

5. ENVIRONMENTAL MANAGEMENT

5.1 INTRODUCTION

This section of the PER has two primary purposes:

- (1) To confirm the environmental management commitments made by Phillips for the original EIS (D&M 1997), Supplement (D&M 1998a) and Preliminary Environmental Management Programme (EMP) (D&M 1998b) to ensure the design, construction and operation of the proposed LNG plant is undertaken in a responsible manner; and
- (2) To identify additional commitments which may be required to address the potential environmental effects of the proposed expansion of the LNG plant design, taking into account the revised assessment studies outlined in Section 4.

5.1.1 Objectives

The objective of the EMP is to establish management and monitoring plans which ensure that actual and potential impacts associated with the construction, operation and decommissioning phases of the LNG plant are minimised, and that compliance with all relevant environmental regulations is achieved.

The specific objectives of the EMP are to provide a planned structure which will:

- ensure that construction activities are undertaken in an appropriate manner and that impacts on the environment are minimised and monitored;
- ensure that impacts associated with the operational phase of the development are minimised and monitored; and
- minimise the risk of potential effects from unexpected incidents, such as oil spills, and ensure that appropriate contingency plans are in place in the event of such incidents.

The EMP also identifies the timing and scope of individual components of the environmental management plan, and serves as a compliance document - recording the progress of management commitments and their conformity with requirements set by authorities and expectations of the public. An EMP is therefore a means of both documenting and auditing environmental management commitments made by the proponent

5.1.2 Previous Environmental Management Commitments

In November 1998, Phillips submitted a Preliminary EMP for the original 3 MTPA LNG Plant and associated sub-sea gas pipeline. That EMP superseded previous

commitments presented in the Supplement to the Draft EIS in that it was restructured to capture comments and approval conditions provided by Commonwealth and Northern Territory (NT) governments subsequent to their review of the Supplement.

In the EMP for the Wickham Point plant, Phillips agreed to undertake the following in accordance with its corporate Health, Environment and Safety (HES) Management System:

- the adoption of best practice industry standards and guidelines applicable to the construction, operation and decommissioning of the pipeline and LNG plant;
- compliance with government regulations and all legal requirements;
- production and implementation of a safety manual and an emergency response manual, including an oil spill contingency plan, for the LNG plant;
- monitoring to confirm the scale of potentially adverse environmental impacts;
- decommissioning the plant upon completion of operations; and
- rehabilitation of the plant site and infrastructure areas to a natural condition or as otherwise specified by legislative or regulatory requirements.

A summary of specific proponent commitments was included in Table 1 of the Preliminary EMP (D&M 1998b), categorised according to the key phases of the project (Detailed Design Phase, Construction Phase, Operational Phase and Project Decommissioning).

5.1.3 Conditions of Approval for Previous Project

The principal recommendations made by DLPE and EA in early 1998 were summarised previously in Section 1.4.1. Both parties committed Phillips to implement the proposed project in accordance with the undertakings outlined in the draft EIS, the Supplement to the EIS and consequent recommendations made by the NT and Commonwealth Governments.

Additional measures for environmental protection were required to be incorporated into the EMP, which requires review by DLPE and EA prior to finalisation. It was also agreed that the final version of the EMP, as a public document, shall form the basis for any approvals and licences issued under the *Waste Management and Pollution Control Act*. The reader is referred to Appendix 1 of the Preliminary EMP for full details of all specific recommendations and conditions of approval submitted by DLPE and EA at that time (D&M 1998b).

5.1.4 Preliminary EMP Prepared in 1998

The Preliminary EMP described in detail the specific management responses by the proponent to environmental impacts and issues identified during the assessment process, as a result of input by the proponent, the public and government reviewers.

The Preliminary EMP was structured according to the key project activities, and included the following components:

- **Pipeline Environment Plan** – related to the design, construction and operation of the Bayu-Undan gas pipeline. It also outlined a commitment to prepare a Pipeline Management Plan (PMP) under *Petroleum (Submerged Lands) Act* requirements. Note that the approval process for the pipeline has since been progressed separate from the LNG plant and associated infrastructure (see Section 1.4.2).
- **Dredging and Spoil Disposal Management Plan** – addressed potential effects associated with pre-construction dredging and spoil disposal in preparation for the construction dock and loading jetty, and the pipeline shore crossing.
- **LNG Plant Environment Management Plan** – to address the requirements for environmental management during the site preparation, construction, operation and decommissioning of the LNG plant. Phillips committed to prepare the LNG Plant EMP as a stand-alone document of the EMP when finalised.
- **Emergency Response Manuals** – included the proponent’s commitment to prepare written emergency plans for the pipeline, plant and marine terminal to cover emergency situations that could occur, based on the results of a Quantitative Hazard and Risk Assessment. It was agreed that Emergency Response Manuals will be developed for:
 - LNG Plant Accident Response;
 - Loading Facility and LNG Carrier Accident Response;
 - Pipeline Rupture Contingency Plan; and
 - Platform Emergency Response.
- **Oil Spill Contingency Plans** – outlined commitments to prepare a series of Oil Spill Contingency Plans (OSCPs) to enable effective response during construction and operation of the LNG project, based on the results of an ecological/environmental risk assessment. Separate OSCP are to be prepared for:
 - Pipelay Operations (integrated with the existing Darwin Harbour OSCP where appropriate);
 - Pipeline Rupture (produced as part of the Pipeline Rupture Contingency Plan); and
 - Platform OSCP (to be interfaced with the Platform Emergency Response Plan).

- **Corporate Relations Plan** – in accordance with Phillips’ commitment as a good corporate citizen, a Corporate Relations Plan was proposed to ensure that the local community and other key stakeholders are kept informed of the proposed project operations. The proponent committed to implement the Plan by establishing:
 - A Corporate Relations Manager and Department;
 - Public and Community Relations Programme;
 - Larakia Liaison Committee;
 - Stakeholder Liaison Committee;
 - Internet website; and
 - CASA/Air Service Australia Liaison Link.
- **Compliance Auditing and Reporting** – Phillips assumed responsibility for undertaking regular audits and reviews of the LNG facility’s environment and safety management, including both on-site compliance auditing and review of performance reports. In addition, Phillips proposed to conduct regular site internal environmental audits and Environmental Management Systems (EMS) audits as required.

For each of the components relating to the Pipeline Environment Plan, Dredging and Spoil Disposal Management Plan and LNG Plant EMP, a draft *Environmental Effects and Management Register* was outlined. These detailed the potential effects related to each activity, applicable legislation and guidelines, and the proposed implementation strategy to address those environmental effects (including management commitments, performance objectives, proposed monitoring activities to be undertaken, and performance criteria).

Monitoring Commitments

In the 1998 Preliminary EMP, Phillips committed to the production and implementation of a detailed Environmental Monitoring Programme. The environmental monitoring commitments were primarily in relation to:

- abundance of weeds and feral animals in undisturbed areas of Wickham Point;
- abundance of biting insects within the plant site;
- effects of dredging and excavation associated with construction of the loading facility turning basin, the pipeline shore crossing and the construction dock approach channel on the coral communities of Channel Island and north-east Wickham Point;
- productivity of mangroves adjacent to the plant site;
- quantity, quality and methods of disposal of construction and operational wastes;
- confirmation of the quantity and quality of atmospheric emissions;

- wastewater discharge volumes and quality, including effluent dispersal studies;
- concentrations of selected metals, tributyltin and total petroleum hydrocarbons in marine sediments and selected marine biota in the vicinity of the ship-loading facility and construction dock; and
- contribution to the Darwin Port Corporations' monitoring programme for introduced marine organisms.

More specific details on each of the above monitoring commitments were indicated in the relevant *Environmental Effects and Management Register* for each component of the Preliminary EMP (D&M, 1998) and remain valid for the revised project.

In relation to the proposed expanded 10 MTPA LNG facility, Phillips intends to build on the previous environmental commitments for managing the approved 3 MTPA plant. The finalisation of the EMP, to occur after the current Public Environmental Review period, will be focused on reviewing those original commitments for their applicability. Preparation of the final plans outlined in the Preliminary EMP will be undertaken with due regard to the additional level of risk associated with the expanded project and comments received from interested stakeholders.

5.2 REVISED ENVIRONMENTAL MANAGEMENT PLAN

The final EMP will comprise the same components as those outlined in the 1998 Preliminary EMP, as detailed in Section 5.1.4. The final EMP will provide detailed Management Plans for both construction and operational components of the project.

The following section details the additional commitments which will be made by Phillips to address the potential environmental effects associated with the expanded 10 MTPA LNG plant design.

5.2.1 Additional Environmental Management Commitments

The outcomes of the updated assessment studies undertaken for the PER and detailed in Sections 4.3.1 to 4.3.12, confirm that most of the anticipated environmental effects of the proposed 10 MTPA LNG plant essentially remain the same as those identified for the original 3 MTPA proposal. As such, the commitments detailed in the Preliminary EMP adequately address the majority of the anticipated effects of the project on biophysical, cultural and socio-economic environments.

However, evaluation of the modified project has identified a number of additional commitments to be

implemented by the proponent, and one previous commitment that can no longer be sustained. These are outlined below:

5.2.1.1 Air monitoring

Phillips will quantify the major emission sources during commissioning of the project by periodic emission testing programmes (as previously agreed). Dependent on the results of this verification process, Phillips will undertake to establish a monitoring system for oxides of nitrogen (NO_x) from key emission sources. While the revised air modelling assessment clearly showed that predicted worst-case concentrations of all pollutants will meet accepted NEPM standards and no adverse effects are anticipated, when due consideration is given to cumulative effects from the existing Channel Island Power Station, NO_x is most likely to be the pollutant closest to ambient limits.

5.2.1.2 Greenhouse emissions

As part of its commitment to the Commonwealth Government's Greenhouse Challenge Programme, Phillips will develop a Cooperative Agreement with the AGO during the detailed design phase. This will include a corporate commitment to continual improvement in energy efficiency, development of a comprehensive greenhouse gas management strategy, and action plans for mitigation measures employed in the design of the revised project.

Phillips will further investigate other 'no regrets' and 'beyond no regrets' options for greenhouse minimisation. At this time plantation sequestration options, such as investment in oil mallee plantations, offer the greatest benefit as tangible offset measures. Phillips will evaluate these options further during detailed design and construction, with periodic reviews throughout the life of the project.

5.2.1.3 Wastewater discharge

As described in Section 4.3.4, Phillips has re-designed the wastewater disposal component of the project so that all treated wastewater will be used for on-site irrigation, to avoid direct discharge into Darwin Harbour. Direct discharge will only be considered as a contingency option.

During preparation of the final EMP, Phillips will undertake an evaluation of the proposed release of hydrotest water during construction of the storage tanks for LNG and condensate on-site. This will include an analysis of the additives which will be present, their fate and anticipated environmental effects. Management measures to avoid potential adverse effects on the marine environment will be agreed with the DIPE prior to construction.

5.2.1.4 Waste disposal management

The proposed management measures to handle the increased levels of solid and semi-liquid wastes anticipated from the expanded plant design have been detailed previously in Section 4.3.5. These measures have been revised to ensure compliance with the *Waste Management and Pollution Control Act 1999*, which had not been enacted at the time of the previous assessment.

Waste minimisation and recycling principles will be built into all project operations so as to reduce solid and semi-liquid waste streams where possible.

5.2.1.5 Dry rainforest mitigation

Phillips will continue to work with the NT Government to identify a suitable area of dry rainforest in the Darwin region to be acquired for conservation purposes. Protection of dry rainforest of good or better quality will offset the loss of dry rainforest required within the project area on Wickham Point.

5.2.1.6 Fauna Corridors

The restructure of major components within the plant site for the revised plant design has markedly reduced areas of natural habitat to the south of the plant. This has therefore created a physical barrier through the fauna corridor and culverts previously proposed for the southern end.

5.2.1.7 Public Risks

Section 4.3.10 detailed the outcomes of the revised Hazard Analysis and Risk Assessment undertaken to address the potential effects of the expanded 10 MTPA plant design and increased movements of LNG tankers in Darwin Harbour. It has been demonstrated that the siting, design, construction and operation of the proposed LNG plant is such that the safety and protection of persons, property and the environment will be maintained.

During the detailed engineering phase of the project, Phillips will undertake the following:

- a final HAZOP (Hazard and Operability) Study, to identify all potential scenarios arising from the failure of valves and controls or other upset conditions;
- a final QRA (Quantitative Risk Assessment), to identify, assess, evaluate and manage all potential risks associated with the project; and
- a detailed Safety Report for the LNG plant, in accordance with relevant Worksafe Australia Standards and prepared on the basis of the HAZOP and QRA studies outlined above.

5.2.1.8 Sustainability framework

Phillips has undertaken to build on a framework for assessing the design, construction and operation of the project consistent with the principles of Ecological Sustainable Development (ESD, see Section 4.3.12). Integration of the environmental, social and economic aspects of the project into a logic framework will enable Phillips to track its performance towards sustainable development of the LNG project. This will ultimately establish a tangible means to openly communicate the company's goals, objectives and performance measures through a public Sustainability Reporting process.

5.2.1.9 Proponent's environmental management commitments

Table 5.1 summarises the updated environmental management commitments for the project, taking into account the additional measures described above. Commitments which have substantially changed from the Preliminary EMP, or represent new commitments altogether, are shown in italics. Note that the commitments in relation to the Bayu-Undan to Wickham Point pipeline, being addressed in separate Environment Plans under the *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999*, are not listed here.

5.3 DREDGING AND SPOIL DISPOSAL MANAGEMENT PLAN

During discussions completed during production of the Supplement to the EIS, the Darwin Port Authority and Department of Transport and Works (DTW) suggested that Phillips coordinate dredging activities with Northern Territory government plans to dredge Stage 2 for East Arm Port, thereby sharing costs of dredge mobilisation. The agencies also offered to accept for disposal at East Arm Port reclamation area all suitable fill material generated by Phillips which was not required for the LNG plant site.

Recent consultations with the DTW have confirmed that all suitable fill material generated by Phillips could be utilised for both the East Arm Port and also the preparation of the road corridor through Middle Arm Peninsula. As a result of the full evaluation of dredging and spoil disposal options as presented in Section 4, Phillips has determined that there is unlikely to be substantial volumes of excess fill once the plant construction requirements are met. Nonetheless, as part of the development of its Dredging and Spoil Disposal Management Plan, Phillips will liaise with DTW to ensure that the dredging works are undertaken in an acceptable manner, and excess dredge material will be managed and disposed of to the satisfaction of DIPE and DTW.

Table 5.1 Revised Proponent's Environmental Management Commitments

Proposed Activity	Proposed Environmental Management Commitment	PER Section(s)
Detailed Design Phase		
Pipeline shore crossing, turning basin and construction dock approach channel	Based on the detailed evaluation of all dredging, excavation and spoil disposal options, Phillips will develop a dredge and spoil disposal management plan for approval by the DIPE. Phillips will endeavour to coordinate dredging works with the Department of Transport and Works to enable the relocation of suitable fill material to East Arm Port.	4.3.11
Plant site	The gas flare system will be designed to eliminate risk to routine air traffic. Approval for the preferred flare design will be sought from the appropriate Commonwealth and NT Government authorities, and modelling completed to the satisfaction of CASA.	4.3.3
	An inventory of atmospheric emissions and project energy efficiency will be prepared. Mechanisms for reducing greenhouse gas emissions will be discussed with the Commonwealth Government's Australian Greenhouse Office, including further investigation of 'no regrets' and 'beyond no regrets' options.	4.3.1; 4.3.2
	<i>Alternatives to the direct discharge of wastewater into the harbour has been pursued, to enable re-use for on-site landscape irrigation. Approval for minor volumes of direct outfall, if necessary as a contingency position, will be sought from the NT Government.</i>	4.3.4
	<i>Evaluation of the discharge of hydrotest water anticipated from construction of storage tanks will be undertaken during final EMP to identify constituents and environmental safeguards required in consultation with DIPE.</i>	4.3.4
	Design measures will be implemented where practical to minimise the potential visual impact of the development.	4.3.7
	Phillips will continue to work with the NT Government to identify a suitable area of dry rainforest of equal or better quality for conservation purposes.	4.3.8
	<i>Final Hazard and Operability (HAZOP), Quantitative Risk Assessment (QRA) and 'Safety Case' Report studies will be undertaken to address all potential hazards and risks associated with the project.</i>	4.3.10
	<i>Sustainability measures within a logic framework will be developed for environmental, social and economic aspects of the project.</i>	4.3.12
Access Road	Matters relating to the planning, alignment and construction oversight of the access road are the responsibility of the NT Government.	1.5
Construction Phase		
	Any unusual, planned temporary interruptions to the activities of recreational fishermen, mariners and other users of the harbour as a result of barge movements will be notified to the Darwin Port Authority and advertised in the local media.	4.3.9
	Phillips will liaise with the Department of Transport and Works to plan the routing and timing of truck movements during construction activities so as to minimise disturbance to commuter traffic.	4.3.9

Table 5.1 Revised Proponent's Environmental Management Commitments (cont'd)

Proposed Activity	Proposed Environmental Management Commitment	PER Section(s)
Hydrotest of storage tanks	Evaluation of hydrotest water will be undertaken during final EMP to identify constituents and environmental safeguards required. Hydrotest water will be discharged into Darwin Harbour and will meet DIPE water quality requirements.	4.3.4
Pipeline shore crossing, turning basin and construction dock approach channel	Appropriate construction methods and timing will be adopted to minimise the potential for dispersion of turbid water plumes towards the Channel Island coral community.	4.3.11
Ship-loading facilities and construction dock	No commitments during construction.	
Plant site construction	Phillips undertakes to manage the area within the boundaries of the LNG plant in an environmentally responsible manner and will cooperate with the NT Government in management programmes as agreed in the final EMP for the site.	5.4
	Introduction of weeds and plant pathogens will be prevented through vehicle washdown and inspection procedures, to be developed in conjunction with the Department of Primary Industries and Fisheries.	5.4
	A feral animal control programme will be developed on the basis of advice from the Parks and Wildlife Commission.	5.4
	Potential soil erosion and siltation of water resources will be minimised by earthworks and by the design of drains and culverts.	5.4
	The creation of acid soil conditions will be mitigated by minimising disturbance of mangrove sediments and by disposing of any marine sediments with the potential for acid generation in a government-approved location. If necessary, an Acid Sulphate Soil Management Plan will be developed in consultation with DIPE soil conservation officers.	4.3.8; 5.4
	Construction practices will be adopted which avoid the creation of new breeding areas for biting insects, and identified breeding sites will be removed.	4.3.8; 5.4
	Phillips will establish a liaison committee, which will include indigenous interests, to assist in the management and protection of any archaeological sites which may be discovered on Wickham Point.	5.7
	An archaeological sites register will be established in consultation with DIPE Heritage Conservation Services and will be updated if any new artefacts or historic sites are discovered.	4.3.9; 5.7
	If any sites of Aboriginal significance are discovered, the areas will be protected and the AAPA will be consulted.	4.3.9; 5.7
	Areas of significant vegetation (rainforest and mangroves) to be retained will be marked by temporary fencing, with access prohibited. Fire fighting equipment will be available.	4.3.8; 5.4

Table 5.1 Revised Proponent's Environmental Management Commitments (cont'd)

Proposed Activity	Proposed Environmental Management Commitment	PER Section(s)
	Fauna habitat surrounding the plant site will be protected by fencing, with access prohibited.	5.4
	Construction activities will comply with noise abatement requirements and, where possible, will be undertaken during daylight hours. Blasting will only occur during daylight hours.	4.3.6; 5.4
	The potential for dust generation will be minimised by shaping of stockpiles, spraying of cleared areas with water and control of vehicle speeds.	5.4
Operational Phase		
Plant	<i>Stack emissions will meet ambient air quality guidelines, verified through periodic emission testing. Depending on the results, a continuous NO_x monitoring programme will be established.</i>	4.3.1; 5.2.1
	Improvements in project energy efficiency will be sought throughout the operational life of the plant.	4.3.2; 5.2.1
	<i>Sewage will undergo treatment before re-use for on-site irrigation. An ICPMS scan for trace elements in wastewater will be conducted.</i>	4.3.4
	All potentially contaminated stormwater leaving the process areas of the plant site will be routed through a CPI separator to ensure removal of any oil.	5.4
	AN INDUCTION PROGRAMME FOR THE OPERATIONAL WORKFORCE WILL COVER ALL ASPECTS OF HEALTH, SAFETY AND THE ENVIRONMENT. IT WILL EDUCATE WORKERS ON THE CULTURAL AND NATURAL HERITAGE VALUES OF THE PLANT SITE AND ON THE REASONS FOR THE APPLICATION OF ENVIRONMENTAL MANAGEMENT PRACTICES.	5.4
	Emergency Response Manuals will be developed for the plant. The workforce will be trained in their implementation and regularly tested to maintain necessary skills.	5.5
Shipping	Vessels serving the LNG plant will follow IMO and AQIS guidelines for ballast water discharge at sea, prior to entering Darwin Harbour. This will minimise the potential for introduction of foreign marine organisms.	5.4
	Shipping movements will be coordinated through the Darwin Port Corporation. Vessels will be escorted by tugs in the vicinity of the loading facility and will be under the control of a pilot within harbour waters, to ensure compliance with all procedures including maintenance of separation distances from other vessels.	5.5
Project Decommissioning	At the end of the project life, the plant and pipeline will be decommissioned in accordance with standard practice applicable at the time.	5.9

5.4 LNG PLANT ENVIRONMENTAL MANAGEMENT PLAN

Specific management and monitoring actions to be implemented by Phillips have been identified to achieve sound environmental management of the plant site, building on commitments made by Phillips in the Draft EIS and Supplement, and recommendations made by EA and the NT DLPE in their assessment reports on the 3 MTPA LNG plant proposal.

The LNG Plant EMP will be structured to address all effects associated with the following project phases:

1. site preparation;
2. plant construction;
3. plant operation; and
4. post-operations.

In summary, the key environmental management issues identified during the original environmental impact assessment process, and addressed in the Preliminary EMP, included:

- minimisation of environmental disturbance associated with development of the plant and protection of surrounding undisturbed areas;
- protection of remaining dry rainforest (monsoon thickets), mangroves and fauna habitat;
- management of weeds, feral animals and bushfires;
- protection of undisturbed archaeological and heritage sites;
- minimisation of mangrove mud disturbance and management of acid soil conditions that may eventuate;
- management of biting insect issues;
- management of waste and emissions resulting from construction and operation activities;
- training and education of the plant site workforce in relation to environmental management objectives; and
- minimisation of adverse socio-economic effects of the project on the Darwin region, including establishment of community liaison mechanisms.

Specific measures to manage the above environmental effects and risks are identified and addressed in detail in Table 4 (Environmental Effects and Management Register) of the Preliminary EMP (D&M 1998b). Phillips will complete this table, with performance indicators and responsibilities, during finalisation of the EMP.

5.5 EMERGENCY RESPONSE MANUALS

Phillips will prepare a written emergency plan for the plant and marine terminal to cover the conceivable emergency situations that could occur. This plan will not only address situations that occur within the operating

facilities, it will also address those situations offsite that could impact these facilities. It will be Phillips' intent to liaise with the appropriate civil and port authorities in development of the overall facility emergency plan. This external liaison will facilitate the development and continual review of the plan and procedures, provide for joint participation in training and emergency exercises, and develop effective and rapid communications and response in an emergency.

5.5.1 Hazard and Risk Assessment Analysis

A revised Hazard and Risk Assessment has been undertaken for this PER, presented as Appendix G, to take into consideration the potential effects of the expanded plant design and increased shipping movements for the current revised proposal.

During the detailed engineering phase of the project, Phillips will undertake the following:

- a final HAZOP (Hazard and Operability) Study, to identify all potential scenarios arising from the failure of valves and controls or other upset conditions;
- a final QRA (Quantitative Risk Assessment), to identify, assess, evaluate and manage all potential risks associated with the project; and
- a detailed Safety Report for the LNG plant, in accordance with relevant Worksafe Australia Standards and prepared on the basis of the HAZOP and QRA studies outlined above.

5.5.2 Plant Accident Response

A site emergency plan will be produced to cover conceivable accident situations. The plan will clearly describe the emergency organisation of personnel. The responsibility for deciding when to implement an emergency plan will rest with the site manager, and a key dedicated person (probably the shift supervisor or equivalent) will be designated to coordinate on-site actions.

The emergency plan will be supported by emergency response manuals, relevant sections of which will be available to, and required reading for, all site personnel needing to work in hazardous plant areas, especially those likely to be directly involved in emergency response. The manuals will set down the procedures needed to implement the relevant part(s) of the emergency plan, and will be designed to provide instructions and advice to personnel involved in the response to an emergency on the actions to be taken. Personnel training and preparation for contingency scenarios will remain a high priority during the life of the project.

5.5.3 LNG Carrier Accident Response

Planning for emergencies on LNG carriers will be based on an understanding of the types of accident that could occur and their possible consequences, together with an effective system of communication. Written procedures will be developed in liaison with the Darwin Port Corporation (DPC). Both the NT Marine Oil Pollution Plan (NT Coastal Waters) and the National Plan to Combat Pollution of the Sea by Oil (NATPLAN-Commonwealth Waters) would be applicable to LNG carrier accident responses at sea. In Darwin Harbour the relevant plan is the Darwin Harbour Oil Spill Contingency Plan (see below).

As with the on-site plan, ship emergency procedures will be reinforced by training and exercises, and will be continually reviewed and updated in consultation with the Darwin Port Authority.

5.5.4 Emergency Response Management

Emergency response management will be provided by a small team of senior managers (the control committee) who in turn will direct all response activities through the emergency response unit, plant security, communications, public relations, safety and environmental affairs, and material procurement departments. Each of these departments will have specific responsibilities to perform in the event of an emergency.

5.6 OIL SPILL CONTINGENCY PLANS

A series of Oil Spill Contingency Plans (OSCPs) will be prepared by Phillips to enable effective response during both the construction phase and the operation phase of the project.

During the construction phase, there is potential for spillage within the harbour as a result of dredging operations, construction dock traffic and loading jetty traffic.

During operations, there is potential for spillage in the harbour as a result of LNG and LPG carrier accidents or spillages at the loading jetty.

The DPC has legal jurisdiction for dealing with oil spills in Darwin Harbour, and has developed a detailed Oil Spill Contingency Plan (OSCP) as part of the National Plan to Combat Pollution of the Sea by Oil (NATPLAN). A broader OSCP is also currently being developed for the whole of the NT, however this is yet to be finalised (B. Wilson, pers. comm.)

The Darwin Port Corporation OSCP covers all areas of the port area, including the waters adjacent to the proposed LNG plant. As such, the Phillips OSCP for the harbour will be integrated into the existing OSCP. A

supplementary plan, specific to the LNG plant, will be developed in consultation with the DPC and other relevant authorities. This plan will detail the organisational responsibilities, actions, reporting requirements and resources to ensure effective and timely management of an oil spill for operations in the Darwin Harbour area. The plan will interface with the Phillips Emergency Response Plan.

5.7 CORPORATE RELATIONS MANAGEMENT PLAN

Phillips is committed to being recognised as a good corporate citizen and has incorporated appropriate practices into its HES policy to enable it to achieve this goal. Therefore, Phillips has developed a Corporate Relations Plan to ensure that the local community is informed about proposed operations and that key stakeholders have ready access to relevant information and appropriate Phillips personnel.

Phillips proposes to manage corporate relations for this project by establishing the following:

- Corporate Relations Manager and Department;
- Public and Community Relations Programme;
- Larakia Liaison Committee;
- Stakeholder Liaison Committee;
- internet web site;
- CASA/Air Service Australia Liaison Link.

Corporate Relations Manager

A senior Public Relations Manager will be employed in Darwin to manage corporate relations with key stakeholders and the community at large.

Larakia Liaison Committee

Phillips has been active in liaising with local indigenous representatives since project investigations commenced in 1996. This will continue as a formalised process. An Aboriginal Liaison Committee will be established specifically to liaise with the Larakia people regarding issues of significance to Aboriginal people along the proposed pipeline route, within Darwin Harbour and in relation to the Wickham Point plant site.

Stakeholder Liaison Committee

A committee will be established to liaise with all other stakeholders who may be affected by the construction programme and operations phase. Phillips will liaise with the NT government and the NT Chamber of Commerce and Industry regarding the establishment of this committee. Relevant NT government authorities will be represented on this committee plus private stakeholders such as recreational fishing and diving groups, ferry operators, charter boat operators and commercial fishing interests, aviation groups, etc.

CASA/Air Services Australia Liaison Link

The team currently resolving the issue of the flare being on the southern approaches to Darwin Airport with Airport and CASA authorities will remain in existence until the issue has been resolved. Phillips will advise NTDLPE when the issue has been resolved and CASA approval for the flare has been obtained.

Public and Community Relations

Information brochures will be produced for distribution to community groups, advertisements will be placed in local newspapers to inform the public of the occurrence of particular activities, and regular updates will be provided to keep the community informed of progress.

Internet Web Site

An internet wet site will be established on which a summary of this EMP will be placed, together with information on where the full EMP can be viewed, current status of the project, and a register of auditable activities which have been complied with to date.

5.8 COMPLIANCE AUDITING AND REPORTING

As confirmed in the Preliminary EMP, Phillips will be responsible for the regular audit and review of the LNG facility’s environment and safety management. This will include both on-site auditing and review of performance reports. Additional onsite inspections and investigations will be undertaken in the event of significant environmental incidents. These will be undertaken in conjunction with the relevant government agencies. Plant management will participate in the audits and inspections and investigations. Plant management will also be responsible for regular review of the environmental performance of the site and site personnel, and for the reporting on the implementation of commitments made in the EMP. There is also likely to be some compliance auditing associated with the licensing of the LNG Plant under the *Waste Management and Pollution Control Act*.

Table 5 of the Preliminary EMP (D&M 1998b) presented a Compliance Audit Table which summarised, for each government recommendation and proponent commitment, the following information:

- the recommendation or proponent commitment being addressed;
- the issue to be addressed by the proponent;
- how the issue is to be addressed by the proponent;
- where the issue is addressed in the EMP;
- when the issue is to be addressed by; and
- to whose satisfaction the issue is to be addressed.

The finalisation of the EMP will see the Compliance Audit Table completed, which will record dates of compliance by the proponent with recommendations and commitments, and a reference to appropriate documentation from the relevant approving authority. It is envisaged that this table will be a live document and will be updated periodically throughout the life of the project.

Audits

In particular, there will be:

- annual audit reports to the DBIRD, DIPE and EA as required;
- a triennial review and improvement of the EMP.

Phillips recognises that periodic DBIRD external compliance audits and inspections will be made to monitor, assess and validate the level of Phillips’ performance and compliance pursuant to the commitments made in the accepted Environmental Management Plan.

Phillips also proposes to conduct the following in-house audits:

- **Site Internal Environmental Audit** – to enable site management to assess the day-to-day environmental management of activities at the site. Environmental activities include all aspects of operations that result in emissions, effluent or wastes.
- **Environmental Management Systems Audit** - to assess the implementation and operational success of the EMS at the site. This is achieved by assessing the objectives, organisational structure, responsibilities, procedures, processes and resources available at the site. The EMS Audit is a systems assessment, rather than an audit of environmental compliance, which is assessed through the Site Internal Environmental Audit.

The above auditing activities will also facilitate Phillips’ intention to provide annual greenhouse and energy efficiency reports as part of its Cooperative Agreement under the Greenhouse Challenge Programme and, ultimately, the framework for public sustainability reporting.

5.9 PROJECT DECOMMISSIONING

Phillips remains committed to the original position stated in the Preliminary EMP that, at the end of the project life, the plant will be decommissioned in accordance with standard practice applicable at the time.

Once all resources are exhausted and no feed is available for the LNG plant, plant equipment and piping will be purged of hydrocarbons. Plant and office equipment will be sold where possible unless the facility is sold as is. Equipment that cannot be sold will be disassembled and sold as scrap or disposed of in accordance with current

regulatory guidelines. This includes the construction dock and product loading jetty.

The plant site will be rehabilitated in consultation with the Northern Territory Government as appropriate if the site is not sold and will not be utilised for other purposes.