MANAGING WASTE ACID SULFATE SOILS

INDUSTRIAL WASTE MANAGEMENT POLICY (WASTE ACID SULFATE SOILS) AND POLICY IMPACT ASSESSMENT
POLICY IMPACT ASSESSMENT

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Industrial Waste Management Policy (Waste Acid Sulfate Soils) and Policy Impact Assessment

EPA Victoria
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Victoria 3006 AUSTRALIA

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FOREWORD

‘Acid sulfate soils’ are soils or sediments that contain elevated levels of metal sulfides being principally iron sulfides in the form of pyrite. Exposure of iron sulfides to oxygen – for example by drainage and excavation of these soils – can generate sulfuric acid. This may result in acidification of soils, surface water and groundwater. Runoff and leachate from acid sulfate soils can adversely impact aquatic communities, agricultural practices and engineering works. Acidic leachate can release aluminium, iron and other metals from soil and sediment, and has the potential for significant adverse environmental and human health impacts.

Acid sulfate soils are not common in Victoria but are found in areas such as the Coode Island silt formations (underlying much of the Yarra River delta) and some of the sandy formations underlying the south-eastern suburbs of Melbourne. Present-day estuarine and marine sediments may also have acid sulfate soil properties – for example, sediments in the Hopkins River estuary near Warrnambool. Many of these areas are currently subject to redevelopment.

In August 1998, Governor in Council, on EPA’s recommendation, made an interim policy to address an immediate need to improve the management of acid sulfate soils being removed from development sites. This interim policy had effect for a period of four months and was remade on two further occasions to enable the final Policy to be completed. An interim policy was in effect for approximately nine months and worked well in practice with approximately 10 sites approved under the interim policy to safely manage the disposal and reuse of this material. The draft Policy and Policy Impact Assessment released in January 1999 were a key stage in developing an on-going policy framework for the management of acid sulfate soils. In accordance with the Environment Protection Act 1970, this policy development process involved public advertising of the proposed Policy, stakeholder consultation on the proposed Policy, preparation of a response to public comment and a Policy Impact Assessment prior to consideration of the proposed Policy by the Authority and subsequent recommendation to the Governor in Council.

This Policy Impact Assessment (PIA) sets out the Policy and explains its rationale. It also provides a discussion of the Policy’s anticipated impacts. All Victorians were invited to comment during the three month public consultation period between January and April 1999. Nine submissions were received and have been taken into account in the final PIA and Policy.

The Policy provides a consistent and flexible framework for the management of waste acid sulfate soils. The Policy provides industry with certainty as to their obligations and assurance to the community that their health and the environment will be protected. EPA will work cooperatively with stakeholders to ensure that the goals of the policy are achieved.
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1. INTRODUCTION

Overview

An Industrial Waste Management Policy (IWMP) is a statutory instrument which may be declared under section 16(1A) of the Environment Protection Act 1970 (the EP Act) with respect to any aspect of the management of industrial waste including generation, storage, treatment, transport, disposal, or handling. The definition of industrial waste in the EP Act means any waste arising from commercial, industrial or trade activities or from laboratories, or any waste containing substances or materials which are potentially harmful.

Acid sulfate soils occur naturally in the environment but may become waste soils when disturbed by development and construction projects. If managed inappropriately, acid sulfate soils may oxidise, generating acidic discharges that may pose a risk to human health and the environment. In order to minimise such risks, specific management requirements are necessary which differ substantially from those generally applicable to other industrial wastes.

The Policy provides a policy framework to guide the management of waste acid sulfate soils throughout Victoria. This Policy replaces the Industrial Waste Management Policy (Waste Acid Sulfate Soils) (the interim policy) first made by EPA in August 1998.

This PIA provides a discussion of the likely environmental, social and financial impacts of the waste acid sulfate soils Policy. It also incorporates a description of the policy development process.

IWMPs are developed through the process prescribed in section 18A of the EP Act. In line with the requirements of the EP Act, notices of the intention to prepare the Industrial Waste Management Policy (Waste Acid Sulfate Soils) were advertised in September and October 1998. Public comment was sought on those occasions. This Policy and PIA were released for public comment in January 1999 for a three month period. The Policy was finalised following consideration of submissions received.

Acid sulfate soils

Acid sulfate soils are soils, sediments or rocks that occur naturally in the environment and contain elevated levels of metal sulfides, principally iron sulfides in the form of pyrite ($\text{FeS}_2$). Exposure of metal sulfides to oxygen – for example by drainage and excavation of these soils – can generate sulfuric acid. Exposure may also arise from natural events such as variations in the water table and erosion due to natural weathering. This may result in acidification of soils, sediments, rocks, surface water and groundwater. Runoff and leachate from acid sulfate soil can adversely impact upon aquatic communities, agricultural practices and engineering works. Acidic leachate can release aluminium, iron and other metals from soil and sediment, potentially impacting on beneficial uses of the environment.

Most acid sulfate soils were deposited in the last 10,000 years – for example the Coode Island silt formation (underlying much of the Yarra River delta). However, they may be as old as the Tertiary geological period (more than a million years ago) – for example, some of the sandy formations underlying the south-eastern suburbs of Melbourne. Present-day
estuarine and marine sediments may also have acid sulfate soil properties – for example, sediments in the Hopkins River estuary near Warrnambool.

Acid sulfate soils generally occur in soil formations that:

- contain elevated concentrations of metal sulfides
- were originally deposited in marine or estuarine settings, often as soft, dark grey to dark greenish-grey muds
- are below or above high tide level, but generally not more than five metres above high tide level.

**Acid Sulfate Rocks**

Metal sulfides can be found in most rocks. However, they generally occur at very low concentrations, at which the risk of adverse environmental impact due to acid generation is minimal. Metal sulfides may be concentrated in rocks due to igneous and/or metamorphic processes. The risk of adverse environmental impact is higher where metal sulfides are concentrated.

Elevated concentrations are usually associated with most ore deposits including coal, precious metals (e.g., gold, silver, platinum), base metals (e.g., copper, lead, tin, zinc) and uranium. Acid generation from mine wastes affects most sectors of the mining industry and is one of the most significant environmental issues facing the mining industry.

**Significance of Acid Sulfate Soils and Rocks**

Acid sulfate soils and rocks can affect human health, land use and development. Their management needs to be considered during the planning stage – before land is cleared, or drainage and construction works begin. Acid sulfate soils and rocks can impact on:

- engineering and landscaping works – including the type of concrete and steel required for the design of roads, buildings, embankment and drainage systems
- agricultural practices – including suitability of crops, liming practices, fertiliser requirements and drainage systems
- environmental quality, including soil quality, surface and groundwater quality and aquatic habitats
- water quality – including recreational waterways and water for human consumption.

The potential environmental impact of acid sulfate soils depends on a number of factors including:

- exposure to oxidising conditions – acid sulfate soils cannot commence generating acidic discharges unless exposed to oxygen and water;
- the nature and extent of the sulfidic characteristics of the soil – these characteristics can vary widely and will affect both the amount and concentrations of any acidic discharges and the rate of acid generation;
- capacity for self-neutralisation – acidic discharges may be neutralised as they occur depending on the content and nature of neutralising material present in the soil, including in the form of organic material and carbonates (e.g., shell matter or lime); and
- the buffering capacity of the receiving environment – acidic discharges may be
neutralised by the presence of organic material in the receiving environment or by the buffering effects of some water environments. These factors will determine the environmental risk posed by acid sulfate soils. Depending upon the circumstances, acidic discharges may be harmless in one environment but hazardous in others. The risk and hazard posed must be assessed on a case by case basis.

**Human Health Impacts of Acid Sulfate Soils**

There is very little information regarding the human health impacts of acid sulfate soils. Community concerns have focussed upon risks posed by skin contact and ingestion of dust either through inhalation or by the acidification of drinking water stored in rainwater tanks. While both soils and drinking water have varying natural levels of acidity, any adverse health effects due to acidification of soils and waters by acidic leachate generated by acid sulfate soils would need to be evaluated on a case by case basis. Acidic leachate from acid sulfate soils can release aluminium, iron and other metals from the soil and sediment potentially impacting on human health. Any adverse health impacts due to acidic leachate will be dependant upon the nature of the leachate, its concentration and duration of exposure and would need to be evaluated having regard to the specific circumstances giving rise to the leachate. There have been some concerns regarding the potential health effects of acid sulfate soils in New South Wales and Queensland. Corrosion of pipes and elevated levels of lead and copper have been observed in drinking water supplies sourced from a groundwater bore located at Evans Head, NSW. Evans Head is situated in a heavily drained and farmed acid sulfate soil area. The cause of the corrosion is in dispute, but may be linked to acid sulfate soils.

Acid sulfate soils of the type observed in NSW and Queensland are unlikely to be a cause of elevated arsenic and other metals in groundwater supplies in Victoria, due to their relatively limited occurrence here. Furthermore, where acid sulfate soils of this type are observed in Victoria, groundwater is usually highly saline and therefore unsuitable for most uses, including drinking.

Acidification of recreational waterways is generally unlikely, due to the large buffering capacity of seawater in marine and estuarine environments and the dispersal and dilution effects of freshwater environments, unless subject to gross or sustained pollution events most commonly associated with poor management of acid mine drainage.

EPA acknowledges that there is a need for further research into the human health impacts of acid sulfate soils. The management framework provided by the Policy will, in the absence of confirmed data on human health impacts, help ensure that any such impacts are minimised.

**Victoria’s Environment Protection System**

**The Environment Protection Act 1970**

Victoria’s environment protection system is based on the EP Act. The EP Act establishes the Environment Protection Authority (EPA), defines EPA’s powers, duties and functions, and contains a number of instruments to minimise pollution, wastes and environmental risks. These instruments include State environment protection policies.
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(SEPPs), IWMPs, works approvals, licences and pollution abatement notices and other notices, environmental audits, environmental improvement plans and industry waste reduction agreements.

**Industrial Waste Management Policy**

Under the EP Act it is EPA's responsibility to recommend SEPPs and IWMPs to the Governor-in-Council. IWMPs set a framework for the management of industrial wastes or particular aspects of those wastes. IWMPs are one of EPA's primary tools for pollution prevention. IWMPs give effect to the principle established in the State's Industrial Waste Strategy – Zeroing in on Waste – that waste generators are responsible for the proper management of their wastes from 'cradle-to-grave' and that such wastes are most effectively dealt with through waste avoidance.

IWMPs have been developed for some specific waste types, such as ozone depleting substances. An overarching IWMP (Waste Minimisation), developed in 1990, sets out the principles of waste minimisation and stresses the integral role of pollution prevention and sets directions for avoiding waste management problems. IWMPs are statutory instruments and their provisions are legally enforceable and binding on all private individuals and all private and public sector organisations.

**Interim IWMP (Waste Acid Sulfate Soils)**

The interim policy set out the management regime required for disposal and reuse of acid sulfate soils and specified the responsibilities of those involved. The interim policy first came into operation in August 1998 for a period of four months and was remade on two further occasions to allow the final policy to be developed. It was declared as an interim measure in response to the urgent need to ensure sound management of large amounts of waste acid sulfate soils being generated by the major development projects being undertaken around Melbourne. The interim policy was in effect for approximately nine months and worked well in practice. Approximately 10 sites were approved under the interim policy to safely manage the disposal and reuse of this material. The unprecedented level of construction activity in and around the lower reaches of the Yarra River is continuing to result in the generation of large amounts of waste acid sulfate soils. The interim policy has now been superseded by this Policy.

**Other Relevant Legislation, Policies and Strategies**

Victoria's land and water environments are protected by a range of legislative and non-legislative instruments. The EP Act provides the overarching legislative framework for the protection of the Victorian environment.

The Environment Protection (Prescribed Waste) Regulations 1998 classify certain wastes to be general prescribed wastes and prescribed industrial wastes and establishes a system of controls over the management of these wastes, including a tracking and vehicle permitting transport system for the transport of prescribed industrial waste. The Regulations also set out the obligations of the waste producer, accredited agent, waste transporter and waste receiver. Prescribed industrial wastes must be disposed of at premises licensed by EPA to accept such wastes. The Regulations do provide for exemptions from the requirements of the regulatory transport tracking system where waste is destined
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for reuse, recycling or recovery of energy or where accreditation is granted.

The *Industrial Waste Management Policy (Waste Minimisation)* focuses on waste avoidance and establishes a waste management hierarchy aimed at encouraging avoidance and reuse rather than disposal of wastes. These principles can be applied to minimise the impacts of acid sulfate soils by encouraging minimal disturbance or drainage of acid sulfate soils that can lead to adverse environmental impacts on land and water.

The *State Environment Protection Policy (Groundwaters of Victoria)* identifies beneficial uses and groundwater quality objectives for groundwater potentially affected by human activities. This may include, for example, acid sulfate soils when disturbed by construction or development projects.

The draft *SEPP (Prevention and Management of Contamination of Land)* aims to provide a comprehensive policy framework for the prevention and management of contamination of land. The draft Policy aims to establish clear goals and to integrate, and build upon, the existing framework of instruments which influence management of contaminated land, within a comprehensive, coherent implementation process. This framework will also complement work being undertaken at a national level for the National Environment Protection Measure (NEPM) for the Assessment of Site Contamination. This SEPP is currently being finalised following a period of public consultation.

EPA is also currently developing Environmental Guidelines for the Reuse and Disposal of Waste Soils. These guidelines will provide general guidance on current best practice activities and provides a road map to the various statutory controls existing to manage waste soils, including waste acid sulfate soils.

In addition, protection of land and water environments is provided by a range of other legislative requirements. For example:

- The *Catchment and Land Protection Act 1994* provides for the development of catchment management strategies which integrate land use with catchment issues. Catchment management strategies aim to ensure that land use is sustainable and compatible within a catchment area to allow protection of land, biodiversity and water resources for future generations.

- The *Health Act 1958* contains general provisions for the protection of human health from potentially contaminated land through exposure and land use controls. No other beneficial use of land is protected by this Act.

- Planning and Environment Act 1987:
  - this Act sets out the guiding framework for land use planning in Victoria, including consideration of environmental issues. In preparing a planning scheme or amendment, a planning authority must take into account any significant effects which it considers the scheme or amendment might have on the environment or which it considers the environment might have on any use or development envisaged in the scheme or amendment and must have regard to any state SEPPS and IWMPs.
  - the *Victoria Planning Provisions*, developed under the Act, promote the protection of
sensitive land uses through the State Planning Policy Framework. Under section 1.3 ‘Principles of Land Use and Development Planning’ the Victoria Planning Provisions note that planning is to contribute to the protection of air, land and water quality and the conservation of natural ecosystems, resources, energy and cultural heritage. The provisions further stress that planning should prevent environmental problems created by siting incompatible land uses close together.

- **Mineral Resources Development Act 1990** (MRD Act) and the **Extractive Industries Development Act 1995** (EID Act): premises regulated under these Acts must be licensed and have approved work plans which include environmental management plans. The Department of Natural Resources and Environment is responsible for the administration of both Acts and for the approval of licenses and work plans.

**Development of Policy and Policy Impact Assessment**

Following amendments to the EP Act in June 1994, PIAs are required for all new or revised IWMPs. PIAs are intended to bring together all the information relating to the impact of the IWMP in a clear and transparent manner for the community and decision-makers to consider. The PIA is required to assess the possible financial, social and environmental impacts of the alternatives to ensure costs are not disproportionate to the benefits achieved.

A draft version of this PIA was released with a draft version of the Policy to assist interested persons and organisations to comment on the draft Policy. Following public comment, the draft PIA and Policy have been adjusted where necessary. This final version of the PIA accompanied the final Policy recommended by the Authority for declaration by the Governor-in-Council.

Public comment on the draft **IWMP (Waste Acid Sulfate Soils)** and draft PIA was sought prior to the closing date for submissions on 6 April 1999. Submissions were considered and a written summary of public comment has been prepared. Where necessary, further revisions of the draft Policy and PIA have been undertaken to ensure that the final Policy provides a clear statement of the management regime applicable to waste acid sulfate soils and that any issues that had arisen under the interim policy were addressed. This final PIA also provides an explanatory and resource document for future users of the **IWMP (Waste Acid Sulfate Soils)**.

EPA has provided a response to those who have made written submissions during the formal consultation period. The final **IWMP (Waste Acid Sulfate Soils)** and PIA were submitted to Government prior to the Authority recommending its declaration to the Governor-in-Council. Finally, the **IWMP (Waste Acid Sulfate Soils)** and PIA will be tabled in Parliament.
2. ALTERNATIVE POLICY OPTIONS

The goal of this Policy is to develop a mechanism which will protect human health and the environment from risks that may be posed by waste acid sulfate soils, by ensuring that they are managed in an environmentally responsible manner. In determining how best to achieve this goal, the following options were considered:

- do nothing
- include waste acid sulfate soils within the management regime of the Environment Protection (Prescribed Waste) Regulations 1998
- add detailed waste acid sulfate soil management provisions to the proposed SEPP (Prevention and Management of Contamination of Land)
- develop best practice environmental guidelines for the management of waste acid sulfate soils

Do nothing

The EP Act provides a strong framework for the protection of the environment and for the clean up and abatement of pollution where pollution occurs. The EP Act establishes planning and preventative mechanisms for environmental protection, in particular, through statutory policies such as SEPPs and IWMPs. However, the ‘do nothing’ option would fail to take advantage of an opportunity to establish a clear consistent framework for avoiding pollution by planning for safe management of waste acid sulfate soils. There is a need to give certainty to industry about their obligations and to the community about the environment and their health is being protected.

The do nothing option means allowing the interim policy to lapse and not replacing it. This option creates an unacceptable risk to the environment and fails to meet community expectations for its protection. While industry has a general duty of care under the Environment Protection Act 1970 not to pollute or create an environmental hazard, this option would fail to provide the additional certainty and clarification of obligations for the particular management needs of this material and could lead to the continuation of some poor practices which have occurred.

Include waste acid sulfate soils within the management regime of the Environment Protection (Prescribed Waste) Regulations 1998

Acid sulfate soils occur naturally in the environment, and are not classified by EPA as prescribed waste unless they include introduced contaminants which meet the criteria prescribed by the Environment Protection (Prescribed Waste) Regulations 1998 (the Regulations) for contaminated soils and low level contaminated soils. EPA regards prescribed waste as the most potentially hazardous category of waste and that which because of its hazardous properties requires special management. If not managed properly, these wastes may pose a threat to the life or health of living organisms due to their toxic or other hazardous properties. Some prescribed wastes also pose a threat to the safety of humans or buildings and equipment due to their explosive, reactive or corrosive properties. The Regulations designate prescribed wastes and establish a system.
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of controls over the management of these wastes, including a tracking and vehicle permitting system for the transport of prescribed industrial waste. The Regulations also set out the obligations of the waste producer, accredited agent, waste transporter and waste receiver. Prescribed industrial wastes must be disposed of at premises licensed by EPA to accept such wastes. However, the Regulations do provide for exemptions from the requirements of the regulatory transport tracking system when waste is destined for reuse, recycling or recovery of energy or where accreditation is granted.

Under the IWMP (Waste Acid Sulfate Soils) waste acid sulfate soils which include introduced contaminants which meet the criteria prescribed by the Regulations for contaminated soils and low level contaminated soils will continue to be subject to the management regime of the Regulations and any other associated measures under the proposed IWMP for prescribed industrial waste currently being developed by EPA. However, not all waste acid sulfate soils include introduced contaminants.

Considering the variable nature and potential of waste acid sulfate soils to impact on the environment, it would be inefficient to categorise all waste acid sulfate soils as prescribed industrial waste. Applying the management regime of the Regulations to waste acid sulfate soils, including the use of transport certificates and permitted vehicles, would not address the specific management requirements of waste acid sulfate soils.

The Regulations' primary focus is upon requirements for the transport and tracking of prescribed industrial waste rather than prescribing detailed management requirements for the disposal or reuse of a waste. The Regulations have been designed to ensure the safe transport of wastes that pose a significant environmental risk if not disposed of to a landfill, treatment or storage facility licensed to accept such waste. Including waste acid sulfate soils in this regime would impose additional costs for the transporting and tracking of the wastes on both EPA and industry. Those costs are not considered to be justified given the low level of risk posed by these materials when appropriately managed.

Add detailed waste acid sulfate soils management provisions to the proposed SEPP (Prevention and Management of Contamination of Land)

The draft SEPP (Prevention and Management of Contamination of Land) aims to provide a coherent set of goals and a clear administrative framework for both the prevention and management of contamination of land throughout Victoria.

However, clause 17 of the draft SEPP recognises the potential for some natural material, including acid sulfate soils, to impact adversely on the surrounding environment. The Authority recognises that, because of the physical or chemical characteristics of naturally occurring materials such as acid sulfate soils or land with naturally elevated levels of certain chemical substances (eg arsenic), there is a need to apply appropriate management practices to ensure there is no risk to designated protected beneficial uses on or off the site. The draft clause 17 requires occupiers of land with acid sulfate characteristics to manage the land so as to ensure prevention of adverse impact on any beneficial uses of the land on-site, and reduction of the risk of off-site environmental impact to a level acceptable to the Authority. It also requires occupiers to ensure that
disposal or reuse of any material off-site is undertaken in accordance with any legislative requirements and procedures approved by the Authority.

While it would be possible to include more detailed provisions relating to the management of waste acid sulfate soils in this policy, it was not considered appropriate to include a detailed coverage of issues relating to one form of soil in a statutory document which is intended to provide a broad policy framework for prevention and management of contamination of all land throughout Victoria. Additionally, the focus of the draft SEPP is on ‘contamination’ not on uncontaminated soils whose potential hazard derives from their natural properties. Different approaches are warranted for each.

**Develop best practice environmental guidelines for the management of waste acid sulfate soils**

Environmental guidelines for the management of waste acid sulfate soils could be developed as part of EPA’s Best Practice Environmental Management Guideline (BPEMG) series. EPA is currently developing Environmental Guidelines for the Reuse and Disposal of Waste Soils as part of its BPEMG series. These guidelines will bring together current best practice activities for waste soils generally and provide a road map to the various statutory controls existing to manage waste soils, including waste acid sulfate soils. However, a BPEMG is not of itself mandatory or enforceable at law. This option fails to provide certainty of legal obligations to industry and certainty of good environmental outcomes to the community, because it cannot establish an enforceable mechanism for planning and managing the reuse or disposal of waste acid sulfate soils.

**Develop an Industrial Waste Management Policy (Waste Acid Sulfate Soils)**

In order to provide certainty and clarification for all stakeholders and to provide a sound lifecycle management regime for waste acid sulfate soils, the preferred option was for the declaration of an *Industrial Waste Management Policy (Waste Acid Sulfate Soils)* which will provide an on-going statutory framework to assist with the management of acid sulfate soils.

The Policy provides certainty within a flexible statutory framework and facilitates the development of management measures which are site-specific and relevant for affected premises. The Policy has also been designed to complement existing regulatory and non-regulatory instruments so as to avoid duplication of environmental requirements.
3. THE IWMP (WASTE ACID SULFATE SOILS)

This chapter of the PIA describes the potential impacts (environmental, social and financial) of adopting the *IWMP (Waste Acid Sulfate Soils)*. Variations from the interim policy are discussed in the detailed description of the policy below. The Policy is included in Appendix 1 to this PIA.

**Clause 1 – Title**

Clause 1 states that the policy title is Industrial Waste Management Policy (Waste Acid Sulfate Soils).

**Clause 2 – Commencement**

Clause 2 states that the policy comes into effect upon publication in the Government Gazette. This will occur following approval of the policy proposal by the Governor-in-Council.

**Clause 3 – Review of Policy**

Clause 3 provides that the Policy will remain in force until revoked by an Order of the Governor in Council and that it must be reviewed by the Authority every 10 years.

**Clause 4 – Revocation**

Clause 4 revokes the interim *Industrial Waste Management Policy (Waste Acid Sulfate Soils)* declared by Governor in Council in April 1999.

**Clause 5 – Contents of Policy**

Clause 5 outlines the contents and structure of the policy.

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**PART I – PRELIMINARY**

Part I comprises clauses 6 to 8 covering definitions, the Policy objective and the Policy area.

**Clause 6 – Definitions**

Clause 6 provides specific definitions of various words and terms used throughout the policy. These definitions clarify the use and intent of terms used within the policy.

The key term ‘*acid sulfate soils*’ means

‘any soil, sediment, unconsolidated geological material or disturbed consolidated rock mass containing metal sulfides which exceeds criteria for acid sulfate soils specified in Publication 655 entitled ‘Acid Sulfate Soil and Rock’ published by the Authority in 1999 as amended from time to time or republished by the Authority’

The definition varies from that contained in the interim policy by the substitution of the words ‘or other regolith’ with the words ‘unconsolidated geological material or disturbed consolidated rock mass’. The variation aims to provide clarity and certainty as to the meaning of the term ‘*acid sulfate soils*’. This change has been made in response to comments on the definition in the interim policy.

The Authority recognises that this definition is broader than the definition most commonly used by the soil science profession. However, its aim is to reflect the range of materials arising from the construction industry with potential to impact upon the environment. The Authority also recognised in the draft PIA that the test criteria and methodology provided for in the definition in the draft Policy was not the most appropriate for disturbed consolidated...
rock mass and sought submissions particularly on this issue.

A number of submissions were received regarding appropriate criteria and test methodology for rock material. EPA has developed such criteria based upon the NAPP and NAG test methodologies, which were recommended in submissions received by EPA as more appropriate for rock material. EPA also recognises that, with technological and scientific advances, test criteria and methodologies may vary over time rendering the POCAS and NAPP and NAG methodologies inappropriate or obsolete. To ensure flexibility and enable EPA to respond quickly to such developments, the draft Policy has been varied to delete the criteria from Schedule A of the Policy, and insert them together with criteria for rock material into EPA Publication 655 entitled ‘Acid Sulfate Soil and Rock’ which can be updated to take account of research developments when warranted. This will enable practical and technical changes to be made without going through the time consuming and costly process of varying the Policy.

Both the interim Policy and the draft Policy focused upon waste soils and rocks containing iron sulfides (in the form of pyrite) as iron sulfides are the most common metal sulfide in geological material with acid generating potential. However, following receipt of submissions on this matter, EPA acknowledges that geological material with sulfides of metals other than iron can have acid generating potential. The definition of ‘acid sulfate soils’ in the draft Policy has been amended to include all metal sulfides to ensure that all acid sulfate soils are covered by the Policy thereby providing the benefit of a comprehensive framework for the management of all materials with acid generating potential.

Clause 7 – Policy objective

Clause 7 sets out the objective of the policy namely:

‘… to protect human health and the environment from risks that may be posed by waste acid sulfate soils, by ensuring that they are managed in an environmentally responsible manner.’

All waste soils must be managed in accordance with the principles set out in the Industrial Waste Management Policy (Waste Minimisation), with the highest preference for waste avoidance and waste reduction. Clause 9 (below) reinforces this by expressly requiring the application of best practice management for waste acid sulfate soils. Clause 7 varies the draft Policy by the insertion of the term ‘waste’ (consistent with clause 6 of the interim policy). The term ‘waste’ is broadly defined in the Environment Protection Act 1970 and enables coverage of all management aspects of acid sulfate soils both before and after such soil becomes a waste. This reflects the need to manage all aspects of acid sulfate soils including prevention and minimisation of any adverse impacts due to them.

Clause 8 – Policy area

Clause 8 states that the IWMP (Waste Acid Sulfate Soils) applies throughout the State of Victoria. The provisions of this policy are binding upon both the public and private sectors as all have the potential to impact on the condition of land and water environments in Victoria. This ensures nobody can receive a competitive advantage based on where they are located or whether they are public or private sector.
PART II – GENERAL REQUIREMENTS

Part II comprises clauses 9 to 10. These clauses set out the general requirements for the management of acid sulfate soils including best practice management and on-site management.

Clause 9 – Best practice management

Clause 9 aims to encompass best practice management approaches for acid sulfate soils. The clause reinforces the principles of the policy and of the Industrial Waste Policy (Waste Minimisation) 1990 which aim to reduce the generation of wastes requiring off-site treatment or disposal. The Authority will work with industry to promote and encourage best practice management of soils and reuse options rather than disposal of acid sulfate soils to landfill. This aspect of the Policy promotes both flexibility and certainty with respect to the selection of management options.

The implementation of best practice management measures will benefit the community through sustainable improvements in environmental quality. Industry will benefit through minimising waste, avoiding environmental problems and liabilities, increased certainty and streamlined management procedures. These benefits are demonstrated by the case studies in the discussion on clause 14 below.

The suitability of management measures depends on the nature of the acid sulfate soil. The preferred hierarchy for management of acid sulfate soil is:

1. Minimise disturbance
2. Prevent oxidation
3. Treat to reduce acidity
4. Reuse or dispose

Common management approaches include:

- Minimise disturbance or drainage of acid sulfate soils: Selection of alternative non-acid sulfate soil sites or areas is preferred to remediation of impacts caused by disturbance of acid sulfate soils. Alternatively, works can be designed to minimise the need for excavation or disturbance of acid sulfate soils.

- Prevent oxidation: This may include placing potential acid sulfate soil into an anaerobic environment, usually below the water table.

- Minimise oxidation rate and isolate higher risk materials from exposure: This may include covering with soil or water to reduce oxygen availability and control of water movement, or controlling bacteria or other limiting factors (eg alkalinity) by either physical or chemical means to reduce oxidation rate.

- Contain and treat acid drainage to minimise risk of significant off-site impacts: This would typically involve installing a leachate collection and treatment system.

- Provide an agent to neutralise acid as it is produced: Typically this would involve mixing the acid sulfate soil with an excess of lime.

- Separate acid sulfate material: This may include sluicing or hydrocycloning techniques to separate acid sulfate fines from non-acidic sulfate material, followed by treatment or disposal of acid sulfate fines in an anaerobic environment.

- Hasten oxidation and collection and treatment of acid sulfate leachate: This technique involves deliberate oxidation, collection and treatment of
the leachate – for example, spreading on impervious areas and neutralising the collected drainage.

- **Manage stockpiled materials**: Stockpiled acid sulfate soil material needs to be managed to ensure no adverse environmental impacts occur. This would include minimising the quantity and duration of storage, minimising the surface area exposed to air, covering to minimise infiltration, diverting upgradient stormwater runoff, controlling erosion and collection/treatment of runoff.

Where other management approaches are proposed these should be trialled on a small scale. On-site treatment and management of acid sulfate soil material is preferable to off-site disposal. Disposal of land sourced acid sulfate soil material to declared marine spoil grounds is unlikely to be approved under an EMP. An EMP is not required where the spoil is dredged from a subaqueous environment if disposal is in accordance with clause 11 of the Policy.

The above management hierarchy is based upon the draft Environmental Guidelines for the Reuse and Disposal of Waste Soils which EPA is currently developing as part of its BPEMG series. Detailed guidance on best practice management for waste acid sulfate soil can be found in EPA Publication 655 ‘Acid Sulfate Soil and Rock’. The clause adds to the interim policy which fails to address best practice management issues.

**Clause 10 – On-site management of acid sulfate soil**

Clause 10 provides for the on-site management of acid sulfate soils and exempts occupiers of premises from preparing an environment management plan for on-site handling of waste acid sulfate soil which is sourced from those premises. This differs to the interim policy which regulates the disposal and reuse of waste acid sulfate soils but fails to provide for on-site management. Pollution caused by poor on-site management of acid sulfate soils can lead to prosecution under the EP Act.

Clause 10 requires occupiers of premises to apply best practice environmental management for all on-site handling of waste acid sulfate soils sourced from the premises. The Authority encourages on-site treatment and management of acid sulfate soil material in preference to off-site disposal. As noted earlier, the Authority is currently developing BPEMGs for waste soils management to provide general guidance to stakeholders in identifying and applying best practices. Detailed guidance on best practice management for waste acid sulfate soil can be found in EPA Publication 655 ‘Acid Sulfate Soil and Rock’.

The exemption provided by this clause is aimed at premises where acid sulfate soils that have been excavated at the site are being handled entirely at the site. Where soils are not being removed, the environmental risk is minimised and there may be no benefit in introducing an EMP. This approach is consistent with the philosophy of ensuring that costs are proportionate to environmental benefits achieved. If the soils are being moved off-site to other premises, those premises will be required to be either licensed by EPA or have an environment management plan approved under the Policy.

Similarly, if the site is receiving acid sulfate soils from other premises for disposal or re-use, the site
will require a licence or an environment management plan.

Any large development project falling within the exemption is likely to come to the attention of EPA through land use planning processes. EPA will work with the occupier to help ensure that best practice is applied to the management of any acid sulfate soils present on the premises. EPA anticipates that in the vast majority of smaller development projects, the premises will be unable, due to space constraints, manage acid sulfate soils on site. In such a case the waste soil should be disposed of, or reused offsite and will be subject to the requirements of the Policy.

**Cover material**

Clause 9 of the draft Policy released for public comment prohibited the use of acid sulfate soil as daily or final cover material for waste that is deposited at landfills. This clause was not included in the interim policy and was proposed in the draft Policy in view of the potential of acid sulfate soils to generate sulfuric acid if used as cover material and exposed to air. Acid sulfate soils are generally not suitable as cover material as such material itself must be covered to minimise oxidation and acid generation.

However, following submissions made on this clause EPA recognises that in some circumstances acid sulfate soils disposed of to landfills may be suitable for use as cover material. The Policy varies the draft Policy to delete the prohibition on the use of acid sulfate soils as cover material. This will allow an EMP to provide for the use of acid sulfate soils as daily or final cover material where a landfill operator can demonstrate such a proposed use is safe. EPA would generally discourage such a use, particularly use of waste acid sulfate soils as final cover material unless it could be demonstrated that the potential for adverse impact on human health or the environment has been minimised. However, removing the blanket prohibition in clause 9 provides flexibility and facilitates the use of this material where appropriate. Publication 655 emphasises the need to adequately assess and manage any risks associated with the use and management of these soils as cover material.

**PART III – REUSE AND DISPOSAL OF ACID SULFATE SOILS**

Part III comprises clauses 11 to 19. These clauses set out the requirements for the management of acid sulfate soils which are intended for re-use or disposal. The Part also excludes certain dredge spoil material and certain mining premises from the requirements in the Part and sets out the administrative process for approvals, recision and amendment of environmental management plans.

**Clause 11 – Part does not apply to certain dredge spoil material**

Clause 11 states that the Part does not apply to dredge spoil waste acid sulfate soils sourced from a subaqueous environment and intended to be disposed of to a marine or estuarine spoil ground provided oxidation is minimised and that the disposal is conducted in accordance with current best practice for dredging or any best practice environmental management guidelines approved by the Authority. Acid sulfate soils are a natural part of some water environments and are unlikely to cause significant impacts if deposited back into a similar environment. The risk of environmental impact from
acids during such disposal is minimal as any anaerobic (acid sulfate) sediments will remain in an anaerobic environment once deposited, except for the near surface layer. Limited oxidation of dredge spoil expected near the surface layer may release small amounts of acid, but this will normally be neutralised by the large buffering capacity of seawater in the marine and estuarine environment.

The impacts of dredge spoil on the water environment are currently assessed by the Dredge Protocol Management Committee (DPMC), a committee which includes representatives from EPA (Chair), Department Natural Resources and Environment, Parks Victoria, Victorian Channels Authority and Department of Infrastructure. The DPMC determines whether the dredging proposal is in accordance with the Trial Dredge Protocol, first published in 1992.

The draft Policy varied from clause 8 of the interim policy in that the word 'marine' had been deleted to allow disposal to all water environments. In addition, the requirement that the disposal be endorsed by the DPMC has been replaced with a requirement that the disposal be in accordance with current best practice or any best practice environmental management guidelines approved by the Authority. Best Practice Environmental Management Guidelines for dredging are currently being developed by the Authority and will replace the Trial Dredge Protocol. The administrative arrangements for implementing these guidelines is under review. The variation seeks to ensure that any disposal is in accordance with best practice irrespective of the final administrative arrangements put in place.

Following the receipt of public submissions, the clause varies both the draft Policy and the interim Policy by limiting disposal to marine and estuarine environments in recognition that the buffering capacity of seawater in marine and estuarine environments is significantly greater than freshwater environments making seawater environments more suitable for disposal of waste acid sulfate soils. The clause now also requires that dredge spoil waste acid sulfate soils should be managed so as to minimise oxidation prior to disposal in order to minimise the likelihood of acid generation commencing. To further safeguard water environments being used for the disposal of acid sulfate soils the Policy also requires that the disposal be in accordance with dredging best practice. This requirement is in addition to the requirement under clause 7 of the Policy to manage waste acid sulfate soils in accordance with best practice.

Clause 12 – Part does not apply to certain mining premises

The clause provides that the Part does not apply to occupiers of premises regulated under the Mineral Resources Development Act 1990 (MRD Act) or the Extractive Industries Development Act 1995 (EID Act) and exempted from EPA licensing requirements by the Environment Protection (Scheduled Premises and Exemptions) Regulations 1996 for on-site handling of waste acid sulfate soils sourced from the premises. Premises exempted under the Regulations are those discharging or depositing mining or excavation wastes solely to land in accordance with the MRD Act or the EID Act.
The inclusion of this clause is an addition to the interim policy which recognises that proper management of acid sulfate soils at such premises should be achieved through the MRD Act and the EID Act. This will minimise the potential for conflict or overlap in the activities of EPA and other responsible agencies.

Premises regulated under the MRD Act or the EID Act must be licensed under the relevant Act and have approved work plans which include environmental management plans. The Department of Natural Resources and Environment is responsible for the administration of both Acts and for the approval of such licenses and work plans. An environmental management committee can also be formed drawing upon people with a range of expertise to deal with any particular environmental issue that may arise. In addition, the Department of Natural Resources and Environment holds a rehabilitation bond for all sites which could be used to address on site problems that may arise. Premises regulated under the MRD Act or the EID Act are still subject to the requirement under clause 9 of the Policy to apply best practice management of acid sulfate soils. It is anticipated that licences and work plans would, where necessary, place management requirements on operations consistent with the objectives of the Policy.

EPA can still respond to any adverse off-site environmental impacts due to waste acid sulfate soils by utilising the pollution abatement provisions of the EP Act, for example clean up notices, pollution abatement notices and minor works pollution abatement notices where pollution occurs. Other enforcement actions such as prosecution are also available.

The clause varies the draft Policy by substituting the words 'waste acid sulfate soils sourced from' with the words 'an occupier of ' and by the addition of the words ‘for on-site handling of waste acid sulfate soil sourced from the premises.’ to the end of the clause. This is to ensure that the exemption only applies to on-site handling of waste acid sulfate soils which are sourced from those premises and does not extend to acid sulfate soils sourced from premises regulated under these Acts which are to be disposed of off-site.

**Clause 13 – Disposal or reuse of waste acid sulfate soil**

Clause 13 prohibits the disposal or reuse of waste acid sulfate soils at any premises, unless the occupier of the premises is either licensed to do so under the Act or has an environment management plan (EMP) approved under this policy. This clause duplicates clause 9 of the interim policy.

EPA licenses those premises which generate discharges or present significant risks to the environment. Licences typically specify operating conditions including types, concentrations and amounts of waste which may be discharged to the environment. They also set out agreed environmental planning, monitoring and reporting requirements. Licences provide the occupier of the premises with a clear statement of acceptable standards of environmental performance, ensuring that ambient environmental quality objectives established in SEPPs are maintained.

Occupiers of licensed premises who wish to accept waste acid sulfate soils for disposal or re-use at those premises may seek to do so either by applying for a licence amendment under the EP Act or by
preparing and submitting an EMP for approval by the Authority. There is no fee for the approval of an EMP, though development of an EMP may cost around $5,000 – $10,000 (refer case studies below) A licence amendment attracts a service fee of the lower of the two figures gained by calculating either 10 per cent of the annual fee paid on the issue or last anniversary of the issue of that licence, or $680 (85 fee units) (ie. a maximum fee of $680).

Contravention of a licence condition is an offence under section 27(2) of the EP Act. The maximum penalty for breach of licence is $20,000 (200 penalty units) and in the case of a continuing offence, and additional daily penalty of not more than $800 (80 penalty units) for each day upon which the offence continues after conviction or after service by the Authority of a notice of contravention of a licence condition.

Adding management provisions for waste acid sulfate soils to existing licences builds upon the existing infrastructure and systems in place at licensed premises which have been set up to deal with wastes. Utilising licensed premises in this way provides assurance to the community that these soils will be handled appropriately by experienced and regulated operators and facilitates the safe disposal of these soils at minimum cost to operators when disposal to licensed premises is chosen as an option under the Policy.

Unlicensed premises wishing to accept waste acid sulfate soils for disposal or reuse must have an approved EMP under the Policy. Case studies of EMP development costs are included below. EPA aims to work with industry to promote and encourage reuse options rather than disposal of acid sulfate soils to landfill. In particular, EPA will encourage the diversion of this material to unlicensed premises who have an EMP approved under the Policy setting out reuse proposals, in preference to disposal at landfill.

Clause 14 – Disposal or reuse to be in accordance with environment management plan

Clause 14 states that where an occupier of premises has an EMP approved under this policy, disposal or reuse of waste acid sulfate soil at the premises must be in accordance with the requirements of that plan. Clause 14 is central to the achievement of the policy objective:

‘...to protect human health and the environment from risks that may be posed by waste acid sulfate soils, by ensuring that they are managed in an environmentally responsible manner.’

This clause duplicates clause 10 of the interim policy. EMPs are the key instruments for ensuring that waste acid sulfate soils are managed in an environmentally responsible manner. EMPs must describe the objectives, strategies, actions and targets to prevent, mitigate or manage potential impacts from the handling of acid sulfate soils. This ensures that premises which fall outside the licensing system under the EP Act nonetheless address all relevant management issues for the disposal or reuse of waste acid sulfate soils through the EMP process.

The term ‘environment management plan’ is defined in clause 6 of the Policy. The definition sets out generally the matters to be addressed in EMPs. The Authority recognises that the suitability of management measures will depend on the nature
and location of the acid sulfate soil. The potential for acid sulfate soils to impact upon the environment will vary depending on the nature of the acid sulfate properties of the soils and their location. The definition is broadly framed to enable EMPs to be carefully tailored to address the particular issues faced by occupiers on a case-by-case basis. Preparation costs will be kept to a minimum by ensuring EMPs only address relevant matters. Experience gained in implementing the interim policy has demonstrated that the cost of developing an EMP will vary significantly from premises to premises and will be dependant upon a range of factors such as the:

- size of the premises
- the nature and location of the acid sulfate soil
- availability of in-house and consultant’s expertise for assessing acid sulfate generating potential
- the cost of identification and assessment of management options.

Occupiers preparing EMPs will have varying, but often limited degrees of in-house expertise to address the matters required under an EMP. As a result it is expected that many occupiers will need to engage consultants to assist in the preparation of an EMP. An average EMP is expected to cost approximately $5,000. If a consultant was engaged to develop and assess the viability of a range of management options for waste acid sulfate soil for a large or complex premises, the cost of the consultancy may range up to $10,000.

In view of the extent of publicity given to the consequences of site contamination in recent years, prudent developers (and their financiers) would not consider undertaking a major project without an assessment of the contamination status of the land. Risk assessments for acid sulfate soils would build into the work already undertaken in assessing the site for contaminants. Case studies of EMP development costs are included below.

The Authority recognises that some costs will be incurred by industry in implementing management requirements for acid sulfate soils under an EMP or licence amendment. These costs can be recovered. For example landfills will recoup costs through gate fee charges and generators through savings accruing from improved management practices (see case study 3 below). Such costs enable a waste disposer to ensure that their responsibilities under the EP Act not to pollute the environment or create an environmental hazard are met. They therefore assure the disposer that they will not eventually be faced with costs of clean up and can avoid the risk of prosecution for creating an environmental hazard. In addition, the Policy provides flexibility for disposal under an approved EMP rather than mandatory disposal to landfill. The interim policy was in effect for approximately nine months and was working well in practice. Approximately 10 sites were approved under the interim policy to safely manage the disposal and reuse of this material.
**Case Studies 1 and 2: Landfill EMPs**

Brooklyn Landfill & Waste Recycling Pty Ltd and Western Recycle Pty Ltd are two examples of landfill sites which voluntarily undertook the EMP process to enable them to accept waste acid sulfate materials at their premises. After considering their options of undertaking either an EMP or a licence amendment to enable them to accept waste acid sulfate soils, both companies elected to prepare EMPs.

Western Recycle Pty Ltd initially engaged consultants for assistance, and later employed in-house expertise to enable them to finalise the development of their EMP. The cost to Western Recycle of developing its EMP was approximately $4,500.

Brooklyn Landfill engaged an external consultant to assist with preparation of its EMP. The cost to Brooklyn for developing its initial EMP was approximately $6,000. A subsequent amendment to this EMP is estimated to have cost an additional $4,000.

Both EMPs provide for, among other things, the management of waste acid sulfate soils at the premises and include performance monitoring and contingency plans. EPA provided information to both companies on the content and format of the EMPs, as well as the review and approvals process. EPA also provided comment on draft EMPs before final documents were submitted to the Authority for approval.

**Case Study 3: Steampacket Quay Development, Waterfront Geelong**

The City of Greater Geelong commissioned external consultants for the design of the Geelong Waterfront Development. An initial EMP was prepared by the consultants and approved by EPA in October 1998 for the proposed works including quay development and reuse of excavated acid sulfate soils in land reclamation. A detailed site assessment was performed that tested for general hydrocarbon and metals contamination as well as the potential for acid sulfate soil at a total cost of approximately $5,000. The site assessments located approximately 7000 cubic metres of acid sulfate soil with acid generating potential (potentially acid sulfate soil) within the boundaries of the proposed development site. Further analytical evaluations were undertaken at a cost of approximately $5,000 and indicated that most of the acid sulfate soil samples were self-neutralising due to the naturally high carbonate content of the marine sediments. The EMP approved by EPA for the project was amended to change the initial management strategy from off site disposal of acid sulfate soils, to one where the potentially acid sulfate soil (approx. 1000 cubic metres) could be placed underwater in over dredged areas of the seabed (within the quay confines) designated for that purpose. Reductions in the size of the quay during design phase also assisted the reduction of excavation of the potentially acid sulfate soils. The variations to the management strategy through the process of the EMP, due to further testing clarifying the extent of and disposal of the potentially acid sulfate soil, achieved over $300,000 in cost savings to the project.

The timeframe for the preparation and approval of the EMP was approximately 3 months consisting of one month consultation and documentation and 2 months of amendments and approvals. A comprehensive consultation process with EPA was adopted throughout the preparation of the EMP.
Clause 15 – Management of waste contaminated acid sulfate soil

Clause 15 provides that any waste receiver receiving waste acid sulfate soil which is also a prescribed industrial waste must, in addition to complying with any requirements under the Environment Protection (Prescribed Waste) Regulations 1998, prepare and implement an EMP approved under this policy. This provision adds to the interim policy. It is included for clarity only and does not change existing requirements.

Clause 16 – Application for approval of environment management plan

Clause 16 provides that an occupier of premises must apply to the Authority for approval of an environment management plan, and specifies the form the application should take. Sub-clause 16(3) also allows for the Authority to seek additional information from an occupier(s). While EPA does not impose a charge for this service, this requirement may result in additional work to satisfy a particular request by EPA, including further technical assessments and other activities potentially involving a level of further cost. However, the Authority will not seek additional information unless it believes that there are gaps or errors in the analyses in the material presented in support of the application, including the draft EMP, and will generally seek to minimise the likely need for additional information by effective specification of required information under sub-clause 16(3). This clause duplicates clause 11 of the interim policy with the exception that the word ‘may’ in sub-clause 16(1) has been substituted with the word ‘must’ to be consistent with the terminology in clauses 13, 14 and 15.

Clause 17 – Approval of environment management plan

Clause 17 empowers the Authority to approve or not approve an EMP, and specifies the time frame and the considerations the Authority will have regard to in making that decision. In deciding whether or not to approve an EMP, the Authority must have regard to several matters including the information provided by the applicant, the likelihood of an unacceptable risk to human health or the environment, any applicable national environment protection measure made by the National Environment Protection Council, any applicable SEPP or IWMP and the potential for diversion of the waste acid sulfate soil for higher value uses.

A period of 28 days is provided for within which the Authority must make a decision to approve the EMP or not and the Authority must notify the applicant of its decision within 7 days. Further, the Authority may, in approving the EMP, impose such conditions as the Authority considers appropriate.

These provisions are a variation to clause 12 in the interim policy where the period within which the Authority must make a decision is 14 days and the period of notification is 2 days. Experience under the interim policy has demonstrated that the matters to be considered in the approval process can be complex and wide ranging. The variations are to enable the Authority to properly evaluate all relevant matters so that community expectation as to environmental protection is assured. These timelines are maximum periods for approvals of EMPs. The approval process may be shorter
depending upon the complexity of issues to be considered. Clause 17 provides that the Authority may attach conditions. This is an addition to clause 12(1) of the interim policy and enables the EMP to be varied so as to ensure that the EMP is comprehensive and site specific without the need to redraft and resubmit the EMP to the Authority. There is an administrative cost to EPA in assessing the application but this is offset by the benefit of developing EMPs which are comprehensive and fully considered thereby helping to ensure that management options are cost effective and project delays are minimised.

Clause 18 – Rescinding approval of environment management plan

Clause 18 specifies the conditions under which the Authority may rescind a previously approved EMP. The Authority may rescind its approval of an environment management plan if it is satisfied that:

- any information supplied by the applicant was false or misleading or
- any other information considered by the Authority has changed and as a result the Authority considers that the management of waste acid sulfate soil at the site is likely to result in an unacceptable risk to human health or the environment or
- any condition of the environment management plan has been contravened.

An occupier of premises who has an approved EMP is entitled to accept waste acid sulfate soil for disposal or reuse in accordance with the conditions and requirements of the approved EMP. Such an entitlement would cease to have effect if the EMP was rescinded. The power to rescind the approval for an EMP provides an important safety net for the protection of the environment from the risks of waste acid sulfate soils where the criteria set out in the clause are met. However, the Authority recognises the seriousness of such a decision and would endeavour to work with occupiers of premises to overcome problems that may arise so as to avoid any need to rescind an approval.

The clause substantially mirrors clause 13 of the interim policy. The clause varies from the interim policy in that omits the words ‘of damage’ in sub-clause 13(1)(b) and deletes the word ‘or’ from sub-clause (1)(a). The former variation is to make the language consistent with sub-clause 12(2)(b) of the interim policy and the latter as it is grammatically unnecessary.

Clause 19 – Amendment of environment management plans

Clause 19 allows an occupier of premises who has an approved EMP under this policy to seek amendment the plan by adopting the procedures, with any necessary modifications, in clauses 16 and 17. This adds to the interim policy which does not provide for amendments of EMPs. While an amendment will cause costs to be incurred by both the applicant and EPA it is necessary to provide a mechanism to achieve this and to allow flexibility to occupiers to meet the changing needs of their premises so as to ensure that the EMP remains relevant and site specific. As with the original EMP, costs associated with amendments can be recovered. For example landfills will recoup costs through gate fee charges and generators through
savings accruing from improved management practices (see case study 3 above).

The table below provides a short summary of the key benefits and costs of the Policy proposals outlined in detail in chapter 3.
### MANAGING WASTE ACID SULFATE SOILS

#### Benefits

⇒ Sets out a clear, consistent and flexible framework for the management of waste acid sulfate soils through which industry can be confident it has met its responsibilities under the EP Act through either:
  - a licence amendment; or
  - the development of an EMP;

⇒ Provides flexibility and choices to industry for disposal or reuse under an approved EMP rather than mandatory disposal to landfill;

⇒ Allows for EMPs to be risk based and tailored to local circumstances to meet the specific needs of site occupiers on the most cost effective basis while helping to ensure environment protection.

⇒ Provides for improved management of waste acid sulfate soils by the identification and adoption of best practice management options through the EMP/ licence amendment process thereby helping:
  - assure the community that their health and the environment will be protected;
  - ensure prevention of pollution and the associated costs of remediation and clean up to industry;
  - minimise potential liability of directors and financiers by minimising risk of pollution;
  - avoid costs to EPA of investigating pollution events and associated proceedings for clean up and prosecution;
  - maximise opportunities and benefits of safe re-use options in preference to disposal in valuable landfill space.

#### Costs

⇒ Costs of developing an EMP, estimated to range between $5,000 and $10,000. The costs of developing an EMP will depend upon factors including:
  - size of the premises
  - the acid sulfate and any contaminant properties of the soil and its location
  - location of sensitive environments (eg a high quality aquifer or a creek adjacent to the proposed disposal site)
  - identification and assessment of management options available
  - quantity of soil to be re-used or disposed

⇒ A licence amendment will attract a service fee of the lower of the figures gained by calculating either 10 per cent of the annual fee paid on the issue or last anniversary of the issue of that licence, or $680 (ie. a maximum of $680)

⇒ Costs of implementing management requirements under EMP/ licence amendment which will be variable depending on the nature of the receiving site and the nature of the waste acid sulfate soil being accepted. Implementation requirements will be minimal for established landfills.

⇒ Costs of developing and implementing an EMP/licence amendment can be recovered:
  - by landfills through gate fee charges;
  - by generators through savings accruing from improved management practices.

⇒ Costs to EPA in assessing, approving EMPs and ensuring that management of the site is in accordance with the EMP.
APPENDIX 1: INDUSTRIAL WASTE MANAGEMENT POLICY (WASTE ACID SULFATE SOILS)

Environment Protection Act 1970
Act No. 8506/1970

INDUSTRIAL WASTE MANAGEMENT POLICY
(WASTE ACID SULFATE SOILS)

The Governor in Council, under sections 16(1A) and 17(1A) of the Environment Protection Act 1970, and on the recommendation of the Environment Protection Authority, declares the following industrial waste management policy (waste acid sulfate soils) to be observed throughout Victoria.

Title

1. This Order may be cited as the Industrial Waste Management Policy (Waste Acid Sulfate Soils) and is referred to below as the Policy.

Commencement

2. This Policy will come into operation upon publication in the Government Gazette.

Review of Policy

3. (a) This Policy will remain in force until revoked by an Order of the Governor in Council.
   (b) This Policy must be reviewed by the Authority before the expiry of the period of 10 years after the day on which it came into effect or the Policy was last reviewed.

Revocation


Contents of Policy

5. This Policy is divided into parts as follows
   1 Title
   2 Commencement
   3 Review of Policy
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6. In this Policy, unless the contrary intention appears:

‘acid sulfate soil’ means any soil, sediment, unconsolidated geological material or disturbed consolidated rock mass containing metal sulfides which exceeds criteria for acid sulfate soils specified in Publication 655 entitled ‘Acid Sulfate Soil and Rock’ published by the Authority in 1999 as amended from time to time or republished by the Authority;

‘contaminated acid sulfate soil’ means acid sulfate soil which is a prescribed industrial waste as defined in regulation 7 of the Environment Protection (Prescribed Waste) Regulations 1998;

‘environment management plan’ for a particular premises means a document signed by the occupier of the premises, or by an officer authorised by the occupier for this purpose, which describes how the occupier will achieve its environmental objectives, including the objective of this Policy and all other applicable legal requirements, by specifying detailed operating conditions, and must include:

(a) the occupier’s environmental objectives, including all applicable legal requirements;
(b) a description of the premises, including the name and address of the occupier, the location of the premises, and the physical characteristics of the premises and adjacent elements or segments of the environment;
(c) existing and potential uses of the premises and adjacent elements or segments of the environment;
(d) a description of the type of activities to be undertaken at the premises;
(e) a description of any waste which may be generated, stored, treated, transported, reprocessed, reused, disposed of or otherwise handled at the premises, including physical characteristics of the waste and hazards associated with those characteristics;
(f) an assessment of the risk of adverse impacts upon any beneficial uses of the environment;
(g) management arrangements and operating conditions designed to meet the environmental objectives;
(h) a monitoring program to demonstrate compliance with operating conditions and environmental objectives;
(i) contingency arrangements
(j) reporting requirements;
(k) the responsibilities of all relevant parties; and

(l) requirements for review of the plan;

‘occupier’ means occupier as defined in section 4 of the Act;

‘premises’ means premises as defined in section 4 of the Act;

‘the Act’ means the Environment Protection Act 1970;

‘waste’ means, waste as defined in section 4 of the Act.

‘waste receiver’ means an occupier of premises licensed by the Authority to dispose of, treat, store or reprocess prescribed industrial waste.

Objective

7. The objective of this Policy is to protect human health and the environment from risks that may be posed by waste acid sulfate soils, by ensuring that they are managed in an environmentally responsible manner.

Policy area

8. Subject to clauses 11 and 12, this Policy applies throughout the State of Victoria.

PART II – GENERAL REQUIREMENTS

Best practice management

9. Management of waste acid sulfate soils must be in accordance with current best practice or any best practice environmental management guidelines approved by the Authority.

On-site management of waste acid sulfate soil

10. An occupier of premises –

   (1) is, subject to sub-clause (2), exempted from any requirement under this Policy to prepare an environment management plan for on-site handling of waste acid sulfate soil sourced from the premises.

   (2) must apply current best practice environmental management for all on-site handling of waste acid sulfate soil so as to ensure prevention of adverse impact on any beneficial uses of any element of the environment on-site or off-site.
PART III – REUSE AND DISPOSAL OF WASTE ACID SULFATE SOILS

Part does not apply to certain dredge spoil material

11. This Part does not apply to dredge spoil waste acid sulfate soil sourced from a subaqueous environment which is intended to be directly disposed of to a marine or estuarine spoil ground, provided that oxidation is minimised and that the disposal is conducted in accordance with current best practice for dredging or any best practice environmental management guidelines approved by the Authority.

Part does not apply to certain extractive and mining premises

12. This Part does not apply to an occupier of premises regulated under the Mineral Resources Development Act 1990 or the Extractive Industries Development Act 1995 and exempted under Part 3 of the Environment Protection (Scheduled Premises and Exemptions) Regulations 1996 for on-site handling of waste acid sulfate soil sourced from the premises.

Disposal or reuse of waste acid sulfate soil

13. A person must not cause or permit the disposal or reuse of waste acid sulfate soil at any premises, except where the occupier of the premises:

   (1) is licensed under the Environment Protection Act 1970 to dispose of that type of waste; or

   (2) has an environment management plan prepared in accordance with this Policy and approved by the Authority.

Disposal or reuse to be in accordance with environment management plan

14. An occupier of premises who has an environment management plan prepared in accordance with this Policy and approved by the Authority must not cause or permit the disposal or reuse of waste acid sulfate soil at that premises, other than in accordance with the conditions and requirements of the approved environment management plan.

Management of waste contaminated acid sulfate soil

15. Any waste receiver receiving waste contaminated acid sulfate soil must, in addition to complying with any requirements under the Environment Protection (Prescribed Waste) Regulations 1998, prepare and implement an environment management plan prepared in accordance with this Policy and approved by the Authority.
Application for approval of environment management plan

16. (1) An occupier of premises at which it is proposed to dispose of or reuse waste acid sulfate soils must apply to the Authority for approval of an environment management plan which has been prepared in accordance with this Policy.

(2) An application must:

(a) be made in writing; and

(b) be accompanied by:

(i) an environment management plan; and

(ii) any other information requested in writing by the Authority prior to the application being made.

(3) The Authority may request the applicant to provide further information that the Authority considers necessary in order to determine the application.

Approval of environment management plan

17. (1) Within 28 days after the Authority receives an application or the further information requested by the Authority under sub-clause 16(3), whichever is the later, the Authority must approve, subject to such conditions as the Authority considers appropriate, or not approve the environment management plan.

(2) In deciding whether or not to approve an environment management plan, the Authority must have regard to matters including:

(a) the information provided by the applicant;

(b) the likelihood of an unacceptable risk to human health or the environment;

(c) any applicable national environment protection measure made by the National Environment Protection Council;

(d) any applicable State environment protection policy or industrial waste management policy; and

(e) the potential for diversion of the waste acid sulfate soil for higher value uses.

(3) The Authority must notify the applicant in writing of its decision within 7 days after the decision was made.

Rescinding approval of environment management plan

18. (1) The Authority may rescind its approval of an environment management plan, if it is satisfied that:
(a) any information supplied by the applicant was false or misleading;

(b) any other information considered by the Authority has changed and as a result the Authority considers that the management of waste acid sulfate soil at the site is likely to result in an unacceptable risk to human health or the environment; or

(c) any condition of the environment management plan has been contravened.

(2) If the Authority rescinds its approval of an environment management plan, it must notify the occupier of the premises to which the plan relates within 2 days of the rescission.

Amendment of environment management plans

19. (1) An occupier of premises may make an application to amend an environment management plan prepared in accordance with this Policy and approved by the Authority.

(2) Clauses 16 and 17 with any necessary modifications apply to any application for amendment.