

R E P O R T

DARWIN CITY WATERFRONT REDEVELOPMENT

ADDENDUM

**to the Supplement to the Draft
Environmental Impact Statement**

Prepared for

**Department of Infrastructure Planning and
Environment**

12 August 2004

36909-007 / DCWR Supplement Addendum

URS

Prepared by:



Paul Lloyd

Senior Environmental
Scientist

URS Australia Pty Ltd

Reviewed by:



Charles Johnston

Principal, NT Manager

URS Australia Pty Ltd

Authorised
by:



Charles Johnston

Principal, NT Manager

URS Australia Pty Ltd

Level 1, Arkaba House
The Esplanade
Darwin NT 0801
Australia

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Figure A-1 Estimated Safety Buffers for Current Fuel Operations

Acronyms

DBIRD	Department of Business Industry and Resource Development
CEMP	Construction Environmental Management Plan
DCC	Darwin City Council
DCEC	Darwin Conference and Exhibition Centre
DCW	Darwin City Waterfront
Defence	Department of Defence
DEIS	Draft Environmental Impact Statement
DFS	Darwin Film Society
DHCS	Department of Health and Community Services
DIPE	Department of Infrastructure Planning and Environment
DPC	Darwin Port Corporation
ECNT	Environment Centre N.T. Inc
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
FHW	Fort Hill Wharf
IOW	Iron Ore Wharf
MAGNT	Museums and Art Galleries of the Northern Territory
NFI	Naval Fuel Installation
OEH	Office of Environment and Heritage
OEMP	Operational Environmental Management Plan

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PFES	Police Fire and Emergency Services
PWC	Power Water Corporation
RAP	Remediation Action Plan
SHW	Stokes Hill Wharf
SMP	Site Management Plan

1.1 Purpose of the Addendum to the Supplement

This document has been prepared to address a number of issues requiring further clarification following the Supplement to the Draft Environmental Impact Statement (EIS) for the Darwin City Waterfront (DCW) redevelopment.

The Supplement was submitted on 13 July 2004. This Supplement was circulated to all relevant government agencies and all parties that made formal comments on the Draft EIS, and these organisations had an opportunity to note whether their concerns had been adequately addressed in the Supplement. At the time of preparing this Addendum, most parties had advised that the Supplement was satisfactory. The Office of Environment and Heritage (OEH) raised several issues requiring further consideration and these are dealt with in this Addendum to the Supplement.

1.2 Overview of Issues Raised by OEH

1.2.1 Errors

One error was noted in the Supplement. This is addressed in Section 2 (Errata) of this Addendum.

1.2.2 Consolidation of All Commitments

All commitments made by the proponent are noted in Section 3.

1.2.3 Relationship between the DCW and the Darwin Wharves

Further clarification of the relationship between the DCW redevelopment and the Darwin Wharves is shown in Section 4.

1.2.4 Specific Issues

In reviewing the Supplement, OEH noted that issues raised by the technical paper by the CSIRO about climate change, which was noted in its review of the Draft EIS, were not addressed adequately in the Supplement. This is addressed in Section 5.

1.2.5 Further Studies and Plans

Section 6 provides more detail of the additional studies to be undertaken for the DCW redevelopment. This Section also outlines specific issues that will be addressed in the Construction EMP.

Supplement Section	Supplement page	Explanation
3.2.8	3-54	DEIS – 7.2.8 Cyclone and Storm Surge The final sentence of this section (“With this rationale, the design criterion of 6.5m AHD for building floors has not been adopted”) should be replaced with: “With this rationale, the review of the design criterion of 6.5m AHD for building floors recommended by DIPE is not considered necessary at this stage. Further assessment of this issue will be carried out as part of the Development Application process for the final Master Plan.”

The summary of all commitments is shown in **Table A-1**. The commitments in this Table should be considered in conjunction with the obligations placed on the developer in the *Call for Detailed Proposals* for the Master Plan (Table S-6 in the Supplement) as well as the proposed further studies and components of the Construction EMP listed in Sections 6.1 and 6.2 of this Addendum.

PLEASE NOTE:

1. **OEH has prepared a version of this summary table from the Draft EIS and the Supplement that has been provided to the proponent for confirmation of the accepted commitments. The OEH summary table should be used for future discussions rather than Table A-1.**
2. Table A-1 listed the commitments in the summary table from the Supplement plus additional commitments taken from the Supplement text (**highlighted in yellow**).

Consolidation of All Commitments

SECTION 3

Table A-1 Summary of All Commitments

Section	Issue	Commitment	Responsibility	Mechanism for Implementation
Proposed Land Uses	Building heights	Building heights on the central section of the site will be restricted to no greater than RL 25m (except for possible landmark feature)	DIPE	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Surrounding Landscape	Escarpment will be maintained as a buffer of vegetation and backdrop to site	DIPE	NT Government commitment
	Stokes Hill Area	Approval from Senior Aboriginal custodians will sought for possible demolishing of Fuel Tanks and/or rehabilitation proposed to remove source of contamination	DIPE	Requirement of Sacred Sites Act and condition of AAPA Certificate
Environmental Management Plans	Environmental Management Plans	Pre-remediation Site Works Environmental Plan, RAP, SMP, framework for the CEMP, and the framework for the OEMP will be implemented.	DIPE – until hand over Developer – following handover	Compliance with CL Auditor requirements; Requirement to obtain CL Auditor State of Environmental Audit; Compliance with <i>Waste Management and Pollution Act</i> Compliance with <i>Public Health Act</i> ;
Geology, Topography and Soils	Sources of Fill	Only clean fill will be used at the site	Contractors, DIPE	RAP, Compliance with Construction EMP
Site Contamination - Soils	Remediation of Site Contamination	Remediation of portions of the site will be undertaken	DIPE (Central 9.2 hectares) Developer (Remainder of site)	RAP; Compliance with CL Auditor requirements
	Remediation of Site Contamination	Remediation and any site management conditions will comply with the requirements of the Contaminated Land Auditor	DIPE (Central 9.2 hectares) Developer (Remainder of site)	Compliance with CL Auditor requirements; Requirement to obtain CL Auditor Statement of Environmental Audit
	Remediation of Site Contamination	A Remediation Action Plan for the site will be implemented.	DIPE	Compliance with CL Auditor requirements
	Remediation of Site	Appropriate location and type of disposal facility for contaminated	DIPE	Licensing under <i>Waste</i>

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
	Contamination	material will be determined.		<i>Management and Pollution Act</i>
	Soils - Hydrocarbons in soil	Soils heavily impacted with hydrocarbons associated with disused infrastructure will be removed and remediated at suitable sites with appropriate facilities.	DIPE (Central 9.2 hectares) Developer (Remainder of site)	RAP; Compliance with CL Auditor requirements
	Soils - Hydrocarbons in soil	Site management controls will be implemented to provide protection to human health and environment.	DIPE DHCS	Site Management Plan Compliance with <i>Public Health Act</i>
	Soil Remediation - Hydrocarbons	Monitoring of contamination levels will be undertaken to ensure that concentrations are at a steady state or declining, unless Government approval is given to allow contamination within smear zone to remain in place.	DIPE, Developer	SMP; Compliance with CL Auditor State of Environmental Audit
	Soil Remediation - Volatile Petroleum Hydrocarbons	Developers required to implement suitable odour and vapour protection measures to ensure that accumulation of vapours and odours does not pose risk.	Developer	SMP; Compliance with CL Auditor State of Environmental Audit
	Soil Remediation - Volatile Petroleum Hydrocarbons	If required, external ventilation systems may need to be included in building design. The developer will confirm vapour exhaust design requirements.	Developer	SMP; Compliance with CL Auditor State of Environmental Audit
	Soils - Management of Volatile Petroleum Hydrocarbons	Mitigating actions will be implemented if fuel oil contamination gives rise to odours.	DIPE (Central 9.2 hectares) Developer (Remainder of site)	RAP – Remediation; SMP – Post remediation; Compliance with CL Auditor requirements and State of Environmental Audit
	Soil Remediation - Metal Ore Materials	All metal ores will be removed prior to redevelopment of the site.	DIPE (Central 9.2 hectares) Developer (Remainder of site)	RAP; Compliance with CL Auditor requirements
	Soil Remediation - General Fill	Management controls will be implemented for future developments to control contamination. Minimum depths of clean fill in these areas will be specified in the conditions of the Statement of Environmental Audit for the site. These conditions will also specify the maximum root depth of plants to be planted in these areas. No edible plant species will be planted in areas with	Developer	SMP; Compliance with CL Auditor State of Environmental Audit

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		identified soil or groundwater contamination.		
	Soil Remediation - Excavation of Disused Infrastructure, Building Foundations and Piping	Protocols for excavation activities at the site will be included as part of the selected developer's CEMP. If significant concentrations of contamination are detected, these will be reported in accordance with relevant NT guidelines.	Developer	SMP; Compliance with CL Auditor State of Environmental Audit; Compliance with <i>Public Health Act</i> ; Compliance with <i>Waste Management and Pollution Act</i>
	Soil Remediation - Remediation of Shell Bitumen Plant	Site remediation will be appropriately validated by an environmental auditor to meet clean up standards consistent with redeveloped site.	DIPE (Central 9.2 hectares) Developer (Remainder of site)	RAP; Compliance with CL Auditor requirements
	Soils - Surface Water Transport	Site Management Plan will be implemented.	DIPE – until hand over Developer – following handover	Compliance with CL Auditor State of Environmental Audit
	Soil Remediation - Works on Stokes Hill	Any works proposed within the Stokes Hill Sacred Site will only be carried out under the conditions specified in the AAPA Certificate for the Sacred Site. Such works include any remediation of soil contamination from Tanks 13 and 14.	DIPE, Developer (if relevant after hand over)	Requirement of the Sacred Site Act
	Soil Remediation - Enforcement of remediation and ongoing site management conditions	The Statement of Environmental Audit for the site will identify suitable land uses and development conditions for the DCW site. The conditions may include placing covenants on land titles restricting or banning particular activities over part, or the entire DCW site. The developer will be required to integrate the conditions into the final Master Plan	Developer	Statement of Environmental Audit; Compliance with CL Auditor requirements; SMP; CEMP; OEMP
Site Contamination – Groundwater	Impacts from possible marine structures	The developer will evaluate any potential impacts from a seawall or a marina (if included in the final Master Plan) during the engineering design of these structures and in consultation with the appropriate Authorities.	Developer	Condition of approval for works
	Groundwater management	Groundwater will be managed in accordance with the SMP. It will not be used for any purposes identified in the SMP as posing a risk to public health or the environment.	Developer	SMP, Construction and Operational EMPs

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
	Hydrocarbon Impacted Groundwater	Monitoring and contingency management will be undertaken, including treatment of dewatered groundwater during construction before discharge to the marine environment	DIPE – until hand over Developer – following handover	SMP; Compliance with CL Auditor requirements
	Petroleum Hydrocarbons Impact on Marine Environment	Developer must provide an engineered program satisfying the provisions of the <i>Waste Management and Pollution Control Act</i> and the <i>Water Act</i>	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
Site Contamination – Marine sediments	Marine Sediments – Contaminants	If required for approved disposal option, tests of the sediments to determine the capacity for contaminants to be released to water column would be undertaken to assess suitability	DIPE	Requirement of disposal approval; Compliance with <i>Waste Management and Pollution Act</i>
	Dredging	Environmental specifications within a Dredging Management Plan for activities will be defined to ensure that turbidity and contamination effects are minimised. Monitoring will be undertaken during dredging and triggers will be implemented to stop work if criteria threshold are exceeded.	Developer	Compliance with <i>Waste Management and Pollution Act</i> , Requirement of Darwin Harbour Dredging Technical Advisory Committee
Site Contamination – Disposal	Disposal facilities for Contaminated Material	Selection of facilities will be undertaken through standard Northern Territory Government approvals processes and under requirements of the <i>Waste Management and Pollution Control Act</i> and, where appropriate the Darwin Harbour Dredging Technical Advisory Committee	Developer	Compliance with <i>Waste Management and Pollution Act</i> , Requirement of Darwin Harbour Dredging Technical Advisory Committee
Site Contamination – Management Controls and Handling Practices	Remediation	Remedial Program will be finalised including required special handling procedures. Remediation options will address appropriate methodologies to protect human health and the environment for agreed land uses	DIPE (Central 9.2 hectares) Developer (Remainder of site)	RAP; Compliance with CL Auditor requirements
	Initial Cleanup Measures	Remedial Action Plan (RAP) will be implemented.	DIPE (Central 9.2 hectares) Developer (Remainder of site)	Compliance with CL Auditor requirements
	Future Construction and Intrusive Maintenance Operations	The Site Management Plan (SMP) will be implemented	Developer	SMP; Compliance with CL Auditor State of Environmental Audit; Compliance with <i>Public Health</i>

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
				<i>Act; Compliance with Waste Management and Pollution Act</i>
	Construction Activities	The Construction Environmental Management Plan (CEMP) will be implemented	Developer	Condition of approval for development under <i>Planning Act</i>
Acid Sulphate Soils and Contamination	ASS Management	An Acid Sulfate Soil Management Plan (ASSMP) will be implemented for development works requiring deep excavation or dewatering in areas with potential acid sulfate soils. This will include storage, disposal and dewatering procedures. If required the management procedures outlined in the Supplement will be implemented.	Developer	Compliance with <i>Waste Management and Pollution Act</i> ; CEMP
	Excavation and Stockpiling	Stockpiling of excavated and untreated ASS should be minimised	Developer	Compliance with Acid Sulfate Soil Management Plan
	Further assessment	If significant exposure of PASS within Kitchener Bay is required for the redevelopment, further investigations will be undertaken in coordination with engineering investigations required by the developer to minimise impacts.	Developer	Construction Environmental Management Plan; Condition of approval for works
	Disposal of ASS material	Most of the ASS material and PASS material expected to be removed during the redevelopment will be uncontaminated and disposed of subtidally to prevent exposure to the atmosphere and the initiation of acid forming processes. This will be done in full consultation with the Darwin Harbour Dredging Technical Advisory Committee. Any contaminated marine sediments, particularly those contaminated with metals that may be mobilised by acid-generation, will be disposed of to land at an appropriate location and in consultation with all relevant government agencies.	Developer	Construction Environmental Management Plan; Condition of approval for works
Soils	Soil Erosion and Excavation	Activities will be restricted to the Dry season, drains will be designed and constructed to produce non-scour velocities and to avoid erosion at inlet and outlet points.	DIPE – until hand over Developer – following handover	Construction Environmental Management Plan

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
	Soil Erosion and Excavation	Erosion and Sedimentation Control Plan (ESCP) will be implemented.	Developer	Construction Environmental Management Plan
	Dust	Water trucks will be used to suppress excessive dust generation.	Developer	Construction Environmental Management Plan
	Acid Sulfate Soils	Disturbance of ASS and PASS will be minimised wherever possible.	Developer	Construction Environmental Management Plan
	Debris from Existing Fill Material	Debris generated by or exposed during site preparation will be disposed at appropriate waste disposal facilities.	DIPE – until hand over Developer – following handover	Condition of approval for works Condition of approval for development under <i>Planning Act</i>
	Problematic Subsurface Conditions	Buildings will be located on areas with subsurface conditions that suit the load of the structures; this will include appropriate geotechnical assessment and engineering design.	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Construction Waste Generation and Management	Waste management and disposal will be carried out in accordance with the <i>Waste Management and Pollution Control Act</i> .	DIPE – until hand over Developer – following handover	Compliance with <i>Waste Management and Pollution Act</i> Compliance with <i>Public Health Act</i> ; SMP
	Release of Contaminants from Dewatering	A detailed dewatering plan will be prepared and implemented to ensure that the impact of dewatering activities is minimised	Developer	Condition of approval for development under <i>Planning Act</i>
	Land Reclamation	Neutralisation, including buffering with seawater, will undertaken where required to combat the potential generation of acid if ASS materials are incorporated with materials used for reclamation.	Developer	Acid Sulfate Soil Management Plan
	Contingency Plans – Bund Wall Failures	Contingency Plans to be implemented in the event of bund wall failure	Developer Remediation contractor Construction contractor	RAP, Construction Environmental Management Plan; SMP
	Contingency Plans – Significant Acid Generation	Contingency Plans to be implemented in the event of significant volumes of acid being generated at the site would be addressed	Developer	Construction Environmental Management Plan, Acid Sulfate

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		under the ASSMP.		Soil Management Plan
Hydrogeology	Acid Sulfate Soils and Infrastructure Protection	Management of disturbance of acid sulfate soils will address stockpiling, dewatering, foundation design and revegetation.	Developer	Acid Sulfate Soil Management Plan, Construction Environmental Management Plan
Hydrology	Erosion/Contamination	Erosion risk will be managed using an ESCP, and contamination managed with appropriate site remediation and stabilisation. Measures during the remediation stage of the project will be included in the Remediation Action Plan (RAP).	Developer DIPE	Construction Environmental Management Plan; RAP; SMP; OEMP
	Water Management in Ponds and Swimming Features	The ponds and swimming feature will be designed to accommodate rainfall or stormwater inflows up to a 100-year ARI. Water that has been recycled from within the development will not be used in any swimming feature.	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Flooding	Drainage infrastructure will be upgraded throughout the Redevelopment area to safely accommodate runoff from heavy rainfall events	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Stormwater Management	Surface water management plan will be implemented.	Developer	Construction Environmental Management Plan; Operational Environmental Management Plan, SMP
	Greywater	No greywater will be used on site, in accordance with the <i>Public Health Act</i> and to protect the marine environment of Darwin Harbour.	Developer	Development application
	Hydrology - Monitoring	Surface water monitoring will be undertaken for baseline and construction/operational phases of the project.	DIPE – until hand over Developer – following handover	Compliance with <i>Waste Management and Pollution Act</i> Compliance with <i>Public Health Act</i> ; SMP,
Marine Environment	Options for Dredging Operations	Dredging operations will consider the location of proposed operations, the contaminant status of the sediments and the	Developer	Dredging Management Plan

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		proposed disposal location		
	Dredging and Marine Structures	The developer will undertake adequate assessment studies (to the satisfaction of OEH) to assess any potential impacts from dredging, changes to tidal regime and reclamation. This is expected to include hydrodynamic modelling of Kitchener Bay and groundwater modelling.	Developer	Condition of approval for works
	Dredging	Dredging and spoil disposal options will be defined on the basis of an ecological risk assessment (to comply with national standards). If the western and central parts of Kitchener Bay are to be dredged, further sampling of the sediments in these areas will be undertaken.	Developer	Construction EMP; Dredging Management Plan
	Maritime Activity	Sufficient materials to combat oil spills will be maintained within the site, and procedures will be put in place to manage any spills. Appropriate refuelling, cooking, washing, ablution and toilet facilities will be incorporated into design at site to minimise risks of small spillages.	Darwin Port Corporation Developer	Oil Spill Contingency Plan Requirement of approval under <i>Planning Act</i>
Vegetation	Vegetation clearing	Clearing of vegetation will be undertaken with a commitment to minimal impact on surrounding forest and maintaining integrity of vegetation community.	Developer	Construction Environmental Management Plan;
	Escarpment Vegetation	Construction of the Smith St pedestrian connection between the CBD and the project site will be undertaken with minimal clearing of escarpment vegetation and with measures in place to minimise the risk introduction of weeds	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Weeds	A weed management plan will be developed to assist in prevention of further introductions and long-term control of weeds. Spread of Class B noxious weeds will be controlled and wash-down facilities will be provided for earthmoving equipment.	Developer	Construction Environmental Management Plan; Operational Environmental Management Plan
	Trees	Wherever possible, trees listed on the Register of Significant trees in and near the project site will be retained for aesthetic or	Developer	Construction Environmental Management Plan; Operational

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		historical value.		Environmental Management Plan
	Vegetation - Monitoring	Monitoring of management actions, notably weed control, and changes in vegetation condition will be used to guide future management decisions.	Developer	Operational Environmental Management Plan
Terrestrial Fauna	Habitat Protection	Existing habitat will be protected through the installation of temporary fencing of vegetation at the base of escarpment prior to any road works.	Developer	Construction Environmental Management Plan
Biting Insects	Topographical Depressions	Potential mosquito breeding depressions will be either filled, drained or re-contoured; development activity will not create areas capable of holding water for more than three days	Developer	Construction Environmental Management Plan; Operational Environmental Management Plan
	Stormwater Drains	Stormwater drains identified as potential breeding habitats for mosquitoes will be treated to reduce breeding. It is expected that the stormwater system will be largely replaced.	Developer	Replacement of stormwater system an obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Artificial Receptacles	Site preparation and construction will be undertaken to prevent an increase in artificial receptacles capable of mosquito breeding.	Developer	Construction Environmental Management Plan
	Landscaping	Shrub type vegetation which facilitates chemical barrier treatment, will be considered around any proposed public areas to control mosquitoes.	Developer	Advise during finalisation of the Master Plan and ongoing vegetation management
	Personal Protection from Mosquitoes	Information about the timing of biting insects and personal protection measures will be provided to developers, potential residents, landholders and businesses in the project site.	DHCS Developer	Advise during finalisation of the Master Plan and ongoing site development
	Control of Mosquito Breeding Habitat	Management procedures will be implemented during all construction phases of the redevelopment to minimise mosquito breeding habitat and reduce opportunities for mosquito breeding. These measures have been incorporate into the Construction Environmental Management Plan (EMP). Similarly, ongoing management protocols will be incorporated into the Operational	Developer	Construction Environmental Management Plan

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		EMP to minimize mosquito numbers.		
Built Environment	Pre-Remediation Site Works	Pre- Remediation Environmental Management Plan will be implemented (IMPLEMENTED)	Contractor – implementation; DIPE – Supervision	Condition of works approval
	Site Clearance	Stormwater runoff controls will be implemented to minimise erosion and dust generation will be minimised through dust suppression measures.	Developer	Construction Environmental Management Plan
	Excavation and Earthworks	Waste material will either be re-used on site as fill material or transported to licensed landfill. Disposal methods need to be detailed on the construction and/or operational EMPs where appropriate.	Developer	Construction Environmental Management Plan, SMP
	Underground Services	Uncontaminated soil will either be re-used on site as fill material or transported to licensed waste facility	Developer	Construction Environmental Management Plan
	Buildings, Roadways and Landscaping	Measures will be implemented for chemical storage, spill control and prevention as well as soil, groundwater and stormwater protection (including stormwater diversion and erosion control, and dust suppression measures). Where required, clean topsoil will be imported to facilitate establishment of landscape as intended.	Developer	SMP, Construction Environmental Management Plan, Operational Environmental Management Plan
	Site Personnel	Liquid waste will be transported and disposed of at a licensed liquid and solid waste facility. The SMP will be implemented for chemical storage, spill control and prevention as well as soil, groundwater and stormwater protection.	Developer	Construction Environmental Management Plan, SMP
	Site Operation and Maintenance	Designated areas for solid non-hazardous waste and defined recyclable and non-recyclable waste systems will be established.	Developer	Construction Environmental Management Plan
	Toilet facilities	Any new site buildings with toilet facilities will be connected to sewer	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)

Consolidation of All Commitments

SECTION 3

Section	Issue	Commitment	Responsibility	Mechanism for Implementation
Traffic, Roads and Public Transport Network	Further Detailed Traffic Assessment	The developer will undertake a detailed assessment of traffic and transport issues for the final Master Plan.	Developer	Obligation on developer (Call for Detailed Proposals for the Master Plan)
	Construction Traffic	Potentially affected roads will be strengthened as required and maintained regularly so as to maintain safety standards	Developer, contractor	Construction EMP
	Haulage Roads	The developer will visually assess the condition of haulage roads prior to construction. All haulage roads will be returned to their pre-development visual condition or compensation will be paid to the appropriate Authority (DIPE or DCC) for damage to roads resulting from the development construction phase.	Developer	Obligation on developer (Call for Detailed Proposals for the Master Plan) Construction EMP
	Transport of Materials	The developer will ensure that all material is transported appropriately to and from the site. Haulage trucks will have their loads secured.	Developer, contractor	Construction EMP
	Stokes Hill Sacred Site	Any road improvements along McMinn Street and at the intersection of McMinn Street and Kitchener Drive will be carried out with full regard to the conditions of the AAPA Certificate covering the Stokes Hill Sacred Site. The proponent will clarify the boundary of the Sacred Site with AAPA.	DIPE, Developer	Compliance with sacred Sites Act; Obligation on developer (Call for Detailed Proposals for the Master Plan)
Air Quality	Emissions from NFI and refuelling	The proponent will undertake modelling of the release and dispersion of fugitive emission from the NFI and refuelling operations at Fort Hill Wharf.	DIPE	Condition of environmental approval
	Demolition and Remediation Works	Water sprays will be used across work zones and unsealed areas, mitigation measures will be implemented, and direction of prevailing winds will be assessed in relation to impact of dust on surrounding vegetation, housing and offices and mitigation methods implemented	DIPE	Condition of approval for works
	Construction	Dust will be managed to have a negligible impact on human health or amenity in the CBD. Measures will be implemented to minimise the potential for off-site dust emissions,	Contractors DIPE prior to handover;	Construction Environmental Management Plan

Consolidation of All Commitments

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		which will include dust suppression measures; also regular checks of dust levels generated by works and remedial action will be taken whenever visible off-site emissions occur.	Developer following handover	
	Demolition and Construction	Dust monitoring will be continued during major demolition and construction works.	Developer	Construction Environmental Management Plan
	Operation	Impacts arising from vehicle emissions will be mitigated through advocacy of public transport and traffic design/management principles in the final Development Master Plan.	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Air Emissions and Energy Efficiency	An analysis of building design and operation, public transport, non-vehicular access and energy efficient technology will be made in regards to emissions and efficiency.	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Emissions of and Exposure to Air Toxics	Assessment of the dispersion of fugitive emissions from the NFI will be undertaken before Stage 1 construction works commence.	DIPE	Expected to be a condition of environmental approval
Noise	Characterisation of noise environment	Further noise surveys will be carried out while naval vessels are present at the Darwin Wharves, particularly in relation to likely future residential sites.	DIPE	Condition of environmental approval
	Construction Noise	Noise Management Plans will be prepared for any out of hours work. Written notice will be issued at least 48 hours before proposed works to occupiers of all noise sensitive premises where maximum allowable noise level of the site is likely to be exceeded. A Noise Management Plan (NMP) must be established for night-time construction activities.	Developer, contractors	Construction Environmental Management Plan
	Entertainment Noise	Permanent entertainment facilities at redeveloped site will comply with the standards required by NT Government regulators. Management of noise from external events should form an integral part of the NMP.	Owner or lessee	Expected condition of Development Approval for premises
	Traffic	Separation distance between main access roads and premises should be maximised and volumes of passing traffic ill be	Developer	Finalisation of Master Plan

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Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		minimised, external fabric of buildings within development should be designed to achieve noise reduction.		
	Mechanical and Electrical Equipment	Mechanical and electrical equipment and associated air inlets and outlets will be located away from noise sensitive premises.	Developer, owners/lessees	Finalisation of Master Plan, Expected condition of Development Approval for individual sites
	Wharf Activities	Noise impact associated with servicing of navy and cruise liner vessels at the wharves will be minimised through effective planning and layout design.	Developer	Finalisation of Master Plan
	Mechanical and Electrical Services	Noise will be controlled to prevent exceedence of noise limits at surrounding noise sensitive premises.	Developer, owners/lessees	Finalisation of Master Plan, Expected condition of Development Approval for individual sites
	Item Specific Noise Limits	Noise from continuously operating equipment will have item specific noise limits established.	Developer, owners/lessees	Finalisation of Master Plan, Expected condition of Development Approval for individual sites
Visual Characteristics	Visual Characteristics and Values	Height controls for all structures will not exceed view lines obtainable from the city, Visual and functional integration will be achieved along the Smith Street axis,	Developer	Finalisation of Master Plan
Unexploded Ordnance	UXO occurrence	Appropriate procedures will be followed to minimise risk from turbidity and mobilisation of contaminants during dredging and excavation works.	Developer, contractor	Construction EMP, Dredging Management Plan
	Contingency and Management Plan	Operational procedures covering detection of UXO and contingency plans in the event of detection will be implemented	Developer	Construction and Operational Environmental Management Plans
	General Site Procedures	Awareness training and general operation procedures will be implemented and be part of any tender documentation for works on the site. Any excavation into 1942 soil and sediment should	Developer	Construction and Operational Management Plans

Consolidation of All Commitments

SECTION 3

Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		only proceed with UXO clearance from specialists.		
Port Security	Port Security	The proponent and the developer will work cooperatively with Darwin Port Corporation and other port users to ensure the redevelopment satisfies the Port Security Plan for the Darwin Wharves.	DIPE, Developer	Compliance with Commonwealth legislation and international standards
Heritage	Heritage themes	Heritage sites and artefacts will be used to form an identity to the Redevelopment.	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Heritage clearance	An initial heritage inspection will be carried out (to the requirements of OEH) before any site works proceed to provide clearance for work to proceed or identify further field investigation required.	Developer	CEMP
	Heritage notification	If any heritage artefact is discovered works will stop and OEH notified as soon as possible.	Developer	Construction Environmental Management Plan; Compliance with <i>Heritage Conservation Act</i>
	Acknowledgement of Aboriginal Cultural Significance	The Cultural significance of the project site will be acknowledged	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Recognition of Contemporary Aboriginal Cultural Values	Development of the escarpment base should be avoided.	Developer	NT Government commitment, Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Ongoing Local Aboriginal Community Consultation	Consultation should be undertaken with the relevant Aboriginal community groups, the proponent and the OEH to determine possible future land uses for Stokes Hill.	DIPE, Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	European Heritage Features	Mitigation measures will be implemented to retain and protect heritage sites, retained heritage features will be utilised in the Redevelopment. Any removal or destruction of heritage sites	Developer	Construction Environmental Management Plan

Consolidation of All Commitments

SECTION 3

Section	Issue	Commitment	Responsibility	Mechanism for Implementation
		should be documented to the requirements of the OEH before any works are undertaken.		
Socio-economic Environment	Impact	Planning for continued during construction access will minimise the impact on local businesses.	Developer	Construction Environmental Management Plan
Preliminary Hazard Analysis	Risk Assessment	The developer will undertake more detailed risk assessments of the finalised Master Plan. The recommendations from the Preliminary Hazard Analysis and more detailed assessment will be incorporated into the various management plans for the project, particularly the Construction and Operational EMPs and engineering designs where required.	Developer	Construction and Operational EMPs
	Fuel Transport Vehicle Accidents	Spill contingency plans will be developed	Developer, contractor	Construction EMP
	Fire, Explosion and Release of Product from Traffic Accident Damage to Fuel Pipelines Or Refuelling and Bunkering (including NFI)	Contingency plans for fire and explosion scenario should be developed and or reviewed and exercises conducted.	Developer, contractors Developer	Construction EMP Operational EMP
	Spills and Releases of Fuels and Other Hazardous Materials	Contingency plans will be developed; Management and engineering controls will be assessed as part of risk assessment and hazard and operability study.	Developer, contractors Developer	Construction EMP Operational EMP
	Contaminated soil and groundwater	Control will be maintained on handling and disposal of potentially hydrocarbon impacted groundwater and soil.	DIPE, Developer, contractors Developer	RAP Construction EMP, SMP
	Tsunami/Earthquake	Buildings and foreshore areas will be built to code standards to protect against storm surge	Developer	Obligation on developer (<i>Call for Detailed Proposals</i> for the Master Plan)
	Terrorist Attacks	Liaison will be undertaken with the Darwin Port Corporation to confirm their coordinating role and responsibility for the establishment of security committees. The port security plan will be implemented.	Developer	Compliance with Commonwealth maritime security legislation

This section provides further clarification of the relationship between the DCW redevelopment and the Darwin Wharves, particularly relating to:

- Coordination between the DCW and management of the Darwin Wharves;
- Continuation of access and services to existing users of the site and nearby facilities;
- Traffic; and
- Safety.

4.1 Coordination

Coordination between the DCW and management of the Darwin Wharves is expected to be achieved through a management board with an appropriate structure. It is likely that this board will include representatives from:

- The DCW developer;
- DIPE;
- DPC; and
- DCC.

4.2 Continuation of Access and Services

4.2.1 Existing Land-based Activities

The *Call for Detailed Proposals* for the development of the DCW requires the eventual developer to maintain continued access and services to the Darwin Wharves for all existing users during all construction phases and ongoing operation of the development. This includes all existing commercial, tourism and recreation operations in and adjacent to the redevelopment site.

4.2.2 Fort Hill and Stokes Hill Wharves

The *Call for Detailed Proposals* also requires the developer to maintain continued access to Fort Hill and Stokes Hill Wharves.

The DCW Project Team has advised the Cruise Ship Terminal Committee that all parking and set-down requirements generated by the current cruise ship activities on FHW and the planned Cruise Ship Terminal must be accommodated within the secure staging area outside the DCW site. Vehicular activity from these sources will not be allowed to back up into the DCW site. This will reduce both the potential nuisance impacts of poor traffic flow and safety risks.

The NT Government is also involving the Cruise Ship Terminal Committee in relevant components of the DCW redevelopment to ensure integration of activities on FHW and the Fort Hill area. Fencing and lighting infrastructure will be coordinated around the Cruise Ship Terminal, the staging area and the future redevelopment of the Fort Hill area. The developer will be required, through the Development Agreement with the NT Government, to upgrade all services within the DCW site to comply with current Australian Standards, including services to the boundaries of the site and leading to external properties such as the Darwin Wharves. These service upgrades will be coordinated with the expected service upgrades for FHW.

Access and services to business on SHW will not be interrupted by the redevelopment (as required by the *Call for Detailed Proposals*). The redevelopment will assist in the eventual upgrade of services to both wharves.

4.2.3 The Iron Ore Wharf

As noted in the Supplement, the NT Government and the Department of Defence (Defence) are continuing with high-level negotiations about arrangements for the delivery of bulk fuel to the NFI and the decommissioning of the IOW.

It is expected that bulk fuel off-loading will continue for several years to allow Defence to define and develop appropriate alternatives for off-loading and resupply of the NFI. Most of the bulk fuel off-loading from the IOW is expected to cease when the Joint User Terminal is operational in late 2005. Defence will continue to receive about 4 sea tankers each year (approximately 34 megalitres per year) until alternative tanker discharge arrangements are implemented. All bulk fuel off-loading from the IOW is expected to cease prior to the redevelopment of the Fort Hill area, and therefore not influence the redevelopment.

4.2.4 Traffic

The developer will assess all traffic issues, including those relating to Defence traffic loads during major resupply events, as an integral part of the Master Plan development. As noted in Section 4.2.2, all parking and set-down requirements generated by the departure or arrival of cruise ships must be accommodated within the secure staging area at the base of FHW and outside the DCW site. The Development Agreement between the NT Government and the developer will require the developer to accommodate vehicular and pedestrian traffic through the DCW site to the Wharves through the life of the project.

4.3 Safety

Several safety buffers were not clearly distinguished in either the Draft EIS or the Supplement.

- Bulk fuel off-loading from the IOW is expected to require a 300m safety buffer to residential and public open space areas to minimise the possible risks of heat exposure from a pool fire following a

2,000m³ fuel spill (such as a vessel-to-vessel or vessel-to-shore collision by a sea tanker). This is a low-likelihood, high consequence scenario.

- Refuelling operations, which may occur from FHW and the IOW under current arrangements, generally require a safety buffer of 50m.
- Bulk fuel storage, such as at the NFI, requires a buffer of 50m.

The estimated buffer distances are shown in **Figure A-1**.

The DPC is likely to require several management procedures to minimise the risks from fuel operations and as the basis for the 300m safety buffer around bulk fuel off-loading. In particular, it is likely that concurrent berthing of cruise ships and discharging sea tankers occurs at the Wharves will not be allowed.

4.4 Security

As noted in the Supplement, the coordination of security issues will best be achieved through some form of port security working group with representation from all port managers and users. The DPC will determine any need to review the Port Security Plan. Such a review would assess the requirements for new operations and facilities such as the DCW redevelopment, the proposed Cruise Ship Terminal on FHW and any other future changes in port and shoreline activities.

Fencing and lighting for FHW and the secure staging area and access by leisure craft to and from Kitchener Bay will need to be managed under the requirements of the Port Security Plan.

5.1 Cyclones and Storm Surge

OEH noted that issues raised by the 2004 technical paper by the CSIRO about the effects of climate change on the Northern Territory (*Climate Change in the Northern Territory*) were not addressed in the Supplement.

5.1.1 Sea Level Rise

The paper noted that sea levels are predicted to rise by 5-15cm by 2030 and 10-50cm by 2070.

As noted in the Supplement, an additional 30cm has been included in the proposed site elevation to account for changes caused by global warming. The proponent considers this additional allowance adequate to cope with the predicted sea level rise and appropriate for the level of uncertainty of that prediction.

5.1.2 Intensity and Frequency

The paper notes possible effects of climate change on the frequency of cyclones and storm surge events. Global warming is likely to result in an increase in cyclone intensity, though changes in frequency are unclear at this stage. OEH commented that the VIPAC (1994) study used as the basis for assessing storm surge impacts in the Draft EIS did not account for sea level rise or increased intensity and possible increased frequency of cyclones.

The 30cm allowance (noted in Section 5.1.1) was included for all potential impacts from global warming, including sea level rise and changes in meteorological events.

At this stage, the proponent considers the 30cm allowance for global warming impacts to be sufficient and the design criterion of 6.5m AHD for building floors to be adequate. The developer will be required to satisfy the requirements stipulated by DIPE through the statutory planning process under the *Planning Act* and the assessment by the Development Consent Authority. This will include requirements for mitigation of storm surge impacts. In addition, insurance requirements are likely to provide a market driver for adequate risk assessment and implementation of suitable mitigation measures to protect buildings within the redevelopment.

6.1 Further Studies

An incomplete list of proposed further studies were identified in Section 4.4 the Supplement. **Table A-2** listed the further studies proposed as at 10 August 2004.

Table A-2 Summary of Proposed Further Studies

Issue	Proposed Study	Responsibility	Timeframe/ Duration
Potential and Acid Sulfate Soils (PASS/ASS)	If Final Master Plan involves deep excavation: Further investigations to support initial engineering design	Developer	October 2004
Noise from Navy Vessels	Expanded noise survey of Navy vessels at berth at Darwin Wharves	DIPE and URS	December 2004
Air Quality	Dispersion modelling of fugitive emissions from NFI and refuelling activities	URS	September and ongoing
Traffic	Detailed traffic/transport assessment of the Master Plan	Developer	September 2004 and ongoing
Potential Impacts of Marine Structures	Hydrodynamic modelling	Developer	October 2004
Structures for marine structures or building foundations/footings impacting groundwater discharge and/or mixing	Combined groundwater flow and solute transport modelling and potential Ecological Risk Assessment to evaluate ecological toxicity risk at receptor resulting from new construction	Developer	September/October 2004
Groundwater modelling may include the two additional issues if required by CLA Auditor	Solute transport for additional infrastructure options - Hydrocarbon discharge into marine environment - VOC discharge into marine environment	Developer	September/October 2004
Ongoing Groundwater Monitoring.	-	DIPE	October 2004 and ongoing quarterly
Volatilisation of vapours into enclosed building spaces if required by CLA Auditor	Quantitative Human Health Risk – Potential risk to human health for exposure (land-use scenarios)	Developer	September/October 2004 (Prior to Design)
Remediation treatability - if required by CLA Auditor	Bioremediation, groundwater treatment options etc	DIPE	October 2004

Risk Assessment (Hazard Analysis)	Possible further risk assessment for: - Product spills and releases to the marine environment - Product spills and releases from pipeline rupture	Developer	October 2004 and ongoing
Dredging	Once the Master Plan is finalised, further sediment analysis and elutriate testing (and ecotoxicology testing for the western end of Kitchener Bay) may be required.	OEH and AIMS	Subject to development dredging plans but potentially November 2004 and on-going

6.2 Construction EMP

The Construction EMP will include the following components where relevant to the activities proposed.

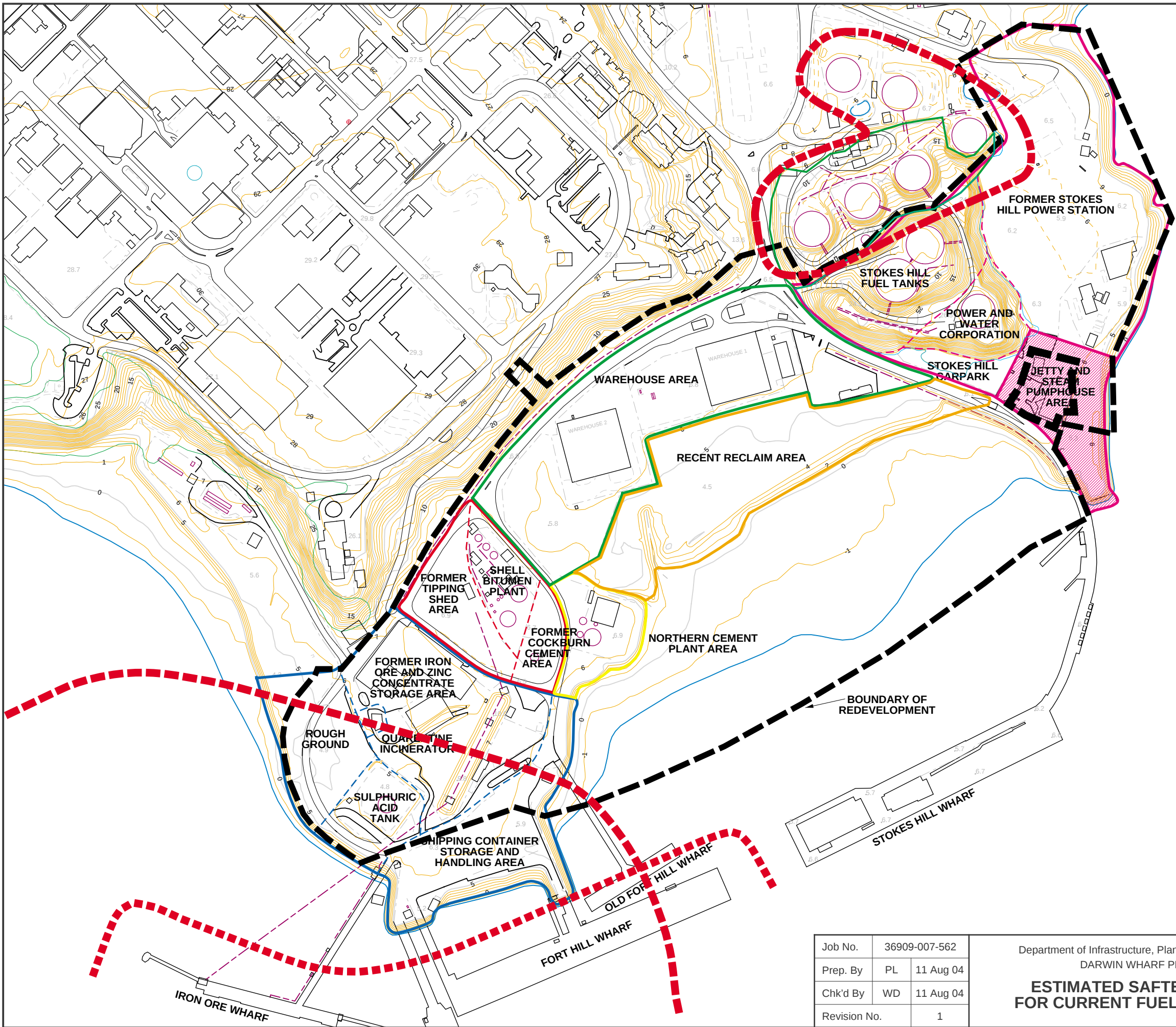
- ASS Management Plan
- Erosion and Sediment Control Plan
- Dredging and Reclamation Management Plan
- Operational Procedures and contingency measures for UXO
- Heritage Management protocols (including inspection and clearance prior to construction works)
- Biting Insects Management Plan
- Asbestos Management Plan
- Surface & Stormwater Management Plan
- Weed Management Plan
- Noise Management Plan
- Construction Waste Generation and Management
- Dewatering Plan
- Contingency Plans (for fire/explosion/release of product from traffic accident; damage to fuel lines; refuelling and bunkering)

URS Australia Pty Ltd (URS) has prepared this report for the use of the Department of Infrastructure Planning and Environment in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

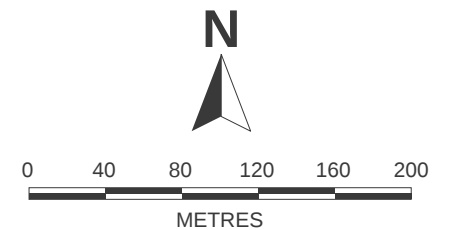
This report was prepared between 29 July and 10 August 2004 and is based on the information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

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LEGEND

- Stokes Hill Area
- Bitumen Plant Area
- Fort Hill Area
- Northern Cement Plant Area
- Recent Reclaimed Area
- Warehouse Area
- Boundary of Redevelopment
- To be retained
- 300m Safety Zone for Bulk Fuel offload at Iron Ore Wharf
- 50m Safety Zone for Refuelling at the Iron Ore Wharf and Stokes Hill Wharf
- 50m Buffer around Naval Fuel Installation



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Department of Infrastructure, Planning and Environment
DARWIN WHARF PRECINCT
**ESTIMATED SAFETY BUFFERS
FOR CURRENT FUEL OPERATIONS**

Figure A1

