Demonstrating Best Practice

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Guideline

Introduction

Under the *Environment Protection Act 1970* (the EP Act), various state environment protection policies (SEPPs) set out what must be done to protect Victoria's environment (air, water and land) and control noise. Sources of emissions or discharges to the environment must be managed in accordance with 'best practice'.

This Demonstrating Best Practice guideline outlines how EPA assesses best practice, and provides guidance on how to demonstrate compliance with best practice requirements.

Purpose

The purposes of this guideline are to:

- Assist those who manage sources of emissions or discharges to the Victorian environment to understand and meet SEPP best practice requirements.
- Contribute to increased consistency and transparency in EPA's definition of best practice and assessment of applications for statutory approval.[1]
- Provide detailed guidance to works approval applicants about what evidence of SEPP best practice compliance they need to provide to EPA and, in particular, assist in the early clarification and confirmation of those evidentiary requirements.

This guideline does not identify the approaches, technologies or practices that constitute best practice for any particular industrial activity or sector. It is not intended to replace any Best Practice Environmental Management (BPEM) guidelines.

Using this guideline

This guideline should be referred to for all matters under the EP Act relating to best practice.

EPA will refer to this guideline when making statutory decisions or providing non-statutory advice.

The guideline should therefore be used by all works approval applicants, in conjunction with EPA's Works Approval Guideline (Publication 1658).

All applicants for EPA approvals are encouraged to discuss with EPA the nature of their proposal early in the process. This will help ensure the application and assessment are proportional to the issues being addressed, and that effort is targeted to prevent risk of harm to human health and the environment.

Other decision-makers in local and state government may find this guideline useful when performing their duties.

Legal status

Compliance with SEPP best practice is a legal requirement under the EP Act. This guideline provides assistance from EPA on how to meet the legal requirements of best practice. If an application for a statutory approval does not demonstrate that it will meet the requirements under the EP Act (including SEPP best practice if relevant), or does not provide the required information, then EPA cannot approve the application.[2]

Background

What is best practice?

Best practice is a requirement of statutory policy

In addition to defining the meaning of clean air, water and land, and acceptable noise levels under the EP Act, SEPPs set out process-related requirements of industry, including those for the management of emissions and discharges to air, land, surface water or groundwater.

As shown in Table 1 (on page 2), a range of terms are used in SEPPs relating to best practice or continuous improvement, depending on the particular environmental segment in question. The reader is referred to the authorised version of each SEPP as published by the Victoria Government Gazette and provided on EPA's website.

[1] A statutory approval is an EPA decision to issue, transfer or amend a works approval, licence, accreditation or research, development and demonstration approval.

[2] Section 20C of the EP Act relevantly states that EPA may refuse to issue, amend or transfer a works approval, a licence or a research, development and demonstration approval if such issue would be contrary to or inconsistent with a SEPP or other statutory policy.

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Table 1. Examples of best practice and continuous improvement requirements in statutory policies

State environment protection policy (SEPP)	Clause (context)	Emitter/industry requirement
SEPP (Noise N-1)	Cl. 19 (when replacing or installing new equipment)	Use quietest equipment available when replacing or installing new equipment
SEPP (Waters of Victoria)	Cl. 3 (in definition of 'best practice' and 'minimise') Cl. 28(3)(c) (new wastewater discharges)	New discharges require best practice
SEPP (Groundwaters of Victoria)	Cl. 12 (prevention of groundwater pollution)	Undertake all practicable measures to prevent pollution of groundwater
SEPP (Prevention and Management of Contamination of Land)	Cl. 17(2) (prevention of contamination of land)	Apply best practice to any transport, storage or handling of any chemical substance or waste
SEPP (Air Quality Management)	Cl. 18 (general requirements) Cl. 19 (management of new sources of emissions)	Apply best practice and continuous improvement for all relevant indicators; reduce to maximum extent achievable for 'Class 3' indicators

Of the above, the SEPP (Air Quality Management - AQM) provides the most detailed articulation of what is meant by best practice. A similar definition is also provided in SEPP (Waters of Victoria). Part IV of SEPP (AQM) defines best practice to mean:

> 'the best combination of eco-efficient techniques, methods, processes or technology used in an industry sector or activity that demonstrably minimises the environmental impact of a generator of emissions in that industry sector or activity'

-- where eco-efficient is defined as:

> 'producing more goods with less energy and fewer natural resources, resulting in less waste and pollution'.

While there are variations in wording across the SEPPs, the essence of the requirements is consistent in that all require the 'best practicable' measures to be implemented in the management of emissions and discharges.

The term 'best practice' implies a degree of pragmatism and cost effectiveness. By contrast, SEPPs sometimes use the term 'to the maximum extent achievable' (MEA). In the case of air emissions, for example, best practice can be distinguished from the requirement to reduce emissions of Class 3 indicators to MEA. (Class 3 indicators, as defined in SEPP (AQM), include hazardous pollutants such as dioxins, which are very injurious to human health.) An MEA requirement gives less consideration to cost, and places more emphasis on minimising risk to human health than a 'best practice' or 'best practicable measures' requirement.

For all best practice requirements under the SEPPs that are summarised in Table 1, the following defining elements of best practice should be considered when interpreting requirements.

Best practice for site selection and management systems

An assessment of environmental impact needs to consider the sensitivity of the receiving environment and is therefore site-specific. For example, relevant Air Quality Control Regions and proximity to sensitive receptors should be considered in an assessment of best practice. In another example, the beneficial uses of groundwater – which vary depending on levels of Total Dissolved Solids and from region to region – require different levels of protection.

The best practice assessment may also need to be applied to site selection, site layout, site operation (e.g. operating hours), and management systems to ensure that human health and amenity, and the environment, are protected.

Best practice is preventative

Best practice contributes to ensuring that the proposed environmental impact is prevented, or minimised, as far as practicable. This may mean going beyond the general or overall minimum requirements of quantified standards. For example, where a risk assessment identifies a particular set of high risk air quality indicators, targeted best practice measures are needed, rather than mere compliance with the ground level concentration design criteria specified in SEPP (AQM).

Works built to best practice now are less likely to need partial retrofits to adapt to future changes in standards and less likely to incur increased business costs associated with this. (Such changes can arise from improved understanding of the impacts of pollutants.)

Best practice means undertaking all practicable measures

Decisions with regard to practicability, when assessing best practice, should have regard to technical, logistical and financial considerations. This is different from meeting absolute (quantified) limits set out in SEPPs or regulations, where cost is not a consideration in assessing compliance.

EPA does not expect best practice to be pursued 'at any cost'. It is important that the proposed approach be cost effective in the context of the relevant industry sector within which the site operates or is planned to operate, as well as within the context of the total project cost. Most important is that the preferred option is proportional to the environmental risk.

Cost in this context means 'net cost', where up-front capital investment is considered together with a pay-back period, based on consequently reduced resource management costs.

Best practice may be internationally demonstrated and locally available

Identifying best practice means identifying the combination of measures or practices that demonstrably prevent or minimise environmental impact. An assessment of best practice needs to give reasonable consideration to the availability of technology.

In many circumstances, as acknowledged by the Victorian Civil and Administrative Tribunal (VCAT), the assessment may invite a comparison with practices used elsewhere in the world.[3] This is particularly the case where the relevant practice under examination is novel or has a limited basis for comparison in Australia, and where international best practice is reasonably available and achievable in Australia under local operating conditions. Alternatively, there may be occasions where these circumstances do not prevail and where best practice may need to be assessed at a more local level.

If the proposal, or an element of the proposal, is not yet commercially proven or available, and the purpose of the proposal is to demonstrate an approach, the application may be more suited to an application for Research, Development and Demonstration (RD&D) approval under section 19D of the EP Act.

What is the scope of the process or activity I need to consider?

The requirements for best practice arise from statutory policies relating to segments of the environment. To use the example of the SEPP (AQM), the best practice requirement therefore applies to the management of emissions, rather than to the proposal as a whole. The management of emissions is, however, directly dependent on the choice of process, technology, site layout and location.

Determining the scope of the process or activity to be examined in an application for a statutory application under the EP Act should begin with a reference to the activities defined in the Environment Protection (Scheduled Premises) Regulations 2017.

Further narrowing of the scope of the process or activity to be examined may be made based on the availability of technology (see comments on local availability in previous section) and the nature of the industry sector or activity. For example, best practice for a large urban landfill may be assessed differently to that of a smaller rural landfill.

The intent is to define an industry sector or activity benchmark that provides a relevant and reasonable comparable basis for the assessment.

When is best practice assessed by EPA?

The requirements of statutory policy, including best practice, apply broadly to all activities in Victoria. Using a risk-based approach, EPA assesses compliance with statutory policy and best practice, as relevant, when assessing statutory applications or when assessing compliance with licence conditions. Most notably, this happens as part of the works approval process.

How does EPA assess best practice?

Risk-based approach

EPA's regulatory approach is increasingly risk-based. We are seeking to ensure that our regulatory response is proportional to the issue being addressed, and our resources are targeted to prevent the most serious risk of harm to human health and the environment.

Principles of environment protection

EPA's powers, duties and functions – including decisions relating to works approvals and licences – all need to be discharged in accordance with the environment protection principles set out in the EP Act ('principles').

Statutory policies, regulations and guidelines are all developed with regard to the principles. There may nevertheless be a need to give further consideration to the principles for individual approvals if there is some level of ambiguity in requirements or overlap between applicable principles. As well, reference to the relevant principle(s) can help in interpreting and applying qualitative requirements such as continuous improvement or best practice.

Any one or more of the 11 principles in the EP Act (sections 1B to 1L) may come to the fore, depending on the context. It is ultimately the responsibility of the decision-maker to balance the principles in reaching each decision. For works approval assessments, the most frequently relevant principles include:

Integration of economic, social and environmental considerations (section 1B)

- This principle makes it clear that best practice measures need to be cost-effective and in proportion to the significance of the environmental problems being addressed.
- This principle also requires that social and environmental issues, as well as economic considerations, are effectively integrated into decision-making processes (i.e., it seeks to ensure that factors such as the need to improve community well-being and the benefit of future generations are not overlooked).

[3] Dual Gas Pty Ltd & Ors v Environment Protection Authority [2012] VCAT 308 at [166].

The principle of shared responsibility (section 1G)

- This principle states that protection of the environment is a responsibility shared by all levels of government and industry, business, communities and the people of Victoria.
- The principle also builds upon section 1B to set out that producers of goods and services should produce competitively-priced goods and services that satisfy human needs and improve quality of life. In doing so, producers should progressively reduce ecological degradation and resource intensity throughout the full life cycle of the goods and services, to a level consistent with the sustainability of biodiversity and ecological systems.

The wastes hierarchy (section 1I)

- This principle states that wastes should be managed in accordance with the following order of preference: avoidance, re-use, re-cycling, recovery of energy, treatment, containment and disposal.
- The aspect of eco-efficiency in the definition of best practice in SEPP (AQM) is heavily influenced by the wastes hierarchy.
- Waste is broadly defined under the EP Act, and includes any discharge, emission or deposit that causes an alteration in the environment, as well as any discarded, rejected, unwanted, surplus or abandoned matter intended for treatment or sale.

Integrated environmental management (section 1J)

- This principle states that if approaches to managing environmental impacts on one segment of the environment have potential impacts on another segment, the best practicable environmental outcome should be sought. This principle should also be interpreted with reference to the principle of proportionality, as reflected in section 1B.
- This emphasises that an assessment of best practice may require an integrated environmental assessment, as discussed in further detail in Table 3.

Roles and responsibilities

EPA relies on a number of sources of knowledge to assess best practice for works approval applications.

The applicant

- It is the responsibility of the applicant to prepare the best practice assessment and submit the statutory application to EPA for assessment. The primary source of information on the proposed works will therefore be the applicant.
- The burden of proof lies with the applicant to research and document the application and demonstrate that best practice will be adopted.

EPA Assessing Officers

- EPA relies on its Assessing Officers to analyse and assess the information provided by the applicant, and be satisfied that the application has adequately demonstrated best practice in accordance with this guideline.
- EPA will provide advice to the applicant on any recent decisions in the relevant industry sector.
- Assessing Officers assess the application and provide a recommendation to EPA on the decision to approve or refuse an application.

Specialist advisors engaged by the applicant

- Works approval applicants often engage a consultant to prepare the works approval application, or otherwise have access to industry specialists or contractors who provide information and advice to support the application.

Specialist advisors engaged by EPA

- Where needed, EPA may also seek advice from external specialists to verify or peer review the information provided by the applicant.
- Specialist advisors may make recommendations to EPA based on the information provided by the applicant and may provide EPA with suggestions for improvement, although any decisions rest with EPA.

By influencing proposals and setting conditions on industrial infrastructure and activity ahead of time, works approvals can protect the environment from pollution and avoid expensive retrofitting later down the track.

The remainder of this guideline uses the example of a works approval application, although the approach can be used for any statutory application.

What should your works approval application include?

Risk assessment

In accordance with EPA's Works Approval Guideline (Publication 1658), your application should include an environmental risk assessment. The outcomes of the risk assessment should be used to guide the scope and purpose of your best practice analysis.

For example, if your risk assessment identifies that air emissions are the proposal's highest environmental risk, your best practice assessment should be focused on demonstrating best practice for preventing and minimising air emissions.

Commensurate with the scale of your proposal, you should undertake an initial desktop environmental risk assessment prior to your pre-application meeting with EPA to ensure that your pre-application meeting can be focused on confirming the scope and direction of the best practice analysis needed.

Methodology

The methodology outlined in Figure 1 and Table 2 should be used to demonstrate best practice.

Table 2. Methodology for demonstrating best practice in a works approval application

Step	Description

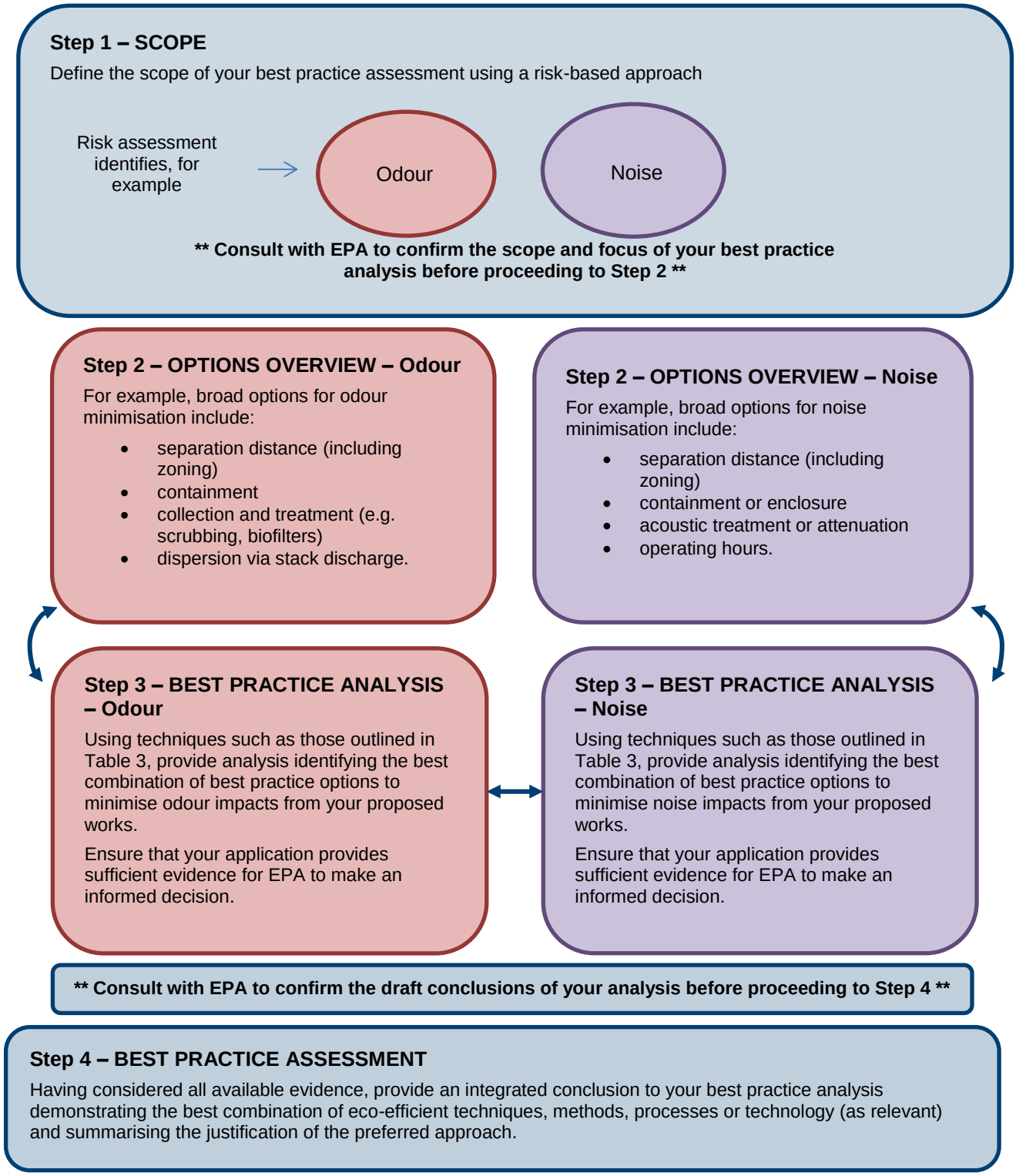
Step 1
Scope
	Using a risk-based approach, define the scope of your best practice assessment, including:
	• a proposed definition of the industry sector or activity
	• a clear identification of the parameters of the assessment in relation to (where relevant):
	  ○ environmental segments and which statutory policy(ies) your best practice analysis is responding to
	  ○ the site boundary, location or layout
	  ○ the remainder of the process or activity that is not in the scope of the best practice assessment (particularly for existing licence holders).
	Having undertaken an environmental risk assessment in accordance with EPA's Works Approval Guidelines, the scope definition should include a statement explaining how your risk assessment has directed the focus of the best practice assessment. Ensure that your risk assessment has considered any relevant SEPP criteria as well as a consideration of the local receiving environment when estimating the consequence of hazards.
	It is strongly recommended that you consult with EPA during this stage to:
	• confirm the scope and focus of your best practice analysis prior to developing your works approval application
	• obtain advice from EPA regarding any recent approvals relevant to your industry sector or activity.

Step 2 Options overview	Provide a broad summary outlining the range of options available for the proposed works (including the 'do nothing' option), and a brief indication of why they were considered or discarded, whether based on environmental performance, social acceptability, cost, suitability, availability or practicability. Further analysis (step 3) and an understanding of options available (step 2) are likely to form part of an iterative process. For example, while detailed analysis of site locations or technology types should be reserved for the best practice analysis, these analyses may in turn influence the breadth or types of options considered.

Step 3
Best practice analysis
	Provide a statement or detailed analysis, in a level of detail commensurate to the priorities identified in your environmental risk assessment, describing how your proposal constitutes best practice, including:
	• analysis demonstrating that the total proposed residual emissions or discharges resulting from your best practice approach meet all relevant criteria in statutory policy
	• evidence:
	  ○ referencing Table 3 of this guideline, provide a summary of techniques or approaches used to analyse best practice, including clear reference to any detailed analyses, assessments, reports or other sources of information relied upon;
	  ○ ensure that significant decisions within the analysis are supported by a decision analysis based on clear criteria
	  ○ you may wish to assign a weighting to the evidence used;
	• appendices – detailed analyses, assessments or reports (whether developed by the applicant or sourced externally) to be provided as appendices where available.

	It is recommended that you consult with EPA at this stage to confirm the draft conclusions of your analysis prior to submitting your works approval application.
Step 4 Best practice assessment	Having considered all available evidence, provide an integrated conclusion to your best practice analysis demonstrating the best combination of eco-efficient techniques, methods, processes or technology (as relevant) and summarising the justification of the preferred approach.

Figure 1. Methodology for demonstrating best practice in a works approval application



Types of evidence

Table 3 provides an outline of suggested evidence or analysis techniques that can be used to demonstrate an assessment of best practice in your works approval application. It is difficult to specify the weighting or preference that should be given to each type of evidence or analysis, as this balance can only be determined on a case-by-case basis. Table 3 provides suggestions as to when each approach may be necessary, or otherwise useful or encouraged.

It is EPA's responsibility as the decision-maker to weigh up the evidence and considerations in each application. It is the responsibility of the applicant to provide EPA with sufficient evidence upon which to make a decision. Any weighting attributed to the different types of evidence used, as proposed by the applicant, may be considered by EPA in making its decision.

Table 3. Types of evidence and analysis techniques for demonstrating best practice

Type of evidence or analysis technique	Description	When should this technique be used?
Literature review	You must refer to EPA Victoria's Best Practice Environmental Management (BPEM) guidelines and other publications where available and relevant to your industry. Where EPA Victoria publications are not available, information from other reputable sources may be considered. Examples include guidance or standards from regulators in other jurisdictions (including international), such as European Commission Integrated Pollution Prevention and Control Reference Documents on Best Available Techniques and United States EPA New Source Performance Standards etc. Review of available literature on practices within the industry sector or activity in Australia and overseas, (e.g. the Energy Efficiency Exchange). See case studies 1 and 2.	It is necessary to demonstrate the proposal will meet any relevant EPA Victoria BPEM guidelines or other protocols. It is necessary to review international practice, particularly where there are no existing similar sites in Victoria.
Benchmarking	Benchmarking is a tool for analysing relevant performance indicators at your site and comparing them to the same indicators for: • similar sites or businesses in Australia or internationally, with consideration given to overall scale • theoretical 'ideal' performance • original design specifications • known 'best practice' sites or businesses. In your pre-application discussions, EPA can provide information on any relevant previous successful approvals. Your application will need to meet any best practice benchmarks set by recent approvals, and consider any distinguishing factors such as location or distance to sensitive receptors. This is particularly relevant where odour has been identified as a risk. By establishing your performance relative to one or more of these and highlighting where possible weaknesses exist, the best practice design process can lead to an improvement in performance. Benchmarking can help a business achieve better performance by learning from best practice businesses. Examples of benchmarks that can be used to demonstrate best practice for environmental impact include kilolitres of wastewater per tonne of product, energy use or water use per tonne of product, or any other indicators of environmental impact or resource intensity. Some consideration should also be given to the overall scale of the emissions or discharges, and the relative ability of the receiving environmental system to absorb the proposed load or concentration. The assessment against relevant environmental objectives may need to involve a consideration of the environmental burden of the proposal. It is in this section that impacts on the use of resources and any resource limitation should be identified. Applicants may have regard to the principle in section 1G of the EP Act as a starting point for resource intensity and life cycle analysis. The rationale for any significant design decisions based on these considerations should be documented. See case studies 1 and 3.	Necessary where directly comparable industry sector or activity is already operational. If directly comparable industry sector or activity is not operational, benchmarking from similar industry sectors or activities may be necessary to provide context.
Application of the wastes hierarchy	Provide an assessment of how your proposal has considered and applied the wastes hierarchy in the management of key waste streams. This may address how your proposal is applying the wastes hierarchy through decisions relating to:	Necessary for justification of decisions where recovery of energy, treatment,

Type of evidence or analysis technique	Description	When should this technique be used?
	• input materials • resource efficiency (balancing considerations of overall emissions or discharge loads with consideration of emissions or resource intensity may be useful) • process design • emissions control technology • waste management. Decisions to design a process with reliance on lower order options within the hierarchy should justify why higher order waste hierarchy options are not available or practicable. See case study 4.	containment or disposal are the preferred options.
Integration of economic, social and environmental considerations	Where decisions are made weighing up economic, social and environmental considerations, some detail may be necessary to support the decision. For example, for a low-risk application in which economic or social factors have been the predominant factor in shaping the proposal, with some consequence for environmental emissions or discharges, some further assessment of environmental impact may be required to justify the reasoning behind the choice. In particular, where a decision has been based mainly on cost, the cost of different options and effectiveness of each option in addressing the relevant environmental risk factor should be analysed. For more complex applications, a triple bottom line assessment may be necessary to support the decision. See case study 5.	Necessary to justify decisions made on the basis of cost. Encouraged for any application that weighs up two or more of these factors.
Integrated environmental assessment	There may be aspects of a proposal where further improvement in one area can lead to greater environmental impacts or benefits in another. The principle of environment protection under section 1J of the EP Act states that if approaches to managing environmental impacts on one segment of the environment have potential impacts on another segment, the best practicable environmental outcome should be sought. Achieving that outcome may also include consideration of associated benefits for other segments, including potential for future opportunities for improvement. Identify these areas and indicate how you intend to balance the competing considerations to achieve the best net environmental outcome. See case study 6.	Necessary where a decision has been made relating to the weighing up of impacts and benefits for more than one segment of the environment.

In all cases, a citation should be provided for each item of evidence referenced in the application. If the cited document is not publicly available, the applicant should provide EPA with a copy of the source, with any content deemed commercial-in-confidence by the applicant clearly identified.

Case studies

The following case studies demonstrate the application of the above analysis techniques and how EPA assists with the assessment of best practice during the pre-application process.

Case study 1

Victorian Best Practice Environmental Management (BPEM) standards

Before preparing a works approval application for additional landfill cells at an already licensed landfill, an applicant meets with EPA to discuss relevant regulatory requirements.

EPA confirms that EPA's Best Practice Environmental Management (BPEM) publication for the Siting, Design Operation and Rehabilitation of Landfills (Publication 788) is a current document that accurately reflects best practice standards for landfills in Victoria.

The site has historically experienced issues with leachate management, so the applicant engages a consultant to undertake a comparative benchmarking review of the performance of more recent installations in Victoria and other jurisdictions, and identifies performance objectives that reflect the best available technology that is practicable for the site.

The applicant requests to meet with EPA to confirm the approach before submitting a works approval application.

See Table 3 'Literature review' and 'Benchmarking'.

Case study 2

Demonstrated and available practice to meet standards set in other jurisdictions

Thermal treatment is used to treat various wastes including medical waste and contaminated soil. Projects involving thermal oxidation such as incineration, thermal desorption, pyrolysis, gasification and plasma processes generate air emissions of class 1, 2 and 3 indicators (such as particles, acid gases and dioxins respectively). SEPP (AQM) requires best practice management of all emissions and 'maximum extent achievable' reductions for class 3 indicators.

Before preparing a works approval application for an incineration facility, the applicant meets with EPA to discuss relevant regulatory requirements. Prior to meeting with EPA, the applicant conducts a preliminary literature review that identifies a number of international standards for waste incineration and finds no apparent Victorian standards specific to the sector. EPA clarifies that best practice requires going beyond meeting minimum requirements such as design ground level concentrations specified in SEPP (AQM), and requires consideration of any relevant international measures or practices that are reasonably available and achievable in Australia under local operating conditions.

EPA advises that recent works approval applications involving thermal oxidation have met the Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste ('EU Directive'), and that these applications have been approved by EPA as representing best practice (and 'maximum extent achievable' for class 3 indicators). The EU Directive provides details of wastes to be treated, emission concentration limits, as well as guidance on residence time, temperature and monitoring. This is a standard that is recognised in a number of jurisdictions as an achievable standard. It is a standard that has been met in Victoria by previous applicants. It is therefore adopted as a measure of best practice in Victoria.

The applicant submits a works approval application with a best practice assessment demonstrating how the proposed air emission controls will comply with SEPP (AQM) and the EU Directive.

See Table 3 'Literature review'.

Case study 3

Going beyond benchmarks set by recent approvals to address site-specific considerations

The emerging practice of sewer mining is resulting in a growing number of proposals for tertiary, mechanical sewage treatment plants (STPs) that are closer to residential areas than traditional lagoon-based large-scale centralised STPs. STPs present a high risk of odour impacts. Sewer mining STPs are typically established to provide a source of recycled water for local re-use and are therefore typically located closer to sensitive receptors, increasing the risk of odour impacts.

Best practice odour controls for sewer mining projects that are near residential areas include designing smaller footprint aerobic treatment, containment of the treatment process within a building or underground to reduce noise and emission exposure, collection of foul air at odour source, treatment with scrubbers and adsorbents prior to discharge, and enhanced air dispersion. These controls are necessary to protect the amenity of residents, given the typically reduced buffer available.

Before preparing a works approval application for a sewer mining STP, the applicant meets with EPA.

EPA identifies a series of recent successful works approval applications for similar sewer mining projects. These recent applications have established a precedent or 'track record' of best practice that the applicant should use as a benchmark. If the proposed site location is closer to residential areas than the previous works approvals, the applicant will need to give further site-specific consideration to ensuring that local residential amenity is protected.

The applicant submits a works approval application with a best practice assessment demonstrating that the overall STP design meets the best practice benchmark set by previous applications, and has been optimised to protect residential amenity at the proposed site location, while meeting recycled water quality standards for the proposed end use.

See Table 3 'Benchmarking'.

Case study 4

Considering practicability in applying the wastes hierarchy

Prior to preparing a works approval application, an applicant for a storage and tanker loading facility that handles bitumen at 150ºC meets with EPA to confirm the scope and focus of the works approval application. Management of odorous emissions generated during tanker filling is identified as a key risk.

The applicant's assessment of options identifies that best practice for handling tanker filling emissions is 'vapour balancing technology', where emissions can be avoided by use of tanker vapour recovery systems. Tanker vapour recovery displaces vapour between the tanker and the bulk storage tank during the transfer of liquids, returning vapour to the tank. EPA advises this approach has been approved as best practice for previous bulk storage and tanker loading applications involving volatile chemicals and fuels. Another option for the applicant is odour emissions collection and ducting to an existing thermal oxidiser on the site.

The wastes hierarchy states that wastes should be managed in accordance with the following order of preference: avoidance, re-use, re-cycling, recovery of energy, treatment, containment and disposal. Some analysis against the wastes hierarchy is necessary for justification of decisions where the proposed approach relies on measures at the lower end of the hierarchy. Vapour balancing is higher up the wastes hierarchy than alternatives such as the treatment and disposal approach where, instead of being displaced, vapour is collected and ducted to a treatment device. Both options meet the quantified limits set in SEPP (AQM).

The applicant undertakes trials of its bitumen tanker fleet with vapour balancing technology and finds that it is not successful. The applicant provides an analysis in its works approval application, providing a justification as to why application of the waste hierarchy is not suitable for its proposed operation. EPA accepts this approach as compliant with best practice under SEPP (AQM) in the particular circumstances of this application.

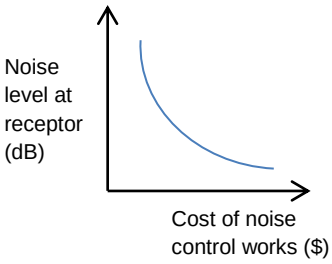
See Table 3 'Application of the wastes hierarchy'.

Case study 5

Integration of economic, social and environmental considerations

Minimising the impact of noise on nearby residents ('sensitive receptors') can be addressed in a number of ways. Consideration should be given to all available options (and combinations thereof), including control of separation distances, noise containment or enclosure, acoustic treatment or attenuation, and control of operating hours.

One common example of noise containment and attenuation is the installation of acoustic insulation. The relationship between the thickness of insulation and the resulting noise attenuation is not linear. That is to say, applying thicker insulation has diminishing returns in noise reduction as illustrated in the adjacent figure.



An applicant is submitting a works approval application for a co-generation plant where noise impacts have been identified as a risk. The application provides an analysis of all available techniques to minimise off-site noise impacts. The application demonstrates through an analysis of diminishing returns that the combination of the proposed separation distance and proposed operating hours will result in residual noise levels that can be managed with the proposed level of acoustic insulation.

The applicant submits a works approval application proposing a level of acoustic insulation that is based on an analysis of nearby businesses and residents, as well as an analysis of diminishing returns.

See Table 3 'Integration of economic, social and environmental considerations'.

Case study 6

Integrated environmental assessment

The principle of integrated environmental management (EP Act, section 1J) states that if approaches to managing environmental impacts on one segment of the environment have potential impacts on another segment, the best practicable environmental outcome should be sought. Works approval applicants are likely to be faced with such scenarios. For example, extra aeration at a wastewater treatment plant may produce better water quality, but use more energy. Additional gas scrubbing at a chemical works may produce cleaner air emissions, but may create more wastewater.

An applicant for a chemical works is preparing a works approval application. The design options include a range of possible treatments of air pollution technologies such as biofilter, carbon bed, regenerable carbon beds, stack dispersion, incinerator, regenerable thermal oxidiser and chemical scrubbers. All options can achieve low ground level concentrations to meet SEPP (AQM), and the applicant needs to undertake analysis to identify which is best practice for this particular application.

That analysis of best practice air emissions should give consideration to the proposal's cumulative impact on the local air shed (including any requirements such as Air Quality Control Regions), health impacts on the region, and the possibility of standards increasing in the future due to the increased load on the local environment. On the other hand, additional air treatment may result in increased energy use, increased waste generation and increased costs (both capital and operating). The applicant's best practice analysis should provide a comparison of the risks and benefits, presented against decision-making criteria. Further, applying discounted cash flow techniques enables the net present value of the options to be compared. Adding further treatment steps over and above those required to meet SEPP (AQM) criteria may increase capital and operating costs. The applicant should weigh up all relevant factors in the context of the proposal's impact on the local air shed.

A best practice analysis needs to provide sufficient evidence weighing up these factors. In some cases, local air quality concerns may prevail, with associated high energy use, waste generation and cost impacts. In other cases, a lower cost approach may be deemed acceptable, provided that the risk assessment shows that human health is still protected.

See Table 3 'Integrated environmental assessment'.

How can EPA help?

Before preparing your application, contact EPA to:

- confirm that you require a works approval

  and

- arrange a pre-application meeting to clarify information requirements and the scope of your application, including demonstrating best practice.

If you have any questions at any stage of the works approval process, please contact EPA on 1300 EPA VIC (1300 372 842) or visit EPA's website www.epa.vic.gov.au.