Summary of submissions received by the National Environment Protection Council in relation to the draft National Environment Protection (Assessment of Site Contamination) Measure and Impact Statement and National Environment Protection Council's responses to those submissions

NEPC

National Environment Protection
(Assessment of Site Contamination)
Measure 1999

NEPC
NATIONAL
ENVIRONMENT
PROTECTION
COUNCIL

Copies are available from:

Government Info Shops in your capital city

or

National Environment Protection Council Service Corporation
Level 5 81 Flinders Street
ADELAIDE SA 5000
Telephone: (08) 8419 1200
Facsimile: (08) 8224 0912

These documents are also available on our website www.nepc.gov.au.

ISBN 0-642-32313-5

EL

1. INTRODUCTION

The foundation for the assessment and management of contaminated sites was laid down in the *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*, published by the Australian and New Zealand Environment and Conservation Council (ANZECC) and the National Health and Medical Research Council (NHMRC) in January 1992. Although most jurisdictions based their approaches on the ANZECC Guidelines (1992), they have no formal status and there remained significant variations between jurisdictions.

A systematic review of the policy and technical components of the ANZECC Guidelines (1992) began in 1995, through the joint ANZECC/NHMRC Contaminated Sites Technical Review Committee (CSTRC). This review decided that the ANZECC Guidelines were basically sound, although they were deficient in several key technical areas. It was intended that these gaps be filled through the review process that was underway. It was then resolved that key policy and technical documents, drafted as part of the CSTRC's defined work program, form part of the National Environment Protection (Assessment of Site Contamination) Measure (Measure). Responsibility for the work was transferred from ANZECC/NHMRC to NEPC in cooperation with NHMRC.

In December 1996, the National Environment Protection Council (NEPC) advertised in all metropolitan daily newspapers its intention to develop a Measure for the Assessment of Site Contamination. Actual development of the Measure began in June 1997. Public comments were sought on the scope of the Measure and the methodology to be used in developing the Measure. The NEPC determined that the purpose of this Measure should be the establishment of a nationally consistent approach to the assessment of site contamination and waste to ensure sound environmental practices by the community which includes regulators, site assessors, environmental auditors, land owners, developers and industry.

In July 1998 the NEPC released a discussion paper, '*Towards a National Environment Protection Measure for the Assessment of Contaminated Sites*' for key stakeholder consultation. After consideration of submissions on the discussion paper, a draft Measure and Impact Statement for the Assessment of Site Contamination was developed and released for a twelve week public consultation period.

This document provides a summary of submissions to the draft National Environment Protection Measure and Impact Statement for the Assessment of Site Contamination and the National Environment Protection Council's responses to those submissions.

2. THE PROCESS

2.1 DEVELOPMENT OF THE MEASURE

National Environment Protection Council Committee member, Dr. Bryan Jenkins, CEO, Department of Environmental Protection, Western Australia, was appointed Project Chair for the Assessment of Site Contamination Measure. A small project team of officers drawn from Queensland, Western Australia and Victoria, two representatives from the National Medical Health and Research Council (NHMRC), and a project manager from the NEPC Service Corporation has carried out the development of the Measure. An officer from New South Wales also provided initial input into the development of the Measure. A Jurisdictional Reference Network with representatives from each participating jurisdiction (Commonwealth, States and Territories) was established to advise the project team.

To facilitate consultation, a Non-Government Organisation (NGO) Advisory Group was formed. This Group was charged with actively seeking views from its constituent organisations and providing high-level policy advice to the NEPC Committee.

A discussion paper, *'Towards a National Environment Protection Measure for the Assessment of Contaminated Sites'* was released for an eight week period of key stakeholder consultation to provide a basis for discussion on what the formal draft NEPM and Impact Statement might include. The NGO Advisory Group participated in a workshop to assist in the development of the Impact Statement on the proposed Measure.

The project team analysed the submissions on the discussion paper and sought advice from the Jurisdictional Reference Network, the Non-government Organisation Advisory Group and NEPC Committee in incorporating relevant comments into the draft Measure and Impact Statement for the Assessment of Site Contamination. The National Environment Protection Council released the draft Measure and Impact Statement for a twelve week period of public consultation from 29 March – 18 June 1999. Public meetings were held nationally to assist people who wished to make a submission. The availability of the draft Measure, and notification of the associated public meetings, was advertised in state and national newspapers. Fifty-four submissions were received from individuals and groups in the community including environmental groups, concerned individuals, government agencies, industry bodies, companies and community groups with a special interest in the development of the Measure.

The project team analysed the submissions and revised the draft Measure accordingly.

3. PUBLIC CONSULTATION

The Measure development process is an extensive and transparent consultative process. The following sections outline the key components of that consultative process.

3.1 PROTOCOL FOR CONSULTATION

The National Environment Protection Council developed a "NEPC Protocol for Consultation", which was revised in May 1999 (see Appendix B).

In accordance with this protocol, the overall aims of the Measure were to seek comments, information and feedback on:

- the appropriateness of the draft Measure;
- the usefulness of the draft guidelines; and
- the accuracy of analysis of the potential environmental, social and economic impacts of the draft Measure.

Consultation with stakeholders occurred through:

- formation of a broadly representative NGO advisory group;
- targeted consultation with NGO focus groups; and
- broad based consultation within the community.

Interested parties were given the opportunity to provide written comment through the Jurisdictional Reference Network, the NGO Advisory Group or directly to the Project Manager, NEPC Service Corporation.

3.2 NEPC PUBLIC PARTICIPATION AND CONSULTATION

The public participation and consultation program included:

- promotion of the availability of the draft Measure in major metropolitan newspapers, including an invitation to provide submissions;
- availability of documents on the NEPC website;
- the establishment of a 1-800 telephone number to facilitate access to documents;
- the formation of a NGO Advisory Group to actively seek views from its constituent organisations; and
- a series of public meetings held across Australia, which were attended by a range of stakeholders including Commonwealth, State and local government, industry, and environment and community groups.

The publication of this Summary/Response document signals the end of the statutory consultation processes for the development of the National Environment Protection (Assessment of Site Contamination) Measure for the. Networks and contacts have been established within Government, business and the community by those who participated in the development of this Measure and these networks have not only strongly contributed to the development of the Measure, but will greatly assist its implementation.

4. SUMMARY OF PUBLIC COMMENT AND NEPC RESPONSE

In accordance with Section 19(b) of the National Environment Protection Council Act, the National Environment Protection Council has considered all submissions received during the consultation on the draft Measure and Impact Statement for the Assessment of Site Contamination. This document and response to those submissions. Where more than one comment has been provided on the same issue these have been grouped together. These submissions and responses were used to revise the draft Measure, including the draft Guidelines, and any additional information on the impact statement was considered by the NEPC when making the Measure.

The NEPC acknowledges the significant effort made in the preparation of the submissions and thanks those persons and organisations for their constructive comments. The final Measure and the associated guidelines reflect the changes resulting from the submissions made to the NEPC.

Several submissions related to issues beyond the scope of the NEPC Act and this Measure in particular. Such issues related to the management or rehabilitation of contaminated sites, jurisdictional responsibilities for implementation, and legal liability for site contamination. Because these issues are outside the scope of the NEPC Act they have not been directly addressed. Where possible such matters will be directed to the relevant jurisdiction or to the relevant forum (eg. ANZECC) for their consideration.

A number of submissions also raised issues related to on-going data requirements, including the updating of the guidelines and associated documents, required to maintain the relevancy of the guidelines in the future and additional guidelines that would enhance the usefulness of the Measure. These issues will be the subjects of a proposed future Workplan which will be considered by NEPC.

Many useful editorial comments have also been received and the Measure and guidelines have been amended accordingly.

4.1 METHODOLOGY EMPLOYED IN SUMMARISING AND RESPONDING TO SUBMISSIONS

Many issues and comments were raised in more than one submission, and in different forms. Style and expressions differ from one submission to another, and thus issues are raised in different ways having different connotations, contexts and emphases. As it is not possible in this document to deal with all the subtleties emerging from such variations, an attempt has been made to group similar comments together. Similarly an attempt has been made, where possible, to provide a single response which captures the key issues raised in submissions.

Comments made in submissions have been assessed entirely on the cogency of points raised. No subjective weighting has been given to any submission for reasons of its origin or any other factor that would give cause to elevate the importance of one submission above another.

This summary does not seek to make judgements about the content or accuracy of statements, although different views about particular issues are contrasted. Some of the information presented was anecdotal and varied in its degree of accuracy. Nevertheless NEPC believes that, while it is important to base the development of the Assessment of Site Contamination Measure and Impact Statement on sound scientific and technical information, responses which may be less technically accurate also have a significant role to play. Such responses show the ways in which people interpret their experiences and may also highlight gaps in access to information or in knowledge.

Each submission has been given a specific reference number (eg The Olympic Co-ordination Authority is Submission 12). Where a submission has referred to a subject in the 'Comment' column, that number appears at the end of that 'Comment' in brackets, eg (12). The Issues are categorised under sub-headings such as the guideline being referred to, the Impact Statement, or Measure itself. Attachment A provides the name of the person or organisation that made a submission, and their submission reference number.

General

COMMENT	RESPONSE
The application of the NEPM to agricultural land is ambiguous. (23, 32, 41)	The NEPM does not address the modification of agricultural land by addition of fertilisers or trace elements to improve productivity. Neither does it set levels of contaminants in soil to protect plants or grazing animals from uptakes which may lead to violations of the Food Standards Code. Management of agricultural land to avoid such situations rests with agriculture departments. Triggers in planning legislation may result in the assessment of agricultural land if it is considered for a more sensitive land use.
The NEPM requires further discussion of financial liability. (36, 10) Issue of 'polluter pays'. (33)	Issues of financial liability are outside the scope of the NEPM, however, clarification has been provided under Availability of Site Contamination Information in the NEPM.
Concern raised about the perceived lack of detail, or the excessive detail, contained in the guidelines. (17, 48)	Section 14(1) of the NEPC Act states that the NEPC may make NEPMs on "general guidelines for the assessment of site contamination". The guidelines provide general guidance only and are not intended to be used as a 'cookbook' for site assessment. The level of detail was considered appropriate.
Concern raised as to who has responsibility for implementation of the NEPM especially in relation to Commonwealth land, and how the NEPM would be implemented. (49, 47, 41, 25, 17, 10)	The NEPC Act deliberately leaves the implementation of the NEPM to each jurisdiction. The Commonwealth is responsible for implementing the NEPM in relation to Commonwealth land/activities.
It was suggested that occupational health and safety issues should be separately dealt with in the NEPM. (45)	The NEPM does not impact on the OHS requirements already established under State/Territory and Commonwealth legislation.
Support/non-support for the NEPM to require jurisdictions to establish a 'Public Register' of contaminated sites. (24, 10)	Establishment of a 'public register' is an implementation issue and under the NEPC Act remains a matter for each individual jurisdiction.
It was suggested that each guideline include a summary and the documents be reorganised to improve sequence. (12)	The sequence of the guidelines has been reconsidered. It is not thought to be practical or necessary to provide

COMMENT	RESPONSE
	summaries as only specialists in the area will use the guidelines and they will need to read the detail.
There are many avenues of future work that would be desirably undertaken to improve guidelines on assessment of site contamination. Consultation with relevant agencies to develop guidelines on specialist areas should be put on NEPC's proposed workplan. It would be useful to set up a committee to oversee updating of the NEPM contents to reflect technical and information developments. (50)	A proposed future workplan will be forwarded to the NEPC for consideration, along with recommendations for update and review of existing guidelines. NEPC will consider an appropriate mechanism for update of guidelines.
Community Right to Know of any parties affected or potentially affected by site contamination and the availability of site information, or a contaminated sites database was queried. (44, 2, 3, 10, 24, 28, 30, 32, 49, 8, 21)	The NEPM Policy Framework notes that "all relevant information on a contaminated site should be readily accessible to the community". The mechanism by which site information is made available is a jurisdictional matter with different jurisdictions having contaminated sites databases in various forms. In some cases this information is provided to local authorities for inclusion in their records.
Concern at the lack of public involvement in the decision to adopt a "fit for use" approach and in the derivation of investigation levels. (10)	The fit for use approach was put forward for discussion as part of the Discussion Paper on this NEPM and as part of the draft NEPM. The NEPC consultation process allows for significant public involvement in the decisions made on the approach adopted in this NEPM.
Gaps in some aspects of the assessment of site contamination (eg aesthetic investigation levels) to be clearly identified. (50)	The development of aesthetic guidelines may be included for consideration by NEPC in any future proposed workplan.
The definition for contamination refers to the presence of chemical substances or waste. However, waste is not defined, and page 7 line 47 notes that the NEPM also applies to sites contaminated with unexploded ordnance, radioactive substances, and pathogens, yet these are all specifically excluded from the definition of contamination. Please	Definitions of waste vary between jurisdictions and a specific definition has not been included in the NEPM to avoid conflicts in implementation. Assessment guidelines are not provided at this stage for the specialist areas mentioned. However affected sites should be assessed by specialists in addition to the normal assessment work

COMMENT	RESPONSE
clarify the precise scope of the NEPM. (19)	eg many UXO site require assessment for lead contamination or sites affected by radiological substances also have associated chemical contamination.
Landfills are not considered. Landfills constitute a substantial proportion of potential contaminated sites. It is suggested that NEPC develop a new NEPM focussing on management of contaminated sites and include appropriate measures for management of all types of landfill. (1)	Management issues are beyond the scope of the NEPC Act.
The 12 weeks allowed for public comment on this extensive document has required a significant diversion of resources for stakeholders to give the attention appropriate for the issues involved. (13)	The 12 week public consultation on the Draft Measure and Impact Statement has been greater than required under the NEPC Act. In addition, the Discussion Paper was released for an additional 8-week key stakeholder consultation.
A formal programme for comment and review of the Measure, for the purpose of maintaining a practical and effective Measure, is suggested for the benefit of all stakeholders. (13)	NEPC will consider a proposed future workplan, which will include a mechanism for updating/reviewing guidelines.
The inclusion of sediments as an environmental medium for contaminated site assessment appears confused in the Measure. Clarification of this issue is necessary as it significantly affects many older industrial sites. The revised ANZECC Water Quality Guidelines (to be issued in draft form later in 1999) contain sediment quality guidelines. Inclusion of sediments as a medium for assessment in this Measure is consistent with the availability of sediment quality guidelines and the inability to physically separate sediments from aquatic environmental settings and associated impacts of contamination. (13)	It may be necessary to assess sediments in an aquatic environment to establish the extent of off site contamination. This requires specific sampling devices which are commercially within the scope of the NEPM refers to specific real property which is usually not defined in aquatic environments. The assessment of data from sediment analyses should refer to human health and ecological risk assessment guidelines as appropriate. The NEPM may be revised to refer to national water quality guidelines when they are finalised.
The lack of a national guideline for sediments despite the EPA (NSW) and EPA (Vic) both having established policies regarding Acid Sulfate Soils is not addressed in the NEPM. Only an	These issues may be included for consideration by NEPC in any proposed future workplan.

COMMENT	RESPONSE
indirect reference to sulfate and sulfur are provided with no mention of acidity in soil. (27)	
If the new ANZECC AWQC is to be included in this guideline, it needs to be finalised and released. (27)	The NEPM cannot refer to documents which are under development or review. These issues may be included for consideration in any proposed future workplan.
General editorial and structural comments. (13, 17, 19, 30, 31, 32, 36, 40)	These have been incorporated, as necessary, into the guideline.

Draft Measure

COMMENT	RESPONSE
A more flexible approach is needed in determining a review period. (8)	The NEPM can be reviewed at any time if Council makes a determination to do so.
Measure should guide jurisdictions in determining responsibility for decisions on land use change, land owner obligations. (16,29)	Decisions relating to land use and associated land owner obligations are dealt with through the planning legislation applying in each state and territory. Specific guidelines on these issues are beyond the scope of the NEPM.
Concern raised about the legal status of the Guidelines and how the guidelines can be updated in light of advances in methodologies, and how updating of documents referred to in the guidelines can be accommodated. (10, 25, 40, 49, 50, 52, 27)	A sufficiently flexible process for updating the guidelines will be developed by the NEPC.
Questions were raised about the legality of the inclusion of the 'Policy Framework", or aspects of the framework. The legality of certain words and phrases has been questioned. (24, 37, 30)	NEPC has taken legal advice on the drafting of the NEPM, and it is consistent with the requirements of the NEPC Act. The Policy Framework is designed to act as a guide for the application of the guidelines. The Framework makes reference to some activities not directly related to assessment but only in the context of their relationship to assessment activities.
The scope of the NEPM, particularly the emphasis on chemical contamination, has been questioned. (50, 17)	Certain contaminants such as radioactive substances and unexploded ordinance require special techniques for assessment which are significantly different from those used to assess the more commonly encountered chemical contaminants of soil. The NEPM does not cover these specialised fields.
The definition for contamination states that concentrations must be above background levels. The suitability of a site for use must be based on the *levels* of contaminants not their *origin*. A site can be totally 'natural' but still unsuitable for certain uses due to the background levels. While this site may not have a	The necessity to consider ambient soil and groundwater conditions is detailed in Schedules B(2), B(4). B(5) and B(6). It is agreed that such sites are subject to the same assessment procedures as described in the above guidelines.

COMMENT	RESPONSE
polluter associated with it, it should still be subject to the same controls, in that the levels must be suitable for the current or intended use of the site. (19)	
The NEPM must not reference or rely on documents which are in press or not finalised. (19, 50)	Reference to documents which are in press or under development or review have been deleted.
It is requested that the Guidelines for the Management of Petroleum Hydrocarbon Impacted Land be acknowledged as an appropriate application of the NEPM. (11, 19, 40)	These guidelines cannot be endorsed by NEPC as they have not been through the NEPM Development Process. The development of HILs for Hydrocarbon Impacted Land may be included for consideration in any proposed future workplan.
To allow application of the Measure to a broader range of environments, beyond the coastal/city environment, it is requested that consideration be given to: • Inclusion of sediment sampling (in creeks/rivers/ponds/dams, as opposed to coastal zone sediment which may be covered by another NEPM) (Schedule B(2) –Section 3); • General guidelines on assessing rock/soil mixtures (sampling methods, particle sizing, analytical fractions etc) (Schedule B(2) –Section 3); • General guidelines on assessing extensive man made landforms (waste rock dumps, reject dumps; tailings dams, heap leach pads, rubbish dumps). (Schedule B(2) – Section 3); • General guidelines on assessing surface waterbodies (stratification, quality of inflows, sediment) (Schedule B(2) – Section 4); and • General guidelines on assessing water quality in creeks and rivers (esp ephemeral, total vs dissolved loads) (Schedule B(2) – Section 4)...(20)	These issues may be included for consideration in any proposed future workplan.
The concept of 'fit for use' has been questioned (10, 33, 36, 10, 6)	The idea of land being fit for its present use is an economic and practical way of

COMMENT	RESPONSE
	managing land where previous or current use may result in contamination. When a change in land use is proposed, particularly a change to a more sensitive land use, then application of an appropriate management plan and/or remediation would be required to ensure the land is 'fit for use' for the proposed new use. The proponent for the change of land use must meet costs associated with redevelopment.
A site can be fit for use yet have financial liabilities associated with it. (36)	This may be true in some cases as there could be requirements for maintenance, management or monitoring, and if a change of land use is proposed, there could well be costs to bring the land to a condition suitable for the proposed changed use. It is anticipated that these liabilities would be reflected in the land value. For the majority of inner city sites fit for commercial/industrial use, or high rise residential use, this is likely to be the most beneficial use of the land and contamination is unlikely to constitute a liability.
The issue has been raised of consistency with IGAE principles. (30, 36, 38, 10)	The IGAE espouses consideration of 7 principles:- • Integration of short and long term economic, environmental, social, and equity • the global dimension of environmental impacts • need to develop a strong, growing and diversified economy • maintain international competitiveness in an environmentally sound manner • provide for broad community involvement • cost effective and flexible policy • lack of scientific certainty is not a reason not to act where there is threat of serious or irreversible environmental damage The NEPM has given consideration to these principles as required under

COMMENT	RESPONSE
	Section 15 of the NEPC Act.
The issue of prevention of pollution was raised. (36)	The jurisdictions have environmental protection legislation which deals with the prevention of pollution. The scope of the NEPM is assessment of site contamination and it aims to address problems of site contamination.
Concern that the NEPM will not deliver a consistent national approach because of its guidance only nature. (10), (33), (47)	If adopted this NEPM will assist in ensuring more consistent methods are applied by all jurisdictions in the assessment of site contamination across jurisdictions. The NEPC Act does not have the power to require the adoption of a specific regulatory process for implementation of the NEPM. This will allow for existing jurisdictional mechanisms to be employed, if appropriate. Alternatively, jurisdictions can develop new mechanisms to implement the NEPM.

Impact Statement

COMMENT	RESPONSE
Parts of the Impact Statement did not reflect changes made to some of the guidelines and the policy framework. (34)	The impacts of any changes to the NEPM have been considered by Council in making this NEPM.
How is it possible to extrapolate that there could be 200,000 contaminated sites in Australia? (30)	The discussion on the possible number of contaminated sites was qualified as 'largely uncertain' and was not intended to be a definitive quantification of the number of contaminated sites in Australia.
The Impact Statement does not provide sufficient analysis of the cost/benefits. (24, 16, 29)	The Impact Statement acknowledges that the Australian data on the social, economic and environmental impacts of site assessment is limited. Every effort was made to extract the available data. Key stakeholders were canvassed for information on the potential impacts of the NEPM. The Impact Statement is believed to be the most comprehensive analysis of the potential impacts of site assessment yet done in Australia. Council will take account of the additional information gained from submissions on the draft NEPM and the Impact Statement when deciding on making the NEPM.
Impact Statement does not adequately address the issue of "relevant international agreements to which Australia is a party to". (30)	The Impact Statement states that this Measure will assist Australia meet its 'Rio Declaration' commitments to 'conserve, protect and restore the health and integrity of Australia's ecosystem'. No other international agreements affect this NEPM.
Many of the positive impacts identified relate to the reduction in site assessment and remediation costs due to a nationally consistent risk-based approach. This effect will not be significantly realised in the oil industry due to the lack of specific guidance on hydrocarbons. (19)	Although industry-specific guidelines that have not been through the NEPM development process cannot be endorsed in the NEPM, there is nothing to prevent their adoption by jurisdictions, or their use by industry groups. Development of specific guidance on hydrocarbons may be included for consideration in any proposed future workplan.

Schedule A

COMMENT	RESPONSE
The nature of the triggers for site assessment has been queried. (19, 29, 44, 16, 2)	The triggers for assessments are a matter for the jurisdictions where various State and Territory planning regulations provide a trigger, or where the environment agencies can request assessments.
The flowchart should include reference to a 'desktop' review before any sampling occurs (43)	Generally, a desktop review is carried out as part of the preliminary investigation.
(R)EILs and GILs as well as HILs need to be considered in all contaminated site assessments. Schedule A does not make this clear. The assumption can be made that if contaminant levels at a site to be zoned for land-use categories A, D, E or F were below the relevant HILs that the "no further action required" box can be ticked. Such confusion could lead to disastrous outcomes in terms of urban environmental and groundwater quality. (6)	It is not possible to put this much detail into a flowchart.
The way Schedule A is structured has the potential to cultivate the concept of investigation levels being equivalent to "cleanup" levels which, of course, is not the case. Having the process go from "Are results greater than investigation levels?" directly to "Is there sufficient information to devise remediation strategies?" could lead to misinterpretation or misapplication of investigation levels. (14)	Throughout the document, we have attempted to explain the appropriate use of investigation levels. It is not possible to put all of this information into the flowchart.
The Preliminary Investigation process does not include any assessment of groundwater contamination (i.e. there is no reference to Schedule B (6)). This is inappropriate. (19)	This has been added to the flowchart.

Schedule B (1)

COMMENT	RESPONSE
It has been suggested that further clarification of the use of the HIL, EIL and GILs is needed (17, 31, 36, 48)	This guideline explains how the investigation levels should be applied. Text has been modified in line with some of the suggestions received.
The risks of misuse of investigation levels as response levels (36)	HILs are not intended to be desirable soil quality objectives. They are intended as a screening level to be applied when investigating land which has a history of use for any one of a number of potentially contaminating activities. HILs should be used in conjunction with EILs, levels to protect building structures and aesthetic criteria, and with recognition of the need to protect groundwater.
The interim EIL values for Mn, Zn, Cu, Cr, Pb and possibly Hg are too low compared to natural background levels in soils (23, 34)	For some metals there is considerable variation in background levels and it is acknowledged that in certain areas natural levels may be above the EILs. Whenever there is data on regional soil levels this should be used; the interim EIL proposed in this guideline are provided until more appropriate data are available.
Care should be taken in the application of EILs to disturbed, industrial or urban areas and priorities for ecosystems assessment and protection should be determined. (22)	It is a matter for the jurisdictions to identify areas of high conservation value and ecosystems to be protected within their State or Territory.
The lack of EILs is likely to lead to a high-cost, conservative approach. (32)	In highly modified environments, EILs are unlikely to be the driver and other investigation levels will probably be used.
The use of aesthetic criteria should be given greater importance. (30)	Certainly soils with high levels of phenols or aliphatic hydrocarbons may fail aesthetic criteria while below HIL for some settings, and in such cases aesthetic considerations should take precedence.
It is suggested the 4 residential settings should not be used and the keeping of poultry and higher production of home grown fruit and vegetables be accommodated in setting HILs for residential land use. (10)	The ABS surveys provided the basis on which estimates were made of the number of households growing fruit/vegetables and the proportion of their requirements met from the home garden. The residential A category is

COMMENT	RESPONSE
	based on this information. Protection of poultry/crops from uptake of certain contaminants would require conditions, as certain crops tend to accumulate certain metals, particularly where soils are deficient in other elements. The residential B and C categories depend on site-specific assessment so that these factors can be considered. Some changes in the text have been made.
HIL/EIL should be set for dioxins. (10)	Given that the WHO ADI for dioxin has been developed recently, it would be feasible to generate a HIL provided there are sufficient data on background exposure. The same difficulties experienced in setting specific toxicity based EIL for other contaminants would also apply to setting an EIL for dioxin and the lack of appropriate data for Australian species precludes this at the present time.
This Guideline is the appropriate place to discuss the method of comparison of site levels with Investigation or Response Levels. We consider this issue to be of paramount importance to the successful implementation of the NEPM. (19)	This is detailed in Schedules B(1) and B(4) and B(6).
Page 1, line 24: The terms Aesthetic Guidelines and Structural Guidelines must be defined. (19)	The terms are expanded in 3.5 Aesthetic Guidelines and 3.6 Structural Guidelines in this Schedule.
Table 2 has a number of values with units incorrectly applied eg Benzene and Toluene in ANZECC are µg/L ng mg/L, Pesticides in ANZECC are in ng/L not mg/L, the Hexachlorobutadiene in fresh water should be 0.0001mg/L etc. (27)	Table 2 has been corrected.
Although the Guideline recognises wilderness and nature reserves, and agriculture as land use settings where contamination occurs, it has not assigned them HILs. It is difficult to assess where such activities as forestry fit into these land use settings and what HILs are appropriate without some guidance	Forestry would be an agricultural land use and the HILs appropriate would depend on the amount of time people spend on the land.

COMMENT	RESPONSE
from the Guideline. (16)	
There is no current analytical method approved in Australia for the proposed TPH split method. Our enquiries with analytic laboratories have indicated that the method will cost approximately $500 per sample due to the need to do an initial fractionation or molecular separation of a sample. The cost of the current method is around $100 and it gives direct measurement of the level of specific chemical of concern.	Aliphatic and aromatic compounds have different toxicological and physiochemical properties. This should be recognised in health risk assessment. The text has been amended so that splitting is not required until detailed health risk assessment is required.
Stating a simple number for background levels (Table 1) is inappropriate. Further consideration needs to be given to the interim EILs for Maganese and other metals particularly Zinc, Lead, Copper and possible Mercury. (34)	This interim number can be used in the absence of local data, however, where there is more appropriate data, this can be applied.
General editorial and structural comments. (19)	These have been incorporated, as necessary, into the guideline.

Schedule B (2)

COMMENT	RESPONSE
Soil sampling for volatiles should refer to the soon to be released draft Australian Standard. (51)	The NEPM cannot refer to documents that are under development or are being reviewed. The NEPM process will enable documents to be added to future versions of the NEPM.
The sequence of sampling types/approaches should be reviewed and placed in preferred order. Generally greater preference should be given to judgmental sampling based on the results of thorough site history work and guidance should be provided on selection of appropriate sampling patterns. (22, 51, 16).	Agreed. The text and order of the sampling patterns in section 3.2 has been altered accordingly. The preferred starting point for a preliminary investigation sampling program should rely on professional judgement by the investigator based on an adequate site history. Where history information is unavailable an appropriate systematic sampling plan should be developed after consideration of site characteristics such as soil types, topography and existing structures on the site. Detailed investigations usually rely on systematic sampling approaches and many investigators use regular grids for lateral and areal delineation of target areas. Professional judgement is also required on a site-specific basis to ensure that the pattern and sampling density selected are sufficient to characterise the site and to detect "hot spots" that could pose an unacceptable risk for the intended land use.
Caution should be applied with composite sampling. Criteria used should be divided by the number of samples composited. (51)	It is agreed that in the limited number of situations where compositing is acceptable (e.g. the appraisal of stockpiled material) criteria used should be divided by the number of samples composited so that "hot spots" are not missed. Problems can arise if the normal concentrations are of a level that they exceed the criterion when it is artificially lowered.
Compositing saves money. (19)	This does not necessarily follow as there are added quality assurance costs to ensure that compositing has been done

COMMENT	RESPONSE
	appropriately and the financial benefits can be lost if there are a sufficient number of exceedances requiring the individual components of a sample to be analysed.
Information should be provided on sediment sampling. (41, 20, 15).	Dealing with assessment of sediments in an estuarine environment is not within the scope of the NEPM. The revised draft ANZECC water quality guidelines for fresh and marine waters may provide an appropriate reference for sampling in these environments. The areas where aquatic sediments may need to be sampled are in sediment traps or man made water bodies where contaminants may be transported by stormwater and accumulate as a result of the industrial activity (eg on metalliferous mining and ore processing sites). In such cases, sediment analyses are relevant to the overall site assessment and the sampling procedures should follow the above guideline. The NEPM has been amended to cover this issue.
Detail is needed on appropriate procedures for sampling rock/soil mixtures, man made land forms (eg waste rock dumps, heap leach pads) and surface water bodies and creeks where there has been an impact related to soil contamination. (20,15)	This is a specialist area and has not been covered in detail in the NEPM. However, general guidance on such sampling is provided and further work on this issue is proposed for consideration in a future workplan.
A number of improvements were suggested in the section dealing with Quality Assurance/Quality Control. The issues raised included: the necessity to apply QA to all collected data and not be limited to risk assessment processes, application to field processes (eg equipment rinse/rinse blank samples), subtraction of blanks, spiking processes and field duplicates. (31, 35, 36, 43).	The limiting of QA/QC to data collection related to risk assessment has been removed. These processes are, of course necessary for all data collection. The comments made in this area from most contributors are corrections related to procedures or are editorial in nature. The section has been changed to incorporate these comments.
Qualifications should be added in relation to the limited applicability of field devices. (25, 51).	Agreed. The guideline states that the sole use of field instruments as a source of analytical data is inappropriate. There is clear agreement with commentators

COMMENT	RESPONSE
	that the use of these instruments is for field guidance only and that laboratory analysis of samples collected under acceptable QA/QC procedures must be undertaken. Comments have been incorporated into the field testing section.
Groundwater and soil assessment processes should not be separated as they are inextricably linked. (19)	It is agreed that overlap exists in the section dealing with groundwater investigations and editorial changes have been made to remove unnecessary repetition. However, while some processes are similar to soil investigations, groundwater monitoring, well establishment and testing, sampling methods and analyte selection are specialist assessment processes that need separate coverage.
Prohibitive sampling costs should not be an excuse for an inadequate sampling program. (16)	The reasonable assessment of health and environmental concerns should not be compromised by cost. However, it is recognised that assessment is a relatively high cost exercise and investigations which are excessive in their scope add unnecessarily to development costs or can lead to a site being "orphaned" and the contamination issue remaining unresolved. The costs of sampling are usually considerably less than the costs of remediation and site management of a contaminated site. Assessors, certifying professionals and regulators have a duty of care to consider these issues on a site-specific basis.
Sample integrity issues should not limit containers to glass jars as other devices such as stainless steel sample liners, split spoons, push tubes etc enable the collection of an undisturbed sample. Other comments recommended that containers should have teflon-lined lids to prevent absorption by the lid liner and that holding times should relate to the times specified by the analytical method only. (14,35)	In general the type of sample container is specified by the analytical method for the target analyte and this should be the principal guide for sample containers. In general it is accepted that "appropriate decontaminated sample containers" are suitable for use provided that there is no reaction or absorption with the container fabric. Various soil samplers are appropriate for collection of undisturbed soil samples. Text has been added to the Guideline to reflect these issues.

COMMENT	RESPONSE
Clearer definitions should be provided on the scope of preliminary and detailed investigations. (19,43)	Agreed. Additional text has been added to provide clearer linkage to the staged assessment process shown in Schedule A.
The guideline should not contain consideration of financial constraints as in s 4.1.5 of Groundwater Investigations, which is a jurisdictional issue. (39)	It is considered that cost is a major factor in dealing with many cases of groundwater contamination and the guideline clearly states that investigations are subject to the regulatory requirements that apply in each jurisdiction. It is difficult for practitioners and regulators to ignore these cost issues in the assessment process as the cost of groundwater investigations can exceed the value of the site under consideration. The guideline recommends prioritisation and a staged investigation process where cost becomes a major impediment in dealing with the specific contamination issue.
Changes should be made to the section on site history to identify the industrial processes carried out on the site. It should also be acknowledged that, despite the best efforts, it may not be practical with some sites to obtain a reasonable level of site history and assessment must proceed with the available information. It should also be emphasised that site history work should precede the site inspection. (51, 13, 14, 25).	These issues are generally agreed and have been incorporated accordingly. However, site history and site investigation are often inter-related and in many instances it is more practicable for the two proceed in tandem.
Information should be provided on the use of remote sensing to detect underground structures in preliminary site investigations. (51).	This issue is agreed and additions have been made to the appropriate section.
Analyte selection in groundwater investigations should ensure the identification of an appropriate marker and consider chemical reactivity in addition to the properties listed in s4.4.1. (51)	These issues are agreed and text changes have been made.
General editorial and structural comments. (11, 13, 14, 18, 19, 23, 24)	These have been incorporated, as necessary, into the guideline.

Schedule B (3)

COMMENT	RESPONSE
Table 1.1 of the document lists Accelerated Solvent Extraction among the relevant USEPA SW-846 methods referenced in the draft guidelines, on the basis of January 1995 proposed updates. However, the only Sample Preparation procedure that references Accelerated Solvent Extraction is referenced in is as one of the alternatives for Polycyclic Aromatic Hydrocarbons or PAHs (502.1). Please note that in addition to PAHs, Accelerated Solvent Extraction has been accepted as US EPA Method 3545 in Update III by the SW-846 Committee for certain classes of compounds. (5)	The schedule allows for the most up-to-date USEPA methodology.
There is no current analytical method approved in Australia for the proposed TPH split method. Our enquiries with analytic laboratories have indicated that the method will cost approximately $500 per sample due to the need to do an initial fractionation or molecular separation of a sample. The cost of the current method is around $100 and it gives direct measurement of the level of specific chemical of concern. We recommend that the current methods for analysing hydrocarbon petroleums should be continued. (11)	A list of appropriate current methods will be referred to.
Section 2.3 Although the issues relevant to the validation of the analysis were adequately covered, it is essential that the sampling steps in the procedure be included in the validation. (16)	This issue is addressed in Schedule B(2) and the following will be incorporated for clarity in Schedule B(3) "at least 10% of the soil samples should be homogenised, split and submitted to separate laboratories for analysis".
Section 3.1.2 Sub-sampling a non-homogenous laboratory sample prior to homogenising may yield erroneous results. The sub-sampling error should be determined for at least a statistically significant number	Noted, however, this is current accepted practice by persons undertaking sampling and analysis of potentially contaminated soils.

COMMENT	RESPONSE
of each type of sample taken. The sampling variance of the mortar and pestle should also be measured. (16)	
Pg 14, Section 2.2 Duplicate analysis. We request that this be modified to '(at least one per process batch or one per twenty samples, whichever is smaller)'. Otherwise, this would be an increase in the amount of duplicates required, to double the current USEPA recommendation. This seems excessive for all sites, and would result in an increase in costs to the industry of 5% across the board for analytical work, where additional field duplicates may give more useful information which includes measures of all the variability's from sampling to laboratory analysis. (18)	Noted, however, this is current accepted practice by persons undertaking sampling analysis of potentially contaminated soils.
Matrix Spikes. 'One matrix spike for each soil type'. This does not define soil type or who should assess the soil type. The onus should be on the sampler to indicate soil type and changes in soil types, not the laboratory. It is recommend that one random MS be preformed per a minimum of every 20 samples, where soil type information is not provided. (18)	The text will be amended to read that laboratory staff should be able to differentiate soil type by visual examination alone unless indicated otherwise by their client.
2.3.4. (Page 19, lines 15-22). The LR (limit of reporting) is used in the guidelines. PQL (Practical quantitation limit) is also commonly used for the same purpose. This section should be changed to refer to either the 'LR' or the 'PQL'.	The current terminology used by NATA will be incorporated.
2.6 Analytical Report. (Page 20). The report gives a great deal of information. We believe that there should be a few clarifications here as to where information is included on the report and some changes to the list on page 20.	The current requirements by NATA will be incorporated and any additional information required.

COMMENT	RESPONSE
This recording of extraction and holding times will assist consultants with the interpretation of inter-laboratory Split sample data as indicated in lines 40-43 of page 20 of this draft. (18)	
2.7 (Page 20). Lines 35-38 There is often much differing opinion on what constitutes a secondary laboratory. This should clearly state whether a secondary laboratory can be either (1)'*an independent laboratory run by a different laboratory organisation or company*', or (2)'*an independent laboratory which receives, analyses and reports analyses independently from the primary laboratory*'. (18)	Clarification will be given to state as per point (1).
3.1 (Page 22). Lines 42-45 The first sentence in 3.1 is clearly talking about "available" contamination, i.e. contamination, which will potentially leach into the environment. This infers that physically occluded (e.g. inside small stones or quartz) or non-available contamination is not what is intended to be measured. Given this, and the risks of cross contamination during pulverizing of samples, we suggest that the further pulverizing be kept to a minimum, this should be reflected in the guidelines and further preparation for "available" analytes be limited to hand grinding which is not as likely to release occluded, or non-available environmental contamination. (18)	Agree with comments and will amend the Schedule to make reference to hand griding.
3.14 (Page 24). Lines 36-43 The air drying of samples at 35°C is relatively slow for some samples and not in keeping with general industry requirements in terms of turnaround of results. I recommend that this be reviewed for pH and conductivity. Conductivity, and the temperature acceptable for drying by increased to	The moisture content may be determined for sample as per method 102 and then the relevant proportions used from the original sample to determine pH.

COMMENT	RESPONSE
40°C in line with Rayment & Higginson 1992. (18)	
3.3 B1 (Page 29). Lines 10-13 This recommends the recording of proportion by weight and description of each fraction of material removed. This recording is very time consuming and judgmental. The description of types of stones etc is also a 'grey area'. This area needs some work to make it more realistic, useable and appropriate to all samples and analyses. (18)	The laboratory has an obligation to report where the sample has been change through the removal of material such as stones.
Method 105 Organic Carbon. (Page 49). "Total Organic Carbon" by oxidation / titration should be differentiated from Total Organic Carbon by Leco. The reason for this, is that one determination includes carbon from Graphite, coke and coal (leco method) and the other does not. Perhaps the titration method should report "Organic Matter" or "Organic Carbon" but not include the word "Total". (18)	Comments in the method already cover this issue.
Method 202 Metals analysis (Page 57). This lists only some metals and seems outdated in terms of elements, which are acceptable for use on ICP-AES and ICP-MS with suitable validation performed. See submissions for update to the table. (18)	This table will be updated.
Method 501 Volatile Organics (Page 81). This states that preliminary screening using headspace analysis (USEPA 5021) is acceptable for samples, which may contain high concentrations. It then goes on to state that low concentrations (individual compounds of 0.5 to 200ug/kg) or approximately 200 ug/kg (0.2 mg/kg) should use P&T techniques, regardless of concentration, USEPA 5035 states that samples may be screened by headspace, followed by P&T analysis. In general, the PQLs (practical quantitation limits) reported for Volatile	This comment is noted and will be included in a proposal for a future workplan by NEPC.

COMMENT	RESPONSE
Organics (VOCs) are generally in the order of 0.1 –10 mg/kg for most work performed in Australia. Best practice is that the P&T techniques should be used for low concentrations. This will give better recovery and more reliable results close to guideline investigation levels, which is really what is needed. For example, with the benzene, the 'Threshold Concentration for Sensitive land use' or 'Environmental Investigation limit' is at 1 mg/kg; P&T techniques should be used to ensure highest quality of data when making decisions as to whether the guidelines have been exceeded and an environmental or health risk exists. Headspace techniques should not be used at concentrations less than 10 mg/kg and possibly not at levels less than 200 mg/kg. (18)	
Method 504 OC Pesticides (Page 90). Has toxaphene ever been used in Australia. If not, should this still be included in the guidelines? This is generally not analysed, and perhaps should therefore be removed to avoid confusion. (18)	The method details the analytes for which it is suitable. It is the site history will determine the applicable analytes (see Schedule B(2)).
Method 506 Petroleum Hydrocarbons (Page 95 lines 7-9). This states that samples should be mixed thoroughly in the jar prior to subsampling for analysis. This will cause loss of volatile C6-C9 constituents. Refer to 3.1.2 on page 23 of this submission, which states that samples should not be homogenized due to resulting VOC losses. This needs to be changed. (18)	The Schedule B(3)) shall be amended to read analysis of volatile contaminants such as C6-C9 should be undertaken prior to any other analysis required from that sample. Sampling and sub-sampling shall be undertaken in accordance with 3.3c.
Maximum Holding Times for volatile organics (Page 27). Our experience and testwork, has shown that even under best practice conditions, samples will lose VOCs at a rate of in excess of 3% per day. This means that results could be a minimum of 40% low	The document will be amended accordingly.

COMMENT	RESPONSE
after 14 days. We strongly recommend that this maximum holding time be reduced to 7 days for the extraction to be performed. (18)	
The note on the bottom of the 3rd page in relation to the ANZECC Guidelines is a bit misleading - this is a NEPM document now, even though it is largely identical to the ANZECC document. (19)	The text has been amended for clarity.
There are absolutely no comments anywhere in the NEPM on laboratory analysis of groundwater. It would be reasonable to at least include groundwater in this Guideline and comment that although no NEPM Guidelines exist, there must be relevant guidance somewhere which can be referenced. The general parts of this Guideline would still apply to groundwater. (19)	Reference will be made to currently used methods.
Appendix A should not be included as there is no benefit to be gained. Why not simply reference the latest version of the Guidelines or Australian Standards, so that when they get revised, the NEPM does not need re-issuing? (19)	Disagree, this document has been found to be extremely beneficial in the majority of submissions.
The Guidelines should clearly explain that the concentration of analytes is a function of the test method e.g. TPH is not really total petroleum hydrocarbons in the sample but it is all the hydrocarbon which could be recovered and detected by the method - they may not all be petroleum related and there may be some petroleum hydrocarbons which weren't recovered or detected. (19)	Disagree, it is commonly understood that the concentration of analytes is a function of the test method hence the reasoning for this Schedule B(3).
The method for determining aliphatic hydrocarbons (page 98) notes that the method may not be suitable for samples with high molecular weight PAHs present but may be appropriate for samples where aromatics are not significant. It should be noted that if aromatics are not significant then the bulk of the TPH will be aliphatics.	This method may be useful to some laboratories and the limitations are clearly explained at the commencement of the method.

COMMENT	RESPONSE
Therefore, there would be no need to complete this test to conservatively estimate the concentration of aliphatics present. The benefits of proposing a split TPH test need to be very clear. See previous comments on TPH for Guideline 1. (19)	
Page 19, line 19-20: It is important that the limit of reporting be equal to or less than the 0.2 x the critical level in question. (23)	The following shall be incorporated as 1.2 (vii) "The method should be selected such that the LR is not greater than 20% of the relevant maximum contaminant is obtained.
Page 34, line 41: Filtration devices – a minimum pore size of 0.45um is more commonly used to prevent continued reaction of fine soil particles after extraction. (23)	Method 101 shall be removed with reference made to Appendix B.
Page 63: exchangeable cations and CEC – what about when soil pH is <7 and Al and H become important species, as well as changes in CEC in variable charge soils. (23)	included in a proposal for a future workplan by NEPC.
Analytical reporting (Page 20, line 1): The NEPM identifies unusual information to be included on analytical test reports. Some of the info. is not routinely reported in most Australian Laboratories. (23)	This will be written in accordance with NATA requirements.
Removal of extraneous material (Page 23, line 1): The NEPM states that extraneous material should be removed and the mass weighed. This is based on AS4479.1 which has been largely discredited as unworkable in commercial laboratory situations. (23)	The text has been left unchanged because this is considered to be good laboratory practice.
Sample Drying (page 24, line 36): The NEPM procedures state that samples should be air dried. This is not practical as many samples would take over 2 weeks to dry at 35 C and 70% humidity. For many clients, this delay would nor be tolerated. (23)	The moisture content may be determined for sample as per method 102 and then the relevant proportions used from the original sample to determine pH.
Organic carbon (page s 49 – 51): The NEPM procedure is archaic. (23)	Alternatives will be considered in a proposed future workplan to be considered by NEPC.

COMMENT	RESPONSE
Total sulphur (pages 76, 77): The NEPM procedure is archaic and time consuming. It has been largely replaced by LECO analysers. (23)	Alternatives will be considered in the next review, however, the Schedule allows for alternative methods provided QA/QC procedures are followed.
The current practice of air drying (<40°C) for all soils for environmental inorganic analyses also should be reviewed and I believe this has largely been derived from agronomy methods of the past. Air-drying is prone to significantly biasing results more than could be expected from the "biological transformation and other chemical reactions" if the holding times were restricted (eg to those used with the AS 4439 Toxicity Characteristic Leaching Procedures). (27)	The moisture content may be determined for sample as per method 102 and then the relevant proportions used from the original sample to determine pH.
The MCA supports uniform laboratory analysis techniques, and encourages laboratories to become registered with NATA. Although the guideline discourages the use of "standards", Guideline 3 needs to strongly recommend a certain technique above others. As it stands the guideline appears to recommend the Australian Standard, but it needs to be clarified. (30)	The intent of the Guideline is to give recommended methods for use in assessment of site contamination.
The Schedule B(1) relating to investigation levels for soil and groundwater includes a reference to complexed and free cyanides (Table 1). There may be documents referring to their definition and standard method of analysis but our laboratory is not aware of these. The recommended method in schedule B(3) for cyanide gives only details for total cyanide. It is suggested that either the guideline levels are converted to more definitive forms of cyanide such as total and weak acid dissociable or a technique is documented for "complexed" and "free" cyanide. The titles "complexed" and "free" will probably be defined more by	This issue is under review but is as yet unresolved. This may be considered by NEPC in a proposed future workplan.

COMMENT	RESPONSE
an analytical procedure than by their name. For example, "free cyanide in soil by the method.....". In the event that the guidelines are accepted, clients could well be asking for the analysis of Free and Complexed cyanide in soil. This will provide obvious problems for laboratories. Our laboratory is aware of some environmental analysis articles that suggest possible techniques but all appear only approximations and each would certainly provide a different result. (31)	
Support the approach to uniformity of sample preparation, extraction and analytical methods. (35)	Noted.
Appendix A Line 17 – We agree that variations in extraction procedures are the greatest cause of inconsistency. However, consistency is maximised if both the extraction and determination steps are prescribed. Standard Methods for determinative step should be required as many variations to Standard Methods introduced by laboratories significantly degrade the quality of the data. (35)	Standard methods for the determinative step will be included in the proposed workplan for consideration by NEPC.
2.2 pg 15 line 18 – Delete this paragraph. Contaminated sites vary significantly in soil type and also in coexistence of contaminants. This section will be abused by laboratories. (35)	This comment is accepted and the paragraph will be amended accordingly.
Page 16 Point 6 – Also applicable for ICP analysis. Not restricted to chromatography. Can be used in any analysis to adjust results but only within predefined limits (say 30%). If internal standard is less than 70% of expected value then errors in data from ratio will be too high and any sensitivity or PQI data will not apply. (35)	Agree with this comment. The text will be amended accordingly.
Point 7 Mass spectral data is also an acceptable confirmation technique. (35)	This technique will be included.

COMMENT	RESPONSE
Section 2.2, 2.3 We have mixed feelings about the inclusion of minimum QC Procedures and Method Validation. On the one hand it reduces the variation between laboratories and laboratory methods and reduces the opportunities for abuse of the system. On the other hand it can lead to a number of negative issues. (35)	Disagree. It should be noted that these are minimum requirements as stated in the text.
Pg 17 line 34 – it is generally accepted and required by NATA that at least 7 replicates should be used for calculation of repeatability. (35)	Agreed. The text will be amended accordingly.
Page 18 line 34 is at odds with preceeding statements 80% recovery or less may be expected from a matrix spike but a reference method should get +-15% (line 12 page 17). (35)	Agreed. The Schedule has been amended to read 15%.
Page 19 Line 25 - the statement on keeping records does not seem appropriate at the end of a section on validation. (35)	Disagree. The text refers specifically to validation records only.
page 19 Line 15 – The limit of reporting as defined will preclude most labs from achieving the groundwater investigation levels. (35)	Agree. The Schedule has been amended accordingly.
Many of the requirements of the document are already covered by international Standards such as ISO Guide 25 or NATA requirements. Why not refer to these requirements? Many of the statement don't make sense eg page 20 line 23 – if the lab must be NATA accredited then the report can only be signed by a NATA signatory. (35)	Disagree. There are many occasions where analysis by NATA accredited laboratories is not always possible. Additionally, a NATA accredited laboratory will not be accredited for all methods.
Page 20 line 26 – it should be mandatory that all calculations and transcriptions be checked. There is not point having all this validation and systems if a simple calculation error can produce an invalid result. (35)	Agree. The Schedule has been amended accordingly.
Section 3.1 – The requirements for preparation, homogenising, air drying, analysis of solvent rinse will add significant cost and time to the analytical	Agree. However, this is not contradictory to the objectives of the schedule.

COMMENT	RESPONSE
process. Based on the volume of samples often generated from a site and the costs and urgency of the testing of this area will be significantly abused unless mandated and made very specific. Words like recommend and preferred should be removed. The procedure of choice should be specified for each analyted. In many instances eg 3.1.3 and 3.1.4(b) repeat whole sections (eg cleaning, rinsing, decontamination, procedures) and yet are not exactly the same. Better these be grouped in one broader section. (35)	
3.1.4 c Sieving line 27 replace recommended with required otherwise no labs will follow and the purpose of the Measure will be lost. (35)	Agree. The Schedule has been amended accordingly.
3.2 Sample Storage – The containers recommended will add significantly to storage handling. Table 3.1 is far more detailed than the reference to containers in Schedule B(2) Section 3.1.1 line 23. Which should prevail? (35)	The text in Schedule B(2) has been amended.
Why are the holding times for volatile organics and semivolatile organics the same (14 days)? Surely, little will happen to OC Pesticides in a jar at 4°C in 14 days given that their problem is that they stick around for years. (35)	This is consistent with current USEPA methodology and is regarded as best practice.
Section 3.3 is restating all before it. What is the purpose at all. Suggest that the first descriptive part be removed and leave the prescriptive section 3.3. (35)	This section provides a summary of the previous section.
It will be essential to inform NATA of these requirements and to ensure they assess labs for compliance to these requirements if labs are to be accredited for Contaminated Site Analysis. Otherwise the abuse of the system will continue. (35)	Agreed. However, this will be an implementation issue for relevant jurisdictions.
Page 33 Line 3 – the reference to 1996 seems out of place. Has the AS been written by 1999? (35)	The Schedule has been amended accordingly for comments relating to method 102 and reference made to the Australian Standard and USEPA 1311.

COMMENT	RESPONSE
page 41 – Many labs dry soils at 103°±2 to be consistent with other test methods also carried out in oven. (35)	Noted, however, the two methods are not inconsistent.
Page 54 Line 15 – The method refers to 1g soil at <2mm. This is in direct contradiction to previous instructions of sieve size appropriate for subsample size. (35)	Agreed. The Schedule has been amended accordingly.
Page 55 Line 10 – The method must state upper limit for blank which can be subtracted without invalidating the procedure. (35)	Agree, however, appropriate amendments have been made in Section 2.2 and 2.3.4.
Page 55 Method Performance – It would appear that the reference method prescribed by the NEPM for soil metals is not capable of achieving the accuracy expected of a screening method, let alone a reference method (refer to Section 2.3.1) eg Nickel recovery 59% on SRM 2710, Lead recovery 73% on SRM 1646 etc. This data is on samples containing levels of analytes at levels considered very high relative to the detection limits expected of the methods. (35)	Agree, but reference should be made to Section 2.3.1. The methods are not designed to recover components bound in the soil matrix. Lower recoveries than those specified will occasionally be obtained for CRMs which have been assessed by more rigorous methods involving matrix dissolution.
page 60 – similar comment as above. Iron 72%, Zinc 81%, Chromium 61%, Cadmium 70%. (35)	See comments immediately above.
Page 85 Line 25 – Reference to 'Notes a to d' goes nowhere. (35)	Agree. The Schedule has been amended accordingly for clarity.
All references to methods which are to be phased out of SW846 should be removed (refer to B(3) Table 1.1) eg 808A on page 91. (35)	Agree. The Schedule has been amended accordingly.
Section 4 refers to the use of the ANZECC Guidelines for the analysis of samples. Paragraph 3 in section 4 states that the Guidelines are "seen as provisional" and that they will be replaced with Australian Standards as they are developed. While we support this approach, as we believe there are shortcomings within the Guidelines, there are also problems with the use of Australian Standards.	The text has been deleted. The Measure cannot refer to documents that are incomplete or under development. The length of time to develop Australian Standards is significant, hence, the impetus for developing this Schedule B(3).

COMMENT	RESPONSE
These relate mainly to the time it takes to develop a Standard (eg the Petroleum Hydrocarbons standard currently under development) and to the general lack of representation on Standards committees from consulting laboratories. (46)	
General editorial and structural comments. (13, 23, 35)	These have been incorporated, as necessary, into the guideline.

Schedule B (4)

COMMENT	RESPONSE
Acceptable risk. Two aspects of this are queried; "acceptable to whom" and "the use of qualitative" (10, 19, 21, 30, 38)	The use of quantitative risk assessment has been largely for the assessment of carcinogens using US EPA cancer slope factors. The general use of US EPA cancer slope factors has not been endorsed by Australian health authorities for several reasons: • comprehensive details of the methodology for the derivation of the cancer slope factors has been unobtainable. • raw data used in developing the cancer slope factors has been generally unobtainable. • the US EPA took several policy decisions that result in underestimates of the real risk by potentially several orders of magnitude: this conservatism is not reflected in the reporting of the outcomes of quantitative risk assessments where the upper bound estimate is presented as the real risk • there is dissatisfaction with the method in the USA and the US EPA's draft review of cancer risk assessment has moved towards a benchmark dose approach • the use of quantitative risk assessment makes the assumption that levels of risk can be estimated for low environmental exposures considerably outside the range of exposures for which toxicological data are available • the use of quantitative risk assessment can assume that there is an acceptable level of risk and this level of risk has often been expressed numerically eg 10^{-5}per annum or lifetime. Reviews of US legislative decisions have indicated that the acceptable level of risk has varied by several orders of magnitude. A

COMMENT	RESPONSE
	specific value for acceptable risk cannot be provided. What is acceptable for a specific situation is a risk management decision taking into account a variety of scientific, technological, social, political, and economic factors.
The use and status of the BMD methodology us questioned. (10, 19)	The methodology has been developed under the auspices of NHMRC and received 'in principle' endorsement from the Health Advisory Committee of NHMRC. It has gone through a formal NHMRC public consultation process.
The document virtually ignores groundwater and does not cover volatiles.	While Schedule B(4) concentrates on soil, the principles can be applied to groundwater. Groundwater is discussed more fully in Schedule B(6). Methods for assessing volatiles are under development and may be included in any proposed future workplan.
The NEPM should provide guidance on assessment of mixtures as soil contaminants are often found in various associations. (10, 33, 38)	While there have been reviews of approaches to dealing with mixtures by bodies such as WHO, there is no internationally accepted method of dealing with mixtures. It is considered that interactions between components of a mixture should be considered where robust toxicological information is available: a general approach to using such data can not be provided and such data needs to be considered on a 'case by case' basis. Mixtures may be included in any proposed future workplan.
Greater emphasis should be placed on point estimates and less on Monte Carlo. (26) Much effort is spent pointing out potential weaknesses with the Monte Carlo analysis for risk assessment, only to state that this type of analysis is preferred to other methods.	Greater detail is given for Monte Carlo-type approaches because of their complexity and to ensure that they will be applied appropriately and accurately. Point estimates are used more commonly than Monte Carlo-type approaches in Australia. The former will result in substantial conservatism where a series of 'worst case' point estimates is used and the conservatism of the individual estimates is compounded. Point estimates are more readily understood and more easily used.

COMMENT	RESPONSE
Information is sought on the calculation of response levels. (19)	A methodology for developing Health-based Investigation Levels is provided. By providing site-specific data and safety factors, the methodology can be used as part of the process of deriving Response Levels. Response levels will be influenced by the risk management process which is driven by scientific, technological, social, political, and economic factors. As response levels should be site-specific (considering land use, receptors etc) no attempt has been made to set generic values.
Default exposure values? (19)	A range of default exposure values is provided in Section 2.14 of Schedule B (4).
General editorial and structural comments. (16, 19, 31, 45)	These have been incorporated, as necessary, into the guideline.

Schedule B (5)

COMMENT	RESPONSE
This guideline should be consistent with AS/NZS 4360 Risk Management Standard. (13)	The focus of the Australian Standard is business risk management and, whilst there are parallels with ecological risk assessment, there will be areas where the two approaches to risk management differ.
The ecological risk assessment approaches for aquatic and terrestrial environments are different. (13, 41)	Protection of the aquatic environment is facilitated via a suite of documents forming the 'National Water Quality Management Strategy'. These documents collate a large amount of scientific information and water quality management experience with the aim of achieving sustainable use of the nation's water resources. These documents are used as the basis for deriving groundwater investigation and response levels when assessing groundwater contamination in relation to contaminated sites. There is no equivalent suite of documents relating to the protection of terrestrial environments. The ERA methodology, described in Schedule B(5), presents a set of formal, scientific methods for conducting ecological risk assessments of chemically contaminated soils and for deriving ecological investigation and response levels for contaminants in Australian soil.
Allowance should be made for a more qualitative approach to ERA, e.g. assessment of biodiversity. (14)	This type of qualitative information is better suited to the risk management phase where consideration of information other than that related to risk is considered.
A detailed qualitative and quantitative risk assessment can be used to determine if there is ecological risk rather than conducting three separate levels of assessment, each based predominantly on deriving and comparing EIL_{soil} data. (14)	This approach is equivalent to a tier three assessment. The three levels consist of the same basic components but incorporate an increasing degree of data collection and complexity, decreasing uncertainty and decreasing conservatism as an assessment proceeds from Level 1 to 3. The staged approach allows flexibility in applying the framework.

COMMENT	RESPONSE
Logic tree should be provided to guide readers through the iterations. (17)	Information on moving between levels of assessment is provided in sections 2.1 and 2.8.
Localised impacts on biota is usually not a concern at small sites. More guidance on addressing ecological concerns at highly modified sites needed. (19) EILs more appropriately applied to pristine areas. (22) EILs should only be used when flow-on impacts to the ecosystem can be described with some certainty and the impact is widespread. Ecological significance should only relate to known impacts of a widespread nature on the structure and function of the ecosystem. (40)	Ecological values vary according to the societal relevance, ecological and economic significance of biota that inhabit or visit the region, local area or site. They are not dependent on the size of the site or the amount of biota on which the site may have an impact but the species that is at greatest risk within a set of identified ecological values. For many highly modified sites, the ecological values to be protected may be relatively low and it will be more appropriate to use other key investigation levels (e.g. HILs). Conversely, for pristine sites of high ecological value, EILs may be the driver. This is discussed further in Guideline 1.
There are potential difficulties in obtaining data on key indicator species, especially if they are rare and/or endangered. (20)	Agreed, there are practical and societal problems associated with sampling and testing rare and/or endangered species especially if the test method requires the sacrifice of the animal/plant. In these instances, Schedule B(5) recommends sampling of representative species would be more appropriate.
Lack of environmental and human data makes risk assessment more of an art form rather than a scientific process on which critical decisions can be made. The guideline promotes minimalisation, (i.e. what is the minimal area of habitat required to protect ecosystem function and biodiversity?) and does not reflect the precautionary principle or intergenerational equity. (33)	The ERA methodology described in Schedule B(5) enables the assessor to identify, evaluate and determine the risk that soil contaminants may pose to biota that are of ecological value. Where data are absent or insufficient, both ERA and HRA nominate default values and indicate that uncertainty associated with the use of the default values should be specifically identified. ERA focuses on the protection of ecological values rather than the protection of a minimum area of land. The principles of the Intergovernmental Agreement on the Environment (which include the precautionary principle and intergenerational equity) are recognised and have been considered in developing

COMMENT	RESPONSE
	all the guidelines.
Increased consistency in the use of the term 'ecological values' needed. (31)	Agreed, the text has been revised to improve consistency in application of this term.
In most instances, a visual inspection will determine if ecological values are degraded. (22)	Ecological values are not defined in purely physiological and visual terms. They also relate to the ecological processes considered to be of significant relevance. Many sub-lethal effects on an organism or process are not detectable at the phenotypic level or only become detectable once significant physiological/process damage has occurred.
The community's perception and definition of environmental risk can change over time. (8)	This is accounted for in an ERA. When identifying the ecological values to be protected for a site, one of the three main components to be considered is societal relevance, i.e. the expectation of society to protect biota (which may change over time).
Quality assurance and quality control procedures used in the preparation of the report are needed. (31)	These aspects are covered in Schedule B(2).
Data gaps may trigger an ERA. The trigger should only be activated when site history suggests there may be an unacceptable ecological risk. (40)	Unacceptable data gaps may trigger an ERA. It will be the responsibility of jurisdictions to decide if data gaps are unacceptable and if an ERA is required.
Preference for draft national Framework the preferred methodology. (13, 52)	Chapter 7 of the guideline identifies a number of methodologies that may be broadly consistent with the framework. However, no one methodology is recommended in the Measure over others at this time.
General editorial and structural comments. (13, 16, 19, 30, 31,)	These have been incorporated, as necessary, into the guideline.
No mention is made of quality assurance (50).	Schedule B(2) contains a section on quality assurance (Section 4.10) which is applicable to all guidelines dealing with data collection, sampling and presentation including Schedule B(5).

Schedule B (6)

COMMENT	RESPONSE
Comments were made regarding consistency with or merging of groundwater components of Schedule B(2) with Schedule B(6) or vice versa. Related concerns involved the need for improved integration with other relevant guidelines eg by use of appropriate groundwater assessment triggers in related guidelines. (24, 30, 39, 43, 41, 19, 17)	A variety of opinions were presented on this issue which ranged from strong support for the guideline in its current form (with minor changes) to its incorporation with SB(2) and inclusion with soil contamination assessment without separate emphasis. It is agreed that more linkages are needed to other relevant guidelines and changes have been made to the guidelines where recommended and considered appropriate. Groundwater contamination associated with contaminated sites is a complex issue which should be subjected to a specific risk based assessment process which is consistent with the Measure's "fit for use" and risk based approach to assessment. The technical components dealing with investigation procedures have been separated into Schedule B(2) to enable a clear presentation of the risk based assessment procedure proposed and to facilitate decision making by affected stakeholders. On this basis Schedule B(6) has been retained as a separate guideline with appropriate revisions. This separation does not imply that the assessment of soil contamination is disregarded when groundwater issues are a major concern. Section 1.2 of the guideline indicates the circumstances where groundwater contamination assessment should be undertaken. This is clearly based on data from preliminary and detailed site investigations of soil contamination.
Groundwater assessments should be conducted by appropriately qualified and experienced professionals only. (39)	It is agreed that groundwater assessment is a specialist area requiring relevant qualifications and experience. Its complexity often requires a multidisciplinary team approach involving expertise in hydrogeological

COMMENT	RESPONSE
	issues, appropriate analyte selection and the effective application of fate and transport modelling and health risk assessments particularly relating to the movement of volatiles. It is essential that site assessors and auditors ensure that professionals with the relevant competencies are consulted in the risk assessment process. The use of relevant professional expertise has been included in the guideline.
The guideline needs appropriate recognition that, in many circumstances, soil contaminants can take years to migrate into groundwater and modelling should include assessment of contaminant behaviour over time. (11)	Agreed. The time related issues for movement of contaminants involve the nature of the strata and the attenuation capacity of vadose zone soils to absorb contaminants and the contaminant properties including degradability and chemical reactivity. These issues have been included in the risk assessment process.
Guideline needs clearer expression (plain English) and statement of purpose eg the term "possible future use" is too broad and should reflect "realistic or reasonable" future uses.(13)	It is agreed that the term "possible future use" is too general and the guideline has been amended to replace this term with "realistic future use". The majority of editorial and text changes that deal with repetitive and unclear language have been included in the revised guideline as suggested by a number of commentators.
Groundwater quality should be based on ambient quality and not AWQG criteria. (24, 15)	The risk based process described in section 1.3 emphasises that consideration of ambient groundwater quality is essential. It is not intended to convey that it is appropriate for contamination to occur up to the specified quality parameters in the GILs where ambient groundwater quality is better than the GILs. The guideline has been amended to recognise this issue.
No specific mention of GILs in the guideline is made and there is inadequate guidance for the development of site specific response levels. (19)	This issue has been recognised and changes have been made to refer directly to GILs in the guideline.

COMMENT	RESPONSE
Inconsistency with the ANZECC/ARMCANZ 1995 groundwater protection guideline which suggests that, before setting criteria, other factors such as local conditions, risks, economics and state policies should be considered. (15)	Agreed. B(6) is not intended to be inconsistent with the ANZECC/ARMCANZ document. The section on response levels in B (6) has been amended to reflect this. The approach in the guideline is based on a risk assessment process which considers any impact from soil contamination causing groundwater quality to differ from ambient quality. This is consistent with the ANZECC/ARMCANZ definition. The assessment of realistic future uses is crucial to determining a site specific response. If the aquifer is of poor quality and yield, the contamination assessment would consider the dimensions of health and environmental risk. This approach is considered to be consistent with the ANZECC/ARMCANZ guidelines. The GILs are used as investigation levels in the aquifer and will default to ambient water quality in the assessment process particularly where the ambient quality is less than the GILs.
Inconsistency with the ANZECC/ARMCANZ definition of groundwater contamination. (15,24)	This difference in definition has been highlighted and explained in the Guideline.
Need to clarify the relationship between "environmental values" and groundwater "uses".(31)	Section 2 has been amended to be more consistent.
Concerns regarding the application of AWQG at the "zone of discharge" for waste storage facilities and excessive conservatism leading to onerous and costly investigations. (15)	The application of the AWQG at a "zone of discharge" into an aquatic environment would follow the risk based approach in the guideline to determine the impact on the receiving environment. In the example of licensed waste storage/disposal facilities or older decommissioned facilities, it would be expected that the AWQG would be exceeded in any leachate but not necessarily in the local aquifer.
Examples should be provided of assessment methodologies for specific types of groundwater pollution eg	The groundwater investigation section of SB2 deals more generally with the use of fate and transport modelling and its

COMMENT	RESPONSE
tailings dams, underground fuel storage, hazardous materials impoundments. (13)	application to the assessment of contaminated sites. It is not in the scope of the NEPM to focus on any specific industrial activity that can result in soil/groundwater contamination. The site specific nature of contaminated site work usually results in the detection and elimination of receptor impacts. The use of the AWQG provides water quality criteria for a wide scope of water uses and receptors to guide site specific responses.
Concerns that the AWQG will become "mandatory" cleanup criteria by default which is contrary to the risk based approach of the guideline. Risk aspects and protection of health and environment should be the main focus not strict adherence to the AWQG. Related concern that suggests that the guideline title should be changed to "risk based assessment of groundwater contamination". (15)	It is agreed that the proposed risk assessment process is based primarily on protection of health and environment and that the GILs should not be adopted as default cleanup criteria. Further emphasis has been placed on the use of GILs in the aquifer as investigation levels only.
Inconsistency between jurisdictions protecting future uses of groundwater. Flexibility in application of framework should be emphasised. (52)	Differences in jurisdictional requirements and approaches are recognised in the Guideline and frequently referred to. For example, groundwater assessors are advised to contact the relevant jurisdiction for advice on possible future uses and environmental values relating to the groundwater resource under investigation.
Further clarity in application of Australian Water Quality Guidelines required. (52)	The Guideline has been revised to clarify the use of AWQGs.
General editorial and structural comments. (19)	These have been incorporated, as necessary, into the guideline.
"At the point of current and realistic future use" potentially gives approval for contamination under a property which currently has no extraction, but through urban consolidation may revert to a more sensitive future use which could rightfully have access to groundwater. The polluter should not	The basis for risk assessment in this guideline is the suitability of the groundwater for its current or realistic future use. If a realistic future use is access by neighbouring properties, the risk assessment should take this into account and derive appropriate GILs to protect this use.

COMMENT	RESPONSE
have the right to contaminate groundwater under someone else's property. (50)	
Groundwater should be assessed on the basis of its ambient quality and environmental value ('vide' draft National Water Quality Management Strategy (NWQMS), ANZECC/ARMCANZ 1999). (50)	The guideline aims to be in general agreement with the NWQMS Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 1992. It is not possible to refer to the 1999 version at this stage, because it is still in draft form. However, final versions of this document may be considered when reviewing the guideline in the future.

Schedule B (7)

COMMENT	RESPONSE
The basis of HILs has been questioned , particularly comparisons have been made to US EPA PRG levels. (6, 10, 21, 30, 38)	The basis for the derivation of HILs has been published in the readily available proceedings of several workshops on the Health Risk Assessment and Management of Contaminated Sites and by the National Environmental Health Forum. The HILs are derived by the health risk assessment methodology in Schedule B(4), which previously appeared in the ANZECC/NHMRC Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites. Criteria will vary from country to country due to different country-specific assumptions (eg in Canada it is assumed that there will be snow cover for several months each year) and policy decisions. Criteria will also be applied in different ways in different countries so direct comparisons may be misleading. For example, the PRG may be used for screening sites but higher values will be tolerated in the Records of Decision. If one compares the 19 substances where both HILs and PRGs are set, in 7 of these the HILs are less than the PRGs (Be, B, Co, Cu, Mn, Hg (inorganic), Zn) and for the 12 others PRGs are less than HILs (aldrin, As, B (a) P, Cd, chlordane, Cr VI, DDT, heptachlor, MeHg, Ni, PCB, phenol). Those that are lower in the US PRGs are generally lower as a result of conservative assumptions about whether they may be human carcinogens and/or how they are to be dealt with as carcinogens. The Dutch methodology is similar to the Australian methodology. For the Dutch health-based values the values for substances such as aldrin, As, B(a)P, Cd, chlordane, DDT, Hg, Ni, B, phenol are higher than the Australian values.

COMMENT	RESPONSE
The level of 200 ppm as the HIL for DDT has been questioned. (10, 30, 38) Investigation levels are inadequate. (28)	The derivation of this HIL is described in Proceedings of the 2nd National Workshop on the Health Risk Assessment and Management of Contaminated Sites (SAHC, 1993). It is based on an acceptable daily intake for DDT established by the Chemical Safety Unit of the Commonwealth department of Human Services. The Australian ADI is ten times less than the World Health Organization's acceptable daily intake i.e. if WHO's ADI had been used the HIL would have been 2000. By contrast, the Dutch human health based value is 11000. The US EPA value for DDT of this chemical arises because the US has used a conservative slope factor derived from rodent carcinogenicity studies. European and Australian health authorities believe the rodent carcinogenicity studies are of questionable relevance to human cancer risk for this class of compound.
How will the HILs be reviewed/modified? (19)	The documents have been available for 5 months public consultation under this NEPM development process. At this stage, there is no new data to suggest a review is warranted. However, a review of the guidelines is built into the NEPM.
The incidence of behaviour in children has been raised as a concern and it has been claimed that episodes of pica could result in acute toxicity from certain contaminants at the HIL. (6, 10, 30, 33, 38)	Even at a soil ingestion rate of 50g, none of the HILs would result in a lethal dose. From daily soil ingestion of 5g, it appears at first comparison that Cu, Pb, Ni, phenol and Zn potentially exceed a non-lethal toxic dose. The assumptions underlying such a statement need to be examined. The chemical form of the contaminant and its bioavailability from soil will differ from that of the metal in the toxicity data (eg suicides from swallowing Cu sulfate or Cu in drinking water). In general, bioavailability will be less (sometimes much less) when the contaminant is present in soil compared to a solution of the substance.

COMMENT	RESPONSE
	Though statistics on the prevalence of pica are unavailable, substantial pica is a relatively rare event judging by blood lead results in extensive cohorts of children aged up to five in Port Pirie. Text has been changed in the guideline to draw attention to the issue of pica.
The methods for dealing with carcinogens need clarification as the BMD methodology is not yet finalised. (19)	A method for dealing with carcinogenic soil contaminants has been developed by NHMRC and has received 'in principle' endorsement …
It is claimed that sensitive sub-populations are not protected. (10,30,38)	The HILs are set to protect young children as their lower body weight and higher soil ingestion rate compared to older children and adults would be expected to result in an exposure dose considerably higher than an adult on the same site. For substances such as nickel, where sensitivity to nickel is a demonstrable phenomenon, the HIL has taken this into account.
It has been suggested that Response Levels be provided.	Response levels are able to be generated using HRA methodology (refer Schedule B4) on a site-specific basis. The fact that response levels should be site specific (considering land use, receptors etc) is the reason no attempt has been made to set generic values.
It is suggested that requiring discussion with health authorities where no HILs are set may not maintain a consistent national approach. (19)	Providing the health authorities use the HRA methods and similar databases to generate HILs, national consistency should be maintained. While health authorities are not always able to provide interim HILs at short notice, the HILS that are available or are in preparation will address nearly all sites.
Request for public participation in the establishment of investigation levels. (10, 33)	Noted. A public consultation process is currently being developed by the NEHF.

Schedule B (8)

COMMENT	RESPONSE
Community Right to Know – all individuals and groups affected, or potentially affected, by site contamination should be able to access all information regarding a contaminated site and be provided with the opportunity to be involved in the decision making process. (2, 8, 10, 21, 28, 32, 33)	The NEPM supports the involvement of the community in the assessment process. PART 4 (Policy Framework) states that "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."
Some protection should be afforded to the providers of 'commercial in confidence' information. (49)	Whilst it is recognised that commercial confidentiality may constrain the release of certain types on information, industry, owners, government etc are encouraged to release as much information as possible to affected communities to enable maximum participation in the decision-making process and to encourage the development of trust and credibility between parties.
Consultation too early with the general community may alarm residents. (30)	Consultation with the community should begin as early as possible, accepting them as a legitimate party in the process. Information should be disclosed sooner rather than later. Failure to disclose information, subsequently obtained by the community via other means, can lead to loss of trust and credibility.
Local knowledge about a potentially contaminated site should not be ignored. (28)	Agreed. The community should be viewed as a legitimate partner in the consultation process. The guideline recognises that individuals and/or groups within that community may have important technical and non-technical information that deserves serious consideration.
Systematic national approach to community education/consultation about contaminated sites required. (3)	It is beyond the scope of this NEPM to implement a national education program. However, if jurisdictions adopt the strategies outlined in this guideline, it will increase the potential for informed involvement and increase the understanding of all stakeholders,

COMMENT	RESPONSE
	including the community, in the site assessment process.
Perceptions of risk are not just based on numbers – the 'outrage' factor and risk management strategies should also be taken into account. (3, 30)	It is important to recognise that community perceptions of risk are as valid, in the context of the consultation process, as other calculations of risk. In the guideline, outrage includes personal concerns, emotions, certain technical issues etc. and determining the acceptability of risk should take into account the outrage factor. Risk management strategies may decrease the level of outrage but are not considered here because they are formulated after the site assessment process has been carried out and are outside the scope of the NEPM.
The Guideline is simplistic and assumes the community's main concern is to be provided with sufficient information in a user-friendly format. (33)	Providing information only to the community is not sufficient. The Guideline recognises that it is not possible to generalise about the role or attitude of the community because it is not a homogeneous entity and recommends that the needs of the community should be taken into account and that they should be involved in the decision-making process. By accepting that there is a diversity of concerns and opinions on risk issues, these can be acknowledged and dealt with.
General editorial and structural comments. (12, 13, 16, 30, 32, 41)	These have been incorporated, as necessary, into the guideline.

Schedule B (9)

COMMENT	RESPONSE
Qualifications of the Site Safety Assessor need to be more stringent. Responsibilities of SSA should be consistent with relevant OH&S legislation. OH&S training should be responsibility of SSA. (4)	The guideline recommends that the Site Safety Assessors should be professionally qualified with recognised experience in site assessment and a working knowledge of relevant OH&S legislation and guidelines.
One SSA may not have relevant knowledge in all areas. (14)	Where the SSA's knowledge is not sufficient, the guideline recommends that advice should be sought from experts to ensure risks to health and the environment are adequately and appropriately addressed. Although responsibility for managing the risks rests with the SSA, OH&S legislation places final responsibility for the protection of health and the environment on a site with the prime client.
SSA should be responsible for ensuring sub-contractors are adequately trained and informed. (38, 39)	Section 9 has been amended to emphasise the requirement to ensure sub-contractors and sub-consultants are adequately trained and aware of any obligations or requirements of the SSSP. The consultant is usually responsible for appointing an SSA.
Clear procedures and protocols for site induction are required. (4) Site Specific Safety Plan proforma needs including as appendix. (4,13)	Site assessment activities vary widely in their complexity. This document is intended to provide the SSA with details on the issues that should be considered when developing an SSSP, including induction. It is the responsibility of the SSA to develop SSSPs, including induction processes, appropriate to the level of complexity of the site assessment.
Process modification and engineering controls should be used before personal protective equipment to decrease hazards. (30)	Agreed, section 5 discusses control measures and ranks process modification and engineering controls above the use of PPE.
Occupational exposure standards should take precedence over HILs for workers on site. (45)	Agreed, the NEPM is intended to supplement not overrule current OH&S legislation.
Should distinguish between workers	Agreed. Scenario-specific risk

COMMENT	RESPONSE
involved in 'intrusive' and 'non-intrusive' site assessments. Scenario-specific risk assessments should be conducted for workers involved in intrusive assessments. (45)	assessment information has been added to the guideline.
Generic SSSPs are not acceptable. (4)	For routine, straightforward assessments of short duration, the guideline assumes a generic safety plan will usually be adequate. However, the SSA must be satisfied that a generic safety plan is appropriate in these instances.
General editorial and structural comments. (4, 13, 14, 16, 41, 45)	These have been incorporated, as necessary, into the guideline.
Is protection of surface water covered by this guideline? (52)	Yes. Section 9 on environmental risks specifically mentions the prevention of contaminated run-off water reaching stormwater systems or local surface water environments.
Occupational health should be left to Occupational Health and Safety legislation. (53)	The guideline is intended to supplement rather than replace legislation and recognises that current legislation must be observed.
The guideline refers to both health and safety of workers. Safety and health should be defined in the glossary and safety should be incorporated in the title of the guideline. (54)	Agreed, the terms have been added to the scope and glossary of the guideline.
The document should be restructured to address health and safety as separate sections, with the health section divided into human health (section 11 –health surveillance, section 7 – environmental risks). (54)	Environmental health is recognised as the impact of the environment on human health rather than integrity of the environment. For this reason, the document has been structured to cover protection of human health/safety and protection of the environment.

Schedule B (10)

COMMENT	RESPONSE
Assessment of contaminant exposure, pathways and risk should be regarded as a core competency. (30)	Agreed. Risk assessment is an essential component of the site assessment and audit process. Irrespective of debates on which competencies should be regarded as "core", the guideline has a strong emphasis on a multidisciplinary approach to site assessment. All certifying professionals need to recognise their limitations on particular sites and seek competent advice in areas beyond their expertise.
Need for recognition of accepted professionals between accrediting or auditor registration bodies. (14).	This is an implementation issue for jurisdictions and it is expected that this guideline will provide a basis for appropriate recognition.
Guideline should expand the concept enabling the establishment of grades of auditors and certifying professionals. This would lead to lower costs to business for sites with straightforward contamination issues. (17,31)	The guideline recognises that, depending on the environmental and planning legislation which applies in each jurisdiction, professionals could be accepted for certification of work depending on the level of complexity. A jurisdiction could establish grades of certifying professionals which relate to the complexity of the contamination on particular sites. This would require that a graded professional work within specified limitations and be aware of the possibility of complications during site assessment. The acceptance would require that jurisdictional and expert review be obtained when the site investigation reveals more complex problems. An example would be a fuel storage site that does not show any major contamination at preliminary assessment stage and further work reveals extensive groundwater contamination and risk to sensitive receptors. This approach may result in cost

COMMENT	RESPONSE
	savings to the community and encourage the development of local and proficient environmental services for large decentralised jurisdictions and areas remote from the main population centres.
Regulators should have similar competencies in circumstances where they review certified assessment work. (14)	The acceptance process and review of work conducted by a certifying professional should be conducted by appropriately qualified and experienced professionals within or appointed by regulatory agencies.
The general management expertise of applicants should cover health and safety issues associated with land contamination and have high-level written and oral communication skills. (13)	Agreed. This is a general and reasonable expectation and has been added to section 4 (iv).
There must be clear accountability processes in the certifying process and substantial penalties for proven malpractice. (3), (13).	Jurisdictions generally apply penalties for malpractice which result in revocation of acceptance. The extent to which additional penalties are applied is a matter for each jurisdiction and is not in the scope of the NEPM. A civil action may be taken by a landowner or other party who considers that they have sustained damages as a result of malpractice.

APPENDIX A
ASSESSMENT OF SITE CONTAMINATION SUBMISSIONS RECEIVED

Submission No.	Submittor
1	Mr Hugh Evans, Victoria
2	City of Unley
3	Ms Bon Darlington, South Australia
4	Australian Drilling Industry Association Limited
5	AI Scientific Pty Ltd, Queensland
6	Soil Science and Plant Nutrition, Faculty of Agriculture, University of Western Australia
7	Mr A E de Jong, Western Australia
8	The Environmental Defender's Office (Tas) Inc
9	Mrs Diane McGill, Queensland
*10	Australian Environment & Community Groups
11	Mobil Oil Australia Ltd, Victoria
12	Olympic Co-ordination Authority, New South Wales
13	BHP, Victoria
14	Environmental Scientist and Geologist, IT Environmental (Australia) Pty Ltd, Queensland
15	Pacific Power, New South Wales
16	Forest Research and Development Division, State Forests, New South Wales
17	Wesfarmers – CSBP Limited, Western Australia
18	Manager Environmental, Environmental and Industrial Services Division, Amdel, New South Wales
19	The Shell Company of Australia Ltd, Victoria
20	Project Manager and Operations Manager, IT Environmental (Australia) Pty Ltd, Queensland
21	NO-LEAD Group, New South Wales
22	Planning Division, NSW Department of Transport
23	NSW Agriculture
24	Environment Protection Agency, Department of Environment, Heritage & Aboriginal Affairs, South Australia

25 Transport SA

26 EGIS Consulting, Victoria

27 Chief Chemist Environmental, Environmental and Industrial Services Division, Amdel, New South Wales

28 Dump Coalition South Australia

29 Urban Development Institute of Australia (South Australian Division) Inc.

30 Minerals Council of Australia, Australian Capital Territory

31 Department of Primary Industries, Water & Environment, Tasmania

32 Santos Limited, Queensland

33 Allergy, Sensitivity and Environmental Health Association (ASEHA) Qld Inc

34 NSW EPA

35 GM Laboratories, New South Wales

36 The Institution of Engineers Australia

37 Norman Waterhouse, South Australia

38 D & A Want, New South Wales

39 Dames & Moore, Victoria

40 Australian Institute of Petroleum

41 Melbourne Water

42 Australian Business

43 Waters & Rivers Commission, Western Australia

44 Local Government Association of South Australia

45 National Industrial Chemicals Notification and Assessment Scheme

46 Environment and Hazardous Materials Group, Royal Australian Chemical Institute, Victoria

47 Coorong District Council, South Australia

48 Department of Main Roads, Queensland

49 Brisbane Airport Corporation

50 Environment Australia on behalf of a range of Commonwealth agencies

51 Queensland Health Scientific Services

52 Environment Protection Authority, Victoria

53 Department of Environmental Protection, Western Australia

54 Environmental Protection Agency, Queensland

* Submission 10 represents the views of the following environment and community groups/individuals:

- National Toxics Network, Marianne Lloyd-Smith
- Greenpeace Australia, Dr Darryl Luscombe
- Chemical Awareness in Schools, Ms Annie Stanton
- Toxin Action Group, Ms Jill Cranny
- Far North Queensland Toxic Link, Ms Joan Moss
- Allergy, Sensitivity & Env. Health Assoc Qld., Ms Dorothy Bowes
- Contaminated Sites Alliance WA, Mr Lee Bell
- Conservation Council of the South East Region & Canberra Inc., Ms Nikki Davies
- Australians for Animals, Ms Sue Arnold
- Altona Residents Action Group, Mr Michael Hogan
- Organic Producers Association of Queensland, Mr Andre Leu
- North Coast Environmental Council, Mr. Jim Tedder
- Australian Conservation Foundation Inc, Dr Peter Brotherton
- Total Environment Centre, Ms Joe Immig
- The Lead Group, Ms Elizabeth O'Brien
- Eco Landuse, Dr Els Wynen
- Environmental Education Co-ordinator, Institute of Environmental Studies, University of New South Wales, Ms Sue Benn
- Community Legal Environmental Action Network, Georgia Rayner
- ACT Greens, Mick Halloran
- BioRegion Computer Mapping & Research, John Wickens

APPENDIX B
NATIONAL ENVIRONMENT PROTECTION COUNCIL CONSULTATION PROTOCOL

Complementary National Environment Protection Council legislation has been passed by all jurisdictions in Australia that enables the National Environment Protection Council (NEPC) to develop National Environment Protection Measures (NEPMs).

The legislation requires that prior to a NEPM being made, notice of the intention to prepare a draft NEPM must be given (Section 16)[1]. The legislation also requires that a draft NEPM and its accompanying Impact Statement must be made available for public comment (Section 18).

The NEPC recognises that broadly based consultation contributes to the development of effective NEPMs. This Protocol describes the processes NEPC will adopt to ensure that productive and transparent consultation occurs.

This Protocol is in three parts: the first part outlines consultation objectives; the second part specifies the principles to be adopted in the consultation process and the third part outlines strategies for consultation.

CONSULTATION OBJECTIVES

The NEPC, in accordance with the Principles of Consultation, seeks to achieve the following consultation and participation objectives:

1. To enhance the development and implementation of National Environment Protection Measures through effective consultation.

2. To maximise stakeholder opportunity to provide information and feedback.

3. To maximise understanding and involvement of stakeholders in consultation leading to the development of draft National Environment Protection Measures.

4. To encourage an appropriate level of community and stakeholder ownership of National Environment Protection Measures.

[1] Note that throughout this document reference is made to sections of the NEPC legislation. The section numbers refer to the legislation in all jurisdictions except the Australian Capital Territory.

PRINCIPLES OF CONSULTATION

The National Environment Protection Council in facilitating the consultation and participation process, will seek to achieve clarity of roles and responsibilities, timeliness of decision making and information delivery, access to information and personnel, feedback mechanisms, openness, fairness and equity.

We will:

1. acknowledge that relevant consultation is an essential component of public policy development, implementation and review and that effective consultation will lead to more informed decisions and increase the effectiveness of environmental outcomes;

2. conduct consultation in a transparent, accountable and timely manner, encouraging input from all interested parties;

3. allow sufficient time for the consultation process avoiding, where possible, key holiday periods or, where unavoidable, extend the consultation period;

4. provide comprehensive, timely and accessible information, including use of the NEPC website where appropriate, ensuring that there are clearly defined lines of communication;

5. support the consultative process by ensuring that material is written in plain English and is accessible to all stakeholders;

6. have regard to the differing resources of interested parties;

7. use appropriate means of disseminating information;

8. establish clear and realistic timeframes for stakeholder input which reflect, as much as possible, sensitivity to the resources available;

9. record accurately and comprehensively the nature and detail of community and stakeholder contributions throughout the consultation program and provide feedback to those providing comment and submissions;

10. stimulate constructive exchange of views and genuinely attempt to address, without prejudice, the major issues related to various draft NEPMs;

11. regularly review and update contact lists for individuals with an interest, or potential interest, in various NEPMs;

12. share the responsibilities for effective consultation with those who enter into the consultative process; and

13. monitor, evaluate and review the effectiveness of consultation.

STRATEGIES FOR CONSULTATION

Identification of potential NEPMs

Purpose:
To seek input from key stakeholders on identification of national issues that could be best addressed through the NEPM process and which are consistent with Section 14 of the NEPC Act.

While NEPC acknowledges the desirability of securing stakeholder views on issues that may be the subject of NEPMs, it is also acknowledged that NEPMs are one of several tools for securing cohesive and coherent environmental management. Identification of potential NEPMs will not necessarily result in the development of a NEPM. The decision to proceed with the development of a NEPM will be made after consideration of a number of factors, including:

- the key environmental and other relevant issues that provide a basis for proposing the development of a national approach;
- whether the NEPM process is the most appropriate means for addressing the issues;
- how the proposed NEPM fits with existing legislative or other initiatives;
- what value the proposed NEPM will add; and
- consistency of the proposed NEPM with the NEPC Act.

It is important that the environmental priorities identified by NEPC and the NEPC Committee and proposed for the NEPC work program are not developed in a vacuum. They result from issues raised through submissions, research, complaints and State of the Environment (SoE) reports.

Input from stakeholders during this initial stage of the NEPM development process will enhance transparency and ensure that stakeholder concerns are taken into consideration to ensure that informed decisions are made. In order to maximise access to current information, NEPC will consider the following approaches in identifying potential NEPMs, which are consistent with Section 14 of the NEPC Act.

1. NEPC, through NEPC Committee and/or NEPC Service Corporation, should be open to facilitate at consultation with the full range of interest groups and in particular, should consult with peak stakeholder groups to identify issues that may be suited to a national approach, or
2. NEPC, through NEPC Committee and/or NEPC Service Corporation, consults regularly with peak bodies to identify environmental issues that may be suited to a national approach, or
3. NEPC, through NEPC Committee and/or NEPC Service Corporation, identifies issues that may be suited to a national approach by annual review of SoE reports and other relevant information, or
4. Combinations of the above.

The costs of consultation have been and will continue to be a serious constraint to the establishment of a consultation process. NEPC will continue to explore options for cost-effective input for the identification of possible NEPMs. Options for developing and maintaining consultation with peak bodies include:

- NEPC Committee, or NEPC Service Corporation, attendance at AGMs or other national meetings of peak bodies; and
- asking conservation groups, industry etc. to include NEPM identification on the agendas of peak body meetings and refer recommendations to NEPC Service Corporation.

SCOPING CONSULTATION

Purpose
To seek views of stakeholders, in broad terms, regarding issues they perceive to be significant which require consideration in setting the scope of a NEPM.

Having identified a potential NEPM, NEPC Committee will seek key stakeholders' views on the NEPM proposal under consideration during the scoping process. The level of stakeholder engagement in scoping potential NEPMs should be considered on a case by case basis. A team of jurisdictional representatives will prepare a "Scoping Paper" which sets parameters for issues to be addressed in any NEPM. The Scoping Paper will be presented to NEPC Committee and Council for consideration as to whether to proceed with the development of a draft NEPM. The NEPM Scoping Protocol outlines the principles applicable to the scoping process.

Following consideration of the Scoping Paper by NEPC, any decisions will be promptly communicated to key stakeholders.

PUBLIC NOTIFICATION OF THE INTENTION TO PREPARE A NEPM

Purpose:
To inform the public of NEPC's decision to undertake development of a draft NEPM and Impact Statement.

Once NEPC has decided to undertake development of a draft NEPM, a Notice of Intention will be published in accordance with the legislation (Section 16); that is, twice in a newspaper circulating in each jurisdiction and in the Commonwealth Government Gazette.

The Notice will state that NEPC intends to proceed with the development of the draft NEPM and announce the release and availability of an information bulletin. The information bulletin will be made available on the NEPC website, by email, and by post. The Notice will also describe how the public can register their interest in

receiving further updates during the development of the NEPM and will call for preliminary comments on the proposal.

The information bulletin will be available as soon as possible after the Notice of Intention has been published. It will contain preliminary information based on the NEPM scoping paper explaining reasons, including the scope and justification, for proposing the development of a draft NEPM, details of where information held by NEPC can be accessed and where comments can be forwarded.

The information bulletin will also include a consultation plan, (including tentative timing), which outlines the NEPM development process and the methods and tasks that will be used to facilitate participation and maximise understanding amongst the public. The consultation plan will outline a preliminary schedule for the release of a discussion paper, developed after consideration of preliminary stakeholder comments.

The legislation specifies a minimum of 30 days following publication of the Notice of Intention before a draft NEPM is prepared. Comments on the proposed scope of a NEPM will be invited in the Notice of Intention to provide additional public input into the process.

DISCUSSION PAPER AND KEY STAKEHOLDER CONSULTATION

Purpose:
To provide stakeholders with background information on the issues that should be considered in the development of a draft NEPM and Impact Statement and to promote focused discussion on those issues, in order to assist NEPM development.

During the development of the Discussion Paper, the Project Team, through the NEPC Service Corporation, will provide timely information to stakeholders through established networks, such as the Non Government Organisation (NGO) Advisory Group and Jurisdictional Reference Network.

Once prepared, NEPC Committee will release the discussion paper for targeted consultation for a period not exceeding two months, during which written submissions will be sought from key stakeholders. Consultation may include public meetings. The Discussion Paper will be made available by e-mail, post and on the NEPC website.

All submissions received on the Discussion Paper will be recorded and acknowledged. Comments received will be considered in the development of a draft NEPM and Impact Statement. Following consideration of submissions, the Project Team will prepare a report summarising submissions received in relation to the Discussion Paper and NEPC Committee's responses to those submissions. Copies of this Summary/Response Report will be forwarded to those stakeholders who have made a submission on the Discussion Paper, at the same time that the draft NEPM and Impact Statement are released for public consultation.

CONSULTATION FEEDBACK MECHANISM

NEPC wishes to maintain an effective and on-going evaluation of its consultation processes. When a Discussion Paper is released for comment, NEPC Committee will also request comment on the quality of the consultation process, whether it has achieved its designated purpose and what consultation improvements could be made in this phase of NEPM development.

DRAFT NEPM AND PUBLIC CONSULTATION

Purpose:
To develop a draft NEPM and Impact Statement through transparent and cooperative consultation with stakeholders.

A Project Team, through the NEPC Service Corporation, will prepare a draft NEPM and Impact Statement.

During the development of the draft NEPM and Impact Statement, the Project Team, through the NEPC Service Corporation, will provide timely information to stakeholders through established networks, such as the NGO Advisory Group and Jurisdictional Reference Network.

Once the draft NEPM and Impact Statement are prepared, NEPC will consider their release for public consultation. The legislation requires that the availability of the documents be advertised in all metropolitan newspapers and in the Commonwealth Government Gazette. The legislation requires a public review period of at least two months. The draft NEPM and Impact Statement will be made available by e-mail, post and on the NEPC website.

The Project Team must consider all submissions received on the draft NEPM and Impact Statement, which will be recorded and acknowledged. Comments received will be considered in the development of the final draft NEPM. Following consideration of submissions, the Project Team will prepare a report summarising submissions received in relation to the draft NEPM and Impact Statement and NEPC Committee's responses to those submissions.

CONSULTATION FEEDBACK MECHANISM

NEPC wishes to maintain an effective and on-going evaluation of its consultation processes. When a draft NEPM and Impact Statement are released for comment, NEPC will also request comment on the quality of the public consultation process, whether it has achieved its designated purpose and what consultation improvements could be made in this phase of NEPM development.

INFORMATION PROVISION IN REGARD TO THE MAKING OF THE NEPM

Purpose:
To provide information on NEPC's consideration of a final draft NEPM and Impact Statement.

Upon completion of the public consultation period, the Project Team will prepare a final draft NEPM, Impact Statement and Summary/Response Report for consideration by NEPC Committee. NEPC Committee will consider the final draft and forward the documents to NEPC for consideration with regard to making the NEPM.

When NEPC Committee forwards the final draft NEPM, Impact Statement and Summary/Response document to NEPC for consideration, the draft NEPM and Impact Statement will be made available on a limited basis to key stakeholders who wish to be informed of what is being considered by NEPC.

Once Council has made a decision on whether to make the NEPM, the decision will be promptly communicated to stakeholders and the broader community via a press release and gazettal in the Commonwealth Government Gazette.

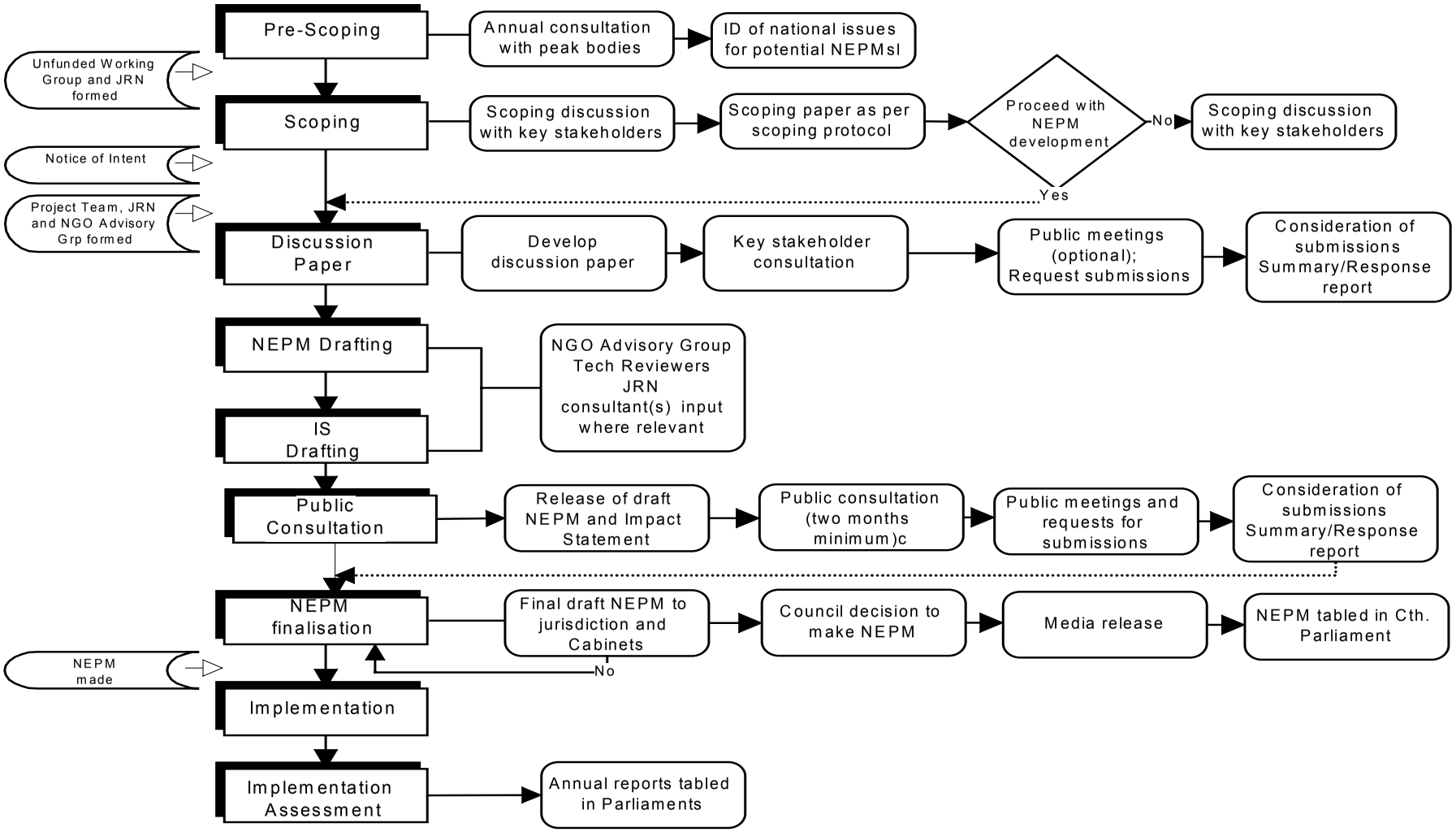
FINAL CONSULTATION EVALUATION

Purpose:
To evaluate the NEPM consultation process in order to provide ongoing enhancement.

NEPC will seek ongoing feedback during the various stages of consultation as the individual NEPM development process proceeds. A review of the consultation protocol will be undertaken every two years or as required.

ATTACHMENT A

The Consultation Process for NEPM development



APPENDIX C
LIST OF CONSULTATION MEETINGS HELD

Commonwealth

24 July 1998	Canberra
29 April 1999	Canberra

New South Wales

28 July 1998	Sydney
8 April 1999	Wagga Wagga
12 April 1999	Sydney
15 April 1999	Lismore

Victoria

16 July 1998	Melbourne
6 April 1999	Melbourne

Queensland

23 July 1998	Brisbane
10 May 1999	Townsville
12 May 1999	Rockhampton
14 May 1999	Brisbane

Western Australia

6 August 1998	Perth
22 April 1999	Perth

South Australia

11 August 1998	Adelaide
19 May 1999	Adelaide

Tasmania

13 July 1998	Hobart
20 May 1999	Hobart

Australian Capital Territory

23 July 1998	Canberra
29 April 1999	Canberra

Northern Territory

30 July 1998	Darwin
4 May 1999	Alice Springs
6 May 1999	Darwin

APPENDIX D
MEMBERSHIP

National Environment Protection Council

- initiates the development of the draft Measure
- approves the release of the draft Measure and Impact Statement for public consultation
- makes the Measure

SENATOR THE HON ROBERT HILL (CHAIR)
Minister for the Environment, Commonwealth

THE HON PAM ALLAN MP/THE HON BOB DEBUS MP
Minister for the Environment, New South Wales

THE HON MARIE TEHAN MP/ THE HON SHERRYL GARBUTT MP
Minister for Conservation and Land Management, Victoria

THE HON BRIAN LITTLEPROUD MLA/THE HON ROD WELFORD MLA
Minister for the Environment, Queensland

THE HON CHERYL EDWARDES MLA
Minister for the Environment, Western Australia

THE HON DAVID WOTTON MP/THE HON DOROTHY KOTZ MP
Minister for the Environment and Heritage, South Australia

MR BRENDAN SMYTH MLA
Minister for the Environment, Land and Planning/Minister for Urban Services, Australian Capital Territory

THE HON PETER HODGMAN MHA/THE HON DAVID LLEWELLYN MHA
Minister for the Environment and Land Management, Tasmania

THE HON MIKE REED MLA/THE HON MICK PALMER MLA/THE HON TIM BALDWIN MLA
Minister for Lands, Planning and Environment , Northern Territory

National Environment Protection Council Committee

- appoints a Project Chair from the NEPC Committee
- appoints Project Team - experts from jurisdictions
- develops the proposal for the Measure
- oversees the development of the draft Measure
- members of NEPC Committee are responsible for consultation in their respective jurisdictions

MR ROGER BEALE (CHAIR)
Secretary
Environment Australia
Commonwealth

MS ANTHEA TINNEY (ALTERNATE)
Head, Environment Protection Group
Environment Australia
Commonwealth

DR NEIL SHEPHERD
Director General
Environment Protection Authority
New South Wales

MS LISA CORBYN (ALTERNATE)
Assistant Director General
Environment Protection Authority
New South Wales

DR BRIAN ROBINSON
Chairman
Environment Protection Authority
Victoria

MR ROB JOY (ALTERNATE)
Director Policy
Environment Protection Authority
Victoria

MR JOHN GILMOUR
Executive Director (Environment)
Department of Environment and Heritage
Queensland

DR BRYAN JENKINS
Chief Executive Officer
Department of Environmental Protection
Western Australia

MR ROB THOMAS
Executive Director
Environment Protection Agency
South Australia

MS LEANNE BURCH (ALTERNATE)
Manager Policy and Planning
Environment Protection Agency
South Australia

MR WARREN JONES
Manager Policy and Programs
Department of Primary Industries, Water and Environment
Tasmania

DR FRANK CATTELL (ALTERNATE)
Manager Operations Branch
Department of Environment and Land Management
Tasmania

MR PETER BURNETT
Director
Environment Protection
Environment ACT
Australian Capital Territory

MR JOHN PINNEY
Secretary
Department of Lands, Planning and Environment
Northern Territory

MS BARB SINGER (ALTERNATE)
Assistant Secretary
Department of Lands, Planning and Environment
Northern Territory

DR BRUCE KENNEDY
Executive Officer
NEPC Service Corporation

OBSERVER

MR GRAHAM SANSOM
Chief Executive Officer
Australian Local Government Association Association

MS HEATHER NEIL
Policy Manager
Australian Local Government

Project Chair

- responsible to NEPC and NEPC Committee for overall development of the Movement of Controlled Waste Measure

DR BRYAN JENKINS Western Australia

Project Manager

- responsible for managing the development of the Measure and Impact Statement. The Project Manager is also the Executive Officer for the NGO Advisory Group and Jurisdictional Reference Network

MR BRENDAN CARROLL NEPC Service Corporation (to July 1999)

MS JUDY GOODE NEPC Service Corporation (From July 1999)

Project Officer

- provide assistance to the Project Manager and Project Team

MS JUDY GOODE NEPC Service Corporation (to July 1999**)**

MS MONINA GILBEY NEPC Service Corporation (from July 1999)

Project Team

- develops draft Measure and Impact Statement under the guidance of the Project Chair and Project Manager

MS CATHY DYER New South Wales

MR GAVIN SCALLY Western Australia

MR PHIL SINCLAIR Victoria

DR ELIZABETH GIBSON Victoria

MS CATHERINE HARRISON Western Australia

MR GREG O'BRIEN Queensland

DR ANDREW LANGLEY National Health and Medical Research Council

DR PAULA IMRAY National Health and Medical Research Council

Peak NGO Advisory Group

- comprises senior executives from Non-Government Organisation (NGO) groups (conservation, industry, professional)
- is chaired by Project Chair
- provides policy advice to NEPC Committee

MR KEN HODGES Australian Institute of Valuers and Land Economists (AIVLE)

MR ROSS MCFARLAND/MR BILL RYALL ACLCA (Australian Contaminated Land Consultants Association Inc.)

MR JIM STARKEY Australian Institute of Petroleum

DR DAVID BOWMAN Business Council of Australia

MR NICK MCCLURE/MR RICHARD BENTHAM Waste Management Association of Australia

MR DAVID SINCLAIR/MR IAN WOOD Minerals Council

MR PETER RAMSEY Institution of Engineers

MR EDWARD ANDERSON Australian Gas Association

MR MARK WHEELER EMIAA

MR JOHN NEWTON Australian Chamber of Manufactures

MR TREVOR LORMAN/MR PHILLIP DEWS RACI

MR ALAN BRADBURY NELA

MR LEE BELL National Environment Consultative Forum

DR DARRYL LUSCOMBE National Environment Consultative Forum

Jurisdictional Reference Network

- comprises one government officer from each jurisdiction
- conducts whole-of-government consultation
- usually conducts public consultation
- provides policy advice and feedback to Project Team through the NEPC Service Corporation
- supplies appropriate data and information to Project Team to assist Measure development

MR ELVIN WONG New South Wales

MS GILLIAN KING-RODDA Commonwealth

MR TIM EATON Victoria

MS TONI GROVES/MS MELISSA LEE Queensland

MR HARVEY JOHNSTONE Western Australia

MR ALEX EADIE SOUTH AUSTRALIA

MR WARREN JONES/MS LIZ CANNING Tasmania

MR DANIEL WALTERS Australian Capital Territory

MR MICHAEL WARD/MR RANDALL SCOTT Northern Territory