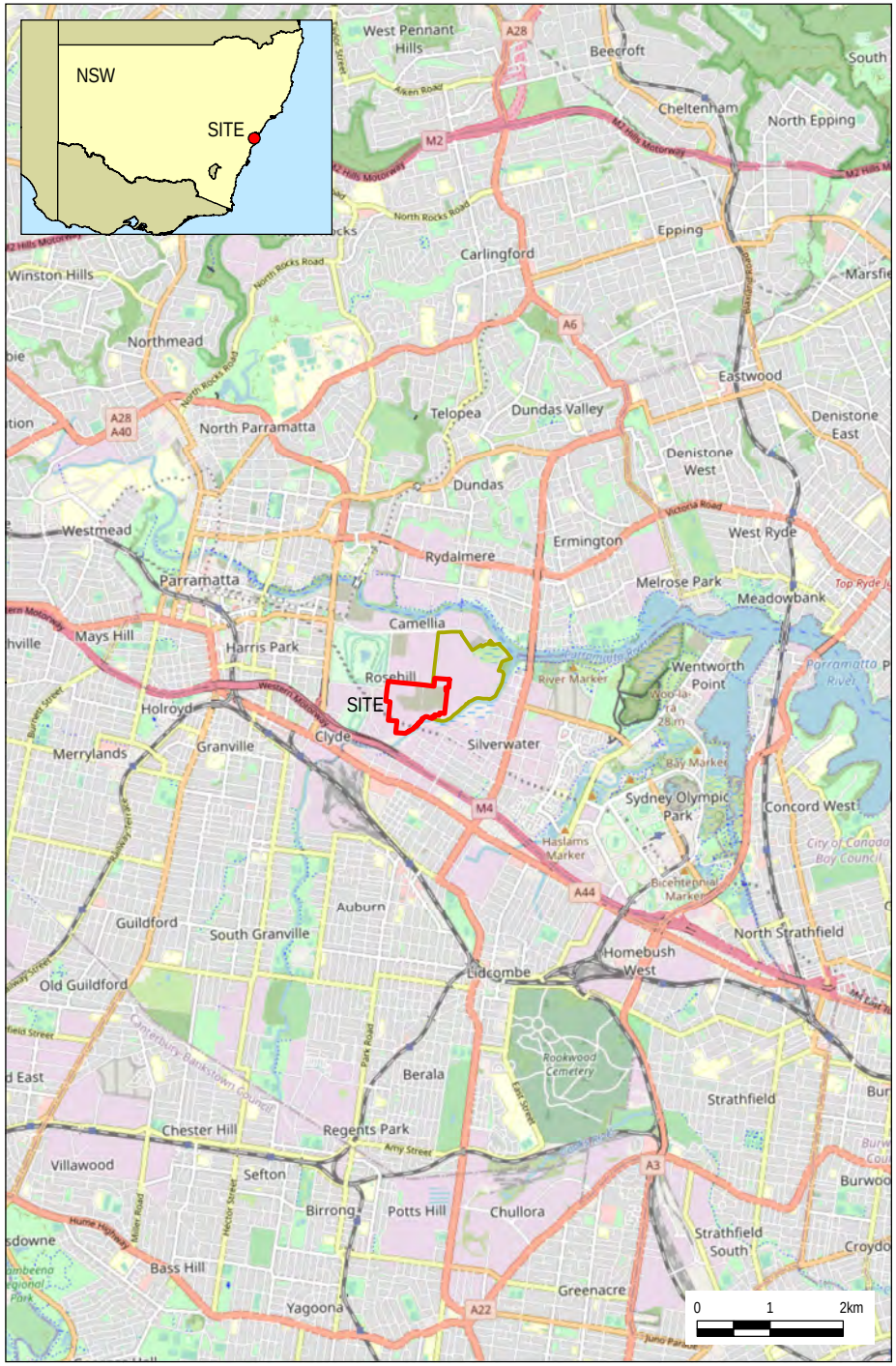
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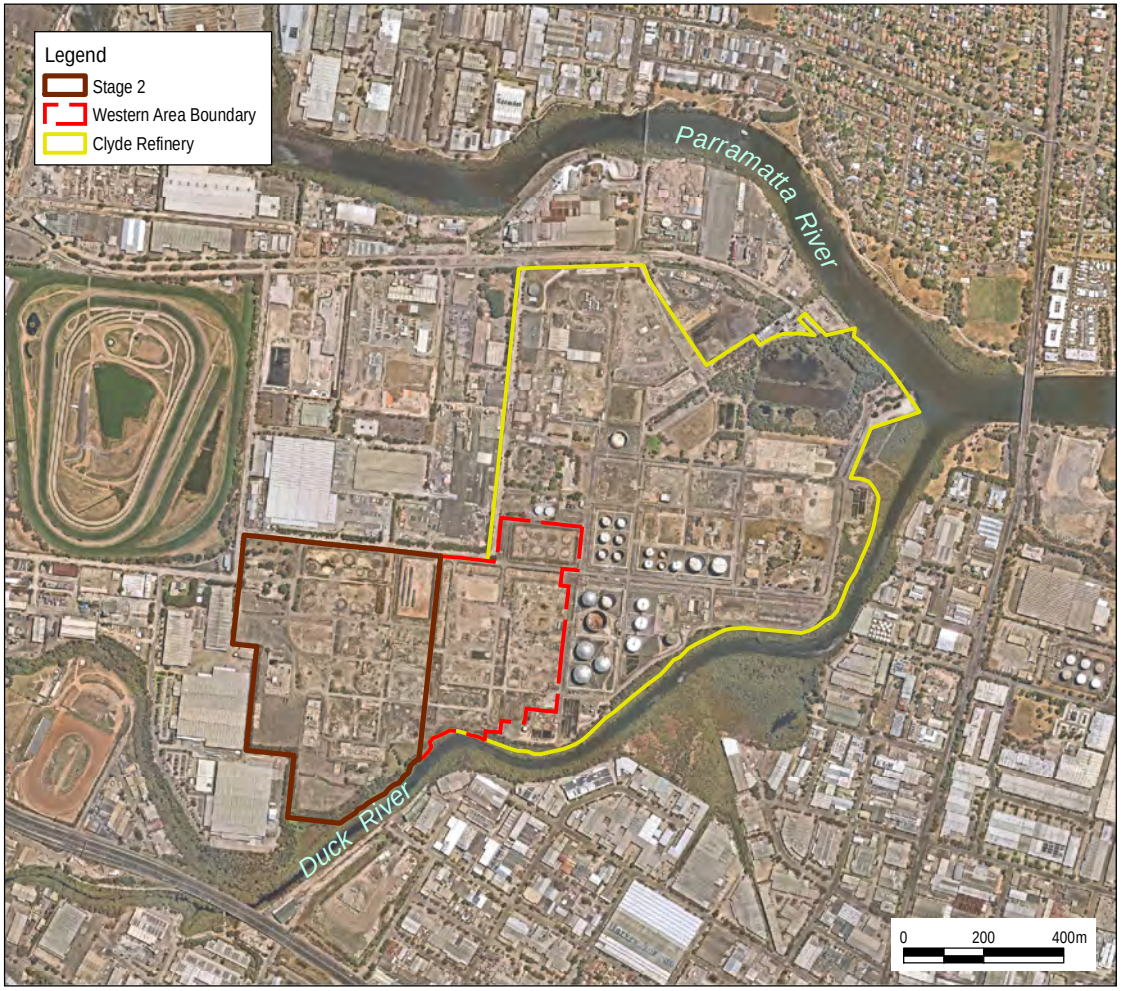
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ERM

Appendix A-2 Figures (AA1 SSR report)





General Area Land Use:
Industrial
General Hydrogeology of Locality:
1. Soil Type:
Residual clay with minor silt and sand
2. Depth to aquifer:
1.0-3.0m bgs

Aquifer Usage:
Not known beneficial onsite extraction
Potentially Sensitive Receptors:
- Parramatta River (north eastern boundary)
- Duck River (southern boundary)

Source:
Nearmap Imagery January 2021
Locality: Esri, OpenStreetMap 2021

Site Locality

F1

Drawing No:	0561882s_SSR_G001_R0.mxd		Clyde WARP - Site Suitability Report Durham Street, Rosehill NSW
Date:	08/07/2021	Drawing Size: A4	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd
Coordinate System: GCS GDA 1994		N	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

DEVON STREET

COLQUHOUN STREET

UNWIN STREET

BUS SHELTER

VISITORS CAR PARK

OFFICE

SUB 11

BLOCK

TURNSTILE

STAGE 2

51

52

53

54

55

56

57

58

59

60

61

62

63

64

TANKFARM A1

TANKFARM A3

TANKFARM A2

TANKFARM J

TANKFARM H

SUB 3

SUB 4

SUB 5

SUB 6

SUB 7

SUB 18

SUB 22

SUB 23

SUB 24

SUB 26

SUB 29

1601

DISTILLATE SPLITTER HDS

CDU 2

GAS TAIL UNIT

CPI

BLOCK ROAD 113.080MS

ROAD 2 6.096 MS

ROAD 2 3.657 MS

ROAD 1 144.475 ME

ROAD 4 88.697 MS

ROAD 6 103.327 MS

ROAD 8 183.185 MS

ROAD 10 280.924 MS

ROAD 11 652.272 ME

ROAD 12 312.420 MS

ROAD 12A 371.780 MS

ROAD 13 686.714 ME

ROAD 14 137.66

ROAD 14A 182.549 MS

ROAD 15 826.008 ME

ROAD 3A

ROAD 3B 243.840 ME

ROAD 3C

ROAD 5 384.378 ME

ROAD 5B 383.743 ME

ROAD 9 530.352 ME

EASEMENT 21 WIDE

MANIFOLD PIT

NO.1 P JUMPHOUSE

PUMP HOUSE

M.W.S. & D.R.

RAIL SIDING

BITUMEN LOADING GANTRY

WATER TREATMENT PLANT

CONTROL ROOM

BOILERS NO7 NO9

FG COM

UTILITIES GEN HOUSE

TA TA 1 2

TA 3

TRANSFORMERS T8 T4 T5

FIELD OFFICE

HVU

CCR

STAGE 1 SUBDIVISION

SUBDIVISION

PROPOSED ROAD

PLATFORMER 3

1.553ha

BRU

CAR PARK

GAS BLENDING PLANT

CCU & GS PLANT

DRY GAS TREATER

POLY PLANT

ALKYLATION PLANT

PLANT WORKSHOP

TRANSF YARD

CAUSTIC SODA REGENERATION

WASTE DISPOSAL PLANT

SULPHER RECOVERY UNIT 1

SULPHER RECOVERY UNIT 2

CAUSTIC SODA TREATER CC GAS

TRANSFORMERS

HYDRO BLASTING AREA

OIL INTERCEPT INLET BOX

COOLING TOWER

SLUDGE

FILTER UNITS 2102

BASIN 2103

CLARIFIER

ACTIVATED SLUDGE BASIN

FEED NO2

BASINS NO1

COOLING TOWER & BIOTREATMENT FACILITIES 2101

MAIN INTERCEPTOR

SAMPLE STORE

LEASED TO AUTO GROUP APPROX. 8.282 ha

2 DP 864567

TRANSFIELD SERVICES

FIRE STATION

ABSTORE

LABORATORY

WAREHOUSE WORK SHOPS

BLOCK ROAD

AMENITIES

SECURITY ROAD

SOUTH SECURITY ROAD

GND LEVEL FLARES STAGE 1

RADIO MAST

MAST

HIGH LEVEL FLARES STAGE 2

FLARES STAGE 3

SETBACK

RIPARIAN

HIGH

MEAN

WATER

RIVER

DUCK

CARNA

BOUNDARY

EX 6" ETHYLENE

Legend

- Stage 2 Boundary
- Western Area Boundary
- Area Investigated for Site Suitability Report
- Lot Subdivision Boundaries (SSD 10459)

Site Layout

F2

Drawing No: 0561882s_SSR_G002_R0.mxd		Clyde WARP - Site Suitability Report Durham Street, Rosehill NSW
Date: 08/07/2021	Drawing Size: A3	
Drawn By: GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

N

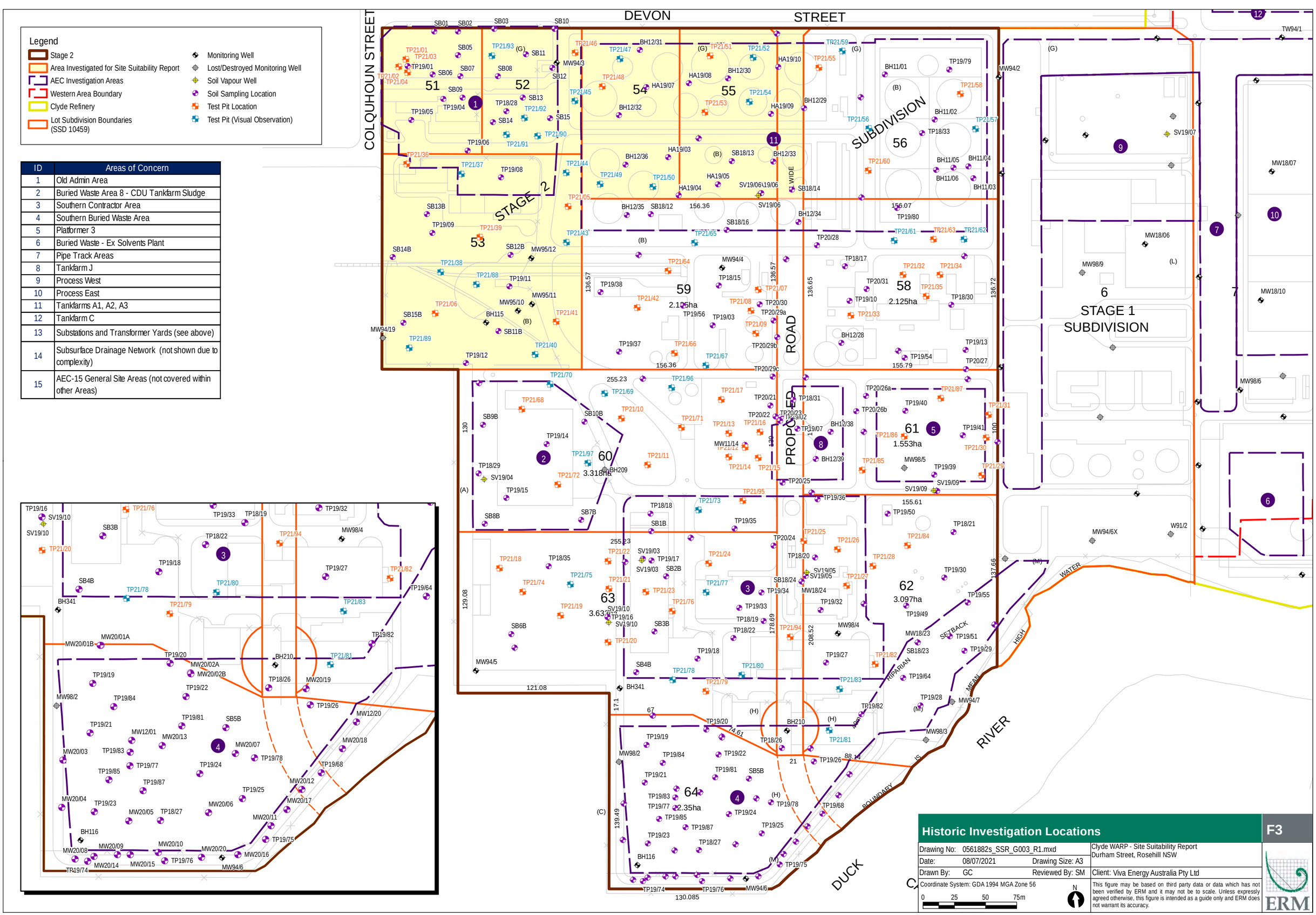
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

Legend

- Stage 2
- Area Investigated for Site Suitability Report
- AEC Investigation Areas
- Western Area Boundary
- Clyde Refinery
- Lot Subdivision Boundaries (SSD 10459)
- Monitoring Well
- Lost/Destroyed Monitoring Well
- Soil Vapour Well
- Soil Sampling Location
- Test Pit Location
- Test Pit (Visual Observation)

ID	Areas of Concern
1	Old Admin Area
2	Buried Waste Area 8 - CDU Tankfarm Sludge
3	Southern Contractor Area
4	Southern Buried Waste Area
5	Platformer 3
6	Buried Waste - Ex Solvents Plant
7	Pipe Track Areas
8	Tankfarm J
9	Process West
10	Process East
11	Tankfarms A1, A2, A3
12	Tankfarm C
13	Substations and Transformer Yards (see above)
14	Subsurface Drainage Network (not shown due to complexity)
15	AEC-15 General Site Areas (not covered within other Areas)



Historic Investigation Locations

F3

Drawing No:	0561882s_SSR_G003_R1.mxd		Clyde WARP - Site Suitability Report Durham Street, Rosehill NSW
Date:	08/07/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

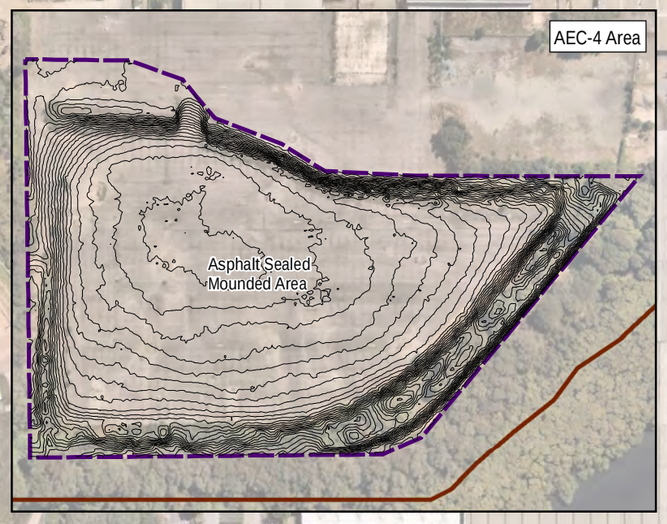
N

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ERM

Stockpile Location (centroid)		
Stockpile ID	Eastings	Northings
SP29	317926.68	6255206.23
SP30	317990.55	6255063.99
SP31	318027.27	6255056.47
SP32	318121.81	6255026.71
SP33	318145.95	6255017.47
SP34	318139.76	6255013.41
SP35	318140.75	6255007.03
SP36	317975.98	6254978.08
SP37	318015.09	6254938.89
SP38	318039.20	6254937.89
SP39	318115.94	6254962.02
SP40	317986.28	6254843.23
SP41	317929.30	6254816.08
SP42	317960.39	6254801.35
SP43	318009.82	6254817.67
SP75	318105.52	6255169.96
SP76	318118.62	6255169.20
SP77	318128.32	6255139.06

Coord. Sys.: GDA 1994, MGA Zone 56



Legend
- Stage 2 Boundary
- AEC-4 Area
- Western Area Boundary
- Clyde Refinery
- Biopiling Area (Tankfarm A1)
- Area Investigated for Site Suitability Report

Stockpile Land Use Suitability:
- Disposal from Site
- Suitable for Reuse (subject to visual clearance or LTEMP)
- Unrestricted Reuse Onsite
- Lot Subdivision Boundaries (SSD 10459)

Data Source: Nearmap Imagery January 2021

Existing Stockpile Plan

F4

Drawing No:	0561882s_SSR_G004_R1.mxd		Clyde WARP - Site Suitability Report Durham Street, Rosehill NSW
Date:	08/07/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

N

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ERM

DEVON STREET

COLQUHOUN STREET

UNWIN STREET

Site Entry/Exit

Site Offices/ Amenities

AEC-1

STAGE 2

SUBDIVISION

Biopiling Treatment Area (Tankfarm A1)

AEC-14a

AEC-14B

Soil Screening/ Segregation Area

STAGE 1 SUBDIVISION

PROPOSED

Soil Screening/ Segregation Area

AEC-3d

AEC-3a

AEC-3b

62 Sediment Basin 3.097ha

AEC-3e

AEC-4

64 2.35ha

RIPARIAN

WATER

HIGH

MEAN

SETBACK

BOUNDARY

RIVER

DUCK

CARNA

2 DP 864567

Remediation Area of Concern	Estimated In-situ Volume (m^3)	Area (m^2)	Excavation Depth (m)
AEC-1	23	113	0.2
AEC-3A	3166	1583	2
AEC-3B	678	848	0.8
AEC-3D	842	421	2
AEC-3E	1400	1400	1
AEC-4	6968	13936	0.5
AEC-14A	90	50	1.8
AEC-14B	192	192	1

Legend

- Stage 2 Boundary
- Area Investigated for Site Suitability Report
- Western Area Boundary
- Clyde Refinery
- Sediment Basin (approximate)
- Biopiling Treatment Area (Tankfarm A1)
- Site Offices / Amenities
- Soil Screening/ Segregation Area

Revised Extent of Remediation:

- In-situ Management with Engineered Capping Layer
- Excavation/On-site Biopiling for Re-use
- Excavation/Offsite Disposal (asbestos)
- Site Entry/Exit (Cnr Colquhoun & Unwin Streets)
- Lot Subdivision Boundaries (SSD 10459)

Remediation Site Layout Plan

F5

Drawing No:	0561882s_SSR_G005_R0.mxd		Clyde WARP - Site Suitability Report Durham Street, Rosehill NSW
Date:	08/07/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

N

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ERM

Legend

- Stage 2
- Area Investigated for Site Suitability Report
- Clyde Refinery

Revised Extent of Remediation:

- Excavation/On-site Biopiling for Re-use
- Excavation/Offsite Disposal (asbestos)
- Soil Sampling Location
- LNAPL Present
- Inhalation (Asbestos)
- Vapour Intrusion
- Direct Contact
- TRH Management Limit
- Lot Subdivision Boundaries (SSD 10459)

COLQUHOUN STREET

DEVON STREET

STAGE 2

51

52

53

54

55

59

(G)

(B)

AEC-1

AEC-14a

AEC-14B

SB01 SB02 SB03 SB10 SB05 SB11 SB12 SB06 SB07 SB08 SB09 SB13 SB14 SB15 SB13B SB14B SB12B SB15B SB11B

TP21/01 TP19/01 TP21/02 TP21/03 TP21/04 TP19/04 TP19/05 TP19/06 TP21/93 TP18/28 TP21/92 TP21/91 TP21/90 TP21/36 TP21/37 TP19/08 TP21/05 TP19/09 TP21/39 TP21/43 TP19/11 TP21/88 TP21/38 TP21/06 TP21/41 TP21/89 TP21/40 TP19/12

TP21/46 TP21/47 BH12/31 TP21/48 HA19/07 TP21/45 BH12/32 TP21/51 TP21/52 HA19/10 TP21/55 BH12/30 HA19/08 TP21/53 TP21/54 HA19/09 BH12/29 TP21/59 MW11/01 MW11/02 MW11/03 HA19/03 BH12/36 TP21/44 TP21/49 TP21/50 HA19/04 HA19/05 HA19/06 SV19/06 SB18/14 BH12/33 SB18/13 MW11/04 BH12/35 SB18/12 BH12/34 SB18/16 TP21/65 MW11/06 MW11/07 TP18/17 TP21/64 TP18/15 TP21/07 TP20/30 TP21/08 TP19/10 TP21/33 TP20/29a TP19/03 TP21/09 TP20/29b BH12/28 TP19/37 TP21/66 TP21/67 TP19/38 TP21/42 TP19/56 MW12/04 TP21/70 TP21/69 TP21/68 MW11/09

156.36 136.57 136.65 255.23 21 WIDE

Soil Exceedances (0-1m)		F6A
Drawing No: 0561882s_SSR_G007_R0.mxd		Clyde WARP - Site Suitability Report Durham Street, Rosehill NSW
Date: 08/07/2021	Drawing Size: A3	
Drawn By: GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56	N	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

0 10 20 30m

ERM

Legend

- Stage 2
- Area Investigated for Site Suitability Report
- Clyde Refinery

Revised Extent of Remediation:

- Excavation/On-site Biopiling for Re-use
- Excavation/Offsite Disposal (asbestos)
- Soil Sampling Location
- LNAPL Present
- Inhalation (Asbestos)
- Vapour Intrusion
- Direct Contact
- TRH Management Limit
- Lot Subdivision Boundaries (SSD 10459)

COLQUHOUN STREET

DEVON STREET

SU

STAGE 2

51

52

53

54

55

59

2.135ha

156.36

136.57

136.65

21 WIDE

AEC-1

AEC-14a

AEC-14B

(G)

(B)

SB01 SB02 SB03 SB10 SB05 SB11 SB12 SB06 SB07 SB08 SB09 SB13 SB14 SB15 SB13B SB14B SB12B SB15B SB11B

TP21/01 TP19/01 TP21/02 TP21/03 TP21/04 TP19/04 TP19/05 TP18/28 TP21/92 TP21/91 TP21/90 TP21/93 TP19/06 TP21/36 TP21/37 TP19/08 TP21/05 TP19/09 TP21/39 TP21/43 TP21/44 TP21/38 TP21/88 TP19/11 TP21/06 TP21/41 TP21/89 TP21/40 TP19/12

TP21/46 TP21/47 BH12/31 TP21/48 TP21/45 HA19/07 BH12/32 TP21/51 TP21/52 HA19/10 TP21/55 TP21/59 BH12/30 HA19/08 TP21/54 TP21/53 HA19/09 BH12/29 MW11/01 MW11/02 MW11/03 HA19/03 BH12/36 SB18/13 BH12/33 TP21/49 TP21/50 HA19/05 HA19/04 HA19/06 SV19/06 SB18/14 MW11/04 BH12/35 SB18/12 BH12/34 SB18/16 TP21/65 TP20/28 MW11/06 MW11/07 TP18/17 TP21/64 TP18/15 TP21/07 TP19/38 TP19/10 TP20/30 TP21/42 TP19/56 TP21/08 TP21/33 TP20/29a TP19/03 TP21/09 TP20/29b BH12/28 TP19/37 TP21/66 TP21/67

MW12/04 TP21/70 255.23 MW11/09 TP21/69 TP21/68

Soil Exceedances (1-2m)		F6B
Drawing No: 0561882s_SSR_G008_R0.mxd		Clyde WARP - Site Suitability Report Durham Street, Rosehill NSW
Date: 08/07/2021	Drawing Size: A3	
Drawn By: GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56 0 10 20 30m N		This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

DEVON STREET

COLQUHOUN STREET

STAGE 2

SUBDIVISION

STAGE 1 SUBDIVISION

PROPOSED ROAD

51 52 53 54 55 56 58 59 60 61 62 63 64 6 7

2.135ha 2.125ha 1.553ha 3.097ha 2.35ha

2 DP 864567

RIVER

DUCK CA

WATER

HIGH MEAN

SETBACK

RIPARIAN

BOUNDARY

Legend

- Stage 2 Boundary
- Western Area Boundary
- Clyde Refinery
- Sumps / Drainage Pits
- Drainage Pipelines
- Clean Drain Line (Above ground)
- Clean Drain Line (Underground)
- Residual Sludge within Pipe Network
- Lot Subdivision Boundaries (SSD 10459)

Data Source:
Nearmap Imagery January 2021

Site Drainage Layout

F7

Drawing No:	F7_0561882s_SSR_G009_R0		Clyde WARP - **Site Suitability Report (Stage 1)** Durham Street, Rosehill NSW
Date:	08/07/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

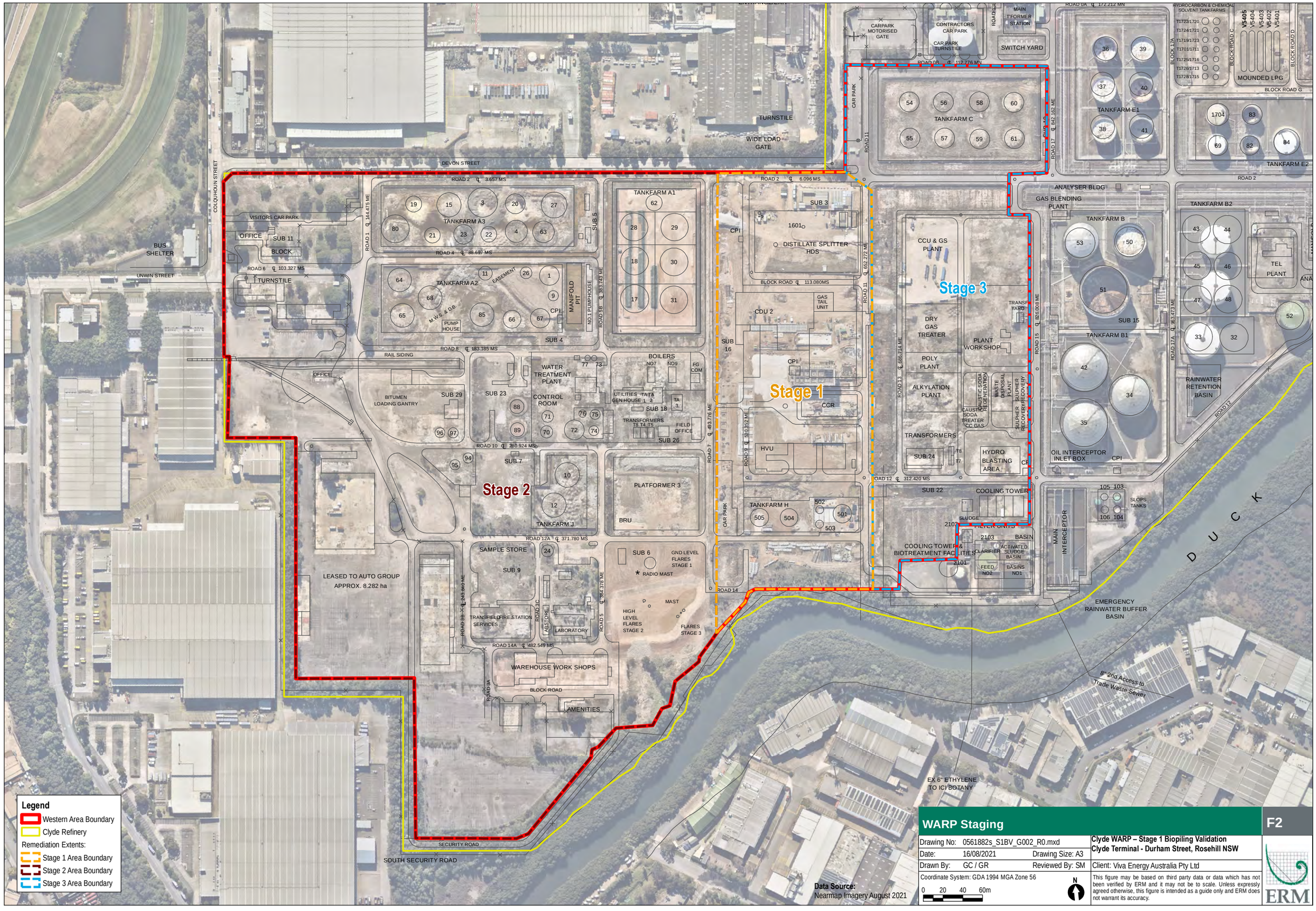
0 25 50 75m

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

Appendix A-3 Figures (Stage 1 Biopile Validation report)



WARP Staging

F2

Drawing No:	0561882s_S1BV_G002_R0.mxd		Clyde WARP – Stage 1 Biopiling Validation Clyde Terminal - Durham Street, Rosehill NSW
Date:	16/08/2021	Drawing Size: A3	
Drawn By:	GC / GR	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

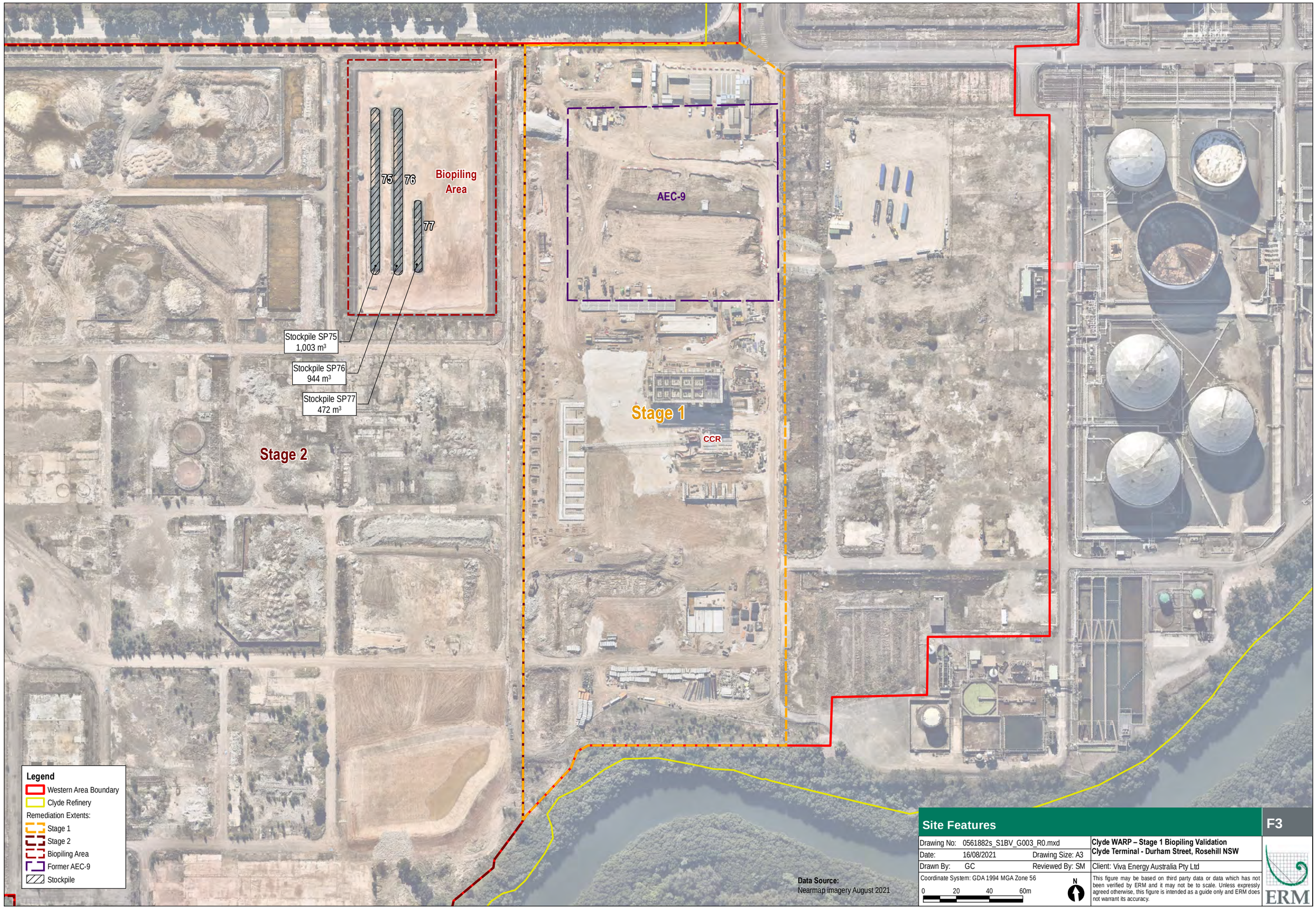
Coordinate System: GDA 1994 MGA Zone 56

0 20 40 60m

N

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ERM

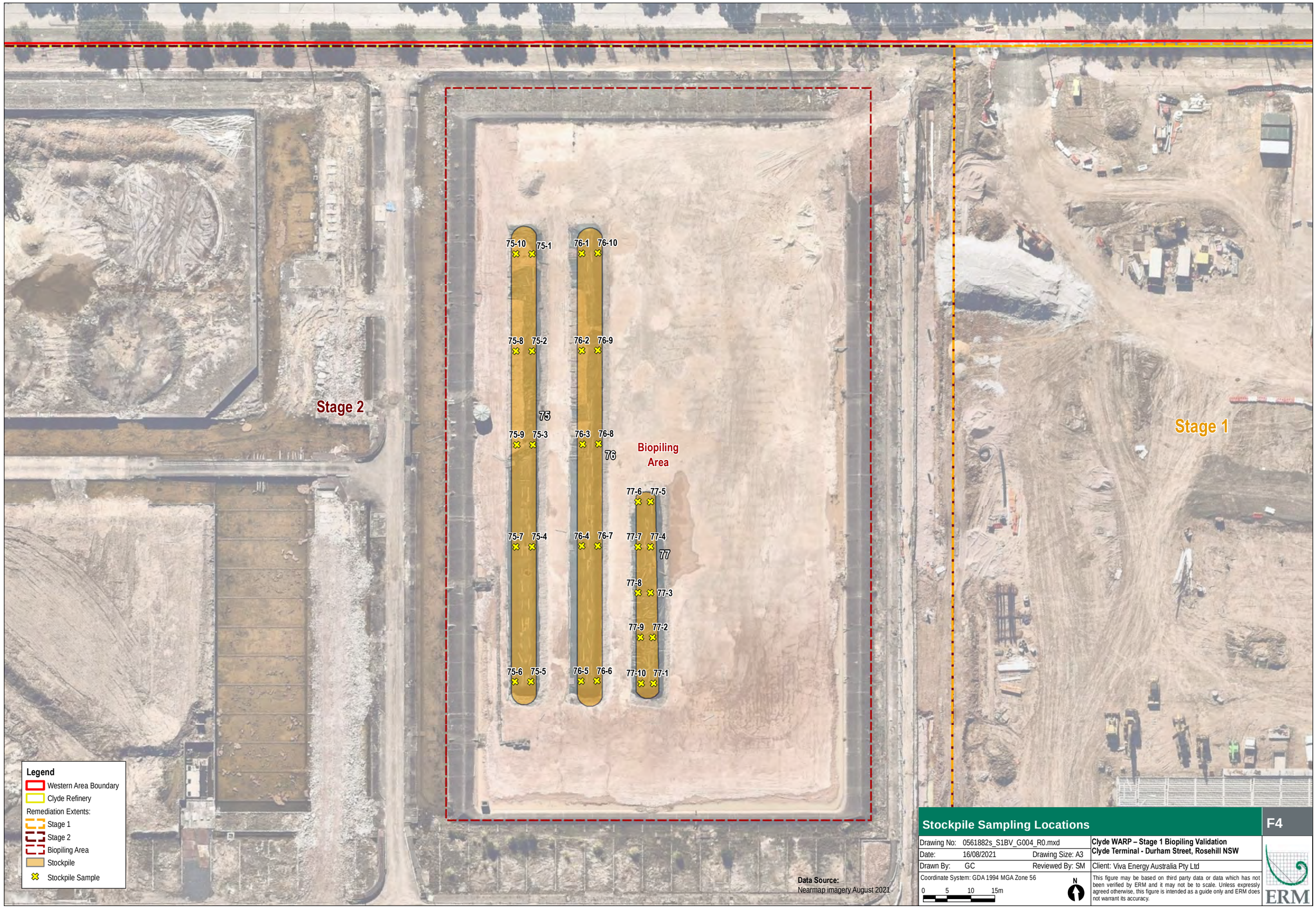


Site Features

F3

Drawing No:	0561882s_S1BV_G003_R0.mxd		**Clyde WARP – Stage 1 Biopiling Validation** **Clyde Terminal - Durham Street, Rosehill NSW**
Date:	16/08/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56 0 20 40 60m N			This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM



Stockpile Sampling Locations

F4

Drawing No:	0561882s_S1BV_G004_R0.mxd		Clyde WARP – Stage 1 Biopiling Validation Clyde Terminal - Durham Street, Rosehill NSW
Date:	16/08/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energia Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

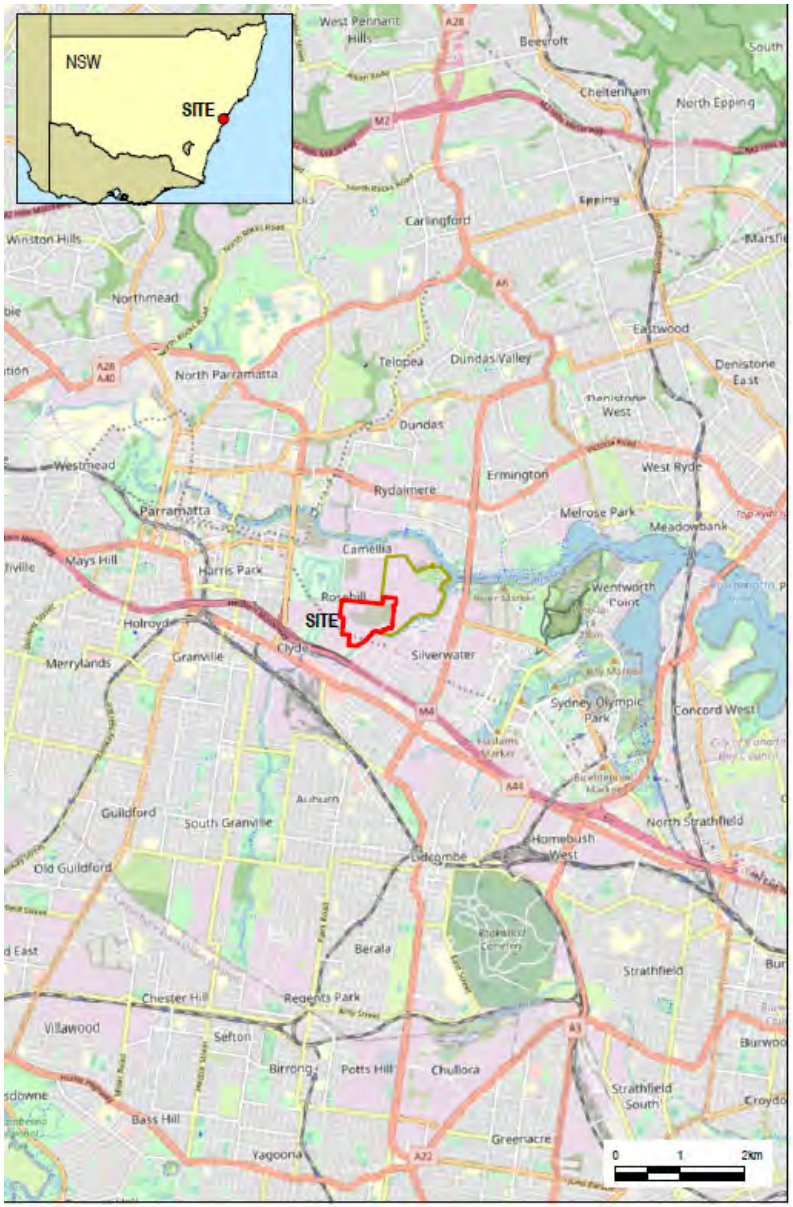
0 5 10 15m

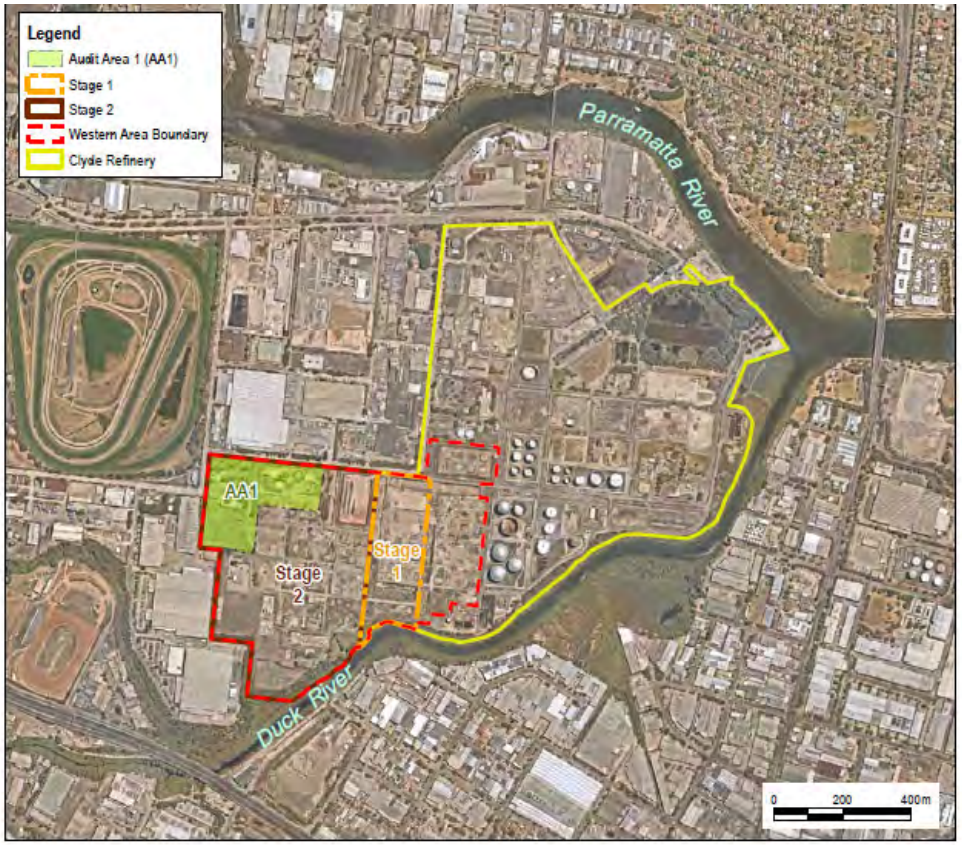
N

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ERM

Appendix A-4 Figures (Stage 1 Reusable Material Letter)





General Area Land Use:
Industrial
General Hydrogeology of Locality:
1. Soil Type:
Residual clay with minor silt and sand
2. Depth to aquifer:
1.0-3.0m bgs

Aquifer Usage:
Not known beneficial onsite extraction
Potentially Sensitive Receptors:
- Parramatta River (north eastern boundary)
- Duck River (southern boundary)

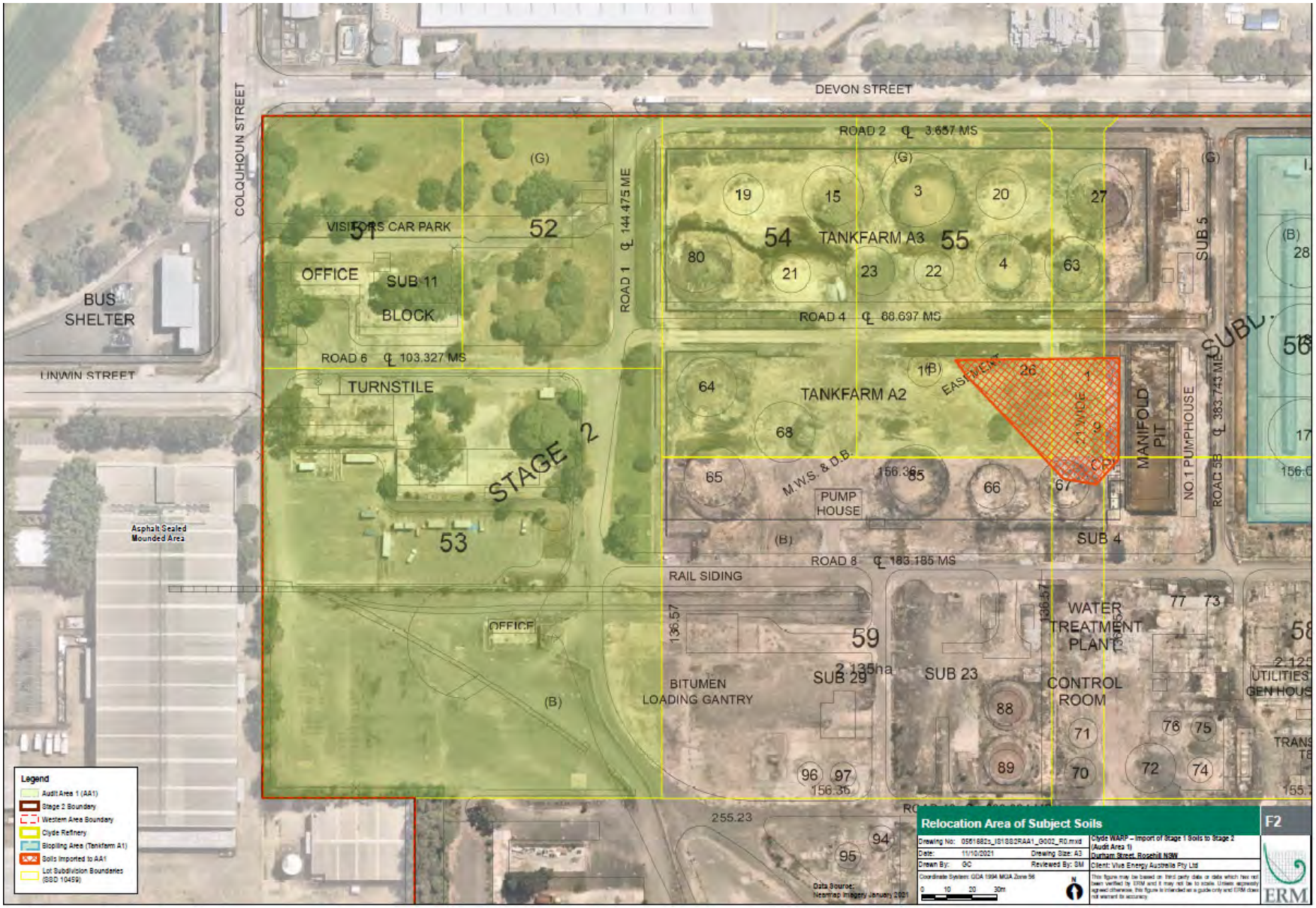
Source:
Nearmap Imagery January 2021
Locality: Esri, OpenStreetMap 2021

Site Locality

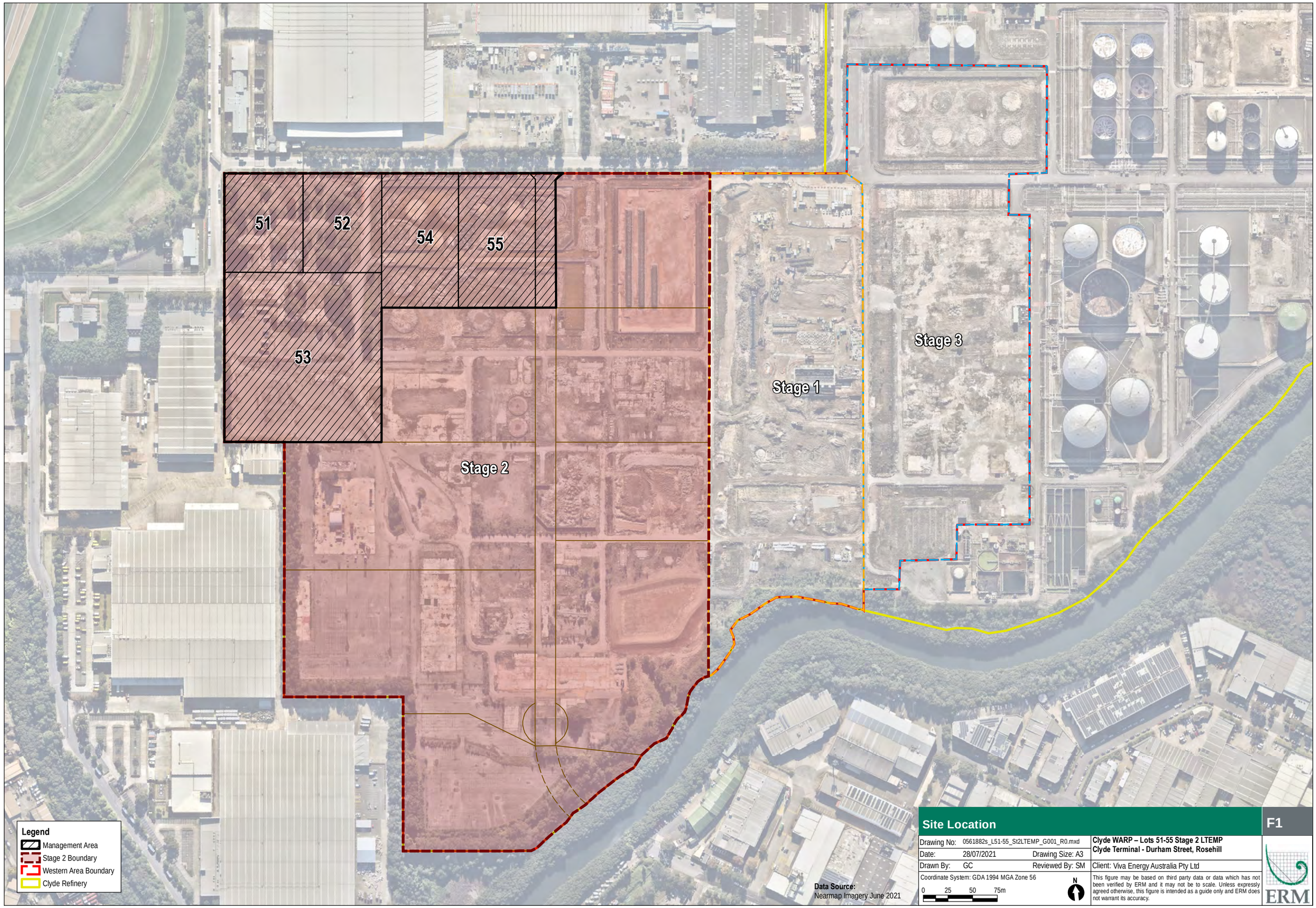
F1

Drawing No:	0561882s_IS1SS2RAA1_G001_R0.mxd		Clyde WARP – Import of Stage 1 Soils to Stage 2 (Audit Area 1) Durham Street, Rosehill NSW
Date:	11/10/2021	Drawing Size: A4	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd
Coordinate System: GDA 1994 MGA Zone 56		N	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM


DEVON STREET
COLQUHOUN STREET
UNWIN STREET
BUS SHELTER
VISITORS CAR PARK
OFFICE
SUB 11
BLOCK
TURNSTILE
STAGE 2
Asphalt Sealed Mounded Area
ROAD 1 ℄ 144.475 MS
ROAD 2 ℄ 3.657 MS
ROAD 4 ℄ 66.697 MS
ROAD 6 ℄ 103.327 MS
ROAD 8 ℄ 183.185 MS
TANKFARM A3
TANKFARM A2
EASEMENT
MANIFOLD PIT
NO.1 PUMPHOUSE
M.W.S. & D.B.
PUMP HOUSE
SUB 4
SUB 5
RAIL SIDING
OFFICE
BITUMEN LOADING GANTRY
SUB 29
SUB 23
WATER TREATMENT PLANT
CONTROL ROOM
UTILITIES
GEN HOUS
TRANS
51
52
53
54
55
56
58
59
Legend
Audit Area 1 (AA1)
Stage 2 Boundary
Western Area Boundary
Clyde Refinery
Biopiling Area (Tankfarm A1)
Soils Imported to AA1
Lot Subdivision Boundaries (SSD 10459)
Relocation Area of Subject Soils
F2
ERM

Appendix A-5 Figures (LTEMP)



Site Location

F1

Drawing No:	0561882s_L51-55_St2LTEMP_G001_R0.mxd		Clyde WARP – Lots 51-55 Stage 2 LTEMP Clyde Terminal - Durham Street, Rosehill
Date:	28/07/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

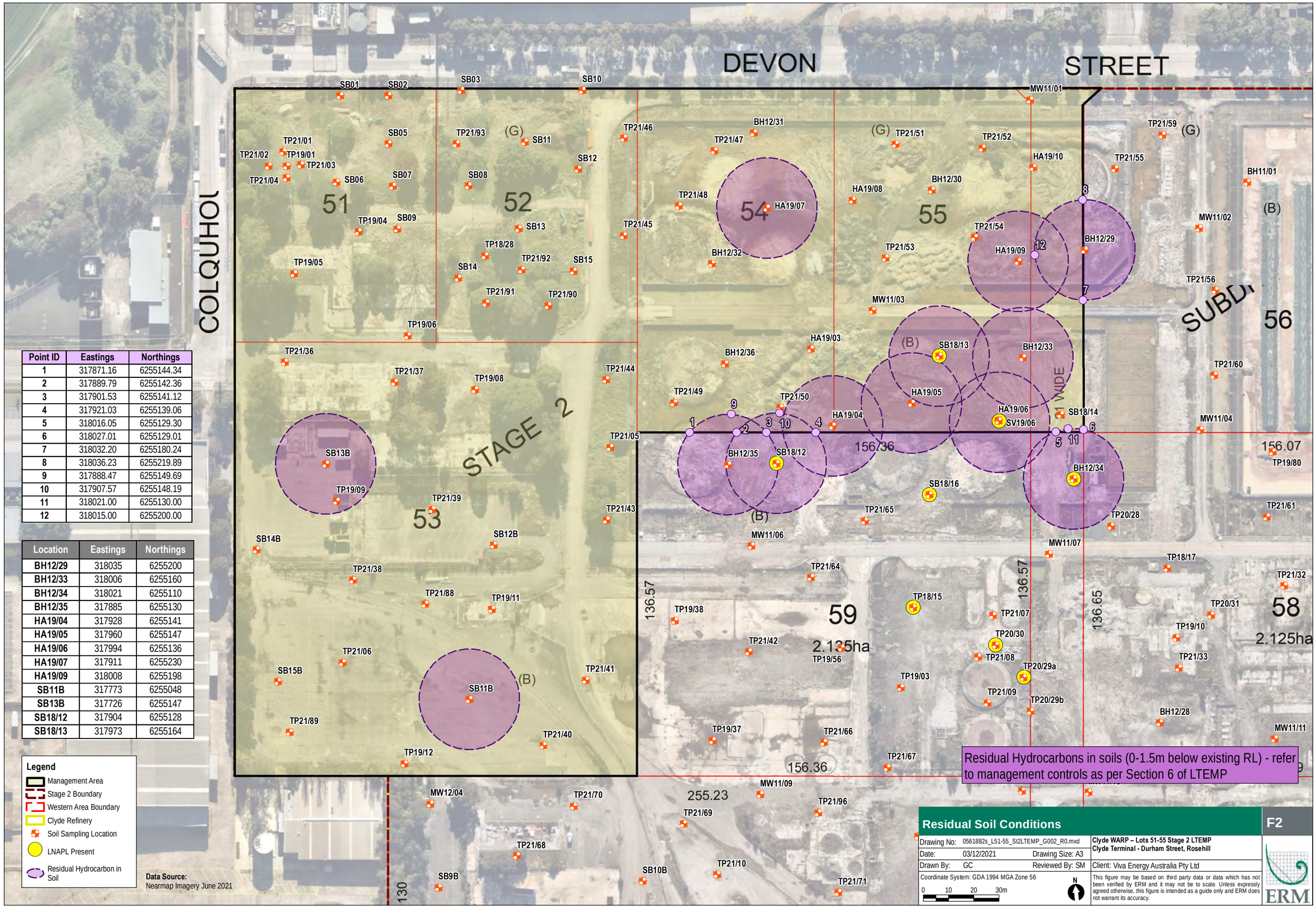
Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

N

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ERM



Point ID	Eastings	Northings
1	317871.16	6255144.34
2	317889.79	6255142.36
3	317901.53	6255141.12
4	317921.03	6255139.06
5	318016.05	6255129.30
6	318027.01	6255129.01
7	318032.20	6255180.24
8	318036.23	6255219.89
9	317888.47	6255149.69
10	317907.57	6255148.19
11	318021.00	6255130.00
12	318015.00	6255200.00

Location	Eastings	Northings
BH12/29	318035	6255200
BH12/33	318006	6255160
BH12/34	318021	6255110
BH12/35	317885	6255130
HA19/04	317928	6255141
HA19/05	317960	6255147
HA19/06	317994	6255136
HA19/07	317911	6255230
HA19/09	318008	6255198
SB11B	317773	6255048
SB13B	317726	6255147
SB18/12	317904	6255128
SB18/13	317973	6255164

Legend

- Management Area
- Stage 2 Boundary
- Western Area Boundary
- Clyde Refinery
- Soil Sampling Location
- LNAPL Present
- Residual Hydrocarbon in Soil

Data Source:
Nearmap Imagery June 2021

Residual Hydrocarbons in soils (0-1.5m below existing RL) - refer to management controls as per Section 6 of LTEMP

Residual Soil Conditions

F2

Drawing No:	0561882s_L51-55_St2LTEMP_G002_R0.mxd		Clyde WARP – Lots 51-55 Stage 2 LTEMP Clyde Terminal - Durham Street, Rosehill
Date:	03/12/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

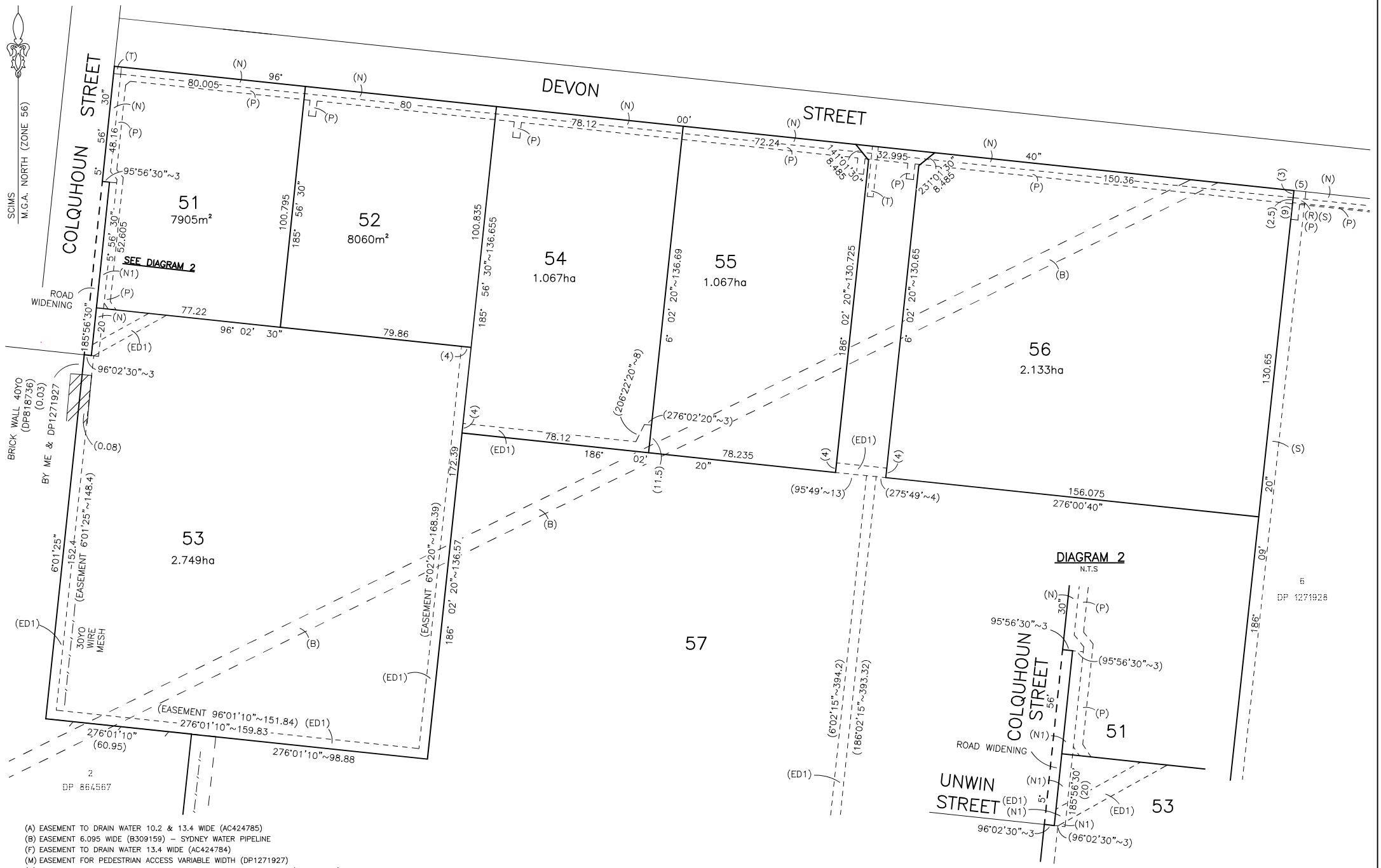
0 10 20 30m

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

Appendix A-6 Figures (Survey Plans)



(A) EASEMENT TO DRAIN WATER 10.2 & 13.4 WIDE (AC424785)
(B) EASEMENT 6.095 WIDE (B309159) – SYDNEY WATER PIPELINE
(F) EASEMENT TO DRAIN WATER 13.4 WIDE (AC424784)
(M) EASEMENT FOR PEDESTRIAN ACCESS VARIABLE WIDTH (DP1271927)
(N) EASEMENT FOR UNDERGROUND CABLES 3 WIDE & VARIABLE WIDTH (DP1271928)
(P) EASEMENT FOR SEWERAGE PURPOSES 2.5, 3 WIDE & VARIABLE WIDTH (DP1271928)
(R) EASEMENT FOR SERVICES 5 WIDE (DP12471928)
(S) RESTRICTION ON THE USE OF LAND FOR LANDSCAPE BUFFER 5 WIDE (DP1271928)
(ED1) EASEMENT FOR DRAINAGE OF WATER 4 WIDE & VARIABLE WIDTH
(T) EASEMENT FOR WATER SUPPLY PURPOSES 2.5 & 3 WIDE (DP1271928)
(N1) EASEMENT FOR UNDERGROUND CABLES 3 WIDE

Surveyor: GREGORY K OXLEY LandPartners PTY LTD PO BOX 1144 DUNDAS 2117 Date of Survey: 13/04/2021 Surveyor's Ref: SY074707.000.20	PLAN OF SUBDIVISION OF LOT 5 DP 1271928	LGA: CITY OF PARRAMATTA Locality: ROSEHILL Subdivision No: Lengths are in metres. Reduction Ratio 1:1000	Registered	DP

10 20 30 40 50 Table of mm 90 100 110 120 130 140

Appendix B

Site Audit Documentation

Client: Viva Energy
GHD project: 2127799
Site: WARP - Stage 2
Report: **Stage 2 – Site Suitability Report (Audit Area 1)**

Item	Report Section	Auditor Coments (version dated 28/07/21)	Consultant Responses	Auditor Comments (version dated 01/09/2021)	ERM responses	Auditor comments (final version dated 8/09/2021)
1	General comments	The auditor notes that specific information of remediation of Lots 51 and 54 is yet to be provided. Therefore, the AA1 suitability will be dependent on remediation/removal of asbestos from Lot 51 and stockpile from Lot 54.	Noted. As discussed verbally on 5/8/2020, a validation report for AA1 validating successful completion of these activities will be prepared and submitted for Auditor Review. This will form one of the earlier.	Noted. Validation of stockpile footprint and asbestos remediation of Lots 51 and 54 will be completed separately.	Not applicable.	No additional comment.
2	Executive summary	*Conclusions* - The discussion of the objectives in the conclusion should reflect the suitability of each lot as was presented in Section 10.	Discussion of the objectives in the conclusions reflects the suitability of each lot, as was presented in Section 10.	It is acknowledged that the discussion of the suitability of each site was presented in Section 10. However, for completeness the executive summary should present key elements of the report, including conclusions on suitability of each lot .	Noted - executive summary edited acoordingly.	Amended.
3	1.2	1 - The discussion regarding the ROA presented in Section 1.2 refers only to the remedial approach regarding petroleum hydrocarbons contamination. It would be beneficial to outline the ROA for the AEC-4 supporting the engineered cap should be discussed even briefly as well as the asbestos remediation.	Findings of the ROA across the wider Western Area are not relevant to the Site Suitability Report for AA1. As such, reference to ROA recommendations has been removed. The conclusions of the Stage 2 Detailed RAP (remediation of asbestos impacted soils in AEC-1) relevant to AA1 is already discussed in this section and considered sufficient.	Noted.	Not applicable.	No additional comment.
4	1.3	The LTEMP is an outcome of whether each of the lots is suitable for its proposed land use, and it is not an objective of the SSR.	Noted. Reference to the LTEMP within the objectives section has been removed.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
5	2.5	Table 2-2: This table should refer to information relevant to the AA1. For example, information regarding the depth of groundwater within AA-1 should be presented.	Table updated to include groundwater depth range in AA1.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
6	3.2	Clarify why the road was classified as AEC14 (drainage network) and not AEC-15 (all others areas of potential concern).	The proposed road which forms part of AA1 falls under AEC-11 (Tankfarms A1, A2 and A3). Text amended accordingly	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
7	4.1	Table 4-1: The following reviews or clarifications are necessary: **Step 1:** 1 - First bullet point: <u>As results of groundwater sampling did not record CoPC greater than adopted criteria</u>, groundwater remediation is not required (a review is required). 2 - First bullet point - Removal of asbestos stockpile from Lot 54 should be considered a "problem" too as as well the demolition of old buildings within AA1. 3 - Last bullet point - Please include the lots that will require an LTEMP, as this information is already known. **Step 4**: The vertical boundary for the AA1 should be outlined.	1 - Amended to remove groundwater from this statement. 2 - Dot point added as point 2 to outline requirement to remove asbestos waste from lot 54. 3 - LTEMP will include all lots as per discussions with VE Property, slight alteration to wording added to clarify. 4 - Vertical boundary of the study is the vertical extent of soil and groundwater investigations undertaken, noting that shallow soil and groundwater investigation is considered appropriate in the context of the Conceptual Site Model. Minor addition to document made.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
8	4.2	Table 4-2: Clarify where the assessment of QA/QC procedures is discussed.	Minor amendment to text above table 4-2 to clarify that detailed QAQC assessment has been undertaken within individual assessment reports.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
9	5.2	Certificates of calibration (PID and LFG) should be presented.	No new data is presented within this report, minor edit to clarify these methods were implemented during previous assessment works. Specifically, calibration certificates have been provided for PIDs/ LFG within the RSI report, which has been previously reviewed and endorsed by the Auditor.	It is noted that SSR AA1 is a stand-alone document. A paragraph mentioning that certificates of calibrations were presented in the previous reports (with a reference to the reports where the information was presented) should be inserted.	Text added to outline that calibration certificates have been provided for PIDs/ LFG within the RSI report, and that the same soil vapour screening methods were employed during the previous RSI.	Amended.
10	6	Reference to the table showing the assessment criteria should be presented.	Noted. Assessment Criteria table has been added as table 6-1.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
11	7.2	1 - Please note that with the subdivision of the Stage 2 Area, off-site human receptors within lots down gradient of AA1 should be considered into the groundwater discussion (not only Duck River). 2 - Discussion on the number of groundwater monitoring wells and groundwater data collected to date per lot should be presented in the section, supporting that the assessment met the minimum requirements or reference to where this information is discussed should be presented or at the least reference were this information was presented should be outlined.	1 - Noted - minor amendment to text in this section and CSM added to include 'future off-site commercial/industrial workers' as a receptor assessed by the CSM 2 - Outline of available dataset for groundwater added to section 3.3. A reference to the relevant section has been added here for completeness	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
12	7.3	1 - Clarify whether the soil vapour characterisation discussed in this section is only regarding Lot 55. 2 - Discussion on the number of soil vapour wells and vapour data collected to date per lot (or per area of concern that has been characterised) should be presented, supporting that the assessment has either met a minimum requirement or an AEC has been appropriately characterised. Reference to where this information is discussed should be presented.	1 - Correct, soil vapour data is only relevant to Lot 55 (location SV19/06). Vapour risk has been assessed via screening of soil data in other areas of the site and did not require direct measurement of vapour based on concentration of VOCs assessed. 2 - Discussion of soil vapour data set provided in section 3.3.3. A reference to the relevant section has been added here for completeness.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
13	7.4	LNAPL characterisation should be discussed in relation to AA1. Was LNAPL observed in all lots within AA1? Was LNAPL appropriately delineated in these lots?	LNAPL discussion has been modified to focus on AA1 and the delineation of LNAPL within/surrounding AA1. LNAPL visually observed is limited to shallow soils within Lot 55 and limited to shallow soils in Lots 53, 54, 55 and the proposed road as potential LNAPL indicated by TRH Management Limit exceedances, as outlined in *Table 8-1* . Consistent with the LNAPL CSM presented in Stage 2 RAP (ERM, 2021e), discussion has been added to outline that potential for migration or increased contaminant concentrations are considered to be low given the removal of primary sources from the site and that any present LNAPL/ TRH Management Limit exceedances are considered highly weathered and immobile. A 20 m buffer around these locations has been applied for management of residual hydrocarbons under an LTEMP and considers data points beyond the boundary of AA1. The management requirements for intrusive works within a 20 m buffer of residual hydrocarbons is to be outlined within the LTEMP for AA1. Considering the immobility of LNAPL and soils containing TRH Management Limit exceedances, these contaminants are not considered a risk of further migration between lots or between audit areas throughout Stage 2.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
14	8.3	Clarify whether potential acute hazards during intrusive works or in future buildings due to the generation and pooling of ground gases from LNAPL and impacted soil is applicable for AA1.	Addressed in the second last paragraph of section 7.4.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
15	8.4	The following statement was made "beneficial groundwater users (potable or non-potable) are not considered a potential receptor given the absence of registered extraction bores down gradient of the Site, poor natural background quality of groundwater and likely low yields." This assumption will need to be reviewed based on the information presented in Table 9-1, where ERM stated that restriction on groundwater extraction for Lots 51 and 52 is not necessary.	For simplicity and consistent with the remainder of the Western Area Table 9-1 has been updated to outline that lots 51 and 52 will also be subject to a restriction on groundwater extraction, which is to be applied throughout the AA1 area.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.
16	9	Data supporting that groundwater can be extracted should be presented, and as mentioned above, the CSM for Lots 51 and 52 will need to be updated in light of those data.	As above.	Noted. Awaiting report to check if the information has been included as mentioned in the tracking sheet.	Not applicable.	Information presented. No further comment.

Item	Report Section	Auditor comments - Report dated 20/10/2021	ERM Responses	Auditor comments - Report dated 03/12/2021
1	Executive summary	1 - ERM's role in the remedial works should be clarified. 2 - The remediation and validation discussion should refer to the Lots and not only the AECs. The discussion (restrictions) presented in the draft of the LTEMP was based on Lots. In addition, the suitability discussion in the SAS will be based on Lots, not AECs. 3- It is acknowledged that the discussion on the impacts within AA1 was presented in the AA1 Supplementary Assessment. However this report needs to be stand alone and a brief summary of relevant results/findings (and relevant figures) from other reports must be presented, as required in the Consultant Guidelines remediation and validation checklist.Any information that is in other reports that is relevant to validating the suitability of the site or describes management of contamination needs to be in this Validation Report. 4 - A preliminary discussion regarding the management post-remediation was presented in the AA1 Supplementary report. However, the management post-remediation and validation must be presented in the LTEMP given the suitability of the site is dependent on management of residual contamination (or potential contamination). 5 - Please include the information demonstrating that LNAPL is associated with shallow soils. The reason(s) for precluding groundwater extraction should be stated. A blanket ban on extraction may not be feasible as construction activities may come into contact/need to extraction groundwater.	1 - Refer to response to item 3. Will be summarised in Exec Summary as requested. 2 - Noted - AECs have been used in this report to identify excavations only with direct reference to the RAP. In terms of areas to be managed and the final CSM, this will be discussed in terms of lots. ERM to conduct a review of the document and provide clarification of lot areas where required. 3 - As discussed in meeting on 24/11/2021, summary of findings from the SSR will be incorporated and paraphrased within early sections of the report to make the document standalone. 4 - amendment of text to clarify post remediation management requirements are presented in the LTEMP (not SSR). 5 - As discussed in meeting on 24/11/2021, summary of findings from the SSR will be incorporated and paraphrased within early sections of the report and covers LNAPL in shallow soils. Residual Contamination requiring management has been added to section 7.4 and includes description of LNAPL. ERM proposes rewording of 'preclusion of groundwater extraction on site' to 'beneficial re-use' in line with LTEMP wording (i.e. drinking water, irrigation).	1 to 5 - Noted.
2	1	As per the NSW EPA (2020) *Consultant Guidelines* checklist any deviation from the RAP must be discussed in the Validation report.	No deviations to the RAP were noted, as outlined in section 3.7.	Noted.
3	1.4.1	Please refer to the auditor's comment on the executive summary concerning the EPS works and ERM's role during the remediation.	Roles and responsibilities outlined within Section 1.4.1 from RAP to outline the various roles of EPS/ ERM/ Viva for AA1.	Amended.
4	1.4.2	Regarding to the following statement "Detailed discussion on management requirements for these areas have been provided within a Site Suitability Report for AA1 (ERM, 2021e) and hence do not form part of the scope of this validation report", it is noted that the discussion of management requirements post-remediation must be presented in the Validation Report, given that contamination management is linked to the suitabilty of the site.	Inclusion of a summary of site suitability report, which includes summary of management requirements will be provided. As per Executive Summary Comments, the LTEMP covers detail on environmental management and will also be cross-referenced	Amended.
5	2.3	ERM reported the following "*The remediation and validation requirements for stockpile and soil excavation areas (Lots 51 and 54) are detailed within the Stage 2 Detailed RAP*". If this information was included in the Stage 2 RAP, a summary must be included in the Validation report as required by the Consultant Guidelines checklist.	Comment added that the remediation and validation requirements are summarised in section 4.1 and 4.2 of this validation report.	Amended.
6	2.4	1 - A statement specific to drainage associated with AA1 should be presented. In addition, reference to the Figure F4 showing the drainage should be referenced in this section. 2 - There is no definition of the term Site. If reference to the Site in this section or elsewhre is the report, is for AA1 this should be made clear.	1 - Noted - to add a statement regarding site drainage network specific to AA1. Reference to figure 4 to be added. Clean water drainage network only present within this area, tank farm drainage network was mostly above-ground infrastructure and has been removed, adjoining pits to the east and west were cleaned and decommissioned. 2 - Definition of 'the Site' has been defined clearly upfront within the Glossary section of the report and section 1.1. This covers the footprint of Viva Energy' owned property at Clyde and is consistent with early definition with EIS and planning documents	1 - Amended 2 - Noted.
7	2.8.1	1 - The Lot ID where AEC-11 is located should be presented. 2 - Was the lead UCL based on its position within a Lot or a larger area?	1 - Lot IDs of AEC-1, 11, 14 and 15 have been added to the start of section 2.8. 2 - Note 2 of table 2-4 updated to clarify that the lead UCL calculation consisted of representative fill data within AEC-11, noted to consist of partial areas of tank farm A2 and A3 - lot 54, 55 and proposed roadway.	1 - Amended. 2 - Noted.
8	2.8.2	There should be additional detail in relation to the statement that *no CoPCs were reported about the adopted groundwater criteria* - such as which CoPCs, the criteria. And refer to the GWMPs.	Inclusion of a summary of the Site Suitability Report CSM (pre-remediation) as per previous points above provides clarification on groundwater.	Amended.
9	2.8.4	ERM reported the following *"LNAPL is limited to shallow soils within Lot 55 and limited to shallow soils in Lots 53, 54, 55 and the proposed road as potential LNAPL indicated by TRH Management Limit exceedances, as outlined in Table 7-1. These LNAPL locations/ TRH Management Limits exceedances have been delineated to these lots within AA1, via clean data points, with the exception of the southern and eastern boundaries of Lots 54, 55 and the proposed road*". The following clarification or review are necessary: 1 - LNAPL in the shallow soil of Lot 55 was mentioned twice. 2 - The rationale supporting why the TRH exceedances were not delineated must be presented, especially given that there was no removal of primary sources. 3 - Clarify if the presence of LNAPL within shallow soils in Lots 54 and 55 were visually confirmed during the historical assessment or it was estimated based on TRH concentrations only. Data should be presented that supports the statements.	1 - Typographical Error - clarified within text "LNAPL is limited to shallow soils within limited to shallow soils in Lots 53, 54, 55 " 2 - There is a statement later within this section which provides this rationale: "Considering the immobility of LNAPL and soils containing TRH Management Limit exceedances, these contaminants are not considered a risk of migration between lots or between audit areas throughout Stage 2. Areas not delineated to the south (northern edge of Lot 59) and to the east (western edge of Lot 56) do not require remediation are to have their immobile hydrocarbon impacts be managed within their corresponding LTEMPs. " Primary sources of LNAPL have been removed (tank and fuel storage infrastructure) and what remains is residual LNAPL within soils (immobile and weathered secondary source) 3 - Statement re-worded to clarify. The presence of LNAPL identified in shallow soils was through a combination of visual identification and TRH management limit exceedances. Text updated to refer to figure 7 locations with 'LNAPL present' where LNAPL visually identified but not exceeded but not exceeding Management Limits.	1 - Amended. 2 - Noted. 3 - Amended.
	2.8.4	4 - Rationale supporting the 20 m buffer need to be presented, as previously requested by the auditor. 5 - ERM reported the following "LNAPL discussion for the broader Stage 2 area is provided within the Stage 2 RAP (ERM, 2021b)". As previously mentioned, a summary of the potential for LNAPL migration across Stage 2 Area needs to be presented as the Validation report should be stand alone. 6. The 20 metre buffer question also needs to explain how the buffers based on samples taken outside the five lots will be noted/measured.	4 - As per prior correspondence on the draft LTEMP for AA1 "The 20m buffer is proposed based on sample density achieved across these areas and is consistent with the approach applied for Stage 1. Each former tank farm area extends beneath lots 54, 55 and the proposed road and therefore soils. Residual hydrocarbon impacts have not been delineated to within each lot boundary (and wont be given former tank infrastructure extending beneath areas). Application of the buffer area around affected locations close to proposed lot boundaries factors in this potential for identified soil impacts to overlap boundaries." 5 - Noted - this summary will be added on fate and transport of LNAPL as requested, noting the full LNAPL CSM is presented in the Stage 2 RAP. 6 - As discussed on 24/11/2021, GPS co-ordinates for 3-4 points along the edge of to 20m buffer where this situation is applicable in addition to the actual sample location will be added to LTEMP figure for AA1.	4 - Amended. 5 - Amended. 6 - Noted.
10	2.9	A summary of the stockpile 29 should be included in Table 2-5. The commentary is written in the future tense.	Tense of this section has been reviewed and amended. Stockpile 29 had no reported exceedances so is not appropriate to add to a soil exceedance table. SP29 was proposed for removal based on its known source (asbestos waste from 2020 demolition works scope) and visual confirmation of ACM within this stockpile during ERM stockpile characterisation works.	**I don't agree with ERM's responses. A summary stating that no exceedances were identified, plus the explanation provided in this table should be included in the report, as it is a "positive" information.**
11	2.1	A summary of the management actions including the depths of impacted area needs to be presented in the Validation report.	Noted, to be included in line with comments on the LTEMP regarding identification of depths of impacts. Given the vertical distribution of hydrocarbon impacts (i.e. top down source from ASTs and aboveground pipework) within top 1.5m, limiting management controls to excavation at particular depths will be impractical, particularly given surface levels are likely to change. Management controls are therefore proposed for all ground disturbance works in these areas. Management actions are summarised later in the document in Section 7.4	Amended.
12	3.1	Management of the residual TRH contaminated soil is an action that should be listed as one of the objectives	Noted - It is not a specific objective of the validation report to manage residual TRH contaminated soil but have added the following point as an overall remediation objective: "Identify areas of residual contamination requiring in-situ management into the future, as documented via a Long Term Environmental Management Plan (LTEMP)."	Noted.
13	4.1	The discussion should include the Lots not only the AECs (which in this case are not linked to the management locations listed in Sectoin 2.10) as previously mentioned by the auditor in this trackingsheet.	Noted - added lot references along with AECs to Table 4-1 and report text in this section	Amended.
14	4.5	The dimensions and description of Stockpile SP29 should be presented.	Full description of this stockpile is provided within site characterisation section 2.8.5 (Onsite Stockpiled Material). Dimensions to be added (11m high x 5m wide x 1m high).	Amended.
15	5	1 - ERM reported a visual clearance following excavation of AEC-1. However, an asbestos clearance certificate was not presented in the validation report. 2 - Clarify whether an asbestos clearance certificate was issued for the footprint of Stockpile 29 within Lot 54. 3 - Is ERM confident that the footprint of the Stockpile 29 was appropriated validated with one sample?	1 - Asbestos Clearance Certificate to be attached to the report (Appendix L) 2 – SP29 and SP30 footprints covered by separate clearance certificate (Appendix L). Note SP30 is relevant to AA2 but was included due to concurrently completed removal works. 3 – Yes, Footprint was <100m2 and sampling undertaken in accordance with the Stage 2 RAP. Additionally, asbestos was present in this stockpile as ACM fragments and would be visibly identifiable if present. A visual inspection and clearance of this area was undertaken in addition to collection of samples	1 to 2 - Noted.
16	5.1.1	1 - ERM reported that the average depth of the fill within the AEC-1 (Lot 51) was between 0.1 to 0.2 mbgl and the excavation depth was up to 0.2 mbgl. However, in Table 4-1, ERM reported that the actual depth of excavation within AEC-1 was 0.35 mbgl. This matter needs to be clarified. 2 - ERM reported that following rainfall events occurred after excavation and validation of AEC-1 asbestos was found within AEC-1. If excavation occurred until the clay material was observed, and the base/wall validated what is is the source of this asbestos? Could be from an upgradient area? 3 - Clarify why additional soil sampling validation was not deemed necessary? 4 - The asbestos clearance certificate for the inspection completed on 20/09/21 was not presented in the Validation report.	1 – Building footings were present within the west and north-west extent of the excavation footprint at the completion of the excavation. Depth to natural soils were up to 0.35m BGL outside the footings to the east following removal of some shallow concrete footings. Where footings remained in place excavation was shallower. Wording of the report will be updated consistent with this description of the completed excavation. 2 – The additional ACM finds were within minor amounts of sandy fill material (1-2cm depth) which remained overlying sections of concrete footings. ACM fragments were also identified in the northern wall of the excavation. Asbestos (ACM) has previously been identified below land-use criteria at the northern extent of this excavation (TP21/01_0.2) and is therefore not unexpected. 3 – The additional ACM from the above-listed sections of fill were removed by hand picking. Remaining fill was also hand tilled with a rake to confirm no additional ACM fragments to be present. On the basis of first round of validation samples plus historical investigation data (TP19/01) asbestos has been identified as being present in the form of ACM only (bonded), with no reported detections of fibres in soil. Due to the small number and limited extent of the additional fragments removed, and low likelihood of fibres being generated, laboratory analysis was not considered to be required. 4 – Asbestos clearance to be included in final report as per item 15.	1 - Amended. 2 - Noted. 3 - Noted.
		5 - Is ERM confident that the source of asbestos within Lot 51 was removed, thus the potential for asbestos within Lot 51 is not necessary to be addressed in the LTEMP? 6 - ERM stated in this section that the soil density adopted was 1.8 T/m3. However, in the note of Table it was reported that the density adopted was 1.6 T/m3 for material with gravel. Clarification of the adopted density is necessary.	5 – The source of asbestos within Lot 51 has been identified and documented in historical investigations as originating from the demolition of a former buildings and is localised to the immediate vicinity of the building footprint at AEC-1. The driver for remediation of asbestos impacts was based on land-use criteria exceedances an/or the presence of asbestos at the ground surface. The LTEMP for the entire AA1 area (including lot 51) specifically addresses the potential for trivial amounts of asbestos containing materials via an unexpected finds protocol. 6 - This discrepancy is due to differing material types between those excavated and those imported and compacted to backfill the excavation. Within Section 5.5.1 - Moist clay material was imported to backfill the excavation which had a bulk density of approximately 1.8 T/m3 once compacted in place. Table 6-1 refers to waste material excavated and disposed of from AEC-1 and SP29. Drier, less consolidated materials can be expected to have a lower bulk density than imported materials and accounts for this difference.	5 - Noted. 6 - Noted.

17	7	Table 7-1 - Clarify whether PFAS in groundwater have recently been confirmed (i.e. Q4 2020 GME). If PFAS was recently detected above the criteria, rationale supporting why groundwater impacted by PFAS did not need to be remedied should be presented	Clairifcation of groundwater has been added up front within groundwater characterisation section. PFAS in groundwater does not form part of the GWMP for the remediation project (outside of the AEC-4 area). The following information has been previously presented in consolidated format within the SSR: Previous assessment identified detections of PFAS above criteria for offsite ecological receptors in MW94/3 (Lot 52). Given the location of this well (upgradient site boundary), this detection is considered associated with an offsite source to the north. Given the significant distance, downgradient delineation and flux assessment undertaken, no risk to offsite receptors from PFAS in groundwater at the Duck and Parramatta Rivers was identified requiring remediation. As per previous comments, ERM will include a clairifcation within Site Characterisation Section on Groundwater to clarify no requirement for remediation (due to no risk to receptors).	
18	7.4.1	A summary of the residual impacts per lot, including the depths and potential risks should be discussed in the Validation report.	Sub-Sections titled 'Residual Contamination Requiring Management' and 'Location and Extent of Residual Contamination' have been added before previous Section 7.4.1. These sections are aligned with information presented in the LTEMP.	Amended.
19	7.4.2	As required by the NSW EPA (2020) Consultant Guidelines, a summary of groundwater results must be presented in the report. This is key information that should be discussed to support that ongoing groundwater monitoring within AA1 is not necessary. First bullet point of the conclusions needs to acknowledge that soils were not only remediated, but will be managed.	Summary of Groundwater Results to be included within Chapter 2 and cross-referenced. Updated Conclusion dot point #1: "Soil within AA1 was remediated in accordance with the Stage 2 RAP and will be managed in accordance with a LTEMP to enable the land to be used for commercial/ industrial purposes in the future and reducing the risk of contamination from the land adversely affecting human health and the environment;	Amended.
20	8	The suitability statement for each of the lots followed that comprises AA1 must be presented in the Conclusions sections.	Noted - added reference to the proposed lots in concluding statement on site suitability	Amended.
21	General comment	Figure F5 needs to be linked to the historical data	Noted, in text reference to be added. Summary table of data points per lot to be added from Site Suitability Report	Amended.
22		Figure F7 needs a link to tables/commentary on *residual soil conditions* - what does this mean?	Residual Soil Conditions requiring Management - propose renaming figure	Amended.
23		Step 5 of the DQOs - should also include a rule regarding soils with TRH that are to be managed.	Noted - decision rule added as requested	Amended.
24		The conclusions need to state that the site is suitable for commercial/industrial land use, subject to an EMP.	Added as per item 19 above	Amended.
25		The LTEMP also needs to incorporate identification of the drainage lines - what is meant by *no significant residual hydrocarbons remained* (2.8.6)? As an unexpected find should they be encountered	Drainage lines present within AA1 did not form part of the oil contaminated drainage network and did not contain residual sludge following cleaning. As such, drainage line identification is not considered required within the LTEMP (as per the WARP Stage 1 LTEMP).	Clarified.
26		The results of the gas testing (2.8.6) should be presented or summarised	Significant detail on this is provided within the Stage 2 Drainage report, relevant gas test data has been provided as new table 12 for completeness.	Amended.

Appendix C

Tables

Appendix C-1 Tables (AA1 Validation report)

COPC	Soil									
	Direct Contact (mg/kg)			VI (mg/kg)						Management Limits (mg/kg)
	Commercial	IMW	Construction	Commercial (0.15mbgl)	Commercial (1 mbgl)	Commercial (>2-4mbgl)	Commercial (>4mbgl)	IMW	Construction	
Benzene	400	15000	1200	3.2	3.2	3.2	3.2	NL	NL	-
Naphthalene	9800	810000	67000	NL	NL	NL	NL	NL	NL	-
Benzo(a)pyrene TEQ	40	3000	200	-	-	-	-	-	-	-
Total Chromium[a]	21000	100,000	8200							
Chromium VI	3600	17000	1400	-	-	-	-	-	-	-
TRH C6-C10 (less BTEX)	28000	830000	69000	600	770	NL	NL	NL	NL	-
TRH C6-C10	-	-	-	-	-	-	-	-	-	700
TRH C10-C16 (less N)	17000	540000	45000	NL	NL	NL	NL	NL	NL	-
TRH C10-C16	-	-	-	-	-	-	-	-	-	1000
TRH C16-C34	27000	770000	64000	-	-	-	-	-	-	3500
TRH C34-C40	27000	770000	64000	-	-	-	-	-	-	10000
TPH (EC5-6) aliphatic	1200000	3700000	310000	-	-	-	-	-	-	-
TPH (>EC6-8) aliphatic	1200000	3700000	310000	480	610	880	1400	NL	NL	-
TPH (>EC8-10) aliphatic	24000	740000	62000	760	980	1400	2200	NL	NL	-
TPH (>EC10-12) aliphatic	24000	740000	62000	430	600	980	1800	NL	NL	-
TPH (>EC12-16) aliphatic	24000	740000	62000	4300	8300	17000	33000	NL	NL	-
TPH (>EC16-21) aliphatic	470000	4400000	370000	-	-	-	-	-	-	-
TPH (>EC21-34) aliphatic	470000	4400000	370000	-	-	-	-	-	-	-
TPH (>34) aliphatic	4700000	44000000	3700000	-	-	-	-	-	-	-
TPH (>EC8-10) aromatic	9500	300000	25000	110	150	230	420	NL	NL	-
TPH (>EC10-12) aromatic	9500	300000	25000	280	430	750	1400	NL	NL	-
TPH (>EC12-16) aromatic	9500	300000	25000	430	2800	5100	9800	NL	NL	-
TPH (>EC16-21) aromatic	7100	220000	18000	-	-	-	-	-	-	-
TPH (>EC21-34) aromatic	7100	220000	18000	-	-	-	-	-	-	-
TPH (>34) aromatic	7100	220000	18000	-	-	-	-	-	-	-
Trimethylbenzene, 1,2,4-										
Trimethylbenzene, 1,3,5-										
Cyclohexane										
Heptane, N-										
Hexane, N-										
Isooctane										
Propene										

a - Assumes Total chromium is 17% Hexavalent chromium

																OCs												

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				BTEX							Naphthalene	TRH NEPM (1999)							TRH NEPM (2013)							TRH Silica Gel Cleanup													
				Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.05	0.05	0.05	0.1	0.2	0.05	0.2	0.1	10	20	20	50		50	50	10	10	50	50	100	50	100	50	20	50	50	50	50	100	50	100					
Clyde WARP SSTL (Direct Contact - Commercial)				400							9800									28000		17000	27000		27000													
Clyde WARP SSTL (Direct Contact - Construction Worker)				1200							67000									69000		45000	64000		64000													
Clyde WARP SSTL (Direct Contact - IMW)				15000							810000									830000		540000	770000		770000													
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																																						
4-6m				3.2							NL									NL		NL																
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																																						
1-1.99m				3.2							NL									770		NL																
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																																						
2-3.99m				3.2							NL									NL		NL																
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																																						
0-0.99m				3.2							NL									600		NL																
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)				NL							NL									NL		NL																
Clyde WARP SSTL (Vapour Intrusion - IMW)				NL							NL									NL		NL																
NEPM (1999) HIL D - Commercial/Industrial																																						
NEPM (1999) HSL D Comm/Indust - Asbestos																																						
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																			700		1000		3500		10000			1000				3500		10,000			
Alternative_Name	**Location_Code**	**Field_ID**	**Sample_Depth_Range**	**Sampled_Date_Time**																																		
Lot 51	SB01	SB01_0.2-0.5	0.2-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB02	SB02_0.0-0.3	0-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB03	SB03_0.45-0.6	0.45-0.6	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB05	SB05_0.4-0.6	0.4-0.6	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB05	SB05_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	D091209-01	0.2-0.4	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	3.9	-	<20	<50	1200	2400	1200	2425	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	SB06_0.2-0.9	0.2-0.4	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	3.7	-	<20	50	1500	2800	1300	2850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB07	D091208_02	0.1-0.3	9/12/2008	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<2.2	<0.5	-	<10	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB07	SB07_0.1-0.3	0.1-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB08	SB08_0.0-0.3	0-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB09	SB09_0.4-0.7	0.4-0.7	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB10	SB10_0.2-0.5	0.2-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB11	SB11_0.15-0.25	0.15-0.25	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB12	SB12_0.35-0.5	0.35-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB13	SB13_0.15-0.3	0.15-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	200	150	225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB14	SB14_0.1-0.5	0.1-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB15	SB15_0.0-0.5	0-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_0.3	0.3-0.3	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_1.2	-1.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_1.2	1.2-1.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_2.2	-2.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_2.2	2.2-2.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_3.0	3-3	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	DOI_050819	0.7-0.9	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.8	0.7-0.9	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.1	0-0.2	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/04	TP19/04_0.1	0-0.2	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	50	240	-	210	500	<20	<20	61	61	370	601	170	-	<50	<50	330	-	170	300	160	<100				
Lot 51	TP19/05	TP19/05_0.2	0.1-0.3	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/06	TP19/06_0.5	0.4-0.6	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/06	TP19/06_1.0	0.9-1.1	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_1.0	0.9-1.1	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_0.1	0-0.2	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	130	-	220	350	<20	<20	<50	<50	290	290	<100	-	<20	<50	<50	-	<50	<100	<50	<100				
Lot 55	BH12/30	BH12/30_0.25	0.25-0.25	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/30	BH12/30_1.3	1.3-1.3	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.1	0.1-0.1	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	660	710	<100	660 - 735	<20	<20	58	58	680	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.4	0.4-0.4	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	76	110	160	<100	190 - 236	<20	<20	120	120	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_1.4	1.4-1.4	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/32	BH12/32_0.2	0.2-0.2	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5 - 1.2	<10	-	650	600	650	<100	1300	<20	<20	880	880	370	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/32	BH12/32_1.2	1.2-1.2	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	0.7 - 5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/33	BH12/33_0.2	0.2-0.2	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	5.2	57	-	2700	10,000	10,520	520	13,000 - 13,220	92	92	6200	6200	7700	-	230	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/33	BH12/33_0.6	0.6-0.6	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	55	-	2200	8400	8670	270	10,870 - 11,000	83	83	5100	5100	6100	-	110	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_0.7	0.7-0.7	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	320	2300	2580	280	2900	<20	<20	700	700	2300	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_1.3	1.3-1.3	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/03	HA19/03_0.8	0.7-0.9	31/07/2019	<0.1	<0.1	0.5	<0.1	0.5	0.5	-	2.1 - 5.6	-	<20	49	200	-	<50	249	24	23	100	94.4	140	240	<100	-	27	60	147	-	120	<100	<50	<100				
Lot 54	HA19/03	HA19/03_1.5	1.4-1.6	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	1.8	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_0.4	0.3-0.5	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	750	1431	-	840	590	91	<100				
Lot 54	HA19/04	HA19/04_0.4	0.4-0.6	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	68	1300	2200	-	220	3720	200	200	2100	2100	1500	3600	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_1.0	0.9-1.1	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/05	HA19/05_0.3	0.2-0.4	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	1200	120	-	<50	1320	27	27	1200	1200	<100	1200	<100	-	150	160	150	-	<50	<100	<50	<100				
Lot 55	HA19/05	HA19/05_0.05	0-0.1	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	75	-	<50	75	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/06	HA19/06_1.0	0.9-1.1	1/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/06	HA19/06_2.2	2.1-2.3	1/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/07	HA19/07_0.3	0.2-0.4	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	31	360	-	88	479	<20	<20	69	69	370	439	<100	-	<20	<50	190	-	190	180	<50	<100				
Lot 54	HA19/07	HA19/07_0.05	0-0.1	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	60	5400	-	2100	7560	<20	<20	320	320	6600	7840	920	-	73	300	9073	-	7100	7300	1900	850				
Lot 55	HA19/08	HA19/08_0.8	0.7-0.9	2/08/2019	<0.4	<0.4	<0.4	0.4	<0.8	<1.2	-	12 - 29	-	<80	220	470	-	50	740	<80	<80	310	281	380	690	<100	-	100	150	290	-	190	140	<50	<100				
Lot 55	HA19/08	HA19/08_1.2	1.1-1.3	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	2.3	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/09	HA19/09_0.8	0.7-0.9	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5 - 1	-	<20	2300	9700	-	340	12,340	<20	<20	5400	5400	6300	11,900	200	-	2200	5100	11,330	-	8900	5800	230	180				
Lot 55	HA19/09	HA19/09_1.4	1.3-1.5	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	46	190	-	<50	236	<20	<20	100	100	120	220	<100	-	<20	<50	77	-	77	<100	<50	<100				
Road alignment	HA19/10	HA19/10_0.2	0.1-0.3	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	HA19/10	HA19/10_0.05	0-0.1	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	200	-	190	390	<20	<20	<50	<50	350	350	<100	-	<20	<50	175	-	94	160	81	<100				
Lot 55	MW11/03	MW11/03_0.8	0.8	6/10/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-				
Lot 55	MW11/03	D_061011_02	3	6/10/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-				

					BTEX					Naphthalene	TRH NEPM (1999)							TRH NEPM (2013)							TRH Silica Gel Cleanup								
					Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.05	0.05	0.05	0.1	0.2	0.05	0.2	0.1	10	20	20	50		50	50	10	10	50	50	100	50	100	50	20	50	50	50	50	100	50	100
Clyde WARP SSTL (Direct Contact - Commercial)					400							9800									28000		17000	27000		27000								
Clyde WARP SSTL (Direct Contact - Construction Worker)					1200							67000									69000		45000	64000		64000								
Clyde WARP SSTL (Direct Contact - IMW)					15000							810000									830000		540000	770000		770000								
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																																		
4-6m					3.2							NL									NL		NL											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																																		
1-1.99m					3.2							NL									770		NL											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																																		
2-3.99m					3.2							NL									NL		NL											
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																																		
0-0.99m					3.2							NL									600		NL											
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)					NL							NL									NL		NL											
Clyde WARP SSTL (Vapour Intrusion - IMW)					NL							NL									NL		NL											
NEPM (1999) HIL D - Commercial/Industrial																																		
NEPM (1999) HSL D Comm/Indust - Asbestos																																		
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																				700		1000		3500		10000			1000				3500		10,000
Alternative_Name	**Location_Code**	**Field_ID**	**Sample_Depth_Range**	**Sampled_Date_Time**																														
Lot 55	MW11/03	MW11/03_3.0	3	6/10/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-
Lot 55	MW11/03	MW11/03_5.8	5.8	6/10/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-
Lot 55	SB18/13	SB18/13_0.3_20180214	-0.3	14/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	-	-	<1 - 2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	SB18/13	SB18/13_0.3_20180214	0.3-0.3	14/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	660	2310	-	170	3140	14	14	1280	1280	1800	3210	130	970	530	970	1970	2020	1440	1050	<100	<100
Lot 55	SB18/13	SB18/13_0.9_20180214	-0.9	14/02/2018	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	SB18/13	SB18/13_0.9_20182014	0.9-0.9	14/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	77	-	<50	<100	-	<100	<50	130	130	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_0.3_2018	-0.3	9/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_0.3_180209	0.3-0.3	9/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_1.2_20180209	-1.2	9/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_1.2_180209	1.2-1.2	9/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_2.4_180209	2.4-2.4	9/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Road alignment	MW11/01	MW11/01_0.2	0.2-0.2	23/09/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50 - 200	-	-	-	-	-	-	-	-	-	-	-	<100	-	200	-
Road alignment	MW11/01	MW11/01_2.4	2.4-2.4	23/09/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-
Lot 53	SB11B	SB11B_0.2	0.2-0.4	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	1350	580	-	<100	1930	<10	<10	1570	1570	200	1770	<100	-	-	-	-	-	-	-	-	-
Lot 53	SB11B	SB11B_1.0	0.9-1.1	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	100	770	-	300	1170	<10	<10	150	150	960	1230	120	-	-	-	-	-	-	-	-	-
Lot 53	SB11B	SB11B_2.0	1.9-2	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Lot 53	SB12B	SB12B_1.0	0.9-1.1	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Lot 53	SB12B	SB12B_2.0	1.9-2	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Lot 53	SB13B	SB13B_0.5	0.4-0.6	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1 - 0.5	54	-	1190	2040	-	720	3950	78	78	2210	2210	1970	4770	590	-	-	-	-	-	-	-	-	-
Lot 53	SB13B	SB13B_1.0	0.9-1.1	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1 - 1.6	296	-	980	2410	-	1420	4810	356	356	1960	1960	2530	5340	850	-	-	-	-	-	-	-	-	-
Lot 53	SB14B	SB14B_1.0	0.9-1.1	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Lot 53	SB15B	SB15B_1.0	0.9-1.1	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Lot 53	SB15B	SB15B_2.0	1.9-2	1/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-
Lot 53	TP19/09	TP19/09_0.4	0.4-0.6	17/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 53	TP19/09	TP19/09_0.6	0.5-0.7	17/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 53	TP19/11	TP19/11_0.4	0.3-0.5	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	D01_170719	0.1-0.3	17/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	T01_170719	0.1-0.3	17/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	TP19/12_0.1	0.1-0.3	17/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	TP19/12_0.3	0.2-0.4	17/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 52	TP21/46	TP21/46_0.2	0.2	19/03/2021	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-
Lot 52	TP21/46	TP21/46_0.5	0.5	19/03/2021	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-

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					TRH Aliphatic/Aromatic Split													Metals																				
					TRH >C5-C7 (Benzene) Aromatic	TRH >C5-C8 Aliphatic	TRH >C8-C10 Aliphatic	TRH >C10-C12 Aliphatic	TRH >C12-C16 Aliphatic	TRH >C16-C21 Aliphatic	TRH >C21-C35 Aliphatic	TRH >C5-C7 Aromatic	TRH >C7-C8 Aromatic	TRH >C8-C10 Aromatic	TRH >C10-C12 Aromatic	TRH >C12-C16 Aromatic	TRH >C16-C21 Aromatic	TRH >C21-C35 Aromatic	Arsenic	Boron	Cadmium	Chromium	Chromium (hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.1	10	10	10	10	10	10	0.1	0.1	1	10	10	10	10	1	10	0.1	2	0.5	2	5	2	50	2	5	0.05	1	1	2	0.1	1	5
Clyde WARP SSTL (Direct Contact - Commercial)						1200000	24000	24000	24000	470000	470000			9500	9500	9500	7100	7100				21000[#1]	3600													
Clyde WARP SSTL (Direct Contact - Construction Worker)						310000	62000	62000	62000	370000	370000			25000	25000	25000	18000	18000				8200[#1]	1400													
Clyde WARP SSTL (Direct Contact - IMW)						3700000	740000	740000	740000	4400000	4400000			300000	300000	300000	220000	220000				100000[#1]	17000													
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																																				
4-6m						1400	2200	1800	33000					420	1400	9800																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																																				
1-1.99m						610	980	600	8300					150	430	2800																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																																				
2-3.99m						880	1400	980	17000					230	750	5100																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																																				
0-0.99m						480	760	430	4300					110	280	430																				
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)						NL	NL	NL	NL					NL	NL	NL																				
Clyde WARP SSTL (Vapour Intrusion - IMW)						NL	NL	NL	NL					NL	NL	NL	NL	NL																		
NEPM (1999) HIL D - Commercial/Industrial																			3000		900		3600			240000		1500		730		6000	10000			400000
NEPM (1999) HSL D Comm/Indust - Asbestos																																				
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																																				
Alternative_Name	**Location_Code**	**Field_ID**	**Sample_Depth_Range**	**Sampled_Date_Time**																																
Lot 51	SB01	SB01_0.2-0.5	0.2-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.6	<10	<0.5	22	<1	22	<5	44	-	9	-	<0.1	<10	5.8	<2	-	<10	13
Lot 51	SB02	SB02_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	<10	<0.5	36	<1	36	<5	26	-	190	-	<0.1	<10	7.8	<2	-	<10	360
Lot 52	SB03	SB03_0.45-0.6	0.45-0.6	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	<10	<0.5	19	<1	19	<5	8.5	-	32	-	<0.1	<10	6.9	<2	-	<10	27
Lot 51	SB05	SB05_0.4-0.6	0.4-0.6	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	<10	<0.5	25	<1	25	<5	9.1	-	8	-	<0.1	<10	5.4	<2	-	<10	16
Lot 51	SB05	SB05_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	D091209-01	0.2-0.4	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	<10	<0.5	12	<1	12	6.6	21	-	16	-	<0.1	<10	16	<2	-	<10	56
Lot 51	SB06	SB06_0.2-0.9	0.2-0.4	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.3	<10	<0.5	14	<1	14	7.9	22	-	21	-	<0.1	<10	15	<2	-	<10	58
Lot 51	SB07	D091208_02	0.1-0.3	9/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	<1	45	-	-	-	11	19,700	-	39	<0.1	-	6	-	-	-	59
Lot 51	SB07	SB07_0.1-0.3	0.1-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	<10	<0.5	58	<1	58	<5	13	-	34	-	<0.1	<10	8.7	<2	-	<10	79
Lot 52	SB08	SB08_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4	<10	<0.5	11	<1	11	<5	6.6	-	8.8	-	<0.1	<10	<5	<2	-	<10	16
Lot 51	SB09	SB09_0.4-0.7	0.4-0.7	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<10	<0.5	11	<1	11	<5	6.6	-	8.9	-	<0.1	<10	<5	<2	-	<10	14
Lot 52	SB10	SB10_0.2-0.5	0.2-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	<10	<0.5	1900	2.3	1900	13	8.6	-	13	-	<0.1	<10	32	<2	-	<10	44
Lot 52	SB11	SB11_0.15-0.25	0.15-0.25	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	<10	<0.5	1000	1.1	1000	6	13	-	48	-	<0.1	<10	15	<2	-	<10	45
Lot 52	SB12	SB12_0.35-0.5	0.35-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7	<10	<0.5	19	<1	19	<5	12	-	28	-	<0.1	<10	7.4	<2	-	<10	75
Lot 52	SB13	SB13_0.15-0.3	0.15-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	<10	<0.5	52	<1	52	<5	14	-	52	-	<0.1	<10	5.8	<2	-	<10	91
Lot 52	SB14	SB14_0.1-0.5	0.1-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<10	<0.5	15	<1	15	<5	7.8	-	10	-	<0.1	<10	<5	<2	-	<10	25
Lot 52	SB15	SB15_0.0-0.5	0-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<10	<0.5	8.7	<1	8.7	<5	5.1	-	18	-	<0.1	<10	<5	<2	-	<10	16
Lot 52	TP18/28	TP18/28_0.3	0.3-0.3	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_1.2	-1.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	<1	27	-	-	-	13	-	20	-	<0.1	-	5	-	-	-	15
Lot 52	TP18/28	TP18/28_1.2	1.2-1.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_2.2	-2.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	<1	17	-	-	-	16	-	17	-	<0.1	-	<2	-	-	-	7
Lot 52	TP18/28	TP18/28_2.2	2.2-2.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_3.0	3-3	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	DOI_050819	0.7-0.9	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	<0.4	44	-	-	-	25	-	32	-	<0.1	-	5.4	-	-	-	15
Lot 51	TP19/01	TP19/01_0.8	0.7-0.9	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	<0.4	35	-	-	-	21	-	31	-	<0.1	-	<5	-	-	-	9.2
Lot 51	TP19/01	TP19/01_0.1	0-0.2	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6	-	<0.4	24	-	-	-	11	-	51	-	<0.1	-	6.4	-	-	-	90
Lot 51	TP19/04	TP19/04_0.1	0-0.2	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	2.8	52	-	-	-	82	-	97	-	0.2	-	78	-	-	-	480
Lot 51	TP19/05	TP19/05_0.2	0.1-0.3	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	<0.4	<5	-	-	-	<5	-	<5	-	<0.1	-	<5	-	-	-	<5
Lot 51	TP19/06	TP19/06_0.5	0.4-0.6	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	-	<0.4	2400	-	-	-	8.5	-	17	-	<0.1	-	58	-	-	-	62
Lot 51	TP19/06	TP19/06_1.0	0.9-1.1	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	<0.4	150	-	-	-	14	-	19	-	<0.1	-	<5	-	-	-	14
Lot 53	TP19/08	TP19/08_1.0	0.9-1.1	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	-	<0.4	30	-	-	-	13	-	17	-	<0.1	-	8.1	-	-	-	18
Lot 53	TP19/08	TP19/08_0.1	0-0.2	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	-	<0.4	54	-	-	-	25	-	78	-	0.3	-	11	-	-	-	180
Lot 55	BH12/30	BH12/30_0.25	0.25-0.25	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	-	<0.1	8.5	-	-	-	13	-	11	-	<0.05	-	<1	-	-	-	7.1
Lot 55	BH12/30	BH12/30_1.3	1.3-1.3	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.8	-	0.2	26	-	-	-	52	-	46	-	<0.05	-	5.3	-	-	-	540
Lot 54	BH12/31	BH12/31_0.1	0.1-0.1	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.4	0.4-0.4	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	-	0.6	13	-	-	-	76	-	50	-	0.11	-	4.7	-	-	-	180
Lot 54	BH12/31	BH12/31_1.4	1.4-1.4	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	-	0.1	16	-	-	-	62	-	50	-	<0.05	-	2.8	-	-	-	280
Lot 54	BH12/32	BH12/32_0.2	0.2-0.2	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	0.6	40	<1	33	-	140	-	160	-	<0.05	-	110	-	-	-	1100
Lot 54	BH12/32	BH12/32_1.2	1.2-1.2	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6	-	<0.1	13	-	-	-	18	-	20	-	<0.05	-	3.1	-	-	-	5.5
Lot 55	BH12/33	BH12/33_0.2	0.2-0.2	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	0.2	24	-	-	-	21	-	520	-	0.07	-	5.5	-	-	-	220
Lot 55	BH12/33	BH12/33_0.6	0.6-0.6	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.9	-	<0.1	18	-	-	-	12	-	39	-	<0.05	-	3.8	-	-	-	62
Lot 54	BH12/36	BH12/36_0.7	0.7-0.7	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	<0.1	18	-	-	-	10	-	30	-	<0.05	-	2	-	-	-	33
Lot 54	BH12/36	BH12/36_1.3	1.3-1.3	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	-	<0.1	7.7	-	-	-	10	-	11	-	<0.05	-	<1	-	-	-	<5
Lot 54	HA19/03	HA19/03_0.8	0.7-0.9	31/07/2019	<0.1	<10	<10	11	41	37	18	-	<0.1	<1	<10	28	57	35	12	-	<0.4	35	-	-	-	19	-	29	-	<0.1	-	<5	-	-	-	15
Lot 54	HA19/03	HA19/03_1.5	1.4-1.6	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	<0.4	26	-	-	-	27	-	38	-	<0.1	-	<5	-	-	-	66
Lot 54	HA19/04	HA19/04_0.4	0.3-0.5	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_0.4	0.4-0.6	31/07/2019	<0.1	<10	<10	190	430	1100	590	380	-	<0.1	<1	10	240	250	280	5.4	-	<0.4	29	-	-	-	14	-	30	-	<0.1	-	8.4	-	-	-	49
Lot 54	HA19/04	HA19/04_1.0	0.9-1.1	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.9	-	<0.4	22	-	-	-	20	-	21	-	<0.1	-	<5	-	-	-	13
Lot 55	HA19/05	HA19/05_0.3	0.2-0.4	31/07/2019	<0.1	<10	<10	640	540	<10	<10	-	<0.1	<1	<10	40	<10	<10	7.2	-	<0.4	37	-	-	-	48	-	72	-	<0.1	-	14	-	-	-	390
Lot 55	HA19/05	HA19/05_0.05	0-0.1	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	1.6	150	-	-	-	400	-	650	-	<0.1	-	100	-	-	-	4200
Lot 55	HA19/06	HA19/06_1.0	0.9-1.1	1/08/2019	<0.1	<10	<10	<10	<10	<10	<10	-	<0.1	<1	<10	<10	<10	<10	17	-	<0.4	32	-	-	-	24	-	82	-	<0.1	-	<5	-	-	-	52
Lot 55	HA19/06	HA19/06_2.2	2.1-2.3	1/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4	-	<0.4	21	-	-	-	38	-	82	-	<0.1	-	6.6	-	-	-	210
Lot 54	HA19/07	HA19/07_0.3	0.2-0.4	2/08/2019	<0.1	<10	<10	<10	<10	47	110	-	<0.1	<1	<10	<10	11	33	6.1	-	<0.4	26	-	-	-	16	-	23	-	<0.1	-	5	-	-	-	89
Lot 54	HA19/07	HA19/07_0.05	0-0.1	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6	-	2.2	240	-	-	-	1000	-	660	-	1	-	35	-	-	-	3000
Lot 55	HA19/08	HA19/08_0.8	0.7-0.9	2/08/2019	<0.4	<40	<40	63	140	94	59	-	<0.4	<4	37	160	270	170	16	-	<0.4	37	-	-	-	33	-	34	-	<0.1	-	<5	-	-	-	99
Lot 55	HA19/08	HA19/08_1.2	1.1-1.3	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	<0.4	11	-	-	-	13	-	17	-	<0.1	-	<5	-	-	-	18
Lot 55	HA19/09	HA19/09_0.8	0.7-0.9	2/08/2019	<0.1	<10	<10	310	4300	4000	830	-	<0.1	<1	21	380	800	310	6.9	-	<0.4	37	-	-	-	15	-	22	-	<0.1	-	9.3	-	-	-	28
Lot 55	HA19/09	HA19/09_1.4	1.3-1.5	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	<0.4	19	-	-	-	17	-	18	-	<0.1	-	<5	-	-	-	14
Road alignment	HA19/10	HA19/10_0.2	0.1-0.3	2/08/2019	<0.1	<10	<10	<10	<10	<10	<10	-	<0.1	<1	<10	<10	<10	<10	4.8	-	1.3	94	-	-	-	390	-	380	-	1	-	29	-	-	-	3200
Road alignment	HA19/10	HA19/10_0.05	0-0.1	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	-	9.9	450	-	-	-	2700	-	1800	-	3.8	-	130	-	-	-	22,000
Lot 55	MW11/03	MW11/03_0.8	0.8	6/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	-	<0.1	50	<1	50	-	17	-	26	-	<0.05	-	9.1	-	-	-	17
Lot 55	MW11/03	D_061011_02	3	6/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	<0.1	11	1.1	10	-	14	-	7.8	-	<0.05	-	1.7	-	-	-	9.7

| | | | | | | TRH Aliphatic/Aromatic Split | | | | | | | | | | | | | | Metals | | | | | | | | | | | | | |

					TRH Aliphatic/Aromatic Split													Metals																		
					TRH >C5-C7 (Benzene) Aromatic	TRH >C6-C8 Aliphatic	TRH >C8-C10 Aliphatic	TRH >C10-C12 Aliphatic	TRH >C12-C16 Aliphatic	TRH >C16-C21 Aliphatic	TRH >C21-C35 Aliphatic	TRH >C5-C7 Aromatic	TRH >C7-C8 Aromatic	TRH >C8-C10 Aromatic	TRH >C10-C12 Aromatic	TRH >C12-C16 Aromatic	TRH >C16-C21 Aromatic	TRH >C21-C35 Aromatic	Arsenic	Boron	Cadmium	Chromium	Chromium (hexavalent)	Chromium (Trivalent)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.1	10	10	10	10	10	10	0.1	0.1	1	10	10	10	10	1	10	0.1	2	0.5	2	5	2	50	2	5	0.05	1	1	2	0.1	1	5
Clyde WARP SSTL (Direct Contact - Commercial)						1200000	24000	24000	24000	470000	470000			9500	9500	9500	7100	7100				21000[#1]	3600													
Clyde WARP SSTL (Direct Contact - Construction Worker)						310000	62000	62000	62000	370000	370000			25000	25000	25000	18000	18000				8200[#1]	1400													
Clyde WARP SSTL (Direct Contact - IMW)						3700000	740000	740000	740000	4400000	4400000			300000	300000	300000	220000	220000				100000[#1]	17000													
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																																			
4-6m						1400	2200	1800	33000					420	1400	9800																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																																			
1-1.99m						610	980	600	8300					150	430	2800																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																																			
2-3.99m						880	1400	980	17000					230	750	5100																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																																			
0-0.99m						480	760	430	4300					110	280	430																				
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)						NL	NL	NL	NL					NL	NL	NL																				
Clyde WARP SSTL (Vapour Intrusion - IMW)						NL	NL	NL	NL					NL	NL	NL	NL	NL																		
NEPM (1999) HIL D - Commercial/Industrial																			3000		900		3600			240000		1500		730		6000	10000			400000
NEPM (1999) HSL D Comm/Indust - Asbestos																																			
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																																			
Alternative_Name	**Location_Code**	**Field_ID**	**Sample_Depth_Range**	**Sampled_Date_Time**																															
Lot 53	TP21/06	TP21/06-0.3	0.3	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	<0.4	26	-	-	-	32	-	130	-	<0.1	-	<5	-	-	-	110
Lot 53	TP21/06	TP21/06-0.8	0.8	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/36	TP21/36_0.5	0.5	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	<0.4	9.8	-	-	-	49	-	<5	-	<0.1	-	42	-	-	-	39
Lot 53	TP21/36	TP21/36_1.5	1.5	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TP21/39_0.3	0.3	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	<0.4	19	-	-	-	61	-	8.6	-	<0.1	-	63	-	-	-	65
Lot 53	TP21/39	DUP09_210319	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TP21/39_1.2	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TRIP09_210319	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/41	TP21/41_1.0	1	29/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6	-	<0.4	32	-	-	-	22	-	33	-	<0.1	-	5.6	-	-	-	19
Lot 53	TP21/41	TP21/41_2.0	2	29/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 61	TP21/30	TP21/30-1.0	1	9/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 61	TP21/30	TP21/30-2.1	2.1	9/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	TP21/48	DUP11_210330	0.2	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	<0.4	61	-	-	-	75	-	<5	-	<0.1	-	250	-	-	-	91
Lot 54	TP21/48	TP21/48_0.2	0.2	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	<0.4	54	-	-	-	68	-	<5	-	<0.1	-	240	-	-	-	88
Lot 54	TP21/48	TRIP 11_210330	0.2	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5	-	<1	20	-	-	-	70	-	<5	-	<0.1	-	189	-	-	-	53
Lot 54	TP21/48	TP21/48_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/51	TP21/51_0.5	0.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	<0.4	40	-	-	-	70	-	<5	-	<0.1	-	180	-	-	-	81
Lot 55	TP21/51	TP21/51_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/53	TP21/53_0.5	0.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	<0.4	35	-	-	-	110	-	48	-	<0.1	-	140	-	-	-	410
Lot 55	TP21/53	TP21/53_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/05	TP21/05-0.7	0.7	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	<0.4	33	-	-	-	16	-	48	-	<0.1	-	<5	-	-	-	43
Lot 53	TP21/05	TP21/05-1.0	1	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																																			
Number of Results					8	8	8	8	8	8	8	0	8	8	8	8	8	8	91	15	91	91	23	22	15	91	1	90	1	91	15	91	15	0	15	91
Number of Detects					0	0	1	5	5	5	5	0	0	0	3	5	5	5	70	0	11	87	5	20	4	89	1	82	1	9	0	65	0	0	0	86
Minimum Concentration					<0.1	<10	<10	<10	<10	<10	<10	99999	<0.1	<1	<10	<10	<10	<10	<1	<10	<0.1	<2	<1	<5	<5	4.8	19700	3.8	39	<0.05	<10	<1	<2	99999	<10	<5
Minimum Detect					ND	ND	190	11	41	37	18	ND	ND	ND	10	28	11	33	1.4	ND	0.1	7	1	8.7	6	4.8	19700	3.8	39	0.07	ND	1.7	ND	ND	ND	5.5
Maximum Concentration					<0.4	<40	190	640	4300	4000	830	0	<0.4	<4	37	380	800	310	17	<10	9.9	2400	2.3	1900	13	2700	19700	1800	39	3.8	<10	250	<2	0	<10	22000
Maximum Detect					ND	ND	190	640	4300	4000	830	ND	ND	ND	37	380	800	310	17	ND	9.9	2400	2.3	1900	13	2700	19700	1800	39	3.8	ND	250	ND	ND	ND	22000
Average Concentration					0.069	6.9	30	184	767	598	177		0.069	0.69	12	108	175	105	5.2	5	0.44	93	0.71	152	4.1	79		81		0.12	5	27	1		5	473
Median Concentration					0.05	5	5	37	90.5	42	38.5		0.05	0.5	5	34	34	34	4.8	5	0.2	24	0.5	19	2.5	18	19700	21	39	0.05	5	5.5	1		5	47
Standard Deviation					0.053	5.3	65	246	1479	1389	293		0.053	0.53	12	140	276	129	3.7	0	1.1	333	0.48	443	3.1	302		220		0.42	0	51	0		0	2378
Number of Guideline Exceedances					0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

Env Stds Comments

#1:Assumes Total chromium is 17% Hexavalent chromium

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								Benzo(b)&(k)fluoranthene	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (zero)	Benzo(b)fluoranthene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(b&j)fluoranthene	Benzo(b&j)fluoranthene (TEF 0.1)	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Dinoseb	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Pentachlorophenol	Phenanthrene	Phenol	Phenolics Total	Polycyclic aromatic hydrocarbons EPA448	Pyrene	tetrachlorophenols	Phenols (Total Halogenated)	Total Non-Halogenated Phenol	PAHs (Sum of total)
								mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL								1	0.05	0.05	0.1	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	20	0.1	0.1	0.1	0.5	0.1	0.1	5	0.5	0.1	10	1	20	0.05
Clyde WARP SSTL (Direct Contact - Commercial)														40																					
Clyde WARP SSTL (Direct Contact - Construction Worker)														200																					
Clyde WARP SSTL (Direct Contact - IMW)														3000																					
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																																			
4-6m																																			
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																																			
1-1.99m																																			
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																																			
2-3.99m																																			
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																																			
0-0.99m																																			
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)																																			
Clyde WARP SSTL (Vapour Intrusion - IMW)																																			
NEPM (1999) HIL D - Commercial/Industrial																									660		240000								4000
NEPM (1999) HSL D Comm/Indust - Asbestos																																			
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																																			
Alternative_Name	**Location_Code**	**Field_ID**	**Sample_Depth_Range**	**Sampled_Date_Time**																																
Lot 51	SB01	SB01_0.2-0.5	0.2-0.5	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1
Lot 51	SB02	SB02_0.0-0.3	0-0.3	16/12/2008	-	-	-	0.5	-	-	-	-	-	0.3	0.2	0.3	<0.1	-	0.8	<0.1	0.2	<0.5	0.5	<0.1	-	-	0.7	-	-	-	4.2
Lot 52	SB03	SB03_0.45-0.6	0.45-0.6	16/12/2008	-	-	-	0.3	-	-	-	-	-	0.1	0.1	0.2	<0.1	-	0.5	<0.1	0.1	<0.5	0.3	<0.1	-	-	0.4	-	-	-	2.4
Lot 51	SB05	SB05_0.4-0.6	0.4-0.6	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1
Lot 51	SB05	SB05_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	D091209-01	0.2-0.4	16/12/2008	-	-	-	15	-	-	-	-	-	2.8	2.8	34	8.7	-	8.3	3.3	4.3	<0.5	69	<0.1	-	-	16	-	-	-	210
Lot 51	SB06	SB06_0.2-0.9	0.2-0.4	16/12/2008	-	-	-	11	-	-	-	-	-	2.7	3.3	31	7.3	-	6.8	2.9	4.1	<0.5	60	<0.1	-	-	14	-	-	-	180
Lot 51	SB07	D091208_02	0.1-0.3	9/12/2008	-	-	-	0.7	-	-	-	-	-	<0.5	<0.5	0.9	<0.5	-	1.3	<0.5	<0.5	-	0.9	-	-	-	1.4	-	-	-	-
Lot 51	SB07	SB07_0.1-0.3	0.1-0.3	16/12/2008	-	-	-	1.2	-	-	-	-	-	0.4	0.3	1.1	0.3	-	1.1	<0.1	0.4	<0.5	1.3	<0.1	-	-	1.3	-	-	-	9.5
Lot 52	SB08	SB08_0.0-0.3	0-0.3	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1
Lot 51	SB09	SB09_0.4-0.7	0.4-0.7	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	0.1	<0.1	<0.1	<0.5	<0.1	<0.1	-	-	0.1	-	-	-	0.2
Lot 52	SB10	SB10_0.2-0.5	0.2-0.5	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	0.1	<0.1	<0.1	<0.5	0.1	<0.1	-	-	0.1	-	-	-	0.3
Lot 52	SB11	SB11_0.15-0.25	0.15-0.25	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1
Lot 52	SB12	SB12_0.35-0.5	0.35-0.5	16/12/2008	-	-	-	1.4	-	-	-	-	-	0.6	0.5	1.3	0.3	-	1.9	0.1	0.6	<0.5	2.6	<0.1	-	-	1.9	-	-	-	14
Lot 52	SB13	SB13_0.15-0.3	0.15-0.3	16/12/2008	-	-	-	0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	0.2	<0.1	<0.1	<0.5	0.2	<0.1	-	-	0.1	-	-	-	0.6
Lot 52	SB14	SB14_0.1-0.5	0.1-0.5	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1
Lot 52	SB15	SB15_0.0-0.5	0-0.5	16/12/2008	-	-	-	<0.1	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	-	-	<0.1	-	-	-	<0.1
Lot 52	TP18/28	TP18/28_0.3	0.3-0.3	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_1.2	-1.2	7/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	<0.5
Lot 52	TP18/28	TP18/28_1.2	1.2-1.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_2.2	-2.2	7/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	-	<0.5
Lot 52	TP18/28	TP18/28_2.2	2.2-2.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_3.0	3-3	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	DOI_050819	0.7-0.9	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.8	0.7-0.9	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.1	0-0.2	18/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 51	TP19/04	TP19/04_0.1	0-0.2	5/08/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 51	TP19/05	TP19/05_0.2	0.1-0.3	5/08/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 51	TP19/06	TP19/06_0.5	0.4-0.6	18/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 51	TP19/06	TP19/06_1.0	0.9-1.1	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_1.0	0.9-1.1	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_0.1	0-0.2	18/07/2019	-	-	-	-	<0.5	1.2	0.7	<0.5	-	<0.5	<0.5	0.6	<0.5	<20	1.1	<0.5	0.7	<1	0.8	<0.5	-	-	1.1	<10	<1	<20	4.9
Lot 55	BH12/30	BH12/30_0.25	0.25-0.25	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/30	BH12/30_1.3	1.3-1.3	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.1	0.1-0.1	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.4	0.4-0.4	14/03/2012	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	-	-	-	<1
Lot 54	BH12/31	BH12/31_1.4	1.4-1.4	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/32	BH12/32_0.2	0.2-0.2	14/03/2012	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	1	<0.5	-	-	<0.5	-	-	-	1
Lot 54	BH12/32	BH12/32_1.2	1.2-1.2	14/03/2012	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	2	<0.5	-	-	<0.5	-	-	-	2.7
Lot 55	BH12/33	BH12/33_0.2	0.2-0.2	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/33	BH12/33_0.6	0.6-0.6	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_0.7	0.7-0.7	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_1.3	1.3-1.3	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/03	HA19/03_0.8	0.7-0.9	31/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	0.7	<0.5	<20	<0.5	1.1	<0.5	<1	6.8	<0.5	-	-	0.8	<10	<1	<20	12.1
Lot 54	HA19/03	HA19/03_1.5	1.4-1.6	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_0.4	0.3-0.5	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_0.4	0.4-0.6	31/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	0.7	<0.5	<1	0.6	<0.5	-	-	<0.5	<10	<1	<20	1.9
Lot 54	HA19/04	HA19/04_1.0	0.9-1.1	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/05	HA19/05_0.3	0.2-0.4	31/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 55	HA19/05	HA19/05_0.05	0-0.1	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/06	HA19/06_1.0	0.9-1.1	1/08/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	1.1	<0.5	-	-	<0.5	<10	<1	<20	1.1
Lot 55	HA19/06	HA19/06_2.2	2.1-2.3	1/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/07	HA19/07_0.3	0.2-0.4	2/08/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 54	HA19/07	HA19/07_0.05	0-0.1	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/08	HA19/08_0.8	0.7-0.9	2/08/2019	-	-	-	-	<0.5	1.3	0.8	<0.5	-	<0.5	<0.5	2.4	<0.5	<20	0.9	4.8	<0.5	<1	25	<0.5	-	-	2.6	<10	<1	<20	52
Lot 55	HA19/08	HA19/08_1.2	1.1-1.3	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/09	HA19/09_0.8	0.7-0.9	2/08/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	7.2	<0.5	<1	9.6	<0.5	-	-	1.4	<10	<1	<20	22
Lot 55	HA19/09	HA19/09_1.4	1.3-1.5	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	HA19/10	HA19/10_0.2	0.1-0.3	2/08/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Road alignment	HA19/10	HA19/10_0.05	0-0.1	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	MW11/03	MW11/03_0.8	0.8	6/10/2011	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	-	-	-	<1
Lot 55	MW11/03	D_061011_02	3	6/10/2011	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	-	-	-	<1

	Benzo(b)&(k)fluoranthene	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (zero)	Benzo(b)fluoranthene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(b&j)fluoranthene	Benzo(b&j)fluoranthene (TEF 0.1)	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Dinoseb	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Pentachlorophenol	Phenanthrene	Phenol	Phenolics Total	Polycylic aromatic hydrocarbons EPA448	Pyrene	tetrachlorophenols	Phenols (Total Halogenated)	Total Non-Halogenated Phenol	PAHs (Sum of total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	1	0.05	0.05	0.1	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	20	0.1	0.1	0.1	0.5	0.1	0.1	5	0.5	0.1	10	1	20	0.05
Clyde WARP SSTL (Direct Contact - Commercial)							40																				
Clyde WARP SSTL (Direct Contact - Construction Worker)							200																				
Clyde WARP SSTL (Direct Contact - IMW)							3000																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																											
4-6m																											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																											
1-1.99m																											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																											
2-3.99m																											
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																											
0-0.99m																											
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)																											
Clyde WARP SSTL (Vapour Intrusion - IMW)																											
NEPM (1999) HIL D - Commercial/Industrial																		660		240000							4000
NEPM (1999) HSL D Comm/Indust - Asbestos																											
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																											

Alternative_Name	Location_Code	Field_ID	Sample_Depth_Range	Sampled_Date_Time																										
Lot 55	MW11/03	MW11/03_3.0	3	6/10/2011	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	-	-	-	<1
Lot 55	MW11/03	MW11/03_5.8	5.8	6/10/2011	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	-	-	-	<1
Lot 55	SB18/13	SB18/13_0.3_20180214	-0.3	14/02/2018	-	1.2	<0.5	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	1.3	8	<0.5	-	15.6	-	-	-	1.9	-	-	-	29.2
Lot 55	SB18/13	SB18/13_0.3_20180214	0.3-0.3	14/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	SB18/13	SB18/13_0.9_20180214	-0.9	14/02/2018	-	1.2	<0.5	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	-	<0.5	-	-	-	<0.5
Lot 55	SB18/13	SB18/13_0.9_20182014	0.9-0.9	14/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_0.3_2018	-0.3	9/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_0.3_180209	0.3-0.3	9/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_1.2_20180209	-1.2	9/02/2018	-	1.2	<0.5	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	-	<0.5
Road alignment	SB18/14	SB18/14_1.2_180209	1.2-1.2	9/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_2.4_180209	2.4-2.4	9/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	MW11/01	MW11/01_0.2	0.2-0.2	23/09/2011	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	-	-	-	<1
Road alignment	MW11/01	MW11/01_2.4	2.4-2.4	23/09/2011	<1	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	-	-	-	<1
Lot 53	SB11B	SB11B_0.2	0.2-0.4	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Lot 53	SB11B	SB11B_1.0	0.9-1.1	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.5	<0.5	<0.5	<2	<0.5	<0.5	-	1.2	0.7	-	-	-	-
Lot 53	SB11B	SB11B_2.0	1.9-2	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Lot 53	SB12B	SB12B_1.0	0.9-1.1	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Lot 53	SB12B	SB12B_2.0	1.9-2	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Lot 53	SB13B	SB13B_0.5	0.4-0.6	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	1	0.5	-	-	-	-
Lot 53	SB13B	SB13B_1.0	0.9-1.1	1/02/2018	-	2.3	1.7	-	-	-	-	-	1.1	<0.5	<0.5	3	<0.5	-	0.9	<0.5	<0.5	<2	1	<0.5	-	13.5	2.3	-	-	-	-
Lot 53	SB14B	SB14B_1.0	0.9-1.1	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Lot 53	SB15B	SB15B_1.0	0.9-1.1	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Lot 53	SB15B	SB15B_2.0	1.9-2	1/02/2018	-	1.2	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Lot 53	TP19/09	TP19/09_0.4	0.4-0.6	17/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP19/09	TP19/09_0.6	0.5-0.7	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/11	TP19/11_0.4	0.3-0.5	18/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP19/12	D01_170719	0.1-0.3	17/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP19/12	TO1_170719	0.1-0.3	17/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP19/12	TP19/12_0.1	0.1-0.3	17/07/2019	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP19/12	TP19/12_0.3	0.2-0.4	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP21/46	TP21/46_0.2	0.2	19/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 52	TP21/46	TP21/46_0.5	0.5	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Benzo(b)&(k)fluoranthene	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (zero)	Benzo(b)fluoranthene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(b&j)fluoranthene	Benzo(b&j)fluoranthene (TEF 0.1)	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Dinoseb	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Pentachlorophenol	Phenanthrene	Phenol	Phenolics Total	Polycyclic aromatic hydrocarbons EPA448	Pyrene	tetrachlorophenols	Phenols (Total Halogenated)	Total Non-Halogenated Phenol	PAHs (Sum of total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	1	0.05	0.05	0.1	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	20	0.1	0.1	0.1	0.5	0.1	0.1	5	0.5	0.1	10	1	20	0.05
Clyde WARP SSTL (Direct Contact - Commercial)							40																				
Clyde WARP SSTL (Direct Contact - Construction Worker)							200																				
Clyde WARP SSTL (Direct Contact - IMW)							3000																				
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																											
4-6m																											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																											
1-1.99m																											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																											
2-3.99m																											
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																											
0-0.99m																											
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)																											
Clyde WARP SSTL (Vapour Intrusion - IMW)																											
NEPM (1999) HIL D - Commercial/Industrial																		660		240000							4000
NEPM (1999) HSL D Comm/Indust - Asbestos																											
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																											

Alternative_Name	Location_Code	Field_ID	Sample_Depth_Range	Sampled_Date_Time																										
Lot 53	TP21/06	TP21/06-0.3	0.3	8/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP21/06	TP21/06-0.8	0.8	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/36	TP21/36_0.5	0.5	19/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP21/36	TP21/36_1.5	1.5	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TP21/39_0.3	0.3	19/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP21/39	DUP09_210319	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TP21/39_1.2	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TRIP09_210319	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/41	TP21/41_1.0	1	29/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 53	TP21/41	TP21/41_2.0	2	29/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 61	TP21/30	TP21/30-1.0	1	9/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	-	<0.5
Lot 61	TP21/30	TP21/30-2.1	2.1	9/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	-	-	-	<0.5	-	-	-	<0.5
Lot 54	TP21/48	DUP11_210330	0.2	30/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 54	TP21/48	TP21/48_0.2	0.2	30/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 54	TP21/48	TRIP 11_210330	0.2	30/03/2021	-	1.2	<0.5	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<2	<0.5	<0.5	-	-	<0.5	-	-	-	<0.5
Lot 54	TP21/48	TP21/48_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/51	TP21/51_0.5	0.5	30/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 55	TP21/51	TP21/51_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/53	TP21/53_0.5	0.5	30/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	<0.5	<0.5	-	-	<0.5	<10	<1	<20	<0.5
Lot 55	TP21/53	TP21/53_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/05	TP21/05-0.7	0.7	8/03/2021	-	-	-	-	<0.5	1.2	0.6	<0.5	-	<0.5	<0.5	<0.5	<0.5	<20	<0.5	<0.5	<0.5	<1	0.6	<0.5	-	-	<0.5	<10	<1	<20	0.6
Lot 53	TP21/05	TP21/05-1.0	1	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	9	16	16	16	30	30	30	36	10	71	62	71	71	28	71	71	71	65	71	65	0	10	71	28	28	28	60
Number of Detects	0	16	1	8	0	30	30	0	1	6	6	11	4	0	15	8	7	0	20	0	0	3	18	0	0	0	19
Minimum Concentration	<1	1.2	<0.5	<0.1	<0.5	1.2	0.6	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<20	<0.1	<0.1	<0.1	<0.5	<0.1	<0.1	99999	<0.5	<0.1	<10	<1	<20	<0.1
Minimum Detect	ND	1.2	1.7	0.1	ND	1.2	0.6	ND	1.1	0.1	0.1	0.2	0.3	ND	0.1	0.1	0.1	ND	0.1	ND	ND	1	0.1	ND	ND	ND	0.2
Maximum Concentration	<1	2.3	1.7	15	<0.5	1.3	0.8	<0.5	1.1	2.8	3.3	34	8.7	<20	8.3	8	4.3	<2	69	<0.5	0	13.5	16	<10	<1	<20	210
Maximum Detect	ND	2.3	1.7	15	ND	1.3	0.8	ND	1.1	2.8	3.3	34	8.7	ND	8.3	8	4.3	ND	69	ND	ND	13.5	16	ND	ND	ND	210
Average Concentration	0.5	1.3	0.34	1.9	0.25	1.2	0.61	0.25	0.34	0.3	0.31	1.2	0.44	10	0.54	0.58	0.35	0.54	3	0.2		1.7	0.84	5	0.5	10	9.3
Median Concentration	0.5	1.2	0.25	0.075	0.25	1.2	0.6	0.25	0.25	0.25	0.25	0.25	0.25	10	0.25	0.25	0.25	0.5	0.25	0.25		0.25	0.25	5	0.5	10	0.25
Standard Deviation	0	0.28	0.36	4.4	0	0.018	0.04	0	0.27	0.43	0.51	5.4	1.3	0	1.3	1.4	0.67	0.25	11	0.085		4.1	2.5	0	0	0	36
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:Assumes Total chromium is 17% Hexavalent chromium

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	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	cis-1,4-Dichloro-2-butene	Cyclohexane	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Iodomethane	Isopropylbenzene	n-butylbenzene	n-propylbenzene	Pentachloroethane	p-isopropyltoluene	sec-butylbenzene	Styrene	TCE	tert-butylbenzene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	trans-1,4-Dichloro-2-butene	Trichlorofluoromethane	Vic EPA IWRG 621 CHC (Total)*	Vic EPA IWRG 621 Other CHC (Total)*	Vinyl acetate	Vinyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	MG/KG	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	0.5
Clyde WARP SSTL (Direct Contact - Commercial)																													
Clyde WARP SSTL (Direct Contact - Construction Worker)																													
Clyde WARP SSTL (Direct Contact - IMW)																													
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																													
4-6m																													
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																													
1-1.99m																													
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																													
2-3.99m																													
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																													
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Clyde WARP SSTL (Vapour Intrusion - Construction Worker)																													
Clyde WARP SSTL (Vapour Intrusion - IMW)																													
NEPM (1999) HIL D - Commercial/Industrial																													
NEPM (1999) HSL D Comm/Indust - Asbestos																													
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																													

Alternative_Name	Location_Code	Field_ID	Sample_Depth_Range	Sampled_Date_Time																											
Lot 51	SB01	SB01_0.2-0.5	0.2-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB02	SB02_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB03	SB03_0.45-0.6	0.45-0.6	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB05	SB05_0.4-0.6	0.4-0.6	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB05	SB05_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	D091209-01	0.2-0.4	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	SB06_0.2-0.9	0.2-0.4	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB07	D091208_02	0.1-0.3	9/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB07	SB07_0.1-0.3	0.1-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB08	SB08_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB09	SB09_0.4-0.7	0.4-0.7	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB10	SB10_0.2-0.5	0.2-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB11	SB11_0.15-0.25	0.15-0.25	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB12	SB12_0.35-0.5	0.35-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB13	SB13_0.15-0.3	0.15-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB14	SB14_0.1-0.5	0.1-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB15	SB15_0.0-0.5	0-0.5	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_0.3	0.3-0.3	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_1.2	-1.2	7/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 52	TP18/28	TP18/28_1.2	1.2-1.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_2.2	-2.2	7/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 52	TP18/28	TP18/28_2.2	2.2-2.2	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_3.0	3-3	7/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	DOI_050819	0.7-0.9	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.8	0.7-0.9	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.1	0-0.2	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/04	TP19/04_0.1	0-0.2	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/05	TP19/05_0.2	0.1-0.3	5/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/06	TP19/06_0.5	0.4-0.6	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/06	TP19/06_1.0	0.9-1.1	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_1.0	0.9-1.1	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_0.1	0-0.2	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/30	BH12/30_0.25	0.25-0.25	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/30	BH12/30_1.3	1.3-1.3	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.1	0.1-0.1	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.4	0.4-0.4	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_1.4	1.4-1.4	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/32	BH12/32_0.2	0.2-0.2	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/32	BH12/32_1.2	1.2-1.2	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/33	BH12/33_0.2	0.2-0.2	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/33	BH12/33_0.6	0.6-0.6	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_0.7	0.7-0.7	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_1.3	1.3-1.3	14/03/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/03	HA19/03_0.8	0.7-0.9	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/03	HA19/03_1.5	1.4-1.6	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_0.4	0.3-0.5	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_0.4	0.4-0.6	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_1.0	0.9-1.1	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/05	HA19/05_0.3	0.2-0.4	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/05	HA19/05_0.05	0-0.1	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/06	HA19/06_1.0	0.9-1.1	1/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/06	HA19/06_2.2	2.1-2.3	1/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/07	HA19/07_0.3	0.2-0.4	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/07	HA19/07_0.05	0-0.1	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/08	HA19/08_0.8	0.7-0.9	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/08	HA19/08_1.2	1.1-1.3	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/09	HA19/09_0.8	0.7-0.9	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/09	HA19/09_1.4	1.3-1.5	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	HA19/10	HA19/10_0.2	0.1-0.3	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	HA19/10	HA19/10_0.05	0-0.1	2/08/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	MW11/03	MW11/03_0.8	0.8	6/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	MW11/03	D_061011_02	3	6/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	cis-1,4-Dichloro-2-butene	Cyclohexane	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Iodomethane	Isopropylbenzene	n-butylbenzene	n-propylbenzene	Pentachloroethane	p-isopropyltoluene	sec-butylbenzene	Styrene	TCE	tert-butylbenzene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	trans-1,4-Dichloro-2-butene	Trichlorofluoromethane	Vic EPA IWRG 621 CHC (Total)*	Vic EPA IWRG 621 Other CHC (Total)*	Vinyl acetate	Vinyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	MG/KG	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	0.5
Clyde WARP SSTL (Direct Contact - Commercial)																												
Clyde WARP SSTL (Direct Contact - Construction Worker)																												
Clyde WARP SSTL (Direct Contact - IMW)																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																												
4-6m																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																												
1-1.99m																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																												
2-3.99m																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																												
0-0.99m																												
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)																												
Clyde WARP SSTL (Vapour Intrusion - IMW)																												
NEPM (1999) HIL D - Commercial/Industrial																												
NEPM (1999) HSL D Comm/Indust - Asbestos																												
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																												

Alternative_Name	Location_Code	Field_ID	Sample_Depth_Range	Sampled_Date_Time																											
Lot 55	MW11/03	MW11/03_3.0	3	6/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	MW11/03	MW11/03_5.8	5.8	6/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	SB18/13	SB18/13_0.3_20180214	-0.3	14/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 55	SB18/13	SB18/13_0.3_20180214	0.3-0.3	14/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	SB18/13	SB18/13_0.9_20180214	-0.9	14/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	SB18/13	SB18/13_0.9_20182014	0.9-0.9	14/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_0.3_2018	-0.3	9/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Road alignment	SB18/14	SB18/14_0.3_180209	0.3-0.3	9/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_1.2_20180209	-1.2	9/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Road alignment	SB18/14	SB18/14_1.2_180209	1.2-1.2	9/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	SB18/14	SB18/14_2.4_180209	2.4-2.4	9/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	MW11/01	MW11/01_0.2	0.2-0.2	23/09/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	MW11/01	MW11/01_2.4	2.4-2.4	23/09/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	SB11B	SB11B_0.2	0.2-0.4	1/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 53	SB11B	SB11B_1.0	0.9-1.1	1/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	SB11B	SB11B_2.0	1.9-2	1/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	SB12B	SB12B_1.0	0.9-1.1	1/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 53	SB12B	SB12B_2.0	1.9-2	1/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	SB13B	SB13B_0.5	0.4-0.6	1/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 53	SB13B	SB13B_1.0	0.9-1.1	1/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	SB14B	SB14B_1.0	0.9-1.1	1/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 53	SB15B	SB15B_1.0	0.9-1.1	1/02/2018	<0.5	<5	<0.5	<0.5	<0.5	-	<0.5	<5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	-	-	<5	<5
Lot 53	SB15B	SB15B_2.0	1.9-2	1/02/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/09	TP19/09_0.4	0.4-0.6	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/09	TP19/09_0.6	0.5-0.7	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/11	TP19/11_0.4	0.3-0.5	18/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	D01_170719	0.1-0.3	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	T01_170719	0.1-0.3	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	TP19/12_0.1	0.1-0.3	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/12	TP19/12_0.3	0.2-0.4	17/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP21/46	TP21/46_0.2	0.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP21/46	TP21/46_0.5	0.5	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	cis-1,4-Dichloro-2-butene	Cyclohexane	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	Iodomethane	Isopropylbenzene	n-butylbenzene	n-propylbenzene	Pentachloroethane	p-isopropyltoluene	sec-butylbenzene	Styrene	TCE	tert-butylbenzene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	trans-1,4-Dichloro-2-butene	Trichlorofluoromethane	Vic EPA IWRG 621 CHC (Total)*	Vic EPA IWRG 621 Other CHC (Total)*	Vinyl acetate	Vinyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	MG/KG	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	0.5
Clyde WARP SSTL (Direct Contact - Commercial)																												
Clyde WARP SSTL (Direct Contact - Construction Worker)																												
Clyde WARP SSTL (Direct Contact - IMW)																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																												
4-6m																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																												
1-1.99m																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																												
2-3.99m																												
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																												
0-0.99m																												
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)																												
Clyde WARP SSTL (Vapour Intrusion - IMW)																												
NEPM (1999) HIL D - Commercial/Industrial																												
NEPM (1999) HSL D Comm/Indust - Asbestos																												
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																												

Alternative_Name	Location_Code	Field_ID	Sample_Depth_Range	Sampled_Date_Time																												
Lot 53	TP21/06	TP21/06-0.3	0.3	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/06	TP21/06-0.8	0.8	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/36	TP21/36_0.5	0.5	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/36	TP21/36_1.5	1.5	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TP21/39_0.3	0.3	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	DUP09_210319	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TP21/39_1.2	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/39	TRIP09_210319	1.2	19/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/41	TP21/41_1.0	1	29/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/41	TP21/41_2.0	2	29/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 61	TP21/30	TP21/30-1.0	1	9/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 61	TP21/30	TP21/30-2.1	2.1	9/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	TP21/48	DUP11_210330	0.2	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	TP21/48	TP21/48_0.2	0.2	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	TP21/48	TRIP 11_210330	0.2	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 54	TP21/48	TP21/48_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/51	TP21/51_0.5	0.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/51	TP21/51_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/53	TP21/53_0.5	0.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	TP21/53	TP21/53_1.5	1.5	30/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/05	TP21/05-0.7	0.7	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP21/05	TP21/05-1.0	1	8/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	10	10	10	10	10	0	10	10	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	0	0	10	10
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.5	<5	<0.5	<0.5	<0.5	99999	<0.5	<5	99999	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	99999	99999	<5	<5
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.5	<5	<0.5	<0.5	<0.5	0	<0.5	<5	0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	0	0	<5	<5
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.25	2.5	0.25	0.25	0.25		0.25	2.5		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	2.5			2.5	2.5
Median Concentration	0.25	2.5	0.25	0.25	0.25		0.25	2.5		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	2.5			2.5	2.5
Standard Deviation	0	0	0	0	0		0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments

#1:Assumes Total chromium is 17% Hexavalent chromium

											PFOS and PFOA																					
	N-Ethyl perfluorooctane sulfonamide (NEtFOSA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoethanol (MeFOS	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS		PFOS	Perfluorooctanoate	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FtS)	8:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	N-Ethyl perfluorooctane sulfonamidoacetic acid (Et	N-Methyl perfluorooctane sulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid	Perfluorodecanesulfonic acid (PFDS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluoroundecanoic acid (PFUnA)	Perfluorodecanoic acid (PFDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorododecanoic acid (PFDoA)	Perfluorononanoic acid (PFNA)	Perfluorooctanesulfonamide (PFOSA)
	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
EQL	5	5	5	5	5	5	50	0	0		0	0	0	0	0	0	10	10	0	0	5	0	5	5	0	0	0	5	5	5	5	5
Clyde WARP SSTL (Direct Contact - Commercial)																																
Clyde WARP SSTL (Direct Contact - Construction Worker)																																
Clyde WARP SSTL (Direct Contact - IMW)																																
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																																
1-1.99m																																
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																																
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Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																																
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Clyde WARP SSTL (Vapour Intrusion - Construction Worker)																																
Clyde WARP SSTL (Vapour Intrusion - IMW)																																
NEPM (1999) HIL D - Commercial/Industrial																																
NEPM (1999) HSL D Comm/Indust - Asbestos																																
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																																
PFAS NEMP 2020 Industrial/ commercial (HIL D)												50000																				
Alternative_Name	**Location_Code**	**Field_ID**	**Sample_Depth_Range**	**Sampled_Date_Time**																												
Lot 51	TP19/01	TP19/01_0.1	0-0.2	18/07/2019	<5	<5	<5	<5	<5	<5	<50	<10	<5		<5	<5	<5	<10	<5	<5	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Lot 54	HA19/03	HA19/03_0.05	0-0.1	31/07/2019	<5	<5	<5	<5	<5	<5	<50	<10	<5		<5	<5	<5	<10	<5	<5	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Lot 54	HA19/07	HA19/07_0.05	0-0.1	2/08/2019	<5	<5	<5	<5	<5	<5	<50	<10	<5		<5	<5	<5	<10	<5	19	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Statistical Summary																																
Number of Results	3	3	3	3	3	3	3	3	3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0		0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<5	<5	<5	<5	<5	<5	<50	<10	<5		<5	<5	<5	<10	<5	<5	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<5	<5	<5	<5	<5	<5	<50	<10	<5		<5	<5	<5	<10	<5	19	<10	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	2.5	2.5	2.5	2.5	2.5	2.5	25	5	2.5		2.5	2.5	2.5	5	2.5	8	5	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Median Concentration	2.5	2.5	2.5	2.5	2.5	2.5	25	5	2.5		2.5	2.5	2.5	5	2.5	2.5	5	5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Standard Deviation	0	0	0	0	0	0	0	0	0		0	0	0	0	0	9.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

						Asbestos																
						Asbestos Detected	FA- Comment	AF - Comment	ACM - Comment	Asbestos fibres	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Asbestos Sample Dimensions	Mass ACM	Mass Asbestos in ACM	Mass Asbestos in FA & AF	Soil Mass sieved to 7mm	Mass of test sample for extraction	Mass asbestos in AF	Mass Asbestos in FA	Mass FA	Organic Fibres - Comment	Respirable Fibres - Comment	Synthetic Fibres - Comment
						Comment	Comment	Comment	Comment	g	%w/w	%w/w	Comment	g	g	g	g	g	g	g	g	Comment	COMMENT	COMMENT
NEPM (1999) HSL Asbestos (Commercial/Industrial)											**0.05**	**0.001**												
Field_ID	**Location_Code**	**Sample_Depth_Avg**	**Sample_Type**	**Sampled_Date_Time**	**RSI Area ID**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19/01_0.1 AS	TP19/01	0.2	Normal	18/07/2019	1	Yes	Nil	Nil	Chrysotile and amosite	ND	0.086	ND	160x70x7	113	-	-	11000	113	-	-	-	Nil	Nil	Nil
TP19/01_0.1 BS	TP19/01	0.2	Normal	18/07/2019	1	No	Nil	Nil	Nil	ND	ND	ND	-	ND	ND	ND		551	ND	ND	ND	Organic fibres detected.	No respirable fibres detected.	Nil
TP21/01_0.2	TP21/01	0.2	Normal	18/03/2021	1	No	Nil	Nil	-	ND	ND	ND	-	0	ND	ND	11000	573	ND	ND	ND	Yes	-	-
TP21/01_0.2 ACM	TP21/01	0.2	Normal	18/03/2021	1	Yes	Nil	Nil	Chrysotile	ND	0.00003	ND	140x25x5	4	0.0033	ND	11000	4	ND	ND	ND	No	-	1
TP21/01_1.0	TP21/01	1	Normal	18/03/2021	1	No	Nil	Nil	-	ND	ND	ND	-	0	ND	ND	11000	479	ND	ND	ND	Yes	-	-
TP21/02_0.2	TP21/02	0.2	Normal	18/03/2021	1	No	Nil	Nil	-	ND	ND	ND	-	0	ND	ND	11000	623	ND	ND	ND	Yes	-	-
TP21/02_0.5	TP21/02	0.5	Normal	18/03/2021	1	No	Nil	Nil	-	ND	ND	ND	-	0	ND	ND	11000	570	ND	ND	ND	Yes	-	-
TP21/03_0.3	TP21/03	0.3	Normal	18/03/2021	1	No	Nil	Nil	-	ND	ND	ND	-	0	ND	ND	11000	691	ND	ND	ND	Yes	-	-
TP21/03_1.2	TP21/03	1.2	Normal	18/03/2021	1	No	Nil	Nil	-	ND	ND	ND	-	0	ND	ND	11000	516	ND	ND	ND	Yes	-	-
TP21/04_0.1	TP21/04	0.1	Normal	18/03/2021	1	No	Nil	Nil	-	ND	ND	ND	-	0	ND	ND	11000	731	ND	ND	ND	Yes	-	-
TP21/04_0.5	TP21/04	0.5	Normal	18/03/2021	1	Yes	Nil	Nil	Chrysotile	ND	0.00017	ND	-	0.013	ND	ND	11000	780	ND	ND	ND	Yes	-	-
TP21/92_0.4	TP21/92	0.4	Normal	18/03/2021	1	Yes	Nil	Nil	Chrysotile and amosite	ND	0.0225	ND	-	27	0.027	ND	11000	548	ND	ND	ND	Yes	-	-
Statistical Summary																								
Number of Results						8	0	1	24	40	40	40	11	40	40	40		40	40	40	40	0	21	16
Number of Detects						8	0	1	24	4	10	4	11	31	12	14		40	14	12	12	0	21	16
Minimum Concentration						0.001	99999	0.001	99999	0	0	0	90	0	0	0		4	0	0	0	99999	99999	1
Minimum Detect						0.001	ND	0.001	ND	0.0201	3.33333E-05	0.0007	90	0.013	0.0033	0.0044		4	0.0044	0.0339	0.113	ND	ND	1
Maximum Concentration						0.21	0	0.001	0	0.211	0.785757576	0.0098	200	990.6	0.027	0.0658		1037.3	0.0401	0.0609	0.203	0	0	1
Maximum Detect						0.21	ND	0.001	ND	0.211	0.785757576	0.0098	200	990.6	0.027	0.0658		1037.3	0.0401	0.0609	0.203	ND	ND	1
Average Concentration						0.07				0.0073	0.051	0.00068	138	46	0.001	0.0054		486	0.0023	0.0032	0.011			
Median Concentration						0.0195		0.001		0	0	0	140	0	0	0		560.5	0	0	0			1
Standard Deviation						0.091				0.034	0.17	0.0024	32	166	0.0049	0.016		280	0.0079	0.013	0.042			

								Dioxin-Like PCBs															
								PCB 105	PCB 114	PCB 123	PCB 126	PCB 156	PCB 157	PCB 167	PCB 169	PCB 189	PCB 77	PCB 81	WHO(2005)-PCB TEQ (lower)	WHO(2005)-PCB TEQ (medium)	WHO(2005)-PCB TEQ (upper)
								ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
EQL									0.1	0.1	0.1		0.1					0.1			
USEPA (2019) RSL - Industrial Soil (Commercial Workers)																					
Monitoring_Zone	**Lot ID**	**Location_Code**	**Field_ID**	**Sample_Depth_Avg**	**Sampled_Date_Time**	**Sample_Type**																	
11	Road	HA19/10	HA19/13_0.5	0.5	31/07/2019	Normal		56.2	2.8	1.65	3.89	82.4	31	20.7	<2.35	11.2	20.4	<0.765	0.401	0.472	-
Statistical Summary																					
Number of Results								1	1	1	1	1	1	1	1	1	1	1	1	1	0
Number of Detects								1	1	1	1	1	1	1	0	1	1	0	1	1	0
Minimum Concentration								56.2	2.8	1.65	3.89	82.4	31	20.7	<2.35	11.2	20.4	<0.765	0.401	0.472	99999
Minimum Detect								56.2	2.8	1.65	3.89	82.4	31	20.7	ND	11.2	20.4	ND	0.401	0.472	ND
Maximum Concentration								56.2	2.8	1.65	3.89	82.4	31	20.7	<2.35	11.2	20.4	<0.765	0.401	0.472	0
Maximum Detect								56.2	2.8	1.65	3.89	82.4	31	20.7	ND	11.2	20.4	ND	0.401	0.472	ND
Average Concentration																					
Median Concentration								56.2	2.8	1.65	3.89	82.4	31	20.7	1.175	11.2	20.4	0.3825	0.401	0.472	
Standard Deviation																					
Number of Guideline Exceedances								0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)								0	0	0	0	0	0	0	0	0	0	0	0	0	0

							Dioxins & Furans (PCDD-F)																							
							1234678-HpCDD	1234678-HpCDF	1234789-HpCDF	123478-HxCDD	123478-HxCDF	123678-HxCDD	123678-HxCDF	123789-HxCDD	123789-HxCDF	12378-PeCDF	234678-HxCDF	23478-PeCDF	2378-TCDD (13C12)	2378-TCDF	sum HeptaCDD	sum HexaCDD	sum HeptaCDF	sum HexaCDF	sum PentaCDD	sum PentaCDF	sum TetraCDD	sum Tetra- bis OctaCDD/F	sum Tetra- bis OctaCDF	sum TetraCDF
							ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg
EQL								0.1			0.1				0.1		0.1		0.1											
USEPA (2019) RSL - Industrial Soil (Commercial Workers)																														
Monitoring_Zone	**Lot ID**	**Location_Code**	**Field_ID**	**Sample_Depth_Avg**	**Sampled_Date_Time**	**Sample_Type**																								
11	Road	HA19/10	HA19/13_0.5	0.5	31/07/2019	Normal	196	15.6	0.604	2.46	1.06	6.33	1.35	5.29	<0.392	0.784	0.94	0.816	0.654	1.17	-	-	-	-	-	-	-	-	-	-
Statistical Summary																														
Number of Results							1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Number of Detects							1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Minimum Concentration							196	15.6	0.604	2.46	1.06	6.33	1.35	5.29	<0.392	0.784	0.94	0.816	0.654	1.17	99999	99999	99999	99999	99999	99999	99999	99999	99999	99999
Minimum Detect							196	15.6	0.604	2.46	1.06	6.33	1.35	5.29	ND	0.784	0.94	0.816	0.654	1.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration							196	15.6	0.604	2.46	1.06	6.33	1.35	5.29	<0.392	0.784	0.94	0.816	0.654	1.17	0	0	0	0	0	0	0	0	0	0
Maximum Detect							196	15.6	0.604	2.46	1.06	6.33	1.35	5.29	ND	0.784	0.94	0.816	0.654	1.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration																														
Median Concentration							196	15.6	0.604	2.46	1.06	6.33	1.35	5.29	0.196	0.784	0.94	0.816	0.654	1.17										
Standard Deviation																														
Number of Guideline Exceedances							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

										PCDD-F and PCB TEQ (WHO 2005)			Indicator PCB							Dioxins
							WHO-TEQ0.5	WHO(2005)-PCDD/F TEQ (lower)	WHO(2005)-PCDD/F TEQ (medium)	WHO(2005)-PCDD/F TEQ (upper)	WHO(2005)-PCDD/F+PCB TEQ (Lower Bound)	WHO(2005)-PCDD/F+PCB TEQ inc. 1/2 BG	WHO(2005)-PCDD/F+PCB TEQ (upper)	PCB 101	PCB 118	PCB 138	PCB 153	PCB 180	PCB 28	PCB 52	12378-PeCDD
							ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	ng/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	pg/g
EQL							0.1												0.1		
USEPA (2019) RSL - Industrial Soil (Commercial Workers)												220									
Monitoring_Zone	**Lot ID**	**Location_Code**	**Field_ID**	**Sample_Depth_Avg**	**Sampled_Date_Time**	**Sample_Type**															
11	Road	HA19/10	HA19/13_0.5	0.5	31/07/2019	Normal	-	8.13	-	8.17	8.53	8.59	8.64	0.145	0.13	1.26	0.473	0.607	<0.0804	0.0794	1.6
Statistical Summary																					
Number of Results							0	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Number of Detects							0	1	0	1	1	1	1	1	1	1	1	1	0	1	1
Minimum Concentration							99999	8.13	99999	8.17	8.53	8.59	8.64	0.145	0.13	1.26	0.473	0.607	<0.0804	0.0794	1.6
Minimum Detect							ND	8.13	ND	8.17	8.53	8.59	8.64	0.145	0.13	1.26	0.473	0.607	ND	0.0794	1.6
Maximum Concentration							0	8.13	0	8.17	8.53	8.59	8.64	0.145	0.13	1.26	0.473	0.607	<0.0804	0.0794	1.6
Maximum Detect							ND	8.13	ND	8.17	8.53	8.59	8.64	0.145	0.13	1.26	0.473	0.607	ND	0.0794	1.6
Average Concentration																					
Median Concentration								8.13		8.17	8.53	8.59	8.64	0.145	0.13	1.26	0.473	0.607	0.0402	0.0794	1.6
Standard Deviation																					
Number of Guideline Exceedances							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	BTEX								Naphthalene	TRH NEPM (1999)							TRH NEPM (2013)							TRH Silica Gel Cleanup									
	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylenes (Sum of m,p & o)	Xylene Total	BTEX	Naphthalene	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH >C10-C16 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C16-C34 Fraction	TRH >C16-C40 Fraction	TRH >C34-C40 Fraction	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C16-C34 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	1	1	1	2	3	1	1	0.05	20	20	50	100		50	50	20	20	50	50	100	100	100	100	50	50	50	50	100	100	100	50	100
ANZG (2018) TV - Marine water (95%)	700[a]	180[ac]	80	350[a]	275[a]				70[a]																								
Clyde WARP SSTL - GW VI - Commercial	5000								13000									6200		NL													
Clyde WARP SSTL - GW VI - Construction	NL								NL									NL	-	NL	-		-										
Clyde WARP SSTL - GW VI - MW	NL								NL									NL	-	NL	-		-										
NEPM (2013) - Marine Water	500								50																								
NEPM (2013) - Recreational	10	8000	3000				6000																										
NHMRC (2019) HBGV - Recreational Water																																	
PFAS NEMP 2020 Interim Marine 95%																																	
PFAS NEMP 2020 Interim Marine 99%																																	

Lot ID	AEC	Field_ID	Location_Code	Sampled_Date_Time																																		
Lot S2	1	MW94/3	MW94/3	1/08/1999	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	26/08/1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	1/12/2000	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	300	400	100	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	13/12/2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	1/01/2004	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	7/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	1/03/2005	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	16/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	13/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	14/09/2005	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	29/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	30/03/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	27/09/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	1/09/2007	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	13/09/2007	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	26/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	27/02/2008	<1	<2	<1	-	-	-	<2	<6	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1		MW94/3	13/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	13/11/2008	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1		MW94/3	21/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	21/04/2009	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1		MW94/3	19/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	19/11/2009	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	25/11/2010	<1	<1	<1	<1	<2	-	<3	<6	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	6/10/2011	<1	<1	<1	<1	<2	-	<3	<6	<1	<20	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	<100	+	<100	+	-	-
Lot S2	1	MW94/3	MW94/3	6/12/2012	<1	<1	<1	<1	<2	-	<3	<6	<5	<20	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S2	1		MW94/3	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	12/12/2013	<1	<1	<1	<1	<2	-	<3	<6	<20	<20	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S2	1		MW94/3	22/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1		MW94/3	9/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	9/12/2014	<1	<1	<1	<1	<2	-	<3	<6	<20	<20	-	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S2	1		MW94/3	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	19/08/2016	<1	<1	<1	<1	<2	-	<3	-	<10	<20	<20	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S2	1		MW94/3	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	16/12/2016	<1	<1	<1	<1	<2	-	<3	-	<10	-	<20	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S2	1		MW94/3	29/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	29/05/2017	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1		MW94/3	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	D03_111217	MW94/3	11/12/2017	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	11/12/2017	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	T02_111217	MW94/3	11/12/2017	<1	<1	<1	<1	<2	-	<3	-	<10	-	<20	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	-	300	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	25/06/2018	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	MW94/3	MW94/3	7/12/2018	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S2	1		MW94/3	6/06/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	D04_060619	MW94/3	6/06/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S2	1	MW94/3	MW94/3	6/06/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S2	1		MW94/3	21/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S2	1	D02_20191121	MW94/3	21/11/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S2	1	MW94/3	MW94/3	21/11/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S5	11	D_071011_03	MW11/03	7/10/2011	<1	<1	<1	<1	<2	-	<3	<6	<1	<20	+	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	<100	+	<100	+	-	-
Lot S5	11	MW11/03	MW11/03	7/10/2011	<1	<1	<1	<1	<2	-	<3	<6	<1	<20	+	50	-	-	-	<100 - 50	-	-	-	-	-	-	-	-	-	-	-	-	<100	+	<100	+	-	-
Lot S5	11	MW11/03	MW11/03	12/06/2012	<1	<1	<1	<1	<2	-	<3	<6	<5	<20	+	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S5	11	MW11/03	MW11/03	6/12/2012	<1	<1	<1	<1	<2	-	<3	<6	<5	<20	+	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S5	11		MW11/03	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	12/12/2013	<1	<1	<1	<1	<2	-	<3	<6	<20	<20	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Lot S5	11		MW11/03	27/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	27/05/2014	<1	<1	<1	<1	<2	-	<3	<6	<20	<20	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11		MW11/03	5/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	5/12/2014	<1	<1	<1	<1	<2	-	<3	<6	<20	<20	-	<50	<100	-	<100	<100	<20	<20	<50	<50	100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	25/11/2015	<1	<1	<1	<1	<2	-	<3	<6	<10	<20	-	<50	<100	-	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11		MW11/03	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	19/08/2016	<1	<1	<1	<1	<2	-	<3	-	<10	70	70	<50	<100	-	<100	<100	70	70	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11		MW11/03	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	16/12/2016	<1	<1	<1	<1	<2	-	<3	+	<10	-	<20	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11		MW11/03	29/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	29/05/2017	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11		MW11/03	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	D04_111217	MW11/03	11/12/2017	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	11/12/2017	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	T03_111217	MW11/03	11/12/2017	<1	<1	<1	<1	<2	-	<3	-	<10	-	<20	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	-	500	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	D04_220618	MW11/03	22/06/2018	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	130	<100	+	270	400	<20	<20	130	130	230	480	120	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	22/06/2018	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	110	<100	+	180	290	<20	<20	120	120	190	310	<100	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	6/12/2018	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	140	<100	+	290	430	<20	<20	130	130	220	460	110	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11		MW11/03	7/06/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	7/06/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	170	<100	+	150	320	<20	<20	170	170	<100	170	<100	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S5	11		MW11/03	22/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S5	11	MW11/03	MW11/03	22/11/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	60	<100	+	530	590	<20	<20	<100	<100	370	580	210	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S3	15	BH115	BH115	22/06/2010	<1	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	BH115	BH115	23/11/2010	<1	<1	<1	<1	<1	<2	-	<3	<6	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	BH115	BH115	9/06/2011	<1	<1	<1	<1	<1	<2	-	<3	<6	-	<20	-	60	<100	<200	<100	<100 - 160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	BH115	BH115	9/12/2011	<1	<1	<1	<1	<1	<2	<3	<3	<3	<5	<20	+	<50	-	-	<50	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	<100	+	<100	+
Road alignment	15	MW11/01	MW11/01	5/10/2011	<1	<1	<1	<1	<1	<2	-	<3	<6	<1	<20	+	<50	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<100	+	<100	+
Road alignment	15	MW11/01	MW11/01	6/12/2012	<1	<1	<1	<1	<1	<2	-	<3	<6	<5	<20	+	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Road alignment	15		MW11/01	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	12/12/2013	<1	<1	<1	<1	<2	-	<3	<6	<20	<20	+	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Road alignment	15		MW11/01	11/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	11/12/2014	<1	<1	<1	<1	<2	-	<3	<6	<20	<20	+	<50	<100	-	<100	<100	<20	<20	<50	<50	100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Road alignment	15	MW11/01	MW11/01	25/11/2015	<1	<1	<1	<1	<2	-	<3	<6	<10	<20	+	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Road alignment	15		MW11/01	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	19/08/2016	<1	<1	<1	<1	<2	-	<3	-	<10	<20	<20	<50	<100	+	<100	<100	<20	<20	<50	<50	100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Road alignment	15		MW11/01	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	16/12/2016	<1	<1	<1	<1	<2	-	<3	-	<10	-	<20	<50	<100	+	<100	<100	<20	<20	<50	<50	<100	+	<100	-	-	-	-	-	-	+	-	-	-	-
Road alignment	15		MW11/01	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	11/12/2017	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	<50	<50	<20	<20	<100	<100	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	12/06/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	<50	<100	+	130	130	<20	<20	<100	<100	<100	<100	<100	<50	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Road alignment	15		MW11/01	22/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	22/11/2019	<1	<2	<2	<2	<2	-	<2	<1	<5	<20	+	60	<100	+	630	690	<20	<20	<100	<100	420	680	260	<100	<50	<100	<50	<100	<100	<100	<50	<100	-	-	-
Lot S3	15	MW94/19	MW94/19	1/08/1999	<1	<1	<1	-	-	-	-	<6	-	<20	+	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW94/19	MW94/19	25/08/1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	1/07/2000	<1	<1	<1	-	-	-	<3	<6	-	<20	+	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	26/07/2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	1/01/2004	<1	<1	<1	-	-	-	<3	<6	-	<20	+	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	5/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	16/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	1/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	14/09/2005	<1	<1	<1	-	-	-	<3	<6	-	<20	+	<40	272	322	<100	342	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	28/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	31/03/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	+	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	29/09/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	+	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	22/02/2008	<1	<1	<1	-	-	-	<1	<4	-	<20	+	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15		MW95/10	17/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	17/11/2008	<1	<1	<1	-	-	-	<1	<4	-	<20	+	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15		MW95/10	16/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	22/04/2009	<1	<1	<1	-	-	-	<1	<4	-	<20	+	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot S3	15	MW95/10	MW95/10	17/11/2009	<1	<1	<1	-	-

		BTEX								Naphthalene	TRH NEPM (1999)							TRH NEPM (2013)							TRH Silica Gel Cleanup									
		Benzene	Toluene	Ethylbenzene	Xylene (m)	Xylene (o)	Xylene (Sum of m,p & o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C16-C40 Fraction	TRH >C34-C40 Fraction	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		1	1	1	1	1	2	3	1	1	0.05	20	20	50	100		50	50	20	20	50	50	100	100	100	100	50	50	50	100	100	100	50	100
ANZG (2018) TV - Marine water (95%)		700[#4]	180[#5]	80	350[#4]	275[#4]					70[#4]																							
Clyde WARP SSTL - GW VI - Commercial		5000									13000									6200		NL											
Clyde WARP SSTL - GW VI - Construction		NL									NL								-	NL	-	NL	-		-								
Clyde WARP SSTL - GW VI - HHV		NL									NL								-	NL	-	NL	-		-								
NEPM (2013) - Marine Water		500									50																						
NEPM (2013) - Recreational		10	8000	3000					6000																								
NHMRC (2019) HBGV - Recreational Water																																	
PFAS NEMP 2020 Interim Marine 95%																																	
PFAS NEMP 2020 Interim Marine 99%																																	
Lot ID	**AEC**	**Field_ID**	**Location_Code**	**Sampled_Date_Time**																														
Lot 53	15	MW95/11	MW95/11	14/09/2005	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	31/03/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	29/09/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	**110**	**60**	**130**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	1/09/2007	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	27/09/2007	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	22/02/2008	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/11	14/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	14/11/2008	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/11	22/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	22/04/2009	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/01/2004	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	5/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/03/2005	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	16/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	14/09/2005	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	**639**	**689**	<100	**709**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	28/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	31/03/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	29/09/2006	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/09/2007	<1	<1	<1	-	-	-	<3	<6	-	<20	-	<40	<100	<200	<100	<240	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	27/09/2007	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	22/02/2008	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/12	14/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	14/11/2008	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/12	22/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	22/04/2009	<1	<1	<1	-	-	-	<1	<4	-	<20	-	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																																		
Number of Results		103	103	103	58	58	1	103	95	53	98	8	103	98	64	98	103	49	49	49	49	49	20	49	9	9	9	9	9	14	9	14	9
Number of Detects		0	0	0	0	0	0	0	0	0	1	1	10	4	5	10	15	1	1	5	5	9	6	7	0	0	0	0	0	0	0	0	0
Minimum Concentration		<1	<1	<1	<1	<2	<3	<1	<1	<1	<1	<20	<20	<40	<100	110	<50	<50	<20	<20	<50	<50	<100	<100	<100	<50	<100	<50	<100	<100	<100	<50	<100
Minimum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	70	70	50	272	110	60	130	70	70	120	120	100	170	110	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration		<1	<2	<2	<2	<2	<3	<3	<6	<20	70	70	1300	3600	4200	630	5500	70	70	2200	2200	3900	680	500	<100	<50	<100	<50	<100	<100	<100	<50	<100
Maximum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	70	70	1300	3600	4200	630	5500	70	70	2200	2200	3900	680	500	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration		0.5	0.6	0.6	0.67	1		1.2	2.3	4.5	11	18	42	97	182	72	169	11	11	87	87	156	169	78	50	25	50	25	50	50	50	34	50
Median Concentration		0.5	0.5	0.5	0.5	1	1.5	1.5	3	2.5	10	10	25	50	100	50	120	10	10	25	25	50	50	50	50	25	50	25	50	50	50	25	50
Standard Deviation		0	0.2	0.2	0.24	0		0.38	1	3.3	6.1	21	127	364	517	100	545	8.6	8.6	310	310	552	209	83	0	0	0	0	0	0	0	12	0
Number of Guideline Exceedances		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	0	49	49	49	0	49	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	0	49	49	49	0	49	0	0	0	0	0	0	0	0	0

Env Stds Comments
#1:Moderate reliability⍰
#2:Low reliability ⍰
#3:High reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic values or geometric mean for species). Check toxicant DGV technical brief for spread of data and its significance.⍰
#4:Very high reliability⍰
#5:High reliability ⍰
#6:Low reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic values or geometric mean for species). Check toxicant DGV technical brief for spread of data and its significance.⍰
#7:Moderate reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental chronic values or geometric mean for species). Check toxicant DGV technical brief for spread of data and its significance.⍰
#8:Moderate Reliability⍰
#9:Unknown level of species protection; Unknown Reliability⍰
#10:High Reliability⍰
#11:Very high Reliability⍰
#12:Low Reliability

| | | |

| | Field | | | | | | | | | | | | | Ether-oxygenates | | | | | MNA | | | | | | | | | OCP | | Inorganics | | Metals | | | | | | | | | | | | |

					Per- and Polyfluoroalkyl Subst											PFOS and PFOA																									
					1H,1H,2H,2H-perfluorooctanesulfonic acid	2-Ethyl perfluorooctane sulfonamide (EtFOSA)	2-ethyl-per-fluorooctanesulfonamidoacetic acid	2-Ethyl perfluorooctane sulfonamide (NEtFOSA)	2-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	2-Methyl perfluorooctane sulfonamide (MeFOSA)	2-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctanoic acid	Perfluoropentane sulfonic acid (PFPeS)	Perfluoroheptane sulfonic acid (PFHpS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFAS and PFOS	PFOS	Perfluorooctanoate	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	8:2 Fluorotelomer Sulfonate (8:2 FTS)	6:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	2-Ethyl perfluorooctane sulfonamidoacetic acid (Et	2-Methyl perfluorooctane sulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid	Perfluoroheptanoic acid	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	Perfluorododecanoic acid (PFDoA)	Perfluorononanoic acid (PFNA)	Perfluoropropanesulfonic acid (PFPrS)	Sum of entactin PFAS (PFHxS + PFOS + PFOA)*	Sum of US EPA PFAS (PFOS + PFOA)*	Perfluorooctanesulfonamide (PFOSA)
					ng/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					100	0.05	0.00005	0.05	0.05	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.05		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
ANZG (2018) TV - Marine water (95%)																																									
Clyde WARP SSTL - GW VI - Commercial																																									
Clyde WARP SSTL - GW VI - Construction																																									
Clyde WARP SSTL - GW VI - IMW																																									
NEPM (2013) - Marine Water																																									
NEPM (2013) - Recreational																																									
NHMRC (2019) HBGV - Recreational Water															2			2	10											2												
PFAS NEMP 2020 Interim Marine 95%																		0.13	220																							
PFAS NEMP 2020 Interim Marine 99%																		**0.00023**	**19**																							
Lot ID	**AEC**	**Field_ID**	**Location_Code**	**Sampled_Date_Time**																																						
Lot 52	1		MW94/3	MW94/3	1/08/1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	26/08/1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	1/12/2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	13/12/2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	1/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	7/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	1/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	16/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	13/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	14/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	29/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	30/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	27/09/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	1/09/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	13/09/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	26/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	27/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1			MW94/3	13/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	13/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1			MW94/3	21/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	21/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1			MW94/3	19/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	19/11/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	25/11/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	6/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	6/12/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1			MW94/3	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1			MW94/3	22/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1			MW94/3	9/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	9/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1			MW94/3	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	19/08/2016	-	-	<0.00005	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39	0.01	<0.01	<0.05	<0.01	-	-	-	0.05	<0.05	-	<0.01	0.27	<0.01	<0.01	0.01	0.09	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	<0.05
Lot 52	1			MW94/3	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39	0.01	<0.01	<0.05	<0.01	-	<0.05	<0.05	0.07	<0.05	-	<0.01	0.28	<0.01	<0.01	0.01	0.13	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	<0.05
Lot 52	1			MW94/3	29/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		MW94/3	MW94/3	29/05/2017	-	<0.05	-	-	<0.05	<0.05	<0.05	0.11	0.02	1.75	1.62	1.23	**0.67**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.14	<0.1	-	<0.02	0.56	<0.02	<0.02	0.03	0.2	<0.02	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1			MW94/3	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1		D03_111217	MW94/3	11/12/2017	-	<0.05	-	-	<0.05	<0.05	<0.05	0.2	0.02	1.65	1.43	0.89	**0.27**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.23	<0.1	-	<0.02	0.62	<0.02	<0.02	0.03	0.26	<0.02	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1	MW94/3	MW94/3	11/12/2017	-	<0.05	-	-	<0.05	<0.05	<0.05	0.22	<0.02	1.89	1.67	0.85	**0.24**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.45	<0.1	-	<0.02	0.61	<0.02	<0.02	0.02	0.29	0.04	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1	T02_111217	MW94/3	11/12/2017	-	<0.05	-	-	<0.05	<0.05	<0.05	0.49	0.01	2.27	1.77	0.99	**0.33**	0.02	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.02	0.44	<0.05	-	<0.01	0.66	<0.01	<0.01	0.02	0.26	0.04	<0.01	<0.01	<0.01	<0.01	-	-	-	<0.05
Lot 52	1	MW94/3	MW94/3	25/06/2018	-	<0.05	-	-	<0.05	<0.05	<0.05	0.28	0.02	1.83	1.53	0.98	**0.21**	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.44	<0.1	-	<0.02	0.77	<0.02	<0.02	<0.02	0.11	<0.02	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1	MW94/3	MW94/3	7/12/2018	-	<0.05	-	-	<0.05	<0.05	<0.05	0.38	<0.02	2.24	1.86	1.03	**0.16**	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.52	<0.1	-	<0.02	0.87	<0.02	<0.02	0.02	0.25	0.03	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1			MW94/3	6/06/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1	D04_060619	MW94/3	6/06/2019	-	-	-	<0.05	<0.05	<0.05	<0.05	0.22	<0.02	1.53	1.31	0.73	**0.17**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.3	<0.1	-	<0.02	0.56	<0.02	<0.02	0.03	0.19	0.04	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1	MW94/3	MW94/3	6/06/2019	-	-	-	<0.05	<0.05	<0.05	<0.05	0.22	<0.02	1.59	1.37	0.77	**0.17**	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.31	<0.1	-	<0.02	0.6	<0.02	<0.02	0.03	0.2	0.05	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1			MW94/3	21/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	1	D02_20191121	MW94/3	21/11/2019	-	-	-	<0.05	<0.05	<0.05	<0.05	0.48	<0.02	2.71	2.23	1.08	**0.14**	0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.69	<0.1	-	<0.02	0.94	<0.02	<0.02	0.03	0.36	0.06	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 52	1	MW94/3	MW94/3	21/11/2019	-	-	-	<0.05	<0.05	<0.05	<0.05	0.48	<0.02	2.75	2.27	1.12	**0.14**	0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	0.67	<0.1	-	<0.02	0.98	<0.02	<0.02	0.03	0.36	0.07	<0.05	<0.02	<0.02	<0.02	-	-	-	<0.02
Lot 55	11	D_071011_03	MW11/03	7/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	7/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/ 03	MW11/03	12/06/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	6/12/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	26/06/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	27/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	27/05/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	5/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	5/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	25/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	29/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	29/05/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	D04_111217	MW11/03	MW11/03	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	T03_111217	MW11/03	MW11/03	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	D04_220618	MW11/03	MW11/03	22/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	22/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	6/12/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	7/06/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	7/06/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11		MW11/03	MW11/03	22/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 55	11	MW11/03	MW11/03	22/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	BH115	BH115	22/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	BH115	BH115	23/11/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	BH115	BH115	9/06/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	BH115	BH115	9/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15		MW11/01	MW11/01	5/10/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	6/12/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15		MW11/01	MW11/01	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15		MW11/01	MW11/01	12/12/2013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15			MW11/01	11/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	11/12/2014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	25/11/2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15		MW11/01	MW11/01	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	19/08/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15		MW11/01	MW11/01	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	16/12/2016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15		MW11/01	MW11/01	11/12/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	11/12/2017	-	<0.05	-	-	<0.05	<0.05	<0.02	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.1	-	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Road alignment	15	MW11/01	MW11/01	12/06/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15		MW11/01	MW11/01	22/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Road alignment	15	MW11/01	MW11/01	22/11/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW94/19	MW94/19	1/08/1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW94/19	MW94/19	25/08/1999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	1/07/2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	26/07/2000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	1/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	5/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	16/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	1/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	14/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	28/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	31/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	29/09/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/10	MW95/10	22/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/10	MW95/10	17/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Per- and Polyfluoroalkyl Subst												PFOS and PFOA																									
	10:1H:2H:21H-perfluorotetradecanesulfonic acid	2-Ethyl perfluorooctane sulfonamide (EtFOSA)	2-ethyl-per-fluorooctanesulfonamidoacetic acid	2-Ethyl perfluorooctane sulfonamide (NEtFOSA)	2-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	2-Methyl perfluorooctane sulfonamide (MeFOSA)	2-Methyl perfluorooctane sulfonamidoethanol (NMeFOSE)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of PFHxS and PFOS	PFOS	Perfluorooctanoate	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	2-Ethyl perfluorooctane sulfonamidoacetic acid (Et	2-Methyl perfluorooctane sulfonamidoacetic acid	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid	Perfluoroheptanoic acid	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorononanoic acid (PFNA)	Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	Perfluorododecanoic acid (PFDoA)	Perfluorononanesulfonic acid (PFNS)	Perfluoropropanesulfonic acid (PFPrS)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Sum of US EPA PFAS (PFOS + PFOA)*	Perfluorooctanesulfonamide (PFOSA)
	ng/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	100	0.05	0.00005	0.05	0.05	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.05		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02
ANZG (2018) TV - Marine water (95%)																																						
Clyde WARP SSTL - GW VI - Commercial																																						
Clyde WARP SSTL - GW VI - Construction																																						
Clyde WARP SSTL - GW VI - IMW																																						
NEPM (2013) - Marine Water																																						
NEPM (2013) - Recreational																																						
NHMRC (2019) HBGV - Recreational Water												2	2	10												2													
PFAS NEMP 2020 Interim Marine 95%													0.13	220																									
PFAS NEMP 2020 Interim Marine 99%													**0.00023**	**19**																									

Lot ID	AEC	Field_ID	Location_Code	Sampled_Date_Time																																				
Lot 53	15	MW95/11	MW95/11	14/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	31/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	29/09/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	1/09/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	27/09/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	22/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/11	14/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	14/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/11	22/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/11	MW95/11	22/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	5/01/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	16/03/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	14/09/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	28/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	31/03/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	29/09/2006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	1/09/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	27/09/2007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	22/02/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/12	14/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	14/11/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15		MW95/12	22/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 53	15	MW95/12	MW95/12	22/04/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary																																						
Number of Results	0	7	1	4	11	12	11	11	11	11	11	11	13	13	13	13	13	11	12	12	13	13	0	13	13	13	13	13	13	13	13	13	13	0	0	0	0	13
Number of Detects	0	0	0	0	0	0	10	4	10	10	10	12	11	0	0	0	0	0	0	0	12	0	0	0	12	0	0	11	12	9	0	0	0	0	0	0	0	0
Minimum Concentration	####	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	<0.02	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	99999	<0.01	<0.02	<0.01	<0.01	0.01	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	99999	99999	99999	<0.02
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	0.11	0.01	1.53	1.31	0.73	0.14	0.01	ND	ND	ND	ND	ND	ND	0.05	ND	ND	ND	0.27	ND	ND	0.01	0.09	0.02	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	0	<0.05	<0.00005	<0.05	<0.05	<0.05	<0.05	0.49	0.02	2.75	2.27	1.23	0.67	0.02	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.69	<0.1	0	<0.02	0.98	<0.02	<0.02	0.03	0.36	0.07	<0.05	<0.02	<0.02	<0.02	0	2	0	<0.05
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	0.49	0.02	2.75	2.27	1.23	0.67	0.02	ND	ND	ND	ND	ND	ND	0.69	ND	ND	ND	0.98	ND	ND	0.03	0.36	0.07	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration		0.025		0.025	0.025	0.025	0.025	0.28	0.013	1.8	1.6	0.88	0.25	0.014	0.02	0.025	0.02	0.023	0.013	0.013	0.33	0.044		0.0088	0.59	0.0088	0.0088	0.022	0.21	0.032	0.02	0.0088	0.0088	0.0088					0.013
Median Concentration		0.025	0.000025	0.025	0.025	0.025	0.025	0.22	0.01	1.83	1.62	0.98	0.21	0.01	0.025	0.025	0.025	0.025	0.01	0.01	0.31	0.05		0.01	0.61	0.01	0.01	0.02	0.2	0.03	0.025	0.01	0.01	0.01					0.01
Standard Deviation		0		0	0	0	0	0.16	0.0047	0.74	0.6	0.33	0.17	0.006	0.009	0	0.009	0.006	0.0058	0.0058	0.23	0.011		0.0022	0.28	0.0022	0.0022	0.009	0.1	0.02	0.009	0.0022	0.0022	0.0022					0.0066
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Env Stds Comments
#1:Moderate reliability⍰
#2:Low reliability ⍰
#3:High reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental cl
#4:Very high reliability ⍰
#5:High reliability ⍰
#6:Low reliability. DGV may not protect key test species from chronic toxicity (this refers to experimental ch
#7:Moderate reliability. DGV may not protect key test species from chronic toxicity (this refers to experimer
#8:Moderate Reliability⍰
#9:Unknown level of species protection; Unknown Reliability⍰
#10:High Reliability⍰
#11:Very high Reliability⍰
#12:Low Reliability

| | | | | Microbiology | | | OCs | | | | | | | | | | | | | | | | | | | | | | | | | OPs | | | | | | | | | | | | | | | | | | |

| | Microbiology | | | OCs | | |

| | | | | | PAH/Phenols | | | | |

| | PAH/Phenols | | |

					Canister Sampling - Field Data	Ether-oxygenates	Permanent Gases				Pressure		TRH Aliphatic/Aromatic Split												BTEX						Naphthalene
					Temperature - As Received	Vacuum - As received	Methyltributyl Ether	Carbon Dioxide (free)	Carbon Monoxide	Hydrogen	Oxygen	Pressure - As received	Pressure - Laboratory Atmosphere	TRH >C5-C6 Aliphatic	TRH >C6-C8 Aliphatic	TRH >C8-C10 Aliphatic	TRH C6-C10 Aliphatic	TRH >C10-C12 Aliphatic	TRH >C10-C16 Aliphatic	TRH >C5-C7 Aromatic	TRH >C7-C8 Aromatic	TRH >C8-C10 Aromatic	TRH C6-C10 Aromatic	TRH C6-C10 less BTEX Aromatic	TRH >C10-C12 Aromatic	TRH >C10-C16 Aromatic	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene
					°C	mg/m3	ug/m3	mg/m³	mg/m³	mg/m³	mg/m³	kPaa	kPaa	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv	ppmv
EQL					0.1	0.03	180	0.005	0.0005	0.005	0.1	0.1	0.1	16.5	20	25	20	30	37	0.16	0.19	1.25	3	1.4	2.5	1.4	0.1	0.19	0.22	0.22	0.43	0.65	0.1
Clyde WARP SSTL - SV VI - Commercial 0.15m															76000	4200		4200				4200			830		18						14
Monitoring_Zone	**Field_ID**	**Location_Code**	**Sampled_Date_Time**																														
11	SV19/06	SV19/06	28/08/2019	21	1.8	<180	0.583 - 10,500	<0.001[#1]	<0.01[#1]	19 - 249,000	96	102	<16.5	96.8	103	168	95.9	229	0.37	<0.19	2.57	3.08	1.88	<2.5	2.18	0.431	<0.19	0.529	<0.22	<0.43	<0.65	0.88
Statistical Summary																																	
Number of Results				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of Detects				1	1	0	1	0	0	1	1	1	0	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	0	0	0	1
Minimum Concentration				21	1.8	<180	0.583	<0.001	<0.01	19	96	102	<16.5	96.8	103	168	95.9	229	0.37	<0.19	2.57	3.08	1.88	<2.5	2.18	0.431	<0.19	0.529	<0.22	<0.43	<0.65	0.88
Minimum Detect				21	1.8	ND	0.583	ND	ND	19	96	102	ND	96.8	103	168	95.9	229	0.37	ND	2.57	3.08	1.88	ND	2.18	0.431	ND	0.529	ND	ND	ND	0.88
Maximum Concentration				21	1.8	<180	10500	<0.001	<0.01	249000	96	102	<16.5	96.8	103	168	95.9	229	0.37	<0.19	2.57	3.08	1.88	<2.5	2.18	0.431	<0.19	0.529	<0.22	<0.43	<0.65	0.88
Maximum Detect				21	1.8	ND	10500	ND	ND	249000	96	102	ND	96.8	103	168	95.9	229	0.37	ND	2.57	3.08	1.88	ND	2.18	0.431	ND	0.529	ND	ND	ND	0.88
Average Concentration																																	
Median Concentration				21	1.8	90	5250.2915	0.0005	0.005	124509.5	96	102	8.25	96.8	103	168	95.9	229	0.37	0.095	2.57	3.08	1.88	1.25	2.18	0.431	0.095	0.529	0.11	0.215	0.325	0.88
Standard Deviation																																	
Number of Guideline Exceedances				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

| | | | | Iso-propanol | SVOC | | | | | | VOC | | | | | |

	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Cyclohexane	Dichlorodifluoromethane	Dichloromethane	Ethyl acetate	Freon 113	Freon 114	Heptane	Hexane	Isooctane	Propene	Styrene	TCE	Tetrachloroethene	Tetrahydrofuran	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichlorofluoromethane	Vinyl acetate	Vinyl bromide (bromoethene)	Vinyl chloride
	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
EQL	0.02	0.23	0.17	0.25	0.17	0.18	0.38	0.35	0.2	0.18	0.23	0.09	0.21	0.005	0.34	0.15	0.2	0.23	0.28	0.18	0.22	0.0051
Clyde WARP SSTL - SV VI - Commercial 0.15m																						

Monitoring_Zone	Field_ID	Location_Code	Sampled_Date_Time																				
11	SV19/06	SV19/06	28/08/2019	<0.02	<0.23	1.13	<0.25	<0.17	<0.18	<0.38	<0.35	<0.2	<0.18	<0.23	<0.09	<0.21	<0.005	<0.34	<0.15	<0.2	<0.23	<0.28	0.185	<0.22	<0.0051

Statistical Summary																							
Number of Results	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Number of Detects	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
Minimum Concentration	<0.02	<0.23	1.13	<0.25	<0.17	<0.18	<0.38	<0.35	<0.2	<0.18	<0.23	<0.09	<0.21	<0.005	<0.34	<0.15	<0.2	<0.23	<0.28	0.185	<0.22	<0.0051	
Minimum Detect	ND	ND	1.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.185	ND	ND	
Maximum Concentration	<0.02	<0.23	1.13	<0.25	<0.17	<0.18	<0.38	<0.35	<0.2	<0.18	<0.23	<0.09	<0.21	<0.005	<0.34	<0.15	<0.2	<0.23	<0.28	0.185	<0.22	<0.0051	
Maximum Detect	ND	ND	1.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.185	ND	ND	
Average Concentration																							
Median Concentration	0.01	0.115	1.13	0.125	0.085	0.09	0.19	0.175	0.1	0.09	0.115	0.045	0.105	0.0025	0.17	0.075	0.1	0.115	0.14	0.185	0.11	0.00255	
Standard Deviation																							
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

				Pre Purge						Post Purge					Analytical Results		
				Borehole Flow Rate	LEL	PID	Oxygen	Methane	Carbon Dioxide	LEL	PID	Oxygen	Methane	Carbon Dioxide	Carbon Dioxide (free)	Oxygen	Methane
				L/Hr	%	ppm	%	%	%	%	ppm	%	%	%	Mol %	Mol %	Mol %
															0.005	0.1	0.05
Hazardous Ground Gas Surface Monitoring Criterion (Benchmark Technique 16) EPA (2012)															5		1.25
Field_ID	Monitoring Zone	Location_Code	Sampled_Date														
SV19/06	11	SV19/06	28-Aug-19	-	0	159	16.9	0.5	0.4	0	95.2	19.4	0.4	0.4	0.583	19	<0.1
SV19/06	11	SV19/06	26-Nov-19	-	Water in tubing, no readings					-	-	-	-	-	-	-	-
Statistical Summary																	
Number of Results				2	1	1	1	1	1	2	2	2	2	2	2	2	2
Number of Detects				2	1	1	1	1	1	2	2	2	2	2	2	2	1
Minimum Concentration				99999	0	159	16.9	0.5	0.4	0	95.2	19.4	0.4	0.4	0.583	19	<0.1
Minimum Detect				ND	ND	159	16.9	0.5	0.4	ND	95.2	19.4	0.4	0.4	0.583	19	ND
Maximum Concentration				0	0	159	16.9	0.5	0.4	0	95.2	19.4	0.4	0.4	0.583	19	<0.1
Maximum Detect				ND	ND	159	16.9	0.5	0.4	ND	95.2	19.4	0.4	0.4	0.583	19	ND
Average Concentration																	
Median Concentration					0	159	16.9	0.5	0.4	0	95.2	19.4	0.4	0.4	0.583	19	0.05
Standard Deviation																	
Number of Guideline Exceedances				0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0	0	0	0	0	0	0

* = Instrument not displaying reading
** = Field Measurement Only

				Flow Rate	Field (pre-purge)		Field (post-purge)		Analytical Data			Gas Screening Value		Modified Wilson and Card	
				Borehole Flow Rate #3	Methane	Carbon Dioxide	Methane	Carbon Dioxide	Carbon Dioxide (free)	Oxygen	Methane	GSV Carbon Dioxide (free) #1	GSV Methane #1	Characteristic Gas Situation	Risk Classification #2
				L/Hr	%	%	%	%	Mol %	Mol %	Mol %				
									0.005	0.1	0.05				
Field_ID	Monitoring Zone	Location_Code	Sampled_Date												
SV19/06	11	SV19/06	28-Aug-19	1.6	0.5	0.4	0.4	0.4	0.583	19	<0.1	0.0	0.00	1	Very Low Risk
SV19/06	11	SV19/06	26-Nov-19	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary															
Number of Results				2	2	2	2	2	2	2	2	2	2	2	-
Number of Detects				2	2	2	2	2	2	2	1	2	2	2	-
Minimum Concentration				1.6	0.5	0.4	0.4	0.4	0.583	19	<0.1	0.009328	0	1	-
Minimum Detect				1.6	0.5	0.4	0.4	0.4	0.583	19	ND	0.009328	ND	1	-
Maximum Concentration				1.6	0.5	0.4	0.4	0.4	0.583	19	<0.1	0.009328	0	1	-
Maximum Detect				1.6	0.5	0.4	0.4	0.4	0.583	19	ND	0.009328	ND	1	-
Average Concentration															-
Median Concentration				1.6	0.5	0.4	0.4	0.4	0.583	19	0.05	0.009328	0	1	-
Standard Deviation															-

Note:
#1 GSV= maxiumum borehole flow rate (L/hr) x maximum gas concentration (%)
#2 Refer to Table 6 in *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases* (EPA 2012)
- A Risk Classification has been calculated where methane or carbon dioxide gases exceed adopted screening levels and oxygen conventrations (<5%) indicate anaerobic conditions.
#3 Flow rates not measured for SV19/06, SV19/07, SV19/10 - a flow rate of 1.6 L/Hr has been adopted conservatively and represents the upper limit of the available dataset

					Asbestos																	
				Asbestos Detected	FA- Comment	AF - Comment	ACM - Comment	Asbestos fibres	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Asbestos Sample Dimensions	Mass ACM	Mass Asbestos in ACM	Mass Asbestos in FA & AF	Soil Volume field sieved to 7mm	Mass of test sample for extraction (<7mm)	Mass asbestos in AF	Mass Asbestos in FA	Mass FA	Organic Fibres - Comment	Respirable Fibres - Comment	Synthetic Fibres - Comment
				Comment	Comment	Comment	Comment	g	%w/w	%w/w	Comment	g	g	g	mL	g	g	g	g	Comment	COMMENT	COMMENT
NEPM (1999) HSL Asbestos (Commercial/Industrial)									**0.05**	**0.001**												
Field_ID	**Sample_Depth_Avg**	**Matrix Description**	**Sampled_Date_Time**	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
SP29-V-FP	0	Soil	9/09/2021	No	Nil	Nil	Nil	ND	ND	ND	-	0	ND	ND	11000	821	-	-	-	Detected	Nil	Nil
AEC1-V-B	0	Soil	9/09/2021	No	Nil	Nil	Nil	ND	ND	ND	-	0	ND	ND	11000	500	ND	ND	ND	Detected	Nil	Nil
DUP01-210909	0	Soil	9/09/2021	No	Nil	Nil	Nil	ND	ND	ND	-	0	ND	ND	11000	736	ND	ND	ND	Detected	Nil	Nil
AEC-1-V-N	0.1	Soil	9/09/2021	No	Nil	Nil	Nil	ND	ND	ND	-	0	ND	ND	11000	488	ND	ND	ND	Detected	Nil	Nil
AEC1-V-E	0.1	Soil	9/09/2021	No	Nil	Nil	Nil	ND	ND	ND	-	0	ND	ND	11000	578	ND	ND	ND	Detected	Nil	Nil
AEC1-V-S	0.1	Soil	9/09/2021	No	Nil	Nil	Nil	ND	ND	ND	-	0	ND	ND	11000	845	ND	ND	ND	Detected	Nil	Nil
AEC1-V-W	0.1	Soil	9/09/2021	No	Nil	Nil	Nil	ND	ND	ND	-	0	ND	ND	11000	527	ND	ND	ND	Detected	Nil	Nil

Notes:

ND - Non-Detect

Appendix C-2 Tables (AA1 SSR report)

								BTEX						Naphthalene	TRH NEPM (1999)								TRH NEPM (2013)							TRH Silica Gel Cleanup									
								Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX	Naphthalene	TRH C6-C9 Fraction	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C15-C36 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	TRH >C10-C16 Fraction SG less Naphthalene	TRH >C10-C14 Silica Gel Cleanup	TRH >C10-C16 Silica Gel Cleanup	TRH >C10-C36 Silica Gel Cleanup	TRH >C10-C40 Silica Gel Cleanup	TRH >C15-C28 Silica Gel Cleanup	TRH >C16-C34 Silica Gel Cleanup	TRH >C29-C36	TRH >C34-C40 Silica Gel Cleanup
								mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL								0.05	0.05	0.05	0.1	0.2	0.05	0.2	0.1	10	20	20	50		50	50	10	10	50	50	100	50	100	50	20	50	50	50	50	100	50	100
Clyde WARP SSTL (Direct Contact - Commercial)								400							9800									28000		17000	27000		27000								
Clyde WARP SSTL (Direct Contact - Construction Worker)								1200							67000									69000		45000	64000		64000								
Clyde WARP SSTL (Direct Contact - IMW)								15000							810000									830000		540000	770000		770000								
Clyde WARP SSTL (Vapour Intrusion - Commercial) > 4m																																					
4-6m								3.2							NL									NL		NL											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >1-2m																																					
1-1.99m								3.2							NL									770		NL											
Clyde WARP SSTL (Vapour Intrusion - Commercial) >2 - 4m																																					
2-3.99m								3.2							NL									NL		NL											
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																																					
0-0.99m								3.2							NL									600		NL											
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)								NL							NL									NL		NL											
Clyde WARP SSTL (Vapour Intrusion - IMW)								NL							NL									NL		NL											
NEPM (1999) HIL D - Commercial/Industrial																																					
NEPM (1999) HSL D Comm/Indust - Asbestos																																					
NEPM (1999) Management Limits - Commercial/Industrial (coarse)																								700		1000		3500		10000			1000				3500		10,000
Alternative_Name	**Location_Code**	**Field_ID**	**Sample_Depth_Range**	**Sampled_Date_Time**																																		
Lot 51	SB01	SB01_0.2-0.5	0.2-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB02	SB02_0.0-0.3	0-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB03	SB03_0.45-0.6	0.45-0.6	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB05	SB05_0.4-0.6	0.4-0.6	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB05	SB05_0.0-0.3	0-0.3	16/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	D091209-01	0.2-0.4	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	3.9	-	<20	<50	1200	2400	1200	2425	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB06	SB06_0.2-0.9	0.2-0.4	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	3.7	-	<20	50	1500	2800	1300	2850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB07	D091208_02	0.1-0.3	9/12/2008	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<2.2	<0.5	-	<10	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB07	SB07_0.1-0.3	0.1-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB08	SB08_0.0-0.3	0-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 51	SB09	SB09_0.4-0.7	0.4-0.7	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB10	SB10_0.2-0.5	0.2-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB11	SB11_0.15-0.25	0.15-0.25	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB12	SB12_0.35-0.5	0.35-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB13	SB13_0.15-0.3	0.15-0.3	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	200	150	225	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB14	SB14_0.1-0.5	0.1-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	SB15	SB15_0.0-0.5	0-0.5	16/12/2008	<0.05	<0.05	<0.05	-	-	<0.05	<0.2	<0.1	-	<20	<50	<100	<200	<100	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_0.3	0.3-0.3	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_1.2	-1.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_1.2	1.2-1.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_2.2	-2.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_2.2	2.2-2.2	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 52	TP18/28	TP18/28_3.0	3-3	7/02/2018	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<1	<10	-	<50	<100	-	<100	<50	<10	<10	<50	<50	<100	<50	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	DOI_050819	0.7-0.9	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.8	0.7-0.9	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/01	TP19/01_0.1	0-0.2	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/04	TP19/04_0.1	0-0.2	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	50	240	-	210	500	<20	<20	61	61	370	601	170	-	<50	<50	330	-	170	300	160	<100		
Lot 51	TP19/05	TP19/05_0.2	0.1-0.3	5/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/06	TP19/06_0.5	0.4-0.6	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 51	TP19/06	TP19/06_1.0	0.9-1.1	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_1.0	0.9-1.1	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 53	TP19/08	TP19/08_0.1	0-0.2	18/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	130	-	220	350	<20	<20	<50	<50	290	290	<100	-	<20	<50	<50	-	<50	<100	<50	<100		
Lot 55	BH12/30	BH12/30_0.25	0.25-0.25	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/30	BH12/30_1.3	1.3-1.3	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.1	0.1-0.1	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	660	710	<100	660 - 735	<20	<20	58	58	680	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_0.4	0.4-0.4	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	76	110	160	<100	190 - 236	<20	<20	120	120	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/31	BH12/31_1.4	1.4-1.4	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/32	BH12/32_0.2	0.2-0.2	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	650	600	650	<100	1300	<20	<20	880	880	370	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/32	BH12/32_1.2	1.2-1.2	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	0.7 - 5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/33	BH12/33_0.2	0.2-0.2	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	5.2	57	-	2700	10,000	10,520	520	13,000 - 13,220	92	92	6200	6200	7700	-	230	-	-	-	-	-	-	-	-	-	-	-
Lot 55	BH12/33	BH12/33_0.6	0.6-0.6	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	55	-	2200	8400	8670	270	10,870 - 11,000	83	83	5100	5100	6100	-	110	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_0.7	0.7-0.7	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	320	2300	2580	280	2900	<20	<20	700	700	2300	-	100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	BH12/36	BH12/36_1.3	1.3-1.3	14/03/2012	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	<100	<200	<100	<100	<20	<20	<50	<50	<100	-	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/03	HA19/03_0.8	0.7-0.9	31/07/2019	<0.1	<0.1	0.5	<0.1	0.5	0.5	-	2.1 - 5.6	-	<20	49	200	-	<50	249	24	23	100	94.4	140	240	<100	-	27	60	147	-	120	<100	<50	<100		
Lot 54	HA19/03	HA19/03_1.5	1.4-1.6	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	1.8	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_0.4	0.3-0.5	31/07/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	750	1431	-	840	590	91	<100		
Lot 54	HA19/04	HA19/04_0.4	0.4-0.6	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	68	1300	2200	-	220	3720	200	200	2100	2100	1500	3600	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/04	HA19/04_1.0	0.9-1.1	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/05	HA19/05_0.3	0.2-0.4	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	1200	120	-	<50	1320	27	27	1200	1200	<100	1200	<100	-	150	160	150	-	<50	<100	<50	<100		
Lot 55	HA19/05	HA19/05_0.05	0-0.1	31/07/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	75	-	<50	75	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/06	HA19/06_1.0	0.9-1.1	1/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/06	HA19/06_2.2	2.1-2.3	1/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 54	HA19/07	HA19/07_0.3	0.2-0.4	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	31	360	-	88	479	<20	<20	69	69	370	439	<100	-	<20	<50	190	-	190	180	<50	<100		
Lot 54	HA19/07	HA19/07_0.05	0-0.1	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	60	5400	-	2100	7560	<20	<20	320	320	6600	7840	920	-	73	300	9073	-	7100	7300	1900	850		
Lot 55	HA19/08	HA19/08_0.8	0.7-0.9	2/08/2019	<0.4	<0.4	<0.4	0.4	<0.8	<1.2	-	12 - 29	-	<80	220	470	-	50	740	<80	<80	310	281	380	690	<100	-	100	150	290	-	190	140	<50	<100		
Lot 55	HA19/08	HA19/08_1.2	1.1-1.3	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	2.3	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Lot 55	HA19/09	HA19/09_0.8	0.7-0.9	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5 - 1	-	<20	2300	9700	-	340	12,340	<20	<20	5400	5400	6300	11,900	200	-	2200	5100	11,330	-	8900	5800	230	180		
Lot 55	HA19/09	HA19/09_1.4	1.3-1.5	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	46	190	-	<50	236	<20	<20	100	100	120	220	<100	-	<20	<50	77	-	77	<100	<50	<100		
Road alignment	HA19/10	HA19/10_0.2	0.1-0.3	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	<50	-	<50	<50	<20	<20	<50	<50	<100	<100	<100	-	-	-	-	-	-	-	-	-	-	-
Road alignment	HA19/10	HA19/10_0.05	0-0.1	2/08/2019	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	-	<0.5	-	<20	<20	200	-	190	390	<20	<20	<50	<50	350	350	<100	-	<20	<50	175	-	94	160	81	<100		
Lot 55	MW11/03	MW11/03_0.8	0.8	6/10/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-		
Lot 55	MW11/03	D_061011_02	3	6/10/2011	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<1.5	<0.5	<10	-	<50	-	-	-	<50	-	-	-	-	-	-	-	-	-	-	-	-	<100	-	<100	-		

Appendix C-3 Tables (Biopile Validation report)

ERM

	BTEX						Naphthalene	TRH NEPM (1999)					TRH NEPM (2013)							Inorganics
	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene	TRH >C6-C9 Fraction	TRH >C10-C14 Fraction	TRH >C15-C28 Fraction	TRH >C29-C36 Fraction	TRH >C10-C36 Fraction	TRH C6-C10 Fraction	TRH C6-C10 less BTEX	TRH >C10-C16 Fraction	TRH >C10-C16 Fraction less N	TRH >C16-C34 Fraction	TRH >C10-C40 Fraction	TRH >C34-C40 Fraction	Moisture Content (dried @ 103°C)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
EQL	0.1	0.1	0.1	0.1	0.2	0.3	0.5	20	20	50	50	50	20	20	50	50	100	100	100	1
Clyde WARP SSTL (Direct Contact - Commercial)	400						9800							28000		17000	27000		27000	
Clyde WARP SSTL (Direct Contact - Construction Worker)	1200						67000							69000		45000	64000		64000	
Clyde WARP SSTL (Direct Contact - IMW)	15000						810000							830000		540000	770000		770000	
Clyde WARP SSTL (Vapour Intrusion - Commercial) 0.15m																				
0-0.99m	3.2						NL							600		NL				
Clyde WARP SSTL (Vapour Intrusion - Construction Worker)	NL						NL							NL		NL				
Clyde WARP SSTL (Vapour Intrusion - IMW)	NL						NL							NL		NL				
NEPM (1999) Management Limits - Commercial/Industrial (coarse)													700		1000		3500		10000	

Field_ID	Location_Code	Sampled_Date_Time	Sample_Type																				
75-1	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	130	740	390	1260	<20	<20	240	240	940	1400	220	11
75-10	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	47	1000	440	1487	<20	<20	180	180	1200	1620	240	4.4
75-2	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	100	620	330	1050	<20	<20	200	200	780	1160	180	8
75-3	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	70	83	153	<20	<20	<50	<50	100	280	180	12
75-4	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	75	650	350	1075	<20	<20	170	170	840	1210	200	8.5
75-5	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	25	340	140	505	<20	<20	62	62	400	462	<100	7.6
75-6	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	38	340	150	528	<20	<20	75	75	410	595	110	6.3
75-7	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	280	140	420	<20	<20	<50	<50	350	500	150	5.7
75-8	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	39	450	260	749	<20	<20	89	89	610	849	150	7.3
75-9	SP75	4/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	110	680	360	1150	<20	<20	210	210	860	1280	210	5.8
	SP75		**95% UCL**	ND	-	-	-	-	-	ND	-	-	-	-	-	ND	ND	**174.5**	**174.5**	**842**	-	**201.8**	-
76-1	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	100	490	240	830	<20	<20	120	120	620	910	170	4.8
76-10	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	390	150	<50	540	25	25	420	420	130	550	<100	15
76-2	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	190	100	290	<20	<20	<50	<50	250	250	<100	9.4
76-3	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	100	65	165	<20	<20	<50	<50	140	140	<100	16
76-4	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	120	71	191	<20	<20	<50	<50	160	160	<100	17
76-5	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	67	130	81	278	<20	<20	92	92	160	252	<100	9.7
76-6	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	39	360	<50	<0	<20	<20	88	-	400	-	<100	8.1
76-7	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	46	400	95	<0	<20	<20	140	-	390	-	<100	10
76-8	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	120	380	870	77	<0	270	270	560	-	810	-	<100	18
76-9	SP76	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	21	250	170	<0	<20	<20	<50	-	370	-	100	5.1
D03	SP76	5/02/2021	Field_D	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	<20	71	50	121	<20	<20	<50	<50	100	100	<100	14
	SP76		**95% UCL**	ND	-	-	-	-	-	ND	-	-	-	-	-	**137.6**	**137.6**	**377.9**	**210.7**	**445.2**	-	**86.1**	-
D01	SP77	5/02/2021	Field_D	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	46	210	160	416	<20	<20	75	75	310	485	100	10
D02	SP77	5/02/2021	Field_D	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	86	230	170	486	<20	<20	130	130	320	560	110	8.3
77-1	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	69	200	150	470	<20	<20	98	98	290	388	<100	11
77-10	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	240	180	<50	500	48	57	260	260	230	490	<100	16
77-2	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	89	160	<50	280	<20	<20	110	110	220	330	<100	9.9
77-3	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	170	260	230	760	<20	<20	210	210	400	750	140	13
77-4	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	130	230	<50	400	<20	<20	180	180	320	610	110	9.8
77-5	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	97	150	120	420	<20	<20	120	120	220	340	<100	12
77-6	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	150	200	<50	390	<20	<20	160	160	270	430	<100	9.1
77-7	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	560	290	180	1200	33	39	610	610	340	1060	110	16
77-8	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	110	250	53	450	<20	<20	150	150	350	620	120	7.7
77-9	SP77	5/02/2021	Normal	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<20	110	150	110	470	<20	<20	140	140	200	340	<100	21
	SP77		**95% UCL**	ND	-	-	-	-	-	ND	-	-	-	-	-	**30.55**	**35.56**	**274.3**	**274.3**	**321.3**	-	**100.7**	-

Statistical Summary

Number of Results	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	32	36	32	36	36
Number of Detects	0	3	3	3	3	3	0	4	30	36	30	32	6	6	29	26	36	32	20	36
Minimum Concentration	0	<0.1	<0.1	<0.1	<0.2	<0.3	0	<20	<20	70	<50	<0	0	0	<50	<50	100	100	86.1	4.4
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	120	21	70	50	121	25	25	62	62	100	100	86.1	4.4
Maximum Concentration	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	120	560	1000	440	1487	270	270	610	610	1200	1620	240	21
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	120	560	1000	440	1487	270	270	610	610	1200	1620	240	21
Average Concentration	0.046	0.05	0.05	0.05	0.1	0.15	0.23	13	107	328	149	516	23	24	164	153	419	625	105	11
Median Concentration	0.05	0.05	0.05	0.05	0.1	0.15	0.25	10	75	250	120	450	10	10	135	135	345	500	100	9.8
Standard Deviation	0.014	0	0	0	0	0	0.07	19	123	237	117	395	48	48	141	122	272	403	61	4.2
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix C-4 Tables (Stage 1 Reusable Material Letter)

Table 6 Analytical Results

Sample ID	BTEX / Total Recoverable Hydrocarbons				Asbestos
	Benzene (mg/kg)	TRH C6 – C10 (mg/kg)	TRH C6 – C10 (mg/kg) LESS BTEX	TRH C16 – C34 (mg/kg)	Asbestos (% w/w)
TP1	<0.1	<20	<20	<100	ND
TP2	<0.1	<20	<20	<100	ND
TP3	<0.1	<20	<20	<100	ND
TP4	<0.1	<20	<20	<100	ND
TP5	<0.1	<20	<20	<100	ND
TP6	<0.1	<20	<20	<100	ND
TP7	<0.1	<20	<20	**220**	ND
TP8	<0.1	<20	<20	**110**	ND
TP9	<0.1	<20	<20	<100	ND
TP10	<0.1	<20	<20	**170**	ND
TP11	<0.1	<20	<20	<100	ND
TP12	<0.1	<20	<20	<100	ND
TP13	<0.1	<20	<20	**370**	ND
TP14	<0.1	<20	<20	<100	ND
TP15	<0.1	<20	<20	**170**	ND
TP16	<0.1	**76**	**74**	**<100**	ND
TP17	<0.1	<20	<20	**240**	ND
TP18	<0.1	<20	<20	**420**	ND
TP19	<0.1	<20	<20	<100	ND
TP20	<0.1	<20	<20	<100	ND
Max Concentration Detected (mg/kg)	N/A	**76**	**74**	**420**	N/A
Average Concentration Detected (mg/kg)	N/A	**23**	**23**	**240**	N/A
95% UCL	N/A	**6.90698**	**6.69768**	**53.2077**	N/A
Acceptability	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**
Clyde WARP SSTL (Direct Contact – Commercial)	**400**	**28,000**	**28,000**	**27,000**	**-**
Clyde WARP SSTL (Direct Contact – Construction Worker)	**420**	**69,000**	**69,000**	**64,000**	**-**
Clyde WARP SSTL (Direct Contact – IMW)	**5000**	**830,000**	**830,000**	**770,000**	**-**
Clyde WARP SSTL (Vapour Intrusion – Commercial) 0.15 m (0 – 0.99m)	**3.2**	**790**	**790**	**-**	**-**
NEPM (2013) Management Limits – Commercial/Industrial (Coarse)	**-**	**700**	**-**	**3,500**	**-**

Adapted from Eurofins, Certificate of Analysis 796038-S, 796038-AID and the Clyde WARP SSTL Criteria.
*Notes: LOR = Limit of Reporting; **Bolded and Shaded** = Exceeds adopted criteria of corresponding colour*

Table 6 Analytical Results

Sample ID	BTEX / Total Recoverable Hydrocarbons				Asbestos
	Benzene (mg/kg)	TRH C6 – C10 (mg/kg)	TRH C6 – C10 (mg/kg) LESS BTEX	TRH C16 – C34 (mg/kg)	Asbestos (% w/w)
TP1	<0.1	<20	<20	**330**	ND
TP2	<0.1	<20	<20	**380**	ND
TP3	<0.1	<20	<20	**140**	ND
TP4	<0.1	<20	<20	**460**	ND
TP5	<0.1	<20	<20	**210**	ND
TP6	<0.1	<20	<20	**160**	ND
TP7	<0.1	<20	<20	**270**	ND
TP8	<0.1	<20	<20	**200**	ND
Max Concentration Detected (mg/kg)	N/A	N/A	N/A	**460**	N/A
Average Concentration Detected (mg/kg)	N/A	N/A	N/A	**270**	N/A
95% UCL	N/A	N/A	N/A	**110.08**	N/A
Acceptability	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**
Clyde WARP SSTL (Direct Contact – Commercial)	**400**	**28,000**	**28,000**	**27,000**	-
Clyde WARP SSTL (Direct Contact – Construction Worker)	**420**	**69,000**	**69,000**	**64,000**	-
Clyde WARP SSTL (Direct Contact – IMW)	**5000**	**830,000**	**830,000**	**770,000**	-
Clyde WARP SSTL (Vapour Intrusion – Commercial) 0.15 m (0 – 0.99m)	**3.2**	**790**	**790**	-	-
NEPM (2013) Management Limits – Commercial/Industrial (Coarse)	-	**700**	-	**3,500**	-

Adapted from Eurofins, Certificate of Analysis 800358-S, 800358-AID and the Clyde WARP SSTL Criteria.
*Notes: LOR = Limit of Reporting; **Bolded and Shaded** = Exceeds adopted criteria of corresponding colour*

Table 6 Analytical Results

Sample ID	BTEX / Total Recoverable Hydrocarbons				Asbestos
	Benzene (mg/kg)	TRH C6 – C10 (mg/kg)	TRH C6 – C10 (mg/kg) LESS BTEX	TRH C16 – C34 (mg/kg)	Asbestos (% w/w)
TP1	<0.1	<20	<20	<100	ND
TP2	<0.1	<20	<20	**260**	ND
TP3	<0.1	<20	<20	**210**	ND
TP4	<0.1	<20	<20	**130**	ND
Max Concentration Detected (mg/kg)	N/A	N/A	N/A	**260**	N/A
Average Concentration Detected (mg/kg)	N/A	N/A	N/A	**160**	N/A
95% UCL	N/A	N/A	N/A	**146.63**	N/A
Acceptability	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**
Clyde WARP SSTL (Direct Contact – Commercial)	**400**	**28,000**	**28,000**	**27,000**	**-**
Clyde WARP SSTL (Direct Contact – Construction Worker)	**420**	**69,000**	**69,000**	**64,000**	**-**
Clyde WARP SSTL (Direct Contact – IMW)	**5000**	**830,000**	**830,000**	**770,000**	**-**
Clyde WARP SSTL (Vapour Intrusion – Commercial) 0.15 m (0 – 0.99m)	**3.2**	**790**	**790**	**-**	**-**
NEPM (2013) Management Limits – Commercial/Industrial (Coarse)	**-**	**700**	**-**	**3,500**	**-**

*Adapted from Eurofins, Certificate of Analysis **800440-S, 800440-AID** and the Clyde WARP SSTL Criteria.*
*Notes: LOR = Limit of Reporting; **Bolded and Shaded** = Exceeds adopted criteria of corresponding colour*

Table 6 Analytical Results

Sample ID	BTEX / Total Recoverable Hydrocarbons				Asbestos
	Benzene (mg/kg)	TRH C6 – C10 (mg/kg)	TRH C6 – C10 (mg/kg) LESS BTEX	TRH C16 – C34 (mg/kg)	Asbestos (% w/w)
TP1	<0.1	<20	<20	**160**	ND
TP2	<0.1	<20	<20	**440**	ND
TP3	<0.1	<20	<20	**180**	ND
TP4	<0.1	<20	<20	**230**	ND
Max Concentration Detected (mg/kg)	N/A	N/A	N/A	**440**	N/A
Average Concentration Detected (mg/kg)	N/A	N/A	N/A	**250**	N/A
95% UCL	N/A	N/A	N/A	**342.715**	N/A
Acceptability	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**
Clyde WARP SSTL (Direct Contact – Commercial)	**400**	**28,000**	**28,000**	**27,000**	**-**
Clyde WARP SSTL (Direct Contact – Construction Worker)	**420**	**69,000**	**69,000**	**64,000**	**-**
Clyde WARP SSTL (Direct Contact – IMW)	**5000**	**830,000**	**830,000**	**770,000**	**-**
Clyde WARP SSTL (Vapour Intrusion – Commercial) 0.15 m (0 – 0.99m)	**3.2**	**790**	**790**	**-**	**-**
NEPM (2013) Management Limits – Commercial/Industrial (Coarse)	**-**	**700**	**-**	**3,500**	**-**

Adapted from Eurofins, Certificate of Analysis 800454-S, 800454-AID and the Clyde WARP SSTL Criteria.
*Notes: LOR = Limit of Reporting; **Bolded and Shaded** = Exceeds adopted criteria of corresponding colour*

Table 6 Analytical Results

Sample ID	BTEX / Total Recoverable Hydrocarbons				Asbestos
	Benzene (mg/kg)	TRH C6 – C10 (mg/kg)	TRH C6 – C10 (mg/kg) LESS BTEX	TRH C16 – C34 (mg/kg)	Asbestos (% w/w)
TP1	<0.1	<20	<20	**140**	ND
TP2	<0.1	<20	<20	<100	ND
TP3	<0.1	<20	<20	<100	ND
TP4	<0.1	<20	<20	<100	ND
TP5	<0.1	<20	<20	**190**	ND
TP6	<0.1	<20	<20	**140**	ND
TP7	<0.1	<20	<20	**150**	ND
TP8	<0.1	<20	<20	<100	ND
TP9	<0.1	<20	<20	**120**	ND
TP10	<0.1	<20	<20	<100	ND
TP11	<0.1	<20	<20	<100	ND
TP12	<0.1	<20	<20	**110**	ND
Max Concentration Detected (mg/kg)	N/A	N/A	N/A	**190**	N/A
Average Concentration Detected (mg/kg)	N/A	N/A	N/A	**96**	N/A
Confidence Level (95.0%)	N/A	N/A	N/A	**32.6749**	N/A
Acceptability	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**	**Acceptable**
Clyde WARP SSTL (Direct Contact – Commercial)	**400**	**28,000**	**28,000**	**27,000**	**ND**
Clyde WARP SSTL (Direct Contact – Construction Worker)	**420**	**69,000**	**69,000**	**64,000**	**ND**
Clyde WARP SSTL (Direct Contact – IMW)	**5000**	**830,000**	**830,000**	**770,000**	**ND**
Clyde WARP SSTL (Vapour Intrusion – Commercial) 0.15 m (0 – 0.99m)	**3.2**	**790**	**790**	**-**	**ND**
NEPM (2013) Management Limits – Commercial/Industrial (Coarse)	**-**	**700**	**-**	**3,500**	**ND**

*Adapted from Eurofins, Certificate of Analysis **828007-S, 828007-AID** and the Clyde WARP SSTL Criteria.*
*Notes: LOR = Limit of Reporting; **Bolded and Shaded** = Exceeds adopted criteria of corresponding colour*

Appendix C-5 Tables (LTEMP)

6. ENVIRONMENTAL MANAGEMENT

As outlined above the primary targets / goals of this LTEMP are to facilitate the management of the site so that:

- the assessed risks to human health and the environment arising from contact with residual contamination is understood by all site workers and managers;
- prior to the commencement of any intrusive excavation works, appropriate systems and controls are put in place to mitigate the potential risks posed by residual contamination; and
- all ongoing operational, monitoring and maintenance requirements are adhered to by the Site Operator.

6.1 Environmental Management Requirements

Prior to the commencement of any works, it is the responsibility of the Site Operator to identify whether works within the Management Area will require intrusive excavation. Where any intrusive excavation works are undertaken within the Site the following controls must be implemented:

Table 5 – Site Environmental Management Requirements for Intrusive Excavation Works

Item	Requirements
All Intrusive Excavation Works Undertaken within the Management Area	
Training and Competence	The Site Operator is to establish that all site workers are suitably qualified to undertake required works and inducted into all relevant requirements stipulated within this LTEMP. ■ The induction will include outlining all requirements within this LTEMP and other relevant documentation, the location of known residual contamination (as per Figure 2) and the identification of unexpected finds of contamination (via visual and olfactory means).
Health and Safety Plan	The Site Operator or contactor carrying out the works is to prepare a task specific health and safety plan that includes suitable protection measures for working with residual hydrocarbon contamination including but not limited to: ■ training requirements; ■ air / dust / odour monitoring procedures; ■ respiratory protection; ■ minimum Personnel Protective Equipment (PPE) requirements; ■ site signage requirements; ■ site security; ■ exposure mitigation measures (dust suppression etc.); ■ vehicle/machinery/plant safety; and ■ general site safety.
Excavation works and temporary stockpiling	To reduce and/or prevent the exposure of human receptors at the site to potential contamination within onsite soils, the following will be undertaken during any intrusive excavation works: ■ To reduce the area of disturbed material, the number of areas subject to excavation works at any one time can be minimised. ■ During excavation works, measures to reduce dust emissions such as spraying with water, addition of soil binding agents etc. should be undertaken. ■ During excavation and materials handling, sufficient odour control such as covers, tarps, odour control sprays etc. are to be implemented during works to minimise any disturbance to neighbouring premises. ■ Where material requires offsite disposal, excavated material should be placed directly into a tipper truck and where possible material should not be placed into temporary stockpiles awaiting offsite disposal.

Item	Requirements
	■ Where material requires stockpiling prior to offsite disposal, appropriate dust and sediment controls must be in place. Smaller volumes can be contained within an enclosed or covered skip. ■ All materials movement within the site must be recorded within an appropriate Materials Tracking Register.
Materials handling and disposal	■ **Soil** - Excavated materials are to be either re-instated within the same location and depth (in accordance with relevant planning / DA conditions) or disposed offsite to a suitably licenced landfill / receiving facility in accordance with relevant NSW EPA waste disposal guidance at the time of works. ■ **Groundwater** - Any groundwater extracted from excavation works is to be managed or disposed in accordance with relevant NSW EPA made or endorsed waste disposal guidance at the time of works.
Sediment and Stormwater Runoff Controls	During works, sediment and surface water runoff controls will be implemented to minimise generation and transport of potentially contaminated sediments and surface water within and off the Site. Controls will be developed based on a specific management plan (which may be a safe work method statement or Construction Environmental Management Plan (CEMP) depending on the nature of the works) specific to the location / nature of works to be undertaken, controls may include (but not be limited to): ■ Sediment control; ■ Clean water diversions; and ■ Stormwater drain protection. ■ Environmental Management Controls as per *Managing Urban Stormwater – Soils and Construction (Landcom 2004),* or its most recent update.
Imported Fill Material	If imported fill is required at the site, only construction materials or certified Excavated Natural Material (ENM) or 'Virgin Excavated Natural Material' (VENM) materials are to be imported for use. If ENM / VENM is imported to the site accompanied by an ENM / VENM certificate, sampling will not be required. The ENM / VENM certificate should at a minimum: ■ state that the material has been classified as ENM / VENM (in accordance with relevant NSW EPA guidance) and is suitable for re-use within the site; and ■ include a summary of the site history of the source site, the findings of any environmental site investigations undertaken at that site and the results of any soil analysis undertaken. If the ENM / VENM certificate does not meet these requirements it must be approved in writing from the NSW EPA (Such as a Resource Recovery Exemption). All ENM / VENM / imported material classification reports are to be provided to the Land Custodian or their nominated representative and included within compliance reporting upon completion of works (Section 6.3).
Unexpected Finds Management	During excavation works there is the potential of encountering additional in-ground finds. Unexpected finds may include (but not be limited to): ■ asbestos containing materials; ■ additional LNAPL / hydrocarbon impact; ■ buried building rubble; ■ unusual soil staining and discoloration; and ■ odours emanating from the ground during earthworks. Where unexpected finds are uncovered: ■ Works are to cease immediately in the vicinity of the excavation; ■ the Land Custodian or their nominated representative is to be informed immediately; ■ the area surrounding the unexpected find is to be barricaded to ensure the area is not further disturbed; and ■ a 'Qualified Environmental Specialist' is to visit the site, assess the discovery and undertake assessment / provide recommendations. The environmental consultant is to advise on the required course of action for the find. This may include:

Item	Requirements
	■ Sample collection and analysis; ■ a detailed assessment (if required); and ■ preparation of an assessment report and remediation plan (if required). All reports are to be prepared in accordance with relevant NSW EPA guidance and provided to the Land Custodian for record keeping requirements.
Excavation Re-instatement	Upon completion of excavation works, the area must be re-instated with excavated material in the order in which it was excavated or with other approved imported fill materials.
Intrusive Excavation Works Within 20 m of Identified Residual Contamination (Figure 2)	
Engagement of Environmental Specialist	Where excavation works are undertaken within 20 m of identified residual contamination (**Figure 2**) prior to the commencement of any intrusive works, the Site Operator or nominated representative is to engage a suitably qualified environmental specialist to undertake a review of health and safety management procedures, manage, monitor and evaluate environmental controls and demonstrate compliance with this LTEMP. ■ Where unexpected finds of contamination are identified within other areas of the Site during excavation works, a suitably qualified environmental specialist should be engaged to manage, monitor and evaluate environmental controls, demonstrate compliance with this LTEMP and assess specific requirements for unexpected finds detailed above.
Environmental Monitoring	Environmental monitoring is to be undertaken for odour management purposes during all excavation and construction works within 20 m of identified residual hydrocarbon contamination to evaluate the effectiveness of control measures (**Figure 2**). ■ The specific monitoring methodology / regime should be developed by the environmental specialist and based on the specific tasks / construction methodology. ■ Action levels (odour, dust) are to be developed to incorporate thresholds where intrusive works are to cease and control measures are to be re-assessed / implemented. ■ These action levels are to be based on relevant regulatory guidance at the time of works and are to be incorporated into Health and Safety Planning documentation when undertaking works.
Task Specific Works Plan	Where intrusive excavation works are undertaken within 20 m of identified residual contamination illustrated on **Figure 2**, prior to undertaking works, the contractor is to ensure that a Task Specific Works Plan is prepared by a suitably qualified environmental professional to ensure all environmental risks are appropriately managed. ■ The Works Plan should be prepared for the specific works to be undertaken. ■ The Works Plan should be prepared in accordance with good industry practice standards at the time of works and must comply with all relevant NSW EPA regulatory guideline criteria relating to contaminated sites. The plans should include (but not be limited to) the following details: ■ Risks to human health and the environment – potential risks associated with the work should be highlighted. ■ General site management – Details of required inductions of employees or contractors. ■ Procedures and methodologies to be used for undertaking the works. ■ Specific details of ways to limit disturbance of impacted soils / groundwater / redundant site drainage infrastructure etc. (e.g. soil boring as opposed to open trenching). ■ Mitigation measures. ■ Air / dust monitoring action levels, around areas of residual hydrocarbon impacts; ■ Personal protective equipment. ■ Other protection measures (cabin ventilation, etc.). ■ Roles and responsibilities for implementing the mitigation measures.

Item	Requirements
	■ Soil and groundwater management controls - As a minimum the following requirements should be detailed: ▪ Any groundwater extracted during intrusive works is to be disposed in accordance with all legal requirements. ▪ Excavated soils should be placed on within a bunded area to minimise potential run off. ▪ Soil / concrete material should be kept moist to limit dust. ▪ Excavated materials, where possible, be replaced in the same location. Where this is not practicable, material must be disposed of in accordance with all legal requirements. ■ Reinstatement of the site surface. ■ Waste management including waste disposal. ■ Record Keeping, audit and review.
Biodiversity Management Measures (Green and Golden Bell Frog)	
Green and Golden Bell Frog (GGBF)	Pursuant to a Biodiversity Development Assessment Report dated 3 Dec 2018 prepared by Biosis (see appendix I to the EIS for SSD 10459) there is no residual GGBF habitat within the Management Area. In addition, the further earthworks authorised under development consent SSD 10459 are to be completed in order to create subdivided lots 51 - 55 within the Management Area. When completed, those earthworks will remove ponding of water that might provide potential for habitat for GGBF.

6.2 Reporting and LTEMP Review

The table below outlines the reporting, and review requirements related to this LTEMP.

Table 6 – LTEMP Reporting

Report	Requirement
Material Classification Reports	■ All reports relating to unexpected finds, offsite disposal of fill materials and importation of any materials used for construction / backfilling purposes are to be provided to the Land Custodian upon completion of works. ■ Reports are to include details laboratory analysis and subsequent classification information and materials tracking information detailing the total volume and final placement / disposal location.
Non-Conformance Reporting	■ Any non-conformances with this LTEMP will be recorded in a Non-Conformance and Corrective Action Report. Details of the non-conformance, including any immediate corrective actions undertaken, are to be recorded by the Site Operator. ■ It is the responsibility of the Site Operator to immediately initiate corrective actions, if required. Once completed, the Site Operator will provide details of the actions undertaken on the Non-Conformance Report and sign, date and file the report.

Report	Requirement
LTEMP Review	This LTEMP should be reviewed by the Land Custodian or their nominated representative upon completion of all intrusive excavation activities and / or after incidents or reported findings, to ensure that: ■ information and environmental management strategies remain current; ■ any opportunities for improvement are identified; and ■ changes to legislation, environmental standards licence and approval conditions are identified and complied with. Information obtained during intrusive works including (but not limited to) the following sources may be utilised to review the LTEMP: ■ Details of the works undertaken including relevant photographs. ■ Details of any unexpected finds (nature, location, extent and results of testing / analysis undertaken, photographs). ■ Any pertinent additional safety controls which were required to be implemented during intrusive works. The assessment should take into account all changes such as (but not limited to): ■ changes to site conditions; ■ work requirements; ■ legislation; and ■ environmental condition. If during the review process described above, areas for improvement are identified, or it be determined that the LTEMP requires revision, any changes to the document will require agreement by at least the following stakeholders: ■ Land Custodian (or nominated representative); ■ a Qualified Environmental Specialist; and ■ a NSW EPA accredited Site Auditor.
Record Keeping	All records related to implementation of the LTEMP should be maintained by the Land Custodian or their nominated representative in a consolidated and easily accessible location.

7. CONTINGENCY ACTIONS

The purpose of the contingency plan is to identify unexpected situations that could occur, and specify procedures that can be implemented to manage such situations and prevent or minimise adverse impacts to the environment and human health.

Details of the procedures are defined in the table below:

Table 7 – Contingency Actions

Item	Contingency Action
Asbestos in soils	■ While the risk of significant and / or widespread asbestos contamination within the Management Area is unlikely based on existing environmental assessments, where asbestos contaminated soil is identified during development works, any finds should be investigated as per the unexpected finds methodology detailed within Section 6.1. ■ Identified asbestos remaining on site should be included on an Asbestos Register.
Additional/ unexpected LNAPL / Hydrocarbon Contamination resulting in Potential Vapour Risk	■ While the likelihood of vapour risk from additional / unexpected finds of LNAPL / hydrocarbon impacted soil and / or groundwater is unlikely, during future development works, where a potential indicators of vapour risk is identified, the Land Custodian should engage an environmental specialist to undertake further assessment. ■ The location of LNAPL or residual hydrocarbons in soil within the Management Area which is known and has been assessed as not presenting a risk to future workers is identified on Figure 2.

Appendix D

Data Quality Evaluation

Attachement D - Quality Assurance and Quality Control Review
Client: Viva Energy Australia Pty Ltd
Site: Clyde Western Area - Stage 2 Audit Area 1 (within Stage 2 Area, Part Lot 100 in DP 1168951)
Report: ERM (2021g). *Clyde Western Area Remediation Project Stage 2 Validation Report (Audit Area 1)*, dated 3 December 2021 (the **AA1 Validation**).

Item	Addressed (Y / N / NA)	Comments
Quality Assurance Program		
Statement of pre-determined DQOs for field and laboratory procedures, including quantitative DQOs	Y	Provided in Section 3 of the Validation Report, in line with RAP.
DQOs state the problem, identify goals of the study, identify information inputs, define the boundaries of the study, develop an analytical approach, specify performance or acceptance criteria and outline the plan for obtaining data	Y	
Quality plan designed to achieve DQOs assessing accuracy, precision, comparability, representativeness and completeness of data	Y	
Procedures for assessing chemical data to determine if DQOs are met, including quantitative DQOs (e.g. standard deviation, % recovery, RPDs)	Y	ERM states that *"the acceptable limits on decision errors applied during the review of the results are based on the Data Quality Indicators (DQIs) of precision, accuracy, representativeness, comparability and completeness (PARCC) in accordance with the ASC NEPM* […]". Statistical procedures to assess data such as standard deviation and 95% upper confidence levels were not reported. As the only COPC analysed was asbestos, this omission is not considered to affect data quality.
Procedures that describe the actions if DQOs not met	Y	Provided in Section 3 of the Validation Report, in line with RAP.
Sampling and Analytical Program		
Site investigation objectives and a brief background provided	Y	Reported in Sections 1 and 2.
Summary of CSM provided	Y	Section 7
Data gap analysis provided that reviews existing information	Y	Previous information discussed in Section 2, with data reviewed and discussed in Section 5
Preparation of a site specific health and safety plan and other necessary pre-	NA	Discussed in Section 4.3

Item	Addressed (Y / N / NA)	Comments
mobilisation tasks		
Assessment includes all relevant environmental media (e.g. soil, dust, surface water, groundwater, air, sediments and biota)	Y	The target media is soil.
Sampling is representative of the site, based on selection of appropriate sampling points stated in sampling plan. Included are details of analytes to be monitored, sampling pattern/frequency, and number of samples, location and depth of sampling points	Y	In line with the RAP.
Acceptability of sample collection, handling and transportation in accordance with written procedures	Y	Described in Section 5.4.
Sample analyses use appropriate methodologies in NATA (or equivalent) accredited laboratories for each analyte & matrix	Y	The laboratories were accredited by NATA.
Appropriate sampling methods & procedures, field screening methods and analysis methods are outlined	Y	In line with the RAP.
Detection limits for each chemical of potential concern are appropriate for use in assessment of risk	Y	LORs are lower than the adopted assessment criteria.
For dynamic/reactive sampling, methods for analysing and interpreting field data are outlined	NA	
Field QA/QC		
Use of standardised field sampling forms	Y	Provided in Appendix D
Sampling team	Y	Listed in field documentation.
Sampling methods including type of container used, labelling process, order and degree of filling, preservation, labelling, logging, custody	Y	Described in Appendix F and the RAP.
Decontamination procedures between sampling	Y	Described in Appendix F and the RAP.
Logs for each sample, including time, date, location, sampler, duplicate location & type, chemical analyses to be performed, sample preservation method, site observations & weather	Y	Groundwater sampling field notes are provided in Appendix D.
COC for each sample, including sampler, sample nature, collection date, analyses to be performed, preservation method, dispatch time, condition of samples at	Y	Provided in Appendix K.

Item	Addressed (Y / N / NA)	Comments
dispatch and courier(s)		
Sample duplication/splitting techniques		
Quality control samples, including:		
─ background samples	NA	Not required.
─ field duplicate samples	Y	One intra-laboratory duplicate sample was collected from a total of 6 primary samples collected.
─ split samples	N	No inter-laboratory duplicate samples were collected as part of the Stage 2 Validation works. This is not considered to impact the data quality as duplicate samples are not considered necessary for collection when only analysing for asbestos. These were also not required as per the RAP.
─ rinsate blanks	N	No rinsate blank samples were collected as part of the Stage 2 Validation works. This is not considered to impact the data quality as no reusable equipment was utilised during collection of samples. These were also not required as per the RAP.
─ field blanks	NA	Not required.
─ trip blanks	N	No trip blank samples were collected as part of the Stage 2 Validation works as the only COPC analysed was asbestos. These were not considered required as per the RAP.
─ laboratory prepared trip spike samples	N	No trip spike samples were collected as part of the Stage 2 Validation works as the only COPC analysed was asbestos. These were not considered required as per the RAP.
Background sample results	NA	Not required.
Results of QC samples eg field blanks, background, rinsates, trip blanks	Y	Results provided in Table 11 in the appendix named "*Tables*", with RPDs of the one intra-laboratory duplicate provided in Appendix F.
Laboratory prepared trip spikes for volatile analytes and accompanying results	N	No trip spikes collected as stated above.
Field instrument calibrations (when used)	NA	No equipment requiring calibration utilised.
Tabulate field parameter measurements	Y	Provided in the Appendix D "Field records"

Item	Addressed (Y / N / NA)	Comments
Laboratory QA/QC		
Copy of completed COC including acknowledgment of receipt, conditions of samples on receipt and identity of samples included in shipments	Y	Provided in Appendix K.
Record of holding times and compliance with methods	Y	Comments were provided by the laboratory.
Analytical methods used		
– Laboratory accreditation for methods used	Y	Eurofins Environmental Testing Australia Pty Ltd is accredited by NATA
– Performance in interlaboratory trials for methods used, where available	NA	Not supplied by analysing laboratory. Absence has no material effect as all laboratories are accredited by NATA.
Description & % recovery of surrogates & spikes	NA	Samples only analysed for asbestos.
Instrument detection limits and MDLs	NA	Not supplied by analysing laboratory. Absence has no material effect.
Matrix or PQLs and limit of reporting for each analyte in each media	NA	Samples only analysed for asbestos.
Quality control samples:		
– duplicates	NA	Samples only analysed for asbestos.
– method blanks	NA	Samples only analysed for asbestos.
– surrogates	NA	Samples only analysed for asbestos.
– matrix spikes	NA	Samples only analysed for asbestos.
Laboratory standard charts	NA	Samples only analysed for asbestos.
QA/QC Data Evaluation		
Evaluation of QA/QC with DQOs including: documentation completeness, data completeness, data comparability (see below), data representativeness	Y	Provided in Appendix F.
Precision & accuracy of sampling & analysis for each analyte in each matrix, advising reliability, unreliability or qualitative value of data	Y	Provided in Appendix F.
Data comparability including bias assessment, e.g. different personnel, methodologies, times, spatial and temporal changes etc	Y	The report states that sampling methods were consistent with the RAP.

Item	Addressed (Y / N / NA)	Comments
Results of intra and interlaboratory QC checks	Y	Results provided in Table 11 in the appendix named "*Tables*"
Names of laboratories and details of their accreditation	Y	Eurofins Environmental Testing Australia Pty Ltd
Discussion of appropriateness of non-standard test methods (incl. sample prep; method source and validation)	NA	All methods utilised are standard.
PQLs and MDLs for all relevant matrices	NA	Not required.
Acceptance limit(s) for each QC test (e.g. RPDs, recoveries) included	Y	Provided in laboratory reports and Appendix F.
Acceptance limits for each calibration standard		
Results for all data tabulated according to each soil sample, with appropriate statistical analysis.	Y	Appendix named "*Tables"*.
QC results relevant to the sample analyses	Y	
QA/QC Analytical Methods		
Field Methods		
Applicability and appropriateness of field screening methods discussed.	Y	Soil samples were visually screened for asbestos
Adequacy of calibration of field monitoring equipment and validation of field measurements	Y	
Laboratory screening methods		
Applicability and limitations of analytical screening techniques appropriately discussed	NA	Standard methods were utilised.
Analytical screening method performance expressed, and based on acceptable false negative rate	NA	Not reported by laboratories
Methods specific for contaminants		
Sensitivity of analytical methods appropriate for assessment of risk	Y	Standard analytical methods were used.
Precision and accuracy criteria in quality plan meet performance of 95% of laboratories in recognised inter-laboratory trials	NA	Not reported by the laboratory. This absence in unlikely to materially affect data quality.

Notes: Y = Yes; N = No; NA = Not Applicable

Appendix E

LTEMP



Clyde Western Area Remediation Project

Proposed Lots 51-55 – Long Term Environmental Management Plan

22 December 2021

Project No.: 0561882

The business of sustainability

ERM

Document details	
Document title	Clyde Western Area Remediation Project
Document subtitle	Proposed Lots 51-55 – Long Term Environmental Management Plan
Project No.	0561882
Date	22 December 2021
Version	Final - Revision 4
Author	Joshua Panton
Client Name	Viva Energy Australia Pty Ltd

Document history

				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
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Draft	01	Joshua Panton	Stephen Mulligan / Peter Lavelle	Michael Gaggin	18.08.2021	Draft Incorporating Viva Energy Review
Revised Draft	02	Joshua Panton	Stephen Mulligan / Peter Lavelle	Michael Gaggin	28.09.2021	Draft Incorporating VE Property Review
Final	03	Joshua Panton	Stephen Mulligan / Peter Lavelle	Michael Gaggin	03.12.2021	Draft Incorporating Auditor Comments/ VE Property Review
Final	04	Joshua Panton	Stephen Mulligan / Peter Lavelle	Michael Gaggin	22.12.2021	Final version for consultation – Document title update, survey plan update

Signature Page

22 December 2021

Clyde Western Area Remediation Project

Proposed Lots 51-55 – Long Term Environmental Management Plan

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EXECUTIVE SUMMARY

Introduction

Environmental Resources Management Australia Pty Ltd (ERM) was engaged by Viva Energy Australia Pty Ltd (Viva Energy) to prepare this Long-Term Environmental Management Plan (LTEMP) to outline required environmental management procedures and controls for the ongoing use of part of Lot 100 DP 1168951 being proposed Lots 51-55 and a portion of a proposed road alignment to the east of proposed Lot 55, within the 'Stage 2' portion of the Clyde Western Area Remediation Project (WARP). This area is collectively referred to as 'Audit Area 1' (AA1). The parts of AA1 which are subject to the ongoing environmental management requirements contained in this LTEMP are referred to as 'the Management Area'. The Management Area is shown on Figure 1.

Background Information

Remediation works have been completed within the Management Area to remove contaminated soils which may have previously posed a potential risk to human health and the environment during the ongoing commercial / industrial use of the land.

Upon completion of remediation and validation works, ERM considers the Management Area to be suitable for all slab-on grade commercial / industrial land uses with no basement structures or beneficial re-use of groundwater on site.

Application of this LTEMP

This LTEMP must be complied with before carrying out any works which involve intrusive excavation within the Management Area.

All such works must be undertaken in accordance with relevant requirements outlined within **Sections 2.0** and **3.0**.

This LTEMP documents the nature and extent of residual contamination on-site and outline the mechanisms required for managing potential residual risks into the future.

Residual Contamination Following Remediation Works

Following completion of remediation works within the Management Area, the following residual contamination may be present within the Site:

- Hydrocarbon impacted soils - limited to aesthetic considerations (presence of hydrocarbon staining and/or odours) which may be identified during future intrusive works.
- Following soil remediation works, asbestos has not been identified above criteria for the proposed land-use. However, given the long history of industrial land use and surrounding industries, the possibility of discovering isolated asbestos as an unexpected find during further intrusive excavations within the Management Area cannot be precluded.

A description of the residual contamination and the associated risks where intrusive excavation works are undertaken is presented within **Sections 4.0** and **5.0**. The location and extent of residual hydrocarbon impacted soils within the Site is shown on **Figure 2** (Appendix A).

Required Environmental Management Controls

Based on the nature and extent of residual contamination identified within the Site the following management controls are required under various operational scenarios:

- Where works involve no intrusive excavation (i.e. normal site operations) – no management controls are required
- Where intrusive excavation works are proposed – the environmental management controls detailed in **Sections 6** and **7** of this LTEMP must be implemented.

GLOSSARY

Glossary Term	Definition
the Site	Viva Energy owned land on the Camellia Peninsula consisting of the following Lots: Lot 398 DP41324, Lots 100 and 101 of DP 1168951, Lot 101 DP809340, Lot 2 DP 224288, and Lot 1 DP 383675. It includes the Clyde Terminal, the Parramatta Terminal, the Wetland, the Western Area and other land that is currently vacant or leased to third parties
the Western Area	A largely vacant area of land, approximately 40 Ha in size, located in the south western part of the Site. The land previously contained a variety of refinery assets that have now been removed.
the Project	The proposal to remediate the contaminated soils in the Western Area to a commercial/industrial standard
the Stage 2 Area	Stage 2 Area is situated within the eastern portion of the former Process West area adjoining the current Clyde Terminal and extends from Devon Street to the North to the Duck River at the southern boundary of the Western Area. The extent of the Stage 2 Area is shown on **Figure 1**.
The Management Area	Parts of Lot 100 DP 1168951 being proposed Lots 51, 52, 53, 54 and 55 and a portion of proposed road alignment to the east of proposed Lot 55 located within the north western portion of the Stage 2 Area, as Approved under SSD 10459. The Management Area is shown on **Figure 1** and in the Site Survey (Appendix B). The area of each of the proposed lots is as follows: Lot 51: 8,060 m^2 Lot 52: 8,060 m^2 Lot 53: 27,550 m^2 Lot 54: 10,670 m^2 Lot 55: 10,670 m^2 Proposed Road: 2,922 m^2 Accordingly, the total area of the Management Area is 67,932 m^2 (6.793 ha)[1]
The Land Custodian	The legal owner(s) of the site identified as proposed Lots 51-55 of the Stage 2 Area, from time to time.
Site Operator	The entity in occupation of (or portions of) the Management Area who is responsible for day to day operations. This will include any contractors carrying out works on the site and tenants of the Management Area from time to time.

1. INTRODUCTION AND BACKGROUND

Environmental Resources Management Australia Pty Ltd (ERM) was engaged by Viva Energy Australia Pty Ltd (Viva Energy) to prepare this Long-Term Environmental Management Plan (LTEMP) for a portion of the Clyde Western Area, referred to as 'Audit Area 1' (AA1) to outline required environmental management procedures and controls for future Site Operators.

The portion of AA1 subject to this LTEMP formed part of 'Stage 2' of the Clyde Western Area Remediation Project (WARP), and is referred to as 'the Management Area' in this LTEMP.

The extent of the Management Area subject to this LTEMP is shown on **Figure 1**. This extent is defined by the boundaries of those parts of Lot 100 DP1168951 forming proposed Lots 51, 52, 53, 54, 55 and part of the proposed road alignment as authorised for subdivision under State significant development consent 10459.

This LTEMP must be implemented following completion of remediation and validation works.

Prior to the commencement of any workings involving intrusive excavation, all site personnel / contractors are to be inducted into the requirements of this LTEMP.

1.1 Background and Site Identification

The Western Area is an approximately 40 hectare (ha) parcel of land currently owned by Viva Energy within the footprint of the wider Clyde Terminal Site and is bordered to the south by the Duck River, to the east by current Clyde Terminal Operations and to the north and west by other Industrial zoned properties.

A Site Survey showing the extent of the Management Area is provided as Appendix B.

The Management Area (as defined on Figure 1 and 2, Appendix A) contained former administration buildings, car parking areas, electrical substations, a vehicle refuelling area and fuel and petroleum product storage tanks.

Specific site identification details are summarised in Table 1, below.

Table 1 – Site Identification

Item	Description
Site Owner	Viva Energy Australia Pty Ltd
Site Occupier	Viva Energy Australia Pty Ltd
Site Address	Devon Street, Rosehill NSW
Current Legal Description	Part Lot 100 in DP 1168951
Local Government Authority	City of Parramatta Council
Current Zoning	IN3 – Heavy Industrial under the Parramatta Council Local Environmental Plan 2011
Current Land Uses	Vacant site
Future Proposed Land Use	■ Commercial/ Industrial (slab on grade commercial/ industrial) ■ Upon completion of remediation and validation works, the site is suitable for commercial / industrial land uses with no basement structures or beneficial re-use of groundwater.
Permissible Land Use(s)	Any permissible use allowed under the sites zoning (with consent), which includes: Agricultural produce industries; Building identification signs; Business identification signs; Depots; Freight transport facilities; General industries; Hardware and building supplies; Hazardous storage establishments; Heavy industries; Horticulture; Kiosks; Medical centres; Offensive storage

Item	Description
	establishments; Pubs; Roads; Rural supplies; Sawmill or log processing works; Take away food and drink premises; Timber yards; Warehouse or distribution centres; Water storage facilities.
Area[1]	Proposed Lots under SSD 10459: Lot 51: 8,060 m^2 Lot 52: 8,060 m^2 Lot 53: 27,550 m^2 Lot 54: 10,670 m^2 Lot 55: 10,670 m^2 Proposed Road: 2,922 m^2 AA1 Total: 67,932 m^2 (6.793 ha) [1]
Elevation	Between approximately 5 to 6 metres relative to Australian Height Datum (m AHD)

Source: Plan of Proposed Subdivision of Lot 100 DP1168951, Stage 1B (Landpartners Pty Ltd). Sheet 3-4 of 44

1.2 Purpose of the LTEMP

The specific objectives of this LTEMP are to:

- summarise background environmental information, known and likely conditions within the Management Area, to inform the Land Custodian, workers and managers of the potential risks to human health and / or the environment arising from contact with residual contamination;
- outline methods and procedures to avoid and / or mitigate potential adverse effects on human health and / or the environment associated with the residual contaminated soil;
- provide a recommended methodology for the appropriate environmental management of excavation works that may encounter residual contaminated soil;
- provide environmental requirements for the sourcing and placement of backfill material;
- discuss safety measures / considerations for dealing with potentially contaminated soil; and
- outline restrictions to potential future land uses as detailed within Table 1.

All work related to excavation, movement, handling, importation and placement of fill and soil materials and / or groundwater within the site should be carried out in accordance with this LTEMP and in compliance with relevant legislation detailed within **Section 2.0**.

Groundwater is not extracted for use within the Management Area and future beneficial re-uses of groundwater have not been considered as part of this LTEMP. If beneficial re-use of groundwater is proposed, further assessment of the suitability of groundwater must be completed by a suitably qualified environmental specialist with the findings reviewed and endorsed by a NSW EPA accredited Site Auditor. Other limitations are outlined in Section 1.3 of this document.

This LTEMP is considered to be a passive management approach. The primary purpose of the plan is to document the nature and extent of residual contamination on-site and outline mechanisms for managing potential risks into the future.

1.3 Limitations to this LTEMP

This LTEMP is land-use specific and applies to all commercial/industrial uses involving buildings supported by ground-level slabs which do not include any underground basement structures, such as underground car parks.

If, in the future, any land uses differ from the commercial / industrial use described above (including by including a basement structure) reflected in ERM (2020) Human Health and Ecological Risk Assessment (HHERA), this LTEMP will need to be reviewed and updated in accordance with the procedures contained in Section 2.4.

1.4 Related Documentation

The following report provides a summary of site conditions prior to the completion of remediation works within the Site and should be made available to the Site Operator upon request:

- ERM 2021. Clyde Western Area Remediation Project – Site Suitability Report. Final. August 2021.

The following documentation relating to the environmental condition of the Management Area prior to and following the completion of remediation / validation works within the Management Area should be made available to the Site Operator upon request .

- ERM 2021b. Clyde Western Area Remediation Project – Stage 2 – Validation Report (Audit Area 1). December 2021.

2. STATUTORY REQUIREMENTS

2.1 Legal Enforceability and Public Notification of this EMP

Condition B10 of State significant development consent 9302 granted under the *Environmental Planning and Assessment Act 1979* (the 'EP&A Act') provides as follows:

> ***B10. Upon completion of the Site Audit Statement and Site Audit Report, the Applicant must:***
>
> ***(a) Implement the approved LTEMP***
>
> ***(b) Provide evidence to the Planning Secretary that the LTEMP is listed on the relevant planning certificate for the land, issued under section 10.7 of the EP&A Act***

In addition, condition A9 of State significant development consent 10459 provides as follows:

> ***A9. The Applicant must implement the Long Term Environmental Management Plan (LTEMP) approved under condition B8 of SSD 9302 and provide evidence to the Planning Secretary that the LTEMP is listed on the relevant planning certificate(s) issued under section 10.7 of the EP&A Act for each lot created by Stages 1A and B, 2 and 3 as shown in the 'Subdivision Drawings prepared by Land Partners' in Appendix 1***

Accordingly:

- This LTEMP was prepared in accordance with development consent SSD 9302. It is also enforceable under development consent SSD 10459, granted under the EP&A Act.
- As per conditions B10(b) and A9 and relevant NSW EPA requirements, Parramatta Council will be provided with a copy of this LTEMP and requested to add a notation on the planning certificates issued for the Management Area under section 10.7 of the *EP&A Act* confirming that they are subject to this LTEMP.

2.2 Licence and Approval Requirements

The Site Operator is responsible for obtaining all necessary / required environmental, planning safety and occupational hygiene consents, approvals and licences prior to the commencement of any intrusive excavation works in the Management Area.

- All required consents, approvals and licences required for the relevant works must be obtained prior to works commencing;
- All site personnel, contractors, sub-contractors etc. must comply with the terms and conditions of all relevant approvals and licences; and
- Upon commencement of the intrusive works, all processes and procedures outlined in this LTEMP must be implemented immediately.

2.3 Regulatory Framework

All operational personnel carrying out any intrusive works in the Management Area must comply with the applicable environmental regulatory requirements in New South Wales (NSW).

2.4 Document Revision

This LTEMP may be reviewed and updated as necessary from time to time. Therefore, it is the responsibility of the reader of this document to ensure they have the current version of the LTEMP.

Any updates to this LTEMP must be reviewed and endorsed by a NSW EPA Accredited Site Auditor.

The master document, with the up-to-date version of the LTEMP will be available from the Land Custodian.

The current version of this LTEMP is detailed within the table below. Any subsequent revisions of this LTEMP must include a clear date / revision identifier to enable the most recent to be readily identified.

Table 2 – LTEMP Revision

Document Name	Document Revision Number	Date
Clyde Western Area Remediation Project: Proposed Subdivision of Lot 100 DP1168951 (Lots 51-55) – Long Term Environmental Management Plan	Final – Revision 4	22nd December 2021

3. APPLICATION AND RESPONSIBILITIES

3.1 Implementation of this LTEMP

No works involving any intrusive excavations are to be undertaken until all relevant site personnel / contractors have been inducted into the requirements of this LTEMP.

The LTEMP should be acknowledged in relevant management plans prepared for any intrusive investigations. For smaller intrusive works this is likely to take the form of a safe work method statement while a Construction Environmental Management Plan (CEMP) is likely to be required for more significant development and construction activities.

3.2 Area to which this LTEMP applies

This LTEMP applies to the entire Management Area. However specific management is required for areas within a 20 m buffer of areas containing residual hydrocarbon impacted soil as illustrated (with GPS coordinates) on **Figure 2, Appendix A** and described within Section 4 of this LTEMP.

3.3 Application of LTEMP

Under regular site conditions (i.e. pre or post intrusive excavation works) none of the controls in this LTEMP are activated.

This LTEMP must be complied with immediately upon the initiation of any works which involve intrusive excavation from the ground surface. This includes the following activities:

- excavation of fill and natural soil materials to facilitate removal, realignment or construction of any subsurface infrastructure;
- maintenance and / or upgrade of site utility services;
- temporary stockpiling of excavated material resulting from onsite intrusive works; and
- offsite disposal of any waste contaminated soil / groundwater (if required).

Additional controls including engagement of an environmental specialist, environmental monitoring and development of a task specific works plan (detailed within Section 6.1) are required for any intrusive excavation works undertaken within 20 m of identified residual contamination as shown in **Figure 2, Appendix A**.

In addition, due to the historical land uses within the Management Area (i.e. former Refinery), all intrusive excavation works must be undertaken in consideration of potential unexpected finds of contamination. Where unexpected finds are encountered during works, they are to be managed in accordance with the requirements outlined within Section 6.1 of this LTEMP.

Where groundwater is proposed for future beneficial re-uses, an assessment of suitability must be undertaken by a suitably qualified environmental professional. The assessment and any recommendations for re-use etc. must be reviewed and endorsed by a NSW EPA accredited Site Auditor.

3.4 Roles and Responsibilities

The following table summarises the requirements to be implemented within the Management Area.

Table 3 – LTEMP Roles and Responsibilities

Position / Company	Responsibility
The Land Custodian and Site Auditor	■ Approve the LTEMP
The Land Custodian	■ Ensure all workers and contractors conducting intrusive works are aware of the requirements of this LTEMP.. ■ Maintain records of all works undertaken within the site as required within this LTEMP.
Site Operator (including Contractors and Subcontractors)	■ Implement the LTEMP. ■ Provide adequate training in this LTEMP for all employees and contractors undertaking intrusive excavations during site induction, and as required on an ongoing basis during the works. ■ Require any contractors conducting intrusive works to comply with this LTEMP. ■ Conduct monitoring as required in the LTEMP. ■ Complete all necessary registers, databases and records required in the LTEMP. ■ During excavation works, assess any potentially contaminating unexpected finds in consideration of the sites use. ■ During intrusive excavation works, as required, undertake site inspections and monitoring of the site operations to ensure they are carried out in an environmentally responsible manner and meet the requirements of this LTEMP. ■ Notify the Land Custodian / nominated representative of any environmental issues arising during intrusive excavations. ■ Assess the requirement and (where necessary) engage an environmental specialist / scientist to undertake additional monitoring of excavations / unexpected finds.
Qualified Environmental Specialist	■ Where required, a suitably qualified environmental specialist is to be engaged to manage, monitor and evaluate environmental controls, demonstrate compliance with this LTEMP and assess specific requirements associated with excavation works within areas of known residual contamination and / or unexpected finds.

4. RESIDUAL CONTAMINATION REQUIRING MANAGEMENT

Remediation works completed within the Management Area were undertaken to reduce contaminant concentrations to enable future commercial / industrial land uses and mitigate potential risks to human health / ecological receptors.

Known residual contamination is present at locations illustrated (including X and Y co-ordinates) on **Figure 2 and described in Table 2.**

Table 4 – Residual Contamination

Known Residual Contamination	Descriptions
Hydrocarbon impacted soil	■ Residual Light Non-Aqueous Phase Liquids (LNAPL) or soil contamination exceeding 'TRH Management Limits' are present in a limited number of locations (see Figure 2). ■ The Human Health and Ecological Risk Assessment (HHERA) indicates that the presence of residual hydrocarbon impacted soils does not pose a risk to on-site or off-site receptors under normal site operations (i.e, no ground disturbance) and are limited to aesthetic considerations (presence of hydrocarbon staining and/or odours) which may be identified during future intrusive works.
Asbestos	■ Although there are no known asbestos impacts exceeding land use criteria for soils remaining in the Management Area following remedial works, given the long history of industrial land use and surrounding industries, the possibility of discovering isolated asbestos in the subsurface cannot be discounted. ■ If asbestos is identified during intrusive works, any finds should be investigated as per the unexpected finds methodology detailed within Section 6.1 and appropriate health & safety and waste management measures implemented.

4.1 Location and Extent of Residual Contamination

As outlined in Section 3.2, this LTEMP applies to the whole site but more specifically to areas of the Management Area where residual contaminated materials are present beneath the site surface, as indicated in **Figure 2**. Following completion of remediation works, the following residual sources of contamination are known to exist within the Management Area:

- Residual soil impacts – limited to presence of observed Light Non-Aqueous Phase Liquids (LNAPL) or hydrocarbon impacts exceeding 'TRH Management Limits':
  - Lot 53 – SB11B (0.2 m) and SB13B (0.5-1 m)
  - Lot 54 – HA19/04 (0.4-1 m), HA19/07(0.05 m), SB18/12 (0.5-1.5 m)and BH12/35
  - Lot 55 – SB18/13 (0.3-0.9 m), HA19/05 (0.05 m), HA19/06, HA19/09 (0.8 m), BH12/29 (0.65 m), BH12/33 (0.2 – 0.6 m) and BH12/34 (0.6 m).

Due to the historical land uses within the extent of the Management Area, all future ground disturbance works or site redevelopment activity must be undertaken in consideration of potential unexpected finds of contamination (see Section 6.1).

It should be noted the presence of stained or odorous material may be identified beneath the site during future intrusive works outside of those locations outlined in this LTEMP, however these conditions may not be representative of unacceptable exposure scenarios. Advice should be sought from a 'Qualified Environmental Specialist' as previously defined in Table 2.

5. POTENTIAL RISKS TO HUMAN HEALTH AND THE ENVIRONMENT

5.1 Risks Where No Intrusive Excavation Works Are Undertaken

There are no identified risks to human health or the environment associated with residual contamination if not disturbed. Potential Risks Where Intrusive Excavation Works Are Undertaken

5.2 Risks Where Excavation Works Are Undertaken

The following table outlines the potential risk to human health and the environment if excavation works are undertaken and the material is disturbed without proper management controls. These risks may result from excavation works, including the installation of services, stockpiling of excavated materials and works that encounter residual contamination identified within **Figure 2** or additional unexpected finds.

Contaminant	Source	Human Health Risks	Environmental Risks	Exposure Pathways
Total Recoverable Hydrocarbons (C10-C16, C16-C34) and LNAPL	Residual contamination within soils	Limited to generation of nuisance odours during subsurface intrusive works resulting from degraded hydrocarbons within open excavations.	Risks associated with contamination transported to potentially sensitive receptors (see exposure pathways)	**Human Exposure Pathways:** Limited to aesthetic considerations including potential for generation of odours during subsurface intrusive works **Environmental Exposure pathways**: Surface water / sediment run off to adjacent stormwater drains. Uncontrolled release of dust/ odours generated during excavation works.

6. ENVIRONMENTAL MANAGEMENT

As outlined above the primary targets / goals of this LTEMP are to facilitate the management of the site so that:

- the assessed risks to human health and the environment arising from contact with residual contamination is understood by all site workers and managers;
- prior to the commencement of any intrusive excavation works, appropriate systems and controls are put in place to mitigate the potential risks posed by residual contamination; and
- all ongoing operational, monitoring and maintenance requirements are adhered to by the Site Operator.

6.1 Environmental Management Requirements

Prior to the commencement of any works, it is the responsibility of the Site Operator to identify whether works within the Management Area will require intrusive excavation. Where any intrusive excavation works are undertaken within the Site the following controls must be implemented:

Table 5 – Site Environmental Management Requirements for Intrusive Excavation Works

Item	Requirements
All Intrusive Excavation Works Undertaken within the Management Area	
Training and Competence	The Site Operator is to establish that all site workers are suitably qualified to undertake required works and inducted into all relevant requirements stipulated within this LTEMP. ■ The induction will include outlining all requirements within this LTEMP and other relevant documentation, the location of known residual contamination (as per Figure 2) and the identification of unexpected finds of contamination (via visual and olfactory means).
Health and Safety Plan	The Site Operator or contactor carrying out the works is to prepare a task specific health and safety plan that includes suitable protection measures for working with residual hydrocarbon contamination including but not limited to: ■ training requirements; ■ air / dust / odour monitoring procedures; ■ respiratory protection; ■ minimum Personnel Protective Equipment (PPE) requirements; ■ site signage requirements; ■ site security; ■ exposure mitigation measures (dust suppression etc.); ■ vehicle/machinery/plant safety; and ■ general site safety.
Excavation works and temporary stockpiling	To reduce and/or prevent the exposure of human receptors at the site to potential contamination within onsite soils, the following will be undertaken during any intrusive excavation works: ■ To reduce the area of disturbed material, the number of areas subject to excavation works at any one time can be minimised. ■ During excavation works, measures to reduce dust emissions such as spraying with water, addition of soil binding agents etc. should be undertaken. ■ During excavation and materials handling, sufficient odour control such as covers, tarps, odour control sprays etc. are to be implemented during works to minimise any disturbance to neighbouring premises. ■ Where material requires offsite disposal, excavated material should be placed directly into a tipper truck and where possible material should not be placed into temporary stockpiles awaiting offsite disposal.

Item	Requirements
	■ Where material requires stockpiling prior to offsite disposal, appropriate dust and sediment controls must be in place. Smaller volumes can be contained within an enclosed or covered skip. ■ All materials movement within the site must be recorded within an appropriate Materials Tracking Register.
Materials handling and disposal	■ **Soil** - Excavated materials are to be either re-instated within the same location and depth (in accordance with relevant planning / DA conditions) or disposed offsite to a suitably licenced landfill / receiving facility in accordance with relevant NSW EPA waste disposal guidance at the time of works. ■ **Groundwater** - Any groundwater extracted from excavation works is to be managed or disposed in accordance with relevant NSW EPA made or endorsed waste disposal guidance at the time of works.
Sediment and Stormwater Runoff Controls	During works, sediment and surface water runoff controls will be implemented to minimise generation and transport of potentially contaminated sediments and surface water within and off the Site. Controls will be developed based on a specific management plan (which may be a safe work method statement or Construction Environmental Management Plan (CEMP) depending on the nature of the works) specific to the location / nature of works to be undertaken, controls may include (but not be limited to): ■ Sediment control; ■ Clean water diversions; and ■ Stormwater drain protection. ■ Environmental Management Controls as per *Managing Urban Stormwater – Soils and Construction (Landcom 2004),* or its most recent update.
Imported Fill Material	If imported fill is required at the site, only construction materials or certified Excavated Natural Material (ENM) or 'Virgin Excavated Natural Material' (VENM) materials are to be imported for use. If ENM / VENM is imported to the site accompanied by an ENM / VENM certificate, sampling will not be required. The ENM / VENM certificate should at a minimum: ■ state that the material has been classified as ENM / VENM (in accordance with relevant NSW EPA guidance) and is suitable for re-use within the site; and ■ include a summary of the site history of the source site, the findings of any environmental site investigations undertaken at that site and the results of any soil analysis undertaken. If the ENM / VENM certificate does not meet these requirements it must be approved in writing from the NSW EPA (Such as a Resource Recovery Exemption). All ENM / VENM / imported material classification reports are to be provided to the Land Custodian or their nominated representative and included within compliance reporting upon completion of works (Section 6.3).
Unexpected Finds Management	During excavation works there is the potential of encountering additional in-ground finds. Unexpected finds may include (but not be limited to): ■ asbestos containing materials; ■ additional LNAPL / hydrocarbon impact; ■ buried building rubble; ■ unusual soil staining and discoloration; and ■ odours emanating from the ground during earthworks. Where unexpected finds are uncovered: ■ Works are to cease immediately in the vicinity of the excavation; ■ the Land Custodian or their nominated representative is to be informed immediately; ■ the area surrounding the unexpected find is to be barricaded to ensure the area is not further disturbed; and ■ a 'Qualified Environmental Specialist' is to visit the site, assess the discovery and undertake assessment / provide recommendations. The environmental consultant is to advise on the required course of action for the find. This may include:

Item	Requirements
	■ Sample collection and analysis; ■ a detailed assessment (if required); and ■ preparation of an assessment report and remediation plan (if required). All reports are to be prepared in accordance with relevant NSW EPA guidance and provided to the Land Custodian for record keeping requirements.
Excavation Re-instatement	Upon completion of excavation works, the area must be re-instated with excavated material in the order in which it was excavated or with other approved imported fill materials.
Intrusive Excavation Works Within 20 m of Identified Residual Contamination (Figure 2)	
Engagement of Environmental Specialist	Where excavation works are undertaken within 20 m of identified residual contamination (**Figure 2**) prior to the commencement of any intrusive works, the Site Operator or nominated representative is to engage a suitably qualified environmental specialist to undertake a review of health and safety management procedures, manage, monitor and evaluate environmental controls and demonstrate compliance with this LTEMP. ■ Where unexpected finds of contamination are identified within other areas of the Site during excavation works, a suitably qualified environmental specialist should be engaged to manage, monitor and evaluate environmental controls, demonstrate compliance with this LTEMP and assess specific requirements for unexpected finds detailed above.
Environmental Monitoring	Environmental monitoring is to be undertaken for odour management purposes during all excavation and construction works within 20 m of identified residual hydrocarbon contamination to evaluate the effectiveness of control measures (**Figure 2**). ■ The specific monitoring methodology / regime should be developed by the environmental specialist and based on the specific tasks / construction methodology. ■ Action levels (odour, dust) are to be developed to incorporate thresholds where intrusive works are to cease and control measures are to be re-assessed / implemented. ■ These action levels are to be based on relevant regulatory guidance at the time of works and are to be incorporated into Health and Safety Planning documentation when undertaking works.
Task Specific Works Plan	Where intrusive excavation works are undertaken within 20 m of identified residual contamination illustrated on **Figure 2**, prior to undertaking works, the contractor is to ensure that a Task Specific Works Plan is prepared by a suitably qualified environmental professional to ensure all environmental risks are appropriately managed. ■ The Works Plan should be prepared for the specific works to be undertaken. ■ The Works Plan should be prepared in accordance with good industry practice standards at the time of works and must comply with all relevant NSW EPA regulatory guideline criteria relating to contaminated sites. The plans should include (but not be limited to) the following details: ■ Risks to human health and the environment – potential risks associated with the work should be highlighted. ■ General site management – Details of required inductions of employees or contractors. ■ Procedures and methodologies to be used for undertaking the works. ■ Specific details of ways to limit disturbance of impacted soils / groundwater / redundant site drainage infrastructure etc. (e.g. soil boring as opposed to open trenching). ■ Mitigation measures. ■ Air / dust monitoring action levels, around areas of residual hydrocarbon impacts; ■ Personal protective equipment. ■ Other protection measures (cabin ventilation, etc.). ■ Roles and responsibilities for implementing the mitigation measures.

Item	Requirements
	■ Soil and groundwater management controls - As a minimum the following requirements should be detailed: ▪ Any groundwater extracted during intrusive works is to be disposed in accordance with all legal requirements. ▪ Excavated soils should be placed on within a bunded area to minimise potential run off. ▪ Soil / concrete material should be kept moist to limit dust. ▪ Excavated materials, where possible, be replaced in the same location. Where this is not practicable, material must be disposed of in accordance with all legal requirements. ■ Reinstatement of the site surface. ■ Waste management including waste disposal. ■ Record Keeping, audit and review.
Biodiversity Management Measures (Green and Golden Bell Frog)	
Green and Golden Bell Frog (GGBF)	Pursuant to a Biodiversity Development Assessment Report dated 3 Dec 2018 prepared by Biosis (see appendix I to the EIS for SSD 10459) there is no residual GGBF habitat within the Management Area. In addition, the further earthworks authorised under development consent SSD 10459 are to be completed in order to create subdivided lots 51 - 55 within the Management Area. When completed, those earthworks will remove ponding of water that might provide potential for habitat for GGBF.

6.2 Reporting and LTEMP Review

The table below outlines the reporting, and review requirements related to this LTEMP.

Table 6 – LTEMP Reporting

Report	Requirement
Material Classification Reports	■ All reports relating to unexpected finds, offsite disposal of fill materials and importation of any materials used for construction / backfilling purposes are to be provided to the Land Custodian upon completion of works. ■ Reports are to include details laboratory analysis and subsequent classification information and materials tracking information detailing the total volume and final placement / disposal location.
Non-Conformance Reporting	■ Any non-conformances with this LTEMP will be recorded in a Non-Conformance and Corrective Action Report. Details of the non-conformance, including any immediate corrective actions undertaken, are to be recorded by the Site Operator. ■ It is the responsibility of the Site Operator to immediately initiate corrective actions, if required. Once completed, the Site Operator will provide details of the actions undertaken on the Non-Conformance Report and sign, date and file the report.

Report	Requirement
LTEMP Review	This LTEMP should be reviewed by the Land Custodian or their nominated representative upon completion of all intrusive excavation activities and / or after incidents or reported findings, to ensure that: ■ information and environmental management strategies remain current; ■ any opportunities for improvement are identified; and ■ changes to legislation, environmental standards licence and approval conditions are identified and complied with. Information obtained during intrusive works including (but not limited to) the following sources may be utilised to review the LTEMP: ■ Details of the works undertaken including relevant photographs. ■ Details of any unexpected finds (nature, location, extent and results of testing / analysis undertaken, photographs). ■ Any pertinent additional safety controls which were required to be implemented during intrusive works. The assessment should take into account all changes such as (but not limited to): ■ changes to site conditions; ■ work requirements; ■ legislation; and ■ environmental condition. If during the review process described above, areas for improvement are identified, or it be determined that the LTEMP requires revision, any changes to the document will require agreement by at least the following stakeholders: ■ Land Custodian (or nominated representative); ■ a Qualified Environmental Specialist; and ■ a NSW EPA accredited Site Auditor.
Record Keeping	All records related to implementation of the LTEMP should be maintained by the Land Custodian or their nominated representative in a consolidated and easily accessible location.

7. CONTINGENCY ACTIONS

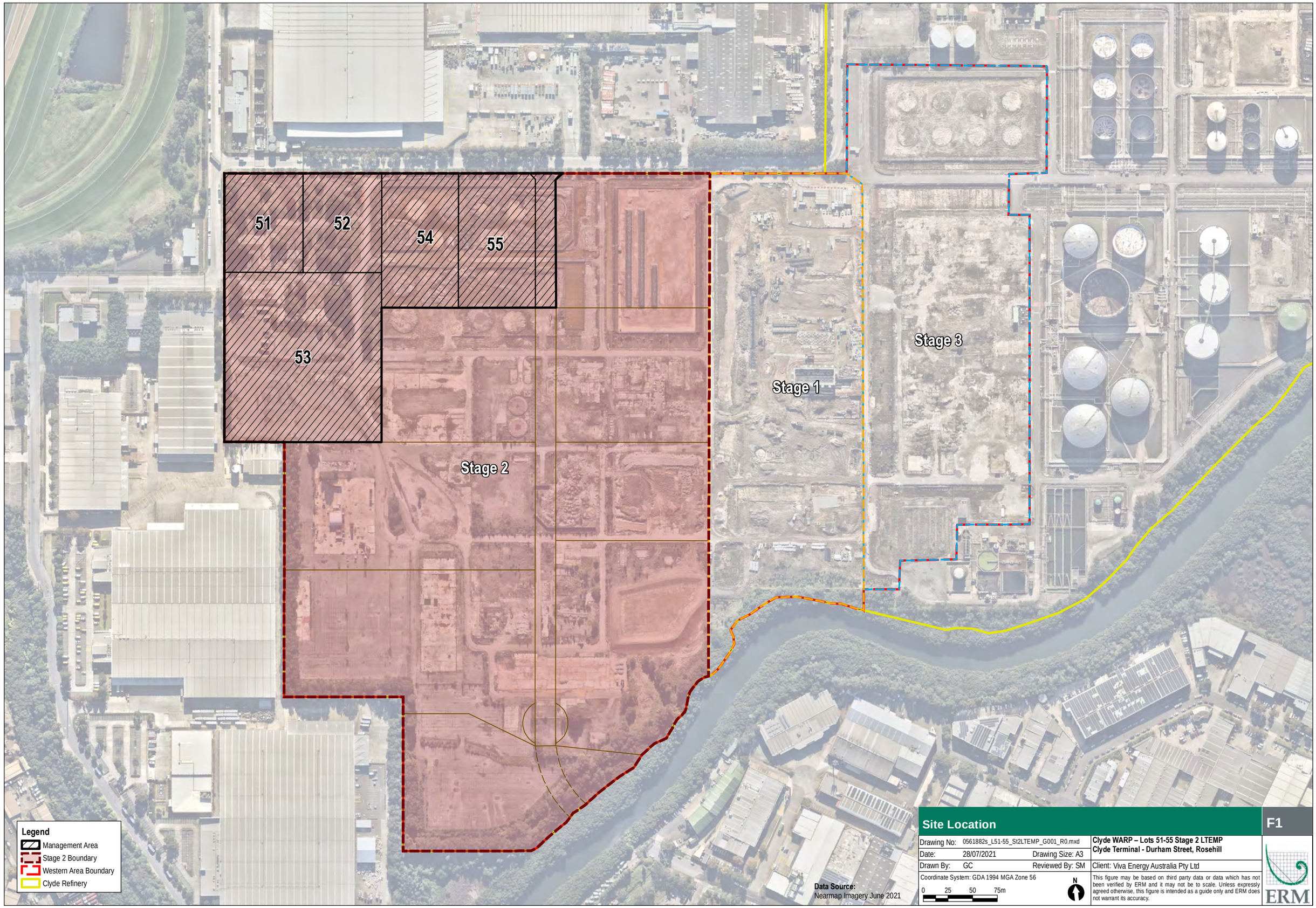
The purpose of the contingency plan is to identify unexpected situations that could occur, and specify procedures that can be implemented to manage such situations and prevent or minimise adverse impacts to the environment and human health.

Details of the procedures are defined in the table below:

Table 7 – Contingency Actions

Item	Contingency Action
Asbestos in soils	■ While the risk of significant and / or widespread asbestos contamination within the Management Area is unlikely based on existing environmental assessments, where asbestos contaminated soil is identified during development works, any finds should be investigated as per the unexpected finds methodology detailed within Section 6.1. ■ Identified asbestos remaining on site should be included on an Asbestos Register.
Additional/ unexpected LNAPL / Hydrocarbon Contamination resulting in Potential Vapour Risk	■ While the likelihood of vapour risk from additional / unexpected finds of LNAPL / hydrocarbon impacted soil and / or groundwater is unlikely, during future development works, where a potential indicators of vapour risk is identified, the Land Custodian should engage an environmental specialist to undertake further assessment. ■ The location of LNAPL or residual hydrocarbons in soil within the Management Area which is known and has been assessed as not presenting a risk to future workers is identified on Figure 2.

APPENDIX A FIGURES



Site Location

F1

Drawing No:	0561882s_L51-55_St2LTEMP_G001_R0.mxd		Clyde WARP – Lots 51-55 Stage 2 LTEMP Clyde Terminal - Durham Street, Rosehill
Date:	28/07/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

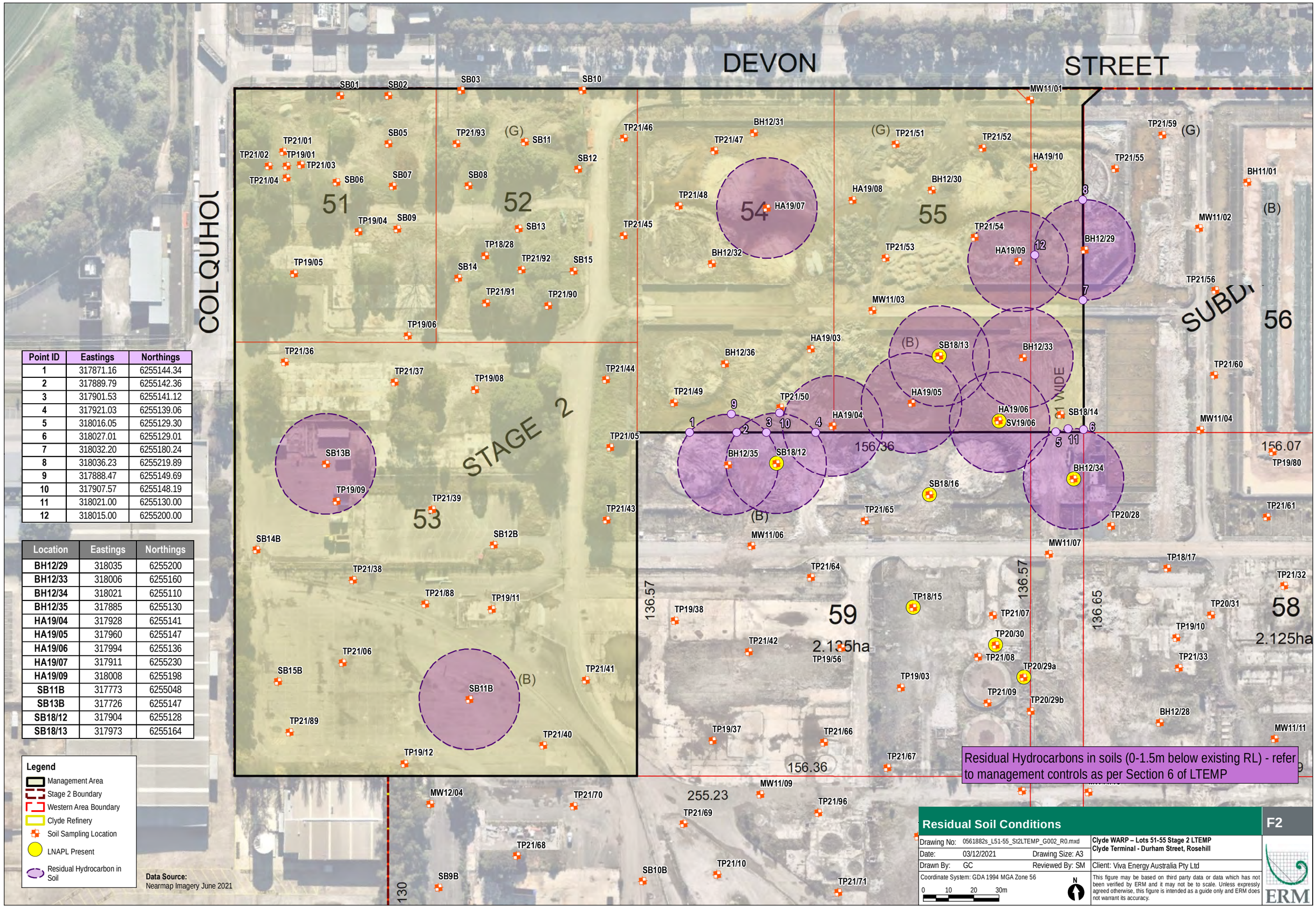
Coordinate System: GDA 1994 MGA Zone 56

0 25 50 75m

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM



Point ID	Eastings	Northings
1	317871.16	6255144.34
2	317889.79	6255142.36
3	317901.53	6255141.12
4	317921.03	6255139.06
5	318016.05	6255129.30
6	318027.01	6255129.01
7	318032.20	6255180.24
8	318036.23	6255219.89
9	317888.47	6255149.69
10	317907.57	6255148.19
11	318021.00	6255130.00
12	318015.00	6255200.00

Location	Eastings	Northings
BH12/29	318035	6255200
BH12/33	318006	6255160
BH12/34	318021	6255110
BH12/35	317885	6255130
HA19/04	317928	6255141
HA19/05	317960	6255147
HA19/06	317994	6255136
HA19/07	317911	6255230
HA19/09	318008	6255198
SB11B	317773	6255048
SB13B	317726	6255147
SB18/12	317904	6255128
SB18/13	317973	6255164

Legend

- Management Area
- Stage 2 Boundary
- Western Area Boundary
- Clyde Refinery
- Soil Sampling Location
- LNAPL Present
- Residual Hydrocarbon in Soil

Data Source:
Nearmap Imagery June 2021

Residual Hydrocarbons in soils (0-1.5m below existing RL) - refer to management controls as per Section 6 of LTEMP

Residual Soil Conditions

F2

Drawing No:	0561882s_L51-55_St2LTEMP_G002_R0.mxd		Clyde WARP – Lots 51-55 Stage 2 LTEMP Clyde Terminal - Durham Street, Rosehill
Date:	03/12/2021	Drawing Size: A3	
Drawn By:	GC	Reviewed By: SM	Client: Viva Energy Australia Pty Ltd

Coordinate System: GDA 1994 MGA Zone 56

0 10 20 30m

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

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APPENDIX B SITE SURVEY

M.G.A

STAGE 3

DEVON STREET

COLQUHOUN STREET

UNWIN STREET

STAGE 2

51 | 52 | 54 | 55 | 53 | 59 2.135ha | 56 | 58 2.125ha | 6 STAGE 1 SUBDIVISION | 7

60 3.318ha | 61 1.553ha | 63 3.633ha | 62 3.097ha | 64 2.35ha

21 WIDE PROPOSED ROAD

SUBDIVISION

156.36 | 156.07 | 255.23 | 155.79 | 155.61 | 136.57 | 136.55 | 136.72 | 130 | 100 | 178.69 | 208.52 | 137.66 | 129.08 | 121.08 | 17.1 | 67 | 74.61 | 88.14 | 40m | 130.085 | 139.49

(A) (B) (C) (G) (H) (L) (M)

WATER

HIGH MEAN SETBACK RIPARIAN

RIVER

DUCK

BOUNDARY

CARNARVAN STREET

2
DP 864567

NSW GOVERNMENT | Planning, Industry & Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No: SSD-10459

Granted on: 31 January 2021

Signed: JF Sheet No: 4 of 44

NOTES:
1. ALL DIMENSIONS SHOWN HEREON ARE APPROXIMATE AND SUBJECT TO FINAL SURVEY
2. NO CADASTRAL SURVEY HAS BEEN UNDERTAKEN

(A) EASEMENT TO DRAIN WATER 10.2 & 13.4 WIDE (AC 424785)
(B) EASEMENT 6.095 WIDE (B309159) – SYDNEY WATER PIPELINE
(C) EASEMENT TO DRAIN WATER 13.4 WIDE (AC424784)
(G) PROPOSED EASEMENT FOR SERVICES 5 WIDE
(H) RIGHT OF ACCESS 21 WIDE AND VARIABLE WIDTH
(L) EASEMENT FOR OVERLAND FLOW 5 WIDE
(M) EASEMENT FOR PEDESTRIAN ACCESS 40 WIDE & VARIABLE WIDTH

20 0 40 100 140m
SCALE 1:1500

CLIENT
VE PROPERTY PTY LTD

PROJECT
PLAN OF PROPOSED SUBDIVISION OF LOT 57 OF STAGE 2 OF SUBDIVISON OF LOT 100 IN DP1168951 STAGE 3

NOTES
The title boundaries shown hereon were not marked at the time of survey and have been determined by plan dimensions only and not by field survey.

Services shown hereon have been located where possible by field survey. If not able to be so located, services have been plotted from the records of relevant authorities where available and have been noted accordingly on the plan. Where such records do not exist or are inadequate a notation has been made hereon.

Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services.

8	GKO	23/11/2020	LOT 61 & 62 AMENDED
7	GKO	11/11/2020	AMEND RIPARIAN SETBACK & (H)
6	GKO	02/11/2020	LANDSCAPE SETBACK REMOVED
5	GKO	29/10/2020	PLAN AMENDED
4	GKO	20/10/2020	LOT BOUNDARIES AMENDED
3	GKO	24/07/2020	EASEMENTS DETAIL ADDED
2	GKO	17/07/2020	EASEMENT AMENDED
1	GKO	22/06/2020	INITIAL ISSUE

SYM	CODE	DESCRIPTION
	BIN	BIN
	BM	BENCH MARK
	BO	BOLLARD
	DJM	DRAINAGE MANHOLE
	EFP	ELEC FUSE BOX
	ELP	ELEC GARDEN LIGHT
	EL	ELEC GREEN PILLAR
	LP	ELEC LIGHT POLE
	EP	ELECT SINGLE PIT
	SPL	ELEC STAY POLE
	PP	ELEC POWER POLE
	ELP	ELEC POLE/LIGHT
TRANS		ELE POLE/TRANSFORM
	FD	FUEL DIP
	GM	GAS MAIN
	GMR	GAS METER
	GAS	GAS VALVE
	AG	GATE
	GUL	GULLY PIT
	HYD	HYDRANT
	BOR	BOREHOLE

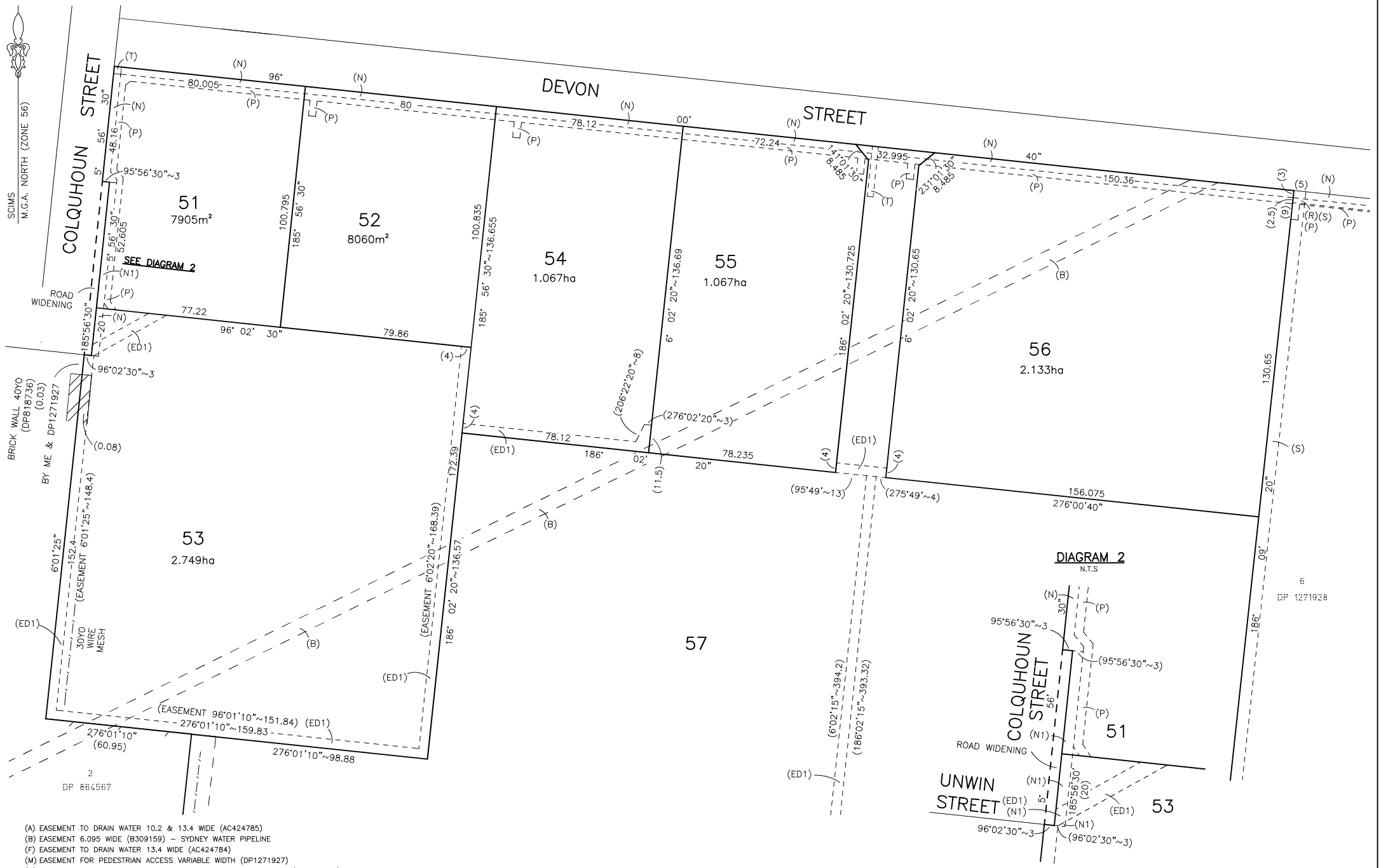
SYM	CODE	DESCRIPTION
	OFM	OPTICAL FIBRE MARKER
	OFP	OPTICAL FIBRE PIT
	TM	PALM TREE
	SE	SEAT
	TS	SHRUB
	TCA	TELSTRA PIT
	SLH	SEWER LAMP HOLE
	SMH	SEWER MANHOLE
	SVP	SEWER VENT PIPE
	SI	SIGN
	BUS	BUS STOP SIGN
	T	TREE
	SGL	TRAFFIC LIGHT
	SCL	TRAFFIC CONTROLLER
	SJX	TRAFFIC JUNCTION BOX
	US	UNKNOWN SERVICE
	WAV	WATER AIR VALVE
	WMR	WATER METER
	WEP	WATER PUMP
	WSV	WATER STOP VALVE
	WTF	WATER TAP

Symbols shown are indicative only. The symbol size and orientation does not necessarily represent the real size or orientation of the feature.

DRAINAGE PIPE U/G
DRAIN
ELECT. CABLE A/G
ELEC. CABLE U/G
GAS PIPE
FENCE LINE
SEWERAGE PIPE
TELSTRA CABLE
WATER PIPE

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Dundas NSW 2117
t (02) 9683 2000
e info@landpartners.com.au
w www.landpartners.com.au

HEIGHT DATUM: AHD	LOCAL AUTHORITY: CITY OF PARRAMATTA
HEIGHT ORIGIN: N/A	SCALE: 1:1500 (A1)
MERIDIAN: 56	CONTOUR INTERVAL: N/A
CO-ORD SYSTEM: MGA	SURVEYOR: N/A — DATE OF SURVEY: -
CCAD FILE: 74707 ver 9 final subdivision	DRAWN: SF/CLP — DATE: 23/11/2020
AUTOCAD FILE: SY074707.000.13.8	CHECKED: GKO — DATE: 23/11/2020
ARCHIVE FILE: SY074707.000.13.6	APPROVED: GKO — DATE: 23/11/2020
PLAN NUMBER: SY074707.000.13.8	SHEET 1 OF 1



(A) EASEMENT TO DRAIN WATER 10.2 & 13.4 WIDE (AC424785)
(B) EASEMENT 6.095 WIDE (B309159) – SYDNEY WATER PIPELINE
(F) EASEMENT TO DRAIN WATER 13.4 WIDE (AC424784)
(M) EASEMENT FOR PEDESTRIAN ACCESS VARIABLE WIDTH (DP1271927)
(N) EASEMENT FOR UNDERGROUND CABLES 3 WIDE & VARIABLE WIDTH (DP1271928)
(P) EASEMENT FOR SEWERAGE PURPOSES 2.5, 3 WIDE & VARIABLE WIDTH (DP1271928)
(R) EASEMENT FOR SERVICES 5 WIDE (DP12471928)
(S) RESTRICTION ON THE USE OF LAND FOR LANDSCAPE BUFFER 5 WIDE (DP1271928)
(ED1) EASEMENT FOR DRAINAGE OF WATER 4 WIDE & VARIABLE WIDTH
(T) EASEMENT FOR WATER SUPPLY PURPOSES 2.5 & 3 WIDE (DP1271928)
(N1) EASEMENT FOR UNDERGROUND CABLES 3 WIDE

Surveyor: GREGORY K OXLEY LandPartners PTY LTD PO BOX 1144 DUNDAS 2117 Date of Survey: 13/04/2021 Surveyor's Ref: SY074707.000.20	PLAN OF SUBDIVISION OF LOT 5 DP 1271928	LGA: CITY OF PARRAMATTA Locality: ROSEHILL Subdivision No: Lengths are in metres. Reduction Ratio 1:1000	Registered	DP

10 20 30 40 50 Table of mm 90 100 110 120 130 140

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