

Your ref: SSD-5544 Modification 7
Our ref: 12640825

02 February 2026

Ampol Australia Petroleum Pty Ltd
Keiran Fleming
keiran.fleming@ampol.com.au

Interim Audit Advice 1 – Ampol Kurnell Remedial Action Plan Review

Dear Keiran

1. Introduction

André Karl Smit of GHD Pty Ltd (GHD) was engaged by Ampol Australia Petroleum Pty Ltd (Ampol) to act as the New South Wales (NSW) Environment Protection Authority (EPA) accredited Site Auditor for the Ampol landholding located at 2 Solander Street, Kurnell, NSW 2231 (the site).

Development consent was granted for the fuel import terminal (the approved project, The Kurnell Terminal) under State Significant Development (SSD) application reference SSD-5544. The objective of SSD-5544 is to establish a *viable, safe, reliable, and sustainable finished product import terminal at Kurnell*. It is understood that Ampol has modified SSD-5544 on six occasions to facilitate the conversion and demolition works. To support the continued sustainable operation of the Kurnell Terminal, Ampol intends to consolidate operational infrastructure, remove redundant assets, and undertake targeted remediation of legacy ground contamination. A Modification Report was prepared to support a modification application to State Significant Development (SSD)-5544 Modification 7 (MOD-7) and was placed on public exhibition for 23 days from Thursday 10 July 2025 until Friday 1 August 2025 in accordance with the *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act).

To support ongoing operations and to understand potential development options, the site has been subdivided into “Zones.” Operational infrastructure is primarily located in the northern portion of the site (Zone 1). Other parts of Ampol’s landholding comprise vacant areas of previously developed land (Zones 2 and 3), as well as areas of undeveloped land containing extensive native vegetation (Zones 4 and 5).

GHD understands that the Site Audit boundary excludes Zone 1, which will continue to operate as the Kurnell Terminal, the asbestos-contaminated soil (ACS) containment cell (subject to a previous Site Audit) located within Zone 2, and Zones 4 and 5. The Site Audit boundary is shown in **Figure 1** (AECOM, 2026).

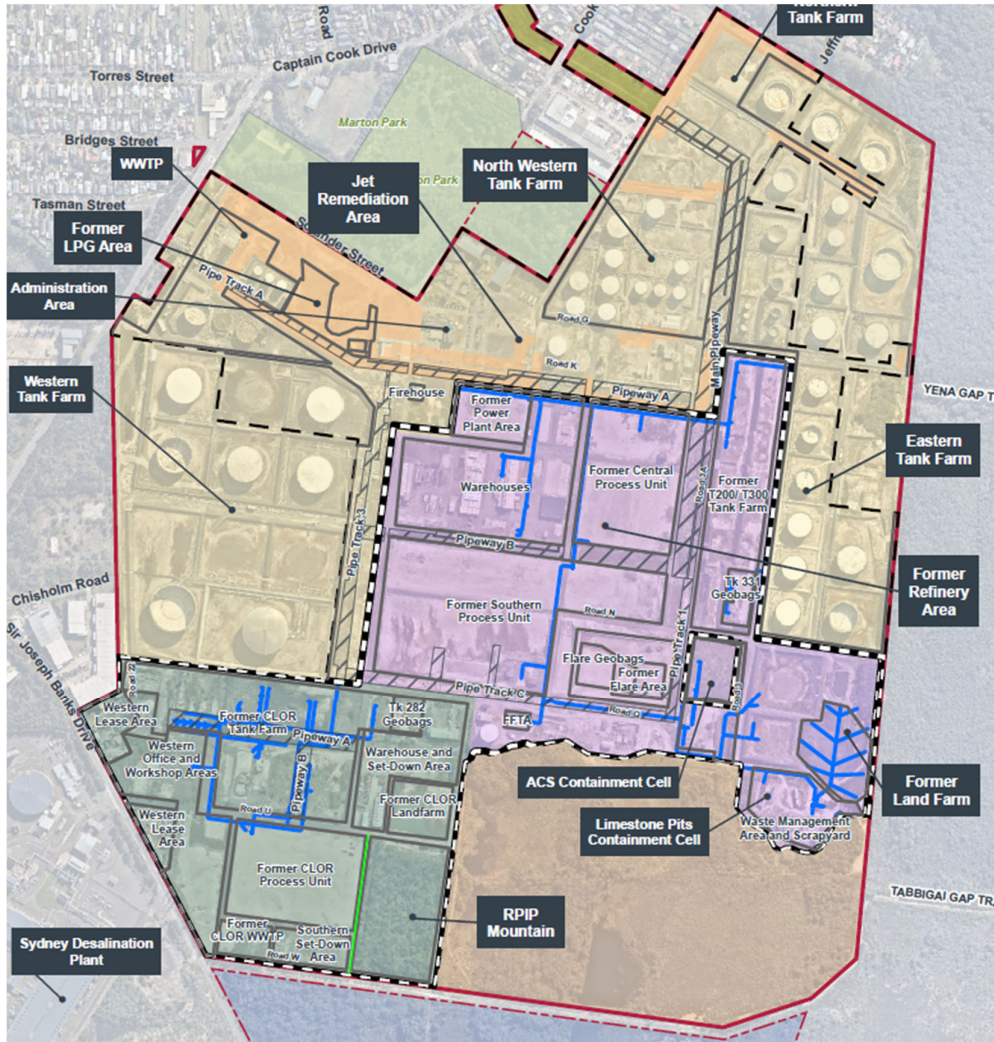


Figure 1 Site Audit Boundary (modified from Figure F2 of AECOM, 2026a).

2. Site Audit objectives and regulatory nature

Ampol commissioned this Site Audit to provide independent review of the proposed MOD-7 remediation works associated with Zones 2 and 3 (excluding the ACS containment cell) It is understood that the ultimate objective of the Site Audit will be to certify the suitability of Zones 2 and 3 for land use consistent with the site’s zoning. The DPHI response on MOD-7 (dated 25 August 2025) requested that the Submissions Report include written interim advice by the Site Auditor on the RAP. The purpose of this interim audit advice is to document the Audit review of the RAP.

3. Site Audit documentation

In preparing this Interim Audit Advice (IAA), the Site Auditor has reviewed the following report prepared by AECOM Australia Pty Ltd (AECOM):

AECOM, 2026. *Kurnell terminal SSD-5544 MOD-7, Appendix E – Remedial Action Plan*, Ref.60695088, Rev.4, 29 January 2026 – (the “RAP”).

The Site Auditor notes that a desktop review of historical site data was previously undertaken by AECOM to assist with the preparation of a Conceptual RAP (*Conceptual Remedial Action Plan*, Kurnell Terminal SSD-5544 MOD-7, Ref. 60695088, Revision C, 12 May 2025; the “Conceptual RAP”). The Site Auditor reviewed the draft Conceptual RAP (AECOM, 2025a) and provided comments for consideration prior to the development of the RAP.

The Site Auditor has also reviewed draft sampling plans associated with data gap assessments that are being completed to inform Remedial Work Plans (RWPs; AECOM, 2025b *DGA for Sampling Quality and Analysis Plan*, Ref. 60695088, 27 October 2025). The Site Auditor understands that the RWPs will present refined remedial strategies for individual areas of concern based on the data gap investigations. The Site Auditor notes that numerous supporting reports were provided to the audit team as part of the DGA SAQPs package, and that the information contained within these reports was considered, as required, during the assessment of the DGA SAQPs (AECOM, 2025b).

This Site Audit has been conducted in accordance with the requirements of the *Contaminated Land Management Act 1997* (the CLM Act), and the review of the RAP (AECOM, 2026) was based on consideration of the following guidelines, which include both NSW EPA statutory guidelines and other guidelines:

- CRC CARE (2013) *Petroleum hydrocarbon vapour intrusion assessment: Australian guidance*, Technical Report No. 23, CRC for Contamination Assessment and Remediation of the Environment, Adelaide.
- Department of Environment and Conservation (DEC), 2007. *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*. Government of Western Australia.
- NSW EPA, 2017. *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*, 3rd edition. NSW EPA, Sydney.
- NSW EPA, 2020a. *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*. NSW EPA, Sydney.
- Heads of EPAs Australia (HEPA), 2025. *PFAS National Environmental Management Plan*, Version 3.0. HEPA, Australia.
- NSW EPA, 2022. *Contaminated Land Guidelines: Sampling Design Part 1 – Application*. NSW EPA, Sydney.
- National Environment Protection Council (NEPC), 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended 2013. NEPC, Adelaide.

4. Review of RAP and Site Auditor discussion

The Site Auditor reviewed draft versions of the RAP (AECOM, 2026) dated 12 November, 12 December 2025 and 15 January 2026. The Auditor’s comments are documented in the Audit Comments Register. Following this review, the RAP was amended, and the Site Auditor considered that the material issues were sufficiently addressed. The final RAP was issued on 29 January 2026. A copy of the Audit Comments Register is provided in **Attachment A**.

The Site Auditor notes that the RAP (AECOM, 2026) addresses contamination in the form of petroleum hydrocarbons (total recoverable hydrocarbons [TRH] and benzene, toluene, ethylbenzene, xylenes, and

naphthalene [BTEXN]), polycyclic aromatic hydrocarbons (PAHs), chlorinated hydrocarbons, per and poly-fluoroalkyl substances (PFAS) and specific areas of asbestos excavations.

It does not address any capping which may be required to address surface asbestos contamination for suitability of land uses permissible under the site's zoning. The Site Auditor understands that a separate RAP, that will include capping, will be produced to support the subsequent SSD application for the Kurnell Energy and Industry Precinct (KEIP). This "KEIP RAP" will detail the scope of any capping works required to facilitate commercial/industrial land use following completion of the MOD-7 remediation.

As noted above, Data Gap Assessments ("DGA") are currently being completed to refine the proposed remedial extents and estimated remediation volumes. The Site Auditor understands that RWPs are to be produced incorporating the DGA outcomes, refinement of remedial approach (if required) and, documenting practical steps that can be followed to meet the RAP objectives.

The Site Auditor's overview of the RAP (AECOM, 2026) is presented in **Table 1** which was prepared based on the key elements required for a RAP as outlined by the consultant guidelines (NSW EPA, 2020).

Table 1 RAP review and Site Auditor's discussion

Element of RAP	Summary of AECOM provided information	Site Auditor's opinion
Remedial goal	<p>The RAP documents that the scope and goals for the RAP and RWPs was to:</p> <ul style="list-style-type: none"> – Set remediation goals that ensure the land to be remediated would be suitable for the proposed use and would pose no unacceptable risk to human health or to the environment. – Identify the necessary approvals and licences required by regulatory authorities. – Provide information on the nature and extent of impact based on the available data. – Evaluate remedial techniques and/or management measures that are required to reduce risks to acceptable levels for the proposed land use of the Project Area, protecting human health and the environment. – Identify remaining nature and extent of impact data gaps, where additional works are required (to facilitate the preparation of RWPs) <p>The overarching objectives for the Project Area as part of the RAP were listed as:</p> <ul style="list-style-type: none"> – Remediate the soil and manage groundwater within the Project Area that are relevant to the proposed modification, to address legacy ground contamination identified in specific locations across the site, to support the ongoing viable, safe, reliable, and sustainable use of the Kurnell Terminal. – Remove the remaining former refinery infrastructure within the Audit Boundary (legacy oily water sewer (OWS)). – Ensure approved remediation process that is implemented adheres to applicable regulatory requirements, minimising potential environmental, human health and operational risks. 	<p>In the Site Auditor's opinion, the remediation goals outlined in the RAP (AECOM, 2026) are appropriate, considering the existing terminal industrial land use. The Site Auditor notes that, although the ACS containment cell is located within Zone 2, it falls outside the Site Audit boundaries. The Site Auditor understands that the ACS containment cell is being managed via the EMP endorsed by the Auditor in 2021¹.</p>
Remediation overview	<p>Based on the site's operational history, the primary identified contaminants of concern (COPC) include:</p> <ul style="list-style-type: none"> – Asbestos containing materials (ACM) – TRH – BTEXN – PAHs – PFAS <p>In addition, a range of secondary COPC, have been identified within targeted areas through historical investigations or are considered likely to have been used during past site operations. These include:</p> <ul style="list-style-type: none"> – Chlorinated hydrocarbons – Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Co, Mn, Se, V and Mo) – Organochlorine pesticides (OCPs) and organophosphate pesticides (OPPs) (DDT, DDE, DDD, aldrin and dieldrin, chlordane, heptachlor, aldrin, bifenthrin and chlorpyrifos) – Herbicides – Polychlorinated biphenyls (PCBs) – Refinery-related process chemicals (furfural and methyl ethyl ketone [MEK], tetraethyl lead [TEL] and total cyanide, sulphur, nitrogen compounds) <p>Asbestos impacts were noted by AECOM to be primarily associated with legacy refinery buildings and infrastructure, including materials such as gaskets, insulation lagging, and fibre cement products. Secondary asbestos sources include recycled construction-derived fill, including material placed within the Refining Process Improvement Project (RPIP) Mountain area that originated from other locations on-site.</p> <p>Soil and groundwater impacts from petroleum hydrocarbons are interpreted to result from cumulative, low-volume releases occurring throughout the refinery's operational period, rather than from a single, discrete spill event.</p> <p>PFAS impacts are primarily attributed to the historical storage and use of fluorinated firefighting foams at the site.</p> <p>AECOM considered that groundwater conditions at the site are expected to improve following remediation of soils, fill and light non-aqueous phase liquid (LNAPL) in Zones 2 and 3, once the primary and secondary contamination sources associated with former refinery operations and related infrastructure within the audit boundary have been removed. The remediation works will permanently reduce the mass of COPC on-site and, over time, likely decrease leaching and migration of these contaminants into the groundwater.</p>	<p>In the Site Auditor's opinion, the extent of the remediation assessment was broadly sufficient to meet the requirements of the NEPC (2013). A large volume of historical investigation was reviewed and assessed for representativeness to inform remediation requirements and the existence of data gaps.</p> <p>The Site Auditor understands that risks from identified contamination at the site are currently managed by the site's Operational Environmental Management Plan (OEMP; Ampol, 2021²). The OEMP assists Ampol to comply with its requirements under the development consent for the Kurnell Terminal (SSD 5544), Environment Protection Licence No. 837 (EPL 837) and the Major Hazard Facility licence for the terminal.</p> <p>The Site Auditor notes that, in parallel with preparation of the RAP (AECOM, 2026), data gap assessments are being undertaken by WSP Australia Pty Ltd (WSP), generally in accordance with the DGA SAQP prepared by AECOM (AECOM, 2025b). The Auditor has reviewed the draft DGA SAQPs prepared for these data gap assessments prior to their implementation and provided comments for consideration. These assessments are intended to provide additional information on the extent of contamination to support refinement of the final remediation volumes.</p> <p>The Site Auditor notes that supplementary groundwater and soil vapour investigations are being undertaken by WSP generally in accordance with the draft DGA SAQPs (AECOM, 2025b). Should the most recent results indicate that active remediation of groundwater and/or soil vapour is required, appropriate management measures can be incorporated into the RWPs.</p> <p>Based on the information made available to the Site Auditor, there does not appear to be any LNAPL extending off-site.</p> <p>It is acknowledged that removal of contamination impacts in the subsurface via excavation should have beneficial effects on groundwater quality; however, the nature, extent and speed of any improvement is not currently known and is difficult to estimate. The Site Auditor understands that, should any residual groundwater contamination above RAP criteria persist following the remediation described in the RAP, additional assessment and/or mitigation measures will need to be developed and subject to Site Auditor review.</p> <p>The Site Auditor also notes that surveys identified that groundwater use off-site is understood to be limited to recreational purposes (including irrigation of lawns and vegetables, filling of pools, and washing of surfaces).</p>

¹ Ampol Refineries (NSW) Pty Ltd, Ampol Kurnell Terminal – Asbestos Contaminated Soil (ACS), Containment Cell Long Term Environmental Management Plan (CCLTEMP), Site Audit Report, 26 February 2021, GHD Pty Ltd.

² Ampol, 2021. Operational Environmental Management Plan, Kurnell Terminal, Final Stage 2, 10 September 2021.

Element of RAP	Summary of AECOM provided information	Site Auditor's opinion
	<p>AECOM noted that active groundwater remediation is currently underway in Zone 1, targeting the Jet Fuel Remediation area and the Northern Tank Farm AEC. In contrast, based on historical extensive dataset, Zones 2 and 3 does not require active groundwater remediation. AECOM noted that, in the unlikely event that residual groundwater contamination poses a risk after data gap assessment and/or completion of soil and LNAPL remediation, additional remedial strategies, including, but not limited to, engineered capping works, may be employed to manage any remaining contamination risks. Residual groundwater impacts requiring engineering controls or management, but not active remediation, will be incorporated into an Environmental management Plan (EMP). If active remediation becomes necessary, such actions would be addressed under a future development application or a modification to the SSD.</p>	
Remedial Options Assessment (ROA)	<p>A range of soil remediation and management options were assessed to address identified contamination across the site, with consideration given to contaminant type, technical effectiveness, regulatory alignment, environmental risk reduction, cost, and long-term liability. Bioremediation approaches, both ex-situ (mechanical biopiling) and in-situ (biostimulation or bioaugmentation), were considered by AECOM technically suitable for biodegradable hydrocarbons such as TRH, BTEXN, and selected chlorinated compounds. However, they require extended treatment timeframes, and ongoing monitoring.</p> <p>Excavation with off-site disposal provided a proven and rapid means of addressing all contaminant types, including hazardous materials. AECOM considered that while this approach effectively removes risk at the site, it is less favoured under regulatory waste hierarchy principles due to reliance on disposal, higher costs for large volumes, and increased off-site impacts associated with transport.</p> <p>Containment based approaches, including in-situ solidification and/or stabilisation and engineered capping systems, are applicable to a broad range of contaminants where complete removal is impractical. These methods reduce exposure pathways and can be cost-effective for large volumes. However, AECOM noted that they do not destroy contaminants and require long-term monitoring, land-use controls, and ongoing management to maintain effectiveness.</p> <p>Targeted on-site treatment of ACM may reduce the volume requiring disposal, subject to practicality and safety constraints.</p> <p>Ongoing site management without active remediation relies on institutional and operational controls to manage residual contamination. AECOM considered that while this approach avoids disturbance and has minimal upfront cost, it retains long-term environmental and human health liabilities and limits land-use flexibility.</p>	<p>Evaluation of Remedial Strategies</p> <p>The RAP (AECOM, 2026) includes an evaluation of potential remedial strategies, considering a broad range of treatment options. The Site Auditor considers that an appropriate range of remedial options has been assessed by AECOM and that the evaluation is consistent with the guidelines outlined in Section 3.</p> <p>Asbestos capping strategy</p> <p>As documented in the RAP (AECOM, 2026), asbestos capping was originally proposed under the MOD-7 application as a risk management measure to address asbestos contaminated soils. The capping strategy was intended to limit potential human exposure and support safe land use across the site. However, further, AECOM concluded that capping is not currently required. This conclusion was based on the limited occupancy of Zones 2 and 3 and the implementation of existing site controls and safety procedures that effectively manage exposure risks. Consequently, asbestos capping has been removed from the MOD-7 modification application. Targeted asbestos removal within the RPIP Mountain Area (within the Audit boundary) and the LPG area (outside of the Audit boundary) is proposed under the RAP (AECOM, 2026a). It is noted that capping is being addressed in a separate RAP (KEIP RAP, see below).</p> <p>Future capping under KEIP SSD application</p> <p>Capping works will be aligned to the KEIP SSD application, which includes subdivision of the land and preparation for land uses consistent with zoning requirements. The KEIP will also propose regrading works within parts of Zones 2 and 3.</p> <p>Groundwater and soil vapour</p> <p>The Site Auditor notes that additional groundwater and soil vapour investigations are being undertaken by WSP in general accordance with the DGA SAQPs (AECOM, 2025b). These investigations are intended to address previously identified data gaps, including those associated with decommissioned infrastructure footprints, areas with limited historical sampling density, and to further refine potential remediation volumes.</p> <p>The Site Auditor notes that should the most recent or future data gap investigation results indicate that active remediation of groundwater and/or soil vapour is required, additional assessment or management requirements can be incorporated into the relevant RWPs or Environmental Management Plans (EMPs), and subject to Site Auditor review.</p>
Selected preferred option	<p>Soil</p> <p>The ROA indicated that the most effective approach for the site in accordance with the preferred hierarchy will involve:</p> <ul style="list-style-type: none"> – Excavation and treatment on-site for reuse – Excavation and disposal off-site – Management of residual contamination in-situ via capping (not part of the proposed modification and subject to separate approval) <p>Bioremediation and off-site disposal</p> <p>Bioremediation of petroleum hydrocarbon contaminated soils, identified as primary COPC, as well as chlorinated hydrocarbon impacted soils, identified as secondary COPC. This would be achieved through excavation followed by biopiling.</p> <p>Soils impacted by PFAS in the former fire training area (FTA) will be excavated and transported off-site for appropriate disposal, with the resulting excavations subsequently backfilled using suitable fill material.</p> <p>Management strategies for asbestos contaminated soils (other than the targeted asbestos remediation already outlined in the RAP) will be integrated into future grading and capping operations on the site (i.e., capping / containment).</p> <p>AECOM noted that in cases where soils are unsuitable for bioremediation or on-site management is not feasible, off-site disposal to a licensed landfill will be considered.</p> <p>Excavation for remedial purposes will be vertically constrained by the groundwater table, generally occurring at depths of less than 4 metres below ground level (mbgl). The remedial excavations will primarily target identified shallow contamination, focusing on soil horizons within approximately 1 metre of the soil surface, LNAPL layers (within soil), and likely contaminated sludges within the redundant OWS network.</p> <p>Temporary dewatering may be implemented in areas of saturated soil to facilitate excavation. In zones affected by LNAPL, overlying saturated soils will be removed where practicable to reduce petroleum hydrocarbon concentrations. Any LNAPL observed on excavation pit water will be collected and either treated on-site at the wastewater treatment plant (WWTP) or transported off-site for appropriate disposal.</p>	<p>Selection of preferred remediation approaches</p> <p>The Site Auditor considers the rationale for the selection of the preferred remediation methods to be adequate. The RAP (AECOM, 2026) assessed a range of remediation options and identified on-site treatment (bioremediation) as the most suitable approach for the site. This will involve excavation and treatment of petroleum hydrocarbon- and chlorinated hydrocarbon impacted soils via biopiling. The Site Auditor notes that all biopiling will be carried out in accordance with the NSW EPA <i>Best Practice Note: Landfarming</i> (2014).</p> <p>Off-site disposal is identified as an option where contaminated soils cannot be treated and reused or managed in situ. The untreated and tested contaminated soils would be disposed off-site to an appropriately licenced facility by licenced contractors, and replaced (where required) with validated clean fill, Virgin Excavated natural material (VENM) or Excavated natural Material (ENM). Disposal of untreated soils to landfill will only be undertaken where bioremediation or on-site management is not feasible.</p> <p>Asbestos management</p> <p>The Site Auditor notes that further details regarding asbestos controls for biopiling excavated materials containing asbestos will be provided in the relevant RWPs, Asbestos Management Plans (AMPs), and/or Asbestos Remediation Control Plans (ARCPs), which will be subject to Site Auditor review.</p> <p>The Site Auditor further notes that a separate RAP (i.e., KEIP RAP) addressing asbestos remediation specifically proposed capping or physical separation, or containment strategies, is currently being prepared by AECOM. The Site Auditor understands that long-term management of asbestos legacy contamination will also be addressed through an EMP. Limited remediation for asbestos is presented in the RAP which is the subject of this IAA. Based on the site's history and investigation information, the Site Auditor considers it reasonable to assume that asbestos is present across the site to varying degrees until detailed assessment can demonstrate otherwise, with an acceptable level of confidence.</p> <p>Applicability of biopiling</p> <p>The Site Auditor notes that soils requiring remediation due to petroleum hydrocarbons or solvents impacts but not impacted to an extent that would make biopiling impractical due to gross contamination, would be remediated by biopiling, to the extent practicable with adherence to asbestos management requirement. The threshold for biopiling practicality will be assessed on a case-by-case basis within the RWPs, allowing for refinement during treatment to optimise the volume of soil to be treated while considering project timelines and other drivers (e.g. sustainability, cost etc).</p>

Element of RAP	Summary of AECOM provided information	Site Auditor's opinion
	<p>Targeted asbestos remediation</p> <p>The RPIP Mountain area, in the south-eastern portion of Zone 3 has been historically disturbed by extensive soil storage and filling, resulting in an elevated, undulating surface. Asbestos is the primary COPC in this area, present in both friable and non-friable forms at varying depths, particularly along the northern perimeter, central area, and south-eastern corner, up to 2 mbgl. Screening also identified localised heavy metal exceedances, especially lead, primarily in the northern portion. AECOM considered that proposed remediation involves removal of low vegetation and large tree root systems, including approximately the top 1 m of organic material likely containing asbestos, to reduce subsidence and migration risks. Excavated soils and roots will be disposed of off-site as special asbestos waste. The surface will then be graded and stabilised using treatments such as spray grass or gravel, with ongoing maintenance managed under the site's Asset Management Plan (AMP).</p> <p>A separate RAP will be prepared to support the subsequent SSD application for the KEIP. This RAP will specify the capping works necessary for asbestos contamination to achieve the site's intended commercial and industrial end-use.</p> <p>Asbestos management</p> <p>The proposed modification will involve the handling, excavation, and relocation of asbestos-contaminated fill materials. These activities will comply with the Work Health and Safety Act 2011 and the NSW Work Health and Safety Regulation 2025, including updates to the site's asbestos register and associated asbestos removal and management plan in accordance with regulatory requirements.</p> <p>Excavation and movement of asbestos contaminated soils, including the construction and dismantling of static biopiles, will follow SafeWork NSW's Guidance on Managing Asbestos in or on Soil (2014) and the WA Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites (2021). During biopile operations, engineering controls such as vapour and dust capture and filtration will be applied to prevent the release of volatile organic compounds (VOCs) and asbestos fibres into the environment.</p>	<p>PFAS and groundwater management</p> <p>It is noted that the extent of PFAS removal in the FTA will be informed by data gap assessments (currently underway). The Site Auditor also notes that management of groundwater impacted by PFAS and other contaminants, in order to inform any treatment requirements for dewatering, will be assessed in accordance with specific RWPs that will be subjected to the site Auditor review. Post-remediation, groundwater monitoring will continue to verify the effectiveness of soil remediation in preventing future groundwater impacts. The remediation process is expected to improve long-term groundwater quality, supported by natural attenuation processes whereby indigenous microorganisms biodegrade residual hydrocarbon contamination. Any remaining groundwater impacts requiring management will be addressed through measures outlined in an EMP or similar document, where applicable.</p> <p>Staging of remediation works</p> <p>It is the Site Auditor's understanding that remediation works described in the RAP are likely to be staged.</p> <p>Vapour intrusion controls</p> <p>The Site Auditor notes that if vapour mitigation measures (e.g. a vapour barrier) are required to facilitate site suitability, based on the outcomes of the DGA or validation sampling, the vapour barrier design, construction details, and associated sampling and validation plans will require review and endorsement by the Site Auditor. Subsequent Site Auditor review of installation and validation of any vapour mitigation measures will also be required to confirm site suitability. Design and installation of any vapour mitigation measures (if required) would be outside of MOD-7.</p>
Proposed validation criteria	<p>AECOM proposed in the RAP (AECOM, 2026) that soil validation data generated during remediation will be assessed in accordance with the NEPC (2013) and NEMP 3.0 HEPA, (2025) to confirm that remediation objectives have been achieved.</p> <p>Validation will be based on systematic sampling designs, appropriate validation methodologies, and a sufficient number of samples to calculate both the arithmetic mean contaminant concentrations and the 95% Upper Confidence Limit (UCL) for relevant exposure areas.</p> <p>Validation assessments will be undertaken separately for staged remediation areas and for different material types (e.g. fill versus natural soils), particularly where materials are proposed for onsite reuse. All reused materials will be independently assessed against the applicable criteria in accordance with regulatory requirements.</p>	<p>The Site Auditor considers that based on the available information, the proposed validation criteria are appropriate. The Auditor further notes that the petroleum hydrocarbon validation criteria (for vapour intrusion) proposed in the RAP are conservative, having been developed based on a worst-case scenario using shallowest sample depth ranges. Final validation depths and criteria will be reviewed and refined based on the outcomes of the DGAs. The Site Auditor understands that any required amendments will be documented in the proposed future Validation SAQPs to be developed as part of the validation program, with consideration of the DGA outcomes.</p>
Proposed validation testing	<p>Soil Validation - Summary</p> <p>Stage specific Validation SAQPs will be prepared as part of the validation Data Quality Objectives (DQOs) program by a suitably qualified environmental consultant and reviewed by the Auditor prior to remediation.</p> <p>Validation SAQPs will align with the remediation sequence and selected remedial methods and will demonstrate compliance with the RAP and RWPs. Each Validation SAQP will define DQOs, Data Quality Indicators (DQIs), field and laboratory quality control procedures, and analytical methods to ensure the reliability of validation data.</p> <p>Reusable on-site materials - Summary</p> <p>Materials generated on-site and proposed for reuse (including concrete) will be validated against site-specific criteria. Sampling density will depend on material source and volume. Analyses will include relevant COPC as identified in the RAP and RWPs. All materials will undergo visual inspection for asbestos-containing material (ACM) prior to placement.</p> <p>Imported fill - Summary</p> <p>VENM and/or ENM and quarry materials accompanied by NSW EPA certification generally will not require validation sampling. Where certification is absent, confirmation testing will be undertaken, including visual inspection, photo-ionisation (PID) screening, and laboratory analysis. Sampling densities will follow the ENM Order and Exemption 2014, with a minimum of three samples for volumes less than 75 m³ and then one sample per 400 T for quantities exceeding 4,000 T. Analyses will include BTEXN, TRH, PAHs, heavy metals, pH, and asbestos.</p> <p>Waste classification – Summary</p> <p>Materials for off-site disposal will be sampled and classified in accordance with the NSW EPA Waste Classification Guidelines (2014, including PFAS addendum) with sampling frequency determined by material volume and heterogeneity.</p> <p>Groundwater – Summary</p> <p>Groundwater monitoring will be undertaken prior to, during, and following remediation to establish baseline conditions, confirm remediation does not adversely affect groundwater, and assess post-remediation conditions. Monitoring well decommissioning and replacement for each remediation area will be managed through the RWPs in accordance with national bore construction standards.</p>	<p>Sampling density and material re-use</p> <p>The Site Auditor notes that the proposed sampling density for the re-use of materials on site and/or the importation of VENM or ENM is acceptable, provided that stockpiled materials are demonstrably homogeneous. Where material variability is identified, increased sampling densities will be required.</p> <p>The Site Auditor further notes that any material proposed for re-use on site must be appropriately validated and approved by the Site Auditor. Alternatively, imported material must meet the criteria for VENM or be sourced as validated quarried material.</p> <p>Soil vapour sampling for biopiling</p> <p>The Site Auditor notes that soil vapour validation sampling requirements associated with treated material on-site (biopiling) will be finalised once the biopiling design and operational details are confirmed. These requirements will be documented in the relevant RWPs, subjected to the Site Auditor review.</p>

Element of RAP	Summary of AECOM provided information	Site Auditor's opinion
	<p>Monitoring well maintenance will involve decommissioning wells impacted by excavation prior to works and installing replacement wells post-remediation as required to maintain spatial coverage of groundwater conditions.</p> <p>Soil vapour– Summary</p> <p>Soil vapour monitoring will be conducted to establish baseline conditions or assess post-remediation effectiveness, particularly where residual contamination still exceeds Tier 1 criteria. Soil vapour probes or wells will be installed and sampled in accordance with CRC CARE Technical Report 23, with the selection of temporary or permanent installations based on site conditions, access, and monitoring objectives. Sampling locations will account for surface conditions and shallow groundwater constraints, and leak testing will be completed prior to each sampling round.</p>	
Contingency plan	<p>AECOM (2026) considered that potential unexpected events during remediation include greater than anticipated contaminated soils, previously unidentified secondary COPC, unexpected groundwater or saturated conditions, unknown underground tanks, flooding, excessive dust, fugitive emissions, odours, spills, and design changes affecting contamination risks. Contingency measures are triggered when thresholds (to be documented in the RWPs) are exceeded on a remediation area-specific basis.</p> <p>A summary of unexpected conditions and likely actions, considered in the RAP (AECOM, 2026) included:</p> <ul style="list-style-type: none"> – Unexpected soil contamination or volumes: Work paused; environmental assessment conducted; remediation approach updated and reviewed by Auditor. Additional imported fill may be required. – Excess contaminated water / high groundwater: Flooding managed through surface water controls; dewatering adjustments or engineering controls applied; remedial extent changes reviewed by Auditor. – Excessive vapours, dust, or odours: Work suspended; mitigation includes relocating materials, using odour suppressants, dust suppression, and engineering controls; thresholds defined in WHS and Air Quality Management Plans. – Soils unsuitable for off-site disposal or treatment. Toxicity characteristic leaching procedure (TCLP) analysis testing or alternative onsite management considered; modifications or further approvals may be required. – Spills / leaks: Managed under Emergency Response Plan with appropriate containment materials. – Noise / vibration: Monitored and mitigated per Noise and Vibration Management Plan. <p>A summary of contingency measures, considered in the RAP (AECOM, 2026) included:</p> <ul style="list-style-type: none"> – Modify biopile operation (e.g., thermal enhancement) if standard bioremediation is ineffective. – On-site management of materials not suitable for treatment, e.g., asbestos-impacted soils. – Off-site disposal of untreated soils where onsite management is impractical. – In-situ groundwater treatment may be considered if required to meet commercial/industrial land use standards, subject to separate approvals. 	<p>In the Site Auditor's opinion, the proposed procedure for managing unexpected finds, which includes the immediate cessation of works and identification of encountered materials, is appropriate, practical, and capable of being effectively implemented within the proposed remediation strategy.</p> <p>The Site Auditor notes that contingency measures will be triggered when the relevant thresholds defined in the RWPs are exceeded.</p>

5. Closure

The Site Auditor understands that the proposed modification constitutes development involving consolidation of operational infrastructure, removal of redundant assets, and undertaking targeted remediation of legacy ground contamination. Accordingly, development is being sought by Ampol as a modification to SSD-5544. A Modification Report was prepared to support the application. The Modification Report included a Conceptual RAP (AECOM, 2025a) which has, following exhibition of the modification application and additional data review, been converted into a RAP (AECOM, 2026).

The RAP (AECOM, 2026) documents that the modification application was publicly exhibited between 10 July and 1 August 2025, during which submissions were received from regulatory agencies and the community. A Submissions Report has been currently prepared, supported by the RAP (AECOM, 2026) and other technical documentation.

The Site Auditor considers that the RAP (AECOM, 2026) has been prepared in general accordance with the guidelines listed in **Section 3**, and that the proposed remediation scope and approach will assist in preparing Zones 2 and 3 for land uses consistent with the sites zoning. It is noted that additional details will need to be provided through the relevant RWPs and/or Validation SAQPs, and these will be informed by ongoing investigations.

This letter should be regarded as interim advice to the overall review and site Audit process and should not be considered a Site Audit Statement under the CLM Act, 1997. This interim Audit advice letter will subsequently be referred to and provided as an Annex to the final Site Audit Statement and Site Audit Report.

Sincerely,



GHD Pty Ltd

Andre-Karl Smit
Technical Director / NSW EPA Accredited Auditor
Attached: Audit Comments Register.

ATTACHMENT A - AUDIT COMMENTS REGISTER

Project ID Kurnell ALM Audit
 Project No. 12640828
 Consultant AECOM Australia Pty Ltd
 Client Ampol Australia Petroleum Pty Ltd
 Report Kurnell Terminal SSD5544 MOD-7 Appendix I - Remedial Action Plan - RAP



Item	Report Section(s)	Auditor's comments - report version dated 21/11/2025	AECOM's responses	Auditor's comments - report version dated 12/12/25	AECOM's responses2	Auditor's comments - report version dated 15/1/2026
0	General comment	The RAP generally requires a detailed review to address some formatting issues, typographic errors, missing references and cross-reference errors.	Amended	1 - Some table references appear to have been deleted (e.g. Table 2, Table 5, Table 6). 2 - Some formatting issues remain, for example: "Updates pertinent to this RAP are captured under the sub-sections Section ? to Section ? below."	Noted. These are errors in the word document that will be resolved in PDF.	Comment closed noting that references and formatting issues need to be resolved in the final pdf.
1	Executive Summary	Background: It's stated that capping is no longer part of this modification application due to ongoing management practices and site specific controls. What ongoing management practices / controls are addressing leaching of contaminants in soil to	Routine GW monitoring per the RAS allows for the detection of leaching related contaminant mobilisation. Added.	Comment closed. It would be beneficial to include a statement regarding health and safety controls, including site inductions.	Added	Comment closed.
2	Executive Summary	Remediation objectives: What are "the" parts of the Project Area being referred to?	Text amended	Comment closed.	-	-
3	Executive Summary	Site Audit: The ACS cell should be identified in Figure F3.	Figure updated	Comment closed.	-	-
4	Executive Summary	Site understanding: PAHs can be petrogenic or pyrogenic. Please review.	Primarily petrogenic, but potentially pyrogenic in fill. No change	Comment addressed.	-	-
5	Executive Summary	Site understanding: Have all secondary COPC been identified on-site, or rather their potential presence based on historical use? This is an important distinction.	Text amended	Comment closed.	-	-
6	Executive Summary	Remediation overview: "Free phase LNAPL" - LNAPL is by definition free phase.	Text amended	Comment closed.	-	-
7	Executive Summary	Remediation overview: In the context of comments from the Department and previous audit comments, a more detailed consideration of the status of groundwater remediation in the summary should be presented.	Text amended	Comment closed.	-	-
8	Executive Summary	Remediation overview: Its stated that "A separate RAP will be produced to support the subsequent SSD application for the KEIP. This RAP will detail the scope of capping works required to bring the Site to its targeted commercial / industrial endpoint." Capping may not be the only remedial works required to make the site suitable for commercial/industrial use - for example groundwater remediation or engineering controls such as vapour barriers may be required.	As discussed: Engineering controls such as vapour barriers would be considered in the EMP (rather than RAP) and subject to Audit sign-off as part of building design and construction. Active groundwater remediation is not expected nor confirmed so have not been referenced in the KEIP - the only remediation that is planned to be proposed in KEIP at this time is asbestos capping. It is noted that the auditor can provide this context in their IAA, without inclusion in the MOD-7 RAP.	This comment is closed, subject to further review once data gap assessment work has been completed.	-	-
9	1 Introduction	6th paragraph: Would 'postponement' or 'deferral' be better than 'removal' to give the reader context that these will still occur?	Text amended	Comment closed.	-	-
10	1.2 Objectives	While it is acknowledged that the later KEIP RAP will be required to facilitate ultimate site suitability, can the stated objectives of this RAP reference this ultimate objective?	Text amended	Comment closed.	-	-
11	1.5 RAP and RWP Scopes	Table 1: What if the RWP needs to revisit the ROA based on new findings in the additional investigations? An ROA is not necessarily N/A at the RWP stage.	Text amended	Comment closed.	-	-
12	1.5 RAP and RWP Scopes	Table 1: DGAs appear to be presented as part of the RWPs; however, won't the RWPs be prepared after the DGA scopes are completed?	Text amended	Comment closed.	-	-
13	1.5 RAP and RWP Scopes	Table 1: Given this RAP precedes the DGA outcomes, how will it refine the nature and extent of impact?	Text amended / clarified	Comment closed.	-	-
14	1.6 Remediation Documentation	Table 2: There are plans presented as part of the CEMP in Section 9.1.2 additional to those listed here (e.g. AMP, CMP). Should these lists be consistent?	Text in Section 9.1.2. amended	1 - Comment closed. 2 - Section 9.1.2 - please clarify what would be included in the "Contingency Plan(s)" which would also be produced as part of or alongside the MOD-7 RWP(s).	2. As discussed, contingency plan referenced here is a section within the RWP, not a stand alone plan. Reference to the "plan" deleted as not warranted.	Comment closed.
15	2.1 Site Identification	Table 3: There appear to be inconsistencies with the Overarching SAQP, including identification of all relevant lots, part-lots, and associated DP numbers - please review.	Part of Lot 62 incorrectly excluded from Zone 2 in SAQP. RAP not amended. Partial lots denoted.	Comment closed.	-	-
16	2.1 Site Identification	Please consider including a figure that shows the relevant Lots and DP boundaries and the audit boundaries.	Figure updated	Figure 1b included. Comment closed.	-	-
17	2.3 Surrounding Land Use	The following surrounding land uses are missing: Sydney Desalination Plant (SDP), Village of Kurnell, Kurnell Public School, Kurnell Kindergarten, and the small shopping centre. Please include.	Text amended	Comment closed.	-	-
18	Figure 1	It would be helpful to include the audit boundary in Figure 1. If this figure is from another source please reference it.	Figure updated	Comment closed.	-	-
19	2.8 Hydrogeology	The aquifer properties presented in Section 2.8 (Aquifer permeability is ~25 m/day; Advective velocity is ~133 m/year; Aquifer porosity is assumed to be 0.4) of the RAP differ from those included in the Overarching SAQP.	Update with consideration to new data as presented in SAQP	Comment closed.	-	-
20	3.1 Site History	The following have not been discussed in the SAQP; please include the source: "Establishment of large bunds to separate the refinery from the surrounding landscape, with a significant portion of the sand for this sourced from dredging in Botany Bay."	Explicit reference not found. Note removed. It is recognised that Kurnell was a significant source of sand (through sand mining) for construction from the 1930s.	Noted. Comment closed.	-	-
21	Table 6	Limestone pit remediation area - please insert "encapsulation" after "stabilisation" - the treated waste was placed into a lined containment cell and capped. The phytoremediation was used to treat the phosphate plume in groundwater.	Text amended	Comment closed.	-	-
22	Table 6	Bund walls - Would this include placement of imported dredged material from Botany Bay?	Text amended	Comment closed.	-	-
23	3.4.4 Remediation Action Strategy Update Report, November 2023 (Ampol, 2023)	It's not clear what remedial actions are still in progress for each area referenced (e.g. northern tank farm). - please include this detail. Were these actions still in progress at the time of reporting (i.e. 2023)? Have those actions now been completed? The Eastern tank farm - please reference the DSI reports referred to (DSIs completed in 2022 and 2023).	3.4.3 3.4.4 and 3.5 merged, and reduced. DU pairings provided.	Comment closed	-	-
24	3.4.7 Soil Vapour Monitoring Program - November 2023 (WSP, 2024a), May 2024 (WSP, 2024e), November 2024 (WSP, 2025e)	There is an unreferenced "2024" at the end of the heading. Should there be another report?	Now 3.4.6 - no error in heading reference observed.	Now Section 3.4.6 - Comment closed.	-	-
25	3.4.8 Soil, groundwater and soil vapour investigation, Former Southern Process Unit and Old Garage Areas (WSP, 2025f)	Is there a reason why historical assessments are not presented in chronological order?	Now 3.4.7 These are organised by either the types of investigations, or the sources being investigated. Chronology was considered within each subsection however. Note added to the start of section 3.4 to state this.	Comment closed.	-	-
26	3.4.9 Remediation Validation Report - CLOR AREA (WSP, 2021h), Soil Vapour Investigation at the former CLOR area (WSP, 2023f)	Please specify the areas that are referenced to have been remediated.	Now 3.4.8 Text amended	Comment closed.	-	-
27	Table 7	Uncontrolled fill across Zones 2 and 3 is not presented. The areas of concern listed in this section should be a consolidation of current knowledge rather than re-presenting the RAS AEC?	No change. Uncontrolled fill was not identified in the RAS, it was added to the C-RAP and in hindsight should not have been.	Noted. Comment closed.	-	-

28	Table 7	Can these AEC be linked to the DUs from the SAQP?	Table amended (item 23)	Comment closed.	-	-
29	Table 7	Zone 2 – AECOM stated "A 2018 review of groundwater data (GHD, 2018) found no exceedances of assessment criteria present. The Former Limestone Pits are within the Project Area but not included in the audit boundary." This is inconsistent with Section 1.4, which only states that the ACS cell is outside of the audit area. Please confirm and reference a figure showing this confirmed as it is beyond.	Text amended (reference to limestone pits being outside the audit boundary removed)	Comment closed.	-	-
30	4.0 Conceptual site model	It would be more appropriate to present the CSM after the data review - i.e. at the point where a refined understanding of the identified contamination and potential SPR linkages could be presented. The current CSM suggests that pathways are potentially incomplete/complete for the full spread of identified COPC, but this is not necessarily the case.	Added Section 4.4.1 Site specific controls and the OEMP, prior to exposure assessment to support the Table 8 exposure assessment conclusions.	Comment closed.	-	-
31	Table 8	Would the column "proposed remediation" be better called "current status" rather than pre-empting the remedial options evaluation later in this document? Proposing remediation before the SPR linkages have been assessed seems pre-emptive.	Text amended	Comment closed.	-	-
32	Table 8	Footnote 2 refers to proposed capping works, which would not be a current control (as listed for DU02). Please review.	Footnote 2 removed. References to site specific controls in Section 4.4.1 added.	Comment closed.	-	-
33	Table 8	How does "COPC" here relate to primary vs secondary COPC or confirmed vs potential COPC? The executive summary states that "A range of secondary COPCs (e.g., chlorinated compounds, refinery process chemicals, as defined in Section 4.2.1) have also been identified onsite," but none of these are mentioned here.	Tables 9 10, 11 introduced prior to Table 8 to link the reader between potential source, copcs per source type, and then to COPC per source type.	Table 8 comment hasn't been responded to. Its not clear how COPC have been shortlisted in Table 8	contaminated area / COPC based on historical investigation data - sentence explaining this included prior to table 8.	Comment closed.
34	Table 9	-	-	Table 9 – The terminology "15 metals" used in the SAQPs has been changed to "expanded metals" due to molybdenum inclusion. Clarify why molybdenum was not included in the SAQPs. Should this be noted as a data gap?	Note that analysis for Mo is included within the heavy metal "block" of analytes covered by a "15 metals" analysis request. The result can be reported through request to the lab. Not considered a data gap as the SAQP lists Mo. In MOD7 documentation "Expanded metals" will be used moving forward.	Noted - Comment closed.
35	Table 8	DU03 – Currently managed through site-specific controls: it would be helpful to include a section discussing current site controls under the OEMP that mitigate the risk from these contaminants.	Section 4.4.1 added.	Comment closed.	-	-
36	Table 8	DU10: Please confirm that, when referring to PHC rather than TRH, the intent is to capture TRH, BTEXN, and PAHs as COPC?	Resolved through update of PHC definition to exclude PAH (Table 12)	Noted, but should PAHs still be considered as a COPC grouping in Table 12?	Table 12 updated to include all COPCs for clarity.	Comment closed.
37	Table 8	DU14 ("No PFAS exceedances") – For clarity, can this specify adopted human health and/or ecological criteria?	Text amended	Comment closed.	-	-
38	Table 8	DU15: B(a)P is listed separately as a COPC from PHC, but when PHC is first defined, it is stated to include PAHs?	Resolved through update of PHC definition to exclude PAH (Table 12)	Comment closed	-	-
39	Table 12	Expanded metals suite does not appear to be complete?	Name changed to "Expanded metals" as Mo is not in NEPM 15 metals suite, 15 metals is therefore not correct.	Clarify why Mo is included in the RAP but not in the DU SAQPs?	Item 34 response.	Comment closed.
40	4.3 Receptors	Onsite receptors are stated to include wetlands. The Zone 2 SAQP documented no on-site ecological receptors. The wetlands are indicated to be outside of the Project Area on Figure 1?	Updated the onsite/offsite definition to the Project Area - and updated receptors accordingly	Noted – wetlands are not included in the project area. Comment closed.	-	-
41	4.3 Receptors	Offsite: The northeast of Zone 2 receptors listed in the Zone 2 SAQP are not included in the RAP (receiving SWS catchments [Botany Bay and Quibray Bay])	Text amended	Comment closed.	-	-
42	Table 13	1. Soil Exposure pathways – "This supports the soil vapour inhalation pathways..." What is meant by "support"?	1. Text amended	1 - Comment closed.	-	-
43	Table 14	2. Groundwater: Section 7.8 of the RAP states: "Shallow groundwater at the Site is generally encountered at 2.0 m below ground level (mbl) with depths ranging between 0.4 mbl (near the water overlying shallow rock) and 8.9 mbl. Within Zone 2 SPR Linkage Assessments – The COPC listed here differ from those presented in Table 9. For example Table 9 indicates OCP and OPP in groundwater but Table 14 does not.	2. Intent is to present that a potential for contact with groundwater exists. These details have been reduced to a range, and a cross-reference to Section 2.8 added. 3. Text amended As discussed, added to GW.	2 - Comment closed. 3 - Comment closed.	-	-
44	Table 14	Which management protocols are AECOM referencing? As noted above a section discussing the current OEMP and controls would be useful context, particularly if these controls are being relied on for risk mitigation discussed in the RAP.	Section 4.4.1 added	Comment closed.	-	-
45	Table 14	Zone 1: Offsite residents marked as "potentially complete" Which exposure pathways are potentially complete? Given off-site residents are known to abstract bore water for several purposes, these uses should be considered.	Table 14 updated (refer to items #40 & #41) - with more detail added for the potentially complete PFAS pathway.	Comment closed	-	-
46	Table 15	Soil Assessment Criteria – How can depth of remediation be informed when future levels are unknown? How will changes in development levels that might drive additional remediation be captured? Would a more protective approach be to screen all results against shallow criteria so that potential development risks are understood?	Soil was already screened against 0 - 1m criteria for SAE exceedances and flagged with this intent. GW - most conservative criteria already applied. SV - more conservative criteria was not applied - updated. One new exceedance, flagged in Section 6.4, DU12 adjacent soil exceedance.	Depths for TRH fractions and BTEXN were deleted. Please keep consistent.	Mention of most conservative criteria added prior to T15. Relevant depths still provided within T15.	Comment closed.
47	4.6.1 Source information	1- Please reference a figure showing the historical LNAPL occurrence mentioned in Section 4.6.1. 2- Please discuss whether the LNAPL in Zone 1 has the potential to influence development/remediation in Zones 2 and 3? 3- Please summarise the known details of the spill (e.g., product type and volume). 4- Depth of LNAPL: Please refer to the applicable DUs and zones for the tank farms.	1. ref Figure F4 added. A stand alone figure to present LNAPL no longer observable has not been developed. 2. discussion on impact of Zone 1 LNAPL added. 3. detail added for ETF - other sources not known 4. text amended	1 - Comment closed. 2 - Comment closed. 3 - Noted. Comment closed. 4 - Comment closed.	-	-
48	4.6.2 Transport	Please clarify whether gauging of monitoring wells near areas where LNAPL has been observed is planned as part of remedial works?	Added - RWP referenced for details.	Comment closed.	-	-
49	4.6.3 Risks to receptors	1 - Please reference the relevant reports and figures which support on-site delineation of LNAPL bodies 2 - second bullet" rather than "cause dermal contact", "could result in dermal contact" is suggested for clarity. Please also consider incidental ingestion as a potential pathway.	1. Added report reference. Figure not provided. 2. Text amended	1 - Not addressed. Referenced reports (WSP 2024c, 2024f, 2025d, and 2025i) are not sufficient evidence that LNAPL is delineated. Based on Figure 4C, it appears that LNAPL is not delineated west of DU16.	Added Annex A - Figure 4D - presenting the 9 LNAPL detections from quarterly GW monitoring at 280 wells.	Comment closed noting that additional groundwater sampling is to be completed as part of the current data gap assessment.
50	5.1 Introduction	1 - 3rd bullet: Are the EMPs referenced existing or future EMPs? 2 - 3rd last bullet on page. What about other potential COPC that are not covered by the NEPM?	1. Revised to future CEMPs 2. Bullet point refers to direct contact with groundwater which is generally >1 m. This would be relevant to all COPC	1 - Comment closed. 2 - Correction - comment should have referred to 3rd last paragraph. Only PFAS is called out as being outside the NEPM.	COPC without Tier 1 criteria will be guided by ASC NEPM hierarchy - utilise protocol LOR as T1 threshold. Minor changes made to text including removal of specific reference to PFAS in the NEPM context.	Comment closed.
51	Table 15	1 - screening depth of 0 to 0.5 m. With reference to above comment in respect of potential development and changes in level, a conservative approach is recommended to screen all data against shallowest criteria so that the risks associated with development are understood. 2 - For COPC without NEPM criteria, how will elevated LORs be managed? 3 - US EPA RSLs, November 2024: Please note that these may be updated periodically and the adopted criteria should always	1. Text amended 2. Where NEPM criteria are not available for specific contaminants, screening has been undertaken using other local or international guidelines with geographic settings comparable to Australia. These alternative criteria are listed in the table. 3. Noted	1 - Refer to the auditor comment in line 55. 2 - Comment closed. RSLs will be adopted where Australian criteria are unavailable. 3 - Comment closed	per line 55	Comment closed.
52	Table 16	Lead is listed as a generic ACL rather than an EIL in Table 1B(4).	Text amended	Comment closed.	-	-

53	Table 17	<p>1 - Footnote 1: Measurement of soil vapour may also be used as a line of evidence where groundwater is shallower than 2m.</p> <p>2 - PFAS: What about groundwater uses such as irrigation of vegetable gardens?</p> <p>3 - BTEX, metals, VOCs and SVOCs (including CHCs): Please clarify how instances of LORs exceeding criteria would be managed?</p> <p>4 - TRH Fractions, BTEX, and naphthalene in LNAPL, vapour inhalation – This pathway can also be assessed using soil vapour measurements.</p> <p>5 - General comment: Please include a section that discusses identified off-site residential bore water use based on Ampol surveys.</p>	<p>1. Text amended</p> <p>2. Recreational criteria would be protective of incidental ingestion during garden watering as the criteria is based on 0.2L/event and up to 150 events/year (i.e. up to 30 L/year) being ingested. The home-grown produce pathway should be assessed using the residential with garden/accessible soil HILs (HIL A), which incorporate soil ingestion, dust, and consumption of home-grown fruit and vegetables assumed to contribute up to 10% of total fruit and vegetable intake. However, this is outside of the scope of this RAP as these locations are offsite.</p> <p>3. Text amended. If protocol LORs exceed screening criteria, ultra-trace analysis will be completed.</p> <p>4. Text amended</p> <p>5. Drafting note: needs to be discuss with Ampol</p>	<p>1 - Comment closed.</p> <p>2 - Soil concentrations may be representative of potential risk for vegetable uptake from contaminated groundwater irrigation however this may be dependent on a number of factors, such as seasonal patterns and how long groundwater has been used for this purpose. It is noted that this pathway is off-site and may need to be revisited at a later stage.</p> <p>3 - Table 15 does not mention ultra-trace analysis. AECOM states: "Where the LOR is exceeded or elevated, the concentration is compared to the US EPA RSLs for drinking water (with a 10-fold factor applied). Please clarify.</p> <p>4 - Comment not addressed; text remains unchanged.</p> <p>5 - Comment not yet addressed</p>	<p>1 -</p> <p>2. Noted. No action needed.</p> <p>3. Text added to Section 5.1</p> <p>4. SV criteria cross reference for VI assessment added to T17</p> <p>5. Text in table 13 updated.</p>	<p>3 - Comment closed.</p> <p>4 - Comment closed.</p> <p>5 - Comment closed, noting that "Surveys identified that bore water use was limited to recreational purposes (irrigation of lawns and vegetables, filling of pools, washing of surfaces) (WSP, 2024d).</p>
54	Table 18	PFAS – PFOA and PFOS – How will the LOR be applied from a remediation/validation perspective if it is two orders of magnitude above the stated 99% criterion? This needs further comment and justification.	This comment has been removed. The 99% criterion will be applied where relevant at boundary locations	Comment closed.	-	-
55	Table 19	VOCs including CHCs – For VOCs not included in the NEPM, could consideration be given to using USEPA RSLs for industrial air as a basis for deriving Tier 1 criteria based on NEPM attenuation factors?	Text amended	Comment closed.	-	-
56	6.1 Overview	<p>1 - Please note up front that data gap investigations are ongoing and may affect the nature and extent of remediation required (not just of LNAPL).</p> <p>2 - Please define extent practicable.</p> <p>3 - Final paragraph states "the removal of LNAPL or volatile COPC (PHC and VOC) via SAE to the extent practicable would depend on the potential vapour intrusion risk that the LNAPL presents, the nature and extent of LNAPL, and the difficulty with which removal can be completed (depth and extent of LNAPL)." Presumably the depth and extent referred to is not just LNAPL but also VOC/PHC-impacted soils/groundwater?</p>	<p>1. Text amended</p> <p>2. Removed. Feasibility already presented in the sentence.</p> <p>3. Text updated in line with NEPM Key principles for the remediation and management of contaminated sites</p>	<p>1 - Comment closed.</p> <p>2 - Comment not addressed. In the 2nd bullet point the following was noted by AECOM "Removing LNAPL via within SAEs to the extent practicable where present..."</p> <p>3 - What AECOM wants to mean with the removal of LNAPL or volatile COPC would be taken opportunistically? in soil and groundwater? If a potential vapour risk is found, it needs to be remediated. Please clarify.</p>	<p>1 -</p> <p>2. Updated and addressed in the subsequent updated paragraph (refer to 3 below)</p> <p>3. Text updated. Future potential vapour risks may also be addressed via vapour barrier.</p>	Comments closed.
57	6.2 Soil / Fill / LNAPL	<p>1 - "The four other LNAPL wells are located within the northwestern tank farm within Zone 1" – Please note that these are outside of the audit area.</p> <p>2 - "Excavation at the FFTA is being completed" – The auditor is not aware of any remediation (or RAP) that has yet commenced in this area – please comment?</p> <p>3 - "Whilst soil PFAS concentrations in this area do not exceed Site criteria" – Which criteria are being referred to? Health or ecological or both?</p>	<p>1. Text amended</p> <p>2. Text amended</p> <p>3. Text amended</p>	<p>1 - Comment closed.</p> <p>2 - Comment closed.</p> <p>3 - Comment closed.</p>	-	-
58	6.3 Groundwater	<p>1 - 4th bullet: "The soil remediation process itself is expected to significantly improve groundwater conditions over the long term". Note that the long term referred to may result in groundwater impacts still needing to be managed in the KEIP RAP (e.g. installation of vapour barriers in building). The degree to which groundwater conditions improve after targeted soil removal with depend on how much impact (e.g. residual LNAPL) is left in-situ below the water table.</p> <p>2- Final paragraph: as noted above, it is not necessarily confirmed that soil excavation works will remediate groundwater to target criteria in the timeframes of potential development. Contemplating the potential need for further management as part of the KEIP RAP is a prudent approach.</p>	1 and 2. reference to engineering control and EMP added	Items 1 and 2 – Comment closed, noting that if required to make the site suitable, vapour barrier design and installation must be reviewed and approved by the auditor.	Noted	-
59		left blank	No action	-	-	-
60	Table 20	<p>1 - How will practicability of biopiling be assessed? Please discuss the criteria which will be applied.</p> <p>2 - Zone 1 – Please note this as being outside of audit boundary.</p> <p>3 - Please refer to the auditor's email sent on 2/12/2025. Cross checking AECOM responses is still under way.</p> <p>4 - SAE3/DU10. If saturation limits are exceeded, it is likely that residual LNAPL is present, but has not been observed.</p> <p>5 - DU14: The stated PFAS concentration range suggests exceedances of the criteria adopted for the site, which is inconsistent with the statement in Section 6.2. There is also no reference to groundwater exceeding adopted ecological criteria</p>	<p>1. Biopiling methodology is discussed in Section 7.5.3.6. Table 20 talks to identified SAEs requiring excavation only.</p> <p>2. Text Amended</p> <p>3. Noted</p> <p>4. Agreed. Areas where saturation limits are exceeded are proposed for remediation.</p> <p>5. Maximum PFAS concentration identified as 1.78 mg/kg?</p>	<p>1 - See comments on 7.5.3.4 (biopiling).</p> <p>2 - Comment closed.</p> <p>3 - Comment not addressed pending AECOM responses ref/ email dated 2/12/25.</p> <p>4. -</p> <p>4. Noted.</p> <p>5 - Comment not addressed. Exceedances of ecological criteria are not considered in Table 20. Please review Section 6.2.</p>	<p>1. addressed below</p> <p>2. -</p> <p>3. 6.4 text updated to address "most conservative criteria"</p> <p>4. -</p> <p>5. PFAS ecological exceedances included in Table 20 as it presents an ongoing risk to offsite eco receptors. Based on last discussion with Auditor.</p>	<p>1 - Noted, see applicable responses.</p> <p>2 - N/A</p> <p>3 - Comment closed</p> <p>4 - NA</p> <p>5 - Comment closed, noting that there are formatting errors in Table 20 such as "Refer to Section Error! Reference source not found (DU01).</p>
61	Table 21	#4: Which DGA is being referred to?	Text amended - AEOCM 2025e	Comment addressed.	-	-
62	7.1 Introduction	<p>1 - It would be beneficial to reference suitability of the site for commercial/industrial use as the ultimate objective of all remedial works.</p> <p>2 - "Remediation of soil impacts (exceeding volatile human health assessment criteria)" is stated as an action that must be taken to meet the remediation objectives in Section 1.2. However, exceedances of volatile human health assessment criteria is not the only issue identified in Table 20?</p>	<p>1. Text amended</p> <p>2. Text amended</p>	1 and 2 - Comment closed.	-	-
63	7.3 Remedial options assessment	3rd bullet point – Please clarify what on-site management of asbestos will comprise (given that it excludes capping).	1. Reference to the Site's AMP added	Comment closed, noting that the AMP has not been reviewed by the auditor.	-	-
64	7.4 Preferred remediation approach	<p>1 - Biopiling friable asbestos impacted material – Has the risk from this activity been assessed? Please reference where controls for this have been discussed</p> <p>2 - Last statement – For clarity, suggest rewording to "natural attenuation continues to reduce concentrations..." or "monitoring continues to confirm the reduction of concentrations of dissolved phase hydrocarbons via natural attenuation."</p>	<p>1. There is precedent for biopiling of friable asbestos impacted material. It is expected that handling of this material and placement into static biopiles would not pose any greater risks compared to excavation/removal. Further detail has been added in Section 7.5.3.6 to describe OHS controls required for safe handling/removal of friable asbestos impacted soil.</p> <p>2. Text amended</p>	<p>1 - Noted biopiles are proposed to be static, however amendment addition would likely require mixing. Detailed controls will need to be prepared in AMP/ARCP.</p> <p>2 - Comment closed.</p>	-	-
65	7.5	In the staging section, it would be beneficial to highlight that remedial works is likely to progress by DUs or by areas (yet to be defined) that reflect future development footprints. It could also be restated here that this RAP will be complemented by the future KEIP RAP, and together the two documents will facilitate works to make the site suitable for commercial/industrial use.	Text amended	Comment closed, noting that the proposed chart showing these stages is still to be presented.	Figure 2 added to show relationship for MOD7 and KEIP, time restricted ability to provide more detailed staging plan.	-
66	7.5.3.2 Approvals	Please also reiterate the potential for iChem to trigger PFAS-related license requirements.	Text amended	Comment closed.	-	-
67	7.5.3.3 Excavation	In the context of the DGA SAQP, would it be appropriate to state that additional data is being collected, rather than it being expected? Page 56 – How is "minor" defined? And if the revisions are not minor, is it envisaged that an update to this RAP would be required?	Text amended regarding additional data. Minor is now defined in Section 7.1.	Comment closed.	-	-
68	Table 22	Please provide the basis for the area and depth estimates?	Text preceding Table 22 amended to include cross reference to Section 6.4 and rationale for areas/volumes	Comment closed, noting that the proposed chart illustrating these stages is still to be presented.	Figure 2 added to show relationship for MOD7 and KEIP, time restricted ability to provide more detailed staging plan.	Comment closed.
69	7.5.3.5 Asbestos Management	<p>1 - Please note the WHS Regulation is now 2025.</p> <p>2 - AECOM states "Screening or sorting materials would be undertaken on excavated soils to remove non-friable asbestos materials to the extent practicable in adherence to NSW's Guidance on Managing Asbestos in or on Soil (SafeWork NSW, 2014) and the Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in WA (WA DoH, 2021) during soil remediation. This allows the impacted soils to be treated onsite through biopiling"</p> <p>Does this infer that soils impacted with friable asbestos cannot be biopiled?</p>	<p>1. Text amended and in references</p> <p>2. Text amended to remove reference to screening/sorting of materials</p>	<p>1 - Comment closed.</p> <p>2 - Now section 7.5.3.7 - Comment n closed.</p>	-	-
70	7.5.3.6 Biopiling	<p>1- How is "gross asbestos" defined?</p> <p>2 - PFAS – Please define "gross" to allow unambiguous decision making.</p> <p>3 - Please discuss what the practicability constraints are here – is it time taken to reduce concentrations of COPC, recalcitrance of some COPC to the method, soil types? This will help define "to the extent practicable" and feeds into the discussion in the final paragraph.</p>	<p>1. Gross contamination with respect to PHC and CHC generally defined as >250 times HSL D criteria</p> <p>2. Not applicable to PFAS</p> <p>3. Text amended</p>	<p>1 - Now Section 7.5.3.4 – Gross contamination is defined as "250 times relevant adopted criteria" Please confirm - should this be 250% (i.e. 2.5 times)? If not, please discuss basis. Is this criterion appropriate for asbestos?</p> <p>2 - Comment closed.</p> <p>3 - Partially addressed. Detailed approach to biopiling will depend on COPC for be treated and area specific considerations, and will need to be presented in the Remedial Work Plans.</p>	<p>1. 250 times a guide for gross, but driven by the ability to practically treat, based on development goals. Asbestos covered by section 7.5.3.7, no gross contamination threshold offered.</p> <p>2. -</p> <p>3. Noted.</p>	<p>1 - A blanket 250 x HIL/HSL criterion is unlikely to be a good indicator of applicability of biopiling for different COPC. Biopiling success would be dependent on a number of factors including media types, co-contaminants, concentrations, physical conditions and COPC type. It is recommended that applicability of biopiling be assessed on a case by case basis in RWP.</p>
71	7.5.3.7 Offsite disposal (untreated)	This appears to assume that each area in Table 20 would be excavated to the full depth stated, and none of it would be remediated – is this a realistic upper estimate?	Estimate updated to include ASB and PFAS volumes only, allowing for contingency volumes where soils are scheduled for onsite treatment	Now 7.5.3.5. Please provide the basis for these updated estimates? It is unclear why asbestos source areas would require off-site disposal as capping was previously contemplated. .	<p>1. discussion for estimates added to action / detail column of table20.</p> <p>2. LPG area discussion regarding capping added (not in KEIP rap boundary). There are program related reasons for these fill materials not being stored for potential reuse during the capping stage of works.</p>	<p>1 - Comment closed.</p> <p>2 - Noted.</p>

72	7.5.3.9 Surface water manager	Can the WWTP manage PFAS?	Updated text introduces the possibility of pre-treatment	Comment closed.	-	-
73	7.5.3.11 Soil Reuse, import fill, and	1 - Is there intention to re-use crushed concrete on site? Please include discussion/assessment in the RAP. 2 - Please note that there is a non-negligible risk for asbestos to be present in imported recycled fill materials.	1. Yes we are proposing to re-use crushed concrete. Additional text will be added to include concrete sampling methodology under Section 8.0 2. Text amended	1 - Noted - Please list concrete in S8.2.1. Will the full analytical suite listed in 8.2.1 also apply to concrete? 2 - Comment closed.	1. added. Suite dependant on local sources.	Comment closed, noting that a full analytical suite for analysis if reusable fill materials, including concrete must be provided in RWPs.
74	7.5.3.12 RPIP remediation	How does removal of vegetation ensure that potential dust migration does not occur? Further detail is warranted – spray grass on its own would need regular maintenance to provide reliable mitigation of dust generation potential. It's effectiveness would also require monitoring under a form of EMP or interim EMP.	Text amended to include reference to maintenance of surface covering via the Sites Asbestos Management Plan	Comment closed	-	-
75	7.6.1 Approach	What about previously unidentified contamination (e.g., different COPC)?	Bullet point added	Comment closed.	-	-
76	Table 24	There will need to be quantifiable thresholds set to trigger contingency actions.	It is considered appropriate to be developed and included in the individual RWPs. Text amended to note this information will be provided in RWPs	Is it likely that these triggers would deviate substantially between areas? Ideally these would be included in the RAP.	AQMP and NVIA/NVMP referenced in Table25.	1. Comment closed. 2. New comment. Table 24 refers to "Soil proposed for offsite disposal fails to meet "General Solid Waste" - this doesn't acknowledge that most soil would be classified as special waste due to asbestos. It should clarify that anychemical classification other than GSW would trigger the identified actions.
77	7.6.2.2 Contingency measures	1 - It is not fully clear in the document how asbestos impacts will affect biopiling and how this will be mitigated. 2 - What about engineering controls such as vapour barriers?	1. Addressed in comment #64 2. Addressed in comment #58	As above	no additional action taken.	1- Noted, with expectation that further detail on asbestos controls for biopiling materials containing asbestos would be provided in the relevant RWP / AMP / ARCP plans. 2 - Comment closed, noting that if a vapour barrier is required based on the outcomes of the DGA, the vapour barrier design, construction details, and any associated sampling and validation plans will need to be reviewed and endorsed by the auditor, with subsequent auditor review of implementation and validation of any installed barriers for assessment of site suitability.
78	8.2 Soil characterisation / validation	SAQP has already been prepared; what characterisation is being contemplated here? It would make sense for this section to focus on validation sampling only.	Text amended	Comment amended.	-	-
79	8.2.2 Fill materials / soils in access	Please have a separate section outlining the validation requirements for imported fill, including information review requirements, sampling densities, inspection requirements, and validation criteria. This should not require revision based on any of the DGA work.	Text amended	1 - Section 8.2.1 refers. If VENM/ENM materials are not certified by Ampol's appointed environmental consultant, check testing must be carried out on receipt. 1/25 m3 is probably not practicable for large volumes of material. Please review. Also, please state categorically that materials selected for on-site re-use must meet adopted validation criteria.	text updated - table 26 added.	Proposed density is acceptable provided stockpiled materials are homogeneous. Sampling densities would need to be increased for materials showing any variability.
80	8.2.3 Waste classification	1 - Please insert "designated for off-site disposal" after "Materials" for clarity. 2 - Given the prevalence of asbestos at the site, is it realistic to anticipate classifying any waste on site as ENM? If on-site material is chemically classifiable as ENM, why would it require off-site disposal?	1. Text amended 2. Deleted.	1 and 2 - Comments addressed.	-	-
81	8.3 Soil sampling methodology	1 - There are several references to monitoring groundwater to assess whether soil remediation has resulted in beneficial groundwater outcomes. As such, groundwater sampling methodology should also be included in the RAP. The placeholder in Section 8.7 is not considered to be sufficient. 2 - Soil vapour validation of successful biopiling of TRH/CHC-impacted material should have its own section, separate from soil sampling and groundwater sampling. The RAP that needs to describe overarching requirements; it would be appropriate to state that validation and characterisation sampling will be done in accordance with this document rather than deferring to another document.	1. Added groundwater sampling details in Section 8.7.1 2. Sampling and validation of biopiles is outlined in Section 8.6.4.	1a. What triggers groundwater gauging and sampling? This must be clearly stated in the RAP. 1b. Requirements for decommissioning and re-installation of groundwater monitoring wells destroyed during remediation must be included. 1c. Identify which monitoring wells will be gauged and PID-screened during remediation or this will be included in the RWP? 1d. Specify analytical parameters or this will be included in the RWP? 2 - ref 8.6.4: 2a - Overarching soil vapour validation procedures should be detailed in the RAP, including implant construction, prevention of atmospheric ingress, analytes, sampling rate, equilibration time. 2b - 1/1000 m3 vapour confirmation sampling density is too low. 10x baseline soil sampling frequency of 1/25m3 would be a reasonable starting point. The quantitative sampling referred to by AECOM needs to be detailed in the RAP. Please also note that WA DoH 2021 has not been endorsed by NSW EPA. Where there are departures in WA DoH 2021 from NSW EPA endorsed guidelines these need to be identified and commented on.	1a. GW monitoring pre, during, post remediation nominated. Further post-remediation monitoring per OEMP requirements and will be further refined as part of the EMP. 1b. Added to Section 8.7.3 1c. Stated in RWP based on confirmed extent of remediation 1d. As above. 2a. Soil vapour added to section 8.8 - largely reliant on reference to CRC CARE TR23. 2b. Updated to 250.	1a - Comment closed. 1b - Comment closed. 1c - Comment closed, noting that monitoring wells that will be gauged and PID-screened during remediation will be discussed in the RWP. 1d - Comment closed, noting that analytical suite for GW monitoring will be included in the RWP. 2 - Comment closed. 2a - Comment closed subject to further review of detail presented in area specific RWPs. 2b - Comment closed.
82	8.4 Validation inspections	Where do asbestos clearance inspections factor into any of the processes in this RAP?	added asbestos clearance Section8.6.6	Updates made to describe sampling requirements and note made regarding comparison between NSW and DoH.	Comment closed	Comment closed
83	8.5 Quality assurance / quality control	This is very brief. The overall requirements for QA/QC (e.g., QA sample types, frequencies, etc.) should not change based on each RWP, just the specific quantities. Can these be tabulated? Please also reference the relevant guidelines and standards	Text amended	Comment addressed.	-	-
84	8.7 Groundwater assessment method	Groundwater sampling methodology should be consistent across the site irrespective of DGA outcomes – please include.	Text amended	Refer to the auditor comments made in item 81.	as above	-
85	Annexure C	This table should include a column presenting the outcomes, supporting the proposed remediation. Are there any documents supporting this statement? Clarify if the Limestone Pits are outside of the audit area. This ROA should be clearly linked to asbestos contamination.	Most of the relevant findings/outcomes from previous investigations have been consolidated in Section 3.4, focusing on those applicable to the development of this RAP. Annex C provides additional detail on each investigation and its respective scope. Limestone pits are within the audit area.	Comment not addressed. Outcomes must be linked to the ROA. Asbestos is also not clearly linked to the ROA. The auditor noted that there is no summary of historical works presented that captures key results such as concentrations above criteria. Not clear really what the use of Annex C is if it only presents objective and scope. Is	Annex C removed as it provides limited value.	Comment closed
86	Annexure E	1 - Should this be Table E1 rather than D1? 2 - Please insert a column describing which identified COPC would be targeted by each option - e.g. TRH, CHCs etc. 3 - PFAS remediation and chlorinated solvents do not appear to be discussed in the ROA. 4 - Please explain what is meant by "degraded compounds" and "other organics". Target COPC for specific remediation methods should be linked to the COPC identified in the RAP. 5 - Excavation and off-site disposal is noted as "Able to handle most solid waste streams generated at the target area (hazardous materials excepted)". Have interstate hazardous waste disposal facilities been considered? 6 - There are several references to options being "inconsistent with NSW EPA Remediation Hierarchy". Rather than inconsistent (where the option is on the hierarchy), it would be more accurate to state that it is less preferred. 7 - Cost seems to be considered in some evaluations but not others. Similarly ESD and intergenerational equity. Please keep review criteria consistent and objective. 8a - In-situ solidification / stabilisation: This option seems to link on-site containment and stabilisation and solidification. On-site containment does not necessarily require stabilisation? 8b - Unclear what "moderately protective" means here. This could be interpreted negatively when containment and stabilisation are generally proven technologies in Australia. 8c - there is reference to community and regulatory expectations but these are not set out in the RAP	1. Text amended 2. Column added 3. CHCs have been added, and PFAS is captured under treatment options that are suitable for all COPC. 4. Text amended 5. Text amended 6. Text amended 7. Text amended 8a. Text amended 8b. Text amended 8c. Removed 8d. Text amended 8e. Text amended 9. Text amended 10. Text amended to clarify this option is ongoing management without remediation - "do nothing" is not presented as an option	1 to 10 - Comments closed.	-	-