

Appendix 2

Director General's Requirements



NSW GOVERNMENT
Department of Planning

Contact: Jacqueline Ingham
Phone: (02) 9228 6338
Fax: (02) 9228 6466
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Our ref: 9040848

Mr Brent Lawson
Moorebank Recyclers Pty Ltd
PO Box 238
RYDALMERE NSW 1701

Dear Mr Lawson

**Director-General's Requirements
Moorebank Waste Recycling Project
Project Number: 05_0157**

The Department has received your application for the proposed Recycling Facility project at Moorebank (Application Number: 05_0157).

Following a review of the project, I have determined that the Director-General's requirements (DGRs) for the project should be modified. I have therefore attached a copy of the modified DGRs for the project.

Please note that under section 75F(3) of the *Environmental Planning and Assessment Act 1979*, the Director-General may alter these requirements at any time.

If your proposal is likely to have a significant impact on matters of National Environmental Significance, it will require an additional approval under the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to any approvals required under NSW legislation. It is your responsibility to contact the Department of Environment, Water, Heritage and the Arts in Canberra (6274 1111 or <http://www.environment.gov.au>) to determine if the proposal would require an approval under the EPBC Act. The Commonwealth Government has accredited the NSW environmental assessment process for assessing any impacts on matters of National Environmental Significance. As a result, if it is determined that an approval is required under the EPBC Act, please contact me immediately as supplementary Director-General's requirements will need to be issued.

The Department understands that site access issues are yet to be resolved. Consequently, you are required to ensure that suitable site access agreements are in place prior to the lodgement of the draft Environmental Assessment.

I would appreciate it if you would contact the Department at least two weeks before you propose to submit your Environmental Assessment for the project to determine:

- The fees applicable to the application (see Division 1A, Part 15 of the *Environmental Planning and Assessment Regulation 2000*);

- whether the proposal requires an assessment under the EPBC Act and any assessment obligations under that Act;
- the consultation and public exhibition arrangements that will apply; and
- the number of copies (hard-copy or CD-ROM) of the Environmental Assessment that will be required for exhibition purposes.

As you may know, the Department will review the draft Environmental Assessment in consultation with the relevant authorities to determine if it adequately addresses the Director-General's requirements. If the Director-General considers the Environmental Assessment to be inadequate, you will be required to revise it prior to public exhibition.

The Director-General's requirements will be placed on the Department's website along with other relevant information which becomes available during the assessment of the project. As a result, the Department would appreciate it if all documents that are subsequently submitted to the Department are in a suitable format for the web, and if you would arrange for an electronic version of the Environmental Assessment for the project to be hosted on a suitable website with a link to the Department's website.

If you have any enquiries about these requirements, please contact Jacqueline Ingham, Senior Environmental Planning Officer (02 9228 6338).

Yours sincerely



7.7.07

Chris Wilson
Executive Director
as delegate for the Director-General

Director-General's Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Project	The proposed construction and operation of a building materials recycling facility at Moorebank that would handle approximately 500,000 tonnes of building and construction waste a year.
Site	Lot 6 DP 1065574 Newbridge Road, Moorebank.
Proponent	Moorebank Recyclers Pty Ltd
Date of Issue	8 July 2006
General Requirements	<p>The Environmental Assessment (EA) must include</p> <ul style="list-style-type: none"> • an executive summary; • a detailed description of the project including the: <ul style="list-style-type: none"> – need for the project; – alternatives considered; and – various components and stages of the project; • consideration of any relevant statutory provisions; • a general overview of the environmental impacts of the proposal, identifying the key issues for further assessment, and taking into consideration any issues raised during consultation (see below); • a detailed assessment of the key issues specified below, and any other significant issues identified in the general overview of the environmental impacts of the proposal (see above), which includes: <ul style="list-style-type: none"> – a description of the existing environment; – an assessment of the potential impacts of the project; – a description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage, and/or monitor the impacts of the project; • a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures; • a conclusion justifying the project, taking into consideration the environmental impacts of the proposal, the suitability of the site, and the costs and benefits of the proposal; and • a signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading.
Key Issues	<ul style="list-style-type: none"> • Site access – demonstrate that suitable arrangements have been made to secure access to the site, including written evidence of the relevant landowner's consent for the proposed site access works; • Traffic and transport - including details of the traffic volumes that are likely to be generated during construction and operation, and an assessment of the impact of this traffic on the safety and efficiency of the surrounding road network; • Waste management– including waste receipt, classification and stockpiling; • Air quality – including dust, odour and greenhouse gas emissions; • Noise – including construction, operation and traffic noise; • Soil and water - including surface and ground water impacts, particularly on the Georges River; stormwater management, including detailed consideration of any potential offsite drainage impacts; flooding; wastewater disposal; erosion and sediment controls; soil contamination; and salinity. • Visual – particularly on the existing and proposed residential areas, nearby conservation and parkland areas, and the Georges River;

	<ul style="list-style-type: none"> • Flora and Fauna – particularly on any threatened species, populations, or ecological communities and their habitats; • Hazards and risks – including handling of potentially hazardous materials and fire management; and • Heritage – both Aboriginal and non-Aboriginal.
References	The Environmental Assessment must take into account relevant State government technical and policy guidelines. While not exhaustive, guidelines which may be relevant to the project are included in the attached list.
Consultation	<p>During the preparation of the Environmental Assessment, you must consult with the relevant local and State government authorities, service providers, community groups, affected landowners and any affected Commonwealth government authorities.</p> <p>In particular you must consult with:</p> <ul style="list-style-type: none"> • Department of Environment and Conservation; • Department of Natural Resources; • NSW Roads and Traffic Authority; • Liverpool City Council; and • Sydney Water. <p>Both the consultation process, and the issues raised during this consultation process, must be described in the Environmental Assessment.</p>
Deemed refusal period	60 days

State Government Technical and Policy Guidelines - For Reference

Aspect	Policy /Methodology
Air Quality	
	Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC)
	Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC)
	Draft Policy: Assessment and Management of Odour from Stationary Sources in NSW (DEC)
Noise	
	NSW Industrial Noise Policy (DEC)
	Environmental Criteria for Road Traffic Noise (DEC)
	Environmental Noise Control Manual (DEC)
Soil and Waters	
	Managing Urban Stormwater: Soils & Construction (Landcom)
	Guidelines for Fresh and Marine Water Quality (ANZECC)
	NSW State Groundwater Protection Policy (DNR)
	Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC)
	Acid Sulfate Soil Manual (ASSMAC)
	Contaminated Sites: Sampling Design Guidelines (DEC)
	Managing Land Contamination – Planning Guidelines (DOP)
	NSW Salinity Strategy
Traffic & Transport	
	Guide to Traffic Generating Development (RTA)
	Road Design Guide (RTA)
Waste	
	Environmental Guidelines: Assessment Classification and Management of Non-Liquid and Liquid Waste (DEC)
	Waste Avoidance and Resource Recovery Strategy (Resource NSW)
Flora and Fauna	
	draft Guidelines for Threatened Species Assessment (DEC)
	Threatened Biodiversity Survey and Assessment: Guidelines for Development and Activities (DEC);
	NSW Groundwater Dependent Ecosystem Policy (DNR);

From: "Peter Flynn" <P.Flynn@liverpool.nsw.gov.au>
To: <chris.ritchie@dipnr.nsw.gov.au>
Date: 3/03/2006 5:56:31 pm
Subject: Proposed Major Project - Waste Recycling Facility - Lot 6 DP 1065574 Newbridge Road Moorebank

Reference is made to your email dated 20 February 2006 requesting Council's requirements for the Environmental Assessment of the above proposal.

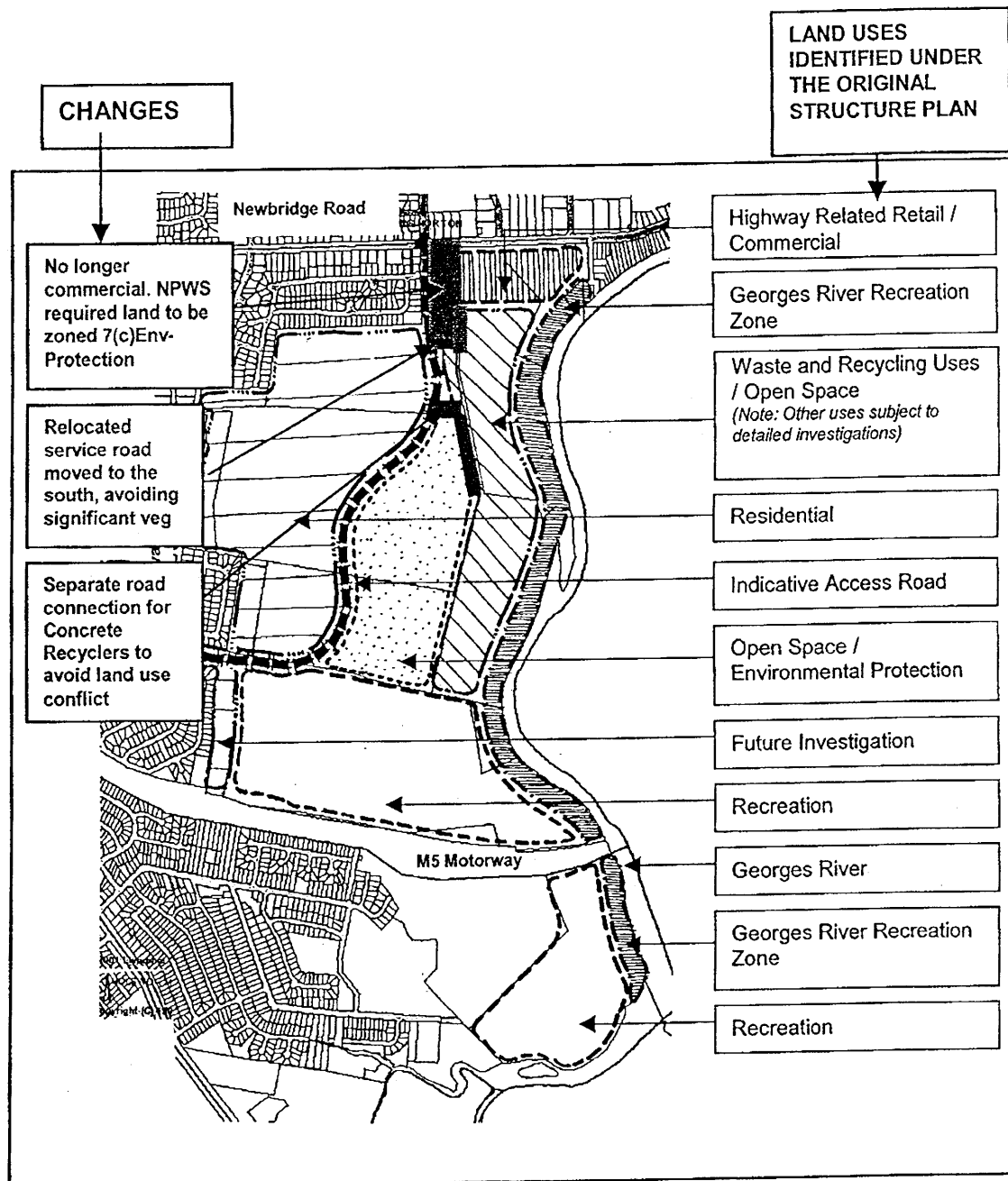
The following information should be provided by the applicant so as to enable a full assessment of the proposal to be carried out:

- * Clarification of the scale of the development, relative to any staging of the development and an assessment of whether initial stages trigger the "major projects" criteria.
- * Full details of all the activities and processes to be carried out on the property, including the method of sorting mixed loads.
- * Clarification as to whether domestic scale loads of materials are to be accepted and whether similar sized loads of processed material will be sold from the site.
- * Details of stockpiles of all types of materials to be recycled in addition to brick and concrete.
- * Full details of truck types and truck capacities in addition to truck numbers.
- * Owners consent to be obtained for any permanent or interim access proposed over neighbouring properties.
- * Details of any temporary access arrangements and their compatibility or otherwise with the master planning of the area.
- * Arrangements satisfactory to Council are to be made for the level of contribution for the provision or upgrading (or both) of the arterial roads to service the land (see item 29 of Schedule 4 of LLEP 1997)
- * Details of the interaction of proposed accessway design with the proposed bridge / easement over the accessway by the adjoining property.
- * Design details of the accessway (long and cross sections). The width of the driveway to be a minimum 8 metres to allow for two trucks to pass. Surface to be hard paved so that no mud / debris is carried on to roadway.
- * The accessway should be designed to have the ability for trucks (including trucks with dog trailers and articulated vehicles) to enter and leave the site, staying within the kerb side lane, as well as allowing trucks to enter and leave the site simultaneously.
- * Details of any truck fleet parking or storage on site. Location and design of weigh bridges, wash bays and any truck or plant servicing facilities.
- * The height of all structures, equipment and stockpiles and their relationship to the Obstacle Limitation Surface Plan for Bankstown Airport
- * The visual impact all structures, equipment and stockpiles not just on existing and proposed neighbouring residential areas but from neighbouring open space land, public roads and the Georges River
- * Site security, lighting and fencing details.
- * Details of noise mitigation and hours of operation

- *
* Control measures for dust from stockpiles.
*
- *
* Control measures for wind blown litter and its containment on site.
*
- * The means of dealing with potentially hazardous materials in demolition materials in typically small quantities in individual mixed loads but potentially significant quantities in total (eg. lead paint finished timber, CCA treated timber, non bio-soluble fibre glass, paint, glues and solvents).
*
- * Evacuation procedures from the site in all flood events and the method of preventing the movement of stored material off site in extreme flood events.
*
- * Drainage design and run off control details.
*
- * Details of investigations into the presence of acid sulphate soils on the site, particularly those unfilled portions that may be disturbed.
*
- * Proposed bushfire and firefighting measures.
*
- * Methods of dealing with the impact the development may have on existing site contamination issues - mobilisation of contaminants, site settlement, leachate and methane gas generation.
*
- * Methods of maintaining the integrity of the current site capping from the impact of stockpile loads and manoeuvring vehicles and plant.
*
- * Location and design of office and amenity building/s
*
- * Signage / advertising details.
*
- * Adequacy of existing utility services and the safety of any new utility services in former land fill areas and the impact of their installation on the integrity of the existing land fill.

Should you require any further information please contact me on 9821 9284.

Peter Flynn
Senior Development Planner



2.5 Current zoning

Liverpool Local Environmental Plan 1997 (Liverpool LEP 1997) is the principal planning instrument controlling land use and development on the site.

The site is currently zoned 1(a) Rural-under the Liverpool LEP 1997 – see Figure 9. Under this zoning a range of uses are permissible with the objective of facilitating rural land uses.

The LEP also identifies land along the southern, south western and eastern boundaries of the site (area shown hatched area on Figure 9) as

Environmentally Significant Land under Clause 16. While classification of land as Environmentally Significant does not prohibit development (beyond that prohibited by the relevant zoning), Clause 16 requires that specific environmental matters be considered prior to determining DAs.

This submission seeks an amendment to Liverpool LEP 1997 by way of a site specific zoning change. The proposed zoning amendment is explained in detail in Section 4.0.

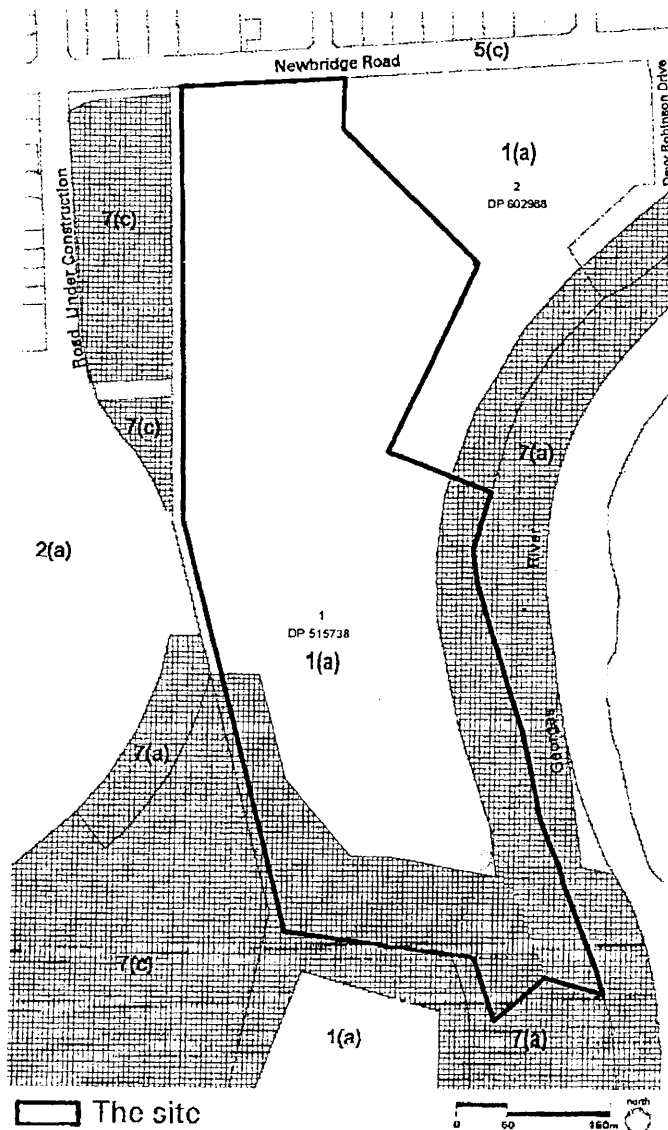


Figure 9 – Current zoning



Department of
Environment and Conservation (NSW)

Reference No: HOF65298

Mr Chris Ritchie
Manager – Manufacturing, Rural and Waste Industries
Major Development Assessment
Department of Planning
GPO Box 39
SYDNEY NSW 2001

23 FEB 2006

Dear Mr Ritchie

**RE: Proposed Waste Transfer Station, Lot 6, DP1065574, Newbridge Road, Moorebank
Request for DEC requirements for Environmental Assessment for the proposal**

I refer to the proposal titled "Preliminary Assessment Recycling Facility, Lot 6, DP1065574, Newbridge Road, Moorebank" (the "Proposal") dated 25 January 2006. I also refer to your request for the Department of Environment & Conservation (DEC) requirements for the environmental assessment in regard to the above proposal received by the EPA on 17 February 2006.

The DEC has considered the details of the proposal as provided by the Department of Planning and has identified the information it requires for the environmental assessment in Attachment 'A'. In summary, the DEC's key information requirements for the proposal are:

1. Waste Management
2. Stormwater and Wastewater Management
3. Air Quality Issue – Odour and Dust Management
4. Noise Management

Based upon the information provided to the EPA, the applicant will require an environment protection licence in regard to the following: -

- carry out scheduled development work
- carry out scheduled activities

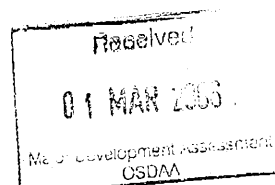
The applicant will need to make a separate application to the EPA to obtain this licence.

In addition, the DEC will await Department of Planning's advice/determination as to whether a Species Impact Statement is required and will provide DEC requirements accordingly.

If you have any queries regarding this matter please contact Ruth Owler on 9995 5586.

Yours sincerely

JULIAN THOMPSON
Principal Officer - Sydney Waste Section
Environment Protection and Regulation Division
Department of Environment & Conservation



ATTACHMENT A:
ENVIRONMENTAL ASSESSMENT REQUIREMENTS FOR
WASTE TRANSFER STATION, NEWBRIDGE ROAD, MOOREBANK

DEC requirements

The DEC requirements have been structured in the following way

- 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

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

B THE PROPOSAL

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.

Air

- Identify all sources of air emissions from the development.

Note: emissions can be classed as either:

- *point (eg 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 (eg 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 for significant air impacts.

Noise and vibration

- Identify all noise 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:
 - a) including 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 www.environment.nsw.gov.au/ieo, 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 eg 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 *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes* (NSW EPA, 1999).
- 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: *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes* (NSW EPA, 1999).

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
 - b) proper valuation and pricing of environmental resources
 - c) 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

1. General

- Provide an overview of the affected environment to place the proposal in its local and regional environmental context including:
 - a) meteorological data (eg 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.
 - h) location and extent of any areas of native vegetation and fauna habitat and Aboriginal cultural heritage value

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: www.environment.nsw.gov.au/ieo 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.

5. Native Flora, Fauna and Aboriginal Heritage

- Provide appropriately scaled maps which identify the location and extent of any areas of native vegetation and fauna habitat and Aboriginal cultural heritage value in relation to the area of proposed development.

D IDENTIFICATION AND PRIORITISATION OF ISSUES / SCOPING OF IMPACT ASSESSMENT

- 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) EAs 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 (eg 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

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 eg 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 a 'reasonable level of performance' to minimise environmental impacts. The proponent must indicate how the proposal meets reasonable levels of performance. For example, reference technology based criteria if available, or identify good practice for this type of activity or development. A 'reasonable 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. Air

Describe baseline conditions

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

Assess impacts

- Identify all pollutants of concern and estimate emissions by quantity (and size for particles), source and discharge point.
- Estimate the resulting ground level concentrations of all pollutants. Where necessary (eg potentially significant impacts and complex terrain effects), use an appropriate dispersion model to estimate ambient pollutant concentrations. Discuss choice of model and parameters with the DEC.
- Describe the effects and significance of pollutant concentration on the environment, human health, amenity and regional ambient air quality standards or goals.
- Describe the contribution that the development will make to regional and global pollution, particularly in sensitive locations.
- For potentially odorous emissions provide the emission rates in terms of odour units (determined by techniques compatible with EPA / DEC procedures). Use sampling and analysis techniques for individual or complex odours and for point or diffuse sources, as appropriate.

Note: With dust and odour, it may be possible to use data from existing similar activities to generate emission rates.

- Reference should be made to
 - *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2001);
 - *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (EPA, 2001);
 - *Assessment and Management of Odour from Stationary Sources in NSW* (EPA, 2001);
 - *Technical Notes: Draft Policy: Assessment and Management of Odour from Stationary Sources in NSW* (EPA, 2001)

Describe management and mitigation measures

- Outline specifications of pollution control equipment (including manufacturer's performance guarantees where available) and management protocols for both point and fugitive emissions. Where possible, this should include cleaner production processes.

3. Noise and vibration

Describe baseline conditions

- Determine the existing background (L_{A90}) and ambient (L_{Aeq}) noise levels in accordance with the *NSW Industrial Noise Policy*.
- Determine the existing road traffic noise levels in accordance with the *NSW Environmental Criteria for Road Traffic Noise*, 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, including the procedure used to choose the site, having regards to the definition of 'noise sensitive locations(s)' and 'most affected locations(s)' described in Section 3.1.2 of the *NSW Industrial Noise Policy*
- 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 under Step 1 in Section B1.3 of the *NSW Industrial Noise Policy*
- j) determination of L_{Aeq} noise levels from existing industry.

Assess impacts

- Determine the project specific noise levels for the site. For each identified potentially affected receiver, this should include:
 - a) determination of the intrusive criterion 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 amenity criterion for each receiver
 - d) determination of the appropriate sleep disturbance limit.
- Maximum noise levels during night-time period (10pm-7am) should be assessed to analyse possible affects on sleep. Where $L_{A1(1min)}$ noise levels from the site are less than 15 dB above the background L_{A90} noise level, sleep disturbance impacts are unlikely. Where this is not the case, further analysis is required. Additional guidance is provided in Appendix B of the *NSW Environmental Criteria for Road Traffic Noise*.
- Determine expected noise level and noise character (eg tonality, impulsiveness, vibration, etc) 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 most sensitive locations (these may vary for different activities at each phase of the development). Potential impacts should be determined for any identified significant adverse meteorological conditions. Predicted noise

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levels under calm conditions may also aid in quantifying the extent of impact where this is not the most adverse condition.

- 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. Where modelling approaches other than the use of the ENM or SoundPlan computer models are adopted, the approach should be appropriately justified and validated
 - e) an assessment of appropriate weather conditions for the noise predictions including reference to any weather data used to justify the assumed conditions
 - f) the predicted noise impacts from each noise source as well as the combined noise level for each prediction scenario under any identified significant adverse weather conditions as well as calm conditions where appropriate
 - 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 Section 4 of the *NSW Industrial Noise Policy*.
- Discuss the findings from the predictive modelling and, where relevant noise criteria have not been met, recommend additional 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.
- Where relevant noise/vibration criteria cannot be met after application of all feasible and cost effective mitigation measures the residual level of noise impact needs to be quantified by identifying:
 - a) locations where the noise level exceeds the criteria and extent of exceedence
 - b) numbers of people (or areas) affected
 - c) times when criteria will be exceeded
 - d) likely impact on activities (speech, sleep, relaxation, listening, etc)
 - e) change on ambient conditions
 - f) the result of any community consultation or negotiated agreement.
- 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.

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 breaks
 - 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.

4. 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: www.environment.nsw.gov.au/ieo. 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.deh.gov.au/water/quality/nwqms/volume1.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 ANZECC 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 (www.hrc.nsw.gov.au) or the NSW Salinity Strategy (DLWC, 2000) (www.dlwc.nsw.gov.au/care/salinity/#Strategy).
- 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 DEC 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 the technical guidelines section 'Bunding and Spill Management' of the *Authorised Officers Manual* (EPA, 1995) (<http://www.environment.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 DEC 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 DEC 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
 - *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004),
 - *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 (eg 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 including details of any previous waste disposal activities on-site and remediation activities undertaken.

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) disturbing any previously landfilled area
- c) contamination of soil by operation of the activity
- d) subsidence or instability
- e) soil erosion
- f) disturbing acid sulfate or potential acid sulfate soils.
- Reference should be made to
 - *Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites* (EPA, 1997);
 - *Contaminated Sites – Guidelines on Significant Risk of Harm and Duty to Report* (EPA, 1999).

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 *Assessing and Managing Acid Sulfate Soils*, Environment Protection Authority, 1995 (note that this is the only methodology accepted by the DEC).
 - d) proposals for managing previously landfilled waste according to the *Environmental Guidelines: Solid Waste Landfills* (1996).

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
 - *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes* (EPA, 1999).

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.

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 (eg 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 (eg travel demand management strategies).

8. Native Flora, Fauna and Threatened species

- Provide a detailed description and mapping of all vegetation communities in the study area;
- Provide identification of any vegetation communities or plant species which are of local, regional or state conservation significance (including threatened species, populations, ecological communities or critical habitat listed under the *Threatened Species Conservation Act 1995* (TSC Act)). The criteria for establishing significance should be documented;
- Provide a description of known or expected fauna assemblages within the study area;
- Provide an identification of fauna habitat likely to be of local, regional or state significance (including habitat of threatened species, populations, ecological communities or critical habitat listed under the TSC Act);
- Provide an identification of habitat corridors and linkages between areas of remnant native vegetation which may assist faunal movement through the area and an assessment of the conservation significance of these;
- Provide a prediction of the likely impact of the proposal on the above attributes (quantification of the extent of impact where practical).

F. LIST OF APPROVALS AND LICENCES

- 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

- 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 DEC licences or approvals (eg 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

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