



Consulting Environmental Scientists

ISO 9001:2015 | B-BBEE Level Two
www.gptglobal.com

2025 Biannual Groundwater Monitoring Report

for

V & A Waterfront Service Station

Compiled for:

Astron Energy (Pty) Ltd

GPT Ref No: CHVAW/25/13176

Version: 1.00

Date: October 2025

Offices in: Gauteng, Western Cape,
KwaZulu-Natal & Mozambique

Report Type: 2025 Biannual Groundwater Monitoring Report
Site Name: V & A Waterfront Service Station
Site Location: Dock Road, V&A Waterfront Precinct, Foreshore, Cape Town, Western Cape
Compiled For: Astron Energy (Pty) Ltd
Compiled By: M. R. Mukwevho; BES. Hons (Mining & Environmental Geology); Pr. Sci. Nat (170341)
GPT Reference: CHVAW/25/13176
Client Reference: 9000057167
Version: 1.00
Date: October 2025
Distribution List: Mr Jody Fredericks

Reviewed by: L. Netshiungani; M. Sc. (Geology); Pr. Sci. Nat (116730)

Disclaimer:

The results and conclusions of this report are limited to the Scope of Work agreed between GPT and the Client for whom this investigation has been conducted. All assumptions made and all information contained within this report and its attachments depend on the accessibility to and reliability of relevant information, including maps, previous reports and word-of-mouth, from the Client and Contractors.

Copyright:

The copyright in all text and other matter (including the manner of presentation) is the exclusive property of Geo Pollution Technologies - GPT (Pty) Ltd, unless where referenced to external parties. It is a criminal offence to reproduce and/or use, without written consent, any matter, technical procedure and/or technique contained in this document. This document must be referenced if any information contained in it is used in any other document or presentation.

Declaration:

I hereby declare:

- I have no vested interest (present or prospective) in the project that is the subject of this report as well as its attachments. I have no personal interest with respect to the parties involved in this project.
- I have no bias with regard to this project or towards the various stakeholders involved in this project.
- I have not received, nor have I been offered, any significant form of inappropriate reward for compiling this report.



(electronic signature)

M. R. Mukwevho; BES. Hons (Mining & Environmental Geology); Pr. Sci. Nat (170341)



(electronic signature)

L. Netshiungani; M. Sc. (Geology); Pr. Sci. Nat (116730)

Customer Satisfaction:

Feedback regarding the technical quality of this report (i.e., methodology used, results discussed and recommendations made), as well as other aspects, such as timeous completion of project and value of services rendered, can be posted onto GPT's website at www.gptglobal.com.

EXECUTIVE SUMMARY

Geo Pollution Technologies - Gauteng (hereafter GPT) was appointed by Astron Energy (Pty) Ltd (Astron Energy) to conduct bi-annual groundwater sampling and vapour utility survey at V & A Waterfront Service Station. The site currently operate as a service station and fuel storage facility. The primary objective of the assessment was to to determine the trend of dissolved concentrations and Light Non-Aqueous Phase Liquid (LNAPL) over time. The assessment aims to comply with the Environmental Authorisation (EA) issued to V&A Waterfront Holdings (Pty) Ltd by the Department of Environmental Affairs and Development Planning (DEA&DP) reference number 16/3/3/1/A7/4/3014/20 for the development and operation of a “listed activity” as listed in the Environmental Impact Assessment (EIA) Regulations, 2014.

This investigation was conducted on 14 April 2025 (first sampling event), 10 and 17 October 2025 (second sampling event) and involved the collection of groundwater samples from existing monitoring wells and off-site dewatering pump for laboratory analysis. A vapour utility survey was also conducted to assess the potential presence of vapours in all accessible underground utilities and third-party services.

Site Characterisation:

- **Geology:** According to the 1: 250 000 Geological map series of the Republic of South Africa, as well as the field observations made during the drilling of the groundwater monitoring wells, the region is underlain by the Tygerberg Formation of the Malmesbury Group, comprised of graywacke, phyllite and quartzitic sandstone, interbedded lava and tuff. This is confirmed by fieldwork observations during drilling, which found weathered graywacke from as shallow as 0.5 mbgl. Localised backfill was also found, specifically in MW101.
- **Hydrogeology:** According to the 1: 500 000 Hydrogeological map of Cape Town (3317), the main water-bearing strata in the area is an intergranular and fractured aquifer with typical borehole yields between 0.1-0.5 L/s. The groundwater quality is thought to have low electrical conductivity ranging between 28.70 - 64.60 $\mu\text{S}/\text{cm}$. The aquifer is classified as a major aquifer on a regional scale, most vulnerable and high susceptibility (Aquifer Classification of South Africa, DWAF, 1999). The local drilling indicated a low yielding fractured aquifer that is not a major aquifer.
- **Bail tests** were conducted in 2023 on the monitoring wells, and the geometric mean of the hydraulic conductivity was calculated to be 0.187 m/day. The average local groundwater flow velocity was calculated to be 0.077 m/year in the absence of preferred flow pathways.
- **Topography and drainage:** The site is located at an altitude of approximately 4.5 mamsl with a slight gradient of 0.01 in an east south-easterly direction. The nearest surface water body which lies approximately 250 m of the site is the Waterfront harbour which is part of Table Bay. There is a canal upstream (using the topographic gradient) from the site about 100 m away. The groundwater flow was calculated to be towards a south westerly direction and based on the current static water level (SWL) measurements, it remains constant throughout the dry and wet season.
- The site is surrounded by a mix of industrial, commercial and also some residential properties which is common to this mixed-use land redevelopment found in the V&A Waterfront Precinct.
- **Hydrocensus** was previously conducted in 2023 within a 300 m radius around the site. There is an adjacent dewatering sump (BH1) located south of the site (Investec property) installed to keep the underground parking dry and the water is pumped to the storm water. The National Groundwater Archive (NGA) showed two production boreholes within 750 m radius cross-gradient of the site.

- Monitoring network: consists of three (3) on- and off-site monitoring wells (MW101, MW102 and MW103) and one (1) off-site dewatering sump (BH1). No tank monitoring wells with water exist on-site.

Fieldwork Activities:

- Utility surveys were conducted in April and October 2025, to measure the possible presence of vapours in all accessible underground utilities and third-party services. Vapour phase volatile organic compound (VOC) concentrations ranged between 0 and 11 ppm in April 2025, and between 0 and 19 ppm in October 2025. Lower explosive limit (LEL) readings yielded 0%, indicating that the explosion risk was low at the time of measurement in April and October 2025.
- The depth to groundwater level was measured to lie between 7.19 and 8.02 mbgl in April 2025, and between 7.80 and 8.72 in October 2025. LNAPL with an apparent thickness of 3.20 and 2.40 m was detected in MW103 during the April and October 2025 sampling event, respectively.
- A total of eight (8) groundwater samples, comprising three (3) groundwater and one duplicate samples for quality assurance/control (QA/QC) purposes were collected in April and October 2025 and submitted to a SANAS accredited laboratory for BTEXN, TAME, MTBE, and TPH C7-C36 analysis. One (1) LNAPL sample was collected from MW103 in April 2025 and submitted to the laboratory for forensic analysis.

Laboratory Results:

- Groundwater results: analytical results indicated that the targeted hydrocarbon compounds were below the laboratory reportable limit (BRL) in all the collected water samples during both sampling events in April and October 2025.
- LNAPL results: The LNAPL sample collected from MW103 in April 2025, showed compound compositions that ranged from TPH C₁₀ to C₄₀ and even beyond. Due to this thick black colour and confirmation of compositional characteristics, the sample found at MW103 is consistent with heavy fuel or marine fuel oil and is unrelated to present day service station operational activities, while most likely forming part of historical impacts associated with previous dock yard land use in the area.
- Dissolved concentration and LNAPL trend analysis: MW101 and MW102 have reported concentration BRL since the sampling started in 2023. In March 2024, concentrations of GRO C₇-C₉ (19 µg/l) were detected in BH1, which then decreased to BRL during the subsequent events. LNAPL was detected in MW103 in March and October 2024. However, the thickness could not be measured in 2024 due to the thick composition of the product, which caused the interface meter probe to become coated and unable to detect the water beneath the apparent product column. LNAPL with an apparent thickness of 3.20 and 2.40 m was detected in MW103 during the April and October 2025 sampling event, respectively.

TABLE OF CONTENTS

	Page
1 Introduction	1
2 Objectives & Scope of Work.....	1
3 Fieldwork Methodology	2
3.1 Health and Safety.....	2
3.2 Utility Vapour Survey.....	2
3.3 Groundwater & LNAPL Sampling.....	2
4 Site Information.....	2
4.1 Geology, Geohydrology, Site Setting and Groundwater Users.....	3
4.2 Site History	3
4.2.1 Phase 2 Assessment Report by GPT (Ref No: CHVAW/23/11540 dated November 2023)	4
4.2.2 Biannual Groundwater Report by GPT (Ref No: CHVAW/24/12131 dated February 2025)	5
5 Fieldwork Activities	5
5.1 Vapour survey within accessible utility manholes	6
5.2 Groundwater & LNAPL Sampling Field Measurements	8
6 Results of Petroleum Hydrocarbon Analysis.....	10
6.1 Groundwater Analytical Results	10
6.2 LNAPL laboratory results	12
6.3 LNAPL and Dissolved Phase Concentration Trend Analysis.....	12
6.4 Data Quality Assurance/Quality Control.....	13
7 Summary and Conclusions	14
8 Disclaimer.....	16
9 References.....	16

LIST OF APPENDICES

APPENDIX I: Map.....	17
APPENDIX II: Photos.....	21
Appendix III: Laboratory Certificates & Field Forms	22

LIST OF FIGURES

Figure 1: Site map showing underground utilities and third party services.	7
Figure 2: Site map showing groundwater monitoring wells and dewatering sump locations.	9
Figure 3: Site map showing current and historic laboratory results (2023 to 2025)	11
Figure 4: Chromatogram of MW103 against Petrol, Diesel, and n-Alkane Standards (April 2025)	12
Figure 5: GRO and DRO trend analysis for BH1.	13
Figure 6: LNAPL and DRO trend analysis for MW103.	13

LIST OF TABLES

Table 1: VOC's, LEL & O ₂ survey results (April and October 2025).	6
Table 2: Field parameters measured in April and October 2025.	8
Table 3: Time-series laboratory analytical results (µg/l).	10
Table 4: LNAPL laboratory results (2024 and 2025).....	12
Table 5: Relative Percentage Difference (April and October 2025).	14

LIST OF PHOTOS

Photo 1: MW102 sampling location.	21
Photo 2: MW103 sampling location.	21

LIST OF ABBREVIATIONS

BRL	=	Below Reportable Limit
BTEX	=	Benzene, Toluene, Ethyl-benzene, Xylenes
CBD	=	Central Business District
CSM	=	Conceptual site model
DEA&DP	=	Department of Environmental Affairs and Development Planning
DP	=	Dispenser
DRO	=	Diesel Range Organics
EA	=	Environmental Authorisation
EC	=	Electrical Conductivity
EIA	=	Environmental Impact Assessment
GPT	=	Geo Pollution Technologies
GRO	=	Gasoline Range Organics
h	=	Height
K	=	Hydraulic conductivity value measured in metres per day
ℓ	=	Litres
L	=	Length
LEL	=	Lower Explosive Limit
LNAPL	=	Light Non-Aqueous Phase Liquid
LRP	=	Lead Replacement Petrol
m ³	=	Cubic meters
mamsl	=	Metres above mean sea level
mbgl	=	Metres below ground level
NA	=	Not applicable or No information
NGA	=	National Groundwater Archive
ORP	=	Oxidation Reduction Potential
PAH	=	Poly Aromatic Hydrocarbons
pH	=	Power of Hydrogen
PID	=	Photo Ionization Detector
ppb	=	Parts per billion
ppm	=	Parts per million
PSH	=	Phase Separated Hydrocarbons
RBSLs	=	Risk Based Screening Levels
SSV1	=	Soil Screening Value 1 (protection of water resources)
SSV2	=	Soil Screening Value 2 (commercial/industrial use)
SVS	=	Soil Vapour Survey
SWL	=	Static (ground) water level
ULP	=	Unleaded petrol
USTs	=	Underground Storage Tanks

2025 BIANNUAL GROUNDWATER MONITORING REPORT

1 INTRODUCTION

Geo Pollution Technologies - Gauteng (hereafter GPT) was appointed by Astron Energy (Pty) Ltd (Astron Energy) to conduct bi-annual groundwater sampling and vapour utility survey at V & A Waterfront Service Station. The site currently operate as a service station and fuel storage facility. The primary objective of the assessment was to to determine the trend of dissolved concentrations and Light Non-Aqueous Phase Liquid (LNAPL) over time. The assessment aims to comply with the Environmental Authorisation (EA) issued to V&A Waterfront Holdings (Pty) Ltd by the Department of Environmental Affairs and Development Planning (DEA&DP) reference number 16/3/3/1/A7/4/3014/20 for the development and operation of a “listed activity” as listed in the Environmental Impact Assessment (EIA) Regulations, 2014.

This investigation was conducted on 14 April 2025 (first sampling event), 10 and 17 October 2025 (second sampling event) and involved the collection of groundwater samples from existing monitoring wells and off-site dewatering pump for laboratory analysis. A vapour utility survey was also conducted to assess the potential presence of vapours in all accessible underground utilities and third-party services.

2 OBJECTIVES & SCOPE OF WORK

As per the Scope of Work agreed with Astron Energy, the primary objective of the assessment was to determine the trend of dissolved concentrations and LNAPL over time. To achieve the project objectives, the following Scope of Work was implemented:

- Groundwater samples were collected from the on- and off-site monitoring wells, including the off-site dewatering sump. A duplicate sample was collected for quality assurance and control purposes (QA/QC) per sampling event.
- Field parameters such as static water level (SWL), LNAPL level, potential Hydrogen (pH), Electrical Conductivity (EC), Oxidation Reduction Potential (ORP), and Temperature were measured during sampling of each well.
- The collected groundwater samples were submitted to a SANAS accredited laboratory for BTEXN, TAME, MTBE, and TPH C7-C36 analysis.
- LNAPL samples were collected from wells containing free phase products and submitted to the laboratory for forensic fuel analysis.
- A vapour utility survey was conducted to assess the potential presence of vapours in all accessible underground utilities and third-party services.
- A factual biannual groundwater monitoring report was compiled and submitted to Astron Energy.

3 FIELDWORK METHODOLOGY

To achieve the objectives of this study the following actions were undertaken:

3.1 Health and Safety

Site specific health and safety plans (HASPs) and job safety analyses (JSAs) were compiled prior to GPT moving onto site. The HASP includes critical safety information such as the contact information of emergency services as well as emergency response plans which detail the location of the nearest medical facilities. The response plans detail the courses of action to be followed should an incident occur and include the contact information of the relevant GPT and Astron Energy personnel who should be informed should a loss Incident occur. Task specific JSAs are compiled prior to work commencing. These JSAs detail the primary and secondary tasks to be completed, along with the identified possible hazards and the required mitigation measures which are to be implemented.

3.2 Utility Vapour Survey

A utility survey was conducted to measure the persistence of vapours present in all accessible underground utilities and third-party services such as storm water, sewer, Telkom, and other manholes present on-site. A Mini Rae photo ionisation detector (PID) calibrated with 100 ppm isobutylene gas and a calibrated MSA 4x Altair explosimeter were respectively used to measure both volatile organic compounds (VOCs) as well as lower explosive limit (LEL) and oxygen (O₂) percentage in all manholes linked to services both on and adjacent to the site.

3.3 Groundwater & LNAPL Sampling

The groundwater and LNAPL sampling methodology employed in this investigation conforms to GPT Standard Operating Procedures (SOPs) as well as industry best practices. LNAPL and groundwater samples were collected using bottom filling bailers with rope. Information on SWLs and LNAPL presence was collected using an interface meter. Field parameters (i.e., pH, EC, ORP, and Temperature) were measured during sampling of well. Field measurements were not taken for wells containing LNAPL.

The groundwater samples were collected for BTEXN, TAME, MTBE, and TPH C7-C36 analysis in 200 ml amber glass bottles and 40 ml vials. The LNAPL samples were collected in 40 ml vials for forensic fuel analysis. The samples were kept cool, by using a cooler box with ice packs during each sampling events. Samples were then dispatched to the laboratory and analysed within 4 days of the sampling. A duplicate sample was collected for quality assurance and control purposes (QC/QA purposes) per sampling event.

4 SITE INFORMATION

Site Name:	V & A Waterfront Service Station					
Site Address:	Dock Road, V&A Waterfront Precinct, Foreshore, Cape Town, Western Cape					
Coordinates:	-33.911378° S; 18.422999° E					
Manager:	Andre Cronje		Position	V&A Waterfront Project Manager		
Email:	acronje@waterfront.co.za		Cell:	072 386 7996		
Landowner:	V&A Waterfront		Phone:	N/A		
Surrounding land use:	Commercial	Y	Industrial	Y	Residential	Y

Adjacent properties:	North	Commercial and light industrial properties including a shipyard (North-West).
	East	Transnet National Ports Authority (TNPA) land beginning with a railway track (operational).
	South	Parcel M site (Old Caltex SS) followed by a car dealership.
	West	Dock Road followed by commercial properties.
Other possible contamination sources in the area:	The site is mainly surrounded by commercial and some light industry land use areas. As part of the redevelopment a Caltex Service Station located approximately 50 m south of the site was demolished and all infrastructure decommissioned in April 2021.	

4.1 Geology, Geohydrology, Site Setting and Groundwater Users

According to the 1: 250 000 Geological map series of the Republic of South Africa, as well as the field observations made during the drilling of the groundwater monitoring wells, the region is underlain by the Tygerberg Formation of the Malmesbury Group, comprised of graywacke, phyllite and quartzitic sandstone, interbedded lava and tuff. This is confirmed by fieldwork observations during drilling, which found weathered graywacke from as shallow as 0.5 mbgl. Localised backfill was also found, specifically in MW101. The geological map is attached under Appendix I.

According to the 1: 500 000 Hydrogeological map of Cape Town (3317), the main water-bearing strata in the area is an intergranular and fractured aquifer with typical borehole yields between 0.1-0.5 L/s. The groundwater quality is thought to have low electrical conductivity ranging between 28.70 - 64.60 $\mu\text{S}/\text{cm}$. The aquifer is classified as a major aquifer on a regional scale, most vulnerable and high susceptibility (Aquifer Classification of South Africa, DWAF, 1999). The local drilling indicated a low yielding fractured aquifer that is not a major aquifer. Based on the groundwater level flowing through a predominantly fractured sandstone rock layer, the assumed porosity is 10%.

Bail tests were conducted in 2023 on the monitoring wells, and the geometric mean of the hydraulic conductivity was calculated to be 0.187 m/day. The average local groundwater flow velocity was calculated to be 0.077 m/year in the absence of preferred flow pathways.

The site is located at an altitude of approximately 4.5 mamsl with a slight gradient of 0.01 in an east south-easterly direction. The nearest surface water body which lies approximately 250 m of the site is the Waterfront harbour which is part of Table Bay. There is a canal upstream (using the topographic gradient) from the site about 100 m away.

Hydrocensus was previously conducted in 2023 within a 300 m radius around the site. There is an adjacent dewatering pump (BH1) located south of the site (Investec property) installed to keep the underground parking dry and the water is pumped to the storm water. The National Groundwater Archive (NGA) showed two production boreholes within 750 m radius cross-gradient of the site. The location of the boreholes are presented in the locality map attached under Appendix I.

4.2 Site History

The V&A Waterfront Precinct is a major brownfield redevelopment undertaking over several decades of what used to be industrial and commercial land in the foreshore area. As with many brownfield sites in South Africa, there is a complex history of activities on the site stretching back several decades. Parcel N is one of two portions of land that forms part of the current project upgrade works on Dock Road. It was purchased from Transnet National Ports Authority (TNPA) by the V&A Waterfront

group and has been awaiting redevelopment approval and commencement, which it is now undergoing.

Adjacent to Parcel N in the southerly direction, lies Parcel M the second portion of land . It operated as a Caltex Service Station where ERM Consulting conducted Phase 1 and Phase 2 Health Environment and Safety Baseline Assessment. Parcel M was decommissioned and knocked down in April 2021; all fuel associated infrastructure was demolished and removed. Some localised contamination was observed during the environmental assessments (performed by ERM) linked to these decommissioning works, however the perimeter sampling positions showed below detection limit concentrations.

Industrial land use properties, including large storage tanks (JBS Tank Farm) containing mainly heavy fuel oil (MFO), were being stored in the land nearby Parcel N (approximately 100 m south westerly and westerly direction). In 1992, this former JBS Tank Farm, was remediated and redeveloped for residential land use but it is possible that remnant historical contamination may be present in the vicinity of old tank farm margins (ERM, May 2021).

Pipelines carrying fuel to these storage tanks, and also directly to their operational neighbours ran underground and through both Parcel M and Parcel N sites. These pipelines were owned by different parties within the Joint Bunkering Services Group; these pipelines were all decommissioned and have undergone various levels of removal.

In 1992, a V&A contractor damaged a MFO pipeline in the vicinity of the previously located Dock Road traffic circle (80m south-west of the site) with an estimated loss of 50,000 litres of MFO. No recovery is understood to have been conducted to date according to site management. Oil was reportedly found in trial pits excavated by Kantey & Templer to the north and east side of the traffic circle in 1994 (ERM, May 2021).

Upstream from the previous petrol station the areas which contained bulk fuel storage units for many years, have already (as mentioned above) undergone extensive remedial operations as part of their respective redevelopment works. It was possible however, that some of the impacts on subsurface soils and groundwater have migrated over time and extended into the previous petrol station area. It was with this aspect in mind that an environmental investigation would be undertaken as part of the redevelopment works in order to characterize the site and make appropriate recommendations for the management of this contamination that would facilitate the redevelopment works going forward.

GPT conducted Phase 2 assessment and biannual groundwater sampling at V & A Waterfront service station in 2023 and 2024, respectively. The findings of the investigations are summarised below.

4.2.1 Phase 2 Assessment Report by GPT (Ref No: CHVAW/23/11540 dated November 2023)

In October 2023, GPT conducted the drilling and installation of three (3) on- and off-site monitoring wells to update the site assessment at the rebuilt service station (V & A Waterfront), which would form part of the brownfield redevelopment site previously referred to as Parcel N, within the Cape Town Waterfront Precinct. The primary objective of this assessment was to establish a permanent monitoring well network that would be able to track baseline and future groundwater conditions in the subsurface, given the site risk characterization to the surrounding environment.

A hydrocensus was conducted within a 300 m radius around the site. There is an adjacent dewatering sump named BH1 to keep the underground parking dry and the water is pumped to the storm water. The National Groundwater Archive (NGA) showed two production boreholes within 750 m radius cross-gradient of the site.

Three (3) monitoring wells (i.e., MW101, MW102 and MW103) were drilled and installed to depths between 8.5 mbgl and 10 mbgl. PID readings of VOCs ranged between 0 and 63 ppm. Seepage of groundwater was intercepted in two of the three holes drilled. Three (3) soil samples were collected during drilling and sent to a SANAS accredited laboratory for BTEXN, TAME, MTBE, PAH and TPH C6-C36 GC-MS analysis. The soil analytical results indicated that concentrations of gasoline and diesel range organic (GRO and DRO) compounds were detected in all the collected samples.

The depth to groundwater was measured to lie between 5.17 and 8.72 mbgl in the monitoring wells. LNAPL product was observed as a sheen in MW103. Four (4) water samples were collected from the monitoring wells and dewatering sump and sent to the laboratory for BTEXN, TAME, MTBE, PAH and TPH C6-C36 GC-MS analysis. The groundwater analytical results indicated that concentrations of GRO C₇-C₉ and TPH C₁₀-C₃₆ were detected in MW103. The targeted hydrocarbon compounds were below the laboratory reportable limit (BRL) in MW101 and MW102.

A topographic survey was conducted to establish the monitoring wells' altitude. A bail test was conducted, and the local hydraulic conductivity (K) was calculated to be 0.187 m/day. The average local groundwater flow velocity was calculated to be 0.077 m/day. The groundwater flow direction was calculated to be in a southerly direction, due to the groundwater dewatering operations taking place in Parcel M site. However the undisturbed groundwater flow direction is inferred to be flowing in an east north-easterly direction, toward the harbour.

4.2.2 Biannual Groundwater Report by GPT (Ref No: CHVAW/24/12131 dated February 2025)

In March and October 2024, GPT conducted bi-annual seasonal groundwater sampling in order to determined dissolved concentration and LNAPL trends over time.

The depth to groundwater level was measured to lie between 7.98 and 8.65 mbgl in March 2024, and 4.16 and 7.41 mbgl in October 2024. LNAPL was measured to lie at a depth of 5.11 and 3.33 mbgl from MW103 in March and October 2024 respectively. However, the thickness could not be measured in due to the thick composition of the product, which caused the interface meter probe to become coated and unable to detect the water beneath the apparent product column.

Three (3) water samples were collected from the monitoring wells and dewatering sump and sent to the laboratory for BTEXN, TAME, MTBE, PAH and TPH C6-C36 GC-MS analysis during each sampling event. One (1) LNAPL sample was collected from MW103 for forensic fuel analysis during each sampling event. The groundwater analytical results indicated that, targeted hydrocarbon compounds were BRL in the groundwater samples from MW101, MW102, and BH1 during both sampling events. However, trace concentrations of GRO C₇-C₉ were detected in BH1 during March 2024 sampling event, which then decreased to BRL during the subsequent event in October 2024.

The LNAPL sample collected from MW103 in March and October 2024, showed compound compositions that ranged from TPH C₁₀ right thorough to C₄₀ and even beyond. Due to this thick black colour and confirmation of compositional characteristics, the sample found at MW103 was consistent with heavy fuel or marine fuel oil and was unrelated to present day service station operational activities, while most likely forming part of historical impacts associated with previous dock yard land use in the area.

5 FIELDWORK ACTIVITIES

This section provides a brief discussion of activities conducted by GPT during the site assessment. The first monitoring event was conducted on 14 April 2025, and the second event was conducted on 10 and 17 October 2025.

5.1 Vapour survey within accessible utility manholes

Utility surveys were conducted in April and October 2025, to measure the possible presence of vapours in all accessible underground utilities and third-party services. Results for the surveys conducted are presented in Table 1. Vapour phase VOC concentrations ranged between 0 and 11 ppm in April 2025, and between 0 and 19 ppm in October 2025. LEL readings yielded 0%, indicating that the explosion risk was low at the time of measurement in April and October 2025. A site map with all accessible underground utilities and third party services are presented in Figure 1.

Table 1: VOC's, LEL & O₂ survey results (April and October 2025).

Utility point	14-Apr-25					17-Oct-25				
	VOC (ppm)	LEL (%)	O ₂ (%)	Water (Y/N)	Depth (mbgl)	VOC (ppm)	LEL (%)	O ₂ (%)	Water (Y/N)	Depth (mbgl)
CHVAW-EM1	NM	NM	NM	NM	NM	0	0	20.8	N	NM
CHVAW-SWM1	0.7	0	20.8	Y	0.2	0	0	20.8	N	0.2
CHVAW-SWM2	2	0	20.8	Y	0.3	0	0	20.8	N	0.3
CHVAW-SWM3	1	0	20.8	Y	0.4	0	0	20.8	Y	0.4
CHVAW-SWM3.1	NM	NM	NM	NM	NM	0	0	20.8	Y	NM
CHVAW-SWM4	11	0	20.8	Y	0.4	0.2	0	20.8	Y	0.4
CHVAW-SWM5	11	0	20.8	Y	0.4	0	0	20.8	N	0.4
CHVAW-SEM1	0.2	0	20.8	N	0.8	0	0	20.8	Y	0.8
CHVAWS-SEM2	0.5	0	20.8	N	0.5	0	0	20.8	Y	0.5
CHVAWS-SEM3	7	0	20.8	N	0.7	0	0	20.8	Y	0.7
CHVAWS-SEM4	1	0	20.8	N	1.0	0	0	20.8	Y	1.0
CHVAWS-SEM5	0	0	20.8	N	1.3	0	0	20.8	Y	1.3
CHVAWS-SEM6	0	0	20.8	N	NM	0.2	0	20.8	Y	NM
CHVAWS-SWC1	0.2	0	20.8	Y	NM	0.3	0	20.8	Y	NM
CHVAWS-SWC2	0.3	0	20.8	N	NM	0.6	0	20.8	N	NM
CHVAWS-SWC3	0.4	0	20.8	Y	NM	3.9	0	20.8	Y	NM
CHVAWS-SWC4	0.4	0	20.8	Y	NM	3.8	0	20.8	Y	NM
CHVAWS-SWC5	0.4	0	20.8	Y	NM	19	0	20.8	Y	NM
CHVAWS-SWC6	0.4	0	20.8	Y	NM	14	0	20.8	Y	NM
CHVAWS-SWC7	0.2	0	20.8	Y	NM	0.6	0	20.8	Y	NM
CHVAWS-SWC8	0.2	0	20.8	Y	NM	0.2	0	20.8	Y	NM
CHVAWS-SWC9	1	0	20.8	N	NM	0.4	0	20.8	N	NM
CHVAWS-SWC10	2	0	20.8	Y	NM	0.2	0	20.8	Y	NM
CHVAWS-MAW1	0.1	0	20.8	N	0.6	0	0	20.8	N	0.6
CHVAWS-MAW2	NM	NM	NM	NM	NM	0	0	20.8	N	NM
CHVAWS-TM1	NM	NM	NM	NM	NM	0	0	20.8	N	NM
CHVAWS-TM2	NM	NM	NM	NM	NM	0	0	20.8	N	NM
CHVAWS-TM3	NM	NM	NM	NM	NM	0	0	20.8	N	NM
CHVAWS-TM4	NM	NM	NM	NM	NM	0	0	20.8	N	NM
CHVAWS-UNM1	NM	NM	NM	NM	NM	2	0	20.8	Y	NM
CHVAWS-UNM2	NM	NM	NM	NM	NM	1	0	20.8	Y	NM
NM: Not Measured/ Could Not Measure Electrical Manhole (EM) Stormwater Manhole (SWM) Sewer Manhole (SEM) Stormwater Culvert (SWC) Main Water (MAW) Telkom Manhole(TM) Unknown Manhole (UNM)										

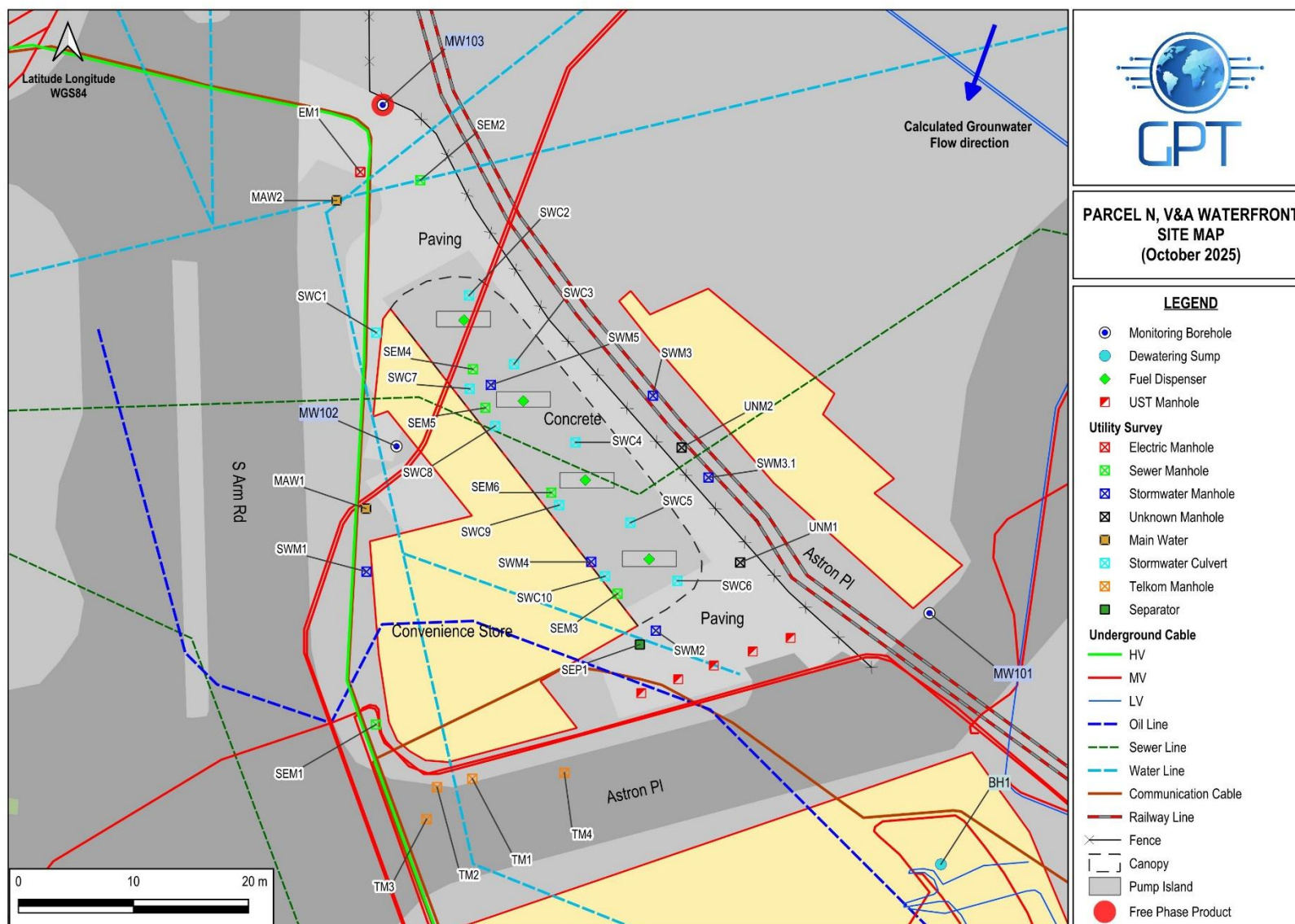


Figure 1: Site map showing underground utilities and third party services.

5.2 Groundwater & LNAPL Sampling Field Measurements

The monitoring network consists of three (3) on- and off-site monitoring wells (MW101, MW102 and MW103) and one (1) off-site dewatering sump (BH1). The location of the monitoring points are presented in Figure 2.

Groundwater sampling of the monitoring wells, and dewatering sump was conducted on 14 April and 10 October 2025. The field parameters measured during the sampling events is presented in Table 2. Field observations during the groundwater sampling found water to be clear and light brown with rotten egg smell in MW102. The depth to groundwater level was measured to lie between 7.19 and 8.02 mbgl in April 2025, and between 7.80 and 8.72 in October 2025. LNAPL with an apparent thickness of 3.20 and 2.40 m was detected in MW103 during the April and October 2025 sampling event, respectively.

The groundwater flow was calculated to be towards a south westerly direction based on the current SWL measurements and it remains constant throughout the dry and wet season. During both of the sampling events, pH was measured to range between 7.22 and 7.74, indicating neutral groundwater. EC values ranged between 20 and 1575 uS/cm. ORP was measured to range from -113 to 170 mv, indicating reducing and oxidising conditions.

A total of eight (8) groundwater samples were collected in April and October 2025 sampling event, comprising three (3) groundwater samples and one (1) duplicate sample per event for quality assurance and quality control (QA/QC) purposes. All groundwater samples were submitted to a SANAS accredited laboratory for BTEXN, TAME, MTBE, and TPH C7-C36 analysis. In addition, one (1) LNAPL sample was collected from MW103 in April 2025 and submitted to the laboratory for forensic analysis.

Table 2: Field parameters measured in April and October 2025.

Well ID	Task Performed	SWL (mbgl)	LNAPL (m)	pH	EC (uS/cm)	ORP (mV)	Sample Description
14-Apr-25							
CHVAW-BH1	Sample only	NM	None	7.61	20	11	Clear and odourless
CHVAW-MW101	Gauge and sample	8.02	None	7.34	906	-16	Light brown and odourless
CHVAW-MW102	Gauge and sample	7.19	None	7.22	1575	-15	Light brown with rotten egg odour
CHVAW-MW103	Gauge and sample	7.67	3.20	Not Measured, LNAPL Present			LNAPL present
10-Oct-25							
CHVAW-BH1	Sample only	NM	None	7.74	1526	170	Clear and odourless
CHVAW-MW101	Gauge and sample	8.04	None	7.41	614	-50	Clear and odourless
CHVAW-MW102	Gauge and sample	8.72	None	7.72	408	-113	Light brown with rotten egg odour
CHVAW-MW103	Gauge and sample	7.80	2.40	Not Measured, LNAPL Present			LNAPL present
NM: Not Measured							

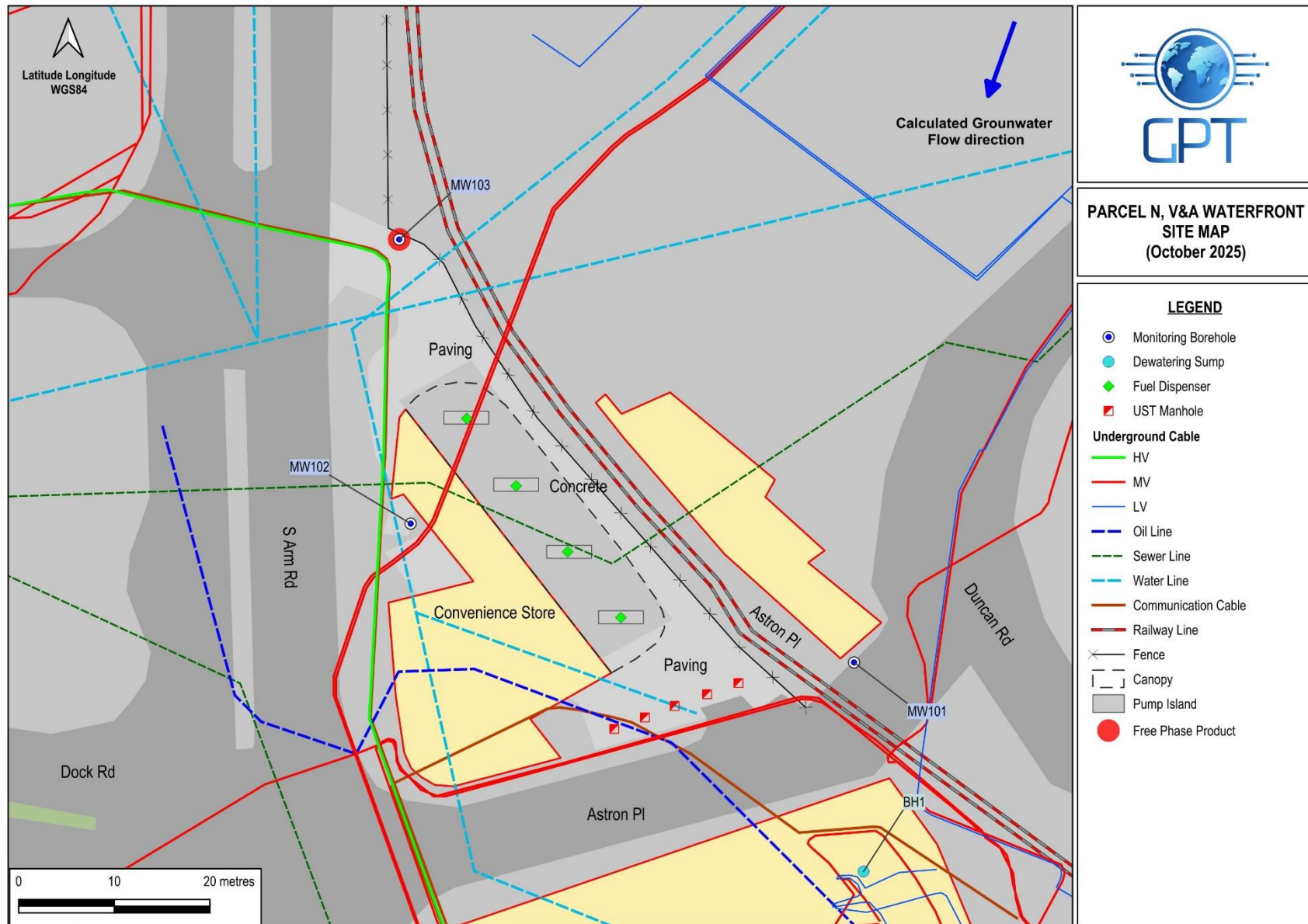


Figure 2: Site map showing groundwater monitoring wells and dewatering sump locations.

6 RESULTS OF PETROLEUM HYDROCARBON ANALYSIS

The groundwater and LNAPL laboratory analytical results are summarised in the sections below, while the laboratory certificates are attached under Appendix III.

6.1 Groundwater Analytical Results

The groundwater laboratory results presented in Table 3 and Figure 3 indicate that the targeted hydrocarbon compounds were below the laboratory reportable limit (BRL) in all the collected water samples during both sampling events in April and October 2025. Dissolved phase and LNAPL trend analysis is discussed in Section 6.3.

Table 3: Time-series laboratory analytical results (µg/l).

Well ID	SWL	LNAPL	MTBE	TAME	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Total BTEX	C7-9	C10-14	C10-36	C15-36
CHVAWBH1														
11-Oct-23	NM	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
25-Mar-24	NM	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	19.00	BRL	BRL	BRL
18-Oct-24	NM	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
14-Apr-25	NM	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
10-Oct-25	NM	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
CHVAMW101														
11-Oct-23	8.04	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
25-Mar-24	7.99	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
18-Oct-24	7.41	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
14-Apr-25	8.02	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
10-Oct-25	8.04	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
CHVAMW102														
11-Oct-23	8.72	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
25-Mar-24	8.65	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
18-Oct-24	4.16	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
14-Apr-25	7.19	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
10-Oct-25	8.72	None	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL
CHVAMW103														
11-Oct-23	5.17	Sheen	BRL	BRL	BRL	BRL	BRL	BRL	BRL	BRL	11.00	28000	288000	260000
25-Mar-24	NM	NM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18-Oct-24	NM	NM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14-Apr-25	7.67	3.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10-Oct-25	7.80	2.40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
All results are in ug/l BRL: Below Reportable Level NM: Not Measured/Could Not Be Measured NA: Not Analysed														

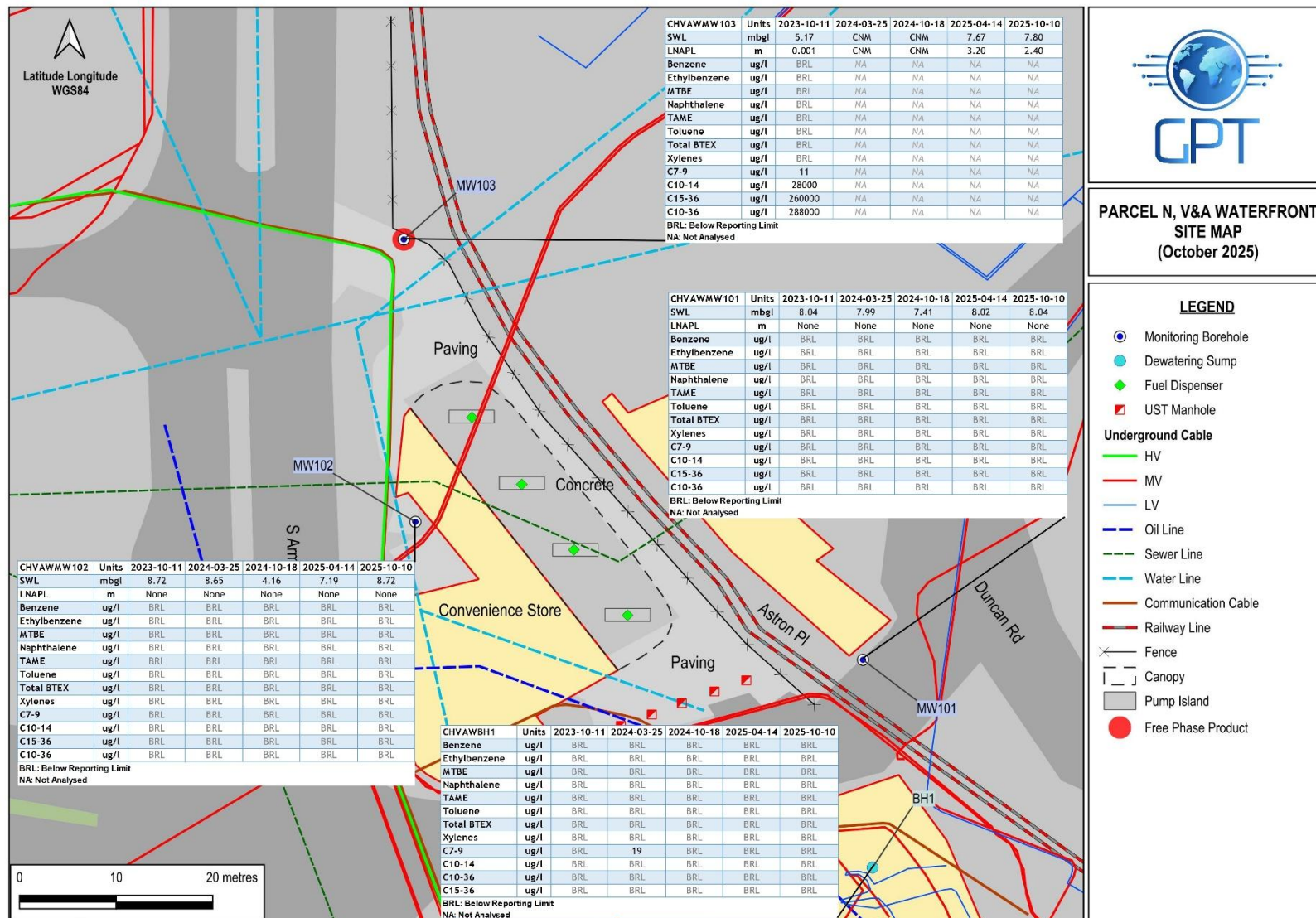


Figure 3: Site map showing current and historic laboratory results (2023 to 2025)

6.2 LNAPL laboratory results

LNAPL with an apparent thickness of 3.20 and 2.40 m was detected in MW103 during the April and October 2025 sampling event, respectively. One (1) LNAPL sample was collected from MW103 in April 2025 and submitted to the laboratory for forensic analysis.

The forensic analysis results showed compound compositions that ranged from TPH C₁₀ to C₄₀ and even beyond. Due to this thick black colour and confirmation of compositional characteristics, the sample found at MW103 is consistent with heavy fuel or marine fuel oil and is unrelated to present day service station operational activities (refer to Figure 4), while most likely forming part of historical impacts associated with previous dock yard land use in the area. The forensic analysis results are presented in Table 4 and Figure 4, with laboratory certificates attached in Appendix III.

Table 4: LNAPL laboratory results (2024 and 2025)

Well ID	MTBE	TAME	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	C6-10	C10-28	C28-40
CHVAWMW103										
2024-03-25	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	200000	120000
2024-10-18	NA	NA	NA	NA	NA	NA	NA	NA	12000	5800
2025-04-14	NA	NA	NA	NA	NA	NA	NA	NA	340000	140000
All results are in ug/l BRL: Below Reportable Limit NA: Not Analysed										

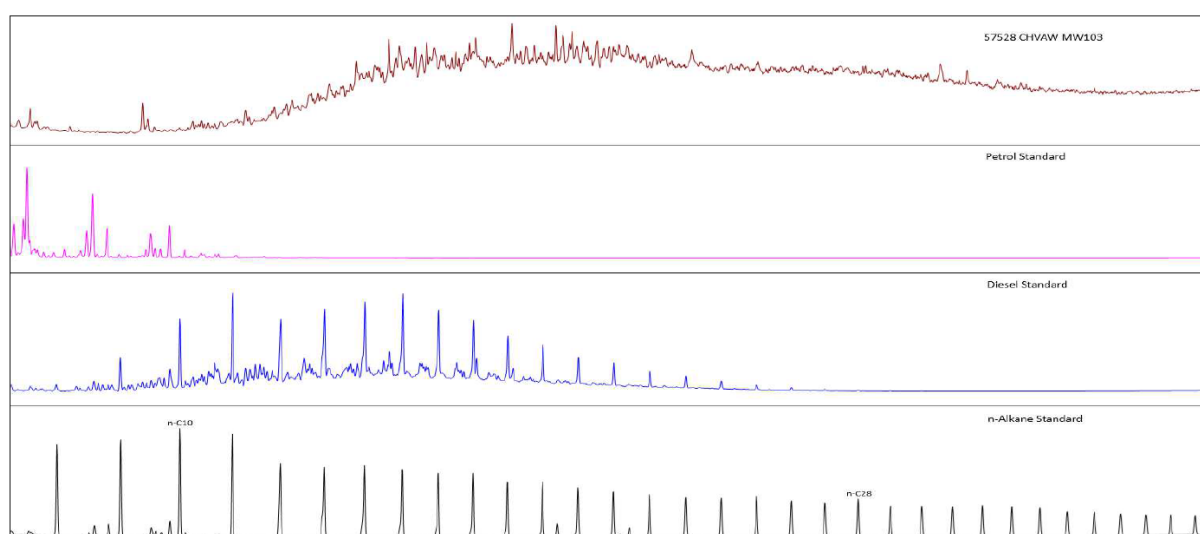


Figure 4: Chromatogram of MW103 against Petrol, Diesel, and n-Alkane Standards (April 2025)

6.3 LNAPL and Dissolved Phase Concentration Trend Analysis

The dissolved concentrations and LNAPL detected at V & A Waterfront were plotted against SWL and displayed over time in Figure 5 (BH1) and Figure 6 (MW103). The historic results are presented in Table 3. MW101 and MW102 have reported concentration BRL since the sampling started in 2023, therefore no trend graphs were created for these wells. The following is noted regarding the graphs:

- The targeted hydrocarbon compounds have been reported BRL since October 2024 in BH1. Concentrations of GRO C₇-C₉ (19 µg/l) were detected in March 2024, which then decrease to BRL during the subsequent events.
- LNAPL was detected in MW103 in 2024. However, the thickness could not be measured in due to the thick composition of the product, which caused the interface meter probe to become

coated and unable to detect the water beneath the apparent product column. LNAPL with an apparent thickness of 3.20 and 2.40 m was detected in MW103 during the April and October 2025 sampling event, respectively

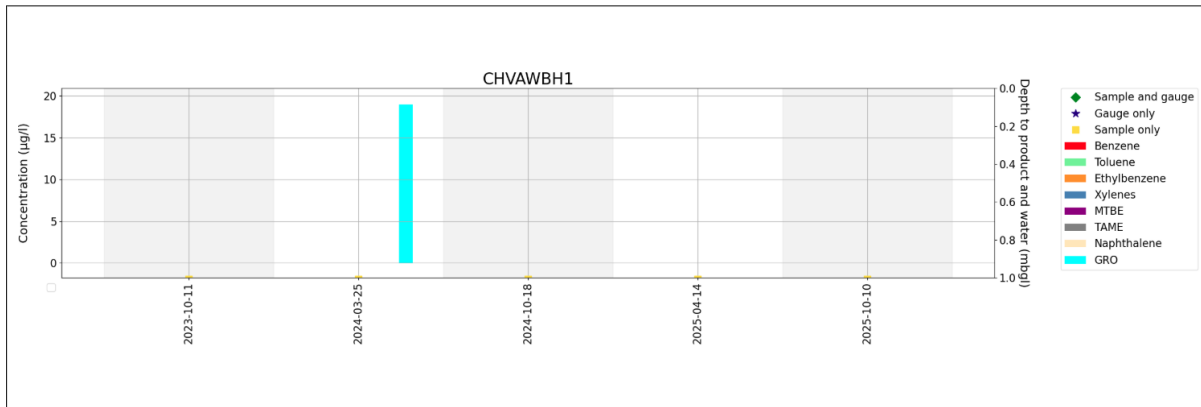


Figure 5: GRO and DRO trend analysis for BH1.

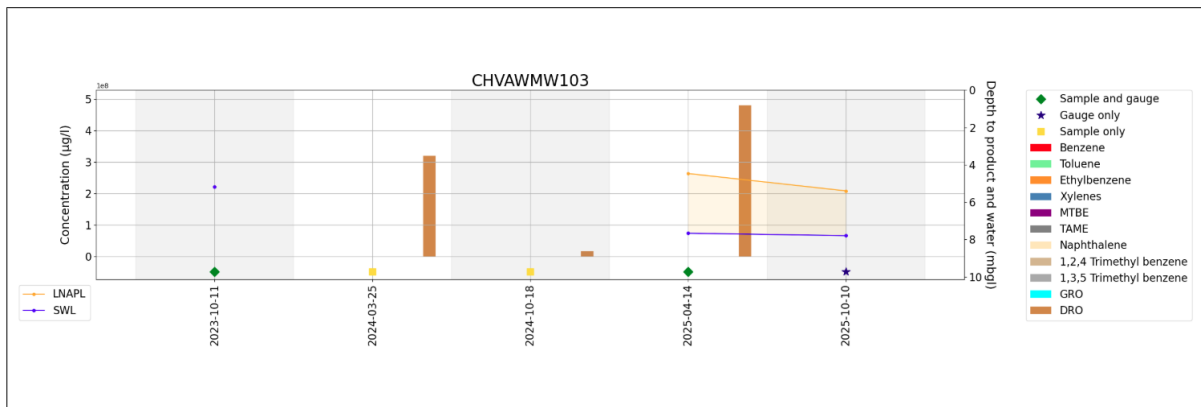


Figure 6: LNAPL and DRO trend analysis for MW103.

6.4 Data Quality Assurance/Quality Control

For QA/QC purposes, duplicate samples, MWDUP, were taken sequentially with water samples from MW102 and MW101 in April and October 2025, respectively. The collected samples were submitted to the laboratory for BTEXN, TAME, MTBE, and TPH C7-C36 analysis. The relative percentage difference (RPD) between two numbers is the difference between them expressed as a percentage of their mean. It is often used as a quantitative indicator of quality assurance and quality control for repeated measurements where the outcome is expected to be the same. A 0% is therefore the ideal, meaning the two values are equal. The following formula is used to calculate the RPD:

$$\% \text{ Diff} = \left| \frac{x_1 - x_2}{(x_1 + x_2)/2} \right| \times 100$$

With reference to the calculated Relative Percentage Difference (RPD) shown in Table 5, laboratory consistency was achieved in the duplicate samples, given the RPD of 0% for all the compounds.

Table 5: Relative Percentage Difference (April and October 2025).

Sample ID	Apr-25			Oct-25		
	MW102	MWDUP	RPD	MW101	MWDUP	RPD
MTBE	0	0	0%	0	0	0%
TAME	0	0	0%	0	0	0%
Benzene	0	0	0%	0.0	0	0%
Toluene	0	0	0%	0	0	0%
Ethylbenzene	0	0	0%	0	0	0%
Xylenes	0	0	0%	0	0	0%
Naphthalene	0	0	0%	0	0	0%
Total BTEX	0	0	0%	0	0	0%
TPH C ₇ -C ₉	0	0	0%	0	0	0%
TPH C ₁₀ -C ₁₄	0	0	0%	0	0	0%
TPH C ₁₅ -C ₃₆	0	0	0%	0	0	0%
TPH C ₁₀ -C ₃₆	0	0	0%	0	0	0%
April 25 Average RPD			0%	Oct 25 Average RPD		0%
All concentrations in ug/l						

7 SUMMARY AND CONCLUSIONS

Site Characterisation:

- **Geology:** According to the 1: 250 000 Geological map series of the Republic of South Africa, as well as the field observations made during the drilling of the groundwater monitoring wells, the region is underlain by the Tygerberg Formation of the Malmesbury Group, comprised of graywacke, phyllite and quartzitic sandstone, interbedded lava and tuff. This is confirmed by fieldwork observations during drilling, which found weathered graywacke from as shallow as 0.5 mbgl. Localised backfill was also found, specifically in MW101.
- **Hydrogeology:** According to the 1: 500 000 Hydrogeological map of Cape Town (3317), the main water-bearing strata in the area is an intergranular and fractured aquifer with typical borehole yields between 0.1-0.5 L/s. The groundwater quality is thought to have low electrical conductivity ranging between 28.70 - 64.60 $\mu\text{S}/\text{cm}$. The aquifer is classified as a major aquifer on a regional scale, most vulnerable and high susceptibility (Aquifer Classification of South Africa, DWAf, 1999). The local drilling indicated a low yielding fractured aquifer that is not a major aquifer.
- **Bail tests** were conducted in 2023 on the monitoring wells, and the geometric mean of the hydraulic conductivity was calculated to be 0.187 m/day. The average local groundwater flow velocity was calculated to be 0.077 m/year in the absence of preferred flow pathways.
- **Topography and drainage:** The site is located at an altitude of approximately 4.5 mamsl with a slight gradient of 0.01 in an east south-easterly direction. The nearest surface water body which lies approximately 250 m of the site is the Waterfront harbour which is part of Table Bay. There is a canal upstream (using the topographic gradient) from the site about 100 m away. The groundwater flow was calculated to be towards a south westerly direction and based on the current static water level (SWL) measurements, it remains constant throughout the dry and wet season.
- The site is surrounded by a mix of industrial, commercial and also some residential properties which is common to this mixed-use land redevelopment found in the V&A Waterfront Precinct.
- Hydrocensus was previously conducted in 2023 within a 300 m radius around the site. There is an adjacent dewatering sump (BH1) located south of the site (Investec property) installed

to keep the underground parking dry and the water is pumped to the storm water. The National Groundwater Archive (NGA) showed two production boreholes within 750 m radius cross-gradient of the site.

- Monitoring network: consists of three (3) on- and off-site monitoring wells (MW101, MW102 and MW103) and one (1) off-site dewatering sump (BH1). No tank monitoring wells with water exist on-site.

Fieldwork Activities:

- Utility surveys were conducted in April and October 2025, to measure the possible presence of vapours in all accessible underground utilities and third-party services. Vapour phase volatile organic compound (VOC) concentrations ranged between 0 and 11 ppm in April 2025, and between 0 and 19 ppm in October 2025. Lower explosive limit (LEL) readings yielded 0%, indicating that the explosion risk was low at the time of measurement in April and October 2025.
- The depth to groundwater level was measured to lie between 7.19 and 8.02 mbgl in April 2025, and between 7.80 and 8.72 in October 2025. LNAPL with an apparent thickness of 3.20 and 2.40 m was detected in MW103 during the April and October 2025 sampling event, respectively.
- A total of eight (8) groundwater samples, comprising three (3) groundwater and one duplicate samples for quality assurance/control (QA/QC) purposes were collected in April and October 2025 and submitted to a SANAS accredited laboratory for BTEXN, TAME, MTBE, and TPH C7-C36 analysis. One (1) LNAPL sample was collected from MW103 in April 2025 and submitted to the laboratory for forensic analysis.

Laboratory Results:

- Groundwater results: analytical results indicated that the targeted hydrocarbon compounds were below the laboratory reportable limit (BRL) in all the collected water samples during both sampling events in April and October 2025.
- LNAPL results: The LNAPL sample collected from MW103 in April 2025, showed compound compositions that ranged from TPH C₁₀ to C₄₀ and even beyond. Due to this thick black colour and confirmation of compositional characteristics, the sample found at MW103 is consistent with heavy fuel or marine fuel oil and is unrelated to present day service station operational activities, while most likely forming part of historical impacts associated with previous dock yard land use in the area.
- Dissolved concentration and LNAPL trend analysis: MW101 and MW102 have reported concentration BRL since the sampling started in 2023. In March 2024, concentrations of GRO C₇-C₉ (19 µg/l) were detected in BH1, which then decreased to BRL during the subsequent events. LNAPL was detected in MW103 in March and October 2024. However, the thickness could not be measured in 2024 due to the thick composition of the product, which caused the interface meter probe to become coated and unable to detect the water beneath the apparent product column. LNAPL with an apparent thickness of 3.20 and 2.40 m was detected in MW103 during the April and October 2025 sampling event, respectively.

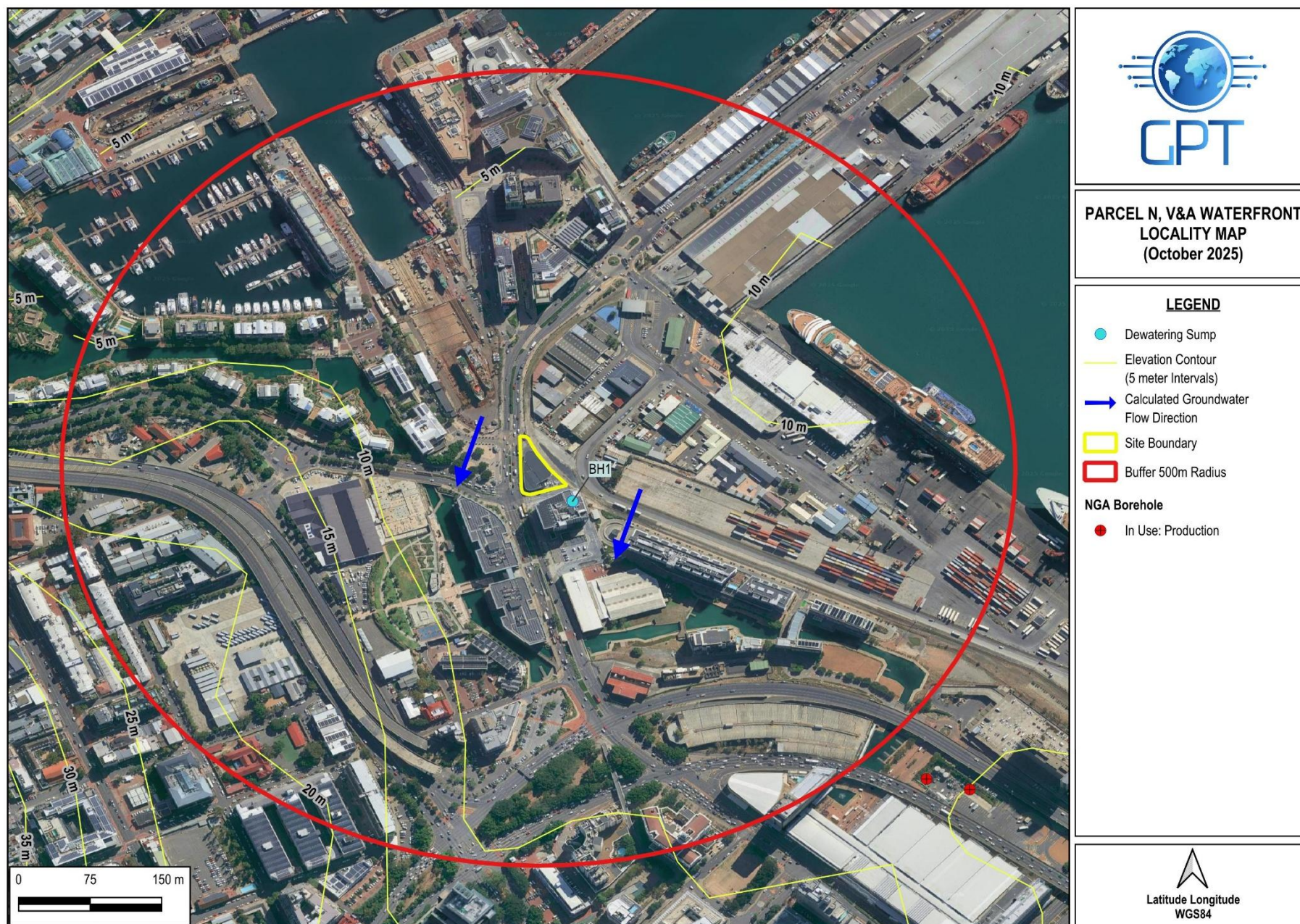
8 DISCLAIMER

This report prescribes to a predetermined scope of investigation as set out in the contract between Geo Pollution Technologies and Astron Energy. The information contained in this report pertains exclusively to the areas investigated/sampled and cannot be used to infer environmental conditions beyond the areas investigated as set out in the Scope of Work. This report does not constitute legal advice. Most historical and operational information is gathered during interviews with site operators and responsible personnel. None of this information has been verified by other means and should not be regarded as absolute fact.

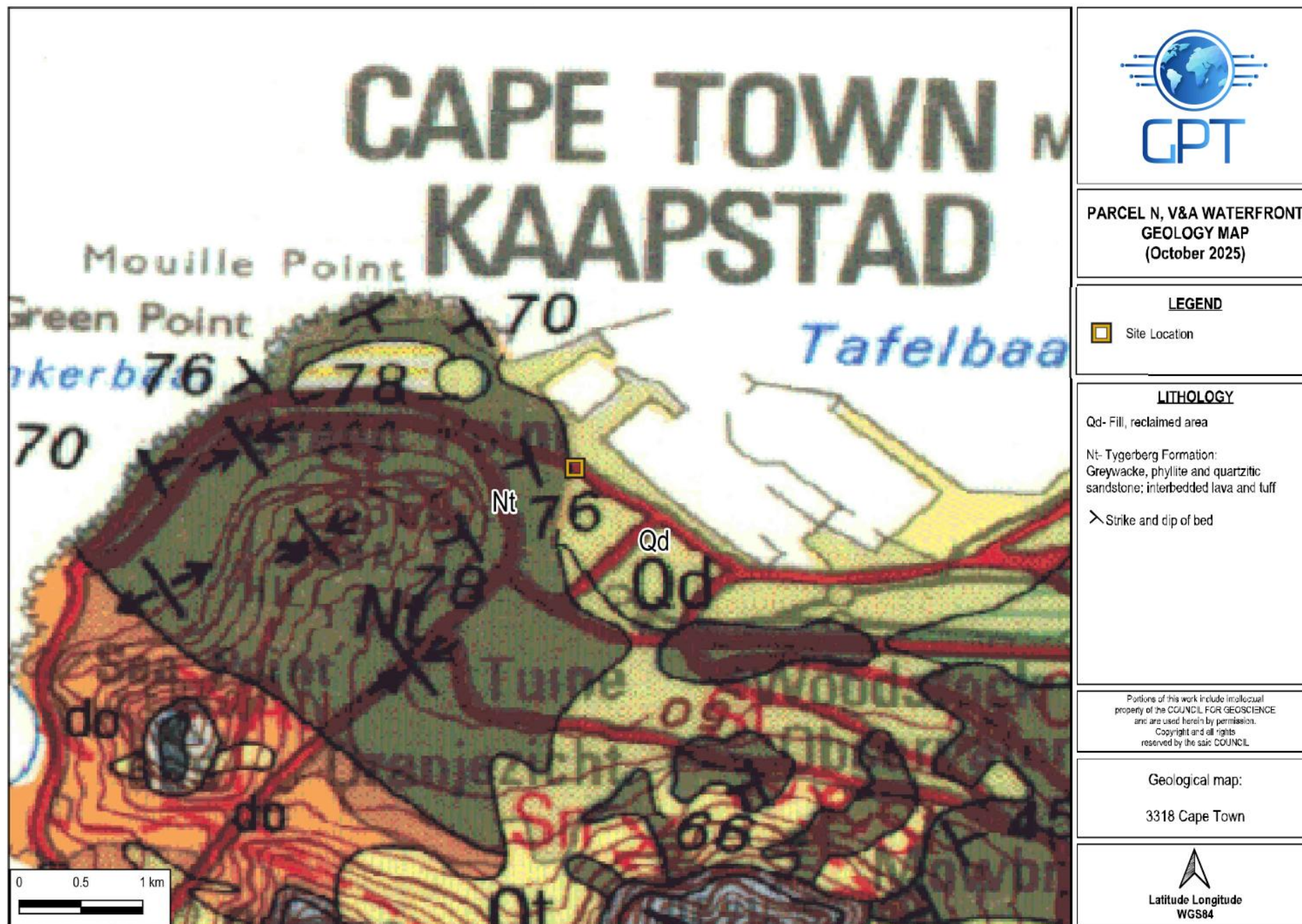
9 REFERENCES

- (1) 1:250 000 scale published Geological Maps of The Republic of South Africa.
- (2) 1:50 000 scale published Topographical Maps prepared by the Chief Directorate: Surveys and Mapping.
- (3) 1:500 000 scale Hydrogeological Map Series of the Republic of South Africa, DWAF.
- (4) Department of Environmental Affairs, 2008: *National Environmental Management Act: Waste Act* (Act 59 of 2008).
- (5) Phase 2 Assessment Report for V&A Waterfront by GPT (Ref No: CHVAW/23/11540 dated November 2023)
- (6) 2024 Biannual Groundwater Monitoring Report for V&A Waterfront by GPT (Ref No: CHVAW/24/12131 dated February 2025)

APPENDIX I: Map







APPENDIX II: Photos

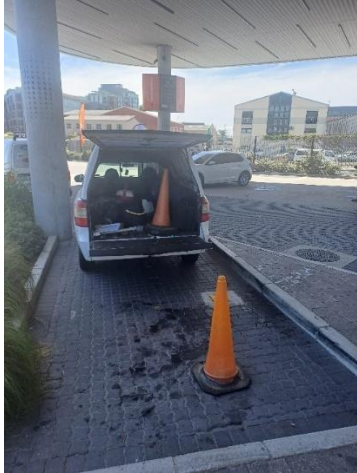


Photo 1: MW102 sampling location.



Photo 2: MW103 sampling location.

Appendix III: Laboratory Certificates & Field Forms

Water	Tier 1 RBSL GW Ingestion - Residential	Tier 1 RBSL GW Ingestion - Commercial	Tier 1 RBSL Indoor Air - Residential	Tier 1 RBSL Indoor Air - Commercial	Tier 1 RBSL Outdoor Air - Residential	Tier 1 RBSL Outdoor Air - Commercial
Benzene - Carcinogenic	0.002	0.099	0.066	4.757	26.265	573.630
Benzene - Hazard	0.031	0.409	2.450	39.452	970.823	>Sol
Toluene	1.564	20.440	27.685	445.730	>Sol	>Sol
Ethylbenzene	0.782	10.220	72.406	>Sol	>Sol	>Sol
Xylenes	1.564	20.440	8.147	131.171	>Sol	>Sol
MTBE	6.726	87.892	2418.946	38944.619	>Sol	>Sol
TAME	ND	ND	ND	ND	ND	ND
Naphthalene	0.156	2.044	2.993	>Sol	>Sol	>Sol
1,2,4 Trimethylbenzene	0.013	0.174	ND	ND	ND	ND
1,3,5 Trimethylbenzene	0.013	0.174	ND	ND	ND	ND
Acenaphthene	0.469	>Sol	>Sol	>Sol	>Sol	>Sol
Acenaphthylene	ND	ND	ND	ND	ND	ND
Fluorene	0.313	>Sol	>Sol	>Sol	>Sol	>Sol
Phenanthrene	ND	ND	ND	ND	ND	ND
Anthracene	>Sol	>Sol	>Sol	>Sol	>Sol	>Sol
Fluoranthene	>Sol	>Sol	>Sol	>Sol	>Sol	>Sol
Pyrene	>Sol	>Sol	>Sol	>Sol	>Sol	>Sol
TPH C ₈ -C ₁₀	>Sol	>Sol	0.239	>Sol	>Sol	>Sol
TPH C ₁₀ -C ₁₂	>Sol	>Sol	>Sol	>Sol	>Sol	>Sol
TPH C ₁₂ -C ₁₆	>Sol	>Sol	>Sol	>Sol	>Sol	>Sol
TPH C ₁₆ -C ₂₀	>Sol	>Sol				

Values in mg/ℓ

Range of Porosity Values	
Soil Type	Total Porosity, p_t
Unconsolidated Deposits	
• Gravel	0.25 - 0.40
• Sand	0.25 - 0.50
• Silt	0.35 - 0.50
• Clay	0.40 - 0.70
Rocks Sediments	
• Fractured Basalt	0.05 - 0.50
• Limestone	0.05 - 0.20
• Sandstone	0.05 - 0.30
• Shale	0.00 - 0.10
• Gabbro	0.40 - 0.45
• Dense Crystalline Rock	0.00 - 0.05
• Fractured Crystalline Rock	0.00 - 0.10
Source: Freeze and Cherry (1979).	

TEST REPORT

57528A

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Lindie Hassan

Tel: (021) 403 7027

Email: Lindie.Hassan@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAW BH1

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/04/16

Date Analysed: 2025/04/16

Date Issued: 2025/04/25

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Jan-Daniël Vorster
Authorised Signatory

TEST REPORT

57528A

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Lindie Hassan

Tel: (021) 403 7027

Email: Lindie.Hassan@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAW DUP

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/04/16

Date Analysed: 2025/04/16

Date Issued: 2025/04/25

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Jan-Daniël Vorster
Authorised Signatory

TEST REPORT

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

57528A

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Lindie Hassan

Tel: (021) 403 7027

Email: Lindie.Hassan@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAW MW101

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/04/16

Date Analysed: 2025/04/16

Date Issued: 2025/04/25

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Jan-Daniël Vorster
 Authorised Signatory

Page 3 of 4

TEST REPORT

57528A

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Lindie Hassan

Tel: (021) 403 7027

Email: Lindie.Hassan@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAW MW102

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/04/16

Date Analysed: 2025/04/16

Date Issued: 2025/04/25

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Jan-Daniël Vorster
Authorised Signatory

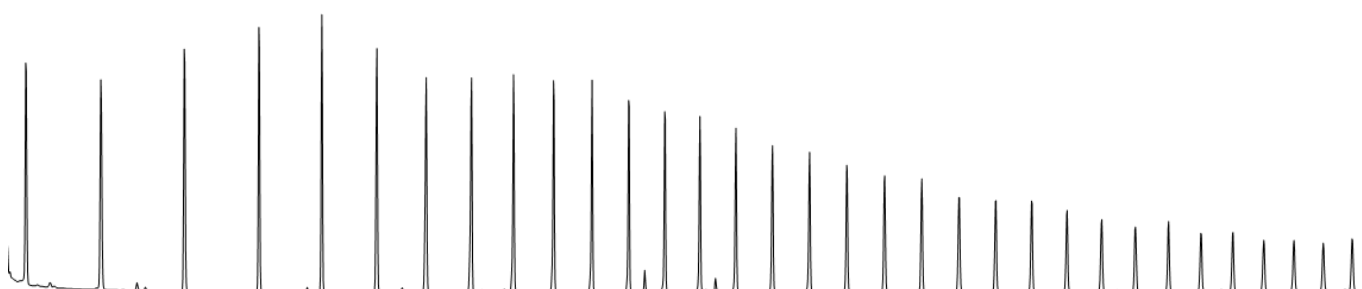
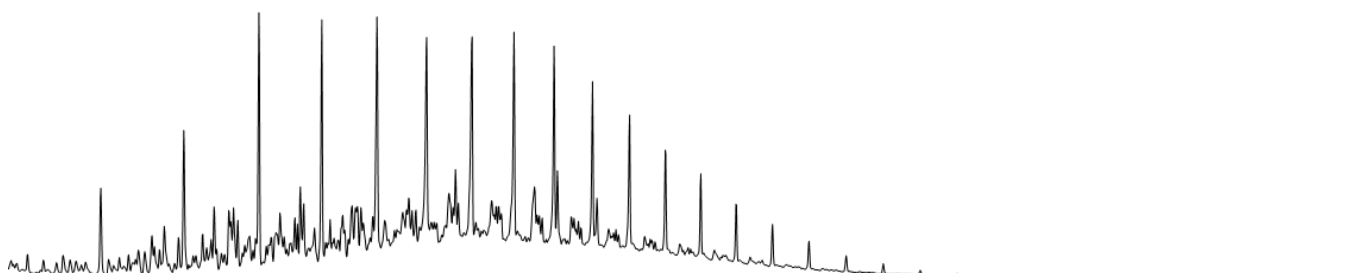
Lab Nr: 57528

Client Information

Client: Astron Energy (Pty) Ltd
Address: PO Box 714
Cape Town
8000

Attention: Lindie Hassan
Tel: 021 403 7027
Email: lindie.hassan
@astronenergy.co.za

Project Name: V&A Waterfront
Project Number: N/A
Date Received: 2025/04/16
Date Analysed: 2025/04/23
Date Reported: 2025/05/06



Environmental Pollution Laboratory (Pty) Ltd

13 Sovereign Drive | Route 21 Corporate Park | Irene | 0178

Company Reg No: 2007/001896/07 | VAT No: 4340243221

T: +27 12 345 1004 | F: +27 86 762 3461 | C: +27 82 534 8321

Web: www.epl.co.za

LNAPL

Sample Name	57528 CHVAW MW103 (Chromatogram A)	
Compound	Concentration	Unit
MTBE	Not analysed	mg/liter
TAME	Not analysed	mg/liter
Benzene	Not analysed	mg/liter
Toluene	Not analysed	mg/liter
Ethylbenzene	Not analysed	mg/liter
m+p-Xylene	Not analysed	mg/liter
o-Xylene	Not analysed	mg/liter
1,3,5-Trimethylbenzene	Not analysed	mg/liter
1,2,4-Trimethylbenzene	Not analysed	mg/liter
Naphthalene	Not analysed	mg/liter
C6-10	Not analysed	mg/liter
C10-28***	340000	mg/liter
C28-40***	140000	mg/liter
Age Analysis**	Not analysed	years
Density	Not analysed	(g/cm3)
Fuel Type*	Unknown	
Comments	Chromatogram A: Hydrocarbon pattern present from n-C9 and beyond n-C40	
	Chromatogram B: Elevated hydrocarbon pattern present beyond n-C40 not accounted for.	
	Picture A: X10 sample dilution in solvent	

* Note: Find chromatograms attached in appendix

** Note: The age analysis only indicates the approximate age of the diesel present in the sample, assuming environmental conditions as specified by the method.

*** Note: The values reported are semi-quantitative.

Analyst

Duan van der Westhuizen
Divisional Chemist

Technical Signatory

Reinardt Cromhout
Laboratory Manager

Environmental Pollution Laboratory (Pty) Ltd

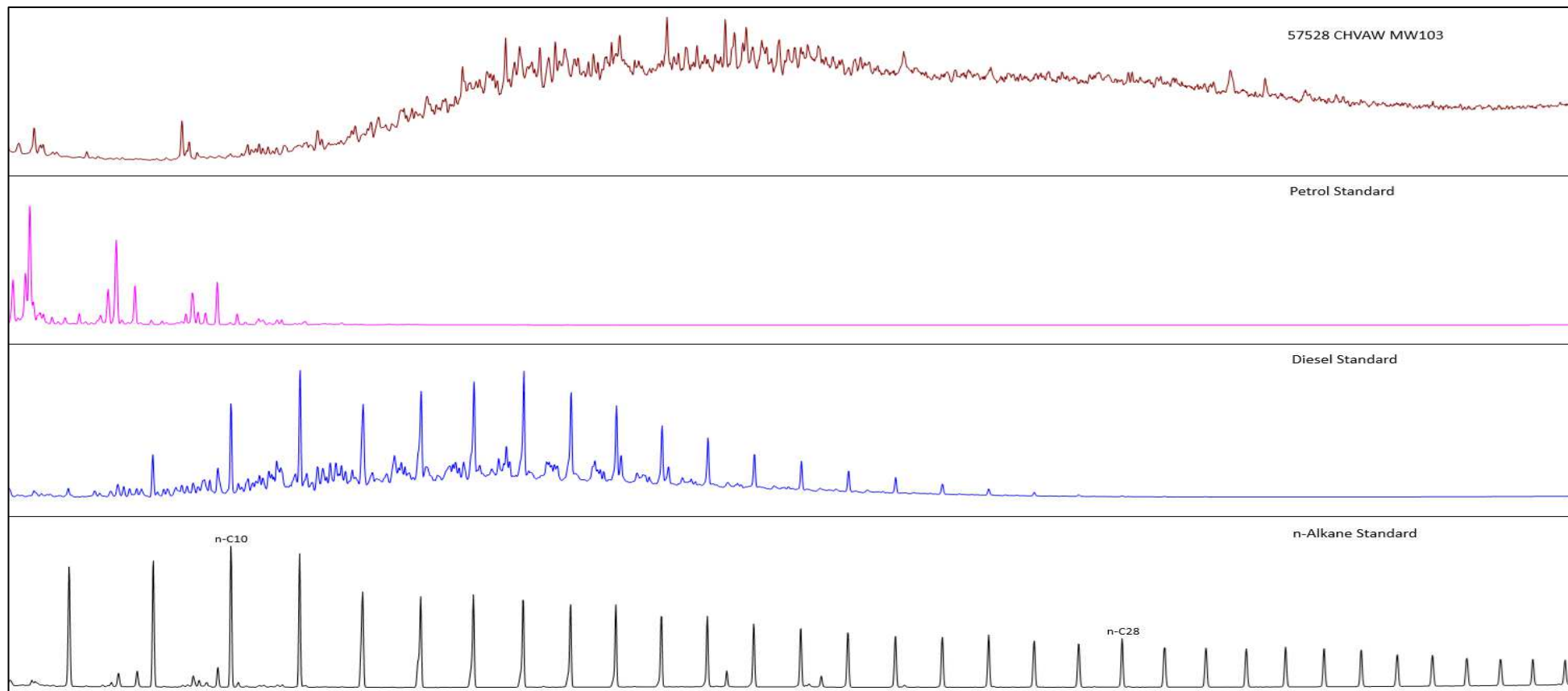
13 Sovereign Drive | Route 21 Corporate Park | Irene | 0178

Company Reg No: 2007/001896/07 | VAT No: 4340243221

T: +27 12 345 1004 | F: +27 86 762 3461 | C: +27 82 534 8321

Web: www.epl.co.za

All Chromatograms were generated using GC-MS or GC-FID



Chromatogram A: Chromatogram of 57528 CHVAW MW103, Petrol Standard, Diesel Standard and n-Alkane Standard.

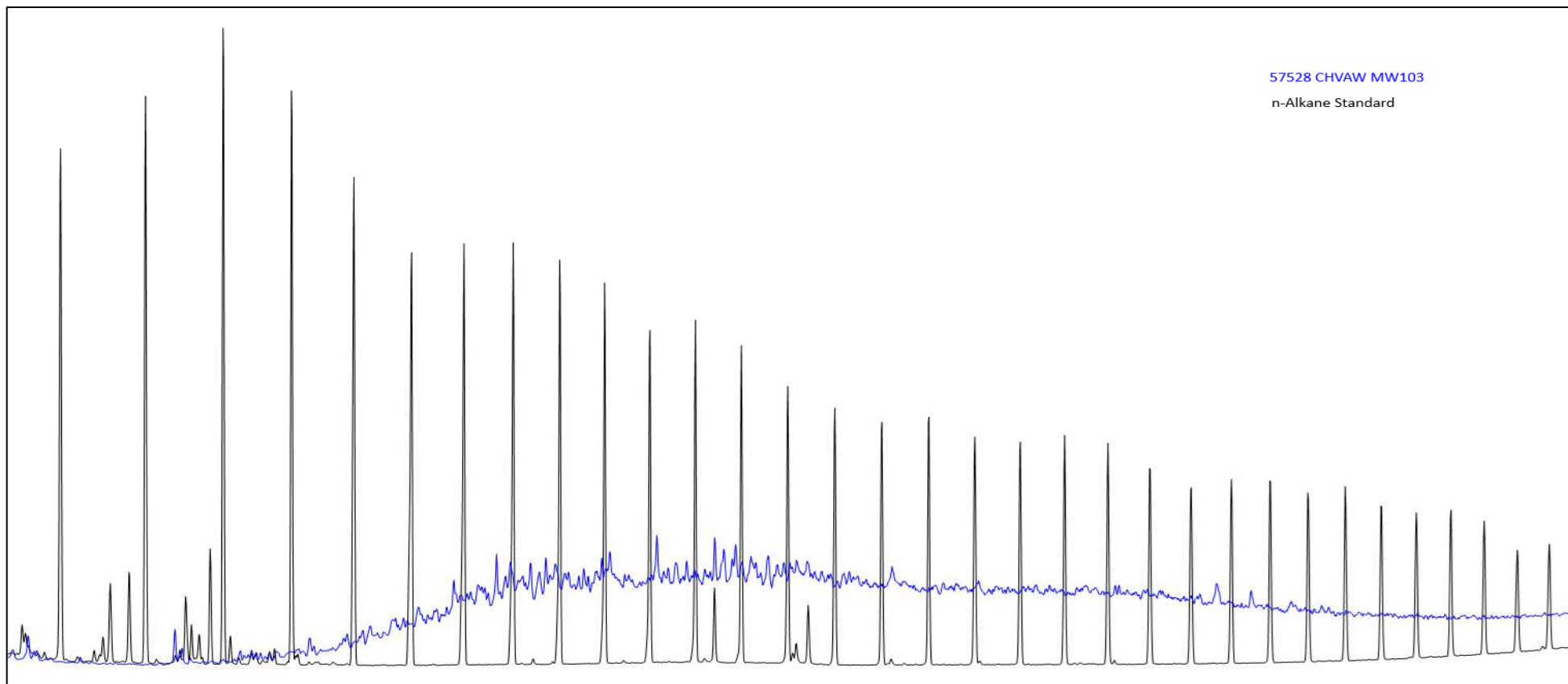
Environmental Pollution Laboratory (Pty) Ltd

13 Sovereign Drive | Route 21 Corporate Park | Irene | 0178

Company Reg No: 2007/001896/07 | VAT No: 4340243221

T: +27 12 345 1004 | F: +27 86 762 3461 | C: +27 82 534 8321

Web: www.epl.co.za



Chromatogram B: Chromatogram of 57528 CHVAW MW103 and n-Alkane Standard.

Environmental Pollution Laboratory (Pty) Ltd

13 Sovereign Drive | Route 21 Corporate Park | Irene | 0178

Company Reg No: 2007/001896/07 | VAT No: 4340243221

T: +27 12 345 1004 | F: +27 86 762 3461 | C: +27 82 534 8321

Web: www.epl.co.za



Picture A: X10 sample dilution in solvent.

Environmental Pollution Laboratory (Pty) Ltd

13 Sovereign Drive | Route 21 Corporate Park | Irene | 0178

Company Reg No: 2007/001896/07 | VAT No: 4340243221

T: +27 12 345 1004 | F: +27 86 762 3461 | C: +27 82 534 8321

Web: www.epl.co.za

TEST REPORT

61430A

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Jody Fredericks

Tel: (021) 403-7027

Email: Jody.Fredericks@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAWBH1

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/10/15

Date Analysed: 2025/10/15

Date Issued: 2025/10/21

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Reinardt Cromhout
Authorised Signatory

Page 1 of 4

TEST REPORT

61430A

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Jody Fredericks

Tel: (021) 403-7027

Email: Jody.Fredericks@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAWMW101

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/10/15

Date Analysed: 2025/10/15

Date Issued: 2025/10/21

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Reinardt Cromhout
 Authorised Signatory

TEST REPORT

61430A

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Jody Fredericks

Tel: (021) 403-7027

Email: Jody.Fredericks@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAWMW102

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/10/15

Date Analysed: 2025/10/15

Date Issued: 2025/10/21

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Reinardt Cromhout
 Authorised Signatory

TEST REPORT

61430A

Test Description BTEXMN/Gasoline Range Organics and Total Petroleum Hydrocarbons

Test Method: EPL-T-012 (BTEX/GRO) and EPL-T-011(TPH)

Client and Project Information

Client: Astron Energy (Pty) Ltd

Address: PO Box 714

Cape Town

8000

Attention: Jody Fredericks

Tel: (021) 403-7027

Email: Jody.Fredericks@astronenergy.co.za

Project number: N/A

Project name: V&A Waterfront

Sample Information

Sample ID: CHVAWMWDUP

Dilutions: BTEX/GRO = No Dilution, TPH = No Dilution

Container: Glass

Matrix: Water

Storage: Fridge at 0-6°C

Date Received: 2025/10/15

Date Analysed: 2025/10/15

Date Issued: 2025/10/21

BTEXMN and Gasoline Range Organics

<u>PARAMETER</u>	<u>RESULT</u>
MTBE	<5 µg/liter
TAME	<5 µg/liter
Benzene	<0.4 µg/liter
Toluene	<1 µg/liter
Ethylbenzene	<0.4 µg/liter
Xylenes Total	<0.4 µg/liter
Naphthalene	<0.4 µg/liter
BTEX Total **	<0.4 µg/liter
TPH GRO C7-C9	<10 µg/liter

Total Petroleum Hydrocarbon (C10-C36)

<u>PARAMETER</u>	<u>RESULT</u>
TPH C10-C14	<30 µg/liter
TPH C15-C36	<206 µg/liter
TPH C10-C36 Total	<206 µg/liter

Disclaimers

- 1) The results only relate to the test items provided, in the condition as received.
- 2) This report may not be reproduced, except in full, without the prior written approval of the laboratory.
- 3) Parameters marked " * " are not included in the SANAS Schedule of Accreditation for this laboratory.
- 4) Parameter marked " ** " is a summation of Benzene, Toluene, Ethylbenzene and Xylenes.
- 5) A = Concentration outside calibration range, O = Outsourced analysis, UTD = Unable to Determine.
- 6) Uncertainty of measurement for all methods included in the SANAS Schedule of Accreditation is available on request.

Reinardt Cromhout
 Authorised Signatory



Dup taken at mw102 021 449 6478 (Transmet-)



GEO POLLUTION TECHNOLOGIES
SAFETY, HEALTH, ENVIRONMENT AND QUALITY

Title:	Utility Survey Form (PID & LEL)	Doc No., Rev No.:	5.3.3.6, Rev 02
Department:	Organics	Page No.:	Page 1 of 1
Project No.:	CHVAW/25/13176	Logged by:	0 Onke Muzekke
Site name:	V&A Waterfront	Date:	08-Apr-25 14/04/2025
Client:	Astron Energy		

LEL Meter:	9245	PID Mini RAE:	4887	MSA Sirius:		Ecoprobe 5:	
Manhole ID	Time	VOC (ppm)	LEL (%)	Oxygen (%)	Water (Y/N)	Depth to Bottom	
SWM 1	15:54	0.2	0	20.8	N	0.2	
SWM 2	15:56	3.1	0	20.8	N	0.3	
SWM 3	15:58	1.0	0	20.8	N	0.4	
SWM 4	16:00	10.8	0	20.8	Y	0.4	
SWM 5	16:02	10.5	0	20.8	Y	0.4	
SWM 6	16:03	16.6	0	20.8	Y	0.4	
SWM 7	16:05	2.7	0	20.8	Y	0.2	
SWM 8	16:06	1.1	0	20.8	Y	0.2	
SWM 1	16:08	1.2	0	20.8	Y	1.8	
SWM 2	16:10	0.9	0	20.8	Y	1.6	
SEM 1	16:12	0	0	20.8	N	0.8	
SEM 1	16:13	0.2	0	20.8	Y	0.5	
SWM 9	16:14	0.4	0	20.8	N	0.2	
SEM 2	16:15	0.5	0	20.8	N	0.5	
SEM 3	16:17	6.7	0	20.8	N	0.7	
MAW 1	16:18	0.1	0	20.8	N	0.6	
SEM 4	16:20	1.4	0	20.8	N	1.0	
SEM 5	16:21	0	0	20.8	N	1.3	
:							
:							
:							
:							
:							
:							

Legend for Manhole ID's:

Sewer Manhole = SEM

Telkom Manhole = TM

Stormwater Culvert = SWC

Vapour Probe/Pin = VP

Storm Water Manhole = SWM

Filler Point = FP

Separator Manhole = SEP

UST Manhole = UST

Electrical Manhole = EM

Main Water = MAW

Unknown Manhole = UNM

Tank Observation Well = TOW



Project Details:							
Site:	V&A Waterfront	Proj. No:	CHVAW/25/13176	Proj. Manager.:	Onke Mazeke	Client:	Astron Energy

Site Details:				
Site Address:	Sample Date:	Field Team Leader:	Signature:	Site Description:
19 Dock Road V&A Cape Town	10/10/2025	0 Mike Noreke		0

[illegible]

Comments:

N T: Not Taken NM: Not Measured CNM: Could Not Measure



GEO POLLUTION TECHNOLOGIES
SAFETY, HEALTH, ENVIRONMENT AND QUALITY

Title:	Utility Survey Form (PID & LEL)	Doc No., Rev No.:	5.3.3.6, Rev 02
Department:	Organics	Page No.:	Page 1 of 1
Project No.:	CHVAW/25/13176	Logged by:	0 SANDILE & Andrew
Site name:	V&A Waterfront	Date:	08-Apr-25 17-10-25
Client:	Astron Energy		

LEL Meter:	✓	PID Mini RAE:	✓	MSA Sirius:		Ecoprobe 5:	
Manhole ID	Time	VOC (ppm)	LEL (%)	Oxygen (%)	Water (Y/N)	Depth to Bottom	
SWM1	:	0	0	20.8	N		
SWM2	:	0	0	20.8	N		
SEP1	:	0	0	20.8	N		
TM4 network pipe	:	0	0	20.8	N		
TM1	:	0	0	20.8	N		
TM2	:	0	0	20.8	N		
TM3	:	0	0	20.8	N		
SWM2	:	0	0	20.8	N		
MAW2 Fire water Valve	:	0	0	20.8	N		
SWC1	:	0.3	0	20.8	Y		
MAW1	:	0	0	20.8	N		
UNM1	:	0	0	20.8	N		
SEM2	:	0	0	20.8	Y		
SEM1	:	0	0	20.8	Y		
SWC2	:	0.6	0	20.8	N		
SWC3	:	3.9	0	20.8	Y		
SWC4	:	3.8	0	20.8	Y		
SWC5	:	18.8	0	20.8	Y		
SWC6	:	13.6	0	20.8	Y		
UNM2	:	2.1	0	20.8	Y		
UNM3	:	1	0	20.8	N		
SWM3.1 SWM3	:	0	0	20.8	Y		
SWM3	:	0	0	20.8	Y		
SWC7	:	0.6	0	20.8	Y		
Legend for Manhole ID's:							
Sewer Manhole = SEM		Telkom Manhole = TM		Stormwater Culvert = SWC		Vapour Probe/Pin = VP	
Storm Water Manhole = SWM		Filler Point = FP		Separator Manhole = SEP		UST Manhole = UST	
Electrical Manhole = EM		Main Water = MAW		Unknown Manhole = UNM		Tank Observation Well = TOW	

SWM1 BWK 3	0.5	0.5	0	20.8	Y	
SWC8	0.2	0.2	0	20.8	Y	
SEP2			0	20.8	Y	
SWC9		0.4	0	20.8	N	
SEM8		0.2	0	20.8	Y	
SWC10		0.2	0	20.8	Y	
SEM7		2	0	20.8	Y	
SWM4		0.2	0	20.8	Y	