

CHECKLISTS AND OTHER INFORMATION

APPENDIX 2 – DETAILED SITE INVESTIGATION REPORT CHECKLIST

REPORT SECTION	REQUIRED INFORMATION	PRESENT? (YES/NO /NA)	COMMENTS (ACTIONS, REQUESTS, RED FLAGS)
Document control	Report date within 2 years		
	Report version, author and reviewer, including consultant certification ¹ (for example, experienced contaminated land specialist, certified environmental practitioner)		
	Details of who commissioned the report		
Executive summary	Background		
	Objectives of the investigation		
	Scope of works		
	A summary of key findings, observations, and sampling results (where appropriate)		
	Summary of conclusions and recommendations		
Objectives	Objectives of the investigation/report and the broader objectives for the site/ investigation		
Scope of work	A clear statement of the scope of work performed (or work not undertaken, where relevant)		
Site identification (where available)	Street number, street name and suburb ²		
	Property identifier (for example, lot and deposited plan number)		
	Geographic coordinates related to a nearby cadastral corner of a state survey control marker		
	Locality map		
Site history or previous contamination assessment report (where available)	Historical site contamination should be detailed in this section. A summary is adequate if detailed information is included in an available referenced previous report. If not, refer to the PSI checklist for information that should be included		
Condition of site and surrounding environment (where available)	A summary is adequate if detailed information is included in an available referenced previous report. If not, refer to the PSI checklist for information that should be included.		

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Geology, hydrogeology and hydrology (where available)	Soil stratigraphy (layers/horizons) using recognised classification methods (for example, <i>Australian Standard AS 1726-2017: Geotechnical Site Investigations</i>)		
	Location and extent of imported and locally derived fill		
	Site borehole logs or test pit logs showing stratigraphy		
	Detailed description of the location, design and construction of onsite wells		
	Description and location of springs and wells in the vicinity		
	Depth to groundwater table		
	Direction and rate of groundwater flow		
	Direction of surface water run-off		
	Background water quality		
	Preferential water courses		
	Summary of local meteorology		
Sampling and analysis quality plan	Sampling and analysis quality plan ²		
Sampling methodology³	Detailed description of the sampling methods, including the following: <ul style="list-style-type: none"> • sample containers and type of seal used • sampling devices and equipment (for example, auger type) • equipment decontamination procedures • sample handling procedures • sample preservation methods and reference to recognised protocols: <ul style="list-style-type: none"> ○ water sample preservation (for example, American Public Health Standards or AS/NZS 5667.1-1998) ○ soil sample preservation (for example, US EPA SW-846; ASC NEPM Schedule B3) 		
	Detailed description of field sample screening protocols		

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Basis for assessment criteria and adopted assessment criteria for the site	A table listing all selected assessment criteria		
	Rationale for and appropriateness of the selected criteria		
	Assumptions and limitations of criteria		
Field QA and QC (where available)	Details of sampling team/personnel		
	Decontamination procedures carried out between sampling events		
	Logs for each sample collected. including time, location, initials of sampler, duplicate locations, duplicate type, chemical analyses to be performed, site observations and weather conditions		
	Chain of custody fully identified for each sample, including the sampler, nature of the sample, collection date, analyses to be performed, sample preservation method, departure time from the site and dispatch to courier		
	Sample splitting techniques		
	Statement of duplicate frequency		
	Field blank results		
	Background sample results		
	Rinsate sample results		
	Laboratory-prepared trip spike results for volatile analytes		
	Trip blank results		
Field instrument calibrations			
Laboratory QA/QC (laboratory certificates attached to the report)	A copy of signed chain-of-custody forms acknowledging receipt date and time, and the identity of samples included in shipments		
	Record of holding times and a comparison with method specifications		
	Analytical methods used		
	Laboratory accreditation for analytical methods used		
	Laboratory performance in inter-laboratory trials for the analytical methods used (where available)		

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Laboratory QA/QC (laboratory certificates attached to the report) (Cont.)	Description of surrogates and spikes used		
	Per cent recoveries of spikes and surrogates		
	Instrument detection limit		
	Method detection limit		
	Matrix or practical quantification limits		
	Standard solution results		
	Reference sample results		
	Reference check sample results		
	Daily check sample results		
	Laboratory duplicate results		
	Laboratory blank results		
	Laboratory standard charts		
Data evaluation QA/QC	An evaluation of all QA/QC information listed above against the stated data quality objectives, including a discussion of: <ul style="list-style-type: none"> • documentation completeness • data completeness • data comparability • data representativeness • precision and accuracy for both sampling and analysis for each analyte in each environmental matrix informing data users of the reliability, unreliability or qualitative value of the data 		
	Data comparability checks, which should include an assessment of bias, which may arise from various sources, including: <ul style="list-style-type: none"> • collection and analysis of samples by different personnel • use of different methodologies • collection and analysis by the same personnel using the same methods but at different times • spatial and temporal changes (because of environmental dynamics) 		
	Relative per cent differences for intra- and inter-laboratory duplicates		

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Conceptual site model	The model should outline the potential sources of contamination; consider potentially affected media and actual or potential exposure pathways; and identify human and ecological receptors. Update the model once site sampling results are received		
Results	A summary of all results in a table that: <ul style="list-style-type: none"> • shows all essential details, including sample numbers and sampling depth • shows assessment criteria • highlights all results exceeding the assessment criteria (usually colour-coded) 		
	A site plan showing all sample locations, sample identification numbers and sampling depths		
	A site plan showing the extent of soil and groundwater contamination exceeding selected assessment criteria for each sampling depth		
	Summary/discussion of the analytical results and summary of previous results (if applicable)		
	Appropriate statistical procedures when comparing site data with the investigation and screening levels ⁴		
Site characterisation and discussion of results (where available)	Assessment of the types of all environmental contamination, particularly soil and groundwater		
	Assessment of aesthetic issues. Assessment of secondary toxicity (if conducting an ecological risk assessment)		
	Assessment of the 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 sulfate soils)		
	Assessment of the extent of soil and groundwater contamination, including offsite effects		
	Assessment of possible exposure routes and exposed populations (human, ecological and so on)		
	Assessment of chemical degradation products (if applicable)		

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Waste Management (if applicable)	Waste classification details in accordance with the NSW EPA's Waste Classification Guidelines . ⁵ Waste disposal documentation (for example, weighbridge dockets)		
Conclusions and recommendations	Summary of all findings		
	Detail of the assumptions used in reaching the conclusions		
	Detail of the extent of uncertainties in the results		
	Where remediation action has been taken, a list summarising the activities and physical changes to the site		
	A clear statement that the consultant considers the subject site to be suitable (or not) for the proposed use (where applicable)		
	Recommendations for further work (where applicable)		
Appendices	Attached appendices: <ul style="list-style-type: none"> • site figures • tables showing laboratory analytical results • land title records, council records and certificates, Bureau of Meteorology records • groundwater record search results • EPA record search results • construction drawings and development plans for the site • field borehole and test pit logs • laboratory documents including, chain-of-custody forms and certificates of analysis • field equipment calibration certificates • groundwater monitoring event field forms, gas field forms • well survey data • ProUCL software results 		

Note: PSI = preliminary site investigation; ASC NEPM = National Environment Protection (Assessment of Site Contamination) Measure 1999; QA = quality assurance; QC = quality control.

Source: NSW Environmental Protection Authority. (2020). *Consultants reporting on contaminated land: Contaminated land guidelines*; National Environment Protection Council. (November 2010). *ASC NEPM field checklist* [spreadsheet], 'SAP, QAQC', 'Soil', 'Groundwater', 'Surface Water' and 'Soil Gas' tabs; NSW Environmental Protection Authority. (2017). *Contaminated land management: Guidelines for the NSW site auditor scheme* (3rd ed.).

¹ See the *Guide to Selecting a Consultant* fact sheet.

² Refer to PSI checklist (Appendix 1) for information that should be included.

³ Key NSW EPA approved methods guidance for:

- water – <https://www.epa.nsw.gov.au/your-environment/water/policies-guidelines-and-programs>
- air – <https://www.epa.nsw.gov.au/your-environment/air/industrial-emissions/modelling-assessing-air-emissions>
- noise – <https://www.epa.nsw.gov.au/your-environment/noise/regulating-noise/noise-guide-local-government>.

⁴ Refer to ASC NEPM Schedule B1 sections 2–4.

⁵ <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>