

# ***Appendix 2***

## ***Director-General's Requirements and Environmental Issues***

---

(No. of pages excluding this page = 64)



This page has intentionally been left blank



## Director General's Requirements

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

<b>Project</b>	The proposed Cudgen Lakes Sand Extraction Project, which includes extracting up to 650,000m <sup>3</sup> of sand a year for up to 20 years using a suction dredge, and transporting the sand off-site by pipeline and road.
<b>Site</b>	<b>Extraction Site:</b> Lot 2 DP 216705, Lot 21 DP 1082482 and part of Altona Drive (current alignment) <b>Pipeline Corridors:</b> <i>Corridor A</i> - Lots 1 and 3 DP 828298, Lots 26C and 26D DP 10715, Lots 11 and 12 DP 871753, public roads (Crescent Street, Tweed Coast Road, Elrond Drive and Turnock Street) and the road reserve between Lot 26D DP 10715 and Lot 11 DP 871753. <i>Corridor B</i> - Lot 21 DP 1082482, Lot 1 DP 1075645, public road Tweed Coast Road and unnamed road
<b>Proponent</b>	Gales Kingscliff Pty Ltd
<b>Date of Issue</b>	6 January 2006
<b>Date of Expiration</b>	6 January 2010
<b>General Requirements</b>	The Environmental Assessment must: <ul style="list-style-type: none"> <li>• be scientifically rigorous, and prepared in accordance with best practice;</li> <li>• be certified by the author;</li> <li>• include an executive summary;</li> <li>• describe all stages of the project in detail (including rehabilitation of the site);</li> <li>• describe the consultation that was carried out during the preparation of the Environmental Assessment, and the issues that were raised during this consultation;</li> <li>• include a general environmental risk analysis of the project;</li> <li>• assess the key assessment requirements specified below;</li> <li>• include a draft Statement of Commitments; and</li> <li>• consider the impacts of the project (as a whole), and justify why it should be approved.</li> </ul>
<b>Key Assessment Requirements</b>	The Environmental Assessment must assess the following potential impacts of the project (including any potential cumulative impacts that may arise from the combined operation of the project with the existing or approved operations at the Bolster Quarry), and describe what measures would be implemented to avoid, minimise, mitigate, offset, manage and/or monitor these impacts: <ul style="list-style-type: none"> <li>• <b>Noise</b> – refer to the <i>NSW Industrial Noise Policy and Environmental Criteria for Road Traffic Noise</i> (Department of Environment and Conservation);</li> <li>• <b>Air</b> – refer to <i>Approved Methods for the Modelling and Assessment of Air Pollutants in NSW</i> (Department of Environment and Conservation);</li> <li>• <b>Soil &amp; Water</b> – include a detailed water balance and flooding impact assessment, and refer to the <i>Guidelines for Fresh and Marine Water Quality</i> (ANZECC), <i>Managing Urban Stormwater: Soils &amp; Construction</i> (Landcom); the various <i>State Groundwater Policy</i> documents and <i>Floodplain Development Manual</i> (Department of Natural Resources); and the <i>Acid Sulfate Soil Manual</i> (NSW Acid Sulfate Soil Advisory Committee);</li> <li>• <b>Transport</b> – refer to the <i>Guide to Traffic Generating Development and Road Design Guide</i> (Roads &amp; Traffic Authority), or relevant Austroad standards;</li> <li>• <b>Flora &amp; Fauna</b> – refer to the draft <i>Guidelines for Threatened Species Assessment</i> (Department of Environment and Conservation);</li> <li>• <b>Heritage</b> – refer to the draft <i>Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation</i> (Department of Environment and Conservation);</li> <li>• <b>Visual</b>; and</li> <li>• <b>Strategic Land Use Planning.</b></li> </ul>
<b>Consultation</b>	During the preparation of the EA, you must consult with the relevant local, State, and Commonwealth government authorities, service providers, community groups, and affected landowners.
<b>Deemed Refusal Period</b>	60 days





Department of  
Infrastructure, Planning and Natural Resources

Mining & Extractive Industries  
Major Development Assessment  
Phone: (02) 9762 8162  
Fax: (02) 9762 8707  
Email: david.kitto@dpnr.nsw.gov.au  
Level 4 Henry Deane Building  
20 Lee Street  
GPO Box 3927  
SYDNEY NSW 2001

Mr Robert Corkery  
RW Corkery & Co. Limited  
PO Box 80  
ORANGE NSW 2800

Dear Mr Corkery

**DIRECTOR-GENERAL'S REQUIREMENTS  
PROPOSED CUDGEN LAKES SAND EXTRACTION**

I refer to your request for the Director-General's requirements for the preparation of an Environmental Impact Statement (EIS) for the Gales Projects Cudgen Lakes sand extraction proposal in the Tweed local government area.

**Strategic Issues**

As discussed at the PFM, the Department has concerns about the proposed final landform, and its relationship with surrounding land uses (such as Bolster Quarry), and approved and future proposals (such as Council's sewerage treatment plant, the proposed link road connecting Kingscliff to the Pacific Highway, and the proposed Bay Lobster aquaculture facility).

The Department believes the company should consult with Council during the preparation of the EIS with a view to strengthening the strategic framework for the land to the west of the Tweed Coast Road, and possibly extending the current structure planning exercise for the company's landholdings to the east of the road.

In the EIS, the company will need to justify the proposed final landform within the broader strategic framework for the area, and describe in detail how this landform will be managed in the long term to ensure that it does not become a public liability.

**Definition of the Proposal**

The proposal includes transporting sand to the company's land to the east of the Tweed Coast Road. As discussed at the PFM, the company will need to clearly define the proposal in the EIS, including any pipelines. It will also need to explain the relationship between this proposal and any proposals to redevelop the company's land to the east of the Tweed Coast Road, and discuss how the relevant approvals for both sets of proposals will be coordinated.

**Statutory Issues**

Attachment No. 1 outlines the statutory matters that must be included in any EIS under clauses 71 and 72 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation).

Under clause 73 (1) of the Regulation, the Director-General requires the EIS to address the following specific issues:

CHECKED



- **Description of the Proposal:** The EIS must include a full description of the proposal, clearly identifying the resource, the proposed site, the proposed works (including any rehabilitation works), and the proposed intensity of operations.
- **Permissibility:** The EIS must clearly demonstrate the permissibility of the proposal. I note that under the 1(b) Agricultural Protection zoning of the land under the *Tweed Local Environmental Plan 2000*, recreation areas are both permissible with consent and prohibited.
- **Justification for the Proposal:** The EIS must include a detailed justification of the proposal.
- **Statutory Planning Documents:** The EIS must assess the proposal against relevant environmental planning instruments, including the provisions of *State Environmental Planning Policy No.11 – Traffic Generating Developments*; *State Environmental Planning Policy No.33 – Hazardous and Offensive Developments*; *State Environmental Planning Policy No.44 – Koala Habitat Protection*; *State Environmental Planning Policy No.55 – Remediation of Land*; *State Environmental Planning Policy No.71 – Coastal Protection*; *North Coast Regional Environmental Plan 1988*; *Tweed Local Environmental Plan 2000*; and any relevant development control plans and section 94 plans.
- **Strategic Planning Documents:** The EIS must assess the proposal against the relevant sections of the *NSW Coastal Policy 1997*, *Northern Rivers Regional Strategy*, *Tweed Council's Urban Land Release Strategy* and any other relevant documents.
- **Key Issues:** The EIS must assess the following potential impacts of the proposal during construction and operation, and describe what measures would be implemented to manage, mitigate or off-set these potential impacts:
  - ground and surface water, including flooding;
  - air quality;
  - noise;
  - acid sulfate soil;
  - traffic and transport;
  - flora and fauna, particularly critical habitats; threatened species, populations or ecological communities, or their habitats;
  - heritage, both Aboriginal and non-Aboriginal;
  - visual;
  - waste management;
  - utilities and services; and
  - social and economic.
- **Cumulative Impacts:** The EIS must assess the following potential cumulative impacts of the groundwater, air quality, noise, flooding, traffic, and fauna and flora impacts of the proposal, taking into account the existing (and/or approved) extractive industries and existing (and proposed) development on surrounding land.
- **Rehabilitation and Final Land Use:** The EIS must:
  - justify the final land use in relation to the strategic land use objectives for the Cudgen/Chinderah/Kingscliff area.
  - describe in detail how the site would be progressively rehabilitated; and
  - describe what measures would be put in place for the ongoing management of the site following cessation of sand extraction activities, including consideration of the most appropriate mechanisms for securing sufficient resources for the implementation of these measures in the long term.
- **Environmental Monitoring and Management:** The EIS must describe in detail how the environmental performance of the proposal would be monitored and managed over time.

#### Crown Road

Figure D of the Background Paper shows the existence of a Crown road shown along the western boundary of Lot 2 DP 216705. The Department of Lands has advised its records indicate that there is no Crown road along the boundary between Lot 2 DP 777905 and Lot 2 DP 216705.



#### Guidelines

During the preparation of the EIS you must consult the Department's EIS Guideline on *Extractive Industries - Quarries*. The EIS Guideline is available for purchase from the Department's Information Centre, 20 Lee Street, Sydney or by calling (02) 9762 8044.

#### Integrated Development

Under section 91 of the *Environmental Planning and Assessment Act 1979* development is "integrated development" if it requires certain approvals in addition to development consent before it may be carried out.

In your Form A, you indicated that your proposal will require additional approvals under the *Roads Act 1993*, *Water Act 1912* and *Protection of the Environment Operations Act 1997*. The detailed requirements for these approvals are included in Attachment No. 2.

If further integrated approvals are identified before the Development Application (DA) is lodged, you must conduct your own consultation with the relevant agencies, and address their requirements in the EIS.

#### Consultation

During the preparation of the EIS you should consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS.

In particular, you should consult the surrounding landowners and occupiers that are likely to be impacted by the proposal.

Several agencies (see Attachment No. 3) have provided the Department with their requirements for the proposal, and you must consider these requirements in your EIS. Details of the consultations carried out and issues raised must also be included in the EIS.

#### The Commonwealth Environment Protection and Biodiversity Conservation Act

If your proposal contains any actions that could have a significant impact on matters of National Environmental Significance, then it will require an additional approval under the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). These approvals are in addition to any approvals required under NSW legislation. If you have any questions about the application of the EPBC Act to your proposal, you should contact the Department of Environment and Heritage in Canberra (6274 1111 or [www.deh.gov.au](http://www.deh.gov.au)).

#### State Significant Development Requirements

For all State significant development proposals, the Director-General requires the Applicant to:

- nominate a contact person (with telephone number) to answer public enquiries about the proposal;
- provide the Department with an electronic copy of the Executive Summary of the EIS when you lodge the DA for exhibition on the Department's website; and
- advise the Department of the relevant newspapers circulating in the area affected by the proposal.

#### Administration

You should notify the Department at least 3 weeks before you lodge the DA for the proposal, so that it can make the necessary arrangements to exhibit the DA and EIS.

When you lodge a DA for the proposal, you must include:



- at least 40 hard copies and 20 CD copies of the EIS ;
- an electronic copy of the Executive Summary of the EIS for the Department's website;
- a cheque for the DA fee and advertising (see clauses 246 and 252 of the Regulation), made payable to the Department;
- a cheque for \$715, made payable to the Department, for designated development;
- a cheque for \$250, made payable to each of the integrated approval bodies; and
- a cheque for \$110, made payable to the Department, for integrated development administration.

You should note that if the DA to which these requirements relate is not made within two years of the date of this letter, you must consult further with the Director-General prior to lodging the application.

**Enquiries**

If you have any enquiries about the above, please contact Michael Young on (02) 9762 8167.  
Yours sincerely

*DK* 6/12/04

David Kitto  
Manager, Mining & Extractive Industries  
Major Development Assessment  
As Delegate of the Director-General



**ATTACHMENT NO. 1**





ATTACHMENT NO. 1

STATUTORY REQUIREMENTS FOR THE PREPARATION  
OF AN ENVIRONMENTAL IMPACT STATEMENT UNDER PART 4 OF  
THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

In accordance with the *Environmental Planning and Assessment Act 1979* (the Act), an environmental impact statement (EIS) must meet the following requirements.

**Content of EIS**

Pursuant to Schedule 2 and clause 72 of the *Environmental Planning and Assessment Regulation 2000* (the Regulation), an EIS must include:

1. A summary of the environmental impact statement.
2. A statement of the objectives of the development or activity.
3. An analysis of any feasible alternatives to the carrying out of the development or activity, having regard to its objectives, including the consequences of not carrying out the development or activity.
4. An analysis of the development or activity, including:
  - (a) a full description of the development or activity; and
  - (b) a general description of the environment likely to be affected by the development or activity, together with a detailed description of those aspects of the environment that are likely to be significantly affected; and
  - (c) the likely impact on the environment of the development or activity; and
  - (d) a full description of the measures proposed to mitigate any adverse effects of the development or activity on the environment; and
  - (e) a list of any approvals that must be obtained under any Act or law before the development or activity may be lawfully carried out.
5. A compilation, (in a single section of the environmental impact statement) of the measures referred to in item 4(d).
6. The reasons justifying the carrying out of the development or activity in the manner proposed, having regard to biophysical, economic and social considerations, including the following principles of ecologically sustainable development:
  - (a) The precautionary principle - namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.In the application of the precautionary principle, public and private decisions should be guided by:
  - (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

- (ii) an assessment of the risk-weighted consequences of various options,
- (b) Inter-generational equity - namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations,
- (c) Conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,
- (d) Improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as:
  - (i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
  - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
  - (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

An environmental impact statement referred to in Section 78A(8) of the Act shall be prepared in written form. The prescribed form to accompany the environmental impact statement must comply with the requirements of clause 71 of the Regulation and be signed by the person who has prepared it.

Procedures for public exhibition of the EIS are set down in clauses 77 to 81 of the Regulation.

Attention is also drawn to clause 283 of the Regulation regarding false or misleading statements in EISs.

**Note**

If the development application to which the EIS relates is not made within 2 years from the date of issue of the Director-General's requirements, under clause 73(6) of the Regulation the proponent is required to re-consult with the Director-General.

- ♦ -



**ATTACHMENT NO. 2**





Department of  
Environment and Conservation (NSW)

INFORMATION  
25 OCT 2004

Your reference :  
Our reference : GR2074 \* GRF 9287  
Contact : Shari Murphy 66402514

General Manager  
Department of Infrastructure, Planning and Natural Resources  
Major Developments Assessment  
GPO Box 3297  
SYDNEY NSW 2001

15 OCT 2004

Dear General Manager

**PROPOSED CUDGEN LAKES SAND EXTRACTION PROPOSAL – CUDGEN - TWEED  
LOCAL GOVERNMENT AREA.**

Thank you for the opportunity to attend the Planning Focus Meeting for the abovementioned proposal at Kingscliff on 17 September 2004. At that meeting the Department of Environment and Conservation (DEC) was requested to provide advice on matters that should be considered in a Environmental Impact Statement (EIS) for the abovementioned project.

As you may be aware, the proposal will be a scheduled activity under the *Protection of the Environment Operations Act 1997* and therefore requires licensing under that Act.

Our general information requirements are covered in the Department of Infrastructure Planning & Natural Resources (DIPNR) document entitled *EIS Guidelines Extractive Industries – Dredging and other extraction in riparian and coastal areas*.

With respect to the *Protection of the Environment Operations Act 1997*, we recommend that the following key issues be addressed in the EIS :

1. Cumulative impact on ground water for this proposal, the local existing dredging activities and the adjoining proposed sand extraction dredge ponds in the local area.
2. The soils to be dredged contain Potential Acid Sulfate Soil (PASS) and all material leaving the site should be assessed and a proposed monitoring program developed.
3. Detailed explanation of how the PASS fines that are proposed to be returned to the dredge pond at depth will not be disturbed during subsequent dredging activities.
4. Noise from sand transfer pumps (especially at night), plant and equipment onsite and heavy vehicles (particularly when empty) accessing the site need to be assessed in accordance with the *NSW Industrial Noise Policy*.
5. Investigation of the impacts in the event of "turnover" of water in the pond (cold water inversion).

The construction of the sand delivery pipeline may require approvals from the Tweed Shire Council and/or DIPNR. The pipeline route should be assessed as part of the proposal.



The following comments relate to the DEC's statutory responsibilities under the *National Parks and Wildlife Act 1974* (NP&W Act), the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environmental Planning and Assessment Act 1997* (EP&A Act).

The relevant issues contained in the general list of environmental issues (attachment 'A') should be addressed in the EIS. Some issues detailed in the attachment will be of greater relevance to the proposal than others, depending on the natural and cultural heritage values of the area involved.

Any EIS prepared must include a rehabilitation plan detailing the location, spatial area, depth and ecology of the wetlands to be created including a comprehensive list of species to be used in the rehabilitation works. Plant species used in the rehabilitation works should be native species indigenous to the local area.

The wetlands included within the rehabilitation are recommended to be adjacent to the Cudgen Plateau in the south and should be designed to consolidate the wetlands into one defined location to maximise the ecological functioning of the created wetland. It is recommended that specific measures be included within the rehabilitation plan to deter breeding of the introduced Cane Toad (Cane Toads exploit open mown areas adjacent to shallow waterbodies).

It is noted that documentation within the EIS is proposed to be consistent with Tweed Shire Council's structure plan for the Gales Holdings lands. This action is supported. The Gales Holdings lands at West Kingscliff have a number of areas (identified previously to Council and to Gales Holdings and their consultants) that support high conservation values, including habitat for threatened species listed under State and Commonwealth legislation. Of particular significance is the population of Mitchell's Rainforest Snail in the vicinity of Turnock Street. Filling on the Gales Holding lands should avoid direct and indirect impact to these high conservation value areas.

#### Flora and Fauna:

- A preliminary review of the DEC Wildlife Atlas indicates that there are no threatened flora or fauna species recorded on the subject property. However, this may be due to a lack of survey. As such, a flora and fauna assessment, including an eight part test under section 5A of the EP&A Act, will need to be carried out.
- The proposed location of the pipeline will need to address flora and fauna issues in areas comprising and/or adjacent to native vegetation, including any proposed works on public land such as reserves.
- If any part of the future development of the site involves exposed fish breeding ponds, the EIS will need to address the presence of native bird predators and measures to deal with predator controls. By way of comment, it is unlikely that a permit would be granted to shoot native predators.
- Specific details of any pollutant from discharge of wastewaters, drainage and/or flooding, entering and contaminating the local stormwater system, should be addressed to determine the likely impacts on native aquatic flora and fauna. The EIS should also address the matter of cane drains and the disposal and impacts of potential saline waste waters.

#### Aboriginal Cultural Heritage

- A preliminary review of the relevant databases indicates that there are no Aboriginal Cultural Heritage sites recorded on the subject property. However, there are several sites recorded in the locality.



- An archaeological survey should be carried out and an appropriately experienced person, in consultation with the local Aboriginal community should undertake the assessment of the cultural heritage values of the subject property and the proposed route of the pipeline.

**Commonwealth Legislation**

Your attention is also drawn to the Commonwealth legislation, *Environment Protection and Biodiversity Conservation Act 1999*. The proposal may need to be referred to the Commonwealth Department of Environment and Heritage for approval if the development is likely to constitute a controlled action.

If you have any inquiries please contact Shari Murphy on 66402514 with respect to air, noise and water quality issues or John Allen for other issues on 66598222.

Yours sincerely



**JON KEATS**  
Head Industry and Waste Unit North Coast  
Environment Protection & Regulation Division  
Department of Environment and Conservation

Enclosed: Attachment A

N:\steve\letters2004\cudgen lakes. doc



Attachment A

**DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
ENVIRONMENT PROTECTION AND REGULATION DIVISION - NORTHERN  
ENVIRONMENTAL ISSUES TO BE ADDRESSED**

**INTRODUCTION**

The following list is provided to assist in the preparation of environmental impact assessment reports. The list details the type of information that is recommended by the Department of Environment and Conservation's (DEC) Environment Protection and Regulation Division (EPRD) - Northern for inclusion in such assessments.

Please note that the provision of information in accordance with this list does not negate the applicant's obligations under any legislative or planning instruments and deals with those components of DEC's responsibilities relating to the *National Parks and Wildlife Act 1974* and the *Threatened Species Conservation Act 1995* only. EPRD suggests that the applicant contact the relevant local council and the Department of Infrastructure Planning and Natural Resources to ascertain these obligations.

**GENERAL**

1. Map(s) showing the locality of the proposed development in a regional and local context. Local context maps should be based on 1:25 000 topographic plans. Photographs of the site's key attributes may provide useful documentation.
2. A description of the existing environment on the subject land and surrounding land, the proposed development and ancillary works, and the manner in which the environment will be modified by the proposal (particularly with regard to the clearing of native vegetation and impacts on fauna habitat).
3. The area subject to development should be clearly identified on an appropriately scaled plan. This includes all ancillary works such as buildings and other structures, parking areas, loading/processing/treatment areas, access roads, and material stockpiling areas.
4. The applicability or otherwise of Local Environment Plans (LEP), Regional Environment Plans (REP) and State Environmental Planning Policies (SEPP) and Regional Vegetation Management Plans (RVMPs) to the site should be determined and detailed. In particular, your attention is drawn to SEPP No. 14 - Coastal Wetlands, SEPP No. 26 - Littoral Rainforest, SEPP No. 44 - Koala Habitat Protection and the *Native Vegetation Conservation Act 1997*.
5. Your attention is also drawn to the new Commonwealth legislation, the *Environment Protection and Biodiversity Conservation Act 2000*. The Act specifically focuses on matters of national environmental significance (NES matters), which include listed threatened species and ecological communities, World Heritage properties, Ramsar wetlands of international importance, internationally protected migratory species and Commonwealth Marine Areas. If any NES matters under this legislation may be affected by the proposal, approval for the development may also be required from Environment Australia.



**FLORA**

1. A comprehensive description of the vegetation on the site. This will include an assessment of the condition of the plant communities present, including the designation of conservation significance at a local, regional and State level, and an assessment of the likely occurrence of any threatened species, populations or ecological communities listed under Schedules 1 or 2 of the *Threatened Species Conservation Act 1995* and any Rare or Threatened Australian Plant (ROTAP) species.
2. A plan showing the distribution of any threatened or ROTAP species and the vegetation communities on the site, and the extent of vegetation proposed to be cleared. This plan should be at the same scale as the plan of the area subject to development in order to assist in the assessment the impact of the proposal on the existing vegetation.
3. Where the assessment concludes that threatened species, populations or ecological communities, or their habitats, exist on or in proximity to the subject land, the effect of the proposed development should be determined in accordance with the eight point test described in Section 5A of the *Environmental Planning and Assessment Act 1979*. An assessment of the impact of the development on the plant communities and/or ROTAP species should also be provided.
4. A description of the measures proposed to mitigate and/or ameliorate the impact of the development on the plant communities, threatened and ROTAP species.

**FAUNA**

1. A fauna survey to identify the distribution and abundance of fauna species known or likely to utilise the site, including a description of available fauna habitats and an assessment of the conservation status of each of the faunal components at a local, regional and State level.
2. A plan showing the results of the above survey. This plan should be at the same scale as the plan of the area subject to development to assist in the assessment of the impact of the proposal on fauna.
3. An assessment of the impact of the development on the identified fauna.
4. An assessment of the existence or likely occurrence of threatened species, populations or ecological communities, or their habitats on the subject land. Where the assessment concludes that threatened species, populations or ecological communities, or their habitats exist on or in proximity to the subject land, the effect of the proposed development should be determined in accordance with the eight point test described in Section 5A of the *Environmental Planning and Assessment Act 1979*.
5. A description of the measures proposed to mitigate and/or ameliorate the impact of the development on fauna.



### **CULTURAL**

1. The presence or absence of Aboriginal objects should be identified and the significance of the area to the local Aboriginal community must be determined. Accordingly, a search of the DEC Aboriginal Heritage Information Management System (AHIMS) should be made and the local Aboriginal community should also be consulted with regard to any Aboriginal heritage issues associated with the proposed development.
2. Aboriginal objects and places of significance to the Aboriginal community are to be detailed on a plan. This plan should be at the same scale as the plan of the area subject to development to assist in the assessment of the impact of the proposal on the identified cultural components.
3. An assessment of the impact of the development on the identified cultural sites.
4. A description of the measures proposed to mitigate and/or ameliorate the impact of the development on the identified cultural sites.
5. A contingency plan that details the measures to be taken in the event that archaeological sites are discovered during the course of operations must be prepared.

### **DEPARTMENT OF ENVIRONMENT AND CONSERVATION ESTATE**

1. Where the proposal may result in impacts on DEC estate or is on land adjacent to DEC estate, an assessment of the impact of the development on DEC estate.
2. A description of the measures proposed to mitigate and/or ameliorate the impact of the development on the DEC estate.

### **SURVEYS AND ASSESSMENTS**

1. Fauna, flora and cultural surveys and assessments should be undertaken by suitably qualified persons and the qualifications and experience of the persons undertaking the work detailed.
2. Dates, site locations, design, methodology, analysis techniques, and weather conditions at the time of the assessments and surveys must be described. The limitations of surveys should be identified and the results interpreted accordingly.
3. Conclusions drawn in surveys and assessments should be substantiated by evidence resulting from those surveys and assessments. The document being supported by the surveys and assessments should reflect these conclusions and clearly state where recommendations of the survey and assessments have been incorporated in the proposal.

### **DEC DATABASES**

1. The DEC can provide records of flora and fauna held in the Wildlife Atlas and / or Rare or Threatened Australian Plants (ROTAP) databases. In addition searches of the DEC AHIMS database can be made. These services generally attract a fee. It should be noted that these databases are not comprehensive, should only be used as a guide and do not negate the need for specific site investigations. Enquires should be made to DEC Hurstville office, telephone (02) 9585 6444.







Department of  
**Infrastructure, Planning and Natural Resources**

**NORTH COAST REGION - DIRECTOR-GENERALS REQUIREMENTS  
CUDGEN LAKES PROJECT**

**Comments:** Following the field inspection of the proposed extraction site of the proposed Cudgen lakes proposed sands extraction the following issues need to be addressed in the Environmental Impact Statement:

**Flooding**

The slopes on the floodplain are very low and small changes on the floodplain may cause significant changes in the direction of flood flows. The proponents must do a detailed study of the whole catchment taking into account the impact of any levees/banks whether temporary or permanent and any resultant environmental impact that may occur.

**Groundwater**

The information required by the Department with respect to potential groundwater impacts from this development will be used to assess if the site is deemed appropriate for sand extraction.

The Department's Policy is aimed at preventing the degradation of the State's aquifers where by each aquifer system is evaluated for its beneficial use. Developers are required to establish that their activity will not contaminate the groundwater quality or impact on groundwater dependent ecosystems.

The Department will not allow dewatering of the proposed sand excavation to allow dry mining, because of acid sulfate soils being present at the site. The impacts on the existing groundwater tables and close proximity to tidal areas should be assessed with respect to the mining proposal. Limited low volume groundwater extraction for dust suppression or other industrial uses may be permitted, provided adequate environmental assessment is undertaken and this justifies granting of an extraction licence.

Monitoring bores would need to be installed to measure any potential impacts on the aquifer. All bores must be licenced with the Department and this must be obtained prior to any drilling on site.

In addition to the above recommendations to adequately assess the feasibility of the project, the following aquifer investigations will be expected as a minimum requirement to be undertaken by a qualified groundwater consultant:

1. A detailed map showing the location of all drill holes and monitoring bores.
2. Installation of monitoring bores at key locations to measure both shallow and deep groundwater quality across the site.
3. Monitoring bores should be installed based on geology/depth of proposed excavation, with relatively short screens intervals, installed at multiple depths.
4. An assessment of the discrete groundwater hydrogeochemistry is required by a qualified consultant to determine the impact of mining and mixing of groundwater through the aquifers water column (from the near surface to the base of the excavation proposed).
5. Groundwater quality parameters for pH/EC/DO/EH from each of the bores should be measured;
6. Analysis of shallow and deep groundwater for the following: cations/anions, (Ca, Mg, Na, K / HCO<sub>3</sub>, SO<sub>4</sub>, Cl), iron (Fe), arsenic (As) Manganese (Mn) and aluminium (Al).
7. Groundwater levels measured to define flow contours (relative to AHD) to show the groundwater flow directions;



8. Test results detailing the percentage of pyritic material and its size present in the acid sulfate (pyritic) fines (Microscopic examination to describe the morphology of iron sulfide fragments and their range of sizes: visual estimation of the abundance of iron sulfide).
9. A visual estimation by microscopic examination of the percentage of shell material and other calcareous components within unconsolidated sediments.
10. Extraction of groundwater requires the determination of aquifer hydraulic parameters and surrounding impacts based on the proposed extraction volume.
11. A management plan for the disposal/storage of acid sulfate fines. Consideration of the fact that the fines may undergo oxidation when exposed to air for long periods and produce acidic by products.
12. An interpreted Hydrogeological report detailing the impacts that the development may have with respect to water quality, quantity and groundwater dependent ecosystems. The development should be considered with respect to the NSW State Groundwater Quality Protection Policy (1998) and The NSW State Groundwater Dependent Ecosystem Policy (2002)
13. A proposed groundwater management plan for the site and progressive rehabilitation plan must be detailed in the EIS report.

#### **Water Licences**

Licences under Part V of the Water Act 1912 will be required for the following:

1. A monitoring bore licence
2. An industrial groundwater licence (aquifer interference licence) to carry out sand extraction.
3. A licence to pump water from the pit or bores to carry out washing of the extracted material and dust suppression (Low volume - no lowering of the water table will be permitted).

For further information on groundwater matters contact Richard Green on (02) 6640 2120.

#### **Acid Sulfate Soils (ASS)**

As the proposed extraction site will impact an area of potential ASS, a detailed survey of the area must be carried out which complies with the ASSMAC guidelines. The number of test hole drill holes and sampling intervals must comply with the NSW ASSMAC Guidelines. In the event that ASS material is found on site a detailed ASS management plan must be included in the EIS. The EIS must include any technical reports, which must include details of sampling, a map detailing locations of samples taken, profiles details, results of sampling and treatment of any ASS fines as required by the ASSMAC Guideline (nb. it should be noted that sampling must go to at least 1 metre below the expected maximum excavation depth).

For further information on ASS matters contact Glenn Atkinson on (02) 6562 0717.

#### **Regionally Significant Agricultural Lands**

The proposed development lies within an area mapped as Regionally Significant Agricultural Land. The impact of the development on this land and cumulative impacts need to be thoroughly assessed taking into account all other existing and proposed sand extractive developments within the area.



Commercial Uses

A number of large sand extraction operations are currently operating or awaiting approval in the Tweed Catchment. The size of the proposed Sands Extraction Operation and the proposed market demand would need to be researched and justified, especially in view of the current Government policy against any large scale filling of the floodplain.

Future Land Use and Rehabilitation

The future land use of the area and its subsequent management should be examined in detail.

Details on the final batter slopes after excavation and final progressive rehabilitation plans must be outlined within a given timeframe. The degree and nature of any rehabilitation may be directly affected by the type of future land use.

Wave Action

The large size of the excavation together with the proposal to link the excavation with the existing Bolsters sand extraction site will create the potential for significant wave action during some high winds. The potential for damage from wave action should be examined.

Should the development be approved a security deposit (bond) will be required and attached to the Water Licence.

**Enquiries**

Please contact David Thompson in the Department's Grafton Regional Office on (02) 6640 2125.





Please Quote Council Ref: PF1070/780 Pt 3

[dltr]

Your Ref No:

For Enquiries Please Contact: Lindsay McGavin

Telephone Direct (02) 6670 2456

Document2

30 September 2004

Department of Infrastructure, Planning and Natural Resources  
Henry Deane Building  
20 Lee Street  
Sydney 2000

Attention: David Kitto

Dear Sir

**RE: Proposed sand extraction at Lot 2 DP 611021 and Lot 2 DP 216705 and hydraulic filling of various sites.**

With reference to the above proposal and to the Planning Focus Meeting held on 17 September 2004 the following matters are required to be considered in the environmental impact statement-

- The provisions the Tweed LEP 2000 and in particular of clause 8(2) for sand extraction and end use.
- The provisions of the North Coast REP 1988 and in particular clauses 12 and 18.
- DIPNR's and DPI's Farmland Protection Project.
- Groundwater
- Water quality
- Acid sulfate soil on site and the pumped material
- Flooding
- Noise
- Dust
- Assessment of contamination of materials to be extracted.
- Source of make up water
- Accumulated impact of the proposal and adjacent developments ie. existing sand extraction, proposed sewerage treatment plant and aquaculture proposal.
- DCP-45 Social and Economic Impact Assessment
- Effluent disposal report for any amenities for staff, workers etc.
- Existing approval surrender



CIVIC AND CULTURAL CENTRE, MURWILLUMBAH  
P.O. BOX 816, MURWILLUMBAH, N.S.W. 2484  
TELEPHONE: (02) 6670 2400 FAX: (02) 6670 2429

PLEASE ADDRESS ALL COMMUNICATIONS TO THE GENERAL MANAGER  
ABN 90 178 732 496  
[www.tweed.nsw.gov.au](http://www.tweed.nsw.gov.au)



- Rehabilitation and end use including ownership, management, safety, health and public liability.
- Clear identification of proposal ie. inclusion of sites to be filled and full assessment of filling.
- Pipeline route, timeframe for filling, owners consent for pipeline route, impact assessment.
- Access road impacts including protection of the road during and after the life of the sand extraction.
- Traffic management report including preliminary design investigations including the following-
  - Crescent Street industrial grade standard, 13 metre seal and batters.
  - Left turn onto Coast Road acceleration lane to Austroads standards.
  - Channelised right turn lane from Coast Road into Crescent Street.
  - Allow for four lane upgrade of Tweed Coast Road.
  - Widening at intersection of Crescent Street and access road to allow through traffic to pass trucks turning right.
  - Integrated development information to support S.138 application ie. plans for works including pipeline route.
- Detailed traffic analysis on Pacific Highway interchange on ramps may need to be increased. Liaison with RTA required.
- Detailed analysis regarding traffic movements ie. trucks, staff etc.
- Ongoing liaison and consultation with Council 's Manager of Design Mr Ian Munro and Council's sewage treatment plant Project Manager Mr Ian Norris regarding road network and treatment plant issues.

Yours faithfully

  
**Lindsay McGavin**  
Co-ordinator Development Assessment

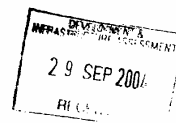


**ATTACHMENT NO. 3**





NSW DEPARTMENT OF  
PRIMARY INDUSTRIES



Now incorporating NSW Fisheries  
ABN 51 734 124 190-002

David Kitto  
Manager, Mining and Extractive Industries  
DIPNR  
20 Lee St  
SYDNEY NSW 2000

24 September 2004

Dear Mr Kitto

**Re: Proposal to Develop Cudgen Lakes**

The following information has been prepared to outline requirements for inclusion in an EIS to facilitate assessment of impacts on fish and fish habitat by the Department of Primary Industries Fisheries Division.

The Fisheries section within the Department of Primary Industries is responsible for managing fish (including aquatic invertebrates), and fish habitat throughout NSW. The Department's goals encompass protecting wetlands, mangroves and seagrasses, and promoting rehabilitation of degraded aquatic environments. This includes protecting rare and threatened species and maintaining aquatic biodiversity. DPI Fisheries also aims to provide quality recreational and sustainable and viable commercial fishing opportunities.

Cognisant of this charter, DPI Fisheries requires the environmental studies examine and demonstrate how impacts on aquatic biodiversity can be addressed to ensure compliance with habitat provisions in the *Fisheries Management Act 1994* and DPI Fisheries policies that underpin them.

The proposal may be an Integrated Development Assessment matter for DPI Fisheries should the works involve dredging and reclamation activities as defined in the *Fisheries Management Act 1994* (s. 198 – 203).

Depending on the route of any proposed pipelines and design and construction methods for watercourse crossings a permit under s. 218 – 220 of the *Fisheries Management Act 1994* for activities that block the free passage of fish may be required.



Finally, I have included as an attachment DPI Fisheries' minimum information requirements for environmental assessment to determine whether permits are required under the *Fisheries Management Act* 1994. Addressing these requirements in the environmental studies will facilitate effective assessment of the proposal and reduce delays.

If you have any further enquiries please contact me on (02) 6686 2018.

Yours sincerely



Patrick Dwyer  
Conservation Manager (Far North Coast and Border Rivers)





## **DPI FISHERIES' MINIMUM REQUIREMENTS FOR ENVIRONMENTAL STUDIES**

### **GENERAL REQUIREMENTS**

- Describe the purpose of the proposal;
- Describe the location and area of the proposal;
- Detail the location of all component parts of the proposal, including any auxiliary infrastructure;
- Provide a timetable for construction of the proposal with details of each phases of construction;
- Detail likely or possible future needs arising from the proposal;
- Provide a legible topographic map with scale, contours, north represented and the date the map/plan/air photo was prepared;
- Specify zoning, present land use and whether special conditions (eg SEPP 14 wetlands) apply to the land proposed for development or adjacent land;
- Describe the surrounding geomorphology;
- Identify all water bodies including wetlands and floodplains;
- Specify the direction of river flow and provide hydrological and stream morphological including depth contours and stream bed substrate information, water quality and if appropriate tidal characteristics;
- Describe / map aquatic habitats (generally within 100 metres of the boundary of the proposal and sometimes further if downstream) that could be impacted upon either directly or indirectly by the proposal during its construction, life and decommissioning including:
  - gravel beds,
  - deep pools,
  - rocky reefs,
  - aquatic vegetation (seagrass, mangroves, saltmarsh and emergent vegetation such as reeds),
  - riparian vegetation and snags,
  - wetlands and floodplains, and
  - under cut banks.
- Identify recreational and commercial fishing areas and aquaculture ventures that could be effected by the proposal or works during its construction;
- A statement about the presence or absence of threatened species. Threatened species and key threatening processes are listed in Schedule 4 of the Fisheries Management Act and regularly updated on the Fisheries Scientific Committee website: [www.fsc.nsw.gov.au](http://www.fsc.nsw.gov.au)
- Detail the potential impacts of the various phases of the proposal;
- Outline ongoing management activities to ensure impacts on aquatic biodiversity are minimised;

### **REQUIREMENTS FOR ACTIVITIES THAT BLOCK FISH PASSAGE**

- Purpose and type of works requiring fish passage to be blocked;
- Timing, duration and manner of proposed restriction / blockage to fish passage;
- Methods to be used to avoid stranding fish and any remediation works.



## **DPI FISHERIES' MINIMUM REQUIREMENTS FOR ENVIRONMENTAL STUDIES**

### **REQUIREMENTS FOR DREDGING AND RECLAMATION WORKS**

- Purpose of works;
- Type(s) of marine vegetation in the vicinity of the proposed works;
- Distance of adjacent marine vegetation from the outer boundary of the proposed works;
- Method of dredging or reclamation to be used;
- Duration of dredging or reclamation works;
- Time of dredging or reclamation works;
- Dimension of area to be dredged or reclaimed;
- Depth of dredging height of reclamation activities;
- Nature of sediment to be dredged, including Acid Sulphate Soil and Potential Acid Sulphate Soils;
- Method of marking area subject to works;
- Environmental safeguards to be used during and after works;
- Measures for minimising harm to fish habitat under the proposal;
- Spoil type and source location for reclamation activities;
- Method of disposal of dredge material;
- Location and duration of spoil stockpiling, if planned;
- Volume of material to be extracted or placed as fill.

### **REQUIREMENTS FOR ACTIVITIES THAT DAMAGE MARINE VEGETATION**

- Type of marine vegetation to be harmed;
- Amount of marine vegetation to be harmed, map distribution noting percentage densities of species of marine vegetation;
- Reasons for harming marine vegetation;
- Methods of harming marine vegetation;
- Construction details, including proposed drainage;
- Duration and timing of works/activities;
- Measures for minimising harm to marine vegetation under the proposal;
- Environmental measures to be employed;
- Method and location of transplanting activities or disposal of marine vegetation.



## DPI FISHERIES' MINIMUM REQUIREMENTS FOR ENVIRONMENTAL STUDIES

### REQUIREMENTS FOR ACTIVITIES THAT COULD IMPACT ON THREATENED SPECIES OR CONTRIBUTE TO KEY THREATENING PROCESSES

- All assessments require a statement about the presence or absence of threatened species. Up to date listings are available on the Fisheries Scientific Committee website: [www.fsc.nsw.gov.au](http://www.fsc.nsw.gov.au)
- In determining the presence of threatened species, consideration must be given to the habitat types present within the study area, recent records of threatened species in the locality and the known distributions of these species;
- The condition of the habitat within the area must be discussed noting habitat requirements of threatened species likely to occur and the effect of relevant historical events (including land clearing, agricultural activities, water abstraction/diversion, dredging, de-snagging, reclamation, siltation, commercial and recreational activities);
- Assess potential impacts on threatened species via the 'Eight-Part Test' and upon completion, consultation with DPI Fisheries prior to the EIS being finalised;
- The proponent should note that where significant impact on threatened species is likely, a detailed Species Impact Statement must be prepared to assist in forming a determination.
- The proponent should also note that the *Fisheries Management Act 1994* contains provisions for strict penalties (up to \$220,000 and 2 years imprisonment) to be imposed for individuals or companies that harm an endangered species, population or community or their habitat without proper authority carries.

### ASSESSMENT OF LIKELY IMPACTS

- Investigate and report on an area extending downstream and/or upstream as far as is necessary to take all potential impacts into account;
- Discuss possible indirect effects of the proposal on species/habitats in the area surrounding the subject site: for example, through altered hydrological regimes including stormwater runoff and drainage, soil erosion or pollution;
- Outline the habitat requirements of threatened species and species important to commercial or recreational fishing likely to occur in the study area;
- Discuss fish habitats within the study area and the nature and extent of habitat removal or modification which may result from the proposed action;
- Discuss the potential impact of the modification or removal of habitat on fish species in the area;
- For all species likely to have their lifecycle patterns disrupted by the proposal to the extent that individuals will cease to occupy any location within the subject site, the EIS must describe and discuss other locally occurring populations of such species;
- The relative significance of this location for these species in the general locality must be discussed in terms of the extent, security and viability of remaining habitat in the locality;
- Describe the potential contribution of the proposal to cumulative impacts on fish and fish habitat in the vicinity of the proposal.



## DPI FISHERIES' MINIMUM REQUIREMENTS FOR ENVIRONMENTAL STUDIES

### AMELIORATIVE MEASURES

- Discuss measures for minimising impacts on fish and fish habitat and other environmental safeguards to be employed such as how erosion and run off will be reduced and water quality maintained;
- Specify the nature of any rehabilitation or environmental compensatory works to be undertaken and ongoing maintenance of these works to ensure their benefits are maintained;
- Describe ongoing management actions within the proposal, both during construction and after completion, which relate to impact minimisation eg Environmental Management Plans;
- Detail monitoring programs, including methodologies that assess Before and After, Control and Impact sites to determine the success of techniques used to ameliorate impacts on aquatic biodiversity level of impact of the development;

The EIS must consider how the proposal has been or may be modified and managed to conserve fisheries habitat on the subject site and in the study area.

In discussing alternatives to the proposal, and the measures proposed to mitigate any effects of the proposal, consideration must be given to developing long term management strategies to protect areas within the study area which are of particular importance for fish species. This may include proposals to restore or improve habitat.

Any proposed pre-construction monitoring plans or on-going monitoring of the effectiveness of the mitigation measures must be outlined in detail, including the objectives of the monitoring program, method of monitoring, reporting framework, duration and frequency.

**Please Note:** Persons undertaking aquatic surveys may be required to hold or obtain appropriate permits or licences under relevant legislation. It is recommended that, prior to any field survey activities taking place, those persons proposing to undertake those activities give consideration to their obligation to obtain appropriate permits or licences which may be required in the specific context of the proposed survey activities.

For example:

#### *Fisheries Management Act 1994*

- Permit to take fish or marine vegetation for research or other authorised purposes (Section 37)
- Licence to harm threatened (aquatic) species, and/or damage the habitat of a threatened species (Section 220ZW).

#### *Animal Research Act 1985:*

- Animal Research Authority to undertake fauna surveys.



## DPI FISHERIES' MINIMUM REQUIREMENTS FOR ENVIRONMENTAL STUDIES

### USEFUL DEFINITIONS

The definitions given below are relevant to these requirements:

**Fish** means any part of marine, estuarine or freshwater fish or other aquatic animal life at any stage of their life history (whether alive or dead). Fish include oysters and other aquatic molluscs, crustaceans, echinoderms and beachworms and other aquatic polychaetes.

**Marine vegetation** means any species of plant that at any time in its life must inhabit water (other than fresh water).

**Waters** refers to all waters including tidal waters to the Astronomical High Tide Level (AHTL) as well as flowing streams, irregularly flowing streams, gullies, rivers, lakes, coastal lagoons, wetlands and other forms of natural or man made water bodies on both private and public land.

**Dredging work** means:

- (a) any work that involves excavating water land, or
- (b) any work that involves the removal of material from water land that is prescribed by the regulations as being dredging work to which this Division applies.

**Farm Dam** means the backed up waters of any dam, or impoundment, located on land that is not public water land.

**Reclamation Work** means any work that involves:

- (a) using any material (such as sand, soil, silt, gravel, concrete, oyster shells, tyres, timber or rocks) to fill in or reclaim water land, or
- (b) depositing any such material on water land for the purpose of constructing anything over water land (such as a bridge), or
- (c) draining water from water land for the purpose of its reclamation.

**Water Land** means land submerged by water:

- a) whether permanently or intermittently, or
  - b) whether forming an artificial or natural body of water,
- and includes wetlands and any other land prescribed by the regulations as water land to which this Division applies.

**Wetlands** includes marshes, mangroves, swamps, or other areas that form a shallow body of water when inundated intermittently or permanently with fresh, brackish or salt water, and where the inundation determines the type and productivity of the soils and the plant and animal communities.



## DPI FISHERIES' MINIMUM REQUIREMENTS FOR ENVIRONMENTAL STUDIES

### Further Information

The DPI Fisheries Policy and Guidelines series contains more detailed information on techniques and practices that satisfy DPI Fisheries requirements to minimise impacts of developments on fish and fish habitat. The Guidelines are available at [www.fisheries.nsw.gov.au](http://www.fisheries.nsw.gov.au). Considering the information in these documents prior to developing and submitting your proposal is strongly recommended.

Another document "*Guidelines for the Assessment of Aquatic Ecology in EIA*" (Draft 1998) produced by the Department for Urban Affairs and Planning (now planningNSW) may prove useful in outlining appropriate procedures and methodologies for conducting aquatic surveys required for the preparation of an EIS.





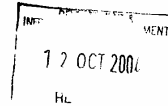
NSW DEPARTMENT OF  
PRIMARY INDUSTRIES

Our Ref: 03/2156 (rw:da/tw/eis requ.sand extr.cudgen lakes)  
Your Ref: David Kitto

**FAXED**  
915 7/13  
97628107

7 October 2004

Mr David Kitto  
Manager, Mining & Extractive Industries  
Dept. of Infrastructure, Planning and Natural Resources  
20 Lee Street  
SYDNEY NSW 2000



Dear David

**EIS Requirements – Cudgen Lakes Sand Extraction Proposal**

I refer to the planning focus meeting of 17 September 2004 and the request at the meeting for the agencies with an interest in this development to provide a formal list of their issues and requirements to be addressed in the EIS.

Firstly, it is considered paramount that the scope of the EIS be clarified and determined at an early stage so as to ensure the appropriate environmental impact assessment and approval process for dealing with the proposed sand extraction as well as the proposed transport pipelines, land filling and final use of the lake(s) is clear to all concerned.

It is expected that the EIS Guideline for Extractive Industries (DUAP, 1996) be generally followed in preparation of the EIS. Specific agricultural issues of interest to this Department in relation to the proposed sand extraction are:

- assessment of the project against the relevant LEP and REP provisions,
- the agricultural quality of the subject lands and immediately adjoining lands,
- the previous, current and potential agricultural use of the subject and adjoining lands,
- chemical residue assessment of the soil to be excavated and relocated,
- the location and implications of any cattle tick dip sites in the immediate locality,
- a description of the impacts of alienating and using the land for the purpose of an extractive industry,
- the compatibility and impact of the operation on adjoining lands including any agricultural enterprises,
- potential impacts on rural amenity and rural resources such as water resource,
- sources of environmental pollution and management of same,
- traffic and road sharing issues particularly with existing agricultural industry use of roads,
- evidence of consultation with adjoining land owners / users,
- a measure of potential cumulative impacts resulting from additional sand extraction on the Chinderah floodplain,
- expected quality of the water body resulting from the sand extraction and possible use of this water body by adjoining agriculture such as the vegetable production at Cudgen,
- proposed rehabilitation, land stabilisation measures and longer term land use scenario.

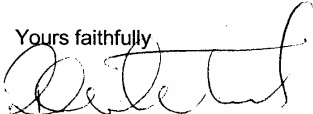


As the proposed development involves the disturbance of some 24 ha for the purposes of sand extraction for fill, it is expected that the EIS provide some assessment of the alternate sources of fill material.

Separate advice and requirements are to be expected from NSW DPI with respect to fisheries/aquatic habitat issues and mineral resource issues.

I can be contacted on (02) 6626 1349 if further information or advice is required.

Yours faithfully



Rik Whitehead  
Agricultural Environment Officer  
NORTH COAST

WOLLONGBAR AGRICULTURAL INSTITUTE

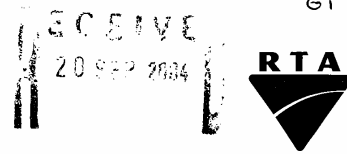
1243 Bruxner Highway  
WOLLONGBAR NSW 2477

ABN 51 734 124 190  
[www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)  
Tel: 02 6626 1200  
Fax: 02 6628 1744





RSTM&D 438.5395/981  
04/1599  
Mr Greg Sciffer (02) 6640 1344  
Email: Greg-Sciffer@rta.nsw.gov.au



R W Corkery & Co  
PO Box 80  
**ORANGE NSW 2800**

15 SEP 2004

**Tweed Shire Council. Proposed Cudgen Lakes Sand Mining. Cudgen.**

Dear Sir

Reference is made to your letter dated 8 September 2004 concerning a Planning Focus Meeting for the proposed development.

As previously advised the Roads and Traffic Authority (RTA) was unable to attend the meeting and submits the following comments in relation to road safety and traffic management for consideration in the Environmental Impact Statement (EIS).

- It is noted that development is classified as State Significant and will be approved by Minister for Infrastructure and Planning.
- A Traffic Impact Study should be undertaken that takes into consideration the key issues listed in Table 2.1-Traffic Impact Studies of the RTA's Guide to Traffic Generating Developments (attached).
- Junction of Tweed Coast Road and Crescent Street should be upgraded to AUSTROADS standards including provision for increased heavy vehicle loadings and turning traffic.
- Details in relation to the site operations need to be provided. Such as access conditions, sight distances, parking, servicing and commercial activities. These should cater for heavy vehicle turning paths.
- Consideration should be given to the impact on any public transport infrastructure and routes such as school buses.
- Contribution scheme should be implemented for the maintenance of the road network.
- Where the hydraulic pipeline is within the road reserve it will require a Section 138 (Roads Act 1993) approval from the roads authority to clarify responsibilities. It should be located outside the clear zone. Where this is not possible adequate protection of the hazard is required. Public and private accesses standards need to be maintained. Provisions need to be made to maintain pedestrian and bicycle access.
- Impact of the increased road traffic and pipeline noise.
- Provisions made to prevent the fouling of the road pavements.
- Control of dust from the site and commercial traffic.

Once the EIS has been completed the RTA would appreciate the opportunity to comment further on traffic and transport aspects so the necessary conditions can be included in the consent conditions.

Roads and Traffic Authority  
ABN 64 480 155 255

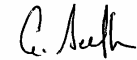
	31 Victoria Street Grafton NSW 2460	PO Box 576 Grafton NSW 2460	T 02 6640 1300	<a href="http://www.rta.nsw.gov.au">www.rta.nsw.gov.au</a>
---	--	--------------------------------	----------------	--



-2-

A copy of this letter has been referred to the Department of Infrastructure, Planning and Natural Resources for their information.

Yours faithfully



Peter Collins  
Regional Manager, Northern Client Services

CHECKED



Section 2 - Traffic impact studies



Procedures & Key Parameters	Source	Check
<b>Impact of Proposed Development</b>		
<i>Traffic generation during design periods</i>		
Daily and seasonal factors		
Pedestrian generation and movements		
<i>Traffic Distribution and Assignments</i>		
Hourly distribution of trips		
Assignments of these trips to the road system based where possible on development feasibility studies or on origin/destination surveys undertaken at similar developments in the area		
<i>Impact on Traffic Safety</i>		
Assessment of Road Safety Impact		
<i>Impact of Generated Traffic</i>		
Daily traffic flows and composition on key stages and the expected effect on the environment, particularly in residential areas		
Peak period volumes at key intersections and effect of generated traffic on congestion levels	Survey	
Impact of construction traffic during construction		
Other proposed developments in the vicinity, their timing and likely impact known	Local Council	
Assessment of pedestrian movements	Survey	
Assessment of traffic noise		
<i>Public Transport</i>		
Options for extensions and changes to bus routes and bus stops, following discussions with the STA and/or private bus operators	STA	
Provision for pedestrian access to bus stops		
<i>Recommended Works</i>		
Improvements to site access and circulation		
Improvements to roads, signals, roundabouts and other traffic management measures		
Improvements to pedestrian facilities		
Effect of recommended works on the operation of adjacent developments		





Section 2 - Traffic impact studies

Procedures / Key Parameters	Source	Check
<b>Proposed Development</b>		
<i>The Development</i>		
Plan reference, if plans not contained in study report		
Nature of development		
Gross floor areas of each component of development		
Projected number of employees/users/residents		
Hours and days of operations		
Staging and timing of development		
Selection of appropriate design vehicles for determining access and circulation requirements	Section 6	
<i>Access</i>		
Driveway location, including review of alternative locations	Sections 5, 6	
Sight distance of driveways and comparisons with stopping and desirable minimum sight distances	Section 6	
Service vehicle access	Section 6	
Analysis of projected queuing at entrance	Section 6	
Current access to site and comparison with proposed access		
Provision for access to, and by, public transport	Section 6	
<i>Circulation</i>		
Proposed pattern of circulation	Section 6	
Internal road widths	Section 6	
Provision for bus movements		
Service area layout		
<i>Parking</i>		
Proposed supply		
Parking provision recommended by State Government policy	RTA	
Council code and local parking policies and plans	Council	
Parking layout		
Projected peak demand, based where appropriate on similar research reports and on surveys of similar developments;	Section 5	
Parking for Service / courier vehicles and bicycles	Section 5	



Section 2 - Traffic impact studies



Procedures & Key Parameters	Sources	Check
Estimate of the speed of traffic on the road to which vehicular access is proposed	Survey	
Current traffic generation of site	Survey	
Daily and peak period heavy vehicle flows and percentages	Survey	
The adaptation of appropriate computer models or techniques for assessing levels of traffic congestion and queuing conditions		
<i>Traffic Safety</i>		
Accident history of road network in the area	Accident History	
<i>Parking Supply and Demand</i>		
On street parking provision	Local Council	
Off street parking provision	Councils / Survey	
Current parking demand, including utilisation by time of day and turnover rates	Survey	
Short term pick up and set down areas	Licensed / Survey	
<i>Modal Split</i>		
<i>Public Transport</i>		
Rail Station locations	SRA	
Bus routes and bus stop locations, Pedestrian access to bus stops, Constraints and conflicts	SRA / Private Operators / Survey	
Rail and bus service frequencies, ideally separated into Monday to Friday, Saturday and Sunday, for both peak and off peak times	SRA / STA / Private Operators	
Commuter parking provision	SRA / Survey	
<i>Pedestrian Network</i>		
Identify major pedestrian routes	Survey	
Pedestrian flows and potential conflicts with vehicles, particularly where such conflicts cause capacity constraint on either vehicular or pedestrian movement	Observation	
Pedestrian infrastructure	Survey	
Proposed developments in the vicinity	Council	





Section 2 - Traffic impact studies

## 2.3 Issues to be addressed

A traffic impact study should follow the standard format and structure that is listed in Table 2.1. This format covers the key issues to be addressed in determining the impact on traffic of a development. Use of this format and the checklist will ensure those involved in the preparation and / or assessment of Development Applications that the most significant matters are considered.

**Table 2.1**  
**Key issues in preparing traffic impact studies**

Procedures / Key Parameters	Source	Check
<i>Brief description of the development</i>		
<i>Application and study process</i>		
<b>Introduction</b>		
<i>Background</i>		
<i>Scope of report</i>		
<i>The key issues and objectives of a traffic impact study</i>		
<b>General Data Collection / Existing Conditions</b>		
<i>Description of the Site and Proposed Activity</i>		
<i>Site location</i>		
<i>Current land use characteristics (zoning) of the proposed site and land use in the vicinity</i>	Council	
<i>Site access</i>		
<b>The Existing Traffic Conditions</b>		
<i>Road hierarchy, including the identification of the classified road network (major and minor roads) which may be affected by the development proposal</i>	Council / RTA	
<i>Inventory of road widths, road conditions, traffic management and parking control</i>	Council, RTA and Survey	
<i>Current and proposed roadworks, traffic management works and bikeways</i>	Council / RTA	
<b>Traffic Flows</b>		
<i>Selection of key streets - possibly divided into the major and the minor road network; selection of key assessment periods, chosen to cover the times at which the development would be expected to have its major impacts</i>	Section 3	
<i>AADT on key streets</i>	RTA / Council / Survey	
<i>Daily traffic flow hourly distribution, particularly in or near residential areas</i>	Survey	





Section 2 - Traffic impact studies

Procedures & Key Parameters	Source	Check
Effect of recommended works on public transport services, including bus routes, bus stops and access thereto		
Provision of LATM measures		
Funding of proposed improvement projects		
Noise attenuation measures		



**Section 2 - Traffic impact studies**

---



This page left intentionally blank







NSW DEPARTMENT OF  
PRIMARY INDUSTRIES

Now incorporating Department of Mineral Resources  
ABN 51 734 124 190-003

The General Manager  
**RW Corkery & Co P/L**  
75 Kite St  
ORANGE NSW 2800

Attn: R.W. Corkery

**Our reference: L97/3124**  
**Your reference:**

12th November, 2004

Dear Sir/Madam

**PROPOSAL TO DEVELOP CUDGEN LAKES:**  
**RW Corkery for Gales Projects P/L**

Thank you for your letter of 8<sup>th</sup> September, 2004 and your invitation to the planning focus meeting on 17<sup>th</sup> September, 2004 concerning the above proposal. As previously indicated by telephone, Departmental officers were unable to attend the planning focus meeting.

The Mineral Resources Division of the Department of Primary Industries recommends that your EIS should comply with the attachment to this letter entitled "EIS RESOURCE DATA". In addition, the Department will request the relevant consent authority to require as a condition of any consent, that the operator provide annual production data to the Mineral Resources Division of the Department in the manner and timeframe outlined on the standard form to be supplied for that purpose.

Availability of such a large sand resource as that outlined in your Background Paper, particularly one with potential for value adding through processing (washing), could be of considerable benefit to the community. However, the scale of the potential resource and the scale of potential extraction and consequent rehabilitation raise issues of cumulative impact on current and future sand production in the district. For these impacts and the potential value of this proposal to be fully understood, several issues should be addressed in the EIS, including:

1. The suitability of the subject sand for processing and the potential cumulative value of products compared to that of unprocessed sand.
2. The size of the potential market (both current and future) for processed sand, and hence the implied production limit and deposit life if only processed sand were to be produced.

Geological Survey  
PO Box 65  
175 Rusden St  
Armidale

www.dpi.nsw.gov.au  
Tel: 02 6776 0313  
Fax: 02 6776 0399



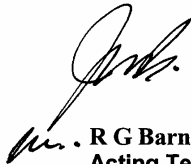
**R. W. CORKERY & CO. PTY. LIMITED**

3. The size of the potential market for unprocessed sand, and hence the implied production limit and deposit life if dominantly unprocessed sand were to be produced.

Finally, this is the fourth EIS covering all or part of the subject site. Previous descriptions of site geology differ from recent geological mapping carried out by the Geological Survey of New South Wales. Resolving these differences would help in establishing a better understand of the full extent of subject resource and also help in establishing the potential for discovering similar sand resources elsewhere in the district. These two factors are important to determine as they could be critical in understanding the full impact of this proposal on long term sand supply in the district.

Should you have any further enquires, please do not hesitate to contact Mr Jeff Brownlow in the Department's Armidale Office (Tel 02 6776 0313).

Yours faithfully,



**R G Barnes**  
**Acting Team Leader**  
**Resources and Land Use**

Encl.





NSW DEPARTMENT OF  
PRIMARY INDUSTRIES

Now incorporating Department of Mineral Resources  
ABN 51 734 124 190-003

**DEPARTMENT OF PRIMARY INDUSTRIES, MINERAL RESOURCES DIVISION  
EIS RESOURCE DATA**

The Department of Primary Industries, Mineral Resources Division considers that it is in the best interests of the proponent to fully assess the resources which are subject of the proposal. This means that a thorough geological assessment should be undertaken to determine the nature, quality and extent of the resource. Failure to undertake such an assessment could lead to operational problems and possibly failure of the proposal.

**Resource Assessment**

The following issues need to be addressed in the environmental impact statement (EIS):

1. A summary of the regional and local geology including information on the stratigraphic unit or units subject of the proposal.
2. The amount of material available for extraction and the method or methods used to determine this amount (e.g. drilling, trenching, geophysical methods). Plans and cross-sections summarising this data, at a standard scale, showing location of drillholes and/or trenches, and the area proposed for extraction, should be included in the EIS. Relevant supporting documentation such as drill logs should be appended. Major resource proposals should be subject to extensive drilling programs to identify the nature and extent of the resource.
3. Characteristics of the material or materials to be produced:
  - a) For clay/shale extraction proposals, ceramic properties such as plasticity, drying characteristics (e.g. dry green strength, linear drying shrinkage), and firing characteristics (e.g. shrinkage, water absorption, fired colour) should be addressed.
  - b) For sand extraction proposals, properties such as composition, grainsize, grading, clay content and contaminants should be indicated. The inclusion of indicative grading curves for all anticipated products as well as the overall deposit is recommended.
  - c) For hard rock aggregate proposals, information such as grainsize and mineralogy, nature and extent of weathering or alteration, and amount and type of deleterious minerals, if any, should be indicated.
  - d) For other proposals, properties relevant to the range of uses proposed for the particular material should be indicated.

Details of tests carried out to determine the characteristics of the material should be appended. Such tests should be undertaken by NATA registered testing laboratories.

4. An assessment of the quality of the material and its suitability for the anticipated range of applications should be given.
5. The amount of material anticipated to be produced annually should be indicated. If the proposal includes a staged extraction sequence details of the staging sequence needs to be provided. The intended life of the operation should be indicated.
6. If the proposal is an extension to an existing operation, any past annual production data (by financial year) for all products should be supplied in support of the proposal.
7. An assessment of alternative sources to the proposal and the availability of these sources. The impact of not proceeding with the proposal should be addressed.
8. Justification for the proposal in terms of the local and, if appropriate, the regional context. Identification of the subject site in relevant planning instruments such as regional environmental plans, should be noted.

Geological Survey  
PO Box 65  
175 Rusden St  
Armidale

www.dpi.nsw.gov.au  
Tel: 02 6776 0313  
Fax: 02 6776 0399



R. W. CORKERY & CO. PTY. LIMITED

9. Information on the location and size of markets to be supplied from the site.
10. Transport routes for the material to the market.
11. Disposal of waste products and the location and size of stockpiles.
12. Assessment of noise, vibration, dust and visual impacts, and proposed measures to minimise these impacts.
13. Proposed rehabilitation procedures during, and after completion of, extraction operations, and proposed final use of site.
14. Assessment of the ecological sustainability of the proposal.

#### **Safety Issues**

On the safety issues, the following points are made:

1. All operations are to comply with the Mines Inspection Act, 1901, as amended.
2. The company is to nominate a person (or persons) as General Manager and Production Manager as required by the Mines Inspection Act 1901, Section 5 and 5B.
3. The General Manager must appoint trained and competent shottirers to conduct all blasting operations.
4. The company is required to contact the Regional Inspector of Mines for a list of guidelines and safety issues which are to be addressed and for the required competencies for a Production Manager.

#### **Mineral Ownership**

The *Mining Act 1992*, and its precursors, apply to those minerals specified in the regulations of the Act. Many construction materials are not prescribed minerals under the Mining Act. In general terms, this means these materials are owned by the Crown where they occur on Crown land and by the landowner in the case of freehold land. A Mining title is not required for their extraction although a Crown Lands licence is required where they occur on Crown land.

Construction materials such as *sand (except for marine aggregate), loam, river gravel, and coarse aggregate materials such as basalt, sandstone, and granite* are not prescribed minerals under the Mining Act 1992. Therefore, the Department of Primary Industries, Mineral Resources Division has no statutory authority over the extraction of these commodities, apart from its role under the Mines Inspection Act 1901 (as amended) with respect to safe operation of mines and quarries. However, the Department is the principal government authority responsible for assessing the State's resources of construction materials and for advising State and local government on their planning and management.

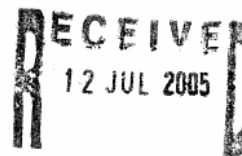
Minerals such as *structural clay (ie clay for brick, tile and pipe manufacture), dimension stone, quartzite, kaolin and limestone* are prescribed minerals under the Mining Act 1992. Minerals which are prescribed as minerals under the terms of the Mining Act may, in some cases belong either to the Crown or to the landowner, depending on a number of factors including the date on which the mineral was proclaimed and the date of alienation of the land. The proponent needs to determine whether the material is privately owned or Crown mineral (publicly owned). If it is privately owned, then either a notification under Section 8 of the Mining Act 1992 or, alternatively, a mining lease or mineral claim would be required. If it is a Crown mineral, an application for a mining lease or mineral claim will have to be lodged.

If you are unsure whether a mining title is required for your proposal you should contact the Department of Primary Industries, Mineral Resources Division.

Geological Survey  
PO Box 65  
175 Rusden St  
Amidale

www.dpi.nsw.gov.au  
Tel: 02 6776 0313  
Fax: 02 6776 0399





Notice No: 1049107

R W Corkery & Company Pty Ltd  
PO Box 80  
**ORANGE NSW 2800**

Dear Mr Corkery

**RE: PROPOSED CUDGEN LAKES SAND EXTRACTION**

You will need to consider Attachment 'B' in addition to the other information provided by the Department of Environment and Conservation on 15 October 2004. We apologise for any inconvenience this may have caused.

The EPA requests that the applicant provide 4 copies of the DA/EIS when lodging its application with the EPA. These documents should be lodged at PO Box 498 Grafton NSW 2460. If you have any queries regarding this matter please contact Shari Murphy on 66402514.

Yours sincerely

A handwritten signature in black ink, appearing to read "Brett Nudd". The signature is fluid and cursive, with a large initial "B" and "N".

**BRETT NUDD**

**A/Head of Waters and Catchments Unit**

**ENVIRONMENT PROTECTION AND REGULATION DIVISION**

Cc  
General Manager  
Attention: Michael Young  
Department of Infrastructure Planning and Natural Resources  
Major Developments Assessments  
GPO Box 39  
SYDNEY NSW 2000



## **ATTACHMENT B: EIS REQUIREMENTS FOR CUDGEN LAKES SAND EXTRACTION**

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

The DEC 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**

---

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](http://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.

### 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 relevant 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](http://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.



## **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) 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 (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. This description should include the following parameters

- Total Suspended Particulates (TSP), Deposited dust, and particulate matter less than 10 microns (PM10)

### ***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 relevant guidelines e.g. *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).

***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 effects 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 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.
- 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 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](http://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](http://www.hrc.nsw.gov.au)) or the NSW Salinity Strategy (DLWC, 2000) ([www.dlwc.nsw.gov.au/care/salinity/#Strategy](http://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 relevant guidelines e.g. *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.

### ***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 e.g. *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).

## 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 relevant guidelines e.g. *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).



## **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.

