RECOMMENDATIONS

MAJOR RECOMMENDATION

Environmental aspects of the proposed remediation of the Lednez site, 40 Walker Street, Rhodes and part of the bed of Homebush Bay by Thiess Services Pty Limited do not preclude its approval subject to the measures recommended by the Commission to mitigate environmental impacts.

RECOMMENDATIONS TO MITIGATE ENVIRONMENTAL IMPACTS

The Commissioners of Inquiry and DIPNR have reviewed procedures for providing parties with the opportunity to comment on the likely controls to be placed on a development if it is approved by the Minister. These amended procedures require DIPNR to submit suggested recommended measures (for later development as conditions of consent) in a plain-English, less legalistic format than previously provided at the submission in reply session of Commissions of Inquiry. For this Commission the scope of each measure has been indicated including its purpose and rationale, together with recommendations to address residual impacts. Parties were given the opportunity to comment on these recommended measures during the Commission process as has been established practice.

DIPNR will prepare draft conditions of consent in a statutory format after the Commission's report is made public. The Commission has been informed by DIPNR that these draft conditions of consent would be made publicly available for comment to all parties who participated in the Commission of Inquiry. Any comments would be considered by DIPNR in preparing its advice to the Minister in an assessment report which would be made publicly available after the Minister determines the development application.

In considering which management and control measures to recommend all submissions made to the Commission (Appendices 3 and 5) have been taken into consideration by the Commission. The Applicant and Mr Hanly specifically commented on the suggested measures submitted by DIPNR.

DIPNR provided additional comment on a number of matters which are of key importance to the proposed remediation project:

- Noise management – Elevated noise impacts associated with the proposed remediation represent a significant issue for the proposed remediation. To address noise impacts above relevant noise criteria, the Department has indicated that the Applicant must establish negotiated agreements with the most significantly impacted landowners prior to the Minister's determination of the proposal. This in itself is not considered sufficient to fully address residual noise impacts, and the Department recommends that the Applicant develop and implement a comprehensive noise management plan to ensure that best practice noise management is applied to the remediation. The Department also recommends comprehensive noise monitoring and complaints handling mechanisms to identify and address noise-related concerns.
- Dust generation – Dust generation on the site must be managed consistent with best practice, to ensure that dust impacts are reduced to as low as reasonably possible. To ensure that residual dust impacts are adequately managed, and that dust emissions from the site area minimised overall, the Department recommends that the Applicant develop and implement a dust management plan, including dust monitoring provisions. For the Statewide site, at which elevated dust impacts have been predicted, the plan must include details of an "agreed outcome" between the Applicant and the landowner to ensure that impacts at that location are minimised, particularly in the event that the Statewide site is occupied prior to the completion

of the remediation works. The emphasis of the dust management plan must be on proactive dust minimisation.

- Air quality – In addition to, and combined with, dust impacts, gaseous emissions from the remediation site have the potential to generate elevated off-site non-carcinogenic health impacts on the Meriton, if occupied during the early stages of the remediation process. In a similar manner to dust impacts, the Applicant will need to consult with the owner of that land in relation to an "agreed outcome", reflecting measures to address the landowners concerns and to ensure that remediation and redevelopment are co-ordinated.
- Water management – The Department recommends that a comprehensive water management plan be developed for the site. The plan must include provision for the practical derivation of discharge criteria in the event that all wastewater cannot be reused on site and is required to be discharged to the environment or sewer. As contaminated water discharges present potential for translocation of contamination issues elsewhere, it is important that discharge water quality be carefully monitored. The Department's recommended measures to address residual environmental impacts include specified provisions for comprehensive water quality monitoring.
- Demonstration of technology robustness – While the Department is satisfied that, based on information provided during the assessment of the proposed remediation, the remediation technology has been utilised in the past to remediate sites with similar contaminants, it recognises that all contaminated sites are unique. As such, the Department recommends a precautionary approach be applied during the commissioning of the proposed development. A staged commissioning process is recommended, with independent certification of environmental and safety performance at the conclusion of each commissioning stage. At each stage the Applicant will be required to demonstrate appropriate performance before being permitted to progress to subsequent commissioning stages. The Department also recommends that manufacturers' performance guarantees be provided for major process components and pollution control equipment, that standard operating procedures be developed and that a training program be implemented to ensure that all relevant employees are fully versed in the operation of the remediation technology.
- Community consultation, information and involvement – The proposed remediation has generated a significant level of community interest and concern, which will continue into the operation phase of the development, if approved. The Department has recommended a suite of provisions to ensure effective, open and transparent community information, participation and consultation. These measures include a provision of all monitoring results and reports in relation to the environmental performance of the development, a Community Information Program, a Community Consultative Committee and funding for the Committee to obtain independent technical advice.
- Cumulative impacts – There is potential for the Minister to approve both the remediation proposals on the Rhodes Peninsula (the Meriton site and the Lednez site). In such a situation there is potential for cumulative impacts to be generated by concurrent operation of the remediation proposals. The Department recommends that if both proposals are approved, the Applicant be required to develop a Cumulative Remediation Impact Protocol to outline a coordinated approach to be applied by both remediation proponents to minimise potential cumulative impacts (particularly in relation to air quality, noise and traffic).

The Applicant referred to the relevant environmental planning instruments applying to the site. These are SREP 22, SREP 29, SEPP 55 and SEPP 56 (see *Environmental Planning Considerations*). In particular, the Applicant drew the Commission's attention to its interpretation of clause 12(1) of SEPP 55, which in the case of the proposed Category 1 remediation work is that:

> The consent authority must not refuse development consent for a category 1 remediation work unless the authority is satisfied that there would be a more significant risk of harm to human health or some other aspect of the environment from the carrying out of the work than there would be from the use of the land concerned (in the absence of the work) for any purpose for which it may lawfully be used.

It was also submitted by the Applicant that all development applications concerning the SREP 29 area must be determined in accordance with the EP&A Act, and relevant legal principles determined by the courts. It made the following main points:

- Neither the EP&A Act nor the relevant case law imposes any general requirement that a proposed development be designed so as to minimise or remove any incompatibility it may have with possible future development of adjoining or nearby land;
- The primary planning instrument for the Rhodes Peninsula, SREP 29, does not especially address the issue of incompatibility between remediation works and residential development but its provisions do give remediation of the Lednez site some priority;
- The Minister could not reasonably be satisfied that residential occupation of adjoining sites would be safe if the remediation did not occur; and
- Any conditions imposed on the proposed remediation to address potential incompatibility with possible future development of adjoining land must not significantly alter the proposed remediation.

Draft General Terms of Approval

Both the EPA and the Waterways Authority submitted draft general terms of approval (GTAs). In relation to the EPA's submissions the Applicant stated that "for the most part the draft GTA's are acceptable…". The comments made by the Applicant raise a series of issues which require further discussion between the EPA and the Applicant. Adoption of a number of the Applicant's suggestions would improve the environmental performance of the project. Other issues including matters relating to offensive odours, control and monitoring of emissions from the pre-treatment building stack, and wastewater treatment and reuse requirements require some clarification of interpretation. However, they are not such as to preclude approval.

The Commission considers the submission of draft GTAs worthwhile as they provide a level of surety of control, management and monitoring beyond any conditions of consent should the development be approved. While the Commission has reviewed the Applicant's comments, it is not the role of the Commission, other than in a general way, to canvass the adequacy of draft GTAs. However, the Commission does comment more fully on measures to control and mitigate environmental impacts which it recommends be attached to any development consent the Minister may subsequently grant. These in part adopt and/or overlap with the draft GTAs.

Cross-Boundary Environmental Impacts

DIPNR has suggested that negotiated agreements or agreed outcomes would need to be in place between the Applicant and adjacent landowners prior to the Minister's determination of the proposal due to the Applicant's inability to comply with relevant environmental criteria at its boundaries. Agreed outcomes were recommended by DIPNR in relation to air quality and potential non-carcinogenic health impacts resulting from dust emissions. Negotiated agreements were recommended by DIPNR in relation to noise management. These arrangements would involve the landowners of the McRoss, Statewide and Meriton sites in relation to noise; the Statewide and Meriton sites in relation to potential health impacts; and the Statewide and McRoss sites in relation to air quality.

Strong objection was raised by the Applicant to the concept of negotiated agreements, land acquisition and/or application of further mitigation measures. It considers DIPNR's requirement for negotiated agreements as "entirely inappropriate". As the other parties do not have development consents, such arrangements would not be equitable, and the Minister has no power to impose such a condition of consent. This issue remains unresolved.

The most likely occupancy scenario assumes that the Lednez site/Homebush Bay sediment remediation commences early in 2004, whereas the worst case occupancy scenario assumes a 2 year

delay. On the evidence before the Commission, commencement of the remediation is more likely to be earlier rather than later given the benefits of an early start. This outcome cannot be guaranteed, but the significance in avoiding delays to commencement of the remediation must be acknowledged.

Agreed Outcomes

Human Health

The Applicant's assessment of human health risk during remediation activities at the 14 receptor locations identified in Figure 11 indicated there would only be exceedances of the recognised guideline value of 1.0 for the hazard index in relation to non-carcinogenic health impacts at 1 building on both the Meriton and Statewide sites for the worst case occupancy scenarios. There are no predicted exceedances of the non-carcinogenic health index for the most likely occupancy scenario and no exceedances of the carcinogenic health risk under either occupancy scenario. A level of conservatism in predicting dust levels is also claimed by the Applicant. Control of particulate, and volatile emissions, from contaminated soils as set out in the Air Quality Management Plan is clearly essential to limit potential health impacts.

Air Quality

Exceedances of the 24-hour average PM_{10} dust goal of 50µg/m^3 are predicted at existing and future residences. PM_{10}, as noted earlier, has increasing health effects with rising concentrations.

At most existing and future residences 1 exceedance of the goal is predicted each year for both the most likely and worst case occupancy scenarios. At 1 building on the Statewide site and 1 building on the McRoss site multiple exceedances are predicted for both occupancy scenarios. A second building on the Statewide site would experience multiple exceedances of the goal during Stage 3 under the worst case occupancy scenarios.

Other than for the closer buildings on adjacent sites the background contribution of PM_{10} dust levels (from offsite sources) accounts for more than 80 percent of PM_{10} dust levels under worst case meteorological conditions. For the closer buildings the background contribution ranges for about 40 to 60 percent. Effective dust controls are again seen as essential to limit the exposure of residents to dust, not only under worst case meteorological conditions, but at all times.

In considering the PM_{10} goal, up to 5 exceedances per year could be considered acceptable according to the EPA. However, DIPNR, EPA and NSW Health sought the implementation of effective dust emission controls to reduce dust (particularly PM_{10}) generation from the remediation activities to not only amenity effects, but especially potential health effects.

Odour generation during remediation of the site, particularly as natural odour sources are likely to be present, requires active management. Its extent cannot be predicted with any accuracy. Consequently, the Applicant's proposed management measures for odour, as set out in the air quality management plan, are of fundamental importance in minimising odour levels.

The PM_{10} and human health risk modelling are claimed by the Applicant to use conservative assumptions. The Commission notes that even if this remediation project was delayed the Applicant may still be able to comply with the relevant PM_{10} and human health criteria. This would require confirmation following commencement of the remediation using actual site data in a revised modelling assessment. The Commission is satisfied that PM_{10} and human health issues do not preclude approval of the project, subject to strict implementation of the air quality management plan and a review of PM_{10} and health risk modelling using empirical information within 6 months of commencement of remediation activities even if the worst case occupancy scenarios does not occur. Confirmation of the PM_{10} and health risk modelling is required to provide assurance to the community.

Conclusion

On weighing and balancing the evidence the Commission has concerns with requiring the Applicant to enter into agreed outcomes, which seem to result from placing emphasis on the worst case occupancy scenario. Especially when a level of conservatism is also included in the Applicant's predictions of impacts on air quality and public health. However, if the Lednez remediation project is significantly delayed then the agreed outcome approach, but preferably a procedure which achieves similar outcomes acceptable to the Applicant and affected landowners, would be warranted. At this point in time the Commission does not support the agreed outcome approach for air quality or protection of public health. The recommended management and control measures, provided they are strictly implemented including the proposed air quality management plan, are adequate to ensure public health and air quality are protected.

Negotiated Agreements

Noise Amenity

Daytime (7:00am to 6:00pm) noise levels resulting from the remediation activities on the Lednez site/Homebush Bay are predicted to exceed noise level criteria by up to 24dB(A) at the closer proposed residential buildings when they are occupied. At all 14 existing and future residential buildings assessed noise levels would exceed the criteria. The maximum predicted daytime noise level at existing residences is predicted to be 53 to 55dB(A), an exceedance of the criteria by a maximum of 8dB(A). Predicted maximum noise levels under worst case meteorological conditions at future adjacent residential buildings likely to be occupied before completion of the remediation ranged from 60dB(A) to 71dB(A), exceeding the criteria by between 13dB(A) and 24dB(A). These are significant exceedances of the daytime criteria. Cumulative noise from other nearby developments would further add to the exceedances.

Night-time noise levels are predicted to exceed the criteria at 1 building on the Statewide (Glad) site by up to 4dB(A) and 1 building on the McRoss (Orica) by up to 1dB(A). The evidence is that these night-time exceedances which are under worst case meteorological conditions are manageable.

It is particularly relevant to note that in respect to noise mitigation the EPA acknowledged that all reasonable and feasible measures have been adopted by the Applicant.

Conclusion

The Commission has concerns with recommending that the Applicant enter into negotiated agreements with respect to noise prior to the Minister making a decision given the Applicant's evidence before the Commission.

Existing residents in Blaxland Road present at a field demonstration of a noise level of about 52 to 53dB(A) generally indicated that the noise was not readily distinguishable from background noise levels. Some residents also indicated that they would prefer the remediation to finish sooner rather than reduce the number of items of equipment so noise levels would be marginally lower (up to 3dB(A)). The Commission is satisfied that noise impacts for existing residents could be managed to minimise the potential for noise complaints, notwithstanding that daytime noise level criteria could be exceeded by up to 8dB(A) under worst case meteorological conditions.

The predicted noise level exceedances for future residents on sites adjacent to the Lednez remediation project would be more significant as previously noted. The Commission acknowledges that all reasonable and feasible noise mitigation measures have been adopted by the Applicant.

Are exceedances of noise level criteria of up to 24dB(A) justifiable in all the circumstances?

In regard to this question a number of matters need to be taken into account:

- Government planning initiatives for the Rhodes Peninsula in recent years have focussed on the area being developed for residential, commercial and open space uses. The remediation of the contaminated soils and sediments is a pre-requisite for residential development on significant areas of the Peninsula and is reflected in the environmental planning instruments. Clause 12 of SEPP 55 must also be relevantly considered.
- Remediation of near-shore sediments in Homebush Bay is necessary to remove a significant risk of harm, and could be undertaken without remediating the Lednez site. The contaminated sediments would be stored on the Lednez site in impervious cells. But there is no certainty that contaminated groundwater from the Lednez site would not recontaminate the Bay. In addition, the Lednez site would remain a contaminated site affecting the amenity and perception of the immediate neighbourhood. The Commission does not consider this option desirable or necessarily sustainable in the long term. It would not be consistent with the principles of ESD.
- The owners/occupiers of future residential development adjacent to the Lednez site would be the people most affected by noise from the remediation but would also be those who gain most by having the site and nearby Homebush Bay remediated. They would not have to live close by a well known, well documented, and possibly well sign-posted contaminated site and Bay. Although if the site were to be remediated, adjacent high-rise residential development would occur but with a foreshore park.
- Owners of the Statewide site have submitted a development application to DIPNR. The owners have also been discussing environmental issues with the Applicant and are to design their buildings to mitigate noise impacts. Moreover, future purchases of the dwelling units would be informed of the remediation activities on the adjacent Lednez site and the potential effects which these could have on residential amenity. However, any negotiated agreement would be with the current owners/developers of the affected sites, and while some matters may be able to be resolved, it is the future owners/occupiers who would be most exposed to the environmental impacts of remediation.
- The noise environment of the western Rhodes Peninsula will change significantly as the area is developed in accordance with the relevant environmental planning instruments. Significant levels of high-rise residential and commercial developments are planned to occur over the life of the Lednez remediation project and beyond. Background noise levels will rise as a result. Higher background noise levels will be sustained as several thousand new residents move to the locality.
- The daytime noise level on the western Rhodes Peninsula would be consistent with the high noise levels which generally occur in busy city environments. It must be recognised that the highest noise levels occur during daytime only. Once development ceases the noise levels would be lower.
- Although NSW Health raised concerns for the health effects of the daytime noise levels predicted to occur and their duration as a result of the remediation activities, it commended the proactive management measures proposed by the Applicant. Co-operation between developers was supported by NSW Health.
- The timing of remediation and residential development activities on the western Rhodes Peninsula could result in both remediation project and construction of 3 major residential developments occurring together in close proximity. This could be followed by the continuing Lednez remediation project and construction of 4 major residential developments occurring simultaneously in close proximity. The noise environment of the western Rhodes Peninsula will be markedly affected over the next 5 years, whether or not the proposed remediation is approved.

The matters raised above require strong and continuing co-ordination and co-operation between government, developers and the community. The Commission does not support the concept of obligatory negotiated agreements between one developer (Lednez remediation) and 3 or 4 adjacent developers in these circumstances. There is also little comfort in the prospect of non-cooperation and/or disagreement and consequent delay if unforseen events occur, co-operation between adjacent

landowners is not forthcoming, or if other developers do not operate to the high environmental management standards required of the Applicant. Neither does the Commission consider a condition of consent which obligates the Applicant to form and take part in a co-operative group is adequate given the environmental challenges which are likely to arise during concurrent remediation and construction activities on the Rhodes Peninsula.

The Commission is not persuaded that the responsibility for this outcome, given the significant environmental challenges faced by the Lednez remediation project, should be left to the Applicant. Especially by way of negotiated agreements when such agreements are rejected by the Applicant. Furthermore, it is important that the remediation works proceed in a timely manner to avoid escalating environmental conflict with proposed adjacent residential development.

Remediation and development of the western Rhodes Peninsula is an important strategic initiative of the NSW Government. It is essential that it proceed in a co-ordinated and co-operative manner. The Commission considers that noise impacts can be appropriately managed by the recommended measures to limit noise annoyance. Furthermore, given the importance of all development on the Rhodes Peninsula, the Commission recommends that DIPNR, in consultation with the EPA, form a Rhodes Peninsula Environmental Reference Group to facilitate remediation and development in the SREP 29 area. The group should include a senior officer from both DIPNR and the EPA, a senior manager from each developer and 2 members of the community. It would be chaired by the DIPNR officer. To provide informed government input the DIPNR/EPA environmental officer recommended to be stationed on the Rhodes Peninsula should also be a member of the Group.

Noise Amenity

The evidence establishes that the relevant environmental criteria for noise cannot be complied with by the Applicant even with the implementation of all reasonable and feasible measures. Other likely developments on the Rhodes Peninsula would add to the noise level during construction and later residential occupation. Nevertheless, the evidence is that the noise environment predicted to be experienced by future residents in the closer multi-storey buildings during remediation activities would be comparable to that of people living in many busy city localities.

Some future residents may be disturbed during the daytime remediation activities (7:00am to 6:00pm on Mondays to Saturdays). The Commission recommends that activities, other than operation of the pre-treatment building and treatment plant, be restricted on Saturdays to between 8:00am and 1:00pm once residential occupation occurs in any of the multi-storey buildings assessed for noise impacts and listed in Table 21 (Receptors 1 to 10).

Soil Acceptance Criteria

The weighted averages of contaminated material to be reinstated are generally well below the lower soil acceptance criteria proposed for each of the soil categories and placement depths. The Commission particularly notes that the achievable soil treatment standard for dioxins is stated by the Applicant to be less than 1.0µg/kg on an aggregate TEQ basis. The Commission considers that the Applicant should adjust the soil acceptance criteria used to classify material to reflect the lower contamination levels that will be achieved in practice. Benefits of this approach include an assurance of a lower human health risk for potentially affected people. Such a reduction in risk may be important should there be unknown synergistic activity as a result of chemical mixtures.

Environmental Monitoring Officer

The community strongly argued for a government employed environmental officer to be approved to monitor the remediation activities on the Lednez site and the near-shore bed of Homebush Bay (it was

also suggested the same officer could also monitor remediation activities on the Meriton site). DIPNR and the EPA seemed amenable to this request at the Commission.

The Commission considers such an appointment has merit given the substantial contamination on the sites, the potential for impact on the local community and the ecology of the Bay, and the impacts on potential future residents. Initially, while both projects are operating, a greater time commitment is indicated (probably approaching a full-time commitment) than following completion of the Meriton site remediation. Consideration regarding the officer's time commitment may also need to have regard to the future cumulative impacts of construction activities associated with residential development on the Peninsula.

Dioxins in Soil Analysis

The Commission is satisfied there are strong environmental and social reasons to require the analysis of local soils in Blaxland Road for the presence of dioxins particularly due to the conflict in evidence relating to this issue between that given to the former Allied Feeds site Commission and this Commission. The community is particularly concerned to protect children (and adults) from the effects of dioxin. Without knowing the dioxin level in local soils doubt remains as to what dioxin exposure the community faces from the soil and from dust generated on the remediation project sites. A co-operative program with the adjacent Meriton site remediation (as recommended by the Commission for that project) to the satisfaction of the EPA is recommended by the Commission.

Supplementary Recommendations

In the case of some recommended measures the Applicant argues for a 'lower standard' than has been shown can be achieved in the EIS or supporting documentation. The Commission does not support the Applicant's position. The Commission considers that if a better environmental outcome can be reasonably achieved, the Applicant should be required to ensure that outcome, especially when the Applicant has recognised in its documentation that it can reasonably meet more strict criteria.

The Commission recommends that the following additional measures to control and manage residual environmental impacts be developed as conditions of consent for any approval granted to the Applicant for the proposed remediation of the Lednez site and part of the bed of Homebush Bay:

- The Applicant comply with soil acceptance criteria to reflect the contamination levels that would be achieved in practice for both thermally treated and untreated soils;
- The Applicant ensure an average minimum dioxin removal efficiency of 98.0 percent is achieved for all soils treated by the IHTD unit.
- The Applicant conduct a dioxin in soil analysis program for the Blaxland Road area in conjunction with the Meriton site remediation to the satisfaction of the EPA;
- The Applicant restrict operating hours once adjacent residential developments are occupied, such that work other than that associated with the pre-treatment building and thermal treatment processes be restricted to between 8:00am and 1:00pm on Saturdays;
- The Applicant cease all earthworks other than dust control activities when the average 24-hour PM_{10} goals of $50\mu g/m^3$ is likely to be exceeded;
- The Applicant install groundwater monitoring standpipes and undertake monitoring of groundwater to the satisfaction of the EPA;
- The Applicant compose a photographic record of any items likely to have heritage value existing on the site or uncovered during remediation works;
- The Applicant investigate, and as relevant implement, the use of bio-assay methods in relation to the toxic contaminants on the site and in Homebush Bay in consultation with the EPA;
- The Applicant consult with the Meriton site remediation proponents to develop a co-operative monitoring regime; and
- The Applicant develop and implement a developer co-operation action plan in consultation with other developers in the SREP 29 area.

The Commission also recommends the following matters for the attention of government agencies:

- DIPNR establish and chair a Rhodes Peninsula Environmental Reference Group to overview remediation, redevelopment and environmental management in the SREP 29 area. The group should include a senior officer from both DIPNR and the EPA, a senior manager from each developer, 2 community representatives and the DIPNR/EPA environmental planning officer referred to below;
- DIPNR and the EPA jointly fund a suitably qualified environmental/planning officer to monitor remediation works on the Lednez/Homebush Bay site and other approved developments, including the Meriton site remediation and residential development on other adjacent sites where relevant, for the life of the Lednez project; and
- The Waterways Authority and NSW Fisheries prepare and implement a program to monitor dioxin levels in the tissue of fish taken from Homebush Bay following remediation of the sediments to determine whether the fishing ban can be removed.

Recommended Management and Control Measures

Together with the supplementary recommendations above, the following measures are recommended to form the basis for conditions of consent which DIPNR will develop following consideration of the Commission's report. Reference to the Director-General in the recommended measures is a reference to the Director-General of the Department of Infrastructure, Planning and Natural Resources.

The recommended measures are comprehensive but necessary to ensure a high level of protection for human health and the environment. They include requirements to ensure controls are employed where reasonable and feasible to further reduce residual impacts, the community are consulted and informed, and a co-operative and co-ordinated approach is adopted by all approved developments on the western area at the Rhodes Peninsula.

TECHNOLOGY ROBUSTNESS

Recommendation 1

Issue: Staged commissioning program

Rationale: Although the proposed technology has been employed successfully in the past to treat contaminated soils, it has not been demonstrated under conditions identical to those on the subject remediation site (in terms of contaminant types, contaminant loads, soil matrices, total organic loads, moisture content etc). Therefore, the Department considers it appropriate for the Applicant to stage commissioning of the technology to demonstrate appropriate performance prior to full operation.

Provisions: The Applicant must development and implement a Staged Commissioning Program. The Program must:

- be generally consistent with *Outline ITD Commissioning and Operations Test Plan,* prepared by Thiess Services Pty Ltd and dated July 2003;
- contain specific commissioning procedures for each commissioning stage;
- include timetables for testing each process unit and pollution control measure, and procedures for that testing;
- provide details of monitoring of process parameters and air emissions to be undertaken during commissioning;
- include details of procedures to be followed in the event of unexpected or unacceptable environmental performance during commissioning, including protocols for the identification of remedial measures;
- satisfy the requirements of the Environment Protection Authority; and
- be submitted for the approval of the Director-General prior to the commencement of commissioning.

Recommendation 2

Issue: Independent oversight and certification

Rationale: An independent person should be appointed to oversee commissioning and operation of the proposed development. The independent person is required to provide expert advice to the Director-General in relation to environmental and safety performance of the development, and to provide reassurance to the community that an independent party is certifying the development's performance.

Provisions: An independent person must be appointed subject to the following provisions:

- the person is to provide independent certification of the development's performance to the Director-General at the conclusion of each commissioning stage;
- the person is to be approved and appointed by the Director-General;
- the person is to continue to oversee the environmental and safety performance of the development during operation;
- the person is to attend relevant community consultative committee meetings and meetings of the Cumulative Remediation Impact Committee, where relevant;
- the person is to be responsible for:
  a) independently certifying the environmental performance of the waste destruction facility during commissioning and operation,
  b) independently reviewing environmental management, performance and monitoring associated with the waste destruction facility,
  c) providing independent advice to the Director-General in relation to the environmental performance of the waste destruction facility, and mitigation/amelioration measures that may be implemented to address any adverse impacts, should such impacts occur;
- in the event that remediation projects are approved on both the Lednez and the Allied Feeds sites, the person may act to oversee both proposals; and
- the Applicant is to provide funding for the functions of the person noting that the functions of the person may act in relation to both the Lednez and Allied Feeds remediation sites.

Recommendation 3

Issue: Manufacturers' performance guarantees

Rationale: Following final detailed design of the proposed development, it is important that confirmation be provided that process components, particularly pollution control equipment, is certified capable of meeting relevant parameters necessary to comply with environmental outcomes.

Provisions: The Applicant must submit manufacturers' performance guarantees for major process components and pollution control equipment, subject to the following provisions:

- guarantees are to be provided prior to the commencement of construction;
- manufacturers are to certify that relevant design parameters are met by the process components and pollution control equipment;
- guarantees are to demonstrate compliance with the relevant requirements of the development consent and Environment Protection Licence; and
- the guarantees are to be approved by the Director-General prior to the commencement of construction, in consultation with the EPA.

Recommendation 4

Issue: Standard Operating Procedures (SOP)

Rationale: Environmental outcomes may not be achieved, even with an appropriately designed process, if the technology is not operated properly. Standard operating procedures are required to outline how each process component and item of pollution control equipment is to be operated.

Provisions: The Applicant must develop and implement Standard Operating Procedures for all major process units and pollution control equipment and:

- demonstrate to the satisfaction of the Director-General that SOPs have been developed and implemented prior to the commencement of commissioning;
- provide copies of the SOPs for independent review by the independent person appointed to oversee the commissioning process; and
- be made available for inspection by the Director-General on request.

Recommendation 5

Issue: Maintenance program

Rationale: In order for process and pollution control equipment to operate effectively and achieve desired environmental outcomes, it must be adequately maintained. The Applicant should be required to prepare and implement a maintenance program to ensure that all equipment is adequately and appropriately maintained.

Provisions: The Applicant must develop and implement a maintenance program that:

- details maintenance requirements for all major process components and pollution control equipment;
- is reviewed by the independent person appointed to oversee the commissioning process; and
- is approved by the Director-General before commencement of commissioning.

Recommendation 6

Issue: Training program

Rationale: In order for process and pollution control equipment to operate effectively and achieve desired environmental outcomes, it must be appropriately operated. The Applicant should be required to prepare and implement a training program to ensure that all relevant staff are fully trained in the operation of key process components and pollution control equipment.

Provisions: The Applicant must develop and implement a training program that:

- identifies relevant employment positions associated with the waste destruction facility that have an operational or management role related to environmental performance;
- provides details of appropriate training requirements for relevant employees;
- includes a program for training relevant employees in operational and/or management issues associated with environmental performance;
- includes a program to confirm and update environmental training and knowledge during employment of relevant persons;
- is reviewed by the independent person appointed to oversee the commissioning process; and
- is approved by the Director-General prior to the commencement of commissioning.

AIR QUALITY

Recommendation 7

Issue: Air quality limits – IHTD exhaust stack

Rationale: To ensure that relevant air quality outcomes are met, the Department recommends that the Applicant be required to operate the proposed development to meet appropriate discharge concentration limits.

Provisions: The remediation process must be operated to ensure that the concentration limits listed below are not exceeded at the remediation stack. Draft General Terms of Approval received from the Environment Protection Authority provide further details in relation to these limits, including specific reference conditions. The list is:

- chlorine (Cl_2) 200 mgm^{-3}
- hydrogen chloride (HCl) 100 mgm^{-3}
- nitrogen dioxide (NO_X) or nitric oxide (NO), or both 150 mgm^{-3}
- solid particles 30 mgm^{-3}
- total volatile organic compounds (VOC) 10 ppm
- dioxins and furans 0.1 ngm^{-3}
- carbon monoxide 100 ppm

Recommendation 8

Issue: Air quality limits – pre-treatment building exhaust stack

Rationale: To ensure that relevant air quality outcomes are met, the Department recommends that the Applicant be required to operate the proposed development to meet appropriate discharge concentration limits.

Provisions: The remediation process must be operated to ensure that the concentration limits listed below are not exceeded at the soil drying enclosure stack. Draft General Terms of Approval received from the Environment Protection Authority provide further details in relation to these limits, including specific reference conditions. The list is:

- hazardous substances (Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn, V) 0.5 mgm^{-3}
- cadmium 0.1 mgm^{-3}
- mercury 0.1 mgm^{-3}
- solid particles 10 mgm^{-3}
- dioxins and furans 0.1 ngm^{-3}

The list is to be reviewed following further assessment of the contaminants in the soil and sediment by the Applicant to the satisfaction of the EPA.

Recommendation 9

Issue: Stack design

Rationale: To meet the predicted environmental performance of the proposed development, particularly sufficient air dispersion of pollutants, discharge points (stacks) associated with remediation process must be appropriately designed.

Provisions: The IHTD exhaust stack must be at least 20 metres in height and no greater than 1.2. metres in diameter The pre-treatment building exhaust stack must be at least 20 metres in height and no greater than 1.2 metres in diameter. Review of these dimensions is to be undertaken by the Applicant to the satisfaction of the Director-General when detailed designs of the treatment technologies to be used are finalised.

Recommendation 10

Issue: Meteorological station and monitor

Rationale: A key factor in the dispersion of air pollutants and the potential for ambient air quality impacts (and noise impacts) is meteorology. Site-representative meteorological data is required in the on-going consideration of air quality impacts from the development, and forms an important part of a robust air quality management system.

Provisions: The Applicant must:

- install and operate a meteorological station;
- the station must be sited, operated and maintained in accordance with *Approved Methods for Sampling of Air Pollutants in New South Wales*:
  a) AM-1: Guide to the siting of sampling units,
  b) AM-2: Guide to horizontal measurement of wind for air quality applications, and

c) AM-4: On-site meteorological monitoring program guidance for regulatory modelling applications; and

- not be precluded from sharing a monitoring station with another party (for example, if the remediation the adjacent site were approved), provided the requirements for meteorological stations imposed on both parties were met.

Recommendation 11

Issue: Fugitive emissions from the pre-treatment building

Rationale: The pre-treatment building must be operated under negative pressure to control fugitive dust and odour emissions. To achieve this, an appropriately designed ventilation system must be installed.

Provisions: The Applicant must provide design details for the pre-treatment building ventilation system (negative pressure). The ventilation system design must be approved by the Director-General prior to the commencement of construction.

Recommendation 12

Issue: Air emissions monitoring – IHTD exhaust stack

Rationale: To ensure that air emissions specified in the consent and the Environment Protection Licence are being met, the Applicant must undertake monitoring of air emissions.

Provisions: The Applicant must undertake monitoring at the IHTD exhaust stack for the compounds and parameters listed below or as agreed by the EPA having regard to requirements specific to the IHTD process. Test methods and monitoring frequencies are outlined in the EPA's General Terms of Approval. The list is:

- chlorine (Cl_2),
- hydrogen chloride (HCl),
- nitrogen dioxide (NO_X) or nitric oxide (NO), or both,
- solid particles,
- dioxins and furans,
- total volatile organic compounds (VOC),
- carbon monoxide,
- velocity,
- volumetric flowrate,
- temperature,
- moisture content in stack gases,
- dry gas density,
- molecular weight of stack gases,
- carbon dioxide in stack gases, and
- oxygen in stack gases.

Recommendation 13

Issue: Air emissions monitoring – pre-treatment building exhaust stack

Rationale: To ensure that air emissions specified in the consent and the Environment Protection Licence are being met, the Applicant must undertake monitoring of air emissions.

Provisions: The Applicant must undertake monitoring at the pre-treatment building stack for the compounds and parameters listed below or as agreed by the EPA following further assessment by the Applicant of contaminant levels in the soil and sediment to be treated. Test methods and monitoring frequencies are outlined in the EPA's General Terms of Approval. The list is:

- hazardous substances (Sb, As, Cd, Pb, Hg, Be, Cr, Co, Mn, Ni, Se, Sn, V),
- cadmium,

- mercury,
- solid particles,
- dioxins and furans,
- velocity,
- volumetric flowrate,
- temperature,
- moisture content in stack gases,
- dry gas density, and
- molecular weight of stack gases.

Recommendation 14

Issue: Carbon filter breakthrough

Rationale: Carbon filters are to be installed on the pre-treatment building to filter emissions from that source. As there is no prescribed monitoring method for the carbon filter emissions, the Applicant must demonstrate that it has developed an appropriate means of monitoring emissions from the carbon filter.

Provisions: The Applicant must:

- submit a report to the EPA detailing the monitoring methodology that will be used to detect emissions from the carbon filters of the pre-treatment building;
- obtain approval from the EPA for the proposed monitoring methodology;
- provide details of the approved methodology to the Director-General prior to the commencement of commissioning; and
- apply the approved methodology during operation of the development.

Recommendation 15

Issue: Dust impact outcomes

Rationale: Consideration of the air quality impacts associated with the proposed development suggests that dust generated by excavation and soil handling works is a major contributor to air quality, amenity and especially human health impacts. Appropriate outcomes in relation to dust generation and impacts must be clearly defined.

Provisions: The proposed development must be undertaken to:

- minimise or prevent the emission of dust from the site;
- minimise the generation of dust on the site, including dust generated through excavation, soil handling, the remediation process and vehicle movements;
- ensure that mitigation measures minimise the extent of visible dust emissions on the site; and
- take all reasonable measures to prevent visible off-site dust and cease any operation which generates visible off-site dust at any site boundary forthwith.

Recommendation 16

Issue: Ambient dust monitoring

Rationale: To ensure that environmental outcomes for dust are being achieved, the Applicant must monitor dust at the most affected residential receptor.

Provisions: The Applicant must:

- continuously monitor particulates (PM_{10}) at the most affected receptor in accordance with AM-18 or AS3580.9.8; and
- meet the requirements of the EPA in relation to ambient dust monitoring.

Recommendation 17

Issue: Dust management plan

Rationale: Consideration of the air quality impacts associated with the proposed development suggests that dust generated by excavation and soil handling works is a major contributor to air quality, amenity and human health impacts. Therefore, the Department considers it important that a comprehensive dust management plan be prepared and implemented by the Applicant to ensure that dust generation is minimised as far as reasonably possible.

Provisions: The Applicant must prepare and implement a Dust Management Plan that must:

- be generally consistent with the draft *Air Quality Management Plan*, prepared by Thiess Services Pty Ltd and dated July 2003. The Dust Management Plan is not precluded from forming part of a broader Air Quality Management Plan for the site (including, for example, gaseous emissions and odour management measures);
- include relevant details of negotiations and any agreements with the owners of the Statewide and McRoss sites in relation to dust impacts;
- identify all major sources of particulates that may be emitted from the site, being both point-source and fugitive emissions, including identification of the major components and quantities of these emissions;
- include monitoring for particulate emissions from the site, in accordance with any requirements of the EPA;
- provide procedures for the minimisation of particulate emissions from the site;
- provide protocols for regular maintenance of process equipment to minimise the potential for leaks and fugitive emissions;
- detail a contingency plan should an incident, process upset or other initiating factor lead to elevated particulate emissions, whether above normal operating conditions or environmental performance goals/limits;
- include specific protocols to address operations in the event of elevated background dust levels, including measures to cease, modify or alter operations, where relevant;
- include coordination and cooperation mechanisms with the owners of the former Orica and Glad sites in relation to dust management and mitigation;
- be prepared to address the requirements of the Environment Protection Authority; and
- be approved by the Director-General prior to the commencement of any works on the site.

Recommendation 18

Issue: Pro-active odour management plan

Rationale: In order to minimise the potential for odour generation on the site, and possible off-site impacts, the Applicant should be required to implement appropriate, pro-active odour management measures on the site.

Provisions: The Applicant must prepare and implement an Odour Management Plan that must:

- be generally consistent with the draft *Air Quality Management Plan*, prepared by Thiess Services Pty Ltd and dated July 2003. The Odour Management Plan is not precluded from forming part of a broader Air Quality Management Plan for the site (including, for example, gaseous emissions and dust management measures);
- include measures to prevent the emission of offensive odours from the site;
- be consistent with the draft odour management protocol prepared by the Applicant;
- be prepared to address the requirements of the Environment Protection Authority; and
- be approved by the Director-General prior to the commencement of any excavation works on the site.

Recommendation 19

Issue: Confirmation of air quality performance

Rationale: Consistency with the air emissions and impact predictions presented in the Environmental Impact Statement and additional information documents is required to demonstrate appropriate air emissions performance.

Provisions: The Applicant must:

- undertake point source emission sampling and analysis subject to the requirements of the development consent and Environment Protection Licence within three months of the commencement of operation;
- complete a comprehensive air quality impact assessment, using actual air emission data collected under a). The assessment must be undertaken strictly in accordance with the methods outlined in *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2001);
- compare the results of the air quality impact assessment with the predicted air quality impacts detailed in the Environmental Impact Statement and additional information documents;
- compare the results of the air quality impact assessment with the impact assessment criteria detailed in *Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2001);
- provide details of any entries in the Complaints Register relating to air quality impacts;
- provide details of remedial measures to be implemented to reduce point source emissions or ground-level concentrations of air pollutants to no greater than that predicted in the Environmental Impact Statement and additional information documents and to meet the impact assessment criteria detailed in *Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales* (EPA, 2001) in the event the Applicant identifies that the operation of development, under design loads and normal operating conditions, will lead to:
  a) greater point source emissions or ground-level concentrations of air pollutants than predicted in the Environmental Impact Statement and additional information documents, or
  b) greater point source emissions or ground-level concentrations of air pollutants than the impact assessment criteria detailed in Approved Methods and Guidance for the Sampling and Analysis of Air Pollutants in New South Wales (EPA, 2001); and
- provide details of its findings to the EPA and the Director-General within 28 days of completing the above investigations.

WATER IMPACTS

Recommendation 20

Issue: Discharges to sewer

Rationale: The Applicant indicates that it may need to discharge water from the development to a sewer controlled by the Sydney Water Corporation (SWC). There are specific requirements for connection and discharge to a SWC sewer, as outlined in the *Sydney Water Act 1994.*

Provisions: In relation to discharges to sewer, the Applicant must:

- derive relevant discharge criteria for discharge to sewer, to be reflected in a trade waste agreement with SWC, as part of the water management plan for the site;
- establish a Trade Waste Agreement with SWC and comply with the conditions of the Agreement at all times;
- seek the written approval of SWC for the design of all wastewater pre-treatment systems prior to the construction and operation of those systems;
- ensure that the development is operated in accordance with SWC's Trade Waste Policy;
- provide such information as may be required by SWC by obtaining a section 73 Compliance Certificate from SWC under the *Sydney Water Act 1994*;

- meet the requirements of SWC prior to the issue of a section 73 Compliance Certificate, as outlined in a Notice of Requirements under section 74 of the *Sydney Water Act 1994*; and
- provide copies of the section 73 Compliance Certificate to the Director-General prior to the commencement of commissioning.

Recommendation 21

Issue: Acid sulphate soils

Rationale: Acid sulphate soils may be present on the site and should be identified, and where appropriate, adequate management measures put in place to minimise the potential for environmental impacts.

Provisions: The Applicant must:

- undertake representative acid sulphate soil testing for areas of the site to be disturbed during site establishment and construction;
- undertake acid sulphate soil testing consistent with the EPA's Environmental Guideline *Assessing and Managing Acid Sulphate Soil* and the Acid Sulphate Soil Management Advisory Committee (ASSMAC) document *Acid Sulphate Soil Manual*;
- provide the results of soil testing to the Director-General;
- prepare an Acid Sulphate Soil Management Plan to meet the requirements of the EPA and the Waterways Authority should testing indicate that potential or actual acid sulphate soils may be disturbed during site preparation works or construction; and
- submit any Acid Sulphate Soil Management Plan to the Director-General for approval prior to disturbing the relevant soils on site.

Recommendation 22

Issue: Water reuse restrictions

Rationale: As water streams associated with the development may be contaminated, it is important to place restrictions on the reuse of water to ensure that areas are not recontaminated, and to ensure that contamination is not spread.

Provisions: In relation to wastewater utilisation, the Applicant must restrict activities as follows:

- wastewater quality and quantity for reuse on-site must be characterised and irrigation management practices specified in the Water Management Plan for the site. Wastewater reuse areas must be specified on site maps for different stages of the development;
- reused of wastewater on the site must be maximised, ahead of any discharge of the water;
- effluent application must not occur in a manner which causes surface runoff or ponding; and
- spray from effluent application must not drift beyond the boundary of the utilisation area to which it is applied.

Recommendation 23

Issue: Sea wall and Site-Bay interface design requirements

Rationale: Restrictions must be placed on activities at the site-Bay interface and in relation to the design of the seawall to mitigate against potential environmental impacts on Homebush Bay.

Provisions: The Applicant shall undertake works at the site-Bay interface to meet the following requirements:

- silt curtains shall be used during the reconstruction of the sea wall to minimise turbidity impacts in Homebush Bay;
- the effectiveness of the silt curtains shall be monitored to the requirements of the EPA;
- the sea wall is to be reconstructed to follow substantially the same alignment as the existing sea wall and not result in any further encroachment into Homebush Bay; and

- cross sections showing final levels of the foreshore land are to be provided to the Waterways Authority prior to a Part 3A Permit being issued. The cross sections are to extend into the Bay at least 5 metres beyond the toe of the sea wall and inland to at least 40 metres from the top of the sea wall. The cross sections are to depict mean high water mark, the toe of the sea wall and the top of the sea wall.

Recommendation 24

Issue: Turbidity effects

Rationale: Remediation works, particularly those in the vicinity of the site-Bay interface has the potential to generate a negative water quality impact on Homebush Bay through turbidity. To ensure that appropriate environmental outcomes are met in relation to water quality and aquatic fauna and flora in Homebush bay, limits must be placed on the acceptable level of turbidity that may be generated.

Provisions: The Applicant must establish background turbidity levels one metre from the silt curtains as part of the Water Management Plan for the development (refer below). The development must not cause turbidity to increase by more than 10% above the established background level.

Recommendation 25

Issue: Water management plan

Rationale: Appropriate management measures are required to mitigate the potential impacts of contaminated water run-off from the site.

Provisions: The Water Management Plan must:

- be generally consistent with the draft *Water Management* Plan, prepared by Thiess Services Pty Ltd and dated July 2003;
- detail erosion and sediment controls, including dam sizing consistent with should the requirements for longer term developments as outlined in *Managing Urban Stormwater: Soils and Construction* (available from the Department of Housing);
- Include calculations of a water balance for all waters generated at the premises and distributed via water management controls including potential volumes of groundwater and stormwater for treatment, discharge to sewer or ambient waters, or reuse;
- describe the remedial action to be taken by site operators in response to exceedance of concentration limits or other performance criteria for the onsite or ambient water management controls;
- detail specific management measures to ensure maximum reuse of water on the site, and procedures for the reuse of wastewater in particular situation;
- outline procedures for review and updating of the Water Management Plan as works progress;
- describe the triggers and performance criteria for commencing monitoring in the sediment basin after rainfall events, including but not limited to, defining a rainfall event for monitoring purposes (size and duration of rainfall event), time period before monitoring commences after rainfall; and what monitoring will occur during a series of rainfall events or in response to a long rainfall event;
- address the requirements of the EPA and Waterways Authority and NSW Fisheries; and
- be approved by the Director-General prior to any works commencing on the site.

Recommendation 26

Issue: Discharge water quality monitoring

Rationale: Water discharged from the site, through the stormwater sediment basin, must be comprehensively monitored to ensure that water quality outcomes are being met.

Provisions: The Applicant must develop and implement a Water Discharge Quality Monitoring Program that includes:

- procedures for the practical development of specific discharge quality criteria based on monitoring results during the first three months of remediation works and operation of the sediment basin(s);
- measures to ensure consistency of discharge criteria with ANZECC and ARMCANZ guidelines, or where specific criteria are not available in those guidelines, criteria developed and justified based on other relevant literature sources;
- provisions for the consideration of initial mixing process and the potential for bioaccumulation and the parameters listed in the Applicant's primary submission to the Commission of Inquiry in the development of discharge criteria; and
- provision for the review of the water quality monitoring program after the first three months of remediation works and operation of the sediment basin.

The monitoring program and its revised program must be submitted to the Director-General prior to implementation and copies of the program and any revised program must be submitted to the Director-General prior to implementation.

Recommendation 27

Issue: Stormwater/surface water management after remediation

Rationale: Once the site is remediated, there is an on-going need to manage water flowing off the site, particularly during storm events.

Provisions: The Applicant must prepare and implement a Stormwater Management Scheme that:

- is consistent with the Stormwater Management Plan for the catchment, or if such a Plan has yet to be prepared, consistent with the guidance contained in *Managing Urban Stormwater: Council Handbook*;
- meets the requirements of the EPA; and
- is approved by the Director-General prior to the conclusion of operation.

NOISE IMPACTS

Recommendation 28

Issue: Restrictions to hours of works

Rationale: To ensure that the proposed development meets relevant noise criteria during site establishment, construction and operation, it is necessary to restrict hours of works. Restrictions to hours of works will mitigate noise impacts as well as general amenity impacts (such as traffic movements).

Provisions: The development must only be undertaken during the following hours:

- during site establishment and construction: from 7:00 am to 6:00 pm on Mondays to Saturdays, and at no time on Sundays or public holidays;
- during operation, mobile plant and equipment must only be operated outside the treatment compound from 7:00 am to 6:00 pm on Mondays to Saturdays and at no time on Sundays or public holidays. Once any multi-storey dwelling unit affected by daytime noise levels above 55dB(A) by the Lednez site remediation works is occupied, hours of operation on Saturdays are to be restricted to 8:00am to 1:00pm;

- between 6:00pm and 7:00 am on any day, only the IHTD, BCD and Plasma Arc units and one front-end loader may be operated. The front-end loader may only operate in the treatment compound during the period 6:00pm and 7:00 am on any day; and
- outside the hours above with the prior written approval of the Director-General, and with the agreement of the EPA.

Recommendation 29

Issue: Construction noise management plan

Rationale: Appropriate management measures must be in place to minimise noise generated on the site during site establishment and construction, and to ensure that local acoustic amenity is not adversely impacted.

Provisions: The Construction Noise Management Plan must:

- identify general activities that will be carried out and associated noise sources;
- assess construction noise impacts at the relevant receivers;
- provide details of overall management methods and procedures that will be implemented to control noise from the site establishment stage;
- include a pro-active and reactive strategy for dealing with complaints including achieving the construction noise goals, particularly with regard to verbal and written responses;
- detail noise monitoring, reporting and response procedures;
- provide for internal audits of compliance of all plant and equipment;
- indicate site establishment timetabling to minimise noise impacts;
- include procedures for notifying residents of construction activities likely to affect their noise amenity;
- address the requirements of the EPA; and
- be approved by the Director-General prior to the commencement of any works on the site.

Recommendation 30

Issue: Construction noise monitoring program

Rationale: To ensure that noise outcomes are being achieved during site establishment, the Applicant must prepare and implement a construction noise monitoring program.

Provisions: The Construction Noise Monitoring Program must:

- identify noise monitoring locations determined in consultation with the EPA;
- provide for monitoring of $L_{A10(15\ minute)}$, $L_{A90(15\ minute)}$ and $L_{A1(1\ minute)}$ noise levels;
- provide for assessment of noise impacts on local residents;
- meet the requirements of the EPA; and
- be approved by the Director-General prior to the commencement of any works on the site.

Recommendation 31

Issue: Operation noise limits (evening and night)

Rationale: Noise limits must be imposed on the development to ensure that unacceptable noise impacts on receptors.

Provisions: The development must meet the following noise limits during operation at the locations indicated during the periods specified below. Conditions under which these noise limits are to be measured are specified in the EPA's General Terms of Approval:

- at existing residential areas in Rhodes: 45dB(A) ($L_{Aeq(15minute)}$) during the evening, 40dB(A) ($L_{Aeq(15minute)}$) during the night and 48dB(A) ($L_{A1(1minute)}$) during the night; and
- at residential areas in Meadowbank: 45dB(A) ($L_{Aeq(15minute)}$) during the evening, 40dB(A) ($L_{Aeq(15minute)}$) during the night and 50dB(A) ($L_{A1(1minute)}$) during the night.

Recommendation 32

Issue: Operation noise goals (day)

Rationale: Noise goals must be specified to provide a reference to which the Applicant must operate in relation to best practice noise management.

Provisions: The Applicant must design and implement its noise mitigation works and procedures to achieve the lowest noise levels reasonably achievable to the satisfaction of the Director-General in consultation with the EPA. The noise levels must not exceed the predicted noise levels provided by the Applicant in supplementary documentation to the Commission (see Table 21).

Recommendation 33

Issue: Operation noise monitoring program

Rationale: To ensure that noise outcomes are being achieved during operation, the Applicant must prepare and implement an operation noise monitoring program.

Provisions: The Operation Noise Monitoring Plan must:

- identify noise monitoring locations determined in consultation with the EPA;
- provide for monitoring of $L_{A10(15\ minute)}$, $L_{A90(15\ minute)}$ and $L_{A1(1\ minute)}$ noise levels;
- include requirements for monitoring during the day, evening and night;
- provide for assessment of noise impacts on local residents;
- meet the requirements of the EPA; and
- be approved by the Director-General prior to the commencement of any works on the site.

Recommendation 34

Issue: Operation noise management plan

Rationale: Appropriate management measures must be in place to minimise noise generated on the site during operation, and to ensure that local acoustic amenity is not adversely impacted.

Provisions: The Operation Noise Management Plan must include:

- measures to attain evening and night time noise limits, and day time noise goals;
- details of how best practice noise control will be applied to the site;
- procedures to demonstrate the noise limits, noise goals and/or best practice noise control operations are met at all times;
- review protocols to ensure that best practice noise control operation is continually met;
- details of a holistic, co-ordinated approach to noise management in coordination with other noise generating developments on the Rhodes Peninsula;
- identification of all noise sensitive receivers and the applicable noise criteria;
- identification of activities that will be carried out and the associated noise sources;
- details of management methods and procedures that will be implemented to control individual and overall noise emissions from the site;
- reactive and pro-active strategies for dealing promptly with any noise complaints, including documentation of a fast response (within 1 hour), the completed action on a complaint and feedback from the complainant (within 24 hours);
- noise monitoring, and reporting procedures;
- provision for regular internal audits of compliance of all plant and equipment;
- scheduling/timetabling of remediation work to minimise noise impact;
- procedures for notifying residents of forthcoming remediation activities likely to affect their noises amenity;
- address the requirements of the EPA; and
- be approved by the Director-General prior to the commencement of any works on the site.

HAZARDS AND RISK IMPACTS

Recommendation 35

Issue: Fire Safety Study

Rationale: In order to demonstrate that the proposed development has been designed to minimise the risk of fires on the site, the Department considers that a Fire Safety Study should be prepared for the development.

Provisions: The Fire Safety Study must:

a) be prepared in accordance with the Department's document *Hazardous Industry Planning Advisory Paper No. 2 – Fire Safety Study Guidelines* and the NSW Government's document *Best Practice Guidelines for Contaminated Water Retention and Treatment Systems*; and

b) be approved by the Director-General and the Commissioner of the NSW Fire Brigades prior to the commencement of construction.

Recommendation 36

Issue: Hazard and Operability (HAZOP) and Control Hazard and Operability (CHAZOP) Studies

Rationale: To ensure that all process design and control features have been incorporated in to the final design of the remediation process to mitigate against abnormal operation and possible resultant environmental and safety implications, the Applicant should undertake HAZOP and CHAZOP analyses on the development.

Provisions: The HAZOP and CHAZOP studies must:

- be undertaken by an independent person or team approved by the Director-General;
- be consistent with the guidance provided in *Hazardous Industry Planning Advisory Paper No. 8 - HAZOP Guidelines*;
- include evaluation of Standard Operating Procedures; and
- be approved by the Director-General prior to the commencement of construction.

Recommendation 37

Issue: Emergency Plan

Rationale: In the event that an incident does occur on the site, appropriate emergency management and response mechanisms must be in place

Provisions: The Emergency Plan must:

- be consistent with the guidance provided in *Hazardous Industry Planning Advisory Paper No. 1 - Industry Emergency Planning Guidelines*; and
- be approved by the Director-General prior to the commencement of commissioning.

Recommendation 38

Issue: Safety Management System

Rationale: In order to manage safety-related issues associated with the development, an overarching Safety Management System is required.

Provisions: The Safety Management System must:

- be consistent with the guidance provided in *Hazardous Industry Planning Advisory Paper No. 9 - Safety Management*;
- specify all safety-related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to safety procedures; and
- be approved by the Director-General prior to the commencement of commissioning.

Recommendation 39

Issue: Hazard Auditing

Rationale: To ensure that the development is being undertaken in a manner conducive to safe operation, a Hazard Audit should be undertaken of the remediation process.

Provisions: The Hazard Audit must:

- be undertaken by an independent person or team approved by the Director-General;
- be undertaken within 12 months of the commencement of commissioning, and then as may be directed by the Director General;
- be consistent with the guidance provided in *Hazardous Industry Planning Advisory Paper No. 5 - Hazard Audit Guidelines*; and
- be submitted for the approval of the Director-General.

Recommendation 40

Issue: Transport risk management

Rationale: To ensure that the potential for transport incidents and waste spills are minimised during the transport of liquid waste to Queensland, if that disposal option is pursued, the Applicant must develop and implement a Transport Risk Protocol.

Provisions: The Transport Risk Protocol must:

- include minimum requirements for vehicle maintenance;
- detail speed limits to be observed along routes to and from the sites and within the site;
- specify behaviour requirements for vehicle drivers to and from the site and within the site;
- provide protocols for the loading and unloading of vehicles, and management of transport materials during haulage;
- include specific procedures to be followed in the event of an accident, with or without spills of transported material;
- include measures to address issues raised in consultation with relevant emergency services in New South Wales; and
- be approved by the Director-General prior to the first haulage of liquid waste from the site.

Recommendation 41

Issue: Bunding and spill management

Rationale: In the event of a spill of dangerous goods or hazardous materials, the Department considers it important to have appropriate infrastructure on the proposed development to contain the spill. This is particularly important in relation to the prevention of surface water contamination and the containment of the spilled material to permit an appropriate clean-up.

Provisions: The Applicant must install bunding for all dangerous goods and liquid hazardous materials consistent with the most stringent of:

- 110 percent of the volume of the single largest stored volume within the bund;
- relevant Australian Standards; and
- the EPA;s Environment Protection Manual Technical Bulleting *Bunding and Spill Management* relevant to bunding.

WASTE GENERATION AND MANAGEMENT

Recommendation 42

Issue: Waste management plan

Rationale: Appropriate management measures must be in place to minimise the generation of waste on the site, and effectively and appropriately address any waste generated, particularly waste with the potential to be contaminated.

Provisions: The Waste Management Plan must:

- include a list of all potential wastes to be generated on the site;
- outline procedures for the classification and the assessment of wastes in accordance with the *Protection of the Environment Operations Act 1997* and the Waste Guidelines;
- detail procedures for handling, storage and tracking of all wastes, and procedures for disposal of all wastes;
- designation of waste storage areas including stockpiles, recyclable segregation, and bins;
- contingency plans for handling of any waste that cannot be adequately handled/treated on site;
- procedures for review and updating of the Waste Management Plan;
- address the requirements of the Environment Protection Authority; and
- be approved by the Director-General prior to any works commencing on the site.

Recommendation 43

Issue: Destination of liquid waste

Rationale: If liquid waste is to be transported off-site, the waste must be transported for treatment at an appropriate facility that is capable and will of accepting the waste.

Provisions: If the Applicant chooses to transport liquid waste off-site for treatment, it must only transport the waste to the specified facility at Narangba, in Queensland. Prior to the commencement of construction, the Applicant must indicate to the Director-General whether on-site or off-site treatment has been chosen. If off-site treatment is selected, the Applicant must demonstrate to the satisfaction of the Director-General that the Narangba facility has agreed to accept the liquid waste, and there is no regulatory impediment to it doing so.

COMPLETION OF WORKS

Recommendation 44

Issue: Site validation

Rationale: An appropriate person must verify that the site has been remediation to an appropriate standard.

Provisions: At the conclusion of remediation works the site must be validated by a NSW accredited contaminated site auditor.

COMMUNITY INFORMATION, INVOLVEMENT AND CONSULTATION

Recommendation 45

Issue: Community information program

Rationale: The Department considers that the open and transparent provision of information in relation to the remediation works be provided to the community. Equally, there must be appropriate feedback mechanisms to facilitate community comments, inquiries and complaints.

Provisions: The Applicant must prepare and implement a Community Information Program that:

- provides for all monitoring, management and reporting documents required under the development consent to be made publicly available;
- provides means by which public comments, inquiries or complaints can be received, including a 24-hour, toll-free telephone number, a postal address and an email address;
- includes details of a register to be kept of all comments, inquiries and complaints received by the above means, including the following register fields:
  a) the date and time, where relevant, of the comment, inquiry or complaint,
  b) the means by which the comment, inquiry or complaint was made (telephone, mail or email),
  c) any personal details of the commenter, inquirer or complainant that were provided, or if no details were provided, a note to that effect,
  d) the nature of the complaint,
  e) any action(s) taken by the Applicant including any follow-up contact in relation to the comment, inquiry or complaint, and
  f) if no action was taken by the Applicant in relation to the comment, inquiry or complaint, the reason(s) why no action was taken;
- establishment of an internet site on which information in relation to the operation and performance of the development can be provided;
- details procedures and protocols for the open and transparent provision of information to the community, and the effective handling of comments, inquiries and complaints;
- indicates how notification of the provisions of the Community Information Program will be made known to the community (for example newspaper advertisements, letter-box drops); and
- is approved by the Director-General prior to the commencement of any works on the site.

Recommendation 46

Issue: Community consultative committee

Rationale: It is important that a forum be provided in which community representatives can present concerns in relation to the environmental performance of the development and receive details of matters related to the environmental impacts and performance of the development.

Provisions: The Applicant must establish a Community Consultative Committee (CCC, or Community Liaison Group) that must:

- comprise a reasonable and representative cross-section of interested parties from the local community;
- meet regularly throughout the remediation project for the Lednez site and part of the bed of Homebush Bay;
- have reasonable resource requirements provided by the Applicant;
- include occasional representation from the Department, the EPA, Waterways Authority and Council, where relevant and agreed by each of those agencies;
- provide a forum in which information on the environmental performance can be furnished, and in which community concerns can be raised and resolved;
- be chaired by a person from the CCC elected by the CCC;
- have a charter established by the CCC consistent with the conditions of consent; and
- liaise with the convenor of other CCC or similar forums for developments on the Rhodes Peninsula to attempt to synchronise venues and meetings times for the convenience of community representatives.

Recommendation 47

Issue: Funding for independent technical advice

Rationale: Much of the process design and environmental performance data for the development is highly technical and complex in nature. A mechanism is required to allow for independent technical advice to be provided to the CCC.

Provisions: The Applicant must provide funding for the CCC to obtain independent technical advice during site establishment, construction, operation and decommissioning/deconstruction. The Applicant is to provide an amount of $6,000 for the initial 3 months from commencement of site works plus a total amount $15,000 during the commissioning of the IHTD, BCD and Plasma Arc plants (if the latter 2 are constructed at Rhodes), plus $1,000 per month indexed to average weekly ordinary time earnings for the life of the project.

CUMULATIVE IMPACTS

Recommendation 48

Issue: Cumulative Remediation Impacts Protocol (CRIP)

Rationale: In the event that the Minister determines to approve both remediation proposals on Rhodes Peninsula (the Meriton site and the Lednez site), there is potential for cumulative impacts from the two proposals operating concurrently. Further, there is potential to minimise cumulative impacts with a coordinated approach to environmental management between the Applicants for the two projects.

Provisions: The Cumulative Remediation Impacts Protocol must:

- be developed between the Applicants for the two remediation proposals within one month of the granting of this consent;
- include procedures for the communication of environmental performance data between the parties;
- include agreements in relation to the coordination of operations to minimise the cumulative impacts of dust, general air pollutants, traffic and noise;
- outline a coordinated approach between the parties in relation to community consultation, information and participation;
- include measures to address the requirements of the EPA and the Waterways Authority in relation to cumulative impacts; and
- be to the satisfaction of the Director-General.

ENVIRONMENTAL MANAGEMENT AND REPORTING

Recommendation 49

Issue: Construction/ Site Establishment Environmental Management Plan (CEMP)

Rationale: An over-arching environmental management system is required during site establishment and construction to ensure that all environmental matters are coordinated, and to provide relevant environmental policies and procedures relevant to the development during site establishment and construction.

Provisions: The Construction Environmental Management Plan must:

- describe all activities to be undertaken on the site during site establishment and construction of the development, including an indication of stages of construction, where relevant;

- detail statutory and other obligations that the Applicant is required to fulfil during site establishment and construction, including all approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
- include specific consideration of measures to address any requirements of the Department, the EPA, and the Waterways Authority during site establishment and construction;
- detail how the environmental performance of the site preparation and construction works will be monitored, and what actions will be taken to address identified adverse environmental impacts;
- describe the roles and responsibilities for all relevant employees involved in the site establishment or construction of the development;
- include all Management Plans and Monitoring Programs relevant to site establishment and construction;
- include arrangements for community consultation and complaints handling procedures during construction;
- be submitted to the CCC for comment prior to approval;
- be approved by the Director-General prior to the commencement of site preparation or constructions works; and
- be made available for public inspection after approval.

Recommendation 50

Issue: Operation Environmental Management Plan (OEMP)

Rationale: An over-arching environmental management system is required during operation to ensure that all environmental matters are coordinated, and to provide relevant environmental policies and procedures relevant to the development during operation.

Provisions: The Operation Environmental Management Plan must:

- identify all statutory and other obligations that the Applicant is required to fulfil in relation to operation of the development, including all consents, licences, approvals and consultations;
- include a description of the roles and responsibilities for all relevant employees involved in the operation of the development;
- include overall environmental policies and principles to be applied to the operation of the waste destruction facility;
- include specific consideration of measures to address any requirements of the Department, the EPA, and the Waterways Authority during operation;
- detail standards and performance measures to be applied to the development, and a means by which environmental performance can be periodically reviewed and improved, where appropriate;
- detail management policies to ensure that environmental performance goals are met and comply with the conditions of this consent;
- include the Management Plans relevant to operation;
- include the environmental monitoring requirements relevant to operation;
- be submitted to the CCC for comment prior to approval;
- be approved by the Director-General prior to the commencement of commissioning; and
- be made available for public inspection after approval.

Recommendation 51

Issue: Decommissioning/Deconstruction Environmental Management Plan (DEMP)

Rationale: An over-arching environmental management system is required during decommissioning and deconstruction to ensure that all environmental matters are coordinated, and to provide relevant environmental policies and procedures relevant to the development during decommissioning and deconstruction.

Provisions: The Decommissioning/Deconstruction Environmental Management Plan must:

- include procedures for treatment of residual waste products and plant/equipment from the development;
- detail a program to verify that all storage and processing areas of the development are appropriately decontaminated;
- include procedures for the deconstruction of the waste destruction facility, including a schedule for deconstruction activities;
- provide details of rehabilitation and landscaping measures to be implemented after deconstruction, consistent with and expanding on the Landscape Management Plan for the site;
- include specific consideration of measures to address any requirements of the Department, the EPA, and the Waterways Authority during decommissioning/deconstruction;
- be submitted to the CCC for comment prior to approval;
- be approved by the Director-General within two years of the commencement of operation of the development; and
- be made available for public inspection after approval.

Recommendation 52

Issue: Environmental Officer

Rationale: A primary contact is needed to ensure consistency of communication with the community and regulators, as well as provide a single coordinator of environmental and safety management at the development

Provisions: The Environment Officer must:

- be the primary contact point in relation to the environmental performance of the development;
- be the primary interface with the CCC, and shall attend CCC meetings;
- be responsible for all Management Plans and Monitoring Programs required for the development;
- be responsible for considering and advising on matters specified in the conditions of the consent, and all other licences and approvals related to the environmental performance and impacts of the development;
- be responsible for receiving and responding to comments, inquiries and complaints received from the community;
- be required to facilitate an induction and training program for relevant persons involved with the operation of the development;
- be given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur; and
- and be approved for appointment by the Director-General prior to the commencement of any works on the site.

Recommendation 53

Issue: Annual Environmental Management Report (AEMR)

Rationale: Regular reporting of the environmental performance of the development is required to demonstrate that environmental outcomes are being met and that conditions of consent are being complied with. The AEMR also provides an opportunity for the Applicant to provide information to the community in relation to the environmental performance of the development.

Provisions: The Annual Environmental Management Report must:

- detail compliance with the conditions of this consent;
- contain a copy of the Complaints Register for the preceding twelve-month period (exclusive of personal details), and details of how theses complaints were addressed and resolved;

- include a comparison of the environmental impacts and performance of the development against the environmental impacts and performance predicted in the Environmental Impact Statement and additional information documents provided to the Department and Commission of Inquiry;
- detail results of all environmental monitoring required under this consent and other approvals, including interpretations and discussion by a suitably qualified person;
- contain a list of all occasions in the preceding twelve-month period when environmental performance goals for the waste destruction facility have not been achieved, indicating the reason for failure to meet the goals and the action taken to prevent recurrence of that type of incident;
- be prepared within twelve months of the commencement of commissioning, and every twelve months thereafter;
- be provided to the EPA, Waterways Authority and the CCC for comment prior to submission to the Director-General;
- be approved by the Director-General each year; and
- be made available for public inspection, as required by the Director-General.

BUILDINGS, STRUCTURES AND CERTIFICATION

Recommendation 54

Issue: Construction certification

Rationale: Part 4A of the *Environmental Planning and Assessment Act 1979* provides specific requirements in relation to certification of structures.

Provisions: The Applicant must provide the Director-General with the following where applicable:

- written notification of the appointment of a Principal Certifying Authority, as soon as practicable after the appointment;
- copies of all Construction Certificates issued for the development;
- written notification of the intention to commence construction work, to be received at least two working days prior to the commencement of construction;
- copies of all Occupation Certificates issued for the development;
- written notification of the intention to occupy the development, to be received at least two working days prior to occupation; and
- copies of all Compliance Certificates issued for the development.

Recommendation 55

Issue: Demolition of structures

Rationale: The *Environmental Planning and Assessment Regulation 2000* provides specified considerations for the demolition of structures.

Provisions: All demolition works undertaken on the site must be conducted in accordance with *AS2601-1991 The Demolition of Structures*, as in force at 1 July, 1993.

ADMINISTRATION

Recommendation 56

Issue: Scope of the development

Rationale: The Applicant has generated a number of documents relevant to the scope of the development, including the Environmental Impact Statement, Environmental Impact Statement

Supplementary Report, additional information, and submissions to the Commission of Inquiry. It is important that each of these documents be listed in any development consent to clearly define the scope of the proposal.

Provisions: The Department recommends that the Applicant undertake the proposed remediation strictly in accordance with the scope of works outlined in all documents provided during the planning and assessment process for the proposed development. In the event of an inconsistency between documents, the more recent document must prevail to the extent of the inconsistency. This requirement does not preclude the revision of documents such as management plans to the satisfaction of the Director-General. The conditions of consent must prevail over all documents.

Recommendation 57

Issue: Scope of the development

Rationale: The environmental impact assessment of the proposed development has been based on impacts that may be generated through the remediation of materials on the site. The assessment did not include the treatment of any contaminated materials from outside the site.

Provisions: The development must be constrained to only remediating materials originating on the site, and must be expressly prohibited from receiving materials from off-site for treatment other than minor quantities of contaminated material from the Statewide Property Development site as determined by the Director-General in consultation with the EPA.

Recommendation 58

Issue: General Terms of Approval

Rationale: The General Terms of Approval provided by the Environment Protection Authority, the Waterways Authority and NSW Fisheries must be included in any development consent issued.

Provisions: The Applicant must comply with General Terms of Approval, as well as the Department's recommended measures to address residual impacts.