



Clyde Western Area Remediation Project (WARP) SSD-9302

Annual Report

Reporting Period: 01 July 2023 to 30 June 2024

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1 Introduction

Viva Energy Australia Pty Ltd (Viva Energy) operates the Clyde Terminal located at Durham Street, Rosehill on the Camellia Peninsula. These operations previously included the former Clyde Refinery land in the south-western part of the Site (the 'Western Area'). Viva Energy is undertaking the remediation of contaminated soils in the Western Area to a standard suitable for future commercial / industrial land uses.

The Western Area Remediation Project (WARP) was designated state significant development due to the scale of the proposed works and an Environmental Impact Statement (EIS) was prepared. On 7 May 2020, The Minister for Planning and Places approved the development application (SSD 9302) for the Clyde WARP.

The Clyde Terminal site and the Western Area are shown in Figure 1.

Viva Energy are proposing to stage the remediation of the Western Area as follows:

- Stage 1 – Former Process West (completed)
- Stage 2 – Former Utilities and Movements (completed)
- Stage 3 – Former Process East (planned for 2024/2025)

The Stage 1 to 3 areas are shown in Figure 2.

Remediation of the Stage 1 area was completed between October 2020 and February 2021. A Site Audit Statement (SAS) No. 055/2127799 was issued in February 2021 confirming the successful completion of remediation works and the suitability of the Stage 1 area for future commercial / industrial land uses.

Remediation of the Stage 2 area was completed between September 2021 and May 2022. Site Audit Statements were issued for the following sub-stages of Stage 2, confirming successful completion of remediation works and the suitability of the Stage 2 areas for future commercial / industrial land uses.

- Audit Area 1 (AA1): Site audit statement no. 068-2127799, issued on 23 December 2021.
- Audit Area 2 (AA2): Site audit statement no. 072-2127799, issued on 14 April 2022.
- Audit Area 3 (AA3): Site audit statement no. 075-2127799, issued on 14 June 2022.
- Audit Area 4 (AA4): Site audit statement no. 081-2127799, issued on 14 June 2024.

Completion of remediation and validation activities in Audit Area 4 (referred to as AEC-4 and proposed Lot 64) were completed between December 2023 and June 2024.

A Site Audit Statement (SAS) and Site Audit Report (SAR) were issued in June 2024 for the final sub-stage of Stage 2 (proposed Lot 64), confirming successful completion of remediation works and suitability for future commercial / industrial land uses.

Figure 3 illustrates the audit areas and proposed subdivision lots for the Stage 2 works.

The content of this Annual Report provides relevant details of the Stage 2 remediation works and meets the requirements of SSD 9302 condition C12. Table 1 below lists the requirements and the corresponding sections where each specific requirement is addressed.

Table 1: Annual review and reporting requirements

Condition C12 requirement	Report section
Within 12 months of the commencement of the remediation works, and every year thereafter until the completion of demobilisation, or other timing as may be agreed by the Planning Secretary, the Applicant shall review and report on the environmental performance of the development. The report shall:	
(a) be submitted to the Planning Secretary and EPA;	
(b) describe the works that were carried out in the previous year and the works to be carried out in the coming year;	Section 2
<p>(c) include a comprehensive review of the monitoring results and complaints records of the development over the previous year, to demonstrate the effectiveness of the remediation works, including a comparison of:</p> <ul style="list-style-type: none"> i. air quality monitoring data with relevant limits or performance measures/criteria; ii. water discharges with established discharge criteria for contaminants of concern; iii. groundwater monitoring data with background data and trigger levels established in accordance with condition B22; iv. detail community consultation activities during the year, including any alterations to works or mitigation measures implemented to address community concerns; 	Section 3
(d) identify any non-compliances over the last year, and describe what actions were (or are being) taken to ensure compliance; and	Section 4
(e) describe what contingency measures would be implemented over the coming year to improve the environmental performance of the Development, should any issues be identified with the effectiveness of the remediation works.	Section 5

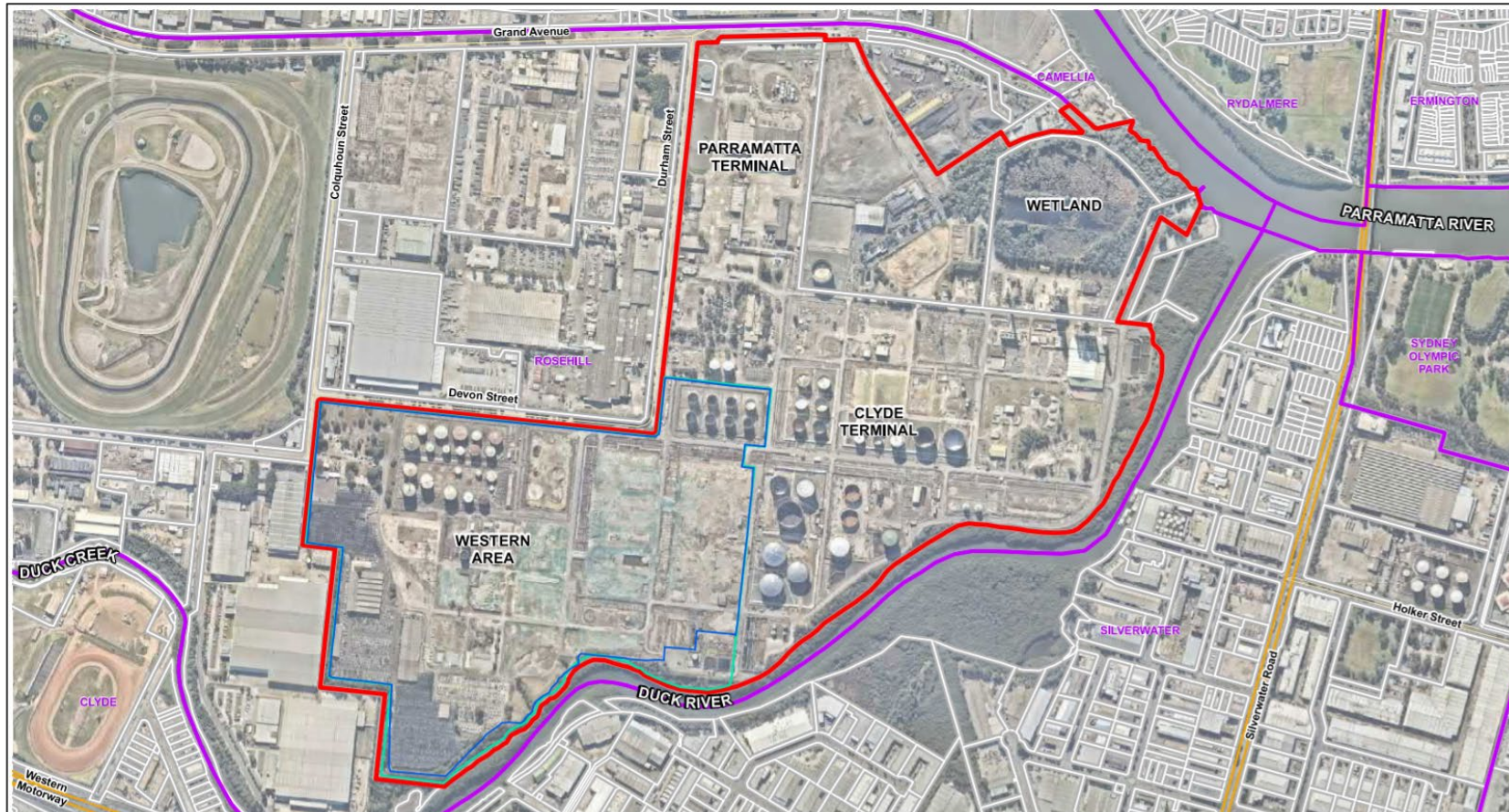


FIGURE 2-1 SITE FEATURES

- KEY**
- Site boundary
 - Project Area boundary
 - Western Area boundary
 - Suburb boundaries
 - Lot boundaries
 - State road
 - Local road



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0 100 200 300 m

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Note: Project Area boundary along the southern border is indicative only and will be refined during detailed design to exclude the tree management zone.

Figure 1 – Clyde Terminal and the Western Area

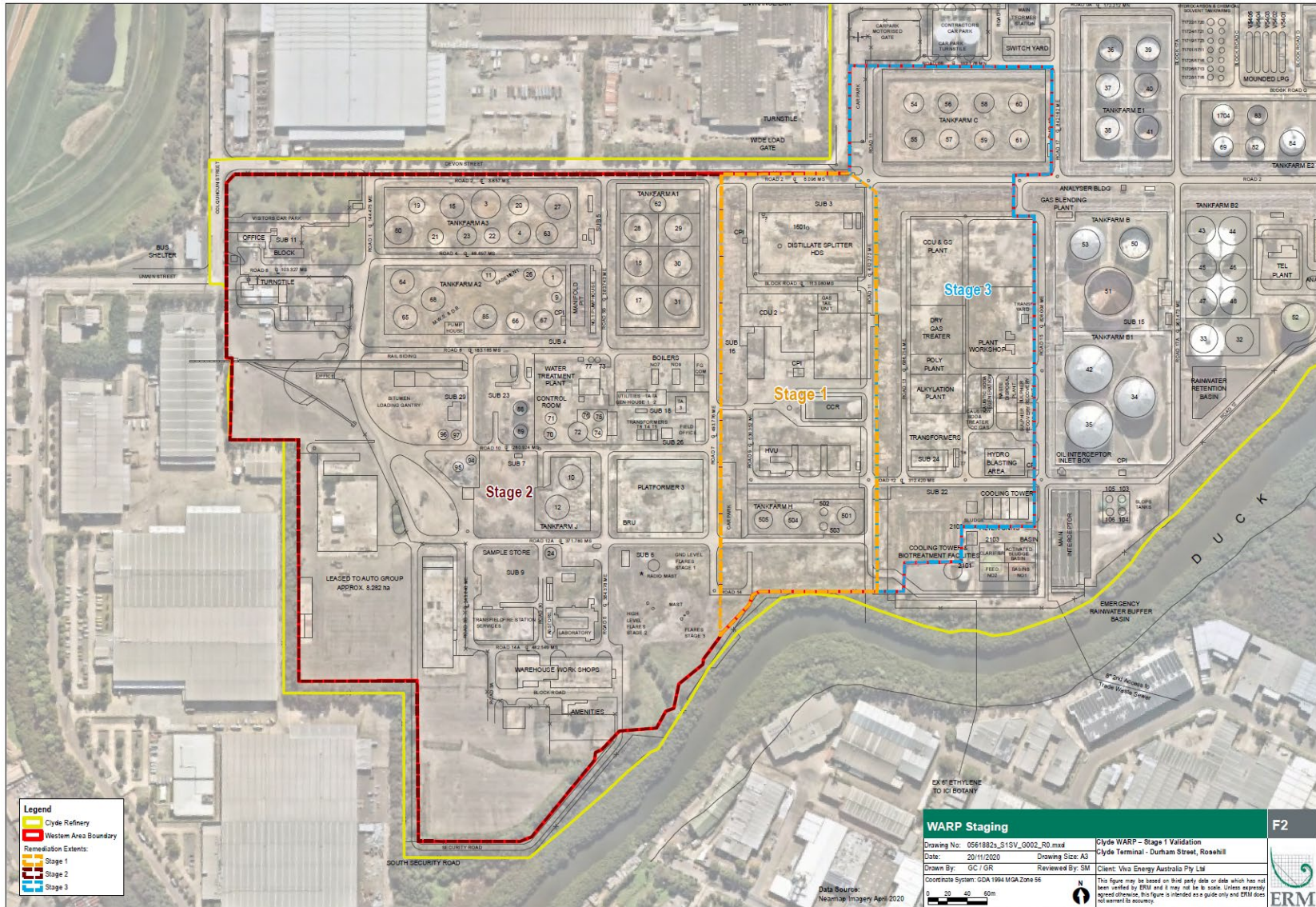


Figure 2 – Clyde WARP Stages 1, 2 and 3

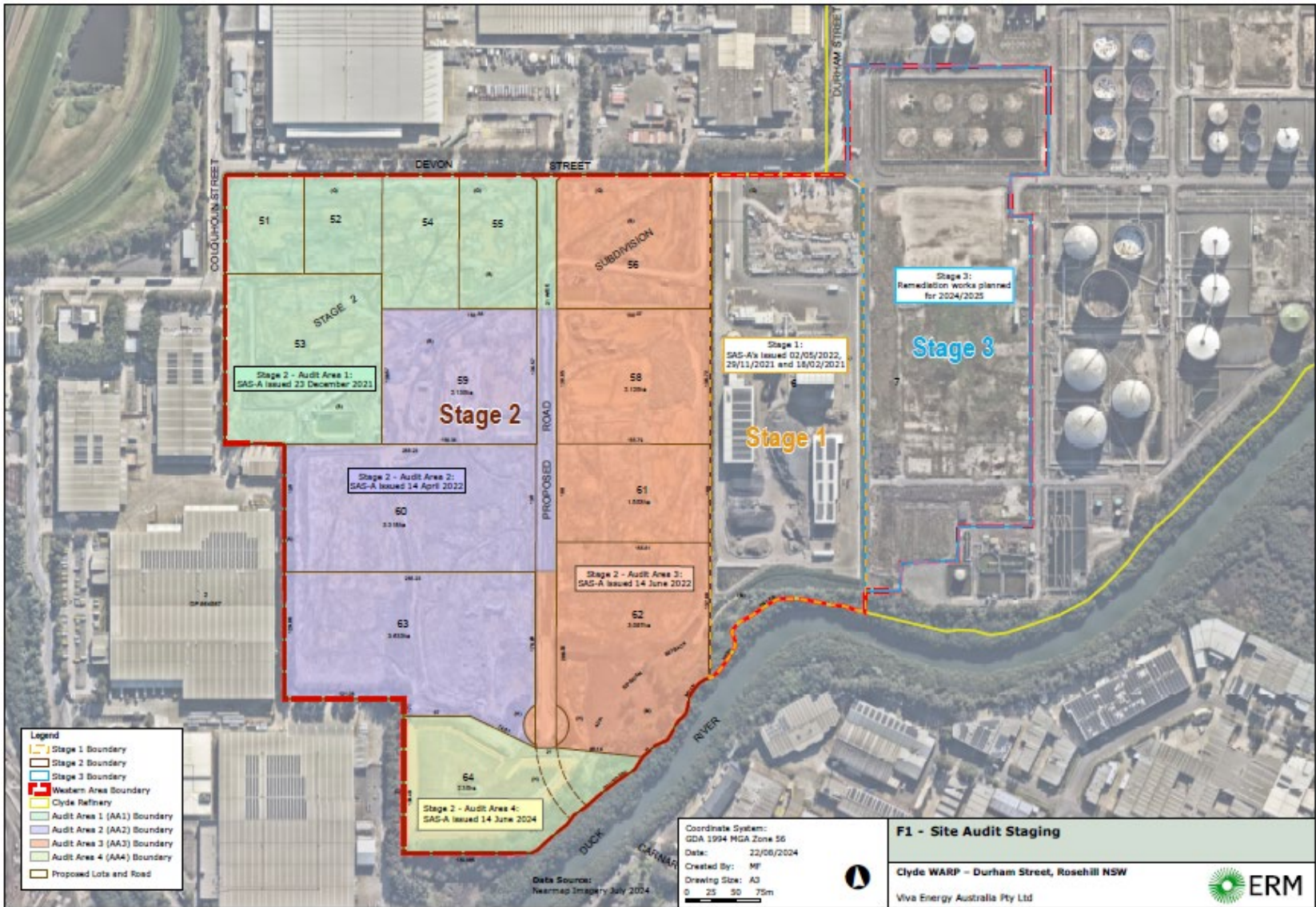


Figure 3 – Stage 2 Site audit staging

2 Works undertaken

This Section describes the works undertaken in accordance with Development Consent SSD 9302 during the period 1 July 2023 to 30 June 2024.

2.1 Remediation works

Site works associated with the capping of contaminated soil materials at AEC-4 within Proposed Lot 64 to meet the objectives of the Stage 2 RAP were completed between December 2023 and June 2024.

A summary of works undertaken is as follows;

- | | |
|---|-------------------------|
| • Vegetation clearing and grubbing | 14 – 16 December 2023 |
| • Monitoring well decommissioning | 14 March 2024 |
| • Landforming and surface grading | 18 March – 5 April 2024 |
| • Subgrade preparation | 22 March – 5 April 2024 |
| • Anchor / utility trench excavation | 15 – 22 April 2024 |
| • Cushion geotextile placement over subgrade | 27 April – 1 June 2024 |
| • LLDPE geomembrane installation | 2 May – 7 June 2024 |
| • Cushion geotextile placement over geomembrane | 31 May – 12 June 2024 |

Full details of the Stage 2 Audit Area 4 remediation works are detailed in the following Clyde WARP Validation Report;

- “Clyde Western Area Remediation Project - Area of Environmental Concern 4 (AEC-4) Validation Report”, prepared by ERM and dated 13 June 2024;

3 Environmental performance

3.1 Air

During the reporting period, air quality was monitored and managed in accordance with the Remediation Environmental Management Plan (REMP), the Air Quality Management Plan (AQMP) and the Air Emissions Verification Report (AEVR).

Dust suppression was applied periodically and no dusty conditions were observed onsite during the reporting period.

A description of the monitoring undertaken and a summary of results is provided in **Appendix A.1**

3.2 Water

Management of small areas of surface water runoff (from rainfall events) was managed through established erosion and sediment controls consistent with requirements detailed in the REMP.

No monitoring of surface water was required to be undertaken during this annual reporting period.

3.3 Groundwater

During the reporting period, groundwater was monitored in accordance with the Remediation Environmental Management Plan (REMP) and the relevant Groundwater Monitoring and Management Plans (GMP).

A description of the monitoring undertaken and a summary of results is provided in **Appendix A.2**

3.4 Community consultation

Prior to the commencement of the Stage 2 remediation activities, a Community Update newsletter/flyer was prepared and physically distributed to approximately 2330 residents and businesses within a 2km (approx.) radius of the Site.

The Community Update (dated August 2021) was also loaded onto the Viva Energy website at the following location: <https://www.vivaenergy.com.au/operations/clyde>

No concerns in relation to the remediation works have been raised by any members of the community. Accordingly, no alterations to works or implementation of mitigation measures were required as a result of any issue raised by the community.

4 Non-compliances

No reportable incidents or non-compliances occurred relating to consent conditions during this reporting period.

No non-compliances with the Clyde Terminal licence conditions (EPL570) occurred during the reporting period.

5 Contingency measures

Environmental performance for Stage 2 of the Clyde WARP (this reporting period) has been compliant and consistent with the statutory requirements and limits.

There were no issues identified with the effectiveness of the remediation works that warranted the consideration or implementation of any contingency measures.

Appendix A

A.1 Summary of air quality monitoring results

A.2 Summary of groundwater monitoring results

A.1 Summary of air quality monitoring results

As per the detail provided within the Stage 2 Air Emissions Verification Report (AEVR), specific air quality monitoring associated with remediation works within AEC-4 / proposed Lot 64 area were not required to be undertaken due to no disturbance or excavation of hydrocarbon contaminated soils at depth.

The remediation activities undertaken in AEC-4 (as outlined in Section 2.1 of this report) were effectively mitigated by conventional dust management measures outlined in the AEVR, including:

- Review of meteorological forecasts at daily toolbox talk to implement a combination of the following mitigation measures (as required):
 - Application of water sprays to stockpiles of potentially dusty materials where not covered.
 - Covering stockpiles during storage periods of greater than one day.
 - Maintaining a visual awareness of dust emissions.
 - Wetting down dry materials prior to handling.
 - Applying water sprays during handling of dusty material.
 - Maintaining work area in a clean condition with minimisation of loose materials in trafficked areas.
 - Reducing or suspending work during high winds.

No observations of dust generation throughout the works were recorded during relevant stages of earthworks conducted throughout March and April 2024.

- **Asbestos air monitoring:** While not a specific requirement of the AEVR, asbestos air monitoring was undertaken for Health and Safety purposes to confirm the appropriate level of asbestos controls during the AEC-4 component of the Stage 2 remediation works. The requirement for monitoring was due to the disturbance and handling of underlying shallow fill material (potentially containing asbestos) to construct the engineered capping layer.

Environmental Resources Management Australia Pty Ltd (ERM) conducted asbestos monitoring on behalf of Viva Energy throughout earthworks stages of the AEC-4 / proposed lot 64 component of the Stage 2 remediation works. Asbestos air monitoring and the issuing of clearances were undertaken in accordance with SafeWork NSW Guidance.

The results of asbestos air monitoring are summarised as follows:

- No exceedances of monitoring thresholds for airborne asbestos fibres were noted during the works.
- An asbestos clearance of the work area was issued on 22nd April 2024 to provide confirmation of no asbestos containing materials throughout the work area by a Licensed Asbestos Assessor (LAA) prior to occupation of the area by the Specialist Liner Installation Contractor.

A.2 Summary of groundwater monitoring results

ERM was engaged by Viva Energy to complete groundwater monitoring requirements in accordance with the approved Groundwater Monitoring and Management Plan (GMP) and the associated Groundwater Monitoring Program (GWMP) for Stage 2 of the WARP (ERM, 2021¹).

The groundwater monitoring program included gauging and sampling of existing monitoring wells based on the following objectives:

- **Monitoring during remediation** – to demonstrate remediation works do not have short-term adverse effects on localised groundwater quality or the Duck River and implement contingency actions (if required); and
- **Monitoring post-remediation** – to demonstrate that stable to decreasing groundwater concentrations continue to be observed as a result of natural attenuation processes and removal of key source areas.

Post remediation groundwater monitoring requirements for Stage 2 (areas outside of AEC-4) were previously completed (detailed in the 2022 annual report) and therefore were not required to be undertaken during the reporting period.

The GWMP did not identify a requirement for 'monitoring during remediation' to be undertaken at AEC-4 due to the assessed low potential for interaction with groundwater and short-term changes associated with the scope of remediation works, which were limited to excavation and reworking of surficial soil material.

One Groundwater Monitoring Event (GME) was completed within the Stage 2 Area during the reporting period to satisfy relevant items under Condition B22 of the Conditions of Consent for the Project:

- Quarter 4 (2023) GME (November 2023), final report dated 14th March 2024;

This groundwater monitoring event was conducted prior to the completion of remediation works within AEC-4, with the objective of establishing a baseline dataset to support the proposed remediation approach for AEC-4 and confirm no risks to receptors, including the Duck River.

Monitoring of groundwater conditions for concentrations of contaminants of concern has identified the following conclusions in relation to the Stage 2 (AEC-4) Area:

- Ongoing monitoring was undertaken in general accordance with the Site Auditor Approved GWMP and met the relevant requirements of B22 of the Conditions of Consent for the Project.
- Potential risks to human health or the environment, including the Duck River have not been identified from groundwater on site;
- The distribution of light non-aqueous phase liquid (LNAPL) and nature and extent of dissolved phase hydrocarbon concentrations remain consistent and do not indicate adverse changes to groundwater conditions compared with the historical dataset;
- Natural attenuation of petroleum hydrocarbons in groundwater down-gradient of residual hydrocarbon sources is evident through a high proportion of polar hydrocarbon degradation by-products when compared with total recoverable hydrocarbon (TRH) concentrations post silica gel clean-up; and
- The current groundwater monitoring well network is considered appropriate for implementation of the post-remediation monitoring (as detailed within the Groundwater Monitoring and Management Plan).

Groundwater data collected from AEC-4 during Q4 2023 supports the proposed remediation approach of '*in-situ management under engineered cap*' for the AEC-4 / Lot 64 area. No changes to this approach were considered warranted based on the delineation and stability of LNAPL and dissolved phase groundwater concentrations of Contaminants of Concern.

The above findings are consistent with groundwater monitoring events undertaken for the subject wells in recent years.

Detailed interpretation and presentation of groundwater data obtained post the Stage 2 remediation works is detailed within the following report:

¹ ERM (2021) Clyde Western Area Remediation Project – Groundwater Monitoring Program – Stage 2. Final, Revision 3, dated 14 July 2021.

- “Clyde Western Area Remediation Project – Quarter 4 (2023) Stage 2 Groundwater Monitoring Report”, prepared by ERM and dated 14 March 2024.

It is noted that the Quarter 2 (2024) GME was delayed and undertaken outside of this Annual reporting period due to ongoing civil works in the area. The results of this event and future ‘Monitoring Post Remediation’ events for AEC-4 will be summarised in future Annual Reports.

Contingency Actions

The implementation of contingency items (as per Section 3.7 of the GWMP) were not warranted as no adverse changes to environmental conditions or risk to off-site receptors were identified.