WHAT SHOULD YOU LOOK FOR WHEN COMMISSIONING A SITE HISTORY REVIEW?

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Contaminated land assessment requires the implementation of a staged process, each part contributing towards the development of a comprehensive Conceptual Site Model (CSM). The neglect of any one stage of this process can result in an incomplete or flawed CSM being used as the basis for decisions regarding:

- the contamination status of a site
- associated risks to human health and/or the environment
- the suitability of a site for a particular end land use; and
- the requirement for, and design of, a site remediation program.

The first step of the assessment process, as nominated by the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPM), Australian Standard AS4482.1-2005 and various state-based guidance documents, involves the completion of a site history review (also identified as a Preliminary Site Investigation or Phase 1 Environmental Site Assessment). Standard site history research generally includes a desktop study followed by a detailed site inspection. The desktop study comprises collating data from a number of sources and should include the following (as a minimum):

Site definition

Comprising a summary of current information (e.g. the physical extent of the site, land title information, zoning and local planning restrictions, site use(s) and ownership), this information provides a snapshot of existing site characteristics.

Regional geological and soil characteristics

Consulting relevant geological/soil (including acid sulphate soil) maps, published literature and/or regional bore drill logs may aid in predicting the subsurface profile at the site, thereby facilitating an understanding of how chemical contaminants are likely to behave over time and what conditions may be encountered during a possible future intrusive site investigation program.

Regional hydrogeology

Hydrogeological maps, published literature and state/territory records of registered groundwater bores may assist in understanding the likely localised groundwater conditions beneath the site, including depth(s) to groundwater, flow direction(s) and physico-chemical characteristics.

Surrounding land uses and surface water bodies

Perusing local maps and current aerial photographs may aid in identifying possible sources of regional contamination and local sensitive receptors.

Historical and recent aerial photographs of the site and surrounds

Taken at intervals of 10 years or less, these are consulted to obtain information regarding temporal changes to land use and/or infrastructure on, and adjacent to, the site.

Historical land titles records –

Consulted as far back as either the first land grant or, where impractical, to evidence of land ownership that is unlikely to have included significant potentially contaminating activities (PCAs), this research is undertaken to obtain a history of land ownership and/or use over time.

Dangerous goods licensing records

Generally held by state/territory government departments, these records are accessed to determine whether licensed fuel or chemical storage facilities, including underground and aboveground storage tanks, may have been located on, or near, the site.

Heritage registers

Commonwealth and state/territory Aboriginal and European heritage agencies should be consulted to determine whether possible heritage issues require further consideration during future site use/management.

Contaminated sites databases

The local contaminated sites regulatory body (i.e. Environment Protection Authority or equivalent) should be consulted regarding the recorded presence of contamination, PCAs, existing/historical licences and/or contaminated land audits (current or completed) for the site and surrounding area.

Local government authority records

Contacting the local council regarding possible recent and historical records regarding the site (including development plan approvals) may aid in establishing the chronology of land use and development.

Underground services

A preliminary investigation into the presence and configuration of underground service conduits, usually undertaken using historical/current site plans and/or dial-before-you-dig information, may aid in determining whether subsurface preferential contaminant pathways might be present on the site.

Site inspection

The site inspection, which should be undertaken (where possible) in the company of a person with knowledge of the site layout as well as past and present site use(s), involves collating as much visual, olfactory, anecdotal and documentary (i.e. site-based records) information as possible regarding the site and immediately surrounding properties. This should include (but not necessarily be limited to) an assessment of factors such as:

- local topography
- surface water flow direction(s), surface water bodies and/or areas of ponding
- types, condition and distribution of surface paving
- current and remnant site infrastructure
- site use activities
- evidence of surface soil contamination, imported fill material(s), stockpiles, waste and/or stressed vegetation
- fuel/chemical storage areas and inventories
- waste management procedures
- presence of asbestos building materials and site asbestos register
- records of spills, leaks or complaints

Once the research phases have been completed, the next stage of the site history review involves collating the various pieces of information to establish a preliminary CSM for the site and immediately surrounding area. This CSM should include a summary of the PCAs that may have occurred on, and in the immediate vicinity of, the site as well as the associated potential contaminants, their likely behaviour within soil and/or groundwater (both on- and off-site), possible contaminant transport routes, sensitive receptors and exposure pathways. The CSM should then be used as the basis for scoping the subsequent intrusive investigation program (if required) and should be progressively updated as more information become available for the site.

Although the standard format for a site history review is now generally well understood by those who undertake the work, it is important to realise that such a format may not necessarily be sufficient to appropriately characterise your site, particularly if it has a long history of land use (e.g. inner city properties) and/or has been used for various industrial activities (e.g. manufacturing, railway, council/fuel/transport depot, commercial service station or Defence facilities). These sites require the assessor to think “outside the box” in terms of possible sources of information that may contribute to

obtaining a complete picture of the history of the site and the development of the CSM. Additional sources of information that may be of assistance in this regard include:

Local and state libraries

These may host relevant historical plans, books, photographic databases or other information to assist in determining the history of land use activities.

Local historical societies

These are a possible source of additional anecdotal information, historical photographs and published/unpublished records for the local area.

Local museums

These may be of assistance with regard to specific areas of interest (e.g. railway, military and mining museums).

State and national archives

A possible source of historical plans or records, particularly with respect to current or former government sites or sites of interest to government bodies, including admiralty charts (i.e. changes to coastlines over time) and military records.

State government department plan rooms

This is a possible source of detailed plans for infrastructure located on government sites (e.g. school sites, railway facilities).

Historical topographic maps

These may show the locations of former features such as landfills, quarries or (backfilled) surface water bodies.

Historical post office directories (i.e. predecessors of more recent telephone books and street directories)

These may be a possible source of chronological information regarding the owners/occupiers of the site and surrounding properties.

Historical street directories

These could indicate additional historical surrounding land use activities that may have resulted in regional contamination.

In summary, if you are responsible for commissioning work on a potentially contaminated site, it is important not to underestimate the importance of this stage of the assessment process, whereby a relatively limited outlay of time and expense may enable the development of a more comprehensive CSM as well as a more streamlined and successful overall approach to the intrusive site investigation and/or remediation programs.