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Mr Neil Campbell Allen Price and Scarratts Pty Ltd 1/28 Bong Bong Street KIAMA NSW 2533

Tuesday, 15 February 2022

Our Reference:

22003 IA1 PSI

SUBJECT: Interim Advice 1, AUDIT 48 Campbell Street, Gerringong, NSW: Review of Preliminary Site Investigation

This letter is provided as Interim Advice and does not constitute a Site Audit Report or Site Audit Statement.

Where required for clarity, the Auditor's opinion in this letter is enclosed in a box to separate the Auditor's opinion from quoted opinions from Consultants' reports or other sources.

A discussion of the scope of site audits is appended to this advice (page 6).

## 1 Introduction

#### 1.1 Audit Background

Allen Price and Scarratts Pty Ltd has engaged Tim Chambers of Phreatic Consulting to act as Contaminated Site Auditor in relation to contamination management at 48 Campbell Street, Gerringong, NSW, NSW. The audit relates to part of Lot 2 DP 1168922.

The audit site has an area of approximately 12.83 ha and is zoned RU2 – Rural Landscape.

The Audit is required to support a planning proposal to re-zone the site...

## 1.2 Proposed Development

The works form part of a planning proposal<sup>1</sup> for re-zoning, and no subdivision is currently proposed. The planning proposal

... seeks to amend the Kiama Local Environmental Plan (KLEP) 2011 and to extend the Gerringong residential zone from Campbell Street to align with the southern boundary of 48 Campbell Street, (Lot 2 DP 1168922), Gerringong.

<sup>1</sup> Allen, Price and Scarratts (2.12.2020) Planning Proposal Elambra West Urban Release Area, Lot 2 DP 1168922, No 48 Campbell Street, Gerringong.

The Site Audit is required to support the planning proposal.

Kiama Municipal Council requested additional information in support of the proposal, including a Stage 1 Contaminated Site Assessment (since conducted by Construction Sciences). A requirement regarding this report is that is is "prepared in accordance with the NSW Managing Land Contamination – Planning Guidelines: SEPP 55-Remediation of Land" and must address Ministerial Direction 2.6 – Contaminated Land. This requires that item 2.6(4) (and in this case 2.6(4)(c)) is met:

- (4) A planning proposal authority must not include in a particular zone (within the meaning of the local environmental plan) any land specified in paragraph (2) if the inclusion of the land in that zone would permit a change of use of the land, unless:
  - (a) the planning proposal authority has considered whether the land is contaminated, and
  - (b) if the land is contaminated, the planning proposal authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all the purposes for which land in the zone concerned is permitted to be used, and
  - (c) if the land requires remediation to be made suitable for any purpose for which land in that zone is permitted to be used, the planning proposal authority is satisfied that the land will be so remediated before the land is used for that purpose.

It is further understood that Council will require site remediation under the Kiama Local Environmental Plan 2014 in relation to the planning proposal.

## 1.3 Site Background

The site has been used for agricultural (grazing) purposes. Recent works have identified some fragments of asbestos on the site in shallow soils, anticipated opt be residual fragments from historical demolition of structures.

The extent and degree of impact is required to be understood, and a suitable method for managing the material is required.

## 2 Current Interim Advice

The following report has been provided for the Auditor's review, and is discussed in this Interim Advice:

▼ Construction Sciences, CS (2021) Stage 1 Preliminary Site Investigation, 48 Campbell Street, Gerringong. Reference 10791.EV.P.234-R01R1

The review of this document has been in general accordance with the requirements in the NSW EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition)* and the NSW EPA (2020) *Contaminated Land Management: Consultants Reporting on Contaminated Land.* The primary focus of the review documented here has been to assess the adequacy of the assessment to identify potential sources of contamination at the site.



The overall objective of this audit is to provide comment on whether the land at the site is suitable for the proposed uses with respect to contamination.

# 3 CS (2021) Preliminary Site Investigation

#### 3.1 Summary Of Works Conducted

The Auditor summarises the works conducted in the preliminary site assessment (PSI) as follows:

- ▼ Site Walkover Sam Scully from Construction Sciences inspected the site on 6 September 2021
- Review of published documentation:
  - ▼ The Department of Mineral Resources Geological Survey of NSW Wollongong 1:250,000 Geological Series Sheet SI 56-9 (Edition 2) 1966
  - ▼ Topographic data
  - ∇ Registered groundwater wells
  - ∇ NSW Department of Land and Water Conservation's Acid Sulfate Soil Risk Map for Gerroa (Edition 2, 1997).
  - ∇ NSW EPA records of contaminated land under the Contaminated Land Management Act 1997 and notices under the Protection of the Environment (Operations) Act 1997.
  - ∇ Council records (Section 10.7 certificate under the Environmental Planning and Assessment Act 1997)
  - ∇ SafeWork NSW records for the licensed storage of hazardous chemicals.
  - ∀ Historical aerial photographs (1949, 1963, 1972, 1979, 1984, 1993, 2005, 2010 and 2020).
  - ∇ Historical land titles from 1912 through 2021.
  - ∀ Meteorological records.
  - Anecdotal evidence from the site owner.

The Auditor summarises the findings of the review below:

- ▼ The site has been used for agricultural purposes since at least 1929. This use has been to run cattle as a dairy farm and more recently for beef.
- ▼ The site include a residence and several farm sheds. Buildings have been demolished and replaced over time.
- Residential development has encroached on the site since around 2005.
- Tributaries of the Crooked River run just to the west of the western boundary of the proposed rezoning area and along the eastern boundary.
- CS identified numerous "Areas of Concern" at the site, relating largely to multiple isolated paarts of the site, and can be broadly characterised as follows:



- 12 stockpiles of soil or other waste of undocumented origin, potentially containing pesticides, hydrocarbons, polychlorinated biphenyls, heavy metals and asbestos. Aesthetic concerns were also raised.
- ▼ 13 areas of emplaced fill soils of undocumented origin, potentially containing pesticides, hydrocarbons, polychlorinated biphenyls, heavy metals and asbestos.
- A dam in the northern part of the site potentially containing hydrocarbons, heavy metals, nutrients and pathogens.
- A livestock holding pen potentially containing hydrocarbons, heavy metals, nutrients and pathogens.
- ▼ A septic system potentially containing hydrocarbons, heavy metals, nutrients and pathogens.

The Auditor notes that the potential contaminants listed are common urban contaminants and are reasonable to assume for the site. The identified areas of potential contamination appear reasonable.

The Auditor notes that where buildings, including historical farm sheds, have been demolished, shallow asbestos impacts are common. Asbestos building materials are also commonly buried in pits on site and may not be apparent from surface investigation alone.

#### 3.2 Data Reliability

CS (2021) have not included an integrity assessment of the data. The Auditor notes that the PSI site history assessment relied on a wide range of publicly available published material, and included discussion with people familiar with the site and its recent operations. Accordingly, the Auditor is satisfied that the data is of adequate reliability to identify historical site activity with potential to result in site contamination.

## 3.3 Guideline Compliance

The Auditor has assessed CS (2021) against the reporting criteria for Preliminary Investigation Reports listed in NSW EPA (2020) *Contaminated Land Management: Consultants Reporting on Contaminated Land*.

Section 1.1 of NSW EPA (2020) states that:

The objective of the preliminary site investigation and associated report is to assess whether contamination has the potential to exist on the site and whether further investigation is needed.

- [...] Key factors include:
- ▼ the purpose of the investigation
- ▼ the site history
- ▼ past and present potentially contaminating activities (on- and off-site sources)
- ▼ potentially contaminated media
- ▼ the condition of the site and surrounding environment



- ▼ the geological and hydrogeological setting
- a preliminary assessment of site contamination and contaminants of potential concern
- a conceptual site model
- ▼ identification of data gaps in the assessment of site contamination
- ▼ recommendations for further investigation.

An appraisal of the site history is fundamental to the preliminary investigation and may be used to assess the likelihood of site contamination. It is important to review and assess all relevant information about the site, including information available from planning authorities and the EPA and information obtained during site inspections.

[...]

A preliminary site investigation report must adequately identify potential human and ecological receptors (on- and off-site) and identify potentially affected media (soil, sediment, groundwater, surface water, soil vapour and indoor and outdoor air). The report must also indicate all contaminants of potential concern including emerging contaminants that have been identified during the preliminary site investigation.

The Auditor is satisfied that he report adequately meets these broad objectives.

The Auditor's comparison of the report to the reporting criteria is appended to this advice (Table 1, page 7 below).

The report was found to satisfactorily meet the reporting guidelines with largely minor non-conformances which did not materially detract from the report findings. The Auditor notes the following items of non-compliance:

 CS did not discuss the verification of their data sources. The Auditor has considered this above and is satisfied that the data sources relied on are adequately reliable. No amendment of the report is required.

## 4 Auditor's Conclusions

The Auditor is satisfied that the preliminary site assessment has been adequate to identify the areas of the site where contamination has the potential to be present, and the likely potential contaminants to be considered.

I trust that this letter meets your requirements. Should you have any questions relating to this letter please feel free to contact the undersigned on 0458 888 033 or <a href="mailto:tim.chambers@phreatic.com.au">tim.chambers@phreatic.com.au</a>.

Sincerely

**Tim Chambers** 

NSW EPA Accredited Site Auditor 1004.



# **Scope of Audits**

Whereas interim audit advice is provided to assist in the assessment and management of contamination issues at the site, interim audit advice should not be regarded as 'approval' of any proposed investigations or remedial activities, as any such approval is beyond the scope of an independent review.

NSW EPA (2017) Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition), describes the site assessment and audit process as:

- The 'first tier' is the work of a contaminated site Consultant, generally engaged by the site
  owner or developer. The contaminated site Consultant designs and conducts a site assessment
  and any necessary remediation and validation, and documents the processes and information in
  reports.
- 3. The 'second tier' is the site audit which involves a site auditor independently and at arm's length reviewing, for one of the audit purposes stated in the CLM Act, the Consultant's assessment, remediation, validation and management plans or reports. The material outcomes of a site audit are a site audit report and site audit statement.

Section 53B of the CLM Act describes that site audits conducted by EPA accredited site auditors must take the following matters into account:

- the provisions of the CLM Act and the CLM Regulations;
- the provisions of any environmental planning instruments applying to the site; and
- ▼ the guidelines made or approved by the EPA.

Therefore, the contaminated land Consultant and other relevant parties should be satisfied that the work to be conducted conforms to all appropriate regulations, standards and guidelines and is suitable based on the site history and the proposed land use.



Table 1: NSW EPA (2020) Reporting Requirements – Preliminary Site Investigation (CS, 2021)

| Requirement in NSW EPA (2020)   | Present  | Location in<br>Document | Auditor Comment   |
|---|----------|-------------------------|---|
| Document Control  |          |                         |   |
| Date, version number, author and reviewer (including certification details) and who commissioned the report     | 1        | p.i                     |   |
| <b>Executive Summary</b>  |          |                         |   |
| Background  | ✓        | pp. iii-vi              |   |
| Objectives of the investigation   | ✓        | pp. iii-vi              |   |
| Scope of Work   | ✓        | pp. iii-vi              |   |
| A summary of key findings, observations and sampling results (if available)                                     | 1        | pp. iii-vi              |   |
| Summary of conclusions and recommendations  | 1        | pp. iii-vi              |   |
| Objectives  |          |                         |   |
| The objectives of the investigation/report and the broader objectives for the site/investigation                | ✓        | Section 1               |   |
| Scope of Work   |          |                         |   |
| Scope of work performed (and work not undertaken where relevant)  | 1        | Section 1               |   |
| Site Identification Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet |          |                         |   |
| Site name or description  | /        | Section 1               |   |
| Street address (street number & name, suburb), town/city  | 1        | Section 1               |   |
| Property description (e.g. Section, hundred, plan, parcel)  | 1        | Section 2               |   |
| Current certificates of title (identifying portion or full title)   | 1        | Appendix E              |   |
| Latitude, longitude (centre of site, or site corners for regular shapes)  | 1        | Section 2               |   |
| Current owner(s)  | ×        |                         | Identified in title documents but not specified in report |
| Current occupier(s)   | X        |                         | Not clear in the report                                   |
| Site area and dimensions  | /        | Section 2               |   |
| Local government authority  | ✓        | Section 2               |   |
| Current zoning (planning)   | 1        | Section 2               |   |
| Locality map  | 1        | Figure 1                |   |
| Trigger for assessment (e.g. Change in land use)  | 1        | Section 1               |   |
| State or local government statutory controls assigned to the site   | <b>✓</b> | Section 5               |   |



| Requirement in NSW EPA (2020)  | Present | Location in<br>Document | Auditor Comment  |
|--|---------|-------------------------|--|
| Legal permission to access site required/obtained  | n/a     |                         | Engaged by site owners   |
| Consent of adjoining land owners and/or occupiers to access land (if required)   | n/a     |                         |  |
| Site History   |         |                         | Site history items from ASC NEPM Field<br>Checklist 'Site information' sheet |
| Historical property title search (with copies of certificates of title)  | 1       | Section E               |  |
| Identification of previous and present owners, occupiers, managers and users of the site   | 1       | Section 5               |  |
| Interviews with owner/occupier/staff/neighbours (present and former) who have an historical knowledge of the site  | 1       | Section 5               |  |
| Review of historical aerial and site photography   | 1       | Section 5               |  |
| Chronological list and summary of land use activities including information gaps and uncertainties, unoccupied periods   | 1       | Section 5               |  |
| Details, charts and diagrams of previous and current buildings and site structures   | ×       |                         | No significant changes to layout   |
| Site layout plans showing locations of present and past industrial processes, storage areas, waste disposal areas  | ✓       | Figure 2                |  |
| Description of manufacturing processes, raw materials, chemicals and fuels associated with site use  | ✓       | Section 5               |  |
| Products (including intermediate products) discharged during batch or continuous production processes, listed by common, systematic and trade names where possible   | n/a     |                         |  |
| Identification and location of chemical storage and transfer areas   | n/a     |                         |  |
| Wastes (including failed batched) discharged during batch or continuous production processes, listed by common, systematic and trade names where possible including their chemical characteristics, volume and method of treatment | n/a     |                         |  |
| Disposal locations (on and off-site) of the wastes from previous and present industries and uses, identifying solid waste and liquid waste lagoons, settling tanks and sumps   | n/a     |                         |  |
| Discharges to land, water and air (authorised and unauthorised)  | n/a     |                         |  |
| Product spills, losses, incidents and accidents, including fires, with an indication of the chemicals spilled, frequency, estimates of quantity, extent of fire damage and   | n/a     |                         |  |



| Requirement in NSW EPA (2020)   | Present  | Location in<br>Document | Auditor Comment   |
|---|----------|-------------------------|---|
| structures affected   |          |                         |   |
| Plans of sewer and underground service locations identifying active and abandoned services  | <b>✓</b> | Section 6               | Septic tanks located  |
| Location and size of previous or existing storage tanks (both above ground and underground) and infrastructure and details of integrity testing                                 | n/a      |                         |   |
| Location of on-site and nearby wells and groundwater monitoring wells   | /        | Section 3               |   |
| Location of transfer lines and notation of whether they are above or below ground   | n/a      |                         |   |
| Locations of dispensing or fill points  | n/a      |                         |   |
| Spill control systems e.g. Bund (noting construction details)   | n/a      |                         |   |
| Earthmoving activities carried out on site  | X        |                         | History not available. Filled areas and earth dam construction noted. |
| Current and previous land uses of adjacent<br>land taking into account relevant features<br>listed above as appropriate   | /        | Section 5               |   |
| Complaint history - regulatory actions, legal actions   | n/a      |                         |   |
| State and local government planning records including historical zoning and land uses   | ×        |                         | No material land use changes since the 1920s                          |
| Details of permits, licences, approvals and trade waste agreements with records of compliance   | n/a      |                         |   |
| State and local government environmental records including licensing conditions, regulatory notices, inspection records, complaints, licence breaches                           | <b>✓</b> | Section 5               |   |
| State or local government dangerous goods records including licensing requirements, goods licensed to store, storage licences, inspection records, complaints, licence breaches | <b>✓</b> | Section 5               |   |
| State and local government records on contamination for site and surrounding areas  | 1        | Section 5               |   |
| Historical site photographs (labelled and dated)  | ✓        | Section 5               |   |
| Summary of literature relating to the site (including newspaper articles)   | n/a      |                         |   |
| Potential sources of site contamination and potential off-site impacts  | ✓        | Section 8               |   |
| Potential chemical substances associated with activities (refer schedule b1 and as4482.1/2)   | /        | Section 8               |   |
|   |          | Figure 3                |   |



| Requirement in NSW EPA (2020)  | Present  | Location in<br>Document | Auditor Comment                    |
|--|----------|-------------------------|------------------------------------|
| above details  |          |                         |                                    |
| Verification of information sources (assessment of the integrity and accuracy of the information)  | ×        |                         | Absent                             |
| Site Conditions and Surrounding Environment Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet  |          |                         |                                    |
| site inspection (date, by whom)  | 1        | Section 6               |                                    |
| topography of site and in relation to surrounding land   | 1        | Section 3               |                                    |
| elevation  | 1        | Section 3               |                                    |
| position on slope (e.g. crest, upper slope,<br>mid slope, lower slope, flat), including<br>direction   | ✓        | Section 3               |                                    |
| quantification of slope (if required) as percentage slope  | n/a      |                         |                                    |
| summary of local meteorology - survey of climatic information from nearby weather stations (e.g. annual range in monthly temperature, precipitation, seasonal variations)                    | ✓        | Appendix F              |                                    |
| climatic conditions (during fieldwork)   | Х        |                         | Minor omission                     |
| current land use   | /        | Section 6               |                                    |
| surrounding land uses (north, south, east, west) noting apparent condition   | 1        | Section 6               |                                    |
| density of residential use in surrounding area   | ✓        | Section 6               |                                    |
| boundary conditions  | 1        | Section 6               |                                    |
| location and conditions of all visible features, including current buildings and surface structures, roads, foundations, positions of former buildings, tanks, pits, wells, drains and bores | <b>✓</b> | Figure 2                |                                    |
| site building information:   | 1        | Section 6               | Adequate summary of farm buildings |
| condition and type of surface cover e.g. bare ground, asphalt, concrete, gravel etc and estimate of percentage of site occupied by buildings, landscaped areas, paved or non-paved areas     | ✓        | Section 6               |                                    |
| chemical storage and transfer areas, including the presence of waste or chemical containers  | 1        | Section 6               |                                    |
| underground storage tanks (USTs)- product<br>stored, volume, direct or remote fill points,<br>dispenser bowsers, contained or<br>uncontained fill points, underground piping                 | 1        | Section 6               |                                    |



| Requirement in NSW EPA (2020)  | Present  | Location in<br>Document | Auditor Comment |
|--|----------|-------------------------|-----------------|
| and ventilation points, dip stick volume gauge, age of tank, records of spills or stock loss   |          |                         |                 |
| above ground storage tanks (ASTs)- product stored, volume, remote fill, bunded or unbunded containment area, staining within bund, staining outside bund, bund plug in place, staining around bund plug, nearby drains, record of spills or stock losses | <b>,</b> | Section 6               |                 |
| locations of settlement ponds  | 1        | Section 6               |                 |
| description and location of services and utilities including on-site septic systems  | 1        | Section 6               |                 |
| identification of electrical transformers/substation/capacitors  | n/a      |                         |                 |
| odours   | 1        | Section 6               |                 |
| visible signs of contamination such as discolouration or staining on the surface of soil or water, bare soil patches - on-site and at site boundaries  | ✓        | Section 6               |                 |
| presence of any stockpiled material, imported<br>soil or fill material as well as any signs of<br>settlement, subsidence or disturbed ground   | ✓        | Section 6               |                 |
| vegetation type and extent of cover (e.g. scattered, sparse, dense, absent, invasive, native)  | 1        | Section 6               |                 |
| condition of vegetation (noting visibly distressed, disturbed or dead vegetation)  | /        | Section 6               |                 |
| assessment of soil loss or deposition that has occurred in the past and evaluation of the future erosion potential   | n/a      |                         |                 |
| visible signs of erosion (on and off-site)   | 1        | Section 6               |                 |
| surface water bodies (e.g. lakes, rivers, streams, wetlands), fresh/marine and distance from site  | 1        | Section 3               |                 |
| surface water drainage (e.g. drainage bores, soak wells, sumps) and run-off and identification of ponding areas (and potential for flooding)   | /        | Section 3               |                 |
| direction of flow of water runoff from the site and adjacent properties  | 1        | Section 3               |                 |
| depth of any standing water, the direction<br>and rate of flow of rivers, streams or canals,<br>together with their flood levels and any tidal<br>inundations  | 1        | Section 3               |                 |
| surface water and groundwater use on site including rate and location of abstractions (current and historical)   | ✓        | Section 3               |                 |
| evidence of possible naturally occurring contaminants  | n/a      |                         |                 |



| Requirement in NSW EPA (2020)   | Present  | Location in<br>Document | Auditor Comment   |
|---|----------|-------------------------|---|
| identification of environmentally sensitive or significant features or habitats   | ✓        | Section 4               |   |
| evidence chemical substances have<br>migrated or are likely to have migrated to a<br>neighbouring site and is or is likely to be<br>causing contamination of the neighbouring<br>property | <b>√</b> | Section 6               |   |
| photographs of site and surrounding adjacent land, showing significant features, topography, nature of surface and existing structures)   | <b>√</b> | Section 6               |   |
| differences between current site condition and site history   | n/a      |                         | None apparent   |
| <b>Conceptual Site Model</b>  |          |                         |   |
| All stages of reporting   |          |                         |   |
| Regional and local geology, hydrogeology<br>and hydrology items from ASC NEPM<br>Field Checklist 'CSM' sheet  |          |                         | Information as reasonably available without field sampling. |
| description of regional and site specific local geology records   | 1        | Section 3               |   |
| geophysical data  | ×        |                         |   |
| drilling logs which clearly identify imported and locally derived fill (including refuse) and natural stratum   | X        |                         |   |
| well logs including strata, casing or<br>construction details and water level,<br>quality and pump/discharge rate<br>information  | Х        |                         |   |
| aquifer types (unconfined, semi-<br>confined, confined) and<br>aquitards/aquicludes present   | 1        | Section 3               |   |
| direction and rate of groundwater flow  | ✓        | Section 3               |   |
| values for soil bulk density and porosity   | ×        |                         |   |
| storativity or storage  | ×        |                         |   |
| soil organic matter content   | ×        |                         |   |
| cation exchange capacity  | ×        |                         |   |
| soil pH   | ×        |                         |   |
| redox potential measured in situ  | ×        |                         |   |
| regional and site-specific<br>hydrogeologic information, including<br>groundwater quality   | ✓        | Section 3               |   |
| hydraulic and piezometric heads and hydraulic gradients   | ×        |                         |   |
| Basic assessment of hydraulic conductivity and porosities   | ×        |                         |   |



| Requirement in NSW EPA (2020)   | Present  | Location in<br>Document | Auditor Comment  |
|---|----------|-------------------------|--|
| transmissivity  |          |                         |  |
| Reported depths to groundwater in unconfined and confined aquifers  | 1        | Section 3               |  |
| Regional groundwater flow direction   | ✓        | Section 3               |  |
| rate and direction of groundwater flow  | ×        |                         |  |
| current usage/resource potential  | 1        | Section 3               |  |
| existing monitoring wells and records<br>of registered production wells or<br>survey of surrounding landholders to<br>determine the existence of wells where<br>the resource may potentially be used<br>in the vicinity of the site | /        | Section 3               |  |
| identify beneficial use of aquifers   | ✓        | Section 3               |  |
| Details of any future realistic use   | ×        |                         |  |
| Details of any relevant environmental beneficial uses   | 1        | Section 3               |  |
| Searches of databases and other sources of information for receptor surface water bodies such as wetlands, streams, rivers, open drains and oceans  | <b>√</b> | Section 3               |  |
| flow paths for surface runoff   | ✓        | Section 3               |  |
| Identifying recharge sources,<br>discharge points and other hydraulic<br>boundaries   | X        |                         |  |
| identification of Acid Sulfate Soil risk areas  | 1        | Section 3               |  |
| List of potential contaminants of concern   | ✓        | Table 8.5               |  |
| Potential and known sources of contamination, on- and offsite   | 1        | Section 8               |  |
| Mechanism of contamination (e.g. 'top<br>down' spill, sub-surface release from tank<br>or pipe, atmospheric, deposition etc.)   | ✓        | Section 8               |  |
| Potentially affected environmental media  | ✓        | Section 8               |  |
| Consideration of spatial and temporal variations (e.g. weather).  | ×        |                         | Not required at this stage   |
| Actual or potential exposure pathways.<br>Also consider preferential pathways for<br>contaminant migration.   | 1        | Section 8               |  |
| Human and ecological receptors  | /        | Section 8               |  |
| Frequency of exposure   | n/a      |                         | Not available for preliminary assessment, Auditor notes default NEPC exposure assumptions are anticipated to be inherently relied on where HIL/HSL values are use for screening. |
|   |          | Section 8               | <u> </u>   |



| Requirement in NSW EPA (2020)  | Present | Location in<br>Document | Auditor Comment  |
|--|---------|-------------------------|--|
| assessed in terms of potentially complete pathways and likelihood  |         |                         |  |
| Discussion on multiple lines of evidence (for complex sites)   | n/a     |                         |  |
| Sampling analysis and quality plan, detailed site investigation, site-specific risk assessment, remedial action plan, detailed environmental management plan, ongoing monitoring | n/a     |                         |  |
| Previous site investigations, contaminant characteristics and migration items from ASC NEPM Field Checklist 'CSM' sheet  | n/a     |                         |  |
| Conceptual site model items from ASC NEPM Field Checklist 'CSM' sheet  | n/a     |                         |  |
| Meteorological data items from ASC<br>NEPM Field Checklist 'CSM' sheet   | n/a     |                         |  |
| Sources of variability   | n/a     |                         |  |
| Data gap identification  | n/a     |                         |  |
| Sensitivity analysis where modelling is undertaken Refer to NEPM Schedule B2 Section 4 for the requirements for developing a CSM   | n/a     |                         |  |
| Presentation in accordance with ASC NEPM Schedule B2 section guide in presenting conceptual site models  | ✓       | Section 8               |  |
| Data Quality Objectives<br>(if sampling is undertaken)   | n/a     |                         | Refer to ASC NEPM Schedule B2<br>Appendix B for a comprehensive<br>guide in reporting data quality<br>objectives |
| Step 1: State the problem  | n/a     |                         |  |
| Step 2: Identify the decision/goal of the study  | n/a     |                         |  |
| Step 3: Identify the information inputs  | n/a     |                         |  |
| Step 4: Define the boundaries of the study   | n/a     |                         |  |
| Step 5: Develop the analytical approach  | n/a     |                         |  |
| Step 6: Specify performance or acceptance criteria   | n/a     |                         |  |
| Step 7: Develop the plan for obtaining data  | n/a     |                         |  |
| Are the data quality objectives linked to the conceptual site model, and have they been updated with the conceptual site model?  | n/a     |                         |  |
| Sampling and Analysis Plan and<br>Sampling Methodology<br>(if sampling is undertaken)  | n/a     |                         |  |
| Quality assurance/quality control data<br>evaluation<br>(if sampling is undertaken)  | n/a     |                         |  |
| Field and analytical results   | n/a     |                         |  |



| Requirement in NSW EPA (2020)   | Present | Location in Document | Auditor Comment                 |
|---|---------|----------------------|---------------------------------|
| (if sampling is undertaken)   |         |                      |                                 |
| A table(s) of analytical results that:  | n/a     |                      |                                 |
| shows all essential details such as sample identification numbers and sampling depth  | n/a     |                      |                                 |
| shows assessment criteria   | n/a     |                      |                                 |
| highlights all results exceeding any assessment criteria  | n/a     |                      |                                 |
| Summary/discussion of the analytical results table  | n/a     |                      |                                 |
| Sample descriptions for all media where applicable (e.g. soil, sediment, surface water, groundwater, soil vapour, ground gas, indoor air and biota) | n/a     |                      |                                 |
| Test pit or bore logs (well construction details<br>where appropriate for example groundwater<br>level expressed in Australian height datum)        | n/a     |                      |                                 |
| Site plan showing all sample locations  | n/a     |                      |                                 |
| Site plan(s) showing the extent of soil and groundwater contamination (if known)  | n/a     |                      |                                 |
| <b>Conclusions and Recommendations</b>  |         |                      |                                 |
| Summary of all findings and discussion of results   | 1       | Section 9            |                                 |
| Conclusions addressing the stated objectives  | ✓       | Section 9            |                                 |
| Assumptions used in reaching the conclusions.   | X       |                      |                                 |
| Extent of uncertainties in the results (quantified where possible)  | 1       | Section 9            | Detailed assessment recommended |
| Recommendations for further work (if appropriate)   | ✓       | Section 9            |                                 |

