



Department of Planning & Environment  
Industry Assessments  
GPO Box 39  
Sydney NSW 2001

Attention: Susan Fox

Notice Number 1589841  
File Number SF19/120417  
Date 19-Dec-2019

**RE: Waste Management Facility Expansion - 14 Kiora Crescent, Yennora (Lot 49 / DP18211) - SSD 10407**

I refer to your request for the Environment Protection Authority's (EPA) requirements for the environmental assessment (EA) in regard to the above proposal received by EPA on 12 December 2019.

The EPA has considered the details of the proposal as provided by Department of Planning & Environment and has identified the information it requires to issue its general terms of approval in Attachment A. In summary, the EPA's key information requirements for the proposal include an adequate assessment of:

1. Waste management
2. Air and odour emissions
3. Noise impacts
4. Clarity on the volumes of each waste type
5. Fire risk management

In carrying out the assessment, the proponent should refer to the relevant guidelines as listed in **Attachment B** and any relevant industry codes of practice and best practice management guidelines.

Please note that this response does not cover biodiversity or Aboriginal cultural heritage issues, which are the responsibility of the Office of Environment and Heritage.

The Proponent should be made aware that any commitments made in the EA may be formalised as approval conditions and may also be placed as formal licence conditions.

The Proponent should be made aware that, consistent with provisions under Part 9.4 of the *Protection of the Environment Operations Act 1997* ("the Act") the EPA may require the provision of a financial assurance and/or assurances. The amount and form of the assurance(s) would be determined by the EPA and required as a condition of an Environment Protection Licence ("EPL").

Yours sincerely

*Pat Fabiano*

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**Patricia Fabiano**  
**Acting Unit Head**  
**Hazardous Materials, Chemicals & Radiation**  
(by Delegation)

## **ATTACHMENT A: EIS REQUIREMENTS FOR WASTE MANAGEMENT FACILITY EXPANSION -14 KIORA CRESCENT, YENNORA, SSD 10407**

### **How to use these requirements**

The EPA requirements have been structured in accordance with the DIPNR EIS Guidelines, as follows. It is suggested that the EIS follow the same structure:

- A. Executive summary
- B. The proposal
- C. The location
- D. Identification and prioritisation of issues
- E. The environmental issues
- F. List of approvals and licences
- G. Compilation of mitigation measures
- H. Justification for the proposal

## **A Executive summary**

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The executive summary should include a brief discussion of the extent to which the proposal achieves identified environmental outcomes.

## **B The proposal**

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### **1. Objectives of the proposal**

- The objectives of the proposal should be clearly stated and refer to:
  - a) the size and type of the operation, the nature of the processes and the products, by-products and wastes produced
  - b) a life cycle approach to the production, use or disposal of products
  - c) the anticipated level of performance in meeting required environmental standards and cleaner production principles
  - d) the staging and timing of the proposal and any plans for future expansion
  - e) the proposal's relationship to any other industry or facility.

### **2. Description of the proposal**

#### ***General***

- Outline the production process including:
  - a) the environmental "mass balance" for the process – quantify in-flow and out-flow of materials, any points of discharge to the environment and their respective destinations (sewer, stormwater, atmosphere, recycling, landfill etc)
  - b) any life-cycle strategies for the products.
- Outline cleaner production actions, including:
  - a) measures to minimise waste (typically through addressing source reduction)
  - b) proposals for use or recycling of by-products
  - c) proposed disposal methods for solid and liquid waste
  - d) air management systems including all potential sources of air emissions, proposals to re-use or treat emissions, emission levels relative to relevant standards in regulations, discharge points
  - e) water management system including all potential sources of water pollution, proposals for re-use, treatment etc, emission levels of any wastewater discharged, discharge points, summary of options explored to avoid a discharge, reduce its frequency or reduce its impacts, and rationale for selection of option to discharge.
  - f) soil contamination treatment and prevention systems.
- Outline construction works including:
  - a) actions to address any existing soil contamination
  - b) any earthworks or site clearing; re-use and disposal of cleared material (including use of spoil on-site)
  - c) construction timetable and staging; hours of construction; proposed construction methods

- d) environment protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.
- Include a site diagram showing the site layout and location of environmental controls.

### **Air**

- Identify all sources or potential sources of air emissions from the development.  
*Note: emissions can be classed as either:*
  - *point (e.g. emissions from stack or vent) or*
  - *fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, exhausts, loss from load), land clearing and construction works).*
- Provide details of the project that are essential for predicting and assessing air impacts including:
  - a) the quantities and physio-chemical parameters (e.g. concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored
  - b) an outline of procedures for handling, transport, production and storage
  - c) the management of solid, liquid and gaseous waste streams with potential to generate emissions to air.

### **Noise and vibration**

- Identify all noise sources or potential sources from the development (including both construction and operation phases). Detail all potentially noisy activities including ancillary activities such as transport of goods and raw materials.
- Specify the times of operation for all phases of the development and for all noise producing activities.
- For projects with a significant potential traffic noise impact provide details of road alignment (include gradients, road surface, topography, bridges, culverts etc), and land use along the proposed road and measurement locations – diagrams should be to a scale sufficient to delineate individual residential blocks.

### **Water**

- Provide details of the project that are essential for predicting and assessing impacts to waters including:
  - a) the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on <http://www.environment.nsw.gov.au/ieo/index.htm>, using technical criteria derived from *the Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, ANZECC 2000)
  - b) the management of discharges with potential for water impacts
  - c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.

- Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc.
- Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.

### ***Waste and chemicals***

Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the EPA's *Waste Classification Guidelines 2014 (as amended from time to time)*

- Provide details of liquid waste and non-liquid waste management at the facility, including:
  - a) the transportation, assessment and handling of waste arriving at or generated at the site
  - b) any stockpiling of wastes or recovered materials at the site
  - c) any waste processing related to the facility, including reuse, recycling, reprocessing (including composting) or treatment both on- and off-site
  - d) the method for disposing of all wastes or recovered materials at the facility
  - e) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility
  - f) the proposed controls for managing the environmental impacts of these activities.
- Provide details of spoil disposal with particular attention to:
  - a) the quantity of spoil material likely to be generated
  - b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil
  - c) the need to maximise reuse of spoil material in the construction industry
  - d) identification of the history of spoil material and whether there is any likelihood of contaminated material, and if so, measures for the management of any contaminated material
  - e) designation of transportation routes for transport of spoil.
- Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes.
- Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage.
- Reference should be made to the guidelines: EPA's *Waste Classification Guidelines 2014 (as amended from time to time)*

### ***ESD***

- Demonstrate that the planning process and any subsequent development incorporates objectives and mechanisms for achieving ESD, including:

- a) an assessment of a range of options available for use of the resource, including the benefits of each option to future generations

proper valuation and pricing of environmental resources

- b) identification of who will bear the environmental costs of the proposal.

### **3. Rehabilitation**

- Outline considerations of site maintenance, and proposed plans for the final condition of the site (ensuring its suitability for future uses).

### **4. Consideration of alternatives and justification for the proposal**

- Consider the environmental consequences of adopting alternatives, including alternative:
  - a) sites and site layouts
  - b) access modes and routes
  - c) materials handling and production processes
  - d) waste and water management
  - e) impact mitigation measures
  - f) energy sources
- Selection of the preferred option should be justified in terms of:
  - a) ability to satisfy the objectives of the proposal
  - b) relative environmental and other costs of each alternative
  - c) acceptability of environmental impacts and contribution to identified environmental objectives
  - d) acceptability of any environmental risks or uncertainties
  - e) reliability of proposed environmental impact mitigation measures
  - f) efficient use (including maximising re-use) of land, raw materials, energy and other resources.

## **C The location**

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### **1. General**

- Provide an overview of the affected environment to place the proposal in its local and regional environmental context including:
  - a) meteorological data (e.g. rainfall, temperature and evaporation, wind speed and direction)
  - b) topography (landform element, slope type, gradient and length)
  - c) surrounding land uses (potential synergies and conflicts)
  - d) geomorphology (rates of landform change and current erosion and deposition processes)
  - e) soil types and properties (including erodibility; engineering and structural properties; dispersibility; permeability; presence of acid sulfate soils and potential acid sulfate soils)
  - f) ecological information (water system habitat, vegetation, fauna)
  - g) availability of services and the accessibility of the site for passenger and freight transport.

### **2. Air**

- Describe the topography and surrounding land uses. Provide details of the exact locations of dwellings, schools and hospitals. Where appropriate provide a perspective view of the study area such as the terrain file used in dispersion models.
- Describe surrounding buildings that may effect plume dispersion.
- Provide and analyse site representative data on following meteorological parameters:
  - a) temperature and humidity
  - b) rainfall, evaporation and cloud cover
  - c) wind speed and direction
  - d) atmospheric stability class
  - e) mixing height (the height that emissions will be ultimately mixed in the atmosphere)
  - f) katabatic air drainage
  - g) air re-circulation.

### **3. Noise and vibration**

- Identify any noise sensitive locations likely to be affected by activities at the site, such as residential properties, schools, churches, and hospitals. Typically the location of any noise sensitive locations in relation to the site should be included on a map of the locality.
- Identify the land use zoning of the site and the immediate vicinity and the potentially affected areas.

#### **4. Water**

- Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: <http://www.environment.nsw.gov.au/ieo/index.htm> should be used to identify the agreed environmental values and human uses for any affected waterways. This will help with the description of the local and regional area.

#### **5. Soil Contamination Issues**

- Provide details of site history – if earthworks are proposed, this needs to be considered with regard to possible soil contamination, for example if the site was previously a landfill site or if irrigation of effluent has occurred.

## **D Identification and prioritisation of issues / scoping of impact assessment**

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- Provide an overview of the methodology used to identify and prioritise issues. The methodology should take into account:
  - a) relevant NSW government guidelines
  - b) industry guidelines
  - c) EISs for similar projects
  - d) relevant research and reference material
  - e) relevant preliminary studies or reports for the proposal
  - f) consultation with stakeholders.
- Provide a summary of the outcomes of the process including:
  - a) all issues identified including local, regional and global impacts (e.g. increased/ decreased greenhouse emissions)
  - b) key issues which will require a full analysis (including comprehensive baseline assessment)
  - c) issues not needing full analysis though they may be addressed in the mitigation strategy
  - d) justification for the level of analysis proposed (the capacity of the proposal to give rise to high concentrations of pollution compared with the ambient environment or environmental outcomes is an important factor in setting the level of assessment).

## **E The environmental issues**

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### **1. General**

- The potential impacts identified in the scoping study need to be assessed to determine their significance, particularly in terms of achieving environmental outcomes, and minimising environmental pollution.
- Identify gaps in information and data relevant to significant impacts of the proposal and any actions proposed to fill those information gaps so as to enable development of appropriate management and mitigation measures. This is in accordance with ESD requirements.

*Note: The level of detail should match the level of importance of the issue in decision making which is dependent on the environmental risk.*

#### ***Describe baseline conditions***

- Provide a description of existing environmental conditions for any potential impacts.

#### ***Assess impacts***

- For any potential impacts relevant for the assessment of the proposal provide a detailed analysis of the impacts of the proposal on the environment including the cumulative impact of the proposal on the receiving environment especially where there are sensitive receivers.
- Describe the methodology used and assumptions made in undertaking this analysis (including any modelling or monitoring undertaken) and indicate the level of confidence in the predicted outcomes and the resilience of the environment to cope with the predicted impacts.
- The analysis should also make linkages between different areas of assessment where necessary to enable a full assessment of environmental impacts e.g. assessment of impacts on air quality will often need to draw on the analysis of traffic, health, social, soil and/or ecological systems impacts; etc.
- The assessment needs to consider impacts at all phases of the project cycle including: exploration (if relevant or significant), construction, routine operation, start-up operations, upset operations and decommissioning if relevant.
- The level of assessment should be commensurate with the risk to the environment.

#### ***Describe management and mitigation measures***

- Describe any mitigation measures and management options proposed to prevent, control, abate or mitigate identified environmental impacts associated with the proposal and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
- Proponents are expected to implement an 'appropriate level of performance' to minimise environmental impacts. The proponent must indicate how the proposal meets an appropriate level of performance. For example, reference technology based criteria if available, or identify good practice for this type of activity or development. An 'appropriate level of performance' involves adopting and implementing technology and management practices to achieve certain pollutant emissions levels in economically viable operations. Technology-based criteria evolve gradually over time as technologies and practices change.

- Use environmental impacts as key criteria in selecting between alternative sites, designs and technologies, and to avoid options having the highest environmental impacts.
- Outline any proposed approach (such as an Environmental Management Plan) that will demonstrate how commitments made in the EIS will be implemented. Areas that should be described include:
  - a) operational procedures to manage environmental impacts
  - b) monitoring procedures
  - c) training programs
  - d) community consultation
  - e) complaint mechanisms including site contacts
  - f) strategies to use monitoring information to improve performance
  - g) strategies to achieve acceptable environmental impacts and to respond in event of exceedences.

## **2. Fire and explosion safety**

The applicant must conduct a Fire Safety Study covering all aspects detailed in the Department's *Hazardous Industry Planning Advisory Paper No. 2 – Fire Safety Study Guidelines 2011* and the New South Wales Government's *Best Practice Guidelines for Contaminated Water Retention and Treatment Systems*. The Study shall focus on the existing development, as well as the proposed alterations which are the subject of the proposal.

An assessment of explosion risk must be undertaken with management and mitigation measures.

## **3. Air**

### ***Describe baseline conditions***

- Provide a description of existing air quality and meteorology, using existing information and site representative ambient monitoring data.

### ***Air Quality and Odour Impact Assessment***

The Environmental Assessment must include a detailed quantitative Air Quality and Odour Impact Assessment (AQIA) that is prepared strictly in accordance with the EPA's most current Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales. The AQIA must:

- Demonstrate compliance with the relevant regulatory framework, specifically the *Protection of the Environment Operations Act 1997* and the *Protection of the Environment Operations (Clean Air) Regulation 2010*;
- Reference the *Assessment and Management of Odour from Stationary Sources in NSW: Technical Framework (2006)* and *Management of Odour from Stationary Sources in NSW: Technical Notes (2006)*;

- Include a detailed description of the existing environment;
- Include a detailed process description outlining all the process inputs and outputs. Identify the pollutants of concern, including particulate matter, individual toxic air pollutants, and odour. The characteristics and quantity of all relevant emissions must be provided in a detailed emissions inventory for all point and fugitive emission sources;
- Include detailed emission control techniques/practices that will be employed by the proposal. All relevant emission controls must be benchmarked against best practice process design and emission control. Nominated controls must be explicitly linked to calculated emission reductions adopted in the air quality impact assessment emissions inventory, with all assumptions documented and justified;
- Assess the risk associated with potential discharges of fugitive and point source emissions from the proposal. Assessment of risk relates to environmental harm, human health, and amenity; and
- Include a cumulative assessment of all existing and proposed sources.

Reference should also be made to EPA's most current Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.

### ***Describe management and mitigation measures***

The proposal must be benchmarked against International Best Practice. This includes demonstrating implementation of Best Available Techniques by benchmarking the emission performance against nominated metrics and other existing plants internationally.

Provide a detailed discussion of all proposed air quality emission control measures, for all proposed point and fugitive emission sources. For the emission controls identified this should include:

- Links to the Best Practice Determination;
- The pollutants treated by the nominated control measures;
- The efficiencies achieved by the pollution control equipment/management measures with supporting documentation including scientific studies or manufacturer specifications and guarantees; and
- The nominated monitoring and management measures that will be used to maintain the control efficiencies.

## **4. Noise and vibration**

### ***Describe baseline conditions***

- Determine the existing background (LA90) and ambient (LAeq) noise levels, as relevant, in accordance with the *NSW Noise Policy for Industry*.
- Determine the existing road traffic noise levels in accordance with the *NSW Road Noise Policy*, where road traffic noise impacts may occur.

- The noise impact assessment report should provide details of all monitoring of existing ambient noise levels including:
  - a) details of equipment used for the measurements
  - b) a brief description of where the equipment was positioned
  - c) a statement justifying the choice of monitoring site(s), including the procedure used to choose the site(s), having regards to Fact Sheets A and B of the *NSW Noise Policy for Industry*.
  - d) details of the exact location of the monitoring site and a description of land uses in surrounding areas
  - e) a description of the dominant and background noise sources at the site
  - f) day, evening and night assessment background levels for each day of the monitoring period
  - g) the final Rating Background Level (RBL) value
  - h) graphs of the measured noise levels for each day should be provided
  - i) a record of periods of affected data (due to adverse weather and extraneous noise), methods used to exclude invalid data and a statement indicating the need for any re-monitoring.

### ***Assess impacts***

- Determine the project noise trigger levels for the site. For each identified potentially affected receiver, this should include:
  - a) determination of the project intrusive noise level for each identified potentially affected receiver
  - b) selection and justification of the appropriate amenity category for each identified potentially affected receiver
  - c) determination of the project amenity noise level for each receiver
  - d) determination of the appropriate maximum noise level event assessment (sleep disturbance) trigger level.
- Maximum noise levels during night-time period (10pm-7am) should be assessed to analyse possible affects on sleep. Determine expected noise level and noise character likely to be generated from noise sources during:
  - a) site establishment
  - b) construction
  - c) operational phases
  - d) transport including traffic noise generated by the proposal
  - e) other services.

*Note: The noise impact assessment report should include noise source data for each source in 1/1 or 1/3 octave band frequencies including methods for references used to determine noise source levels. Noise source levels and characteristics can be sourced from direct measurement of similar activities or from literature (if full references are provided).*

- Determine the noise levels likely to be received at the reasonably most affected location(s) (these may vary for different activities at each phase of the development).
- The noise impact assessment report should include:

- a) a plan showing the assumed location of each noise source for each prediction scenario
  - b) a list of the number and type of noise sources used in each prediction scenario to simulate all potential significant operating conditions on the site
  - c) any assumptions made in the predictions in terms of source heights, directivity effects, shielding from topography, buildings or barriers, etc
  - d) methods used to predict noise impacts including identification of any noise models used.
  - e) the weather conditions considered for the noise predictions
  - f) the predicted noise impacts from each noise source as well as the combined noise level for each prediction scenario
  - g) for developments where a significant level of noise impact is likely to occur, noise contours for the key prediction scenarios should be derived
  - h) an assessment of the need to include modification factors as detailed in Fact Sheet C of the *NSW Noise Policy for Industry*.
- Discuss the findings from the predictive modelling and, where relevant noise criteria have not been met, recommend additional feasible and reasonable mitigation measures.
  - The noise impact assessment report should include details of any mitigation proposed including the attenuation that will be achieved and the revised noise impact predictions following mitigation.
    - a) Where relevant noise/vibration levels cannot be met after application of all feasible and reasonable mitigation measures the residual level of noise impact needs to be quantified
  - For the assessment of existing and future traffic noise, details of data for the road should be included such as assumed traffic volume; percentage heavy vehicles by time of day; and details of the calculation process. These details should be consistent with any traffic study carried out in the EIS.
  - Where blasting is intended an assessment in accordance with the *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (ANZECC, 1990) should be undertaken. The following details of the blast design should be included in the noise assessment:
    - a) bench height, burden spacing, spacing burden ratio
    - b) blast hole diameter, inclination and spacing
    - c) type of explosive, maximum instantaneous charge, initiation, blast block size, blast frequency.

### ***Describe management and mitigation measures***

- Determine the most appropriate noise mitigation measures and expected noise reduction including both noise controls and management of impacts for both construction and operational noise. This will include selecting quiet equipment and construction methods, noise barriers or acoustic screens, location of stockpiles, temporary offices, compounds and vehicle routes, scheduling of activities, etc.
- For traffic noise impacts, provide a description of the ameliorative measures considered (if required), reasons for inclusion or exclusion, and procedures for calculation of noise levels including ameliorative measures. Also include, where necessary, a discussion of any potential problems associated with the proposed ameliorative measures, such as overshadowing effects from barriers. Appropriate ameliorative measures may include:
  - a) use of alternative transportation modes, alternative routes, or other methods of avoiding the new road usage

- b) control of traffic (eg: limiting times of access or speed limitations)
- c) resurfacing of the road using a quiet surface
- d) use of (additional) noise barriers or bunds
- e) treatment of the façade to reduce internal noise levels buildings where the night-time criteria is a major concern
- f) more stringent limits for noise emission from vehicles (i.e. using specially designed 'quite' trucks and/or trucks to use air bag suspension)
- g) driver education
- h) appropriate truck routes
- i) limit usage of exhaust brakes
- j) use of premium muffles on trucks
- k) reducing speed limits for trucks
- l) ongoing community liaison and monitoring of complaints
- m) phasing in the increased road use.

## 5. Water

### ***Describe baseline conditions***

- Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts).  
*Note: Methods of sampling and analysis need to conform with an accepted standard (e.g. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004) or be approved and analyses undertaken by accredited laboratories).*
- Provide site drainage details and surface runoff yield.
- State the ambient Water Quality and River Flow Objectives for the receiving waters. These refer to the community's agreed environmental values and human uses endorsed by the Government as goals for the ambient waters. These environmental values are published on the website: <http://www.environment.nsw.gov.au/ieo/index.htm>. The EIS should state the environmental values listed for the catchment and waterway type relevant to your proposal. NB: A consolidated and approved list of environmental values are not available for groundwater resources. Where groundwater may be affected the EIS should identify appropriate groundwater environmental values and justify the choice.
- State the indicators and associated trigger values or criteria for the identified environmental values. This information should be sourced from the ANZECC 2000 *Guidelines for Fresh and Marine Water Quality* (<http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html>) (Note that, as at 2004, the NSW Water Quality Objectives booklets and website contain technical criteria derived from the 1992 version of the ANZECC Guidelines. The Water Quality Objectives remain as Government Policy, reflecting the community's environmental values and long-term goals, but the technical criteria are replaced by the more recent ANZECC 2000 Guidelines). NB: While specific guidelines for

groundwater are not available, the ANCECC 2000 Guidelines endorse the application of the trigger values and decision trees as a tool to assess risk to environmental values in groundwater.

- State any locally specific objectives, criteria or targets, which have been endorsed by the government e.g. the Healthy Rivers Commission Inquiries or the NSW Salinity Strategy (DLWC, 2000) (<http://www.environment.nsw.gov.au/salinity/government/nswstrategy.htm>).
- Where site specific studies are proposed to revise the trigger values supporting the ambient Water Quality and River Flow Objectives, and the results are to be used for regulatory purposes (e.g. to assess whether a licensed discharge impacts on water quality objectives), then prior agreement from the EPA on the approach and study design must be obtained.
- Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?). Proponents are generally only expected to source available data and information. However, proponents of large or high risk developments may be required to collect some ambient water quality / river flow / groundwater data to enable a suitable level of impact assessment. Issues to include in the description of the receiving waters could include:
  - a) lake or estuary flushing characteristics
  - b) specific human uses (e.g. exact location of drinking water offtake)
  - c) sensitive ecosystems or species conservation values
  - d) a description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc
  - e) an outline of baseline groundwater information, including, but not restricted to, depth to watertable, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment
  - f) historic river flow data where available for the catchment.

### **Assess impacts**

- No proposal should breach clause 120 of the *Protection of the Environment Operations Act 1997* (i.e. pollution of waters is prohibited unless undertaken in accordance with relevant regulations).
- Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source and discharge point including residual discharges after mitigation measures are implemented.
- Include a rationale, along with relevant calculations, supporting the prediction of the discharges.
- Describe the effects and significance of any pollutant loads on the receiving environment. This should include impacts of residual discharges through modelling, monitoring or both, depending on the scale of the proposal. Determine changes to hydrology (including drainage patterns, surface runoff yield, flow regimes, wetland hydrologic regimes and groundwater).
- Describe water quality impacts resulting from changes to hydrologic flow regimes (such as nutrient enrichment or turbidity resulting from changes in frequency and magnitude of stream flow).
- Identify any potential impacts on quality or quantity of groundwater describing their source.
- Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation.
- Identify impacts associated with the disturbance of acid sulfate soils and potential acid sulfate soils.

- Containment of spills and leaks shall be in accordance with EPA's guidelines section 'Bunding and Spill Management' at <http://www.epa.nsw.gov.au/mao/bundingspill.htm> and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.
- The significance of the impacts listed above should be predicted. When doing this it is important to predict the ambient water quality and river flow outcomes associated with the proposal and to demonstrate whether these are acceptable in terms of achieving protection of the Water Quality and River Flow Objectives. In particular the following questions should be answered:
  - a) will the proposal protect Water Quality and River Flow Objectives where they are currently achieved in the ambient waters; and
  - b) will the proposal contribute towards the achievement of Water Quality and River Flow Objectives over time, where they are not currently achieved in the ambient waters.
- Consult with the EPA as soon as possible if a mixing zone is proposed (a mixing zone could exist where effluent is discharged into a receiving water body, where the quality of the water being discharged does not immediately meet water quality objectives. The mixing zone could result in dilution, assimilation and decay of the effluent to allow water quality objectives to be met further downstream, at the edge of the mixing zone). The EPA will advise the proponent under what conditions a mixing zone will and will not be acceptable, as well as the information and modelling requirements for assessment.

*Note: The assessment of water quality impacts needs to be undertaken in a total catchment management context to provide a wide perspective on development impacts, in particular cumulative impacts.*
- Where a licensed discharge is proposed, provide the rationale as to why it cannot be avoided through application of a reasonable level of performance, using available technology, management practice and industry guidelines.
- Where a licensed discharge is proposed, provide the rationale as to why it represents the best environmental outcome and what measures can be taken to reduce its environmental impact.
- Reference should be made to relevant guidelines such as:
  - *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004); and
  - *Guidelines for Fresh and Marine Water Quality* ANZECC 2000).

### ***Describe management and mitigation measures***

- Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls.
- Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies.
- Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water; capturing all contaminated water (including stormwater) on the site; reusing/recycling waste water; and treating any unavoidable discharge from the site to meet specified water quality requirements.
- Outline pollution control measures relating to storage of materials, possibility of accidental spills (e.g. preparation of contingency plans), appropriate disposal methods, and generation of leachate.

- Describe hydrological impact mitigation measures including:
  - a) site selection (avoiding sites prone to flooding and waterlogging, actively eroding or affected by deposition)
  - b) minimising runoff
  - c) minimising reductions or modifications to flow regimes
  - d) avoiding modifications to groundwater.
- Describe groundwater impact mitigation measures including:
  - a) site selection
  - b) retention of native vegetation and revegetation
  - c) artificial recharge
  - d) providing surface storages with impervious linings
  - e) monitoring program.
- Describe geomorphological impact mitigation measures including:
  - a) site selection
  - b) erosion and sediment controls
  - c) minimising instream works
  - d) treating existing accelerated erosion and deposition
  - e) monitoring program.
- Any proposed monitoring should be undertaken in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC 2004).

## 5. Soils and contamination

### ***Describe baseline conditions***

- Provide any details (in addition to those provided in the location description - Section C) that are needed to describe the existing situation in terms of soil types and properties and soil contamination.

### ***Assess impacts***

- Identify any likely impacts resulting from the construction or operation of the proposal, including the likelihood of:
  - a) disturbing any existing contaminated soil
  - b) contamination of soil by operation of the activity
  - c) subsidence or instability
  - d) soil erosion
  - e) disturbing acid sulfate or potential acid sulfate soils.

- Reference should be made to relevant guidelines such as:
  - *Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011); and
  - *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA, 2015).

### ***Describe management and mitigation measures***

- Describe and assess the effectiveness or adequacy of any soil management and mitigation measures during construction and operation of the proposal including:
  - a) erosion and sediment control measures
  - b) proposals for site remediation – see *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998)
  - c) proposals for the management of these soils – see *Acid Sulfate Soil Manual* (Acid Sulfate Soil Advisory Committee 1998) and *Acid Sulfate Soils Assessment Guidelines* (Acid Sulfate Soil Advisory Committee 1998).

## **6. Waste and chemicals**

### ***Describe baseline conditions***

- Describe any existing waste or chemicals operations related to the proposal.

### ***Assess impacts***

- Assess the adequacy of proposed measures to minimise natural resource consumption and minimise impacts from the handling, transporting, storage, processing and reprocessing of waste and/or chemicals.
- Reference should be made to: the EPA's *Waste Classification Guidelines 2014 (as in force from time to time)*.

### ***Describe management and mitigation measures***

- Outline measures to minimise the consumption of natural resources.
- Outline measures to avoid the generation of waste and promote the re-use and recycling and reprocessing of any waste.
- Outline measures to support any approved regional or industry waste plans.
- Provide details of the processing capacity of the plant including typical, maximal and minimal rates of processing for each type of waste to be received.
- Provide the maximum annual, monthly and weekly throughput of each waste and the maximum volume of each type of waste to be stored at the premises at any one time.

## 7. Cumulative impacts

- Identify the extent that the receiving environment is already stressed by existing development and background levels of emissions to which this proposal will contribute.
- Assess the impact of the proposal against the long term air, noise and water quality objectives for the area or region.
- Identify infrastructure requirements flowing from the proposal (e.g. water and sewerage services, transport infrastructure upgrades).
- Assess likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts (e.g. travel demand management strategies).

## **F. List of approvals and licences**

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- Identify all approvals and licences required under environment protection legislation including details of all scheduled activities, types of ancillary activities and types of discharges (to air, land, water).

## **G. Compilation of mitigation measures**

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- Outline how the proposal and its environmental protection measures would be implemented and managed in an integrated manner so as to demonstrate that the proposal is capable of complying with statutory obligations under EPA licences or approvals (e.g. outline of an environmental management plan).
- The mitigation strategy should include the environmental management and cleaner production principles which would be followed when planning, designing, establishing and operating the proposal. It should include two sections, one setting out the program for managing the proposal and the other outlining the monitoring program with a feedback loop to the management program.

## **H. Justification for the Proposal**

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- Reasons should be included which justify undertaking the proposal in the manner proposed, having regard to the potential environmental impacts.

## ATTACHMENT B: GUIDANCE MATERIAL

Title	Web address
<b>Relevant Legislation</b>	
<i>Contaminated Land Management Act 1997</i>	<a href="http://www.legislation.nsw.gov.au/#/view/act/1997/140">http://www.legislation.nsw.gov.au/#/view/act/1997/140</a>
<i>Environmentally Hazardous Chemicals Act 1985</i>	<a href="http://www.legislation.nsw.gov.au/#/view/act/1985/14">http://www.legislation.nsw.gov.au/#/view/act/1985/14</a>
<i>Environmental Planning and Assessment Act 1979</i>	<a href="http://www.legislation.nsw.gov.au/#/view/act/1979/203">http://www.legislation.nsw.gov.au/#/view/act/1979/203</a>
<i>Protection of the Environment Operations Act 1997</i>	<a href="http://www.legislation.nsw.gov.au/#/view/act/1997/156">http://www.legislation.nsw.gov.au/#/view/act/1997/156</a>
<i>Water Management Act 2000</i>	<a href="http://www.legislation.nsw.gov.au/#/view/act/2000/92">http://www.legislation.nsw.gov.au/#/view/act/2000/92</a>
<b>Licensing</b>	
Guide to Licensing	<a href="http://www.epa.nsw.gov.au/licensing/licenceguide.htm">www.epa.nsw.gov.au/licensing/licenceguide.htm</a>
<b>Air Issues</b>	
<b>Air Quality</b>	
Approved methods for modelling and assessment of air pollutants in NSW (2016)	<a href="http://www.epa.nsw.gov.au/air/appmethods.htm">http://www.epa.nsw.gov.au/air/appmethods.htm</a>
POEO (Clean Air) Regulation 2010	<a href="http://www.legislation.nsw.gov.au/#/view/regulation/2010/428">http://www.legislation.nsw.gov.au/#/view/regulation/2010/428</a>
<b>Noise and Vibration</b>	
NSW Noise Policy for Industry	<a href="http://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017)">http://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017)</a>
Interim Construction Noise Guideline (DECC, 2009)	<a href="http://www.epa.nsw.gov.au/noise/constructnoise.htm">http://www.epa.nsw.gov.au/noise/constructnoise.htm</a>
Assessing Vibration: a technical guideline (DEC, 2006)	<a href="http://www.epa.nsw.gov.au/noise/vibrationguide.htm">http://www.epa.nsw.gov.au/noise/vibrationguide.htm</a>
	<a href="http://www.epa.nsw.gov.au/your-environment/noise/transport-noise">http://www.epa.nsw.gov.au/your-environment/noise/transport-noise</a>
NSW Road Noise Policy (DECCW, 2011)	
NSW Rail Infrastructure Noise Guideline (EPA, 2013)	<a href="http://www.epa.nsw.gov.au/your-environment/noise/transport-noise">http://www.epa.nsw.gov.au/your-environment/noise/transport-noise</a>
<b>Human Health Risk Assessment</b>	

Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards (enHealth, 2012)	<a href="http://www.eh.org.au/documents/item/916">http://www.eh.org.au/documents/item/916</a>
<b>Waste, Chemicals and Hazardous Materials and Radiation</b>	
<b>Waste</b>	
Environmental Guidelines: Solid Waste Landfills (EPA, 2016)	<a href="http://www.epa.nsw.gov.au/waste/landfill-sites.htm">http://www.epa.nsw.gov.au/waste/landfill-sites.htm</a>
Draft Environmental Guidelines - Industrial Waste Landfilling (April 1998)	<a href="http://www.epa.nsw.gov.au/resources/waste/envguidlns/industrialfill.pdf">http://www.epa.nsw.gov.au/resources/waste/envguidlns/industrialfill.pdf</a>
EPA's Waste Classification Guidelines 2014	<a href="http://www.epa.nsw.gov.au/wasteregulation/classify-guidelines.htm">http://www.epa.nsw.gov.au/wasteregulation/classify-guidelines.htm</a>
Resource recovery orders and exemptions	<a href="http://www.epa.nsw.gov.au/wasteregulation/orders-exemptions.htm">http://www.epa.nsw.gov.au/wasteregulation/orders-exemptions.htm</a>
European Unions Waste Incineration Directive 2000	<a href="http://ec.europa.eu/environment/archives/air/stationary/wid/legislation.htm">http://ec.europa.eu/environment/archives/air/stationary/wid/legislation.htm</a>
EPA's Energy from Waste Policy Statement	<a href="http://www.epa.nsw.gov.au/wastestrategy/energy-from-waste.htm">http://www.epa.nsw.gov.au/wastestrategy/energy-from-waste.htm</a>
NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	<a href="http://www.epa.nsw.gov.au/wastestrategy/warr.htm">http://www.epa.nsw.gov.au/wastestrategy/warr.htm</a>
<b>Chemicals subject to Chemical Control Orders</b>	
Chemical Control Orders (regulated through the EHC Act )	<a href="http://www.epa.nsw.gov.au/pesticides/CCOs.htm">http://www.epa.nsw.gov.au/pesticides/CCOs.htm</a>
National Protocol - Approval/Licensing of Trials of Technologies for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
National Protocol for Approval/Licensing of Commercial Scale Facilities for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
<b>Water and Soils</b>	
<b>Acid sulphate soils</b>	
Coastal acid sulfate soils guidance material	<a href="http://www.environment.nsw.gov.au/acidsulfatesoil/">http://www.environment.nsw.gov.au/acidsulfatesoil/</a> and <a href="http://www.epa.nsw.gov.au/mao/acidsulfatesoils.htm">http://www.epa.nsw.gov.au/mao/acidsulfatesoils.htm</a>
Acid Sulfate Soils Planning Maps	<a href="http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm">http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm</a>
<b>Contaminated Sites Assessment and Remediation</b>	
Managing land contamination: Planning Guidelines – SEPP 55 Remediation of Land	<a href="http://www.epa.nsw.gov.au/clm/planning.htm">http://www.epa.nsw.gov.au/clm/planning.htm</a>

Guidelines for Consultants Reporting on Contaminated Sites (EPA, 2000)	<a href="http://www.epa.nsw.gov.au/resources/clm/20110650consultantsguidelines.pdf">http://www.epa.nsw.gov.au/resources/clm/20110650consultantsguidelines.pdf</a>
Guidelines for the NSW Site Auditor Scheme - 2nd edition (DEC, 2006)	<a href="http://www.epa.nsw.gov.au/resources/clm/auditorguidelines06121.pdf">http://www.epa.nsw.gov.au/resources/clm/auditorguidelines06121.pdf</a>
Sampling Design Guidelines (EPA, 1995)	<a href="http://www.epa.nsw.gov.au/resources/clm/95059sampingdline.pdf">http://www.epa.nsw.gov.au/resources/clm/95059sampingdline.pdf</a>
National Environment Protection (Assessment of Site Contamination) Measure 1999 (or update)	<a href="http://www.scew.gov.au/nepms/assessment-site-contamination">http://www.scew.gov.au/nepms/assessment-site-contamination</a>
<b>Soils – general</b>	
Managing land and soil	<a href="http://www.environment.nsw.gov.au/soils/landandsoil.htm">http://www.environment.nsw.gov.au/soils/landandsoil.htm</a>
Managing urban stormwater for the protection of soils	<a href="http://www.environment.nsw.gov.au/stormwater/publications.htm">http://www.environment.nsw.gov.au/stormwater/publications.htm</a>
Landslide risk management guidelines	<a href="http://australiangeomechanics.org/admin/wp-content/uploads/2010/11/LRM2000-Concepts.pdf">http://australiangeomechanics.org/admin/wp-content/uploads/2010/11/LRM2000-Concepts.pdf</a>
Site Investigations for Urban Salinity (DLWC, 2002)	<a href="http://www.environment.nsw.gov.au/resources/salinity/booklet3siteinvestigationsforurbansalinity.pdf">http://www.environment.nsw.gov.au/resources/salinity/booklet3siteinvestigationsforurbansalinity.pdf</a>
Local Government Salinity Initiative Booklets	<a href="http://www.environment.nsw.gov.au/salinity/solutions/urban.htm">http://www.environment.nsw.gov.au/salinity/solutions/urban.htm</a>
<b>Water</b>	
Water Quality Objectives	<a href="http://www.environment.nsw.gov.au/ieo/index.htm">http://www.environment.nsw.gov.au/ieo/index.htm</a>
ANZECC (2000) Guidelines for Fresh and Marine Water Quality	<a href="http://www.environment.gov.au/water/publications/quality/nwgms-guidelines-4-vol1.html">http://www.environment.gov.au/water/publications/quality/nwgms-guidelines-4-vol1.html</a>
Applying Goals for Ambient Water Quality Guidance for Operations Officers - Mixing Zones	Contact the EPA on 131555
Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004)	<a href="http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf">http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf</a>