

Copi Mineral Sands Project (SSD-41294067)

Radiation expert review and recommendations report

New South Wales Department of Planning, Housing and Infrastructure



Reference: 754-PEREN420317

11 December 2025

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QUALITY INFORMATION

Revision history

Revision	Description	Date	Author	Reviewer	Approver
1	Initial report	9/12/2025	D.Crouch	L.vandenBerg	M.Deaves

Distribution

Report Status	No. of copies	Format	Distributed to	Date
Version 1 final	1	PDF	Emily Murray Emily.Murray@planning.nsw.gov.au Mandana Mazaheri Mandana.Mazaheri@planning.nsw.gov.au Steve O'Donoghue Stephen.ODonoghue@planning.nsw.gov.au	11/12/2025

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EXECUTIVE SUMMARY¹

This report reviews radiation safety for the Copi Mineral Sands Project (SSD-41294067) in NSW, as per the project submission on the website².

The applicant's report characterises all low-level exposures as non-negligible, but later labels predicted doses as 'negligible' and does not explicitly address radon and thoron decay-product pathways. These inconsistencies and omissions are detailed in Section 3.2 and should be clarified by the applicant.

Monazite concentrate (up to 290 Bq/g) will require Class-7 transport protocols, with packaging, contamination, and road-incident risks assessed. Tailings blending must include verification to prevent hotspots. Based on the assessments reviewed, radiological risks to the environment are expected to be low, but baseline and ongoing monitoring are essential to confirm this and address current information gaps (e.g. groundwater and waste characterisation).

Community concerns raised to the Department about rehabilitation and transparency are consistent with gaps in the current documentation, particularly the absence of a Mine Closure Plan and a project-specific Radiation Management Plan/Radioactive Waste Management Plan demonstrating how requirements under the NSW Radiation Control Regulation 2013 and ARPANSA RPS 9 will be met.

Recommendations overview

- Prepare Radiation Management Plan and Radioactive Waste Management Plans (ARPANSA RPS9).
- Prepare preliminary Mine Closure Plan.
- Appoint a qualified Radiation Safety Officer before commencing construction and operations.
- Conduct 12 months of baseline monitoring and commit to ongoing verification.
- Applicant to provide further details regarding port approval and handling risk assessment.

Radiological risk may be considered to be low, but strong planning, monitoring, and communication are critical for compliance and public confidence.

¹ This executive summary must be read in the context of the full report and the attached limitations.

² <https://www.planningportal.nsw.gov.au/major-projects/>

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
ALARA	As Low as Reasonably Achievable
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
Bq/g	Becquerel per gram – unit of radioactive activity concentration
FIBC	Flexible Intermodal Bulk Container (aka: bulka-bag)
Gy	Gray units – unit of absorbed (radiation) dose
HMC	Heavy Mineral Concentrate
REC/RECP	Rare Earth Concentrate (Product)
RMP	Radiation Management Plan – a statutory approved document
RPS9	ARPANSA Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (2005)
RSO	Radiation Safety Officer – statutory position
RWMP	Radioactive Waste Management Plan - a statutory approved document
Sv	Sievert – unit of radiation dose (risk)
TSF	Tailings Storage Facility

1. SCOPE OF WORK

This report has been prepared at the request of the New South Wales Department of Planning, Housing and Infrastructure to provide independent expert advice on the adequacy and appropriateness of radiation safety aspects of the Copi Mineral Sands Project (SSD-41294067) assessment documents.

The following direction was given regarding the scope of work:

The independent expert advice should specifically assess the adequacy and appropriateness of the assessment documents to support the proposed project in relation to the associated radiation impacts on human health (adjoining residents and local communities) and the environment (including and not limited to airborne dust and water resources), having regard to relevant limits, policies and guidelines.

Specific deliverables:

- Review the adequacy and appropriateness of the proposed project's impact assessments (including Appendices 3, 14a, 14b of the amendment report) and any additional documentation that may be required for clarification.
- Advise if the project's likely radiation impacts on human health (adjoining residents, local agricultural businesses and local communities) during handling, storage, stockpiling and transportation have been adequately assessed, including proposed mitigation and management measures.
- Advise if the project's likely radiation impacts on the environment (including and not limited to airborne dust and water resources) during handling, storage, stockpiling, and transportation have been adequately assessed, including proposed mitigation and management measures.
- Advise if further information is required.
 - o Participate in consultation with relevant NSW Government personnel, the Applicant (RZ Resources) and its experts if required, which the Department would co-ordinate.
 - o Progress updates to the Department via phone/email/MS Teams meeting.
 - o Provide draft and final written expert advice, including recommendations to the Department for input into the Department's assessment report and if relevant, for conditions of consent, including recommendations to minimise and manage identified risks, including regulatory controls/ measures; and
 - o Provision of supplementary advice pending any response from the Applicant.

2. INTRODUCTION

This report has been written upon the request of the New South Wales Department of Planning, Housing and Infrastructure (the Department) to provide expert radiation advice on the mineral sand proposal documents supplied by RZ Resources Limited for the Copi Mineral Sands project (Application Number SSD-41294067) in New South Wales.

Advice has been provided within the scope of the following three (3) documents:

- 13. Appendix 3 – Summary of Mitigations
- 26. Appendix 14A - Public Radiation Risk Assessment
- 27. Appendix 14B - Environmental Radiation Impacts (Non-Human Biota)

Advice provided focuses on the following three (3) areas:

- Validity of the reported information and modelling, or claims/concerns

-
- Information that the applicant should provide during the assessment stage
 - Mechanisms that can be put in place at the beginning of the project, to ensure the project is conducted through all stages of its lifecycle responsibly, in the context of radiation protection for workers, members of the public and the environment.

This document of advice has been informed by the Department's summary of community submissions relating to radiation, rehabilitation and transparency.

The report is authored by Mr Dean Crouch, a Certified Radiation Safety Expert (CRSE), issued by the Australasian Radiation Protection Accreditation Board (ARPAB). He has been in radiation protection for more than 20 years, a full-standing member of the Australasian Radiation Protection Society (ARPS), and a full-standing member of the Australian Institute of Occupational Hygiene (AIOH). He is a former Special Inspector of Mines (Radiation) for the (then) Western Australian Department of Mines and Petroleum, specialising in radiation protection in uranium, mineral sands and rare earth elements mining and processing operations.

3. METHODOLOGY AND SCOPE LIMITATIONS

The following documents from the applicant's submission were reviewed as a desk-based review, with no additional modelling, as part of this report:

- 13. APPENDIX 3 – SUMMARY OF MITIGATIONS
- 26. APPENDIX 14a – Public Radiation
- 27. APPENDIX 14b – Environmental Radiation

More information on report limitations can be found in Section 7.

4. KEY FINDINGS

4.1 FILE: 13. APPENDIX 3 – SUMMARY OF MITIGATIONS

Measure 1.1: Groundwater monitoring should include radio analysis for uranium, thorium, radium (Ra-226 and Ra-228), and Pb-210 to establish baseline levels before operations begin.

Measure 9.3, 12.11: The ARPANSA Code of Practice for the Safe Transport of Radioactive Material also needs to be adopted for the transport of Class-7 radioactive material. ADGC does not address or license Class-7.

4.2 FILE: 26. APPENDIX 14A – PUBLIC RADIATION

Executive Summary Pg 2: “For low levels of exposure, there are no threshold values in which ‘no’ or ‘negligible’ risk can be guaranteed”.

This conveys the idea that *all exposure, no matter how small, carries risk*. This statement is later contradicted by calling modelled exposures/doses negligible. It is recommended that this statement be removed or revised, as the following statement (regarding comparison to dose limits) is sufficient to establish a risk metric.

Executive Summary Pg 2: “Radon gas”.

Given the near-surface, short-lived nature of radon/thoron progeny and the project's configuration, this pathway is likely to contribute less than other pathways; however, the applicant should either (a) provide a

screening calculation showing that radon/thoron doses are negligible compared with other modelled pathways, or (b) explicitly include these gases and decay products in the dose assessment.

Executive Summary Pg 3: “Annual doses were calculated and summed for an adult and a 5-year-old child using the radionuclide content of the project materials and conservative values related to air quality, occupancy, and food consumption rates”.

Including some mention of the exposure or intake pathways would provide the statement with more context.

Executive Summary Pg 3: “...dose ‘optimisation’ is achieved by keeping annual doses ‘as low as reasonably achievable’ (ALARA)..”

The Radiation Management Plan should demonstrate how optimisation (ALARA) has been applied, including consideration of social and economic factors in line with ICRP/IAEA guidance³.

Section 2.2.2: A Radioactive material transport plan was not included in the documents provided by the applicant. Given the actual or perceived impacts this material could have on transport routes and port infrastructure, it is pertinent for the applicant to provide evidence that they have considered the regulatory, logistical, and economic impacts on the project arising from the transportation of HMC and other related products.

Section 4.1: “Under this criterion, heavy mineral sand products or by-products may be exempt from the provisions of the *Transport Code* if they have an activity concentration of Th-232 and U-238 of less than 10 Bq·g⁻¹.”

HMC products (zircon, ilmenite, rutile, etc) often fall under 10 Bq/g. Monazite may be between 60–290 Bq/g and will NOT be exempt; it may also have other impacts on transport, including driver exposure and contamination during bulk transport.

Section 5.1 (3): “For low levels of exposure, there are no threshold values in which ‘no’ or ‘negligible’ risk can be guaranteed.”

This contradicts the later claim that doses are negligible.

Section 7: There is a repeated claim that tailings will be blended RECP and HMC to achieve a low overall blended radiation activity concentration. What safeguards or verifications will be implemented to ensure this happens? What if there are hotspots in the tailing storage facility upon project completion?

4.3 FILE: 27. APPENDIX 14B – ENVIRONMENTAL RADIATION

Section 3.1: Applicant to confirm if this land use also applies to the adjacent land or where activities and mine closure may impact the land use.

Section 4.1: The dose unit is now Gray, while in the public report it is Sv. While this may be correct, it may be highlighted as an inconsistency by a member of the public.

Section 5.2 Scenario 2: The applicant should specify the minimum backfill/cover depth required to ensure dose rates do not restrict any future use and describe how this will be verified at closure.

Section 5.2 Scenario 2: For tailings to have an activity concentration less than the overburden, how will this be verified? It is also assumed that no chemical separation is used, so isotopic mobilisation is unlikely.

Sections 6 & 7: While it is agreed that the modelled risk is low, monitoring should be conducted before and during the initial phases of the project to confirm this.

³ International Atomic Energy Agency. (2014). *Radiation protection and safety of radiation sources: International basic safety standards* (IAEA Safety Standards Series No. GSR Part 3). IAEA.

5. CONCLUSIONS

While mining operations (earthworks) would not pose a significant risk to workers, members of the public, or the environment under normal conditions, the handling, packaging, and transport of Monazite concentrate would require significantly more detail on how they will be carried out safely, along with monitoring to verify their safe execution.

The applicant assessment documents do not provide sufficient detail regarding how radiation protection will be conducted during and post mining operations. What radiation exposure monitoring (people and the environment) is conducted throughout the lifecycle of the project, the methods used and the training and qualifications of those performing that work should be clearly outlined and approved by the regulator before any commencement of mining operations. These commitments would form part of the Radiation Safety Management System and be included in the Radiation Management Plan, Radioactive Waste Management Plan, and Mine Closure Plan, as appropriate, and changes to these documents would require approval, given their potential impact on members of the public and the environment.

This approval process is set out in the New South Wales Radiation Control Regulation 2013. The mining operation will also be subject to the Mines Health & Safety Act (WHSA) and Mines Health & Safety Regulations (MHSR). Interaction of the MHSA & MHSR with radiation licensing and RMP may be as follows:

- A Radiation Licence or RMP required under the Radiation Control Regulation does not remove MHSA obligations.
- The mine must integrate radiation management into its mine safety management system. Regulators (Resources Regulator, EPA, SafeWork NSW) may coordinate, but each can take enforcement action under its own statute.
- A radiation licence/approval from the EPA (or other radiation regulator) where required by the Radiation Control Regulation.
- A Radiation Management Plan (RMP) incorporated into, or run alongside, the mine's safety management system required under the MHSA.
- Site-specific procedures, training, monitoring and health surveillance meeting both radiation licence conditions and MHSA safety system requirements.
- Reporting procedures aligned to both the Resources Regulator (for mine incidents) and EPA/SafeWork (for radiation/environmental incidents) as applicable.

5.1 MONAZITE (RARE EARTH CONCENTRATE)

The following is a general assessment of the radiological impacts of monazite and NORM in rare earth element mining and processing. As the applicant did not provide a detailed Radiation Management Plan, environmental modelling (for example, ResRad), or a Mine closure Plan, the assessment is speculative based on standard industry expectations.

Rare-earth concentrates, including minerals such as monazite, can pose long-term environmental and public-safety risks because monazite naturally contains thorium. Thorium is a radioactive element, and while the radiation levels in such concentrates are typically low to moderate, they persist for a very long time. After a mine closes, the key issue is not immediate high-level exposure, but the slow release and movement of this material in the environment if it is not adequately contained.

If thorium-bearing concentrate or rejected process material (i.e. monazite not economically viable to recover from mined ore) is left on site or stored in tailings storage facilities (TSFs) that degrade over time, weathering processes—such as wind, rain, and erosion—can gradually erode the top covering and transport small particles into surrounding soils and waterways. Although thorium itself is not very soluble, its decay products

can migrate more easily under certain conditions. Over many years, this can lead to a distribution of radioactivity in local soil or sediment. In turn, plants can take up small amounts, which could then enter the food chain. For members of the public who live near the site or rely on local land and water, this long-term accumulation is the primary concern.

Additionally, if the concentrate dries out and becomes dusty, airborne particles can be inhaled by people or animals. Inhalation is one of the more significant exposure pathways for radioactive minerals because particles can remain in the lungs for long periods.

Ensuring secure, long-term containment and ongoing monitoring is therefore essential to prevent gradual environmental dispersion and protect nearby communities long after mining ends.

More information on the management of NORM containing residues can be found in the International Atomic Energy Agency Technical Document IAEA-TECDOC-1712⁴ *Management of NORM Residues*.

5.2 POTENTIAL IMPACTS ON GROUNDWATER

The applicant provided no acid rock drainage characterisation, nor radionuclide leach testing in the submission documents.

Acid rock drainage (ARD) can have long-term environmental impacts when combined with mine tailings and therefore requires appropriate planning and management. ARD refers to the oxidation of newly exposed minerals and rocks, particularly sulphide-bearing minerals like pyrite, which react with water to produce sulphuric acid. The acid, in turn, can leach residual metals, including radionuclides, from the tailings.

The applicant provided a Groundwater Impact Assessment; however, it did not specify radionuclide monitoring in Section 13.1.3, *Groundwater Quality Monitoring*. There is no evidence that radionuclides mobilised from waste material will migrate into local aquifers; neither has a quantitative assessment nor a commitment to verify radionuclide concentrations in groundwater been made. This would ideally be committed to in the environmental radiation monitoring program in the Radiation Management Plan.

5.3 FURTHER INFORMATION REQUIRED FROM THE APPLICANT

The following information or documentation should be provided to the Department, preferably prior to determination or, at minimum, required through conditions of consent:

- Radiation Management Plan.
- Radioactive Waste Management Plan.
- Radioactive Material Transport Management Plan.
- Details of the Radiation Safety Officer and evidence of experience and qualifications appropriate to the project risk profile.
- Mine Closure Plan
- Details of, and commitment to, a baseline (pre-operational) radiation survey and how/when it will be conducted.
- Details of, and commitment to, critical group radiation monitoring (pre and first five years of operation) and how it will be conducted.
- Risk assessment on the use of FIBC for the transport of rare earth concentrate.

This information is required so that potential radiological hazards and risks are systematically and comprehensively considered and appropriate methodologies for their management are determined.

⁴ https://www-pub.iaea.org/MTCD/Publications/PDF/TE-1712_web.pdf

6. RECOMMENDATIONS

6.1 RECOMMENDATION 1 – RADIATION MANAGEMENT PLAN

It is recommended that the applicant prepare a Radiation Management Plan (RMP) and a Radioactive Waste Management Plan (RWMP) in consultation with a suitably qualified expert. This plan should follow the National Code *RPS9 Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (2005)*, sections 2.7 & 2.8, published by ARPANSA.

If not included in a separate set of procedures, this plan should also include detailed methodologies for conducting the monitoring required under the RMP.

If not included in a separate plan (see Recommendation 5.7) that also needs to be approved, this plan should include a detailed radioactive material transport management plan.

We recommend that all relevant regulatory agencies approve this plan before the project commences.

6.2 RECOMMENDATION 2 – RADIATION SAFETY OFFICER

The documents anticipate a Radiation Safety Officer (RSO) overseeing the identification, assessment, monitoring, and review of radiation management for members of the public, but this is not explicitly stated. It is recommended that the RSO qualification and experience requirements be stated, and that there be a commitment to have this person appointed under NSW legislation before the project commences.

We recommend that all relevant regulatory agencies approve the appointment of the Radiation Safety Officer before the project commences.

6.3 RECOMMENDATION 3 – MINE CLOSURE PLAN

The applicant assessment documents do not provide any indicative plan for mine closure or specify the safeguards or measures to be used during rehabilitation to ensure any potential future impacts on the public and the environment are *as low as reasonably achievable*.

It is recommended that the applicant provide an indicative mine closure plan, subject to current information and best practices, which may change in the future. This plan should account for radioactive waste material and potential exposure pathways during rehabilitation.

We recommend that all relevant regulatory agencies approve this plan before the project commences

6.4 RECOMMENDATION 4 – BASELINE MONITORING - DUST

There is no empirical evidence to establish the levels of radioactive dust deposition in the critical group. It is recommended that the applicant conduct and record at least 12 months of pre-operational baseline monitoring across all potential radiation exposure pathways prior to mining commencing.

More information on established radiation baseline monitoring and surveys in mining can be found at the Western Australian Department of Mines and Petroleum NORM guidelines⁵.

We recommend that all relevant regulatory agencies accept a suitably detailed radiation baseline survey before the project commences.

⁵ https://www.worksafe.wa.gov.au/system/files/documents/2025-04/MSH_G_NORM-3.1.pdf

6.5 RECOMMENDATION 5 – CRITICAL GROUP MONITORING

The applicant should implement a critical group monitoring program for at least the first five years of operation, with radionuclides and dose metrics aligned to Appendix 14a assumptions, at locations representative of the critical group. The program should be designed to detect departures from modelled doses at an agreed level of confidence and to report them publicly to address community concerns about transparency.

We recommend the applicant stipulate in an approved Radiation Management Plan (or supporting document) the monitoring type, method and frequency for all potential exposure pathways before the project commences.

6.6 RECOMMENDATION 6 – USE OF FLEXIBLE INTERMODAL BULK CONTAINERS (BULKA-BAGS)

The applicant should assess the risk of using bulka-bags as monazite packaging. The impact of a bag splitting, releasing 250 Bq/g material with low moisture content and relatively small particle size, should be assessed.

We recommend the applicant submit a formal risk assessment of the transport methodology and packaging as part of the Radiation Management Plan or Radioactive Material Transport Management Plan before the project commences.

6.7 RECOMMENDATION 7 – RADIOACTIVE MATERIAL TRANSPORT MANAGEMENT PLAN

The applicant should prepare a Radioactive Material Transport Management Plan, possibly as part of their RMP, that designates routes, methods, and frequencies. It should propose transport routes, relevant regulators across state boundaries, and potentially impacted groups.

This plan would also include a commitment to periodic haul route monitoring to verify that roads and transport routes are not contaminated by use. The verification methodology should be outlined in either this plan or the RMP procedures.

We recommend that this plan be approved by all relevant regulatory agencies, potentially multiple agencies across state borders, before the project commences.

7. LIMITATIONS

Important information about your Tetra Tech Coffey Report

This report has been prepared by Tetra Tech for you, as Tetra Tech's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from our assessment and supplemented by reported data of the local area and professional experience. The assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the accessibility within the built environment. Tetra Tech may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Tetra Tech has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons, the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

Your report has been written for a specific purpose

Your report has been developed for a specific purpose, as agreed by us, and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored assessment approach is required. In most cases, a key objective is to identify, and, if possible, quantify, recognised and potential risks for the context of the agreed purpose. Such risks may be financial (for example, remediation costs or constraints on site use) and/or physical (for example, potential health risks to site users or the general public).

Limitations of the Report

The work was conducted and the report prepared in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on specific data and information made available to Tetra Tech.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site and extent or nature of hazards can change over time, as a result of either natural processes or human influence. Tetra Tech should be kept apprised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where refurbishment or demolition often reveal other conditions.

In addition, advancements in professional practice regarding this scope, and changes in applicable statutes and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential contaminated land.

Interpretation of factual data

Site assessments identify actual conditions only at those points where samples are taken and, on the date, collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No assessment program, no matter how comprehensive, can reveal all details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by within the site.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Tetra Tech would be pleased to assist with any investigation or advice in such circumstances.

Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through additional assessment), then the recommendations would need to be reviewed and may need to be revised.

Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Tetra Tech assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with, or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Tetra Tech be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Tetra Tech prepared the report and has familiarity with the site, Tetra Tech is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted, and Tetra Tech disowns any responsibility for such misinterpretation.

Data should not be separated from the report

The report as a whole presents the findings of the site assessment, and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by consultants based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

Responsibility

Reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all elements in locations across the site.