



Investigation and Reporting Standards

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The Investigating and Reporting Standards has been coordinated by the Hunter Joint Organisation. It is designed as a Guide for Councils to consider when requesting and reviewing information through the land use planning process. The content of this Guide is current at the time of publication. While every effort has been made to ensure accuracy and completeness, no responsibility is taken, nor guarantee given, by the Hunter Joint Organisation with respect to errors or omissions in the materials contained in the Guide. The contents do not constitute legal advice, are not intended to be a substitute for legal advice, and should not be relied upon as such. The Hunter Joint Organisation does not accept any responsibility or liability in regard to your use of any information given in this Guide.

FOREWORD

This document (“the Guide”) provides guidance on the Investigation and Reporting Standards for Contaminated Land technical reports.

Implementing procedures for the management of contaminated land through the land use planning process can assist councils ensure they act in “good faith” with their legislative obligations relating to providing and gathering information.

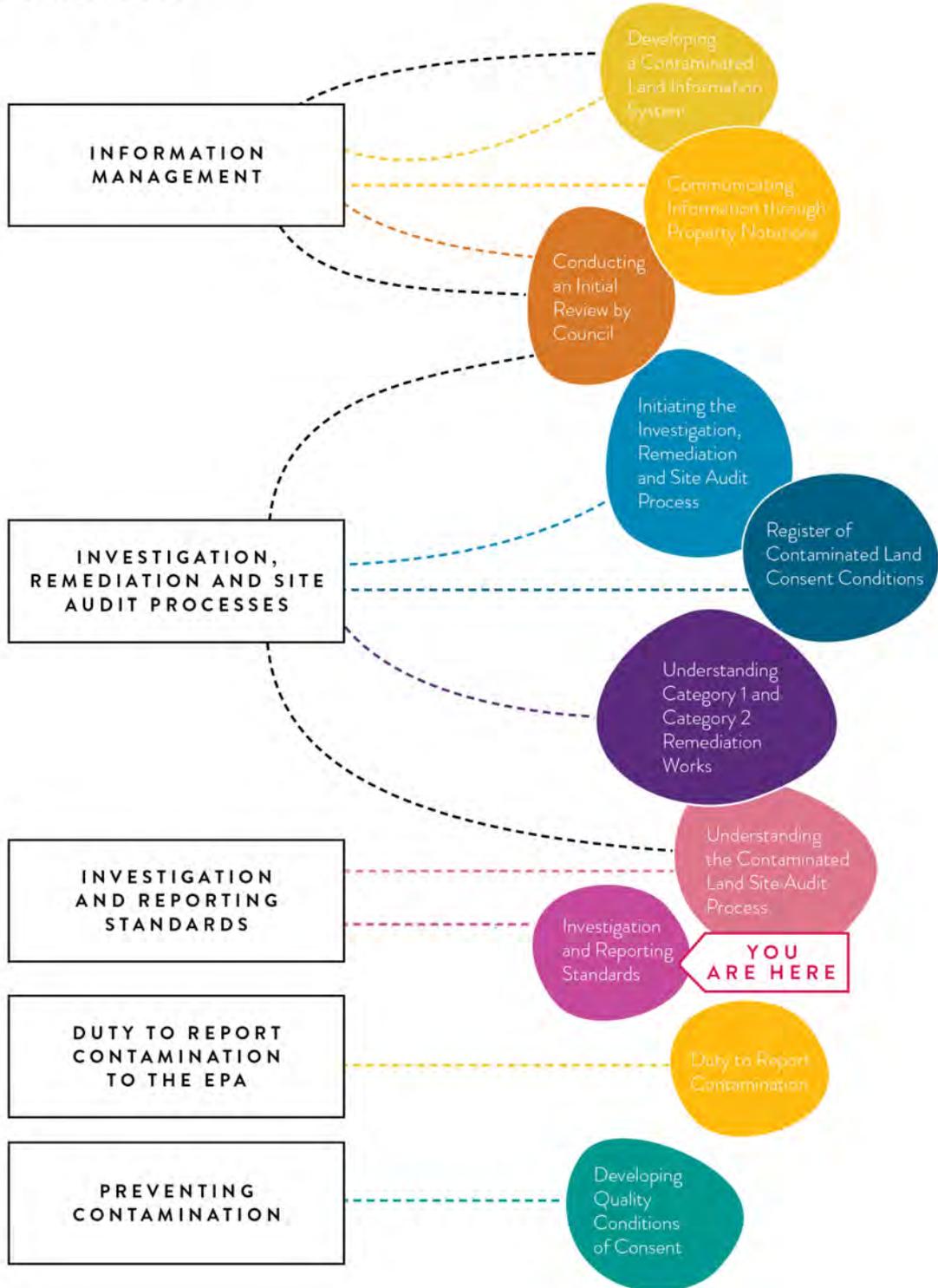
The document was developed collaboratively with staff from Councils participating in the Regional Contaminated Land Capacity Building Program.

The Guide forms part of a series of guides and resources, developed as supporting documents to the *Model Contaminated Land Policy – Land Use Planning* (Hunter Joint Organisation, 2020). Figure 1 presents this Guide in the context of the document series.

Advisory notes are included in shaded boxes to provide greater clarity and direction to staff when requiring or reviewing technical contaminated land reports.

**MODEL REGIONAL
CONTAMINATED LAND POLICY -
LAND USE PLANNING:
FOCUS AREAS**

**SUPPORTING RESOURCES
AND GUIDES**



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Key Terms and Acronyms

Category 1 Remediation	Remediation works requiring Development Consent
Category 2 Remediation	Remediation works that do not require Development Consent (but must be notified to Council)
Conditions of Consent	Requirements imposed by Council on a development approval to ensure the development complies with required standards. Conditions may apply to both the immediate construction stages of the development and occasionally beyond
Contamination	The condition of land or water where any chemical substance or waste has been added as a direct or indirect result of human activity at above background level, and represents, or potentially represents, an adverse health or environmental impact
Contaminated Land Information Register	A Contaminated Land Register forms part of a Contaminated Land Information System and refers to the register created in a property system to capture data relating to contaminated land
Contaminated Land Information System	A Contaminated Land Information System comprises two components: <ul style="list-style-type: none"> • The systematic handling and management of information by Council staff; and • A Contaminated Land Information Register.
Contaminated Land Process	<p>The process includes several stages of investigations and actions. The level ultimately required is determined by the circumstances and outcomes from the previous stage.</p> <p>The potential stages of the Contaminated Land Process are:</p> <ul style="list-style-type: none"> • Preliminary Site Investigation (PSI) • Detailed Site Investigation (DSI): Several reports, such as additional investigations, contamination delineation, monitoring, and/or Site Specific Risk Assessments may be included in this stage) • Remedial Action Plan (RAP) • Remediation • Validation (including Monitoring if applicable) • Long Term Environmental Management Plan (LTEMP) and Monitoring
CLM Act	<i>Contaminated Land Management Act 1997</i> (NSW)
Detailed Site Investigation (DSI)	An investigation with the objective to define the nature, extent and degree of contamination; assess potential risk posed by contaminants to health and the environment; and obtain sufficient information to develop a Remedial Action Plan (if needed)
Data Quality Indicators (DQI)	Pre-determined indicators used to assess if the data is considered fit for its intended uses in operations, decision making and planning. The typical parameters adopted are Precision, Accuracy, Representativeness, Completeness and Comparability (PARCC)
Data Quality Objectives (DQO)	The DQO Process is a seven step planning approach used to define the type, quality and quantity of data required to inform a specified decision relating to the environmental condition of a site

Development Application	A development application is a formal request for consent to carry out development and is considered under Part 4 of the <i>Environmental Planning & Assessment Act 1979</i>
Development Consent	Formal approval from Local Councils to proceed with a development. Development Consent is required prior to commencement of any works associated with development governed by Part 4 of the <i>Environmental Planning & Assessment Act 1979</i>
Duty to Report	The duty to report significant contamination to the NSW EPA is a requirement under the <i>Contaminated Land Management Act 1997</i> , with updates provided in the <i>Contaminated Land Management Amendment Act 2008</i> . The triggers for reporting are presented in the <i>Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997</i> (2015)
EPA	Environment Protection Authority
Initial Evaluation	An evaluation undertaken by Council to determine whether contamination is likely to be an issue, and to assess whether further information is required for it to conduct its planning functions in good faith
Land Contamination	Land contamination may be the result of past or current uses. The land may be contaminated by a current or historical land use activity directly on that site or through migration of contamination from adjacent sites. See also definition of “Contamination”
LEP	Local Environmental Plan. An LEP guides planning decisions for Local Government Areas through zoning and development controls, which provide a framework for the way land can be used. LEPs are Planning Instruments from the <i>Environmental Planning & Assessment Act 1979</i>
LGA	Local Government Area
Long Term Environmental Management Plan (LTEMP)	A plan outlining monitoring and management requirements where contamination remains on site, and there is uncertainty as to its potential to migrate; and/or the effectiveness of the management measures implemented to contain the contamination following remediation and validation; and/or monitoring and ongoing management forms part of the remediation strategy
Planning Guidelines	NSW Managing Land Contamination Planning Guidelines – SEPP 55 Remediation of Land (1998)
Planning Application	A Development Application or Planning Proposal made to/by Council in accordance with the <i>Environmental Planning and Assessment Act 1979</i> (NSW)
Planning Proposal	A formal application submitted by Council that proposes to rezone land
POEO	Protection of the Environment Operations Act 1997 (NSW)
Preliminary Site Investigation (PSI)	An investigation to identify any past or present potentially contaminating activities, to provide a preliminary assessment of any site contamination, and if required, to provide a basis for a more detailed investigation
Proponent	The person who puts forward the development application to Council
Quality Assurance/Quality Control Process (QA/QC)	A process used to assess the reliability of field work and analytical results for an investigation
Remedial Action Plan (RAP)	A plan that sets objectives, and documents the process, for remediating a contaminated site

Request for Information	Requests by Council to the Proponent prior to determination of a development application to ensure Council is provided with adequate information to determine whether consent can be granted
s10.7 Certificate	Planning Certificate under Section 10.7 of the <i>Environmental Planning and Assessment Act 1979</i> (NSW)
Sampling and Analysis Quality Plan (SAQP)	A document outlining the details for a sampling program, such as the objective(s) and the intended process
SEPP 55	State Environmental Planning Policy No 55 – Remediation of Land
Significantly Contaminated Land	A site is declared Significantly Contaminated Land by the EPA where contamination is considered significant enough to warrant regulation under the <i>Contaminated Land Management Act 1997</i> (with changes made through the <i>Contaminated Land Management Amendment Act 2008</i>) given the site's current or approved use
Site Audit	An independent review by a Contaminated Land Auditor, accredited by the NSW EPA, of any or all stages of the site investigation process, conducted in accordance with the requirements of the <i>Contaminated Land Management Act 1997</i>
Site Audit Report (SAR)	A report which summarises the report(s) audited, and provides the Auditor's opinion and conclusions. A Site Audit Report must be accompanied by a Site Audit Statement
Site Audit Statement (SAS)	A statement which outlines the conclusions of a site audit. A Site Audit Statement must be accompanied by a Site Audit Report
Table 1 of the Planning Guidelines	List of potentially contaminating activities included in Table 1 of the <i>NSW Managing Land Contamination Planning Guidelines</i> (1998)
UPSS	Underground Petroleum Storage Systems are tanks and associated piping, completely or partially buried. Includes piping to or from the tanks to the inlet point of any dispensers. Petroleum also includes ethanol & biodiesel fuels and used oil.
Validation	The objective of the validation stage of the Contaminated Land Process is to demonstrate whether or not the objectives stated in the Remedial Action Plan have been achieved

Key Legislative Instruments, Regulations, Policies & Guidelines

Contaminated Land Management Act 1997	Sets out the role of the EPA and the rights and responsibilities of parties it might direct to manage land where contamination is significant enough to warrant regulation
Contaminated Land Management Amendment Act 2008	Introduced amendments aimed to allow sites to be cleaned up more efficiently while reinforcing the 'polluter pays' principle
Contaminated Land Management Regulation 2013	Sets out the recovery of administrative costs for the EPA relating to regulated sites and the auditor system. It also sets out timeframes for administrative matters under the <i>CLM Act</i>
Guidelines on the Duty to Report Contamination under the <i>Contaminated Land Management Act 1997</i> (2015)	Details the circumstances that can trigger the requirement to notify the EPA about contamination under Section 60 of the <i>CLM Act</i>
Environmental Planning & Assessment Act 1979	Provides the overarching structure for regulation of planning and development in NSW together with the <i>Environmental Planning and Assessment Regulation 2000</i>
Guidelines produced or adopted by the NSW EPA under s105 of the <i>Contaminated Land management Act 1997</i>	Provides guidance to stakeholders in the Contaminated Land field on technical, regulatory and management matters. An up-to-date list of guidelines is available on the NSW EPA webpage: http://www.epa.nsw.gov.au/clm/guidelines.htm
Environmental Planning and Assessment Regulation 2000	Provide the overarching structure for the regulation of planning and development in NSW together with the <i>Environmental Planning and Assessment Act 1979</i>
National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)	Establishes a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, site auditors, landowners, developers and industry
NSW Managing Land Contamination Planning Guidelines – SEPP 55 Remediation of Land (1998)	The Planning Guidelines support SEPP55 and address the policy framework, identification and investigation of contamination, the decision making process, management of contaminated sites and remediation, information management, and principles for proactively preventing future contamination
State Environmental Planning Policy No 55 – Remediation of Land	Ensures planning decisions take into account possible land contamination, and promotes remediation to reduce risk of harm

1. Introduction

Given the complexity and technical nature of contaminated land reports, it is essential that Consultants complete investigations and reporting in accordance with the NSW EPA prepared and adopted guidelines, and that the Consultant undertaking the work is duly qualified.

This Guide outlines the requirements for reporting, and for Consultant's qualifications. It also provides procedures for Council when reviewing Consultants' reports to ensure they are sufficient as a basis for land use planning decisions.

Advisory Note:

The information and guidance provided in this Guide reflect the policy statements included in the Model Regional Contaminated Land Policy - Land Use Planning (Hunter Joint Organisation, 2020). Where Council has amended the Model Policy to develop their local Contaminated Land Policy, care should be taken to ensure the application of this Guide reflect local policy directions and statements.

2. Council’s Requirements on Investigation and Reporting Standards

2.1 Consultant Qualifications

Contaminated site assessments are complex and usually present a wide range of issues. Engaging professionals who have the relevant qualifications, competencies and experience is important when investigating and managing contaminated sites. For this purpose, Contaminated Land Consultant certification schemes have been developed to ensure those Consultants dealing with contaminated sites have the necessary competencies to carry out the work. Certification under a recognised scheme should be interpreted as the Consultant meeting at least an acceptable minimum standard of competency. Currently, the certification schemes recognised by NSW EPA and the Council are:

- Environment Institute of Australia and New Zealand’s (EIANZ) – Certified Environmental Practitioner (Site Contamination) (CEnvP (SC))
- Soil Science Australia (SSA) Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) certification.

Should additional certification schemes become recognised as providing an appropriate standard over time, they will also be included on the NSW EPA website.

The *MODEL Contaminated Land Policy – Land Use Planning* (Hunter Joint Organisation, 2020), includes the following policy statement regarding certification requirements:

Policy Statement:

- Contaminated land reports are to be prepared, or reviewed and approved by an appropriately qualified and certified Environmental Consultant (for any reports submitted from 1 July 2017 and onwards). Currently, the certification schemes recognised by NSW EPA and the Council are (noting other schemes may become recognised):
 - Environment Institute of Australia and New Zealand’s (EIANZ) – Certified Environmental Practitioner (Site Contamination) (CEnvP (SC))
 - Soil Science Australia (SSA) Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) certification.

Advisory note:

Certification provided under the above schemes is provided to an individual, not to a company as a whole.

2.1.1 Council Procedures

When requiring a Proponent to complete either a Preliminary Site Investigation, Detailed Site Investigation, Remedial Action Plan, Validation Report, or any other report resulting from the Contaminated Land Process, Council is to require that these reports be completed, or reviewed and approved by a certified contaminated land Consultant. Details of certification are to be included on the front cover of contaminated land reports provided to Council. For a CLA Specialist CEnvP or CPSS CSAM, this involves affixing their scheme logo, and for SCPA the CP SAM is to affix their seal.

Model wording for the certification requirement is included in the *Register of Contaminated Land Consent Conditions* (Hunter Joint Organisation, 2020).

Advisory note:

Other schemes may also become recognised by the NSW EPA in the future. As such, the Council should refer to the NSW EPA webpage for schemes currently recognised.

2.2 Site Audits

A Site Audit is an independent review of a Contaminated Land Consultant's investigations and reports for any or all stages of the Contaminated Land Process. A Site Audit must be undertaken by a NSW EPA accredited Site Auditor, and be conducted in accordance with the *Contaminated Land Management Act 1997*. Section 4 of the Act defines a Site Audit as a review:

- *“that relates to management, carried out in respect of the actual or possible contamination of land; and*
- *that is conducted for the purpose of determining any one of the following matters:*
 - *the nature and extent of any contamination of the land;*
 - *the nature and extent of any management of actual or possible contamination of the land;*
 - *whether the land is suitable for any specified use or range of uses;*
 - *what management remains necessary before the land is suitable for any specified use or range of uses; or*
 - *the suitability and appropriateness of a plan of management, a long-term management plan, a voluntary management proposal”.*

Engaging a Site Auditor to provide a statement about the suitability of the site for its proposed land use can provide greater certainty about the information on which the planning authority is basing its decision, particularly where sensitive uses are proposed is required. A Site Auditor ensures that the methodology used by Consultants and their interpretation of data are consistent with current NSW EPA regulations and guidelines.

A Site Audit will lead to the provision of a Site Audit Statement. Only Site Auditors accredited by the NSW EPA can issue a Site Audit Statement. Site Auditors are also required to provide a Site Audit Report, which contains the key information and the basis of consideration leading to the issue of the Site Audit Statement.

When requesting a Site Audit, it is important to clarify the purpose of the Audit. This will ensure that the information provided from the Audit is clear and appropriate to the requirements of Council. The specific purposes of a Site Audit (which are identified in the Site Audit Statement) are:

- A To determine land use suitability (the intended land use needs to be specified).
- B(i) To determine the nature and extent of contamination; and / or
- B(ii) To determine the appropriateness of an investigation / remedial action / management plan (the specific plan / report needs to be defined): and / or
- B(iii) To determine if the land can be made suitable for a particular use or uses by implementation of a specified remedial action plan / management plan (the specific plan needs to be identified, and the intended land use(s) need to be specified).

A staged approach to an Audit may be appropriate in some cases. Sign-off on each stage may occur as an Interim Opinion (IO) given by the Site Auditor, with a Site Audit Statement and Site Audit Report produced in the final stage of the Audit. This can be a cost and time effective approach in some cases, however; it is important to note that the end result of an Audit must be a Site Audit Statement and Site Audit Report.

Site Audits are explained in more detail in *Understanding the Contaminated Land Site Audit Process* (Hunter Joint Organisation, 2021).

The *Model Regional Contaminated Land Policy - Land Use Planning* (Hunter Joint Organisation, 2020), includes the following statement regarding when a Council may initiate a Site Audit:

Policy Statements:

- Council may require a Site Audit to be carried out where Council:
 - Believes on reasonable grounds that the information provided by the Proponent is incorrect or incomplete;
 - Wishes to verify whether the information provided by the Proponent has adhered to appropriate standards, procedures and guidelines; or
 - Does not have the internal resources to conduct its own technical review.
- All costs associated with providing a Site Audit are to be borne by the Proponent.

2.2.1 Council Procedures

Council is to require a Site Audit where Council:

- Believes on reasonable grounds that the information provided by the Proponent is incorrect or incomplete;
- Wishes to verify whether the information provided by the Proponent has adhered to appropriate standards, procedures and guidelines; or
- Does not have the internal resources to conduct its own technical review.

Council is to ensure that any requirements or restrictions on land use specified in the Site Audit Statement are noted in the Contaminated Land Information System, and where the Council is the appropriate regulatory authority, that they are legally enforceable.

2.3 Contaminated Land Investigations

Contaminated site assessments commonly present a wide range of issues requiring a multi-disciplinary approach, including scientific, technical and project management skills. Assessments must also meet relevant standards, quality assurance and regulatory requirements.

The key legislative instruments, regulations, policies and guidelines that are to be followed during contaminated land investigations are presented at the start of this Guide.

Under Section 105 of the *Contaminated Land Management Act 1997*, the NSW EPA makes or adopts guidelines. The current list is available on their webpage:

<http://www.epa.nsw.gov.au/clm/guidelines.htm>

Particularly relevant to all contaminated land investigations is the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amended in 2013), which aims to provide adequate protection of human health and the environment, where site contamination has occurred, through the development of an efficient and effective national approach to the assessment of site contamination.

Guidelines relating to contaminated land are also made under the Protection of the Environment Operations Act 1997, in particular for Underground Petroleum Storage Systems:

<http://www.epa.nsw.gov.au/clm/upssguidelines.htm>

For the purpose of contaminated land assessments, the series of technical notes available on the webpage relating to Underground Petroleum Storage Systems are particularly relevant.

2.3.1 Council Procedures

When requiring a contaminated land investigation, Council is to define the key legislation and guidelines it is to comply with. Model wording is included in the *Register of Contaminated Land Consent Conditions* (Hunter Joint Organisation, 2020).

2.4 Contaminated Land Reporting

All contaminated land reports provided to Council are to be completed in accordance with the NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*.

Given the complexity and technical nature of contaminated land reports, an appropriate summary of key issues, investigation findings and recommendations formulated by the Contaminated Land Consultant is a valuable resource to assist Council staff during the assessment process.

The *MODEL Contaminated Land Policy – Land Use Planning* (Hunter Joint Organisation, 2020), includes the following policy statements regarding investigations and associated reporting:

Policy Statements:

- All investigations and accompanying reports provided to Council are to be completed in accordance with NSW EPA prepared and adopted guidelines.
- All contaminated land reports provided to Council are required to include a summary report synthesising key findings and recommendations.

The stages of contaminated land reports and the main purpose of the stage is summarised in Sections 2.3.1 to 2.3.5.

2.4.1 Preliminary Site Investigation

A Preliminary Site Investigation report should contain a detailed appraisal of the Site's history, information gathered from a site inspection, and compilation of information from a number of sources in accordance with the NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*. It is important that all relevant information about the Site is sought and assessed to determine the potential for site contamination, and (if needed) to base further investigations on.

The main objectives of the Preliminary Site Investigation are to:

- Identify any past or present potentially contaminating activities; and
- Provide a preliminary assessment of any site contamination, and if required, provide a basis for a Detailed Site Investigation.

2.4.2 Detailed Site Investigation

The objectives of a Detailed Site Investigation (DSI) are to:

- Define the nature, extent and degree of contamination;
- To assess potential risk posed by contaminants to health and the environment; and
- To obtain sufficient information to develop a Remedial Action Plan (RAP), if required.

It should be noted that several investigations and associated reporting such as delineation, site specific risk assessments and monitoring may be needed in this stage of the process.

A Detailed Site Investigation Report should be prepared in accordance with the NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*. It should include an assessment of the risk posed by the contaminants to human health and the environment, which is a tiered approach. Generally, Tier 1 Risk Assessments can be undertaken by comparing the levels of contamination on-site with appropriate predetermined thresholds for various media (e.g. soil, groundwater, surface water, sediment and vapour) specified in *National Environment Protection (Assessment of Site Contamination) Measure 1999*, amended in 2013 (ASC NEPM, 2013) and relevant NSW EPA guidelines and Technical Notes. More detailed, site-specific risk assessments (Tier 2 and 3) can be undertaken by the Proponent's Consultant should the Tier 1 assessment indicate that risks are present.

2.4.3 Remedial Action Plan

The aim of a Remedial Action Plan (RAP) is to set objectives and document the process to remediate the site.

A Remedial Action Plan should be based on the information from investigations and on the proposed land use. The objectives of the remediation strategy and the recommended clean-up criteria should be clearly stated.

The Remedial Action Plan should demonstrate how the Proponent (and their Consultant) proposes to reduce risks to acceptable levels, making the site suitable for its proposed land use.

Remediation of contaminated land is considered to be development and may require planning approval ("Category 1" Remediation), even when the proposed land use does not require approval. If development consent is required, a Remedial Action Plan must be submitted with the development application (refer to SEPP 55 - Remediation of Land). For remediation not requiring consent ("Category 2" Remediation), Council must be notified prior to commencement and upon completion. These notifications must include a Remedial Action Plan (prior to commencement), and a Validation Report (upon completion).

2.4.4 Validation and monitoring

The purpose of validation is to confirm whether the predetermined remediation objectives have been attained and whether any further remediation work or restrictions on land use are required.

SEPP 55 requires that a notice of completion of remediation be submitted to the local Council, within 30 days of completion of the remediation for Category 2 Remediation, and as defined by Council for Category 1 Remediation. Validation and associated reporting is an essential prerequisite of this notice.

Ideally, validation should be conducted by the same Consultant that conducted the rest of the site investigation and remediation process. Validation must confirm statistically that the remediated site complies with the remediation criteria set for the site. The Consultant should follow the relevant NSW EPA guidelines, and *National Environment Protection (Assessment of Site Contamination) Measure 1999* (as amended in 2013), when validating the site.

Where monitoring has formed part of the validation process, the monitoring results are typically incorporated into the validation process/report.

The outcomes of the validation process should be presented in a Validation Report, which must assess the results of the post-remediation testing against the remediation criteria stated in the Remedial Action Plan. Where the targets have not been achieved, reasons for such failure must be stated and additional site work proposed that will achieve the original objectives.

The Validation Report should also include information confirming that all licenses, approvals and development consents were complied with. In particular, documentary evidence should be provided to confirm that any contaminated soil that was disposed of off-site or removed for re-use was dealt with as specified by the relevant authority.

2.4.5 Long Term Environmental Management Plans

Ongoing monitoring/management is required where contamination remains on site and there is uncertainty relating to its potential to migrate and/or the effectiveness of the management measures implemented to contain the contamination. Ongoing monitoring/management is undertaken after the Validation Report has been completed and as such, the land use suitability (and associated statement in the Validation Report) for the remediated Site may be subject to the outcomes of an ongoing monitoring/management program. A Long Term Environmental Management Plan (LTEMP) is the document outlining the requirements and specific details of an ongoing monitoring/management program.

2.4.6 Council Procedures

Council is to require all contaminated land reports provided to it to include a summary report that identifies (as a minimum) project background, scope, objectives, key issues, investigation findings, conclusions and recommendations. Council is also to require that all reports are prepared in accordance with the NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*. Model wording is included for this purpose in the *Register of Contaminated Land Consent Conditions* (Hunter Joint Organisation, 2020).

Council is to review contaminated land reports as part of the land use planning process to assess if the land is, or can be made suitable for the proposed land use prior to or during development. Review checklists for each of the stages described in Sections 2.4.1 to 2.4.5 are provided in Attachments A to M.

If there is sufficient information to satisfy the Council that the Site is suitable for the proposed use, the planning process should proceed in the normal way. If not, the next stage of the process is to be requested.

Advisory Note:

Council can request a peer review of any stage of the Contaminated Land Process.

Council may also require a Site Audit on any or all stages of the Contaminated Land Process to obtain greater certainty in the outcome of the process. Reasons for requiring a Site Audit may be that Council:

- Believes on reasonable grounds that the information provided by the Proponent is incorrect or incomplete;*
- Wishes to verify whether the information provided by the Proponent has adhered to appropriate standards, procedures and guidelines; or*
- Does not have the internal resources to conduct its own technical review.*

Attachment A - Review Checklist: Preliminary Site Investigation

This checklist identifies key items to be considered by Council when reviewing a Preliminary Site Investigation Report. It is a direct copy of information from the NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites, and Managing Land Contamination Planning Guidelines 1998*.

Preliminary site investigation Checklist

Report section	Required information	Included
Document control	Date, version number, author and reviewer (including certification details) and who commissioned the report	<input type="checkbox"/>
Executive summary	Background	<input type="checkbox"/>
	Objectives of the investigation	<input type="checkbox"/>
	Scope of work	<input type="checkbox"/>
	A summary of key findings, observations and sampling results (if available)	<input type="checkbox"/>
	Summary of conclusions and recommendations	<input type="checkbox"/>
Objectives	The objectives of the investigation/report and the broader objectives for the site/investigation	<input type="checkbox"/>
Scope of work	Scope of work performed (and work not undertaken where relevant)	<input type="checkbox"/>
Site identification	Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet	<input type="checkbox"/>
Site history	Site history items from ASC NEPM Field Checklist 'Site information' sheet	<input type="checkbox"/>
Site condition and surrounding environment	Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet	<input type="checkbox"/>
Conceptual site model	See Attachment J	<input type="checkbox"/>
Data quality objectives (if sampling is undertaken)	See Attachment K	<input type="checkbox"/>
Sampling and analysis plan and sampling methodology	See Attachment F, and note and explain the rationale for any deviations from the plan	<input type="checkbox"/>

(if sampling is undertaken)		
Quality assurance/quality control data evaluation (if sampling is undertaken)	See Attachment L	<input type="checkbox"/>
Field and analytical results (if sampling is undertaken)	Summary of previous results, if applicable	<input type="checkbox"/>
	A table(s) of analytical results that:	
	• shows all essential details such as sample identification numbers and sampling depth	<input type="checkbox"/>
	• shows assessment criteria	<input type="checkbox"/>
	• highlights all results exceeding any assessment criteria	<input type="checkbox"/>
	Summary/discussion of the analytical results table	<input type="checkbox"/>
	Sample descriptions for all media where applicable (e.g. soil, sediment, surface water, groundwater, soil vapour, ground gas, indoor air and biota)	<input type="checkbox"/>
	Test pit or bore logs (well construction details where appropriate for example groundwater level expressed in Australian height datum)	<input type="checkbox"/>
	Site plan showing all sample locations	<input type="checkbox"/>
	Site plan(s) showing the extent of soil and groundwater contamination (if known)	<input type="checkbox"/>
Refer to ASC NEPM Schedule B2 sections 13 and 14 for information regarding the data presentation		
Conclusions and recommendations	Summary of all findings and discussion of results	<input type="checkbox"/>
	Conclusions addressing the stated objectives	<input type="checkbox"/>
	Assumptions used in reaching the conclusions	<input type="checkbox"/>
	Extent of uncertainties in the results (quantified where possible)	<input type="checkbox"/>
	Recommendations for further work (if appropriate)	<input type="checkbox"/>

Attachment B - Review Checklist: Detailed Site Investigation

This checklist identifies key items to be considered by Council when reviewing a Detailed Site Investigation Report. It is based on information from NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*, and *Managing Land Contamination Planning Guidelines 1998*.

Detailed site investigation

Report section	Required information	Included
Document control	Date, version number, author and reviewer (including certification details) and who commissioned the report	<input type="checkbox"/>
Executive summary	Background	<input type="checkbox"/>
	Objectives of the investigation	<input type="checkbox"/>
	Scope of work	<input type="checkbox"/>
	Where appropriate, a summary of key findings, observations and sampling results (if available)	<input type="checkbox"/>
	Summary of conclusions and recommendations	<input type="checkbox"/>
Objectives	The objectives of the investigation/report and the broader objectives for the site/investigation	<input type="checkbox"/>
Scope of work	Scope of work performed (work not undertaken where relevant)	<input type="checkbox"/>
Site identification	Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet.	<input type="checkbox"/>
Site history	Site history items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report.	<input type="checkbox"/>
Site condition and surrounding environment	Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report, to be updated with site-specific information.	<input type="checkbox"/>
Sampling and analysis quality plan and sampling methodology	See Attachment F and note and explain the rationale for any deviations from the plan	<input type="checkbox"/>
Results	Summary of previous results, if applicable	<input type="checkbox"/>

	A table(s) of analytical results that:	
	<ul style="list-style-type: none"> shows all essential details such as sample identification numbers and sampling depth 	<input type="checkbox"/>
	<ul style="list-style-type: none"> shows assessment criteria 	<input type="checkbox"/>
	<ul style="list-style-type: none"> highlights all results exceeding any assessment criteria (not just the highest) 	<input type="checkbox"/>
	<ul style="list-style-type: none"> includes a summary/discussion of the analytical results 	<input type="checkbox"/>
	<ul style="list-style-type: none"> includes sample descriptions for all media where applicable (e.g. soil, sediment, surface water, groundwater, biota) 	<input type="checkbox"/>
	<ul style="list-style-type: none"> includes test pit or bore logs (well construction details where appropriate for example groundwater level expressed in Australian height datum) 	<input type="checkbox"/>
	<ul style="list-style-type: none"> includes site plan showing all sample locations 	<input type="checkbox"/>
	<ul style="list-style-type: none"> includes site plan(s) showing the extent of soil and groundwater contamination exceeding selected assessment criteria for each sampling depth, including identification numbers and depths of all samples analysed 	<input type="checkbox"/>
	<ul style="list-style-type: none"> follows appropriate statistical procedures when comparing site data with the investigation and screening levels. Refer to ASC NEPM Schedule B1 sections 2, 3 and 4 	<input type="checkbox"/>
	Refer to ASC NEPM Schedule B2 sections 13 and 14 for information regarding the data presentation	
Quality assurance/quality control data evaluation	See Attachment L	<input type="checkbox"/>
Conceptual site model	See Attachment J	<input type="checkbox"/>
Site characterisation	Assessment of extent of contamination considering all relevant media, including offsite areas	<input type="checkbox"/>
	Assessment of aesthetic issues	<input type="checkbox"/>
	Assessment of secondary toxicity (if conducting an ecological risk assessment)	<input type="checkbox"/>
	Assessment of potential effects of contaminants on human health, and built structures (for example arising from risks to service lines from hydrocarbons in groundwater, or risks to concrete from acid sulphate soils)	<input type="checkbox"/>
	Assessment of chemical degradation products	<input type="checkbox"/>

	Assessment of possible exposure routes and exposed populations (human, ecological)	<input type="checkbox"/>
	Any evidence of, or potential for, migration of contaminants from the site, including odour, air quality, stormwater, sedimentation, soil vapour, ground gases and groundwater issues	<input type="checkbox"/>
Waste management (if applicable)	Waste classification details in accordance with EPA Waste Classification Guidelines (see Attachment M)	<input type="checkbox"/>
	Statements regarding materials being disposed via appropriately licensed facility or re-used under an order or exemption	<input type="checkbox"/>
	Waste disposal dockets or other waste documentation for any disposed waste	<input type="checkbox"/>
	Refer to the Site Auditor Guidelines section 4.3.7 Waste management for waste management requirements	<input type="checkbox"/>
Conclusions and recommendations	Summary of all findings	<input type="checkbox"/>
	Conclusions addressing the stated objectives	<input type="checkbox"/>
	Assumptions used in reaching the conclusions	<input type="checkbox"/>
	Extent of uncertainties in the results	<input type="checkbox"/>
	A clear-cut statement that the consultant considers the site to be suitable for the proposed use (where applicable)	<input type="checkbox"/>
	A statement detailing all limitations and constraints on the use of the site (where applicable)	<input type="checkbox"/>
	Recommendations for further work, if appropriate	<input type="checkbox"/>

Attachment C - Review Checklist: Remedial Action Plan

This checklist identifies key items to be considered by Council when reviewing a Remedial Action Plan. It is based on information from NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*, and *Managing Land Contamination Planning Guidelines 1998*.

Remedial action plan

Report section	Required information	Included
Document control	Date, version number, author and reviewer (including certification details) and who commissioned the report	<input type="checkbox"/>
Executive summary	Background – include a summary of site contamination	<input type="checkbox"/>
	Objectives of the remediation	<input type="checkbox"/>
	Summary of selected scope of remediation works	<input type="checkbox"/>
Objectives	Objectives of the remediation	
Scope of work	Summary of the scope of work	<input type="checkbox"/>
Site identification	Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet	<input type="checkbox"/>
Site history	Site history items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report.	<input type="checkbox"/>
Site condition and surrounding environment	Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report.	<input type="checkbox"/>
Remediation criteria	Table listing all selected remediation criteria and references	<input type="checkbox"/>
	Rationale for the selection of criteria, including assumptions and limitations of the criteria and any deviations from the approved guidelines.	<input type="checkbox"/>
	Rationale for any site-specific remediation criteria developed through a site-specific risk assessment. Refer to ASC NEPM Schedules B4, B5a, B5b, B5c, B6 and B7	<input type="checkbox"/>
	Refer to HEPA (2018) PFAS National Environmental Management Plan (NEMP) or guidance on environmental levels that indicate the need for action.	

Results	A summary is enough if detailed information was included in an available referenced previous report	
	Tabulated previous results relating to the remedial action plan that:	
	<ul style="list-style-type: none"> show all essential details such as sample identification numbers and sampling depth 	<input type="checkbox"/>
	<ul style="list-style-type: none"> show remediation assessment criteria 	<input type="checkbox"/>
	<ul style="list-style-type: none"> highlight all results exceeding any remediation criteria 	<input type="checkbox"/>
	Sample descriptions for all media where applicable (e.g. soil, sediment, surface water, groundwater, biota)	<input type="checkbox"/>
	Site plan showing all sample locations	<input type="checkbox"/>
	Site plan(s) showing the extent of soil and groundwater contamination exceeding selected remediation criteria for each sampling depth, including sample identification numbers and sampling depths of all samples analysed	<input type="checkbox"/>
Site plan(s) showing the proposed extent of remediation	<input type="checkbox"/>	
Site characterisation	A summary is enough if detailed information was included in an available referenced previous report	
	Assessment of types of all environmental contamination	<input type="checkbox"/>
	Assessment of extent of all identified contamination, including off-site areas	<input type="checkbox"/>
Conceptual site model	See Attachment J	<input type="checkbox"/>
Remediation Options Assessment and Remediation Strategy	Remediation objectives (these should already be defined under the general objectives and then the criteria derived.)	<input type="checkbox"/>
	Assessment of possible remedial options and how risk can be reduced	<input type="checkbox"/>
	Rationale for the selection of recommended remedial option, in accordance with the preferred hierarchy of site remediation and/or management set out in Key Principles for Remediation and Management of Contaminated Sites of the ASC NEPM Toolbox	<input type="checkbox"/>
	Description of the remediation works to be undertaken	<input type="checkbox"/>

A validation plan which includes proposed testing to validate the site during/after remediation, including SAQP as per Attachment F.	<input type="checkbox"/>
Confirmation that waste imported onto the site is lawful Note: materials transported onto site will either need to meet the definition of virgin excavated natural material, or a resource recovery order and resource recovery exemption. In addition, materials imported onto the site must be adequately assessed as being appropriate for the final use of the site, including QA/QC evaluation of any sampling and analysis for material brought to site	<input type="checkbox"/>
Contingency plan if the selected remedial strategy fails	<input type="checkbox"/>
Interim site management plan before remediation, including fencing, erection of warning signs, stormwater diversion, etc.	<input type="checkbox"/>
Site management plan requirements (operational phase):	
• site stormwater management plan	<input type="checkbox"/>
• soil management plan, including material tracking	<input type="checkbox"/>
• noise control plan	<input type="checkbox"/>
• dust control plan, including wheel wash (where applicable)	<input type="checkbox"/>
• odour control plan	<input type="checkbox"/>
• work health and safety plan	<input type="checkbox"/>
• remediation schedule	<input type="checkbox"/>
• hours of operation	<input type="checkbox"/>
• contingency plans to respond to site incidents, to remove potential effects on surrounding environment and community	<input type="checkbox"/>
Description of regulatory compliance requirements such as licences and approvals or financial assurance	<input type="checkbox"/>
Names and phone numbers of appropriate personnel to contact during remediation	<input type="checkbox"/>

	Community relations plans (where applicable)	<input type="checkbox"/>
	Staged progress reporting (where appropriate)	<input type="checkbox"/>
	Outline of environmental management plan for ongoing management of contamination at the site (if needed)	<input type="checkbox"/>
Waste management (if applicable)	Waste classification reporting requirements in accordance with EPA Waste Classification Guidelines (see Attachment M)	<input type="checkbox"/>
	Description of material handling and tracking plan	<input type="checkbox"/>
	Statements regarding materials being disposed via appropriately licenced facility or re-used under an order or exemption	<input type="checkbox"/>
	Waste disposal dockets or other waste documentation for any disposed waste	<input type="checkbox"/>
	Refer to the Site Auditor Guidelines section 4.3.7 Waste management for waste management requirements	
Remediation Technology Pilot Trail (if applicable)	Details and results from treatability trials and Proof of Performance testing, to demonstrate the remediation option chosen was suitable for the site (for major remediation projects). If trials have not been completed, include an indicative scope of the proposed trial.	<input type="checkbox"/>
Conclusions and recommendations	A list summarising the activities and physical changes proposed for the site	<input type="checkbox"/>
	Conclusions addressing the stated objectives	<input type="checkbox"/>
	Assumptions used in reaching the conclusions	<input type="checkbox"/>
	A clear statement as to why the consultant considers the site can be made suitable for the proposed use if the remedial action plan is implemented	<input type="checkbox"/>
	A summary of proposed limitations and constraints on the use of the site post remediation and proposed environmental management plan for long-term management of residual contamination at the site (where applicable)	<input type="checkbox"/>
	Recommendations for further work, if appropriate	<input type="checkbox"/>

Attachment D - Review Checklist: Validation Report

This checklist identifies key items to be considered by Council when reviewing a Validation Report. It is based on information from NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*, and *Managing Land Contamination Planning Guidelines 1998*

Site remediation and validation

Report section	Required information	Included
Document control	Date, version number, author and reviewer (including certification details) and who commissioned the report	<input type="checkbox"/>
Executive summary	Background	<input type="checkbox"/>
	Objectives of the investigation	<input type="checkbox"/>
	Scope of works	<input type="checkbox"/>
	Where appropriate, a summary of key findings, observations and sampling results (if available)	<input type="checkbox"/>
	Summary of conclusions and recommendations	<input type="checkbox"/>
Objectives	Objectives of the remediation and validation	<input type="checkbox"/>
Scope of work	A summary of the scope of work	<input type="checkbox"/>
Site identification	Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet	<input type="checkbox"/>
Site history	Site history items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report	<input type="checkbox"/>
Site condition and surrounding environment	Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report; however, changes to the site condition due to remediation should be summarised here	<input type="checkbox"/>
Previous results	Brief summary of previous results	<input type="checkbox"/>
Conceptual site model	See Attachment J	<input type="checkbox"/>
Implementation of remediation	A summary of the remediation plan	<input type="checkbox"/>

action plan	Remediation objectives and criteria including a table listing all selected remediation criteria and references	<input type="checkbox"/>
	Description of remedial activities with any deviations from the remedial action plan (e.g. volumes and characteristics of material treated or disposed, design of permanent treatment installations, etc.)	<input type="checkbox"/>
	Plans showing areas remediated and areas of residual contamination or subsurface structures	<input type="checkbox"/>
	Summary and evidence (for example documentation) of compliance with regulatory requirements set by the regulatory authority and local government	<input type="checkbox"/>
	Contractor reports	<input type="checkbox"/>
	Field inspection checklists and photolog (as appropriate)	<input type="checkbox"/>
	Dates of operations	<input type="checkbox"/>
	Quantity of material treated and/or disposed	<input type="checkbox"/>
Sampling and analysis plan and sampling methodology	See Attachment F	<input type="checkbox"/>
Validation Results and Discussion	Summary of all results, in a table that:	
	• shows all essential details such as sample identification numbers and sampling depth	<input type="checkbox"/>
	• shows remediation criteria	<input type="checkbox"/>
	• highlights all results exceeding remediation criteria (not just the highest)	<input type="checkbox"/>
	Sample descriptions for all media where applicable (e.g. soil, sediment, surface water, groundwater, biota)	<input type="checkbox"/>
	Test pit or bore logs (well construction details where appropriate, for example groundwater level expressed in Australian height datum)	<input type="checkbox"/>
	Site plans or excavation logs showing all sample locations, photoionisation detector results, lithology changes and field observations, if appropriate	<input type="checkbox"/>

	Site plan(s) showing the extent of soil and groundwater contamination exceeding remediation criteria for each sampling depth, including identification numbers and depths of all samples analysed (clearly mark concentrations of contaminants remaining on site)	<input type="checkbox"/>
	Follow appropriate statistical procedures when comparing site data with the investigation and screening levels. Refer to in ASC NEPM Schedule B1 sections 2, 3 and 4	<input type="checkbox"/>
	Assessment of the implementation of the validation plan from the remedial action plan, with justification for departures (if necessary)	<input type="checkbox"/>
	Details of a statistical analysis of validation results and evaluation against the remediation criteria	<input type="checkbox"/>
	Verification of compliance with regulatory requirements set by EPA, SafeWork NSW and consent authority	<input type="checkbox"/>
	Identify and discuss ongoing management or monitoring (if required)	<input type="checkbox"/>
Quality assurance/quality control data evaluation	See Attachment L	<input type="checkbox"/>
Waste management (if applicable)	Waste classification reports in accordance with EPA Waste Classification Guidelines (see Attachment M)	<input type="checkbox"/>
	Summary of material handling and tracking and reconciliation of volumes or weight of soil removed from site and disposed off-site	<input type="checkbox"/>
	Statements regarding materials being disposed via appropriately licenced facility or re-used under an order or exemption	<input type="checkbox"/>
	Confirmation that waste imported on to the site is lawful Note: materials transported onto site will either need to meet the definition of virgin excavated natural material, or a resource recovery order and resource recovery exemption. In addition, materials imported onto the site should be adequately assessed as being appropriate for the final use of the site, including QA/QC evaluation of any sampling and analysis for material brought to site'	<input type="checkbox"/>
	Waste disposal dockets or other waste documentation for any disposed waste	<input type="checkbox"/>
	Refer to the Site Auditor Guidelines section 4.3.7 Waste management for waste management requirements	
Conclusions and recommendations	Summary of all findings	<input type="checkbox"/>

	Conclusions addressing the stated objectives	<input type="checkbox"/>
	Assumptions used in reaching the conclusions	<input type="checkbox"/>
	Extent of uncertainties in the results	<input type="checkbox"/>
	A clear-cut statement that the consultant considers the site to be suitable for the proposed use (where applicable)	<input type="checkbox"/>
	A clear-cut statement of proposed limitations and constraints on the use of the site post remediation and proposed environmental management plan for long-term management of residual contamination at the site (where applicable)	<input type="checkbox"/>
	Recommendations for further work, if appropriate	<input type="checkbox"/>
	Clearly state any ongoing management or monitoring (if required)	<input type="checkbox"/>

Attachment E - Review Checklist: Ongoing Environmental Management Plan

This checklist identifies key items to be considered by Council when reviewing an Ongoing Environmental management Plan. It is based on information from NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites*, and *Managing Land Contamination Planning Guidelines 1998*

Environmental management plan

Report section	Required information	Included
Document status	Including date, version control, author and reviewer names (including certification details where applicable) and who commissioned the report	<input type="checkbox"/>
Title	Use 'environmental management plan' not 'site management plan' or other alternative wording	<input type="checkbox"/>
Purpose	Reason for, and purpose of, the plan and time period	<input type="checkbox"/>
	How the plan will be made enforceable	<input type="checkbox"/>
	Whether the environmental management plan is active or passive	<input type="checkbox"/>
	Parties responsible for implementation and review/maintenance of the plan and their tasks	<input type="checkbox"/>
	Where the plan will be recorded	<input type="checkbox"/>
Background	Site identification (including street number, street name and suburb, lot and Deposited Plan number, co-ordinates, locality map, site survey plan), site owner, local government area, consent authority and site zoning (current and future)	<input type="checkbox"/>
	Summary of site history as it relates to the existing site contamination which requires management	<input type="checkbox"/>
	Current/future site use and layout (relevant to the environmental management plan)	<input type="checkbox"/>
Description of existing/residual contamination	Identify the contaminants of concern, contaminated media, concentrations and location(s) of the contaminants. Use a site plan to show location(s). Details of migration of contamination, if relevant	<input type="checkbox"/>
	Summary of the geology and hydrogeology (relevant to the environmental management plan)	<input type="checkbox"/>
Management activities	Outline the activity(s), and detail procedures that are to be applied	<input type="checkbox"/>
	Management structure and responsibilities	<input type="checkbox"/>

	How the plan sits within an existing environmental management system (EMS) (if applicable)	<input type="checkbox"/>
	Monitoring of site conditions and site management measures	<input type="checkbox"/>
	Approval and licensing requirements (if applicable)	<input type="checkbox"/>
	How the environmental management plan is consistent with conditions of consent under a planning instrument (if applicable)	<input type="checkbox"/>
	Reporting requirements for environmental management plan implementation. Include list of people responsible for preparing the reports, who receives the reports and by when.	<input type="checkbox"/>
	Communications protocols (if applicable)	<input type="checkbox"/>
	Emergency contacts and response, including 24-hour emergency phone number (if applicable)	<input type="checkbox"/>
	Operating hours (if applicable)	<input type="checkbox"/>
	Contingency plans (if applicable)	<input type="checkbox"/>
Inspection, maintenance, environmental sampling, analysis and reporting (if applicable)	Relevant sections from sampling and analysis quality plan (See Attachment F), including:	
	Data quality objectives (see Attachment K)	<input type="checkbox"/>
	Basis for assessment criteria	<input type="checkbox"/>
	Sampling and analysis plan and sampling methodology, identifying sampling locations and media	<input type="checkbox"/>
	Quality assurance/quality control (see Attachment L)	<input type="checkbox"/>
	Frequency of monitoring	<input type="checkbox"/>
	Outline triggers for responses or reassessment arising from the environmental sampling, analysis and reporting, and required actions	<input type="checkbox"/>
	Outline provision for maintenance of existing sampling points and their replacement if necessary	<input type="checkbox"/>
	Integrity inspection or testing or maintenance inspection program and frequency (if applicable) (for example where capping exists)	<input type="checkbox"/>
Monitor and review of environmental	Schedule for environmental management plan review	<input type="checkbox"/>

management plan	Monitoring checklist	<input type="checkbox"/>
	Description of corrective actions and triggers for these actions	<input type="checkbox"/>
	Notification to the regulator and/or consent authority with request to amend or end management activities (if applicable)	<input type="checkbox"/>
Communications and notifications	List of stakeholders	<input type="checkbox"/>
	Outline details for how affected stakeholders including potential purchasers will be notified of the existing/residual contamination and the environmental management plan	<input type="checkbox"/>
	How the environmental management plan is communicated and made enforceable, including any financial assurance requirements	<input type="checkbox"/>
	Outline details for informing stakeholders of changes to activities and/or responsible parties	<input type="checkbox"/>

Attachment F - Review Checklist: Sampling and Analysis Quality Plan

Sampling and analysis quality plan

Report section	Required information	Included
Document control	Date, version number, author and reviewer (including certification details) and who commissioned the report	<input type="checkbox"/>
Objectives	The objectives of the plan and the broader objectives for the site/investigation	<input type="checkbox"/>
Scope of work	Scope of work to be performed (and work outside the scope where relevant)	<input type="checkbox"/>
Site identification	Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report	<input type="checkbox"/>
Site condition and surrounding environment	Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report	<input type="checkbox"/>
Conceptual site model	Outline of existing and potential Source-Pathway-Receptor linkages that require investigation include contaminants of potential concern and a data gap analysis (see Attachment J)	<input type="checkbox"/>
Assessment criteria	Table listing all selected assessment criteria and references	<input type="checkbox"/>
	Rationale for the selection of assessment criteria, including assumptions and limitations of the criteria (relevant to the assessment and current or proposed land use) and any deviations from approved guidelines.	<input type="checkbox"/>
	Rationale for any site-specific assessment criteria developed through a site-specific risk assessment. Refer to ASC NEPM Schedules B4, B5a, B5b, B5c, B6 and B7	<input type="checkbox"/>
	Refer to ASC NEPM Schedule B1 sections 2 and 4.7 for more details on basis for assessment criteria	
	Refer to HEPA (2018) PFAS National Environmental Management Plan (NEMP) for technical guidance for investigations of PFAS in soil, groundwater and surface water for contaminated land assessment and management	
Sampling and analysis strategy and	Sampling and analysis data quality objectives. See Attachment K	<input type="checkbox"/>

sampling methodology	A strategy to achieve pre-determined data quality objectives, including the sampling strategy and justification for the sampling design	<input type="checkbox"/>
	Procedures to be undertaken if the data does not meet the expected data quality objectives	<input type="checkbox"/>
	Sampling and analysis plan and methodology items from ASC NEPM Field Checklist 'SAP, QAQC' sheet	<input type="checkbox"/>
	Refer to the updated conceptual site model and identified data gaps to determine sampling locations (to ensure source-pathway-receptors have been considered)	<input type="checkbox"/>
	Consideration of existing production, residential or monitoring wells when determining groundwater sampling locations	<input type="checkbox"/>
	Refer to ASC NEPM Schedule B2 sections 5 and 6 for sampling and analysis plan and sampling methodology	
	Refer to NSW Sampling Design Guidelines for additional information on sampling design	
Data quality indicators	See Attachment L, including details of the required quality assurance/quality control samples for the project (e.g. field blank, rinsate blank, trip blank, laboratory prepared trip spikes), including acceptable limits for field quality assurance/quality control	<input type="checkbox"/>

Attachment H - Review Checklist: Site-specific Risk Assessments and Modelling

Site-specific risk assessments and modelling

Report section	Required information	Included
Document control	Date, version number, author and reviewer (including certification details) and who commissioned the report	<input type="checkbox"/>
Executive summary	Background to the site	<input type="checkbox"/>
	Rationale and objectives for conducting the risk assessment	<input type="checkbox"/>
	Description of the type of risk assessment conducted	<input type="checkbox"/>
	Description of the elements of the risk assessment	<input type="checkbox"/>
	Results of uncertainty or sensitivity analysis	<input type="checkbox"/>
	Summary of the key conclusions, key assumptions of the risk assessment and recommendations arising from it	<input type="checkbox"/>
Problem identification	Objectives and scope of the risk assessment	<input type="checkbox"/>
	Data quality objectives and conceptual site model considerations, including any significant data gaps, extent and degree of contamination, potential exposure pathways and receptors (on- and off-site)	<input type="checkbox"/>
	Background to the events leading to the risk assessment, including stakeholder objectives	<input type="checkbox"/>
	Level of risk assessment being conducted	<input type="checkbox"/>
	A site description and history (summary is enough if presented in an available referenced previous report)	<input type="checkbox"/>
	Summary of site information, data contained in any previous site assessment reports and which data will be used in the risk assessment	<input type="checkbox"/>
	Contaminants of potential concern for the site and information sources	<input type="checkbox"/>
	Justify which contaminants are the subject of the risk assessment	<input type="checkbox"/>

	Evaluation of quality assurance/control data on any previous field measurements and laboratory analysis contained in site assessment reports	<input type="checkbox"/>
	Conclusions that can be drawn from problem identification	<input type="checkbox"/>
Environmental values	Ecological or human health values to be protected	<input type="checkbox"/>
	Approach used to identify human health or ecological risks, based on the identified environmental values	<input type="checkbox"/>
Data collection and Tier 1 screening	Objectives of the data collection	<input type="checkbox"/>
	Identification of the data used in the risk assessment	<input type="checkbox"/>
	Explanation of any fate and transport modelling (if used)	<input type="checkbox"/>
	Identification of any need for site zoning of contamination. For example, to consider specific source areas separately (e.g. hotspots), or identify on- or off-site locations with specific receptors/exposure (e.g. groundwater users)	<input type="checkbox"/>
	Selection of, and justification for, Tier 1 screening criteria	<input type="checkbox"/>
	Presentation of Tier 1 screening results	<input type="checkbox"/>
Quality assurance/control	Summary of field and laboratory quality assurance/quality control for data used in risk assessment and modelling (see Attachment L)	<input type="checkbox"/>
Updated conceptual site model	Updated conceptual site model, including identification and justification of contaminants of concern and complete source-pathway-receptor linkages for Tier 2 assessment. Conceptual site model can be included as a visual representation of the site for example with site plans and schematic conceptual site model diagrams	<input type="checkbox"/>
	As per conceptual site model (see Attachment J) updated for the risk assessment purpose	<input type="checkbox"/>
	Identify-source-pathway-receptors which are complete/incomplete, with justification for pathways considered in the Tier 2 risk assessment	<input type="checkbox"/>
Exposure assessment	Selection of contaminants of potential concern taken forward for assessment, with rationale	<input type="checkbox"/>
	Fate and transport modelling of contaminants of potential concern; if undertaken	<input type="checkbox"/>
	Analysis of contaminant releases	<input type="checkbox"/>

	Identification of all relevant exposure pathways, with justification, and estimation of exposure concentrations for each pathway	<input type="checkbox"/>
	Details on statistical approach used to determine exposure concentrations (e.g. mean, median, 95% upper confidence limit (UCL) and/or maximum used and reasoning for the chosen approach)	<input type="checkbox"/>
	Identification of all potential receptors	<input type="checkbox"/>
	Estimation of contaminant intake for each exposure route (this includes species-specific inhalation, ingestion and dermal exposure). All assumptions used are outlined with appropriate references and justification	<input type="checkbox"/>
	Identification of media properties that affect contaminant mobility/availability	<input type="checkbox"/>
	Bioavailability and bioaccumulation factors (where appropriate)	<input type="checkbox"/>
	Sampling and analysis of water, sediments, soil, air/dust and food (where relevant)	<input type="checkbox"/>
	Information on biota behaviour relevant to assessing exposure	<input type="checkbox"/>
	Refer to ASC NEPM Schedules B4, B5a, B5b, B5c, B6 and B7	
Hazard/toxicity assessment (not required for fate and transport modelling) (*when generating site specific reference doses)	Review qualitative and quantitative toxicity information (relevant to reference values) and identify most appropriate reference value*	<input type="checkbox"/>
	Detailed literature review or relevant toxicological studies*	<input type="checkbox"/>
	Determine appropriate dose-response relationships for contaminants of potential concern and identify if responses are threshold or non-threshold*	<input type="checkbox"/>
	Potential ecological effects at the individual organism, population and community levels	<input type="checkbox"/>
	Identify the critical toxic effects	<input type="checkbox"/>
	Known toxicity modifying factors*	<input type="checkbox"/>
	Characterise potential for adverse health effects, including summary of the effects on each body system (for example renal, hepatic, cardiovascular and developmental) and the types of effects (for example genotoxic and carcinogenic)	<input type="checkbox"/>
	Discuss all relevant toxicological data and check for accuracy*	<input type="checkbox"/>

	Justify the reference value(s) and toxicity data that have been selected	<input type="checkbox"/>
	Follow hierarchy of toxicity assessment (ASC NEPM Schedule B4, Table 4 – Sources of information for toxicity assessment)*	<input type="checkbox"/>
	Results of in-situ field or laboratory toxicity tests*	<input type="checkbox"/>
Risk characterisation	Development of site-specific target levels (if required)	<input type="checkbox"/>
	Presentation of all equations used in the risk assessment with modelling used (including units, conversion factors, clear definition of all parameters and values)	<input type="checkbox"/>
		<input type="checkbox"/>
	Chemical mixtures, concentrations of contaminants of potential concern	<input type="checkbox"/>
	Identify any data gaps in the risk assessment, including all pathways and receptors that could not be assessed	<input type="checkbox"/>
	Summary of key issues, including the assumptions made when conducting the risk assessment	<input type="checkbox"/>
	Identification of risk driving contaminants and exposure pathways based on the risk analysis	<input type="checkbox"/>
Uncertainty analysis	Summary of the analyses of uncertainty that have been undertaken for each component of the risk assessment	<input type="checkbox"/>
	Presentation of a sensitivity/uncertainty analysis	<input type="checkbox"/>
	Discussion of the implications of the uncertainty for the findings of the report	<input type="checkbox"/>
	Methods of reducing uncertainty	<input type="checkbox"/>
Conclusions and recommendations	Summary of the results of the risk assessment	<input type="checkbox"/>
	Conclusions drawn based on the above assessment	<input type="checkbox"/>
	Discussion of uncertainties and sensitivities	<input type="checkbox"/>
	Recommendations	<input type="checkbox"/>

Attachment I - Review Checklist: Ongoing Monitoring

Ongoing monitoring

Report section	Required information	Included
Document status	Including date, version control, author and reviewer names (including certification details where applicable) and who commissioned the report	<input type="checkbox"/>
Executive summary	Background	<input type="checkbox"/>
	Objectives of the investigation	<input type="checkbox"/>
	Scope of works	<input type="checkbox"/>
	Where appropriate, a summary of key findings, observations and sampling results (if available)	<input type="checkbox"/>
	Summary of conclusions and recommendations	<input type="checkbox"/>
Objectives of the report	Clearly state the purpose of the assessment/report	<input type="checkbox"/>
Scope of work	Clearly state the scope of work and note if there is an environmental management plan for long term management of contamination at the site (if applicable)	<input type="checkbox"/>
Site identification	Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet	<input type="checkbox"/>
Site history	Site history items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report	<input type="checkbox"/>
Site condition and surrounding environment	Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report. The site condition (at the time of monitoring) is to be included if not reported elsewhere	<input type="checkbox"/>
Site condition – remediation features	Description of site in its present state	<input type="checkbox"/>
	Details of party(ies) responsible for maintenance and monitoring program	<input type="checkbox"/>
	Details on the capping and containment works (if applicable) with reference to the Site Auditor Guidelines for all requirements including site inspection frequency/capping integrity maintenance inspection program and frequency	<input type="checkbox"/>

Conceptual site model	See Attachment J	<input type="checkbox"/>
Sampling and analysis plan and sampling methodology	As per sampling and analysis quality plan (see Attachment F)	<input type="checkbox"/>
Field quality assurance/quality control	See Attachment L	<input type="checkbox"/>
Laboratory quality assurance/quality control		<input type="checkbox"/>
Quality assurance/quality control data evaluation		<input type="checkbox"/>
Basis for assessment criteria	Table listing all selected assessment criteria and references	<input type="checkbox"/>
	Rationale for and appropriateness of the selection of criteria. If the assessment criteria from guidelines made or approved under the CLM Act have not been used, include a statement providing the reasons why this is considered acceptable.	<input type="checkbox"/>
	A list of any target levels developed through a site-specific assessment, or where investigation levels are not available for particular contaminants. Refer to ASC NEPM Schedules B4, B5a, B5b, B5c, B6 and B7	<input type="checkbox"/>
	Assumptions and limitations of criteria	<input type="checkbox"/>
	Refer to ASC NEPM Schedule B1 sections 2 and 4.7 for more details on basis for assessment criteria	
	Refer to HEPA (2018) PFAS National Environmental Management Plan for technical guidance	
Results	Summary of previous results (if applicable)	<input type="checkbox"/>
	Summary of all results, in a table that:	
	• shows all essential details such as sample identification numbers and depth	<input type="checkbox"/>
	• shows assessment criteria	<input type="checkbox"/>
	• highlights all results exceeding any assessment criteria (not just the highest)	<input type="checkbox"/>
Sample descriptions for all media where applicable (e.g. soil, sediment, surface water, groundwater, biota)	<input type="checkbox"/>	

	Test pit or bore logs (well construction details where appropriate for example groundwater level expressed in Australian height datum)	<input type="checkbox"/>
	Site plan showing all sample locations	<input type="checkbox"/>
	Site plan(s) showing the extent of soil and groundwater contamination exceeding selected assessment criteria for each sampling depth, including identification numbers and depths of all samples analysed	<input type="checkbox"/>
	Follow appropriate statistical procedures when comparing site data with the investigation and screening levels. Refer to ASC NEPM Schedule B1 sections 2, 3 and 4	<input type="checkbox"/>
	Refer to ASC NEPM Schedule B2 sections 13 and 14 for information regarding the data presentation	
Site characterisation based on post-remediation monitoring	Assessment of types of all environmental contamination	<input type="checkbox"/>
	Assessment of extent of all identified contamination, including offsite effects	<input type="checkbox"/>
	Assessment of aesthetic issues	<input type="checkbox"/>
	Assessment of secondary toxicity (if conducting an ecological risk assessment)	<input type="checkbox"/>
	Assessment of potential impacts to buildings and structures from the presence of contaminants	<input type="checkbox"/>
	Assessment of chemical degradation products	<input type="checkbox"/>
	Assessment of possible exposure routes and exposed populations (human, ecological)	<input type="checkbox"/>
	Any evidence of, or potential for, migration of contaminants from the site, including odour, air quality, stormwater, sedimentation, soil vapour, ground gases and groundwater issues	<input type="checkbox"/>
Ongoing site monitoring	Ongoing site monitoring requirements (if any), including monitoring parameters and frequency	<input type="checkbox"/>
	Results of monitoring analyses	<input type="checkbox"/>
	Justification of any departures to the requirement monitoring plan	<input type="checkbox"/>
	Comparison of results with previous monitoring rounds and statistical analysis (e.g. trend analysis where enough data has been collected))	<input type="checkbox"/>
	Comparison to site-specific criteria (if available) which might trigger the requirement for extra work/remediation or lead to pre-defined outcomes	<input type="checkbox"/>

	Contingency actions undertaken or required in response to monitoring results	<input type="checkbox"/>
	Refer to the Site Auditor Guidelines section 4.3.11 Groundwater remediation and management	
Waste management (if applicable)	Waste classification details in accordance with EPA Waste Classification Guidelines (see Attachment M)	<input type="checkbox"/>
	Description of material handling and tracking plan	<input type="checkbox"/>
	Statements regarding materials being disposed via appropriately licensed facility or re-used under an order or exemption	<input type="checkbox"/>
	Waste disposal dockets or other waste documentation for any disposed waste	<input type="checkbox"/>
	Refer to the Site Auditor Guidelines section 4.3.7 Waste management for waste management requirements	
Conclusions and recommendations	Summary of findings	<input type="checkbox"/>
	Extent of uncertainties in the results	<input type="checkbox"/>
	Statement on whether the monitoring has met the requirements of the environmental management plan	<input type="checkbox"/>
	Response actions to be implemented following monitoring (if applicable)	<input type="checkbox"/>
	Recommendation for further work (if appropriate)	<input type="checkbox"/>

Attachment J - Review Checklist: Conceptual Site Model

Conceptual site model

Relevant reports	Required information	Included
All stages of reporting	Regional and local geology, hydrogeology and hydrology items from ASC NEPM Field Checklist 'CSM' sheet	<input type="checkbox"/>
	List of potential contaminants of concern	<input type="checkbox"/>
	Potential and known sources of contamination, on- and offsite	<input type="checkbox"/>
	Mechanism of contamination (e.g. 'top down' spill, sub-surface release from tank or pipe, atmospheric, deposition etc.)	<input type="checkbox"/>
	Potentially affected environmental media	<input type="checkbox"/>
	Consideration of spatial and temporal variations (e.g. weather).	<input type="checkbox"/>
	Actual or potential exposure pathways. Also consider preferential pathways for contaminant migration.	<input type="checkbox"/>
	Human and ecological receptors	<input type="checkbox"/>
	Frequency of exposure	<input type="checkbox"/>
	Linkage of source, pathway and receptor assessed in terms of potentially complete pathways and likelihood	<input type="checkbox"/>
	Discussion on multiple lines of evidence (for complex sites)	<input type="checkbox"/>
	Refer to ASC NEPM Schedule B2 section 4 for a guide in presenting conceptual site models	
Sampling analysis and quality plan, detailed site investigation, site-specific risk assessment, remedial action plan, detailed environmental management plan, ongoing monitoring	Previous site investigations, contaminant characteristics and migration items from ASC NEPM Field Checklist 'CSM' sheet	<input type="checkbox"/>
	Conceptual site model items from ASC NEPM Field Checklist 'CSM' sheet	<input type="checkbox"/>
	Meteorological data items from ASC NEPM Field Checklist 'CSM' sheet	<input type="checkbox"/>

	Sources of variability	<input type="checkbox"/>
	Data gap identification	<input type="checkbox"/>
	Sensitivity analysis where modelling is undertaken	<input type="checkbox"/>
	Refer to NEPM Schedule B2 Section 4 for the requirements for developing a CSM	
	Refer to ASC NEPM Schedule B2 section for a guide in presenting conceptual site models	

Attachment K - Review Checklist: Data Quality Objectives

Data quality objectives

Relevant reports	Required information	Included
Preliminary site investigation, detailed site investigation, sampling and analysis quality plan, site-specific risk assessments, remedial action plan, environmental management plan, ongoing monitoring	Step 1: State the problem	<input type="checkbox"/>
	Step 2: Identify the decision/goal of the study	<input type="checkbox"/>
	Step 3: Identify the information inputs	<input type="checkbox"/>
	Step 4: Define the boundaries of the study	<input type="checkbox"/>
	Step 5: Develop the analytical approach	<input type="checkbox"/>
	Step 6: Specify performance or acceptance criteria	<input type="checkbox"/>
	Step 7: Develop the plan for obtaining data	<input type="checkbox"/>
	Are the data quality objectives linked to the conceptual site model, and have they been updated with the conceptual site model?	<input type="checkbox"/>
	Refer to ASC NEPM Schedule B2 Appendix B for a comprehensive guide in reporting data quality objectives	<input type="checkbox"/>

Attachment L - Review Checklist: Quality Assurance and Quality Control

Quality assurance and quality control

Relevant reports	Required information	Completeness	Comparability	Representativeness	Precision	Accuracy	Included
Any reports where sampling has been undertaken	Details of sampling team	X	X				<input type="checkbox"/>
	Reference to sampling plan/method, including any deviations from it – sampling and analysis quality plan	X					<input type="checkbox"/>
	Any information that could be required to evaluate measurement uncertainty for subsequent testing (analysis)				X	X	<input type="checkbox"/>
	Decontamination procedures carried out between sampling events			X	X	X	<input type="checkbox"/>
	Logs for each sample collected, including date, time, location (with GPS coordinates if possible), sampler, duplicate samples, chemical analyses to be performed, site observations and weather/environmental (i.e. surroundings) conditions. Include any diagrams, maps, photos.		X	X			<input type="checkbox"/>
	Chain of custody fully identifying – for each sample – the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method, departure time from the site and dispatch courier(s) (where applicable)	X	X				<input type="checkbox"/>
	Field quality assurance/quality control results (e.g. field blank, rinsate blank, trip blank, laboratory prepared trip spike)				X	X	<input type="checkbox"/>

	Sample splitting techniques – subsampling, containers/preservation (ensure unique ID for subsequent samples provided)			X			<input type="checkbox"/>
	Statement of duplicate frequency			X	X		<input type="checkbox"/>
	Background sample results	X	X				<input type="checkbox"/>
	Field instrument calibrations (when used)				X	X	<input type="checkbox"/>
	Sampling devices and equipment	X	X				<input type="checkbox"/>
Any reports where laboratory analysis has been undertaken	A copy of signed chain-of-custody forms acknowledging receipt date, time and temperature and identity of samples included in shipments	X	X				<input type="checkbox"/>
	Record of holding times and a comparison with method specifications	X	X				<input type="checkbox"/>
	Analytical methods used, including any deviations	X	X				<input type="checkbox"/>
	Laboratory accreditation for analytical methods used, also noting any methods used which are not covered by accreditation	X			X		<input type="checkbox"/>
	Laboratory performance for the analytical method using inter-laboratory duplicates		X			X	<input type="checkbox"/>
	Surrogates and spikes used throughout the full method process, or only in parts. Results are corrected for the recovery	X	X				<input type="checkbox"/>
	A list of what spikes and surrogates were run with their recoveries and acceptance criteria (tabulate)		X			X	<input type="checkbox"/>
	Practical quantification limits (PQL)	X	X				<input type="checkbox"/>
	Reference laboratory control sample (LCS) and check results	X					<input type="checkbox"/>
Laboratory duplicate results (tabulate)	X				X	<input type="checkbox"/>	

Laboratory blank results (tabulate)	X				X	<input type="checkbox"/>
Results are within control chart limits	X					<input type="checkbox"/>
Evaluation of all quality assurance/control information listed above against the stated data quality objectives, including a quality assurance/control data evaluation	X	X	X	X	X	<input type="checkbox"/>

Attachment M - Review Checklist: Waste Classification

Waste classification		
Report section	Required information	Included
Document status	Including date, version control, author and reviewer names (including certification details where applicable) and who commissioned the report	<input type="checkbox"/>
Background	Full name, address, Australian Company Number (ACN) or Australian Business Number (ABN) of the organisation and person(s) providing the waste classification and the owner of the waste	<input type="checkbox"/>
	Location of the site where the waste was generated, including the site address and Lot and Deposited Plan number	<input type="checkbox"/>
	History of the material and the processes and activities that have taken place to produce the waste	<input type="checkbox"/>
	Potential contaminating activities that may have occurred at the site where the waste was generated	<input type="checkbox"/>
Waste description	Description of the waste, including photographs and visible signs of contamination (discolouration, staining, odours, etc)	<input type="checkbox"/>
	Quantity of the waste	<input type="checkbox"/>
Sampling and analysis plan and sampling methodology	Number of samples collected and analysed	<input type="checkbox"/>
	Sampling method, including pattern, depth, locations, devices, procedures, and photographs of the sample locations and samples	<input type="checkbox"/>
	Contaminants tested with justification	<input type="checkbox"/>
	Justification for sampling density, pattern and method used	<input type="checkbox"/>
	Justification for leachate analysis using the toxicity characteristics leaching procedure (if undertaken)	<input type="checkbox"/>
	Justification for the number of samples collected and analysed	<input type="checkbox"/>
Field quality assurance/quality control	See Attachment L	<input type="checkbox"/>
Laboratory quality assurance/quality control		<input type="checkbox"/>

Results	Summary of results, including sample numbers or identifications, contaminants analysed, sample results with minimum, average, maximum, standard deviation and 95% UCL average concentration calculated. All results are to be included regardless of whether they are not used in the classification process	<input type="checkbox"/>
	Representative photographs of the waste	<input type="checkbox"/>
	Sample locations marked on a schematic of the stockpile and/or source site	<input type="checkbox"/>
	Scientifically valid reasons for the exclusion of sample results (if required) with reasons clearly outlined	<input type="checkbox"/>
Discussion	Summary of findings, including discussion of results, exceedances of the relevant contaminant threshold or specific contaminant concentration and toxicity characteristics leaching procedure threshold values	<input type="checkbox"/>
Waste classification	Clearly state the classification of the waste as at the time of the report, and its justification	<input type="checkbox"/>