# National Environment Protection (Assessment of Site Contamination) Measure

made under subsection 14(1) of the

*National Environment Protection Council Act 1994* (Cwlth), *National Environment Protection Council (New South Wales) Act 1995* (NSW), *National Environment Protection Council (Victoria) Act 1995 (*Vic), *National Environment Protection Council (Queensland) Act 1994* (*Qld)*, *National Environment Protection Council (Western Australia) Act 1996* (WA), *National Environment Protection Council (South Australia) Act 1995* (SA), *National Environment Protection Council (Tasmania) Act 1995 (*Tas), *National Environment Protection Council Act 1994 (*ACT) and the *National Environment Protection Council (Northern Territory) Act 1994* (NT)

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This Measure was made on 10 December 1999

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# NATIONAL ENVIRONMENT PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE 1999

**INTRODUCTORY NOTE**

Section 14 of the National Environment Protection Council Act 1994 and the equivalent provision of the corresponding Act of each participating State and Territory provides for the making of Measures by the NEPC and the matters to which they may relate. This Measure relates to the matters set out in paragraph 14(1)(d).

The Measure is to be implemented by the laws and other arrangements participating jurisdictions consider necessary: see Section 7 of the Commonwealth Act and the equivalent provision of the corresponding Act of each participating State and Territory.

## PRELIMINARY

### 1. Citation

This Measure may be cited as the National Environment Protection (Assessment of Site Contamination) Measure 1999.

### 2. Commencement

This Measure commences on the date of gazettal of this Measure.

### 3. Definitions

This clause defines particular words and expressions used in this Measure. Definitions of other terms that are used in particular guidelines in Schedule B are set out in the relevant guidelines.

In the context of this Measure the use of the word "should" does not imply obligation, but rather provides for general guidelines for the assessment of site contamination.

In this Measure, unless the contrary intention appears:

"**Agency**" means a body or bodies of a participating State or a participating Territory which that State or Territory has nominated for the purposes of this Measure.

"**Assessment of site contamination**" means a set of formal methods for determining the nature, extent and levels of existing contamination and

the actual or potential risk to human health or the environment on or off-site resulting from that contamination.

"**Background concentrations**" means the naturally occurring, ambient concentrations of substances in the local area of a site.

"**Chemical substance**" means any organic or inorganic substance, whether liquid, solid or gaseous.

"**Commonwealth Act**" means the National Environment Protection Council Act 1994 of the Commonwealth.

"**Contamination**" means the condition of land or water where any chemical substance or waste has been added at above background level and represents, or potentially represents, an adverse health or environmental impact.

**"Ecological Risk Assessment"** is a set of formal, scientific methods for defining and estimating the probabilities and magnitudes of adverse impacts on plants, animals and/or the ecology of a specified area posed by a particular stressor(s) and frequency of exposure to the stressor(s). (Stressors include release of chemicals, other human actions and natural catastrophes).

"**Epidemiology**" is the study of the distribution and determinants of disease in human populations.

"**Health Risk Assessment**" is the process of estimating the potential impact of a chemical, biological or physical agent on a specified human population system under a specific set of conditions.

"**Health Risk Management**" is the process of evaluating alternative actions and selecting options in response to health risk assessments. The decision making will incorporate scientific, social, economic and political information. The process requires value judgements eg. on the tolerability and reasonableness of costs.

"**Investigation level**" means the concentration of a contaminant above which further appropriate investigation and evaluation will be required.

"**Response Level**" is the concentration of a contaminant at a specific site based on a site assessment for which some form of response is required to provide an adequate margin of safety to protect public health and/or the environment.

"**Risk**" means the probability in a certain timeframe that an adverse outcome will occur in a person, a group of people, plants, animals and/or

the ecology of a specified area that is exposed to a particular dose or concentration of a hazardous agent, ie it depends on both the level of toxicity of the hazardous agent and the level of exposure.

"**Site**" means the parcel of land being assessed for contamination.

**Unless otherwise stated, a term used in this Measure and in the Commonwealth Act has the same meaning in this Measure as it has in the Commonwealth Act. The following terms are defined in subsection 6(1) of the Commonwealth Act:**

"**Agreement**" means the Intergovernmental Agreement on the Environment made on 1 May 1992 between the Commonwealth, the States, the Australian Capital Territory, the Northern Territory and the Australian Local Government Association, a copy of which is set out in the Schedule to the Commonwealth Act.

"**Council**" means the National Environment Protection Council established by Section 8 of the Commonwealth Act and the equivalent provisions of the corresponding Acts of participating States and Territories.

"**National environment protection guideline**" means a guideline that gives guidance on possible means for achieving desired environmental outcomes.

"**National Environment Protection Measure" (Measure)** means a Measure made under section 14(1) of the Commonwealth Act and the equivalent provisions of the corresponding Acts of participating States and Territories.

"**Participating jurisdiction**" means the Commonwealth, a participating State or a participating Territory.

"**Participating State**" means a State:

(a) that is a party to the Agreement; and

(b) in which an Act that corresponds to the Commonwealth Act is in force in accordance with the Agreement.

"**Participating Territory**" means a Territory:

(a) that is a party to the Agreement; and

(b) in which an Act that corresponds to the Commonwealth Act is in force in accordance with the Agreement.

# HEAD OF POWER FOR MAKING THIS MEASURE

### 4. Head of Power

This Measure is made pursuant to section 14(1) of the Commonwealth National Environment Protection Council Act, and in particular, paragraph (d) of that section, and the equivalent provisions of corresponding Acts in participating States and Territories.

# PURPOSE AND DESIRED ENVIRONMENTAL OUTCOME OF THE MEASURE

### 5. Purpose and Desired Environmental Outcome

**(1)** The purpose of the Measure is to establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, land owners, developers and industry.

**(2)** The desired environmental outcome for this Measure is 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.

# ASSESSMENT OF SITE CONTAMINATION POLICY FRAMEWORK

### 6. Assessment of Site Contamination Principles

The following principles should be observed in relation to the Assessment of Site Contamination:

#### (1) Individual responsibility

The primary responsibility for ensuring the assessment of site contamination rests with the States and Territories, excluding sites owned by the Commonwealth which are the responsibility of the Commonwealth.

#### (2) Implementation of Jurisdictional Responsibility

There should be a consistent approach to the assessment of site contamination across Australia but each participating jurisdiction may implement the necessary controls in its own manner.

### (3) Prevention

Contamination, or further contamination, of a site should be prevented. Investigation Levels or Response Levels provided as part of this policy framework process should not be construed as desirable soil/water quality criteria or levels up to which contamination may be allowed to occur.

There should be no noticeable or measurable change in the characteristics of soil, or associated ground or surface waters. It is recognised that certain activities will lead to the addition of substances to the soil which raise the background levels of soils. These are valid and legitimate activities where they are undertaken in accordance with relevant laws and best practice guidelines.

### (4) Regulatory Control of Site Contamination

Contaminated soil and associated ground and surface waters should be categorised by the nature and concentration of contaminants and subject to appropriate controls over their use, storage, transport and ultimate disposal.

### (5) Planning

Planning authorities of participating jurisdictions should ensure a site, which is being considered for a change in land use, and which planning authorities ought reasonably to have known to have a history of use that is indicative of potential contamination, is suitable for its intended use.

### (6) Availability of Site Contamination Information

Without detracting from any obligation of disclosure, which may exist at law, all relevant information on site contamination should be accessible to the community and particularly to those who need to make informed decisions, for example, potential land purchasers.

Without detracting from any obligation of disclosure, which may exist at law, the owner of a contaminated site should inform any person who proposes to purchase or lease the site, of information from the assessment of site contamination.

Prospective purchasers of land should also make appropriate enquiries to satisfy themselves regarding the condition of a site and any financial liabilities that may apply for the current use or the proposed future use of the land.

### (7) Community Consultation

Where there are reasonable grounds to expect an impact on the community, the community has the right to be informed of, and to be consulted on, the decision-making process from an early stage in the assessment of site contamination.

### (8) Cultural and Spiritual Significance

Due regard should be given to sites of cultural or spiritual significance, in particular, the significance that indigenous people attach to land.

### (9) Education

Education programs should be implemented in the community, industry and all levels of government to raise awareness and understanding of site contamination issues, including the prevention of soil, air and water contamination.

### (10) Site Assessment

The recommended approach to the assessment of site contamination is shown in Schedule A. Site assessment work should be conducted by professionals who are able to demonstrate to regulatory authorities that they have relevant qualifications and experience.

### (11) Human Health

Human health should be a primary concern when assessing land use and exposure scenarios.

There should be appropriate occupational health and safety measures (including training) for personnel involved in assessment of site contamination.

Community health assessment and monitoring for specific health effects may be warranted where appraisal has indicated a significant risk of exposure to a contaminant.

### (12) Environmental Impact

During the assessment of site contamination there should be management of on-site and off-site impacts of contaminants, particularly of emissions to air and surface water and groundwater.

### (13) Data Collection and Chemical Analyses

Site Assessors should implement data quality objectives, and data quality assurance and quality control procedures that address sampling,

contaminant identification and chemical analyses. These procedures should enable the evaluation of the precision and accuracy of results as part of the assessment of site risk. All other aspects of the risk assessment process should also be subject to quality assurance.

Chemical analyses should be performed using approved standard methods and should be performed by laboratories accredited for those analyses in the particular environmental medium. Field analytical methods should be performed by appropriately skilled personnel using approved standard methods.

Laboratories should be accredited for relevant analytical procedures by the National Association of Testing Authorities, Australia (NATA), or by an equivalent organisation, or according to an appropriate standard dealing with laboratory quality assurance.

## (14) Risk Assessment

The preliminary assessment of human health risk and ecological risks may be undertaken by comparing levels of contaminants on the site with appropriate investigation levels, provided in supporting documents, (see Schedules B(1), B(5), B(6) and B(7A)), or by undertaking a site specific risk assessment. An investigation level refers to the concentration of a contaminant above which further appropriate investigation and evaluation will be required. The preliminary assessment may lead to a more detailed assessment of health and ecological risks.

Human and ecological health risk assessment should take into account, where practicable, any additive, synergistic and antagonistic effects of mixtures of chemical substances.

## (15) Objectives of Assessment

The purpose of site assessment is to determine whether site contamination poses an actual or potential risk to human health and the environment, either on or off the site, of sufficient magnitude to warrant remediation appropriate to the current or proposed land use. In assessing that risk a balance is to be achieved between:

- optimising the current or intended use of the site; and
- the need to adequately protect human health and the environment.

The broader objective of assessment is to ensure:

- that the people of Australia enjoy the benefit of equivalent protection from air, water and soil pollution wherever they live;
- that the capacity of the soil is maintained for future generations; and
- that there is consistency of approach between jurisdictions to aid government and business decision making.

## (16) Attainment of Environmental Outcome

In general, to achieve the desired environmental outcome, the process of the assessment of site contamination should be placed within the context of the broader site assessment and management process. In particular, in assessing the contamination, the site assessor and others should take into account the preferred hierarchy of options for site clean-up and/or management which is outlined as follows:

- if practicable, on-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level; and
- off-site treatment of excavated soil, so that the contamination is destroyed or the associated risk is reduced to an acceptable level, after which soil is returned to the site; or,

if the above are not practicable,

- consolidation and isolation of the soil on site by containment with a properly designed barrier; and
- removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material;

or,

- where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

In cases where no readily available or economically feasible method is available for remediation, it may be possible to adopt appropriate regulatory controls or develop other forms of remediation.

It should be emphasised that the appropriateness of any particular option will vary depending on a range of local factors. Acceptance of any specific option or mix of options in any particular set of circumstances is therefore a matter for the responsible participating jurisdiction.

## (17) Specialist Areas

In the assessment of site contamination the following sources are recognised as requiring specialised forms of assessment and initially, information should be sought from the relevant environmental protection agency for advice on assessing sites with:

- Unexploded ordnance;
- Radioactive substances;
- Biologically pathogenic materials and waste; and
- Contaminated sediments.

Consideration should be given to the physical, and/or chemical properties of the soil and associated ground and surface waters, including naturally elevated contaminant levels or acid sulfate characteristics, where they have the potential to adversely impact on the current or proposed land-

use. In particular, the impact of such physical and/or chemical properties of the soil and associated ground and surface waters on the risk posed by such sites should include appropriate environmental impact assessment within relevant jurisdictional legislative requirements.

### (18) Heritage Sites

Heritage values should, wherever possible, be assessed prior to any physical assessment of contamination of a site. Where appropriate, advice should be sought from the local representatives of the Aboriginal and Torres Strait Islander Commission, the Australian Heritage Commission, jurisdictional heritage bodies and local councils.

### (19) Best Practice

In observing the principles and guidelines in this Measure, each participating jurisdiction should give consideration to the most current advice and best practice.

## SCHEDULES TO THE MEASURE

### 7. Schedules

This Measure contains the following Schedules:

**(1)** Schedule A

Schedule A in this Measure identifies the recommended process for the Assessment of Site Contamination.

**(2)** Schedule B

Schedule B in this Measure identifies general guidelines for the Assessment of Site Contamination that form part of this Measure.

### 8. Stages of Investigation

Schedule A shows the staged site assessment process which indicates which general guidelines are applied to preliminary and detailed site investigations.

The preliminary investigation will involve the components:

- Setting Data Quality Objectives;
- Establishing a site history;
- Detailing the proposed use;
- Reviewing local geology and hydrogeology;
- Conducting a detailed site inspection; and

- Establishing a sampling strategy and sampling pattern for soil and groundwater contamination.

Investigations are usually confined to areas where potentially contaminating activities have occurred and involve a site history-based sampling plan. The preliminary investigation and initial assessment of site contamination should consider the possibility of all forms of potential contamination based on past land use. The preliminary investigation should be sufficient to identify whether contamination exists on the site. Contamination may not be completely delineated at this stage.

A detailed investigation is required when the results of preliminary investigation are insufficient to enable site management strategies to be devised. Potential or actual contamination will need further definition. Potential contamination may have been indicated by the presence of unexpected underground structures (eg. underground fuel or chemical storage tanks) or by the presence of imported fill (eg. ash, odorous material or various types of refuse) and staining of soil. Actual contamination may have been detected in the form of contaminants which are not naturally occurring or as elements or compounds which are above background levels or exceed the investigation levels in Schedule B(1).

Depending on the proposed use and the results of initial site history investigations, the assessment of a site may incorporate the preliminary and detailed investigations.

Many site investigations proceed in multiple stages due to the complexity of the site and the discovery of unexpected contamination, or as investigation funds become available. Site investigators should obtain and consider all site information available to minimise the number of site visits and costs associated with the mobilisation of field investigation teams.

# REPORTING

## 9. Reporting Requirements

**(1)** It is intended that each participating jurisdiction submit a report on the assessment of the implementation and effectiveness of the Measure, including compliance with the Measure, under Section 23 of the Commonwealth Act and similar provisions in the corresponding Acts of each participating State and Territory.

**(2)** It is intended that a report under subsection (1) be submitted to the Council by 30 September next following each reporting year.

**(3)** In this clause 'reporting year' means a year ending 30 June.

# REVIEW OF THE MEASURE

## 10. Review Period

This Measure will be subject to a review five years from the date of commencement, or within any lesser period determined by the Council, which will consider:

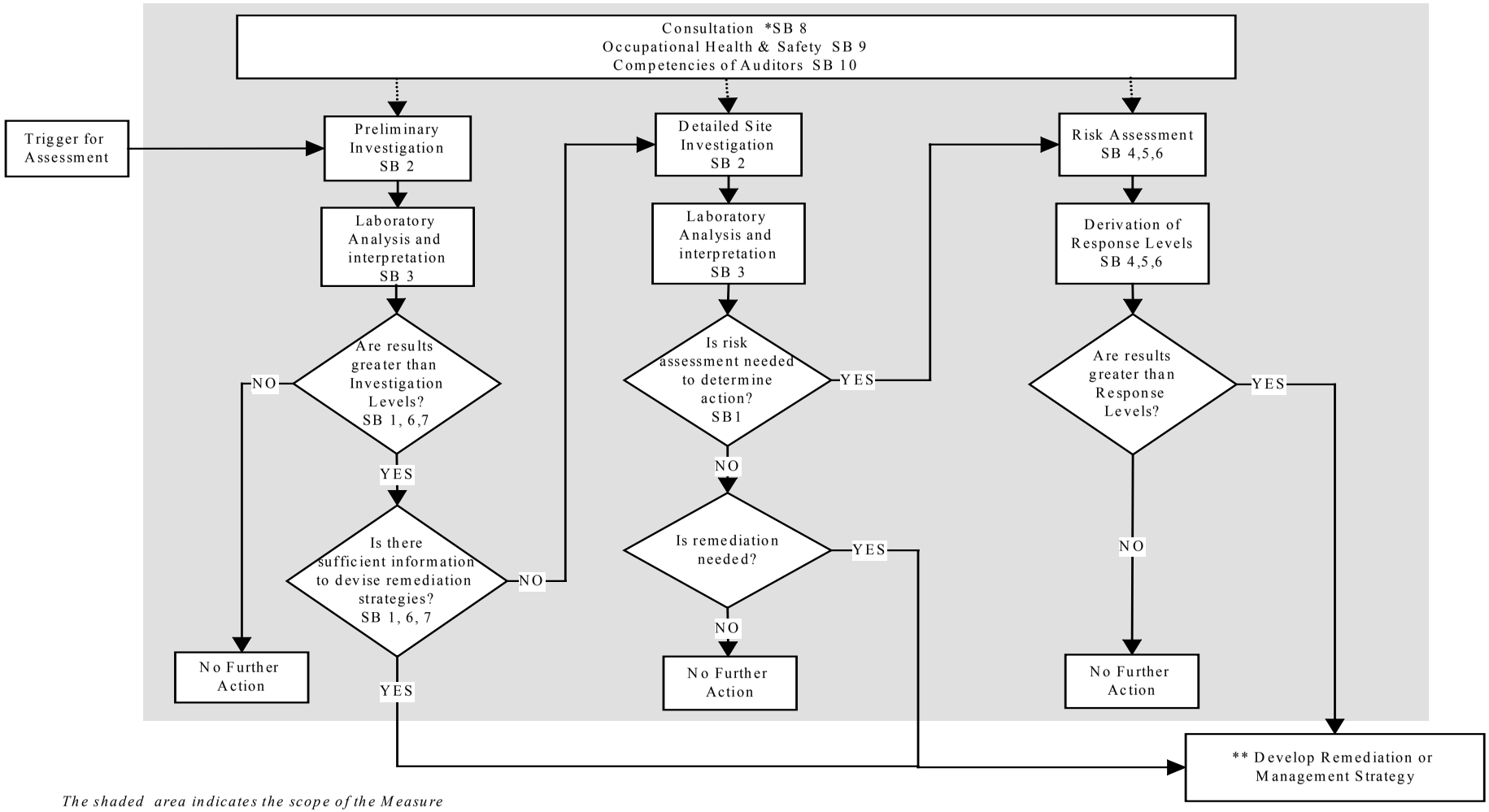
**(1)** the effectiveness of the Measure in achieving the desired environmental outcome set out within it;

**(2)** the resources available for implementing the Measure; and

**(3)** the need, if any, for amending the Measure (in accordance with the Act), including:

- whether any changes should be made to the Schedules; and
- whether any changes should be made to improve the effectiveness of the Measure in achieving the desired environmental outcome set within it.

# SCHEDULE A: RECOMMENDED GENERAL PROCESS FOR ASSESSMENT OF SITE CONTAMINATION




*The shaded area indicates the scope of the Measure*
** SB refers to Schedule B of the Measure*
** * These activities are outside the scope of the Measure*

# SCHEDULE B: GENERAL GUIDELINES FOR THE ASSESSMENT OF SITE CONTAMINATION

***The following general Guidelines provide guidance on the possible means for achieving the desired environmental outcome (PART 3 of the Measure) for the assessment of site contamination and should only be considered in relation to the assessment of site contamination.***

| **Title of Guideline** |
|---|
| Schedule B (1)<br>Guideline on Investigation Levels For Soil And Groundwater |
| Schedule B (2)<br>Guideline on Data Collection, Sample Design and Reporting |
| Schedule B (3)<br>Guideline on Laboratory Analysis Of Potentially Contaminated Soils |
| Schedule B (4)<br>Guideline on Health Risk Assessment Methodology |
| Schedule B (5)<br>Guideline on Ecological Risk Assessment |
| Schedule B (6)<br>Guideline on Risk Based Assessment of Groundwater Contamination |
| Schedule B (7)<br>Schedule B (7A) Guideline on Health-Based Investigation Levels<br>Schedule B (7B) Guidelines on Exposure Scenarios and Exposure Settings |
| Schedule B (8)<br>Guideline on Community Consultation and Risk Communication |
| Schedule B (9)<br>Guideline on Protection of Health and the Environment During the Assessment of Site Contamination |
| Schedule B (10)<br>Guideline on Competencies and Acceptance of Environmental Auditors and Related Professionals |