Government of **Western Australia**
Department of **Water and Environmental Regulation**

Consultation summary

Guideline: Odour emissions

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Enquiries

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Acknowledgement

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Contents

1. Background

The Department of Water and Environmental Regulation (Department) is developing a suite of documents that will guide the administration of its regulatory functions under Part V Division 3 of the Environmental Protection Act 1986 (EP Act).

The *Guideline: Odour emissions* (Guideline) provides information to applicants, licensees, consultants, members of the public and Department staff on information required by the Department to assess the risk from odour for applications for works approvals and licences under the *Environmental Protection Act 1986* (EP Act).

The draft Guideline was released on 25 January 2018 for public consultation, with the 12 week consultation period closing 19 April 2018. A total of 38 submissions were received.

This document summarises the submissions, the key issues raised, the Department's responses and resulting changes to the draft Guideline.

2. Summary of consultation submissions

Thirty-eight submissions were received in relation to the draft Guideline. The respondents are listed alphabetically in the Appendices.

Noting that the approach to odour assessment described in the draft Guideline is a departure from past practice, the submissions included disagreement with the new approach and requests for clarification about how it will work in practice.

There was also support for the Guideline, noting that it has been in development for a number of years.

Some supporting comments on the overall approach described in the Guideline included:

- acknowledgement of the odour science expertise of the authors by their peers, and recognition that the Guideline has been developed taking into account the uniqueness of odours, their perception and nuisance, and the weaknesses of conventional tools to assess odours and their impacts;
- agreement by some respondents with the removal of criterion modelling, seeing it as a sound decision due to the weaknesses and uncertainty in odour modelling for odour assessments;
- support for the two-tier approach with the screening and the detailed assessments, seen as beneficial by regulatory bodies and several proponents and consultants; and
- support for the risk-based approach described in the Guideline by representatives of regulatory agencies in some other Australian states and overseas jurisdictions. One Australian state and one overseas representative

noted that it was of interest for guiding their own policy development in the future.

Key concerns raised in the submissions included:

- a perceived lack of transparency in how information, provided to the Department by applicants in accordance with the Guideline, would be used in a risk-based assessment, and how applicants would perform self-assessment;
- removal of quantitative impact criteria (i.e. modelled odour units) and criterion dispersion modelling as a tool for predicting areas of potentially unacceptable levels of odour. This was a key concern for a number of respondents and the basis of some of the concerns about lack of transparency made in several submissions;
- application of the 'screening distances' proposed in the draft Guideline:
  - including implications of their use for existing facilities;
  - how the distances were derived; and
  - how they were different to 'separation distances' commonly referred to in land-use planning processes;
- requests for clarification on technical aspects of the *Screening* and *Detailed analysis* procedures;
- concern over possible retrospective application of the Guideline to existing licensed premises;
- the legislative context of the draft Guideline and the interaction between the Guideline and existing land-use planning policy instruments;
- concern over the costs associated with preparation of odour analysis reports in accordance with the Guideline requirements; and
- suggestions for editorial improvements including typographical errors, the structure and logical flow of the document, clearer definitions and inclusion of reference material.

Many useful suggestions were gratefully received in submissions, which resulted in a significant number of improvements being made to the Guideline.

3. Response to submissions

This section consolidates submissions into a set of key issues with the Department's response. All submissions were considered in the preparation of this summary, but due to the quantity, responses to individual submissions are not provided.

3.1 Key issue: Risk assessment and decision-making

3.1.1 Summary of submissions

The key themes related to:

- lack of transparency in risk assessments resulting from the lack of documented odour-specific assessment procedures and specific criteria;
- subjectivity of assessments resulting in uncertainty for industry; and
- difficulty for applicants to perform a self-assessment of their application's acceptability.

3.1.2 Department response to submissions

The Guideline is focussed on the breadth and quality of information provided by applicants in support of an application for a works approval or licence amendment, with reduced reliance on dispersion modelling results. This approach has been used successfully by the Department, over the last few years, for assessment of applications and has now been formalised in the Guideline.

The Guideline describes an assessment approach that is different to the previous Interim Odour Guidance (EPA, 2005), which comprised of dispersion modelling criteria for establishing odour risk.

The Department's experience, over many years, is that the previous approach was problematic for a number of reasons including:

- the weaknesses and uncertainties in the modelling information presented (see Section 3.2 of this document); and
- limited information required on critical aspects of an operation, including processes and proposed management.

It is difficult to determine a set of quantitative parameters and methods that can reliably predict odour impacts that will occur at sensitive receptor locations when proposed industrial activities become operational.

The exclusion of specific quantitative odour criteria could be perceived as a move towards a less transparent assessment approach, but the Department does not consider this to be the case.

Previously, the use of odour modelling provided a level of transparency in terms of the criteria specified. However, large uncertainties associated with modelled concentrations resulting from difficulties in reliably characterising source emission rates, differences between models and a number of other factors, greatly reduced the effectiveness of modelling for predicting the risk of impact from odour.

With the approach adopted in the draft Guideline, the applicant is required to provide evidence to demonstrate that the new or changed facility can operate acceptably in accordance with the Department's decision making and risk assessment process.

The Department's risk assessment process is described in the Department *Guidance Statement: Risk Assessments.* The outcome of the risk assessment is a broad risk rating (i.e. low, medium, high or extreme) based on the information presented in the application.

The Department's assessment process is detailed in the assessment and decision reports prepared for all applications. The reports are provided (along with the statutory instrument issued) to the applicant and published on the Department webpage.

The Department will continue to liaise directly with applicants to clarify or seek further information regarding applications, and discuss availability and suitability of controls during the assessment. In this way, decisions will be made through an iterative and negotiated process.

Regarding self-assessment, the risk assessment includes consideration of factors that a competent odour practitioner should be familiar with. Using the Guideline, it is unlikely that two odour experts (i.e. the Department and the applicant's consultant) assessing the same evidence / information would arrive at widely differing risk outcomes. The Department's decision report will state how the risk rating was determined.

Applicants and their consultants are required to familiarise themselves with the Department assessment processes, and have an understanding of the breadth and quality of information required as per this Guideline. Prior experience with similar facilities, and the ability to apply a precautionary approach where there is uncertainty with respect to possible impacts from odour, is recommended in the Guideline. Applicants should satisfy themselves that the consultants they engage are experienced and competent in odour assessment.

All assessment decisions undertaken by the Department are documented, and any controls imposed will be proportionate to the level of risk.

Change to the Guideline

Section 6 of the draft Guideline has been amended to provide applicants with references to Department Regulatory Framework documents that describe the risk assessment decision-making processes (links can be found in *Related documents* in the Guideline).

3.2 Key issue: Dispersion modelling

3.2.1 Summary of submissions

Comments relating to modelling fell into four broad categories:

- *Tall wake-free stacks:* consideration of these sources is excluded in the draft Guideline and respondents sought clarification on how they are defined and how they will be assessed.

- *Criterion modelling:* respondents questioned the exclusion of criterion modelling from odour assessment. It is perceived by respondents as:
  - providing a transparent benchmark for impacts that must be achieved:
  - providing a level of certainty regarding impact prediction; and
  - standard practice in other jurisdictions.
- *Relative modelling* (changed to 'comparative modelling' in the Guideline): clarity was sought in the procedures to be followed for this type of modelling.
- *Modelling guidance:* clarity was sought on the types of dispersion models that are acceptable to the Department.

3.2.2 Department response to submissions

Tall wake-free stacks

These sources are not included in the draft Guideline because the screening analysis is not applicable to them. Screening distances, which are the basis for determining information required by the Department, are based on a broad assumption that odour impacts reduce with distance from source. This assumption is more applicable for sources that are ground-level sources, or downwash affected stacks, than for tall wake-free stacks.

Historically, a very small number of applications have been submitted to the Department that have required odour impact assessment of tall wake-free stacks. For this reason, the Department's preference is to provide advice for odour impact assessment for these sources on a case-by-case basis. In common with other odour source categories, information provided by detailed assessment tools (described in the Guideline) will be requested where appropriate.

Change to the Guideline:

The definition of tall wake-free stacks has been updated in the Glossary to aid clarity.

Criterion modelling

It is acknowledged that criterion modelling is a widely adopted tool used in odour impact assessments in other Australian and international jurisdictions (e.g. Brancher et al. 2017). However, issues with this tool are also widely acknowledged.

Historically, the large uncertainties associated with odour modelling have made it difficult for the Department to place significant weight on submitted modelling assessments, despite often substantial effort and cost to applicants.

These uncertainties are not the result of a lack of quality assurance in sampling and modelling processes. Predicted concentrations at receptor locations can easily differ by an order of magnitude or more depending on the equipment used to measure emissions, the method used to prepare the input meteorological data, the model used and the switches, settings and assumptions adopted in the modelling.

These uncertainties are of particular concern when assessments involve:

- emissions that are fugitive or diffuse in nature (Pullen and Vawda, 2007);
- emissions that originate from area sources (Shultz 2009);
- non-continuous or intermittent emissions (NZMFE 2016); or
- building wake effects (Pullen and Vawda, 2007).

Most applications, received by the Department involving odour assessment, feature odour sources with one or more of these characteristics.

Other odour modelling issues relate to lack of appropriate accounting for the:

- hedonic tone of emissions;
- treatment of short term peak concentrations (important for odour perception versus longer term mean concentrations typically used by dispersion models); and
- selection and calibration of appropriate criteria to associate with odour impacts.

Modelled odour criterion contours are sometimes interpreted as reliable indicators of the extent of odour impact, due to the quantitative and 'scientific' nature of the procedures involved in calculating their locations. These interpretations are not supported by the level of certainty that such analyses can provide as discussed above.

Resulting misconceptions can have implications for assessments as the precise location of modelled criterion contours may then be focussed on at the expense of other potentially informative lines of evidence and experience.

The Guideline references a conservative screening distance as a starting point for the Department's odour impact risk assessment process (for sources other than tall wake-free stacks). Information provided by detailed assessment tools, such as the operational odour analysis and location review, is used by the Department to further analyse the risk of impacts at receptors if indicators of higher risk are present (e.g. sensitive receptors residing inside this distance).

For some industries, such as piggeries and cattle feedlots, screening distances are based on equations that take into consideration relevant factors such as facility size, technology levels and management practices.

It is noted that guidance material published by industry groups (e.g. intensive agriculture) may include criterion modelling procedures. The draft Guideline states that criterion modelling provided in industry-specific guidance will not be supported by the Department moving forward.

Change to the Guideline:

Criterion modelling has been omitted as a tool in the Guideline due to the significant inherent uncertainties and variability associated with this type of modelling assessment.

Comparative modelling

Without being prescriptive as to how this tool might be used to support an application, the Department anticipates that comparative modelling would primarily be used to support assessment of applications for proposed changes to existing facilities rather than for new facilities.

Comparative modelling may, for example, be used to:

- show that proposed changes to a facility will reduce impacts at nearby receptors; or
- assist applicants to identify the most cost-effective way that odour sources at a new facility might be controlled, configured or managed to limit impacts.

An averaging period for comparative modelling was not specified in the draft Guideline. The Department's preference is for an averaging period of one hour and the Guideline has been be amended to reflect this. In many instances, comparative modelling studies will be less sensitive to many details of the modelling methodology than criterion modelling, including factors such as the concentration averaging time and percentile used.

General information regarding methodology for comparative modelling is contained in the Department's Air quality modelling guidance notes (DoE 2006).

Change to the Guideline:

Text has been amended in Appendix A4-7 as follows: *The Department recommends that 99.5th percentile hourly averaged concentrations be reported for comparative dispersion modelling.*

Modelling guidance

Applicants are responsible for demonstrating that the selected model is appropriate for comparative odour modelling submitted to the Department. Comparative odour modelling assessments should follow the relevant sections of the Department's Air quality modelling guidance notes (DoE 2006).

It was noted in submissions that the Air quality modelling guidance notes no longer reflect current model capabilities or the Department's preferred procedures regarding odour impact assessments. The information in the guidance notes is considered by the Department to be adequate for the purposes of comparative modelling.

However, odour dispersion modelling is anticipated to have a significantly reduced role in Departmental odour impact assessments owing to the exclusion of criterion modelling.

Change to the Guideline:

The Department's position regarding modelling will not change and the Guideline has not been modified.

3.3 Key issue: Screening analysis procedure

3.3.1 Summary of submissions

Comments relating to the screening analysis procedure fell into five broad categories:

- the structure of the screening analysis and the type of information to be provided;
- how the screening distances were derived and how they are to be interpreted;
- how existing industry-specific guidance interacts with the draft Guideline;
- queries regarding screening distances specified for particular industry categories, or the non-inclusion of some categories; and
- a range of editorial changes to improve readability and logic flow.

3.3.2 Department response to submissions

A number of suggestions were made to improve the readability and logical flow of this part of the draft Guideline. Most of these have been accepted, with some further details as follows:

Screening analysis questionnaire

The screening analysis in the Guideline requires the applicant to describe odour sources at a proposed or existing operation, including a statement regarding the potential for 'offsite impact'.

- The intent of this question was to elicit a general response, noting that, in this context, 'offsite' relates to whether or not the activity is likely to produce odour emissions detectable at the site boundary and beyond rather than impact distances. The Department agrees that the wording was potentially confusing and does not add valuable information.

Change to the Guideline:

Question 1 in the screening analysis for new premises and for modification to existing premises in Appendix 1 has been amended to read: *Description, including proposed controls.*

Screening Distances

Respondents were seeking additional information on derivation of the screening distances. These distances are based on previously established guidelines in

Western Australia, other Australian guidelines, the experience of odour specialists and case studies from prescribed premises in Western Australia.

The screening analysis is a high level assessment that identifies those proposals that can confidently be assumed to have a low risk of odour impacts without the need for detailed knowledge of the proposal, and those that will require further information in order to establish risk levels.

Rather than attempting to represent scientifically derived and accurate maximum odour impact extents for particular industry categories (a task effectively impossible to achieve), screening distances are intended to include a level of conservatism in order to account for a range of possible industry sizes, management practices, levels of technology and emission control and physical environments. The confidence that receptors outside these distances will not be adversely impacted can be increased simply by increasing these distances and the level of conservatism

The draft Guideline referred to the screening distances being applicable for facilities operated in accordance with effective emissions control technology and best practice management. Upon further consideration of the submissions, and other information by the Department, it was deemed that these control and management conditions are not consistent with the adopted screening analysis approach.

Change to the Guideline:

Reference to *best practice management and emission controls* has been removed.

Non-inclusion of some industry categories

Where an industry is prescribed (and is identified as having odour emissions) but does not appear in Appendix 2 because no screening distance is available, a detailed assessment is generally required which, in its simplest form, only requires an operational odour assessment and a location review.

Both are desktop studies for which information would be readily available. The level of detail provided in the detailed analysis should be commensurate with the impact potential of the proposed works.

Change to the Guideline:

- No change was made to the order of table entries in Appendix 2.
- Information explaining the category numbering and sequencing has been added to Appendix 2 as follows:

  *Odour **screening distances** are listed in Table 2 (below). They are derived from previously established guidelines in Western Australia, other Australian guidelines, the experience of odour specialists and case studies from prescribed premises licensed by the Department.*

  The screening distances represent industry categories and scenarios typically assessed for odour impacts by the Department.

The category numbering is based on the Environmental Protection Regulations 1987, Schedule 1 - Prescribed premises.

Note that the category numbering below is sequential but not contiguous because odour is not a major emission for all industry categories.

- Clarifying text, regarding exemptions for low odour risk facilities, has been added to Appendix 2 as follows:

  If an industry category is not listed in Appendix 2, and the odour risk is considered to be low by the applicant, an exemption from the requirement for detailed analysis may be granted by the Department. In these cases, the Department can be contacted before commencing preparation of an application.

Screening distances specified for particular industry categories

For some intensive agricultural industries, such as piggeries and cattle feedlots, screening distances are based on equations that take into consideration relevant factors such as facility size, technology levels and management practices.

As these equations are designed to account for some of the site-specific source-pathway-receptor information typically captured by detailed analyses, the level of conservatism in the calculations may be expected to be less than for those industries with fixed separation distances (special-case factors notwithstanding).

For cattle feedlots and intensive piggeries, the use of animal numbers for category selection (i.e. size thresholds) without reference to animal sizes was questioned by respondents. Thresholds are as per the *Environmental Protection Regulations 1987, Schedule 1*. Standardised animal sizes are considered in the Guideline in the estimation of S-factor screening distances.

Some respondents considered some of the screening distances in Appendix 2 inappropriate and should be either longer or shorter.

The screening distances are applied as a reasonable starting point for odour analyses, and no changes are proposed except those discussed below. It is reiterated that the screening distances simply represent the point at which more detailed information is required to assist the Department in its assessment. It is possible that screening distances may be updated in the future, reflecting an improved state of knowledge of industry impacts.

It is also likely, in the future, that there will be further development of industry-specific approaches to odour assessment. Such developments may be considered for inclusion in future iterations of the Guideline.

Multiple categories on a premises

Respondents asked which screening distance should be used when multiple industry categories are present on the same site (e.g. an abattoir and rendering operation).

This situation will be treated as a special case factor, with a requirement for a detailed analysis.

Change to the Guideline:

The scenario of multiple industry categories being present on the same site has been added as a special case factor in the screening analyses in Appendix 1.

Asphalt Manufacturing

The screening distances specified for asphalt manufacturing (Category 62) were questioned, noting that some plants operated intermittently (e.g. a few days per week) and mobile plants are typical of the industry.

The Department notes the potential range of operating scenarios including the level of emissions control. The Department is aware of cases where both permanent and mobile plants have impacted beyond 500 metres and, for this reason, the screening distance for this category has been set at 1000 metres for all plant types, regardless of emission frequency.

Change to the Guideline:

The screening distance for all asphalt manufacturing plants (category 35) has been adjusted to 1000 metres for both permanent and mobile plants in Appendix 2.

Cement and lime manufacturing

A submission noted that the separation distance cited for category 43 in the draft Guideline relates only to premises where a furnace or kiln is used in the production of cement clinker or lime. Such premises are classified under category 43(a) in the *Environmental Protection Regulations 1987, Schedule 1*. The Department considers that the screening distance of 2000 metres for this category is reasonable.

Change to the Guideline:

Reference to category 43 has been amended to category 43(a) in Appendix 2.

Liquid and solid waste facilities

Some submissions queried the screening distances for categories 61 and 61A (liquid and solid waste facilities), noting the possibility of “sterilisation” of land and the importance of the type of waste on the odour impact potential.

Change to the Guideline:

No changes have been made to the screening distances for categories 61 and 61A because they are considered to be appropriately conservative.

Class II and III putrescible landfills

The screening distance for category 64 (putrescible landfill sites) was queried, noting that some earlier guidelines recommend smaller separation distances. The screening

distance take account of recent experience in other Australian jurisdictions confirming that impacts can occur at larger distances.

Change to the Guideline:

No change was made to the screening distance for this category as it is considered to be appropriately conservative.

Class IV secure landfills

Submissions queried the screening distance of 1000 m specified in the Guideline for category 65 and suggested that a case-by-case approach is adopted, noting that a limited number of these are expected. The Department agrees with this and is of the view that odour is unlikely to be a key emission for these facilities.

Change to the Guideline:

The screening distance for category 65 class IV landfills has been changed to 'case-by-case' in Appendix 2.

Compost Manufacture

Respondents requested additional information on the screening distances proposed for category 67A (compost manufacturing).

- The distances in Appendix 2 are based on Department investigations at composting operations over the last 10 years in the Perth area.

The Department considered throughput, operational conditions (outdoor and indoor) and management, surface areas of odorous material exposed to air and characteristics of odour emissions.

Distances of odour impacts through complaint validation or odour field assessments were also assessed. This work provided the basis for the derivation of the screening distances.

Change to the Guideline:

No change was made to the screening distances for this category as they are based on extensive investigation and assessment over a number of years.

3.4 Key issue: Detailed analysis procedure

3.4.1 Summary of submissions

Comments relating to the *Detailed analysis* procedure fell into five broad categories:

- How analysis tools should be selected in addition to the "highly recommended" tools;
- Justification of the choice of standard methods;

- Clarification of aspects of the analysis tools;
- The types of data that are applicable to the analysis tools; and
- Editorial changes to improve readability and logic flow

3.4.2 Department response to submissions

If a detailed analysis is to be conducted, only two of the tools are "highly recommended" (Operational odour analysis and the Location review). The choice of other analysis tools will depend on the information that is available, and the type of premises or operational change proposed.

The Guideline currently states that:

- *the level of detail provided in the detailed analysis should be commensurate with the impact potential of the proposed works*; and
- *each Detailed analysis tool has its own strengths and limitations. Consequently, the value of the results of individual tools is enhanced if multiple independent lines of evidence that support each other are provided.*
    - *For example, the value of odour complaints information from residents is significantly improved if odour field assessments independently confirm the presence of odour in the same area.*

The applicant can contact the Department to discuss their choice of tools prior to implementation.

Responses to specific queries about the analysis tools are detailed below:

Operational odour analysis (OOA)

The Department acknowledges that some of the information provided in an OOA may be commercially sensitive.

As is currently the case, all application documentation that is considered to be confidential or commercial in confidence will be dealt with in the same manner as the public review processes for works approvals and licenses.

Respondents noted that the level of detail required by the OOA might not be available until commissioning phases when operational performance is better defined.

The Department acknowledges that the OOA can be refined once commissioning is completed. However, it is expected that the OOA will provide a thorough review of potentially odorous operations, including all available information on proposed monitoring, corrective actions and contingency actions that will demonstrate the applicant's understanding of odour emissions and effective controls.

Location review

There appeared to be some confusion over the use of 9am and 3pm wind roses.

To clarify, annual and seasonal wind rose plots covering the entire day, or alternatively, covering the periods when odour emissions may occur (which could include fugitive emissions during non-operational periods) are requested.

9am and 3pm average wind roses are not requested for any time interval.

Odour field assessment (OFA)

Numerous comments were submitted regarding OFAs. Topics raised in the submissions are addressed individually as follows:

1. *The relevance of field studies for greenfield proposals was questioned:*
    - One purpose of field studies for greenfield proposals is to assess whether there is potential for neighbouring industries to contribute to cumulative odour impacts.
    - Another purpose is to establish a baseline assessment of the odour footprint in the area before the commissioning and operation of the new facility, which could be compared with post-commissioning off-site impacts.
2. *The cost associated with the Department's recommendation to maintain OFA programs during normal operations will be significant:*
    - There is no requirement for industries to maintain regular OFAs during normal operations, however this approach may aid odour management strategies.

    Change to the Guideline:

    Text has been added in Appendix A4-3 to clarify that there are no Department expectations that industries maintain regular OFAs during normal operations.
3. *The reason why OFAs, complaints analyses and community surveys need to be done for a new premises application when there are no other sources in the area is questioned:*
    - OFAs, complaints data analysis and community surveys are optional tools. It is up to applicants and their consultants to select tools that will most appropriately support their application.
4. *The reliability and consistency of results from repeat OFAs for comparison purposes is questioned:*
    - Results of repeat OFAs can be compared with discussion of the various factors that may influence the comparison.
    - The Department's minimum requirements for OFA methodology including design considerations, the number of assessments and number of odour panellists.
    - The recommended design of an OFA is based on the European standard EN 16842-2 plume method and the German standard VDI 3940 Part3.2010 for odour intensity assessment. In rare cases, the proponent may determine that

the application of the European standard EN 16842-1 grid method is appropriate.

- While strict adherence to the standards is not a requirement, it is recommended that the OFA design should allow for the assessment of odour intensity levels and frequencies / duration at different distances from the source under different operational and meteorological conditions.
- Recommendations for the design of a plume method OFA are detailed in the Guideline in Steps 1 to 5 of Appendix A4-3.
- There are no specific number of surveys to be carried out. The number will depend on several factors including the number of panellists, the area to be covered, the wind patterns and its variations when considering the topography, the sensitive receptor locations. It will also depend on the objective of the OFA.

5. *One submission requested that the Department specify the minimum number of assessors accepted by the Department for conducting field surveys noting that some surveys can be undertaken with as few as 2 panellists, and that too many panellists makes surveys impractical.*

   - Although a minimum of 5 odour panellists is recommended for stationary plume method in the standard EN 16842-2, the Department considers that a minimum of 3 odour panellists and an operator would be reasonable.
   - This number may increase with the size of the area to be covered and the public accessibility around the facility to be assessed.

   Change to the Guideline:

   Text changed in Appendix A4-3 Step 3 to clarify Department expectations in relation to the minimum number of odour panellists.

6. *It was recommended that the Guideline should indicate which in-field and portable olfactometers are supported for use.*

   - Data collected from in-field olfactometers (equipment models that the Department is aware of include the Nasal Ranger and Scentroid SM100) may have the potential to provide complementary evidence to support field studies undertaken using the European and German standards. However, experience using these instruments for regulatory assessment purposes is currently limited in Australian jurisdictions and proponents wishing to undertake studies using these instruments are advised to consult with the Department beforehand.

7. *The absence of intensity and frequency based acceptability criteria for odour field surveys is considered problematic given the role of OFAs in the Department risk assessments.*

- The optional OFA tool is primarily anticipated to be used to investigate the presence of recognisable odour under specific meteorological conditions or to undertake source attribution studies.
- A limitation of plume methods is that they are generally of short duration and are consequently not suitable for characterising the full spectrum of longer term odour impact intensities and frequencies to which criteria might be applied.
- Standard methods do exist for longer term field studies as noted in the Guideline (i.e. EN 16841 Part 1:2016 for the grid method). However no widely accepted criterion exists for long term field studies apart from the 10%-15% German frequency of ;odour hour' based criterion (GOAA 2003) which has been found to be unsuitable for application in Western Australia (Griffiths 2014).
- Therefore, no criteria are provided in the Guideline. The information from an OFA would be considered along with that from other tools as part of the Department's risk assessment.

8. *The usefulness of field surveys to determine cumulative impacts (e.g. from different source types) is queried.*
   - The Department notes that OFAs are able to provide useful indications of cumulative impact risk inferred from the wind directions, frequency, intensity and odour character data collected for both identical and different source types.
9. *A recommendation was made to reorganise text to reduce information reproduced from standards.*
   - Text reproduced from standards in the Guideline has been selected to clarify the Department expectations for implementation of the procedures.
10. *It was requested that a mechanism be developed whereby the Department provides assistance to applicants to establish the need for, scope and methodology of OFAs.*
    - It is the responsibility of applicants and their consultants to select the non-"highly recommended" tools that will most appropriately support their application and the associated detail of methodologies that conform to the Guideline's requirements.
    - Following this first step, the applicant may seek the Department advice regarding the chosen tools and the methodologies intended to be implemented.
11. *Further explanation regarding which odour intensities should not be averaged is requested.*
    - Averaging of intensity levels for individual panellists, or between panellists, is not accepted by the Department. Measurements are related to specific

locations, times and meteorological and operational conditions, and therefore should not be averaged.

Change to the Guideline:

Additional text has been added to the 'Important notes' in Appendix A4-3 that averaging of the odour intensity levels during odour field assessments is not permitted.

12. *The Department requirement to capture both intensity and hedonic tone measurements in field studies will complicate assessments and place considerable burden on applicants.*

- The capture of hedonic tone information during OFAs is not a Department requirement. It is not mandated in the Guideline or the referenced OFA standards. Capture of field odour intensity data during odour field surveys is an OFA requirement.

Change to the Guideline:

Text has been modified in Appendix A4-3. The 'Odour field survey standards' section now states: The capture of hedonic tone during measurements is at the applicant's discretion.

13. *The requirement of the Department to use the European standard EN 16841-1:2016 relating to the 'grid' field method to determine the frequency of impacts can be expensive.*

- Use of the EN 16841-1:2016 grid method for OFAs is not a Department requirement. It is anticipated that it will be used in a very small number of applications as it is a resource intensive method and assessment effort should be commensurate with the potential for impacts.
- This standard is referenced for completeness as the need for a longer term field study cannot be ruled out for all assessment situations into the future.

Change to the Guideline:

Text has been modified in Appendix A4-3 in the 'Odour field survey standards' section.

14. *The Guideline cites European standard EN:16841-2 plume method as the primary reference for field studies. The standard EN:16841 includes both grid and plume standards. It is queried why only the plume method is adopted.*

- As noted in some submissions, application of the EN:16841-1 grid method is very resource intensive and can involve months of field observations with multiple panellists.
- For this reason it is anticipated that it will only be used in a small number of applications so that assessment effort is commensurate with the level of

concern regarding impacts. This standard is referenced as the need for a longer term field study cannot be ruled out for all future assessment situations.

Change to the Guideline:

Concept has been clarified in Appendix A4-3.

15. *The use of German VDI 3940-Part 3 field odour intensity scale.*

- The use of German VDI 3940-Part 3:2010 field odour intensity scale was challenged owing to identified shortcomings in that standard.
- This standard specifies an intensity scale in which intensity level of 1 corresponds to the odour recognition threshold under field conditions. Several suggestions were made regarding improved scales more relevant to Australian conditions.
- The Department also notes that a Clean Air Society of Australia and New Zealand (CASANZ) working group has been established to find a better solution to this issue tailored for Australian conditions.

16. *A request for further information relating to which standard field method to use, the degree of adherence required and in which circumstances.*

- It is up to the applicant to decide which standard OFA method will most appropriately support their application, commensurate with the level of concern regarding potential impacts.

Change to the Guideline:

Minimum requirements for the degree of adherence expected with EN:16841-2 has been clarified in Appendix A4-3.

17. *Variability in field odour panellist's sensitivity affecting results for pre- and post-commissioning comparisons.*

- One submission queried the value of OFAs for pre- and post-commissioning comparisons due to variability in field odour panellist's sensitivity affecting results.
- Under the standards, the panellists are nose calibrated which will minimise the potential for these types of artefacts.

18. Conversion of field intensity to odour concentration

- Submissions queried why field or laboratory derived concentration versus intensity relationships could not be applied to convert field observations to concentrations.
- The Department's position is that field intensities should not be converted to concentrations. The need for such conversions is much reduced with the removal of criterion modelling as an analysis tool.

Change to the Guideline:

Text changes made in the 'Important notes' box in Appendix A4-3 and 'Odour field survey standards' section to clarify that Weber-Fechner or Stevens laws should not be used to convert odour intensities recorded by an odour panellist in the field to odour concentrations.

19. The specification of a level 3 intensity as a medium level risk and acceptability thresholds for field observations.

- Two submissions noted that a single intensity score of 'distinct' in 60 observations is arguably not indicative of a medium risk.
- The Department agrees with this observation and has amended the Guideline accordingly.

Change to the Guideline:

Item 1 in the 'Important notes' in Appendix A4-3 has been changed to state: Detection of distinct or stronger odour intensity levels (according to German standard VDI 3940-3) at distances similar to sensitive receptor distances may warrant additional consideration and / or investigations.

20. Acceptability criteria for field observations

- It was suggested that the Guideline include a discussion around acceptable frequencies of field odour intensity scores.
- To the Department's knowledge, acceptability criteria for field observations do not exist apart from Germany's frequency based approach. This approach has not been demonstrated to be applicable to Australian conditions. No change has been made to the Guideline.

21. The use of field surveys for compliance purposes.

- One submission noted that it was not clear how the results of field surveys or other tools specified in the Guideline might be used for compliance purposes. This omission is intentional, as the Guideline's scope does not address compliance with instruments once granted.

22. The use of field surveys to validate criterion modelling predictions.

- One submission noted that an additional function of odour field surveys is to validate dispersion model predictions. No changes to the Guideline were required because predictive (or criterion) modelling is not accepted as an analysis tool.

23. OFAs have shortcomings for sources that are not non-buoyant ground-level sources.

- The onus is on practitioners to appropriately recognise and account for factors affecting plume dispersion and areas of impact when selecting OFAs as an appropriate analysis tool. Relative (now "comparative") modelling might potentially be used to predict peak plume touchdown areas for OFA design.

24. Reference to field observations as 'measurements' is misleading.

- One submission suggested that referring to field observations as 'measurements' is misleading as this data is not collected using instruments.
- The term 'measurement', adopted in the Guideline, is standard terminology used in the European standards EN 16841 Parts 1 and 2 (2016) and German standard VDI 3940 Part 3(2010) for *Measurement of odour impact by field inspection Determination of odour intensity and hedonic odour tone*.

Complaints / community surveys and diaries

Respondents cautioned that complaint and community survey information can be misleading in some instances and recommended that "unsubstantiated" complaints and other data are not included in the assessment.

The Department expects applicants to provide their own assessment of complaint data, which will be taken into account.

Complaints data may be held by the applicant or may be available from local councils or nearby premises. However, it should be noted that the absence of complaints does not necessarily indicate the absence of an odour problem.

The Department may also refer to its internal complaints database or other sources if available. All reasonable efforts will be made by the Department to validate complaint information used by the Department in its risk assessment process.

Change to the Guideline:

There is an amended discussion of this issue in Appendix A4-4, and recommendations for community survey design in Appendix A4-5.

3.5 Key issue: Odour source assessment (OSA)

3.5.1 Summary of submissions

Numerous comments were submitted regarding odour sources assessment (OSA).

Topics included:

- The need for OSAs.
- The lack of criteria for OSAs: proponents will be unable to determine acceptability of results without recourse to the Department.
- Further explanation why the use of AS/NZS 4323.4 Flux Chamber standard for measuring area source emissions is not supported.
- Several submissions acknowledged the validity of the issue of flux-hoods underestimating area source emission rates.
- How air flow less than 0.0083ms-1 might be measured in order to identify passive area sources.
- Consecutive samples and single composite samples for area and volume sources.
- The use of the German standard VDI 4285 Part 2:2011-03 Determination of diffusive emissions by measurements - Industrial halls and livestock farming was recommended for diffuse sources.
- Various suggestions were made regarding sample stability and decay, air freight and time to laboratory for delayed olfactometry analysis.
- Rough sampling duration guidelines were requested.
- Measurement of spray drift and landfill odour emissions measurements.
- OSAs for new sources.
- Information from standards is repeated in the Guideline.
- Methods were proposed for high moisture gas stream sampling.
- The procedure documented for enclosed structure emission rate measurement was considered impractical and an alternative procedure proposed.
- The use of OSA data for comparison with similar operations.
- The use of existing emissions databases

3.5.2 Department response to submissions

Need for OSAs, and the lack of criteria

With the omission of criterion modelling (see *Section 3.2.2* of this document) from the Detailed analysis suite of tools, the reliance on source emissions measurements is much reduced in the Department risk assessments.

However, OSAs remain a useful tool for a range of purposes relating to risk assessment and management. These include:

- assisting applicants and the Department to understand which sources are most likely to produce emissions and cause offsite impacts (i.e. establishing a source emissions hierarchy);
- ongoing management: and
- investigating the effectiveness of emissions control measures.

OSAs may also be used to support comparative modelling exercises, for example to provide evidence of a reduction in impacts at receptors with a proposed change.

The use of AS 4323.4:2009 not supported

The use of AS 4323.4:2009 *Stationary source emissions – Method 4: Area source sampling – Flux chamber technique* relating to the use of flux chambers (isolation flux hoods) for area source emissions measurement is not accepted due to the widely acknowledged under-reporting of emission rates of this technique in some circumstances (e.g. Shultz 2006, Parker 2009).

It is for this reason that the use of German standard VDI 3880:2011 *Olfactometry static sampling* is recommended for area source sampling.

This standard describes the use of sampling hoods (sometimes referred to as "witches hats") for active surfaces and flow through hoods ("wind tunnel" concept) for passive surfaces.

However, as noted in the draft Guideline, significant issues remain regarding characterisation of area source emission rates via surface sampling, and this is not recommended unless there is clearly identified value in so doing.

Identification of passive area sources with flowrates < 0.0083ms^{-1}

The Department acknowledges that measurement of flowrates as small as 0.0083ms^{-1} in order to identify passive area sources, is not likely to be practical.

The Department will rely on the expertise of the practitioners undertaking measurements to recognise and distinguish between passive and active surfaces, and to select and justify the choice of sampling equipment.

Use of consecutive and single composite samples

The requirements for consecutive samples and single composite samples for area and volume sources were queried.

For regulatory purposes, the Department expects that a minimum of one duplicate sample (i.e. sample collected simultaneously in two bags) should be collected at each source from a single location or from multiple locations (composite sample).

For area or volume sources, a composite sample containing air collected from multiple locations over the source is recommended where practicable.

Change to the Guideline:

Appendix A4-6 has been amended to include the minimum sampling requirements as described above.

Use of screening sampling program

One submission recommended against allowing a single composite sample for area or volume sources, and noted that the characterisation of variability across these sources is critical to understanding the variability in odour emission rates and subsequent impacts in the receiving environment.

It was suggested that proponents conduct a screening sampling program at locations across area and volume sources, to inform an initial understanding of variability. Follow up sampling can then be considered if the variability is significant in respect of the predicted impacts.

The Department considers that the intended outcomes from such a screening sampling program may not be achieved, and the program may add significant costs. Other options include a desktop study to analyse the process and identify where higher emissions are likely (for example, sampling the inlet of a pond rather than the outlet or sampling both and assessing variations in odour concentration).

Use of standard VDI 4285 Part 2:2011-03 for diffuse sources.

The submission that referred to the German standard VDI 4285 Part 2:2011-03 for diffuse source emissions measurement is noted.

Sample stability and decay, air freight and time to laboratory etc.

One submission indicated that studies have shown significant decay in odour concentration within several hours of sampling and that a decay study should be conducted for the first time that a new odour source is sampled to determine the optimal holding time, and then ensure this is not exceeded.

The Department recommends analysis of odour samples within six hours of collection and encourages applicants to take additional measures to mitigate sample stability issues including use of near-reference techniques and sample decay studies, particularly when time to laboratory is long or air travel is involved.

The recently published Victorian Environmental Protection Authority guide discusses the decay of samples and makes recommendations about measuring odour concentration.

Sampling duration guidance

Respondents requested that sampling duration guidance be provided.

The Department considers that it is up to the consultant to determine a sampling duration appropriate for the sources being measured and the goals of the OSA.

The duration of the sampling should be justified with reference to the source including batch operations, safety issues, access limitations and process variation.

Measurement of spray-drift and landfill odour emissions

It was noted in submissions that use of spray drift emission rates was not accepted, and the impact of this on assessments was questioned.

The Department anticipates that this will have no impact on assessments, as the primary use of such emission rates would be for criterion modelling, which is not accepted. Additionally, it is the experience of the Department that assessments involving spray drift plume odours are rare.

It was also noted that assessments dependent on landfill active face emission rates were not accepted, and information used to make estimates questioned.

The information used by the Department to make risk determinations is included in the OOA and location review tools and other tools deemed relevant by applicants.

Detail from relevant standards

Detail from the relevant standards has been included in the Guideline in order to emphasise important points without the need for separate reference to the standards.

Methods for high moisture gas stream sampling

Proposed methods for high moisture gas stream odour emissions measurement will be considered on a case-by-case basis depending on measurement methods and purpose. However, it is reiterated that absolute estimates of source emission rates play a significantly reduced role in assessments in the absence of criterion modelling.

Enclosed structure emission rate measurement

One submission deemed the documented procedure for estimating emission rates from enclosed spaces with complex geometries and multiple inlets and outlets to be impractical.

Alternative procedures were recommended involving measuring odour concentrations inside buildings and / or conducting downwind field odour assessments.

The Department cautions against attempting to quantify emissions for these source types owing to significant uncertainties associated with any emissions estimation method. The exception would be where there is clearly identified value in so doing, and an understanding of both the uncertainties involved, and an appreciation of their impact on the goal of the exercise, can be clearly demonstrated.

Comparison with similar operations

A respondent noted that the probability of emissions, field observation and community complaint data being accessible from facilities of a similar size, throughput, operational conditions within the same type of topography,

meteorological conditions, and with the same emission sources, is too low to be relied upon for consistent application within an assessment process.

The respondent recommended that this individual assessment tool be supplemented with a review of contemporary leading practice for emissions management, with performance criteria for individual types of sources (e.g. 1000 OU as an in-stack or at-source design concentration).

The requirement for this type of review is not clearly stated within the operational odour analysis.

The Department considers that the approach of review of process vs performance criteria at one facility to be applied to another is a sensible approach. However, the Department does not support the use of odour concentration limits for regulatory purposes.

Use of existing emissions databases

One submission queried the possibility of using existing emissions databases.

The Guideline does not preclude the appropriate use of such data, but the Department cautions that, in this situation, consideration should be given to how these data have been obtained and their applicability to the case under review.

3.6 Key issue: Application

3.6.1 Summary of submissions

Respondents were interested in a number of topics around the applicability of the Guideline including retrospectivity, planning matters and interactions with other policy instruments.

Comments fell into six broad categories:

- Clarification of the overall legislative framework of which the Guideline is part and interaction with other government guidance/policy.
- Queries around the assessment of encroachment by sensitive land uses near existing odorous premises.
- Retrospective application of the Guideline to existing operations, including cases where planned changes do not significantly increase existing odour emissions.
- The applicability of the Guideline to “low risk” facilities, including a perception that the Department risk assessment process is excessively conservative.
- The applicability of the Guideline with respect to Strategic Industrial Areas (SIAs) or other areas where receptor sensitivity could be argued to be different from a typical urban setting.

- Interaction with other guidelines developed for specific industry sectors developed by industry bodies.

3.6.2 Department response to submissions

Legislative framework

The Government of Western Australia has the following legislative framework hierarchy:

Policy Framework	Provision	Emission
Law	*Environmental Protection Act 1986* Section 49 - Causing pollution and unreasonable emissions *Environmental Protection Regulations 1987*	Odour
Policy (Principles, Factors and Objectives)	To protect human health and amenity and the social surrounds from unreasonable emissions of odour.	
Guidelines	Guidance Statement: Risk Assessments Guidance Statement: Decision Making Guideline: Odour emissions (this document)	
Procedures	None for odour	

The Guideline applies to all applications for works approvals, new licences, amendments to works approvals and amendments to existing licences for prescribed premises under Part V Division 3 of the EP Act applications involving odour emissions, except where the sources involved are tall wake-free stacks.

Prescribed premises that have been found to emit odour, in the Department's experience, are described in Appendix 2 of the Guideline.

The Guideline outlines the nature and form of the minimum information required by the Department to undertake an odour risk assessment. Its intention is to ensure a consistent set of data provided to the Department.

An applicant may choose a different pathway, however it is likely that, in doing so, the assessment may be protracted and require the provision of further information to enable finalisation.

Change to the Guideline:

Sections 1 to 5 have been amended to explain the purpose, scope, context, applicable legislation and environmental objectives to be considered.

Screening distance

Guidance published by other WA government agencies, in particular the Environmental Protection Authority (EPA) and the WA Planning Commission (WAPC) also consider environmental issues including odour.

Key guidance documents for these agencies that reference odour are:

- Guidance Statement No. 3 Separation Distances Between Industrial and Sensitive Land Uses (GS3; EPA, 2005); and
- State Planning Policy 2.5 Rural Planning (WAPC, 2016).

These documents refer to '*separation distance*' and *'buffer distances*', which have different meanings and applications to that of '*screening distance*' used in the Guideline.

The concept of '*separation distance*' in these documents is applied to a broader range of environmental impacts (including dust, emissions to air and noise) for use in land-use planning.

The Guideline's screening distance is not intended to apply to land-use planning proposals for odour-sensitive land uses situated near existing or planned odour-generating activities. Planning authorities are responsible for deciding planning applications.

The purpose of the screening distance in the Guideline is to define a distance from odour sensitive land uses, within which a higher level of information and evidence will be required to inform an odour risk assessment, and develop appropriate controls for a prescribed premises.

The screening distance is not a pass / fail gate, therefore it is to be expected that there will be many situations where an appropriately conditioned works approval or licence will be issued for a facility that is located within the screening distance, noting that separate assessments for other environmental factors will also be part of the decision.

Some respondents thought that the use of screening distances as a primary tool does not adequately account for other relevant factors, such as the level of process control and management.

The Department's view is that the analysis process should have as a starting point a screening procedure to reduce the assessment burden on proponents for applications that are clearly low risk, as represented by the screening distances. Screening distance is one of many tools in the assessment process.

However the detailed analysis acknowledges the potential for widely varying standards of technology and management, and information regarding these issues are captured in this analysis.

Change to the Guideline:

No changes have been made to change the Department's position regarding the use of screening distances.

Encroachment

Submissions calling for integration between the Department and other government approval processes are noted, but these are not within the scope of the Guideline.

The Department does provide advice to the planning approval system with respect to environmental matters, however it has no jurisdiction to prevent planning encroachment.

Retrospectivity

The Guideline will not be used to retrospectively re-assess existing facilities outside of the Department's normal licensing processes.

However, in situations where there is evidence of unacceptable odour impacts, and in the absence of remedial action by the licensee to maintain acceptable performance, the Department may initiate a review of the licence (as it does currently) and new controls may be applied through licence conditions. The Guideline would then inform that process.

The Guideline will be used to inform all licence applications and related processes initiated by the Department such as licence reviews or amendments.

Where a proposed amendment relates to changes to odour emission sources and control systems the Guideline will be applied.

If the application relates to modifications that do not involve changes to odour emissions and controls, then the applicant should identify this and inform the Department early in the assessment process.

The applicant will not need to undertake a detailed assessment as indicated by the flowchart in Appendix 1 *Screening analysis for changes to existing premises.*

Where an application for a licence renewal is submitted (effectively an application for a new licence following attaining the expiry date on the current licence) the Department may apply the Guideline.

Change to the Guideline:

Section 11 has been inserted to clarify the Guideline's implementation and retrospectivity.

'Low risk' facilities

A number of respondents suggested that 'low risk' facilities should be exempt from the requirement for detailed analysis in situations where there is no industry category listed and therefore no screening distance available in Table 2.

If the odour risk is considered to be low by the applicant, an exemption from the requirement for detailed analysis may be granted by the Department. In these cases, the Department can be contacted by the applicant before commencing preparation of an application.

Change to the Guideline:

Appendix 2 has been amended to state: *If an industry category is not included in Table 2 and the odour risk is considered to be low by the applicant, an exemption from the requirement for detailed analysis may be granted by the Department.*

Department Risk Assessment Matrix

Concerns raised regarding excessive conservatism of the risk assessment matrix adopted by the Department in the *Guidance Statement: Risk Assessments* are noted, but revision of the Guidance Statement is outside the scope of the Guideline.

Special Industrial Areas (SIAs) and non-urban areas

Suggestions were made that there could be differing amenity expectations based on location and receptor type.

For odour, reduced amenity expectations within industrial zones generally relates to noxious industries located adjacent to noxious industries within such zones which may have significantly reduced sensitivity with respect to odour amenity.

However, if a noxious industry is located next to a commercial showroom within an SIA, then the showroom might be considered to be a more sensitive receptor with regards to odour amenity than another noxious industry.

The Department would need to consider this on a case-by-case basis, noting that there are a range of factors to be considered other than just being located in an SIA.

Consequently, the Guideline will be applied to assessments for projects located in SIAs and non-urban areas, in accordance with the *Guideline: Risk Assessments* procedures. This allows for consideration of different receptor types through the application of the consequence criteria, which have regard for the '*nature, value and sensitivity*' of the receptor. This would be discussed by the applicant in the Location review of a detailed analysis (*Section 3-2* of the Guideline).

Change to the Guideline:

In Appendix 1, Question 3 in the 'Screening analysis for new premises', and Question 5 in the 'Screening analysis for existing premises' have been updated to include SIAs as special case factors for consideration in the screening analysis.

Relationship to industry specific guidance

Guidance material published by industry groups (e.g. intensive agriculture, piggeries) may include information and procedures that is complementary to the analysis tools described in this Guideline.

If applicants intend to use alternative guidance material or tools, they should first discuss this with the Department to ensure its suitability for informing the Department's assessment and decision-making processes.

Change to the Guideline:

Section 2 has been amended to include a statement that *If applicants intend to use alternative guidance material or tools, they should first discuss this with the Department to ensure its suitability for informing the Department's assessment and decision making processes.*

3.7 Key issue: Implementation

3.7.1 Summary of submissions

Some respondents expressed a view that the analysis approach presented in the draft Guideline would be expensive to implement in practice and require very specific skills.

Comments fell into four broad categories:

- There would be an increase in the costs of preparing applications, due to a limited number of service providers with specific odour expertise, and a perception that the assessment requirements are more onerous.
- There is a preference in the Guidance for labour-intensive analysis methods, especially odour field assessments (OFAs).
- A Regulatory Impact Statement (RIS) should be prepared along with the Guideline.
- There should be a requirement for accredited odour experts to undertake analyses.

3.7.2 Department response to submissions

Cost of preparing applications

Issues relating to costs of service provision, or future constraints on activity due to marketplace limitations, are beyond the scope of the Guideline.

Labour intensive analysis method requirements

None of the detailed analysis tools suggested in the Guideline are mandatory. It is however, highly recommended that the operational odour analysis and the location review are provided with an application in the instance where odour emissions are identified for a proposal and the Screening analysis tool recommended that a detailed analysis be conducted.

An applicant may choose a different pathway than that described in the Guideline to inform an application. However, it is likely that, in doing so, the assessment may be protracted and require the provision of further information to enable finalisation.

The level of detail provided in the detailed analysis is expected to be commensurate with the impact potential of the proposed works.

Regulatory impact statement

Regulatory impact assessments (RIA) are required to be undertaken in WA for new and amended legislation (and some quasi-legislation and regulatory instruments).

The RIA must be accompanied by a Regulatory Impact Statement (RIS) which is submitted to Cabinet to ensure the RIA is only implemented where it has been demonstrated that a clear assessment of alternatives has been undertaken, and that the benefits of the proposed legislation outweigh any costs or negative impacts.

The Guideline is not a mandatory statutory regulatory instrument (legislation), and does not require the imprimatur of Cabinet and, as such, there is no requirement for a RIS to be prepared (Department of the Premier and Cabinet - Premier's Circular 2009/06).

Accredited odour experts

The Department is unaware of any accreditation relating specifically to odour expertise. However, there are a number service providers operating in WA with capabilities and experience for the types of odour analysis described in the Guideline.

The Department's odour specialists are also available to discuss and clarify technical requirements with service providers.

It is the responsibility of applicants to provide relevant information in their application. The decision of who will undertake the analysis and prepare the application remains the applicant's choice with no obligation to engage external expertise.

If the applicant chooses to engage expert assistance, they should satisfy themselves of the expert's relevant experience, qualifications and competency to undertake the work required prior to engaging them.

The Department is not able to recommend particular service providers, but industry recognised accreditation, or other evidence of relevant expertise, should be sought and provided to the Department with the application.

Change to the Guideline:

Section 2 has been amended to reflect that: *The decision of who will undertake the analysis and prepare the application remains the applicant's choice with no obligation to engage external expertise.*

If expert assistance is sought, however, applicants should satisfy themselves of the expert's relevant experience, qualifications and competency to undertake the work required prior to engaging them.

3.8 Other issues

3.8.1 Summary of submissions

This section refers to a number of submissions that dealt with a range of other issues including editorial and process matters.

Comments fell into four broad categories:

- Assessment procedures from other jurisdictions should be included in the Guideline.
- Additional information should be included on how the FIDOL factors have been incorporated into the Guideline.
- A review schedule should be developed for the Guideline.
- A range of suggestions for editorial changes.
    - These are not detailed below but, in most cases, will be incorporated into the final Guideline wherever appropriate.

3.8.2 Department response to submissions

Assessment procedures from other jurisdictions

Assessment procedures from other jurisdictions in Australia and overseas were reviewed during the development of the Guideline.

The scope of the Guideline is generally similar to those of other Australian and overseas jurisdictions, however the majority of other guidelines include criterion modelling which is not included in the Department's Guideline for reasons specified in Section 3.2 of this document.

Use of FIDOL factors

Information relating to FIDOL factors is captured by the analysis tools in the Guideline. This information allows the Department to include consideration of the FIDOL factors in its assessment of odour impact risk.

For example, offensiveness information is provided by knowledge of source emissions.

Change to the Guideline:

The Guideline has been updated to include additional discussion on the FIDOL factors.

Document review

Review of the Guideline is anticipated to be undertaken within five years, however it may be undertaken sooner based upon evaluation, experience and monitoring of its implementation. Input and collaboration with stakeholders will be part of the review process.

The offer from several industry sectors for collaborative and ongoing review of the Guideline is appreciated.

Editorial changes

Change to the Guideline:

The Guideline has been updated to include additional references.

Wherever appropriate, the Department has incorporated a range of editorial suggestions in the Guideline.

One submission noted an inconsistency between Table 1, which shows OSAs to be not applicable to applications for new premises, and the body text, which suggests representative emissions estimates from other facilities may be used.

Additional text has been added to Table 1 to fix the error.

3.9 Out of scope

3.9.1 Summary of submissions

Some submissions were considered to be outside the scope of the Guideline, but provided important perspectives. These submissions included:

- The place of new technologies in the Guideline
- Potential health impacts of odour emissions

3.9.2 Department response to submissions

Use of new technologies

A range of alternative technologies or approaches were suggested for the Guideline, including drones, short time-step dispersion modelling and community logging of complaints with smartphone apps.

It is likely these, and others, will be in broader use sometime in the future.

For example, the Department is investigating the use of drones equipped with chemical sensors for technology trials at some contentious sites.

Future versions of the Guideline may include such technologies, but they are not being considered at this time.

Health impacts of odour

The Guideline only relates to odour impacts as an amenity or nuisance issue.

It is acknowledged that some odours (i.e. not related to toxic substances) can potentially have a range of direct and indirect health effects. These impacts are not readily assessable due to, for example, their psychological nature, individual sensitivities or unusual exposure situations.

The Guideline outlines an assessment approach that, through the provision of better assessment data, aims to minimise the potential for such occurrences.

Change to the Guideline:

Section 3.3 has been added describing the risks from odour, and clarifying the context of its application.

Appendices

List of consultation respondents

Air and Odour, Quebec (Confidential to the Department)
Alcoa Australia
Australian Organics Recycling Association (AORA)
Australian Pork Limited
BGC (Australia) Pty Ltd
Chamber of Minerals and Energy (CME)
City of Rockingham
Clean Air Society of Australian and New Zealand (CASANZ)
C-WISE
Department of Agriculture and Fisheries, Queensland (DAF)
Department of Environment and Science, Queensland (DES)
Department of Jobs, Tourism, Science and Innovation (DJTSI)
Department of Mines, Industry Regulation and Safety (DMIRS)
Department of Primary Industries and Regional Development (DPIRD)
Dr Nastaein Qamaruz Zaman, School of Civil Engineering Universiti Sains Malaysia
Eastern Metropolitan Regional Council (EMRC)
Ektimo Pty Ltd
Environmental Alliances Pty Ltd
Environmental Resources Management Australia
Kwinana Industries Council (KIC)
Malcolm Robb - the Department Water Sciences
MBS Environmental

Metropolitan Environmental Health Managers Group (MEHMG)
Metro Vancouver, Planning and Environment
Ministry of Environment, Chile
NSW Environment Protection Authority
Personal submission – Confidential to the Department
Personal Submission - J & H Gadellaa
Personal submission – Mark Dunlop, Queensland
Personal Submission – Paul Byrnes
South Australian Environmental Protection Authority
Southern Metropolitan Regional Council (SMRC)
Talloman
Victorian Environmental Protection Authority
Waste Management Association of Australia (WMAA)
Water Corporation
Western Australian Local Government Association
Western Australian Pork Producers Association Inc. (WAPPA)

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Shultz, T 2006, Area Source Odour Sampling Issues, Presentation at the Clean Air Society of Australia and New Zealand (CASANZ) Coolangatta Odour Workshop, June 2006.