Development Consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning under delegation executed on 14 September 2011, the Planning Assessment Commission of NSW (the Commission) approves the development application referred to in Schedule A, subject to the conditions specified in Schedules B to D.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

David Johnson
Member of the Commission

Alan Coutts
Member of the Commission

Sydney

14 January 2015

SCHEDULE A

Application No:	SSD 5147
Applicant:	Shell Company of Australia Ltd
Consent Authority:	Minister for Planning
Land:	9 Devon Street, Rosehill Lot 1, DP 109739 Lot 1, DP 383675 Lot 101, DP 809340 Lot 2, DP 224288
Development:	Conversion of the existing Shell Clyde Refinery to a finished petroleum products import, storage and distribution terminal including demolition of the redundant infrastructure

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DEFINITIONS

AEP	Annual Exceedance Probability
Applicant	Shell Company of Australia Limited, or its successor
BCA	Building Code of Australia
Construction	The carrying out of works including excavation, upgrades to tanks, bunds, drainage and instrumentation, replacement of electrical substations, upgrades to the fire water system and revised pumping and piping works, covered by this consent
Clyde Refinery	Import and refining of crude oil to produce finished petroleum products (refining operations ceased on site in 2012)
Council	Parramatta City Council
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Demolition	The removal of redundant refinery processing units, tanks and other infrastructure, covered by this consent
Department	Department of Planning and Environment
Development	The development as described in the EIS and RTS, and as generally depicted in Appendix A, being for the conversion of the existing Clyde Refinery to a finished petroleum products import, storage, product dosing and distribution terminal including demolition of redundant infrastructure
EIS	Environmental Impact Statement titled *Clyde Terminal Conversion Project*, prepared by AECOM Australia Pty Ltd, dated November 2013, and the Response to Submissions report titled *Clyde Terminal Conversion Project – Response to Submissions,* prepared by Shell, dated May 2014
EMP	Environment Management Plan
ENM	Excavated Natural Material
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning & Assessment Act 1979*
EP&A Regulation	*Environmental Planning & Assessment Regulation 2000*
EPL	Environmental Protection Licence
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build
Finished Petroleum Products	Gasoline, Diesel, Jet Fuel, Fuel Oil and Petroleum Gases
Heritage	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement
Heritage Item	An item as defined under the *Heritage Act 1977,* and assessed as being of local, State and/ or National heritage significance*,* and/or an Aboriginal Object or Aboriginal Place as defined under the *National Parks and Wildlife Act 1974*
Incident	An incident causing or threatening material harm to the environment, and/or an exceedance of the limits or performance criteria in this consent
Land	In general, the definition of land is consistent with the definition in the EP&A Act
Licensed Asbestos Assessor	A person licensed by WorkCover NSW under the *Work Health and Safety Regulation 2011* to carry out air monitoring, clearance inspections or the issuing of clearance certificates for removal of friable asbestos
Management & Mitigation Measures	The Applicant's management and mitigation measures contained in the EIS and RTS and included in Appendix C
Material harm to the environment	Harm to the environment is material if it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial

Minister	Minister for Planning (or nominee)
Mitigation	Activities associated with reducing the impacts of the development
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NOW	NSW Office of Water within the Department of Primary Industries
OEH	Office of Environment and Heritage
Operation	The import, storage, product dosing and distribution of finished petroleum products
PHA	Preliminary Hazard Analysis Revision 1 dated January 2013 prepared by Sherpa Consulting and included as Appendix F of the EIS
POEO Act	*Protection of the Environment Operations Act 1997*
Reasonable	Reasonable relates to the application of judgment in arriving at a decision, taking into account: mitigation benefits, costs of mitigation versus benefits provided, community views, and the nature and extent of potential improvements.
RMS	Roads and Maritime Services
Secretary	Secretary of the Department (or nominee)
Sensitive Receiver	Residence, education institution (e.g. school, university, TAFE college), health care facility (e.g. nursing home, hospital), religious facility (e.g. church) and children's day care facility.
Site	The land listed in Schedule A, and as depicted in Appendix A
VENM	Virgin Excavated Natural Material
Vicinity of the Site	Devon Street and Durham Street, Rosehill

SCHEDULE B

ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

B1. The Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, demolition or operation of the Development.

TERMS OF CONSENT

B2. The Applicant shall carry out the Development generally in accordance with the:
(a) EIS;
(b) site layout plans and drawings in the EIS (see Appendix A);
(c) the Management and Mitigation Measures (see Appendix C); and
(d) conditions of this consent.

B3. If there is any inconsistency between the above documents, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

B4. The Applicant shall comply with any reasonable requirement(s) of the Secretary arising from the Department's assessment of:
(a) any reports, plans or correspondence that are submitted in accordance with this consent; and
(b) the implementation of any actions or measures contained within these reports, plans or correspondence.

LIMITS OF CONSENT

B5. The Applicant shall not store in excess of:
(a) 264 megalitres (ML) of finished petroleum products; and
(b) 1,550 cubic metres (m^3) of petroleum gases;
on the site at any one time, unless otherwise agreed to in writing by the Secretary.

B6. Construction shall not extend beyond four (4) years from the date of this consent.

B7. Demolition shall not extend beyond ten (10) years from the date of this consent.

SURRENDER OF EXISTING DEVELOPMENT CONSENTS

B8. Within six (6) months of the date of this consent, or as otherwise agreed to in writing by the Secretary, the Applicant shall surrender all existing development consents for the site listed in Appendix B in accordance with Clause 97 of the EP&A Regulation.

Note: This requirement does not extend to the surrender of construction and occupation certificates for existing and proposed building works under Part 4A of the EP&A Act. Surrender of a consent or approval should not be understood as implying that works legally constructed under a valid consent or approval can no longer be legally maintained or used.

STATUTORY REQUIREMENTS

B9. The Applicant shall ensure that all licences, permits and approval/consents are obtained as required by law and maintained as required throughout the life of the Development. No condition of this consent removes the obligation for the Applicant to obtain, renew or comply with such licences, permits or approval/consents.

STRUCTURAL ADEQUACY

B10. The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures are constructed in accordance with the relevant requirements of the BCA.

Notes:

- *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works; and*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the Development.*

OPERATION OF PLANT AND EQUIPMENT

B11. The Applicant shall ensure that all plant and equipment used for the Development is:

(a) maintained in a proper and efficient condition; and
(b) operated in a proper and efficient manner.

PROTECTION OF PUBLIC INFRASTRUCTURE

B12. Prior to the commencement of construction or demolition, the Applicant shall:

(a) prepare a dilapidation report of the public infrastructure in the Vicinity of the Site (including roads, kerbs, footpaths, nature trip, street trees and furniture); and
(b) submit a copy of this report to the Secretary and Council.

B13. The Applicant shall:

(a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged during construction or demolition; and
(b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of construction or demolition.

PROTECTION OF PRIVATE AND COMMERCIAL PROPERTY

B14. The Applicant shall be responsible for the full costs associated with repairing, replacing, cleanup or compensation of any private or commercial property that is physically damaged by construction and demolition.

PROTECTION OF AUSGRID INFRASTRUCTURE

B15. The Applicant shall:

(a) contact Ausgrid prior to the commencement of construction or demolition to advise of any planned work within two (2) metres of Ausgrid's underground cables;
(b) ensure that no mechanical excavation or boring works occurs within two (2) metres of Ausgrid's underground cables; and
(c) ensure that any hand excavation or hand boring works within two (2) metres of Ausgrid's underground cables is classified as *Work Near Underground Assets* according to WorkCover guidelines and must comply with *Ausgrid's Standard: NS156 Working Near or Around Underground Cables*.

STAGED SUBMISSION OF PLANS OR PROGRAMS

B16. With the approval of the Secretary, the Applicant may:

(a) submit any strategy, plan or program required by this consent on a progressive basis; and/or
(b) combine any strategy, plan or program required by this consent.

B17. Until they are replaced by an equivalent strategy, plan or program approved under this consent, the Applicant shall continue to implement existing strategies, plans or programs for operations on site that have been approved by previous consents or approvals.

Notes:

- *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program shall clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages and the trigger for updating the strategy, plan or program; and*
- *There must be a clear relationship between the strategy, plan or program that are to be combined.*

DISPUTE RESOLUTION

B18. In the event that a dispute arises between the Applicant and Council or a public authority other than the Department, in relation to a specification or requirement applicable under this consent, the matter must be referred by either party to the Secretary, or if not resolved, to the Minister, whose determination of the dispute shall be final and binding to all parties. For the purpose of this condition, 'public authority' has the same meaning as provided under Section 4 of the EP&A Act.

COMPLIANCE

B19. The Applicant shall ensure that employees, contractors and sub-contractors are aware of, and comply with, the conditions of this consent relevant to their respective activities.

B20. The Applicant shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.

SECTION 94A CONTRIBUTIONS

B21. Prior to the issue of a construction certificate, the Applicant shall pay Council $424,000 as a development contribution, in accordance with Council's *Section 94A Development Contributions Plan 2013*, to the satisfaction of the Secretary.

SCHEDULE C

ENVIRONMENTAL PERFORMANCE AND MANAGEMENT

HAZARDS AND RISKS

TERMS OF APPROVAL

C1. The Applicant shall:

(a) carry out the development in accordance with the PHA;
(b) implement all control measures proposed in the PHA;
(c) implement all actions proposed by Shell in response to the recommendations from the Buncefield incident investigation report as contained in the supplementary letter received on 28/11/2013 "*Buncefield Response to DPI*"; and
(d) implement all proposed actions listed in Shell's response to the Department's requests for additional information and clarifications "*140709 PHA Review Questions V3 3*" (latest response update received by the DPE on 24/07/2014).

PRE-CONSTRUCTION

C2. At least one month prior to the commencement of construction or demolition of the proposed development (except for construction of those preliminary works that are outside the scope of the hazard studies) and/or associated demolition works, or within such further period as the Secretary may agree, the Applicant shall prepare and submit for the approval of the Secretary the studies set out under subsections (a) to (d) (the pre-construction studies) of this Condition. Construction, other than of preliminary works, shall not commence until approval has been given by the Secretary and, with respect to the Fire Safety Study, approval has also been given by Fire and Rescue NSW.

CONSTRUCTION/DEMOLITION SAFETY STUDY

(a) A Construction Safety Study, consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 7, 'Construction Safety'. For developments in which the construction period exceeds six (6) months, the commissioning portion of the Construction Safety Study may be submitted two months prior to the commencement of commissioning of each discrete component/system of the development per the development's commissioning plan (e.g. individual tank systems). The Construction Safety Study shall identify and assess construction and demolition related hazards and the control measures that will be put in place to prevent and/or mitigate such hazards.

The Construction/Demolition Safety Study shall include the identification of all significant demolition related hazards, and the assessment of the risks associated with these hazards. The analysis shall cover all phases of the proposed development (i.e. de-inventorisation, demolition/removal of redundant assets and infrastructure, and the construction of new assets), and include all equipment and systems covered by the scope of the project (e.g. demolition of refinery process units, stacks, buildings, tanks, pipelines, etc). The demolition hazards identification and risk assessment shall particularly examine the following:

- the potential risk impacts from the proposed demolition works onto the existing simultaneous terminal operations; and
- the potential for any of the identified demolition related risks to alter, during the proposed works, individually or through interaction with existing operations, the offsite risk profile of the facility as assessed in the PHA.

FIRE SAFETY STUDY

(b) A Fire Safety Study that shall cover the relevant aspects of the Department of Planning's Hazardous Industry Planning Advisory Paper No. 2, 'Fire Safety Study Guidelines' and the New South Wales Government's 'Best Practice Guidelines for Contaminated Water Retention and Treatment Systems'. The study shall also be submitted for approval to Fire and Rescue NSW. The study shall reflect the "end-state terminal" fire prevention, detection, and protection arrangements.

HAZARD AND OPERABILITY STUDY

(c) A Hazard and Operability Study for the proposed development, chaired by a qualified person, independent of the development, approved by the Secretary prior to the commencement of the study. The study shall be consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 8, 'HAZOP Guidelines'. The study report must be accompanied by a program for the implementation of all recommendations made in the report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented.

FINAL HAZARD ANALYSIS

(d) A Final Hazard Analysis of the proposed development, consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis'. The FHA shall report on the implementation of the recommendations of the Preliminary Hazard Analysis. The FHA also shall:

- demonstrate that the tank overfill protection system (for all tanks) reduces the risk so far as reasonably practicable without the use of gas detection in the bunds. The following shall be included as part of this demonstration requirement:
  - a sample bow-tie analysis of the tank overfill protection system;
  - the safety integrity level (SIL) allocation and verification report for the tank overfill protection system;
- include the assessment of all hazards from the Parramatta Terminal;
- confirm the quantity and type of dangerous goods stored in the onsite warehouses and include the associated warehouse fire analysis;
- include the number and assessment of LPG tanker transfer operations. The following items shall be included in the analysis;
  - the analysis of all butane pool fire scenarios;
  - the analysis of leaks from butane road tanker pumps;
- justify the limitation of hole sizes (i.e. a maximum of 100 mm) considered in the analysis, or revise the model accordingly to include larger hole sizes appropriate to the actual pipe diameters;
- re-evaluate and confirm all relevant data and assumptions from the Preliminary Hazard Analysis; and
- re-evaluate and confirm all control measures proposed for the prevention and mitigation of incidents.

PRE-COMMISSIONING

C3. The Applicant shall develop and implement the plans and systems set out under subsections (a) to (b) of this Condition. No later than two months prior to the commencement of commissioning of any component of the proposed development, or within such further period as the Secretary may agree, the Applicant shall submit, for the approval of the Secretary, documentation describing those plans and systems. Commissioning shall not commence until approval has been given by the Secretary.

EMERGENCY PLAN

(a) A comprehensive Emergency Plan and detailed emergency procedures for the proposed development (end-state terminal). This plan shall include consideration of the safety of all people outside of the development who may be at risk from the development. The plan shall be consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 1, 'Emergency Planning'. The plan shall include interim emergency management arrangements (if any) which may be introduced between the commencement of commissioning and reaching end-state terminal operations.

SAFETY MANAGEMENT SYSTEM

(b) A document setting out a comprehensive Safety Management System, covering all on-site operations and associated transport activities involving hazardous materials. The document shall clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to the procedures. Records shall be kept on-site and shall be available for inspection by the Secretary upon request. The Safety Management System shall be consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 9, 'Safety Management'.

An inspection, testing and preventive maintenance program should be developed, implemented and maintained to ensure the reliability and availability of the key safety critical equipment is, at a minimum, consistent with the data estimated in the PHA.

PRE-STARTUP

Pre-Startup Compliance Report

C4. One month prior to the commencement of operation of each asset or system, the Applicant shall submit to the Secretary, a report detailing compliance with Conditions C1, C2 and C3 of this Schedule, including:

(a) dates of study/plan/system submission, approval, commencement of construction and commissioning;
(b) actions taken or proposed, to implement the recommendations and safety-related control measures in the studies/plans/systems;
(c) a pre-startup safety review/checklist
(d) responses to each requirement imposed by the Secretary under Condition C6 of this Schedule.

POST STARTUP

Post Startup Compliance Report

C5. Three months after the commencement of operation of the first asset or system covered by this consent, the Applicant shall submit to the Secretary, a report verifying that:

(a) the Emergency Plan required under Condition C3(a) is effectively in place and that at least one emergency exercise has been conducted; and
(b) the Safety Management System required under Condition C3(b) has been fully implemented and that records required by the system are being kept.

ONGOING

Hazard Audit

C6. Within twelve months of the date of this consent and every three years thereafter, or at such intervals as the Secretary may agree, the Applicant shall carry out a comprehensive Hazard Audit of the proposed development and within one month of each audit submit a report to the Secretary.

C7. The audits shall be carried out at the Applicant's expense by a qualified person or team, independent of the development, approved by the Secretary prior to commencement of each audit. Hazard Audits shall be consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 5, 'Hazard Audit Guidelines' (HIPAP No. 5).

C8. The audit reports shall, in addition to the requirements provided in HIPAP No 5:

(a) verify implementation of all actions proposed by Shell in response to the recommendations from the Buncefield incident investigation report per the supplementary letter from Shell received on 28/11/2013 *"Buncefield Response to DPI"*;
(b) verify implementation of all actions listed in Shell's response to the Department's requests for additional information and clarifications "140709 PHA Review Questions V3 3" (latest response update received by the DPE on 24/07/2014);
(c) verify that an inspection, testing and preventative maintenance program has been developed, implemented and maintained to ensure the reliability and availability of key safety critical equipment;
(d) confirm that the throughput and storage quantities of potentially hazardous materials are consistent with the PHA;
(e) verify that the maximum fill levels in Tank 35 and Tank 42 are being maintained to comply with the maximum bund retention capacity; and
(f) verify implementation of any measures arising from the reports submitted in respect of Conditions C1 to C5 of this Schedule.

The audit report must be accompanied by a program for the implementation of all recommendations made in the audit report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented.

Further Requirements

C9. The Applicant shall comply with all reasonable requirements of the Secretary in respect of the implementation of any measures arising from the reports submitted in respect of Conditions C1 to C6 of this Schedule inclusive, within such time as the Secretary may agree.

WORKCOVER REQUIREMENTS

C10. Prior to finalising the design, the Applicant shall meet with WorkCover to discuss preventative and recovery barriers in the tank farms and the implementation of the relevant findings and recommendations of the Buncefield investigation.

C11. Before finalising the FHA, the Applicant shall meet with WorkCover to agree relevant LPG vessel failure modes and their frequency.

DEMOLITION

Approvals/Licensing

C12. The Applicant shall ensure that all demolition associated with the Development is carried out in accordance with *Australian Standard AS 2601:2001: The Demolition of Structures*, or its latest version and the requirements of the *Work Health and Safety Regulation, 2011.*

C13. The Applicant shall ensure that all demolition is undertaken by licensed demolition experts in accordance with the requirements of WorkCover and the *Work Health and Safety Regulation, 2011.*

Demolition Management Plan

C14. The Applicant shall prepare and implement a Demolition Management Plan, to the satisfaction of the Secretary. This plan must:
(a) be prepared by a suitably qualified and experienced demolition contractor;
(b) be prepared in consultation with Council, EPA, WorkCover and RMS and be approved by the Secretary prior to the commencement of any demolition;
(c) identify the statutory requirements that apply to the demolition works;
(d) provide specific details of the proposed demolition process and methods, structures to be demolished, a program for the sequencing of demolition and details of materials handling and management;
(e) detail the process and techniques for demolishing the key pieces of redundant equipment and details of how this would be managed;
(f) describe in detail the procedures for independent testing and analysis (by a NATA accredited laboratory) of all items to be demolished or disturbed during construction for the presence of asbestos;
(g) include copies of asbestos clearance certificates from an independent Licensed Asbestos Assessor for all items to be demolished;
(h) describe the role, responsibility, authority and accountability of all key personnel involved in the management of the demolition;
(i) describe in general how the environmental performance of the demolition would be monitored and managed; and
(j) describe the consultation procedures for informing the community and relevant agencies about the demolition works and environmental performance, including procedures for responding to, recording and handling complaints and non-compliances.

Stack Demolition Management Plan

C15. The Applicant shall prepare and implement a Stack Demolition Management Plan, to the satisfaction of the Secretary. This plan must:
(a) be prepared by a suitably qualified and licensed demolition expert whose appointment has been endorsed by the Secretary;
(b) be prepared in consultation with Council, EPA, WorkCover and RMS and be approved by the Secretary prior to the demolition of any of the five (5) chimney stacks;
(c) be independently reviewed by a certified structural engineer, including a review of the demolition methodology and blast calculations;
(d) detail the process, timing and techniques for demolition of each chimney stack and how this would be managed;
(e) include copies of asbestos clearance certificates for each stack, prepared by a Licensed Asbestos Assessor;
(f) describe the role, responsibility, authority and accountability of all key personnel involved in the management of the stack demolition;
(g) describe in general how the environmental performance of the stack demolition would be monitored and managed;
(h) describe the specific consultation procedures for informing the community, nearby businesses and relevant agencies about the timing and method for stack demolition works, any required road closures or exclusion areas and environmental management, including procedures for responding to, recording and handling complaints and non-compliances; and
(i) detail the timeframe for removal of the waste materials generated by stack demolition, including the requirement for any interim measures to manage dust and surface water.

ASBESTOS MANAGEMENT

Asbestos Handling, Transport, Disposal and Clearance

C16. The Applicant shall ensure that any asbestos encountered during construction and demolition is monitored, handled, transported and disposed of by appropriately qualified and licensed contractors in accordance with the requirements of WorkCover and relevant guidelines, including:

(a) *Work Health and Safety Regulation 2011*;
(b) *Model Code of Practice – How to Manage and Control Asbestos in the Workplace, 2011* Safe Work Australia;
(c) *Model Code of Practice – How to Safely Remove Asbestos, 2011* Safe Work Australia; and
(d) *Protection of the Environment Operations (Waste) Regulation 2005.*

CONTAMINATION

Contamination Management Plan

C17. The Applicant shall prepare and implement a Contamination Management Plan for construction and demolition, to the satisfaction of the Secretary. The Plan shall:

(a) be prepared by a suitably qualified and experienced expert;
(b) be prepared in consultation with the EPA;
(c) be approved by the Secretary prior to the commencement of construction or demolition;
(d) identify all potential contaminants that could be disturbed, mobilised and discharged to receiving waters during construction and demolition;
(e) detail the procedures for testing, classifying, handling, storing and disposing of contaminated soils and groundwater encountered in excavations;
(f) detail measures for periodically testing surface water run-off that may accumulate in excavations, and the procedures for transfer of contaminated water to the on-site wastewater treatment plant; and
(g) detail any required updates to the *Soil and Groundwater Management Plan Shell Clyde Refinery and Parramatta Terminal, Durham Street, Rosehill, 2010* to address construction and demolition.

Removal of Sub-Grade Infrastructure

C18. The Applicant shall undertake any removal of underground petroleum storage tanks or other infrastructure in accordance with the *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008* or its latest version.

C19. The Applicant shall provide a contamination report to the EPA detailing any site contamination investigation carried out in the immediate vicinity of any subgrade asset removal. This report shall be provided to the EPA on completion of the removal of sub-grade infrastructure.

Acid Sulphate Soils Management Plan

C20. The Applicant shall prepare and implement an Acid Sulphate Soil Management Plan for construction and demolition in accordance with the NSW State Government's *Acid Sulphate Soils Manual 1998.*

NOISE

Noise Limits

C21. The Applicant shall ensure that noise from the operation does not exceed the limits in Table 1.

Table 1: Noise Limits dB(A)

Noise Receiver Location	Location	Day	Evening	Night	
		$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{Aeq\ (15\ min)}$	$L_{A1\ (1\ minute)}$
R1 – R3	Any residence in the suburb of Rosehill	38	38	35	45
R4	Any residence in the suburb of Silverwater	37	37	36	45
R5	Any residence in the suburb of Newington	36	36	35	45
R6 – R7	Any residence in the suburb of Rydalmere	40	40	36	45

Notes:

- *To identify a noise receiver location, refer to the figure in Appendix D; and*
- *Noise generated during operation is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.*

Hours of Work

C22. The Applicant shall comply with the hours detailed in Table 2, unless otherwise agreed in writing by the EPA and the Secretary.

Table 2: Construction, Demolition & Operation Hours

Activity	Day	Time
Construction and Demolition	Monday – Friday Saturday	7:00am to 6:00pm 8:00am to 5:00pm
Operation	Monday – Sunday	24 hours

C23. Construction and demolition outside of the hours identified in condition C22 may be undertaken in the following circumstances:

(a) works that are inaudible at the nearest sensitive receivers;
(b) works that are consistent with Shell's existing maintenance procedures and are in accordance with the EPL;
(c) works agreed to in writing by the EPA or the Secretary;
(d) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or
(e) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

Operating Conditions

C24. The Applicant shall:

(a) implement all reasonable and feasible noise management and mitigation measures to prevent and minimise operational, low frequency and traffic noise generated during operation;
(b) maintain the effectiveness of any noise suppression equipment on plant at all times and ensure defective plant that may generate offensive noise is not used operationally until fully repaired; and
(c) regularly assess noise monitoring data and relocate, modify and/or stop operations to ensure compliance with the relevant conditions of this consent.

Construction & Demolition Noise Management Plan

C25. The Applicant shall prepare and implement a Noise Management Plan for construction and demolition. The plan shall:

(a) be prepared and implemented by a suitably qualified and experienced expert;
(b) be prepared in consultation with the EPA;
(c) be approved by the Secretary prior to the commencement of construction or demolition;
(d) describe the measures that will be implemented to minimise noise from construction and demolition including:
    - all reasonable and feasible measures being employed on site;
    - maintenance of equipment to ensure that it is in proper and efficient condition;
    - procedures to ensure that all construction and demolition equipment does not operate simultaneously, where practicable;
    - traffic noise is effectively managed;
    - identification of high noise generating construction and demolition works, including proposed times when these works will be carried out, respite periods and mitigation measures, including the use of temporary noise barriers where necessary;
(e) includes a noise monitoring program that:
    - is capable of evaluating noise impacts from construction and demolition;
    - includes a protocol for determining exceedances of relevant noise criteria; and
    - includes procedures for responding to complaints.

BLASTING

Blasting Hours

C26. The Applicant shall only carry out blasting on site between 9:00am and 5:00pm Monday to Friday inclusive. Blasting is not permitted on Saturday, Sundays, public holidays or at any other time without the written approval of the Secretary.

Blast Management Plan

C27. The Applicant shall prepare and implement a Blast Management Plan for demolition, to the satisfaction of the Secretary. This plan must:

(a) be prepared by a suitably qualified and experienced expert;
(b) be prepared in consultation with the EPA;
(c) be approved by the Secretary prior to the commencement of blasting;
(d) describe the program for undertaking test blasts to determine appropriate blasting parameters to ensure compliance with the limits in this consent;
(e) describe the measures that would be implemented to:
- ensure compliance with the blasting limits in this consent;
- protect the safety of people in the surrounding area;
- protect public and private infrastructure and property in the surrounding area from any damage; and
- minimise the dust and fume emissions of any blasting; and

(f) include a monitoring program for evaluating and reporting on compliance with the blasting limits in this consent; and
(g) describes the procedures for early notification to the public, nearby businesses and relevant authorities of proposed blasting times, duration and any required exclusion areas and/or road closures.

AIR QUALITY

Dust Minimisation

C28. The Applicant shall carry out all reasonable and feasible measures to minimise dust generated during construction, demolition and operation.

Offensive Odour

C29. The Applicant shall not cause or permit the emission of offensive odours from the site, as defined under Section 129 of the POEO Act.

Operational Air Quality Monitoring Program

C30. The Applicant shall prepare and implement an Air Quality Monitoring Program for the operation. The plan shall:

(a) be prepared and implemented by a suitably qualified and experienced expert;
(b) be prepared in consultation with the EPA;
(c) be submitted to the Secretary for approval within 3 months of the date of this consent;
(d) describe an air quality monitoring program that is capable of evaluating the performance of the operation and determining compliance with key performance indicators agreed in consultation with the EPA;
(e) includes record keeping, a complaints register and response procedure and compliance reporting.

Construction & Demolition Air Quality Management Plan

C31. The Applicant shall prepare and implement an Air Quality Management Plan for construction and demolition. The plan shall:

(a) be prepared and implemented by a suitably qualified and experienced expert;
(b) be approved by the Secretary prior to the commencement of construction or demolition and be provided to the EPA;
(c) describe the measures that would be implemented on site to ensure:
- the control of air quality and odour impacts;
- that these controls remain effective over time;
- that all reasonable and feasible air quality management practice is employed;

- the air quality impacts are minimised during adverse meteorological conditions and extraordinary events; and
- compliance with the relevant conditions of this consent.

(d) includes record keeping, a complaints register and compliance reporting.

Meteorological Monitoring

C32. During the life of the Development, the Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements of the EPA.

ENERGY EFFICIENCY AND GREENHOUSE GAS EMISSIONS

C33. The Applicant shall implement all reasonable and feasible measures to minimise energy use and greenhouse gas emissions during construction, demolition and operation.

TRANSPORT AND ACCESS

Operating Conditions

C34. The Applicant shall ensure that:

(a) the operation does not result in any vehicles queuing on the public road network;
(b) heavy vehicles and bins associated with operation do not park or stand on local roads or footpaths in the vicinity of the site;
(c) all loading and unloading of materials is carried out on site;
(d) the proposed turning areas in the car park are kept clear of any obstacles, including parked cars, at all times;
(e) all trucks entering or leaving the site with loads have their loads covered;
(f) trucks associated with operation do not track dirt onto the public road network; and
(g) heavy vehicles use designated routes to minimise impacts on the local and regional road network.

Car Parking

C35. The Applicant shall provide sufficient parking facilities on-site, including for heavy vehicles, for construction, demolition and operational personnel, to ensure that traffic associated with the Development does not utilise public and residential streets or public parking facilities.

Traffic Management Plan

C36. The Applicant shall prepare and implement a Traffic Management Plan for construction and demolition, to the satisfaction of the Secretary. The plan must:

(a) be prepared by a suitably qualified and experienced person;
(b) be prepared in consultation with Council and RMS;
(c) be approved by the Secretary prior to the commencement of construction or demolition;
(d) detail the measures that would be implemented to ensure road safety and network efficiency during construction and demolition;
(e) detail heavy vehicle routes, access and parking arrangements;
(f) include a Driver Code of Conduct to:
    - minimise the impacts of construction and demolition on the local and regional road network;
    - minimise conflicts with other road users;
    - ensure truck drivers use specified routes;
(g) include a program to monitor the effectiveness of these measures; and
(h) if necessary, detail procedures for notifying residents and the community (including local schools), of any potential disruptions to routes.

FLOODING

Flood Design and Structural Certification

C37. The Applicant shall ensure that all new buildings and structures, and additions to existing buildings and structures are constructed in accordance with the relevant requirements of the City of Parramatta's *Local Floodplain Risk Management Policy, June 2006*.

C38. New electrical substations shall be constructed above the 1% Annual Exceedance Probability (AEP) flood level with an appropriate freeboard determined in consultation with Council and to the satisfaction of the Secretary.

Flood Study

C39. Within 2 months of the date of this consent, the Applicant shall provide detailed site data, to the satisfaction of Council, to update the *Duck River and Duck Creek Flood Study Review, 2013*. The Applicant shall:

(a) provide details of all floodplain obstructions on the site, including bund locations and heights;
(b) fund the work required to update Council's flood model with the site specific data; and
(c) provide details of all construction and demolition works that would be carried out within areas defined as 'high hydraulic hazard'.

C40. Within 1 month of completing the updates to the flood study, the Applicant shall review the outcomes of the updated study and detail any additional flood management measures to be implemented during construction, demolition and operation. The outcomes of the study shall also inform any revisions to the Flood Emergency Response Plan as required by Condition C42.

Flood Warning Signs

C41. The Applicant shall ensure that flood warning signs are maintained throughout the site, during construction, demolition and operation. The flood warning signs shall indicate the site is prone to flooding and shall show the location of assembly and evacuation points, which are above the 1% AEP.

Flood Emergency Response Plan

C42. The Applicant shall update and implement the Emergency Response Plan for the site to include procedures for flood emergency response during construction, demolition and operation. The Plan must:
(a) be prepared by a suitably qualified and experienced expert;
(b) be prepared in consultation with Council;
(c) be submitted to the Secretary for approval at least 1 month prior to the commencement of construction or demolition, or as otherwise agreed with the Secretary;
(d) detail the procedures for managing flood risks during construction, demolition and operation, including flood recovery measures, sufficient warning time for flash flooding and procedures for ensuring the protection of infrastructure and human safety; and
(e) identify assembly points, emergency evacuation routes, flood warning alarms and evacuation procedures.

SOIL & WATER

Imported Soil

C43. The Applicant shall:

(a) ensure that only VENM or ENM or other material approved in writing by the EPA is used as fill on the Site;
(b) keep accurate records of the volume and type of fill to be used; and
(c) make these records available to the Department upon request.

Erosion and Sediment Control Plan

C44. The Applicant shall prepare and implement an Erosion and Sediment Control Plan for construction and demolition to the satisfaction of the Secretary and in accordance with *Managing Urban Stormwater: Soils and Construction, 2004,* or its latest version.

C45. Prior to the commencement of construction or demolition, the Applicant shall implement suitable erosion and sediment control measures on-site, in accordance with the Erosion and Sediment Control Plan.

Discharge Limits

C46. The Development shall comply with section 120 of the *Protection of the Environment Operations Act 1997,* which prohibits the pollution of waters, except as expressly provided in an EPL.

C47. The Applicant shall ensure that signs are displayed and maintained adjacent to all stormwater drains on the site clearly indicating 'Stormwater Only'.

Foreshore Management

C48. The Applicant shall ensure the foreshore and inter-tidal areas on the site are fully protected. This includes preventing the storage of any machinery, materials, equipment, supplies, or waste receptacles within or adjacent to the inter-tidal area.

Bunding

C49. The Applicant shall store all chemicals, fuels and oils used on-site in appropriately bunded areas in accordance with the requirements of all relevant Australian Standards, and/or the EPA's *Storing and Handling of Liquids: Environmental Protection – Participants Handbook.*

Water Management Plan

C50. The Applicant shall update and implement the Water Management Plan for the site for construction, demolition and operation, to the satisfaction of the Secretary. The plan must:

(a) be approved by the Secretary prior to the commencement of construction or demolition and be provided to the EPA and NOW;
(b) include mitigation measures for managing surface water and industrial water including, but not limited to the Management and Mitigation Measures in Appendix C;
(c) include a Surface Water Management Plan, that:
- describes the water management system on site, including plans of the stormwater system and oily water/wastewater system;
- demonstrates compliance with any requirements of the EPL and/or Council with respect to stormwater and wastewater management;

(d) include a Groundwater Management Plan, that:
- details the procedures for testing, dewatering, storage, movement and treatment of any groundwater; and

(e) include a Leachate Management Plan describing procedures for preventing the generation of leachate from waste stockpiles.

WASTE MANAGEMENT

C51. The Applicant shall assess, classify and manage all liquid and non-liquid wastes generated at the site during construction, demolition and operation in accordance with the *EPA's Waste Classification Guidelines Part 1: Classifying Waste, December 2009*, or its latest version and dispose of all wastes to a facility that may lawfully accept the waste.

C52. Waste generated outside the site shall not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the POEO Act, if such a licence is required in relation to that waste.

C53. The Applicant shall manage the chemical fixation and treatment of organic solvents, contaminated blue metals and empty drums or macro-encapsulation of waste in accordance with the EPA Specific Immobilisation Approval and the *EPA Waste Classification Guidelines Part 2: Immobilisation of Waste, April 2008*, or its latest version.

C54. The Applicant shall manage all materials and waste containing Scheduled Chemical Waste and polychlorinated biphenyls in accordance with the applicable Chemical Control Order or in accordance with a licence under the *Environmentally Hazardous Chemicals Act, 1985*.

C55. The Applicant shall manage all materials and waste containing radioactive substances in accordance with the *Radiation Control Act, 1990*, *Radiation Control Regulation, 2013* and the requirements of the EPA.

C56. The Applicant shall retain all sampling and waste classification data for the life of the Development in accordance with the requirements of the EPA.

Waste Management Plan

C57. The Applicant shall update and implement the Waste Management Plan for the site for construction, demolition and operation to the satisfaction of the Secretary. This Plan shall:

(a) be approved by the Secretary prior to the commencement of construction or demolition and be provided to the EPA;
(b) detail the type and quantity of waste to be generated during construction, demolition and operation;
(c) detail the materials to be reused or recycled, either on or off site;
(d) detail the procedures for handling, storage, collection of recycling and disposal of waste;
(e) include measures to manage stockpiles, including ensuring stockpiles are covered or stored undercover on sealed and bunded areas, are no higher than 5 metres and have height markers installed; and
(f) include the Management and Mitigation Measures included in Appendix C.

BIODIVERSITY

Biodiversity Management Plan

C58. The Applicant shall prepare and implement a Biodiversity Management Plan for the Development to the satisfaction of the Secretary. This plan must:

(a) be prepared in consultation with Council and OEH;
(b) be approved by the Secretary prior to the commencement of construction or demolition;
(c) include measures to be taken to minimise impacts on flora and fauna, including inspection of exterior casings and insulations on stacks and buildings to be demolished for the presence of Grey-headed Flying-foxes and microbats and procedures for their safe relocation;
(d) include an updated *Plan of Management: Restoration of Green and Golden Bell Frog Habitat, Clyde, October 2013* for the construction, demolition and operation, incorporating:
- specific measures to be implemented such as frog-proof fences to exclude Green and Golden Bell Frogs from construction and demolition areas;
- plans for the implementation and ongoing management of artificial breeding habitats;
- monitoring protocols including long-term low frequency frog monitoring and a *Gambusia* monitoring program of the ponds and artificial breeding habitats;
- active management procedures for ensuring ponds remain free of *Gambusia* including manually drying out small and intermediate ponds on an annual basis*;*

(e) include an updated Wetland Management Plan to include the creation of habitat opportunities for the Green and Golden Bell Frog; and
(f) include a pest, vermin and noxious weed management plan.

HERITAGE MANAGEMENT

Archival Record

C59. The Applicant shall commission an archival photographic and documentary recording of the existing fabric and operation of the Clyde Refinery. The archival recording must:

(a) be prepared by an appropriately qualified heritage expert, in accordance with the *Heritage Council Guidelines on Photographic Recording of Heritage Items Using Film or Digital Capture 2006*;
(b) ensure the photographic recording is undertaken prior to demolition works taking place;
(c) be submitted to the Heritage Council of NSW, the Council Library and the NSW State Library one month prior to the completion of demolition of the key refinery processing units;
(d) include the recording of oral histories from past and present staff regarding the operations of the Clyde Refinery;
(e) ensure the documentary recording contains a detailed timeline of representative pieces of equipment and tankfarms, together with copies of plans and schematics;
(f) include a photographic archival recording of the former Clyde Refinery infrastructure. These may be staged to capture those elements being deconstructed prior to demolition works and the broader context of the equipment should be captured prior to its removal; and
(g) include a photographic archival recording of the stacks.

Heritage Management Plan

C60. The Applicant shall prepare and implement a Heritage Management Plan for the on-going management of heritage items on the site. The plan shall:

(a) be prepared by an appropriately qualified heritage expert in consultation with Council;
(b) be submitted to the Secretary for approval no later than 3 months from the date of this consent;
(c) include an Archaeological Research Design and Methodology to manage subsurface impacts (if they occur), to the area of archaeological potential identified around the Bitumen Gantry through the removal of foundations or other invasive works;

(d) include details for the relocation of the memorial to John Simpson Fell, Horace Liddon Spencer and Albert Edward Ward to a publicly accessible area, to be agreed in consultation with Council; and
(e) include measures for the management of archaeological potential at the historical residential area along Devon Street and the second bitumen gantry.

Unexpected Finds Protocol

C61. If any archaeological relics are uncovered during the course of the work, then all works shall cease immediately in that area and the OEH Heritage Branch contacted. Depending on the possible significance of the relics, an archaeological assessment and an excavation permit under the *NSW Heritage Act 1977* may be required before further works can continue in that area.

C62. If Aboriginal objects are uncovered during work, excavation or disturbance of the area, work must stop immediately. The Regional Operations Group of the OEH is to be contacted. Aboriginal archaeological excavation must be co-ordinated with any proposed investigation of non-indigenous material.

LIGHTING & SIGNAGE

Lighting

C63. The Applicant shall ensure that the lighting associated with the Development:

(a) complies with the latest version of *AS 4282(INT) – Control of Obtrusive Effects of Outdoor Lighting*; and
(b) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network.

Signage

C64. The Applicant shall not install any advertising signs on site without the written consent of the Secretary.

SCHEDULE D

ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

D1. The Applicant shall prepare and implement an Environmental Management Strategy for the Development to the satisfaction of the Secretary. This strategy must:

(a) be submitted to the Secretary for approval within 3 months of the date of this consent;
(b) provide the strategic framework for environmental management of the Development;
(c) identify the statutory approvals that apply to the Development;
(d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the Development;
(e) describe the procedures that would be implemented to:
- keep the local community and relevant agencies informed about the construction, demolition and operation and environmental performance of the Development;
- receive, handle, respond to, and record complaints;
- resolve any disputes that may arise during the course of the development;
- respond to any non-compliance;
- respond to emergencies; and

(f) include:
- copies of any strategies, plans and programs approved under the conditions of this consent; and
- a clear plan depicting all the monitoring required to be carried out under the conditions of this consent.

Management Plan Requirements

D2. The Applicant shall ensure that the Management Plans required under this consent are prepared in accordance with any relevant guidelines, and include:

(a) detailed baseline data;
(b) a description of:
- the relevant statutory requirements (including any relevant approval, licence or lease conditions);
- any relevant limits or performance measures/criteria; and
- the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the Development or any management measures;

(c) a description of the measures that will be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
(d) a program to monitor and report on the:
- impacts and environmental performance of the Development; and
- effectiveness of any management measures (see (c) above);

(e) a contingency plan to manage any unpredicted impacts and their consequences;
(f) a program to investigate and implement ways to improve the environmental performance of the Development over time;
(g) a protocol for managing and reporting any:
- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria; and

(h) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Revision of Strategies, Plans & Programs

D3. Within 3 months of the submission of:

(a) an annual review under Condition D4 of this schedule;
(b) an incident report under Condition D5 and D6 of this schedule;
(c) an audit report under Condition D7 of this schedule; and
(d) any modifications to this consent,

the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

REPORTING

Annual Review

D4. By the end of July each year, or other timing as may be agreed by the Secretary, the Applicant shall review the environmental performance of the Development to the satisfaction of the Secretary. This review must:

(a) describe the construction and demolition activities that were carried out in the previous calendar year, and the construction and demolition activities proposed to be carried out in the coming calendar year;
(b) include a comprehensive review of the monitoring results and complaints records of the Development over the previous calendar year, which includes a comparison of these results against:
- the relevant statutory requirements, limits or performance measures/criteria;
- the monitoring results of previous years; and
- the relevant predictions in the EIS;

(c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
(d) identify any trends in the monitoring data over the life of the Development;
(e) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and
(f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the Development.

Incident Reporting

D5. Within 24 hours of the occurrence of an incident that causes (or may cause) harm to the environment, the Applicant shall notify the Secretary and any other relevant agencies of the incident.

D6. Within 7 days of the detection of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident.

INDEPENDENT ENVIRONMENTAL AUDIT

D7. Within a year of the date of this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the Development. This audit must:

(a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
(b) include consultation with the relevant agencies;
(c) assess the environmental performance of the Development and whether it is complying with the relevant requirements in this consent and any relevant EPL (including any assessment, plan or program required under these approvals);
(d) review the adequacy of any approved strategy, plan or program required under these approvals; and
(e) recommend measures or actions to improve the environmental performance of the Development, and/or any assessment, plan or program required under these approvals.

Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.

D8. Within 3 months of commissioning this audit, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report and a program for implementation.

ACCESS TO INFORMATION

D9. The Applicant shall, to the satisfaction of the Secretary:

(a) make the following information publicly available on its website:

- the EIS;
- current statutory approvals for the Development;
- approved strategies, plans or programs;

- a summary of the monitoring results of the Development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent;
- a complaints register, updated on a quarterly basis;
- copies of any annual reviews (over the last 5 years);
- any independent environmental audit, and the Applicant's response to the recommendations in any audit; and
- any other matter required by the Secretary; and

(b) keep this information up-to-date.

Note: This requirement does not require any confidential information to be made available to the public.

APPENDIX A
DEVELOPMENT PLANS

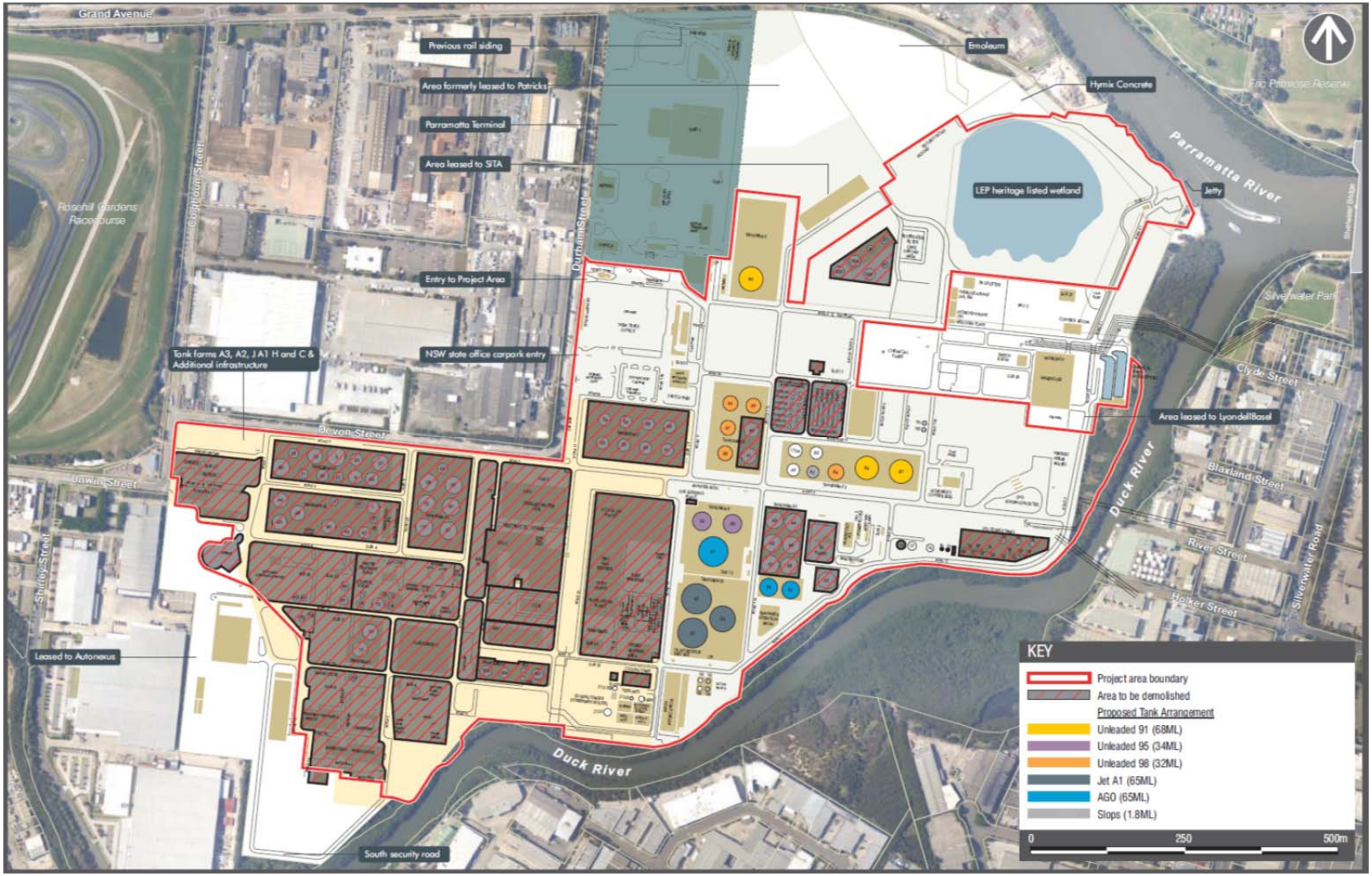


Figure 1: Conversion of Existing Infrastructure

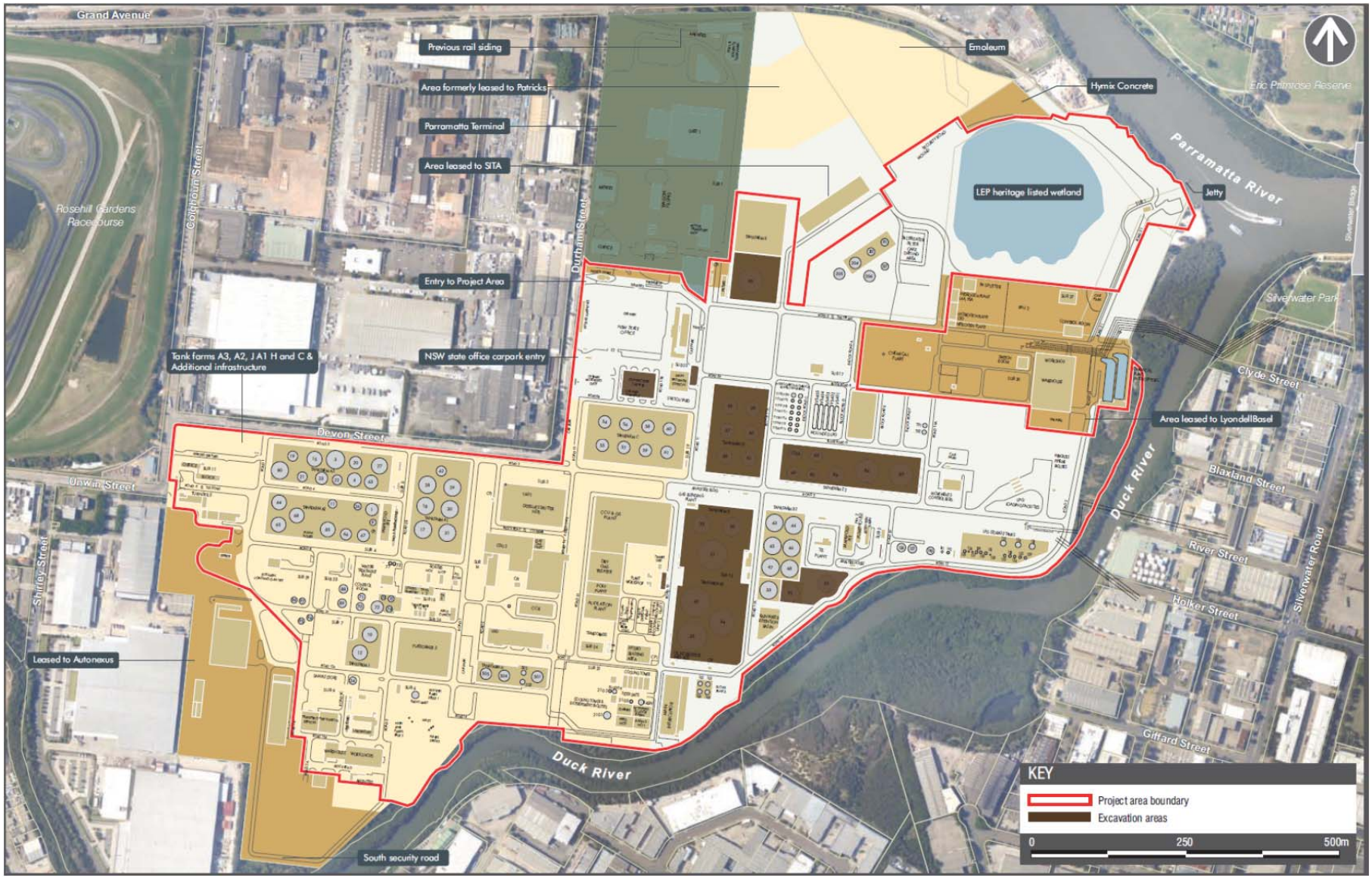


Figure 2: Excavation, Profiling and Grading Activities

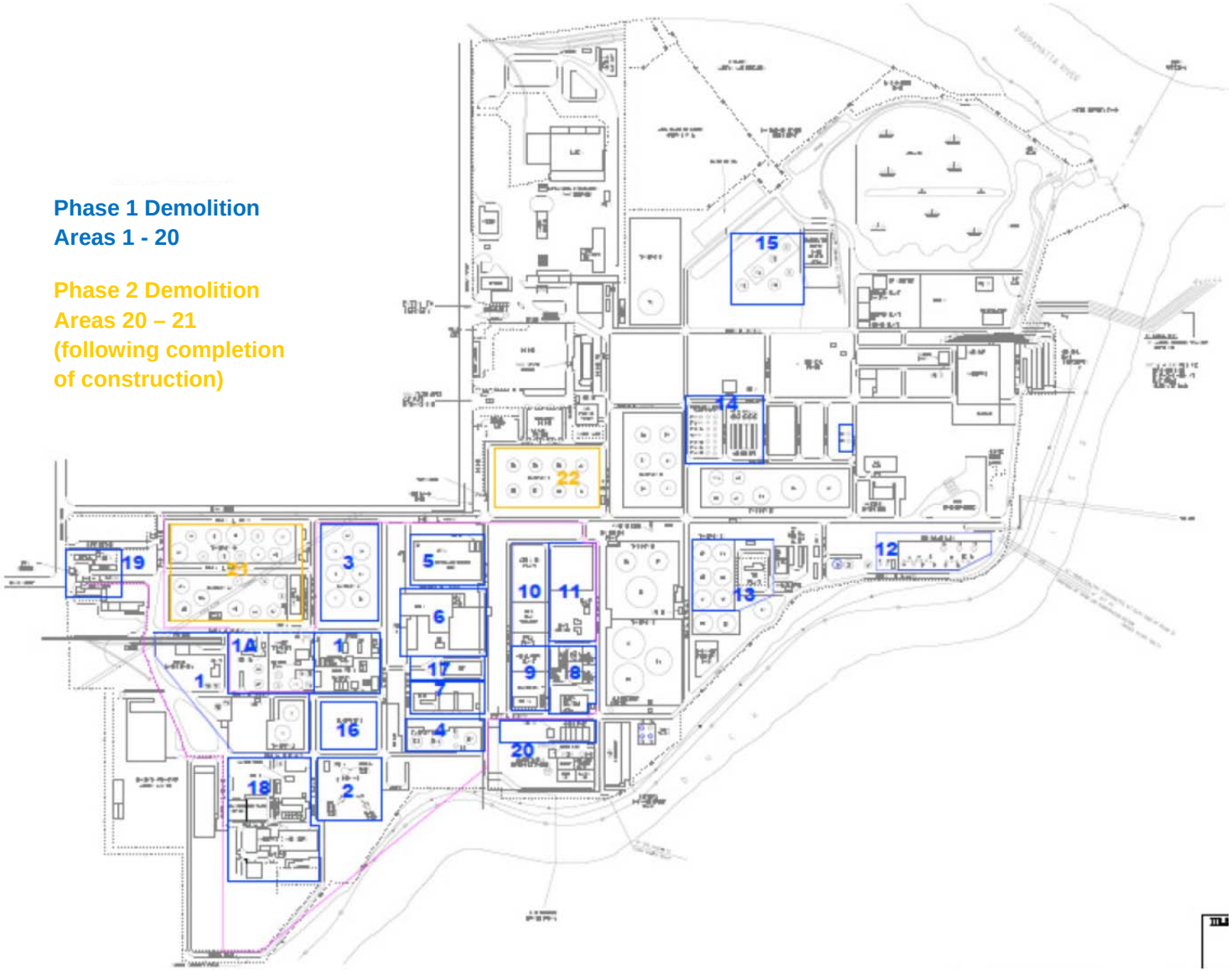


Figure 3: Demolition Phasing

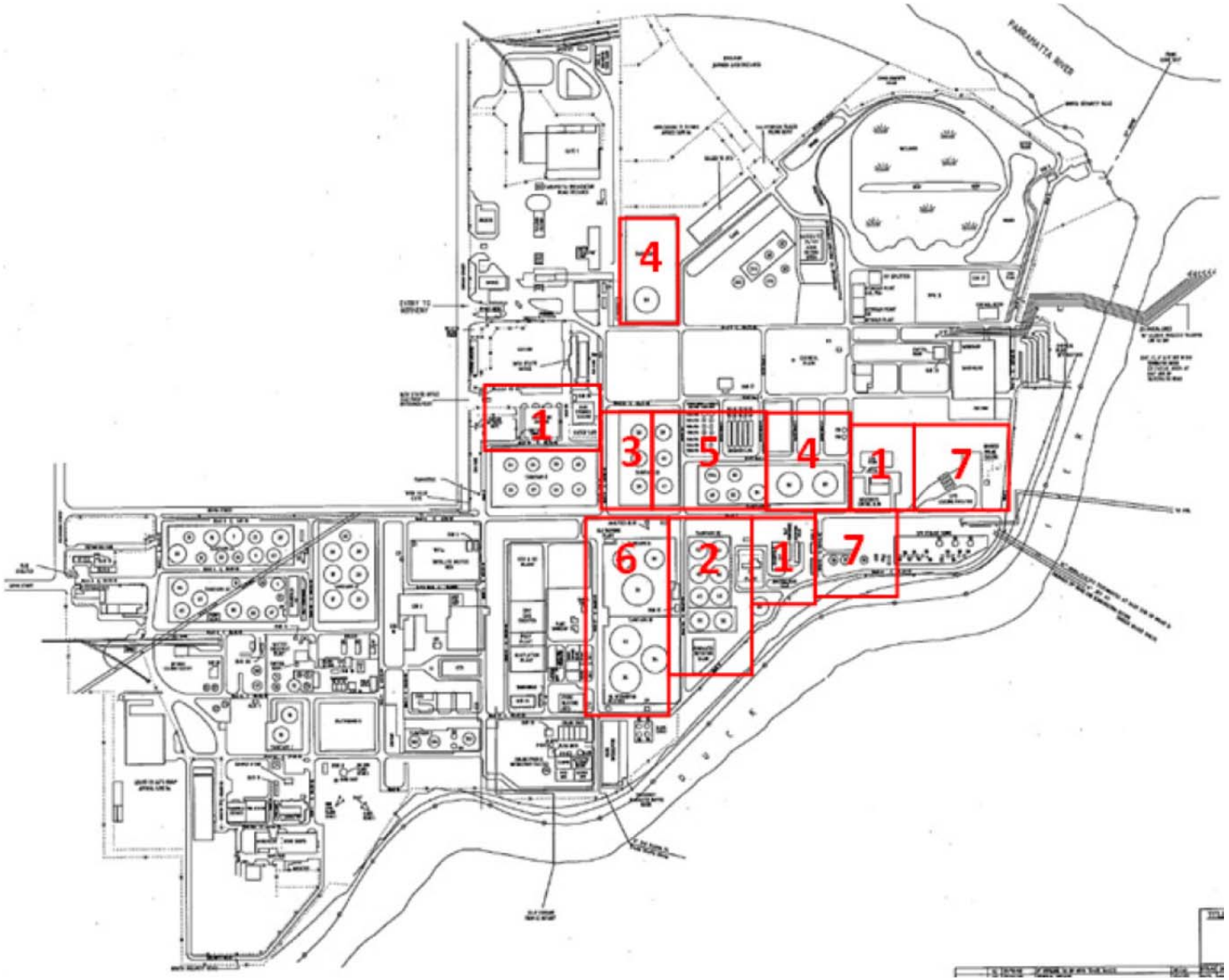


Figure 4: Construction Phasing

APPENDIX B
DEVELOPMENT CONSENTS TO BE SURRENDERED

DA	Year DA was approved	Details of DA
DA/205/2013	2013	Construction of a new concrete slab and fire water storage tank. (Submitted: 15/04/2013).
CC/147/2013	2013	Construction of a new concrete slab and water tank at industrial premises. (Submitted: 15/04/2013).
DA/65/2012	2012	Construction of a building for use as a dangerous good store for an existing plastic production plant. The development is defined as a "Nominated Integrated Development" as an activity approval is required under the Water Management Act 2000. (Submitted: 06/02/2012).
DA/90/2012	2012	Construction of Replacement Vapour Recovery Unit (VPU) at the Shell Refinery, Clyde. (Submitted: 15/02/2012).
DA/925/2010	2010	Installation of an automated crude dehydrator to replace existing manual system. (Submitted: 17/11/2010).
DA/87/2009	2009	Refurbishment of administration precinct, within the Shell refinery complex. (Submitted: 19/02/2009).
DA/103/2008	2008	Alterations and additions to the existing Basell Polypropylene Plant within the Shell Refinery complex including the provision of a water cooling tower. (Submitted: 18/02/2008).
TA/306/2008	2008	Removal 1 Tree (Submitted: 05/05/2008).
TA/364/2008	2008	Removal of 2-4 Trees (Submitted: 29/05/2008).
DA/695/2008	2008	Construction of a workshop within Shell's Clyde Refinery. (Submitted: 23/09/2008).
DA/912/2008	2008	Alterations and additions to the Shell Employee Credit Union Building within the Shell Refinery Complex, including the placement of a pre-fabricated portable office building on the site with an associated walkway. (Submitted: 27/11/2008).
CC/722/2008	2008	A pre-fabricated portable office with a linkway connection to an existing brick veneer office. (Submitted: 27/11/2008).
DA/07/0067	2008	Hydrodesulphurisation unit upgrade of existing unit and associated infrastructure to reduce sulphur content in Diesel (HDS2).
DA/06/0013	2008	Upgrade to fluidised catalytic cracking unit .
DA/26/2007	2007	To install 4 underground storage tanks in the existing Shell Clyde Refinery. (Submitted: 16/01/2007).
DA/96/2007	2007	Storage and distribution of motor vehicles, and for the premises to be used for the registration of and/or wholesale of motor vehicles. No public access to the site is permitted. (Submitted: 12/02/2007).
DA/163/2007	2007	Alterations and additions to a wholesale car distribution yard including the installation of portable building, tree removal, landscaping and removal of a portion of the hail netting. (Submitted: 05/03/2007).
DA/184/2007	2007	Alterations and additions to a wholesale car distribution yard including the installation of a fuel dispensing facility. (Submitted: 13/03/2007).
DA/296/2007	2007	Installation of four 110kL underground storage tanks for the storage of neat ethanol. (Submitted: 20/04/2007).
DA/397/2007	2007	Installation of one 30kl underground storage tank for storage of petroleum slops within the Shell Refinery complex. (Submitted: 25/05/2007).
DA/769/2007	2007	Demolition and alterations and additions to old lift and stairwell (Submitted 17/09/2007).
DA/769/2007	2007	Demolition and alterations and additions to old lift and stairwell (Submitted: 17/09/2007).
DA/975/2007	2007	Construction of two new awnings and provision of additional waste types at the existing resource recovery facility. (Submitted: 12/11/2007).

DA	Year DA was approved	Details of DA
DA/163/2007/A	2007	Section 96(1a) modification to approved alterations and additions to a wholesale car distribution yard. Modifications include: 1. Addition to an existing office; and 2. Modification and replacement of an existing carport structure. (Submitted: 13/12/2011).
TA/849/2006	2006	Pruning of 42 Tree/s (Submitted: 28/09/2006).
DA/1022/2006	2006	Construction of two metal cat walks within the Shell refinery site. (Submitted: 10/11/2006)
CC/752/2006	2006	Construction 2 metal catwalks (Submitted: 10/11/2006).
TA/277/2005	2005	Removal of 5 trees (Submitted: 03/03/2005).
TA/597/2005	2005	Removal of 41 trees (Submitted: 31/05/2005).
DA/222/2006	2005	Construction of a 26,000m3 unleaded petrol storage tank (known as Tank No. 93) within Tank Farm K in the Shell Clyde Refinery. (Submitted: 24/03/2006)
TA/399/2006	2005	Removal of 1 Tree (Submitted: 16/05/2006).
DA/967/2004	2004	Use of part of an existing building as a cafe. (Submitted: 03/08/2004)
DA/1023/2004	2004	Reduction in height of existing above ground storage tank No 28 within the Shell Refinery complex. (Submitted: 13/08/2004)
CC/595/2004	2004	Reduction in height of storage tanks (Submitted: 24/09/2004).
DA-140-6-2004i	2004	Benzene reduction unit – Mogas improvement .
TA/388/2003	2003	Removal of 37 trees Various species In decline & inappropriate location (Submitted: 25/02/2003).
DA/764/2003	2003	Minor alterations to existing amenities/office building (Submitted: 14/04/2003).
CC/206/2003	2003	Minor alterations to existing amenities/office building (Submitted: 14/04/2003).
DA/2145/2003	2003	To erect and operate a waste transfer reprocessing and resource recovery facility. (Submitted: 02/12/2003)
DA/2145/2003/A	2003	Amended application to rotate the footprint of the office building, increase the length of the storage building by 18 metres and reconfigure the footprint of the waste processing building. (Submitted: 03/11/2004)
	2002	Establishment of proposed landfarm area.
DA/868/2001	2001	Alterations to the existing amenities building (Submitted: 15/05/2001).
CC/363/2001	2001	Alterations to the amenities building (Submitted: 15/05/2001).
DA/2384/2001	2001	to construct land farming facility (oily sludge) ancill to existing refinery (Submitted: 11/12/2001).
	2001	Gasoline tankage construction.
DA/249/09/01	2001	Upgrade to Hydrodesulphurising unit (HDS1).
DA/284/1999	1999	Use part of the site for car storage, including. erection of nail netting, etc. (Submitted: 03/03/1999).
CC/228/1999	1999	alterations to existing refinery plant (Submitted: 03/03/1999).
DA/1612/1999	1999	Erection of silos for the transfer, storage & distribution of polypropylene (Submitted: 20/10/1999).
DA/1661/1999	1999	Erect a prefabricated housing module to be used as a display & admin. office, part of shell (Submitted: 27/10/1999).
DA/176/1997	1997	Erect a vapour storage tank and associated pipework. (Submitted: 07/04/1997)
DA/378/1997	1997	The erection of a twin pylon sign. (Submitted: 07/07/1997)
DA/28/1996	1996	additions to the side of the existing control room (Submitted: 09/01/1996).
DA/405/1996	1996	an industrial storage shed (Submitted: 05/07/1996).
DA/7/1995	1995	Refurbishing of the existing office building, with a minor atrium extension (Submitted: 05/01/1995).
DA/112/1993	1993	To construct a new rail tank car loading facility and extend the railtracks. (Submitted: 03/03/1993)

DA	Year DA was approved	Details of DA
DA/172/1993	1993	Construction of a selective hydrogenation unit (Butane/Butlene Treater) (Submitted: 24/03/1993).
	1993	Laboratory upgrade.
	1993	Polypropylene solids handling upgrade.
DA/4233/1992	1992	Monomer Recovery Project (Submitted 21/02/1992).
DA/5819/1992	1992	Request for modification of council's consent for the erection of a bulk store and admin building (Submitted: 16/03/1992).
DA/11078/1992	1992	Construction of a new gatehouse fire tender parking area and associated new concrete roadworks (Submitted: 29/05/1992).
DA/14244/1992	1992	Installation of one additional cell to the water cooling tower (Submitted: 08/07/1992).
DA/26534/1991	1991	Bitumen loading gantry (Submitted: 11/07/1991).
DA/42517/1991	1991	One analyser house (Submitted: 23/12/1991).
NA	1991	Hydrogen purification plant.
NA	1991	Bitumen substation installation.
NA	1991	Provision of drainage connection to river.
NA	1990	Prefabricated analyzer house installation.
NA	1990	Platformer 3 motor upgrade.
NA	1990	Refinery drainage upgrade.
NA	1990	Alkylation operator amenities building.
NA	1989	Poly II construction.
NA	1989	Alkylation plant change room.
NA	1988	Construction of catalytic reformer and gas turbine co-generation units.
NA	1988	Canteen awning.
NA	1987	Construction of new control centre.
NA	1987	Hydrocarbon gas absorption unit.
NA	1986	Installation of second desalter unit.
NA	1986	Interceptor drainage improvements.
NA	1986	Catalytic cracking unit auxilliary control room extension.
NA	1986	Administration building gatehouse and entrance Colquhoun St.
NA	1986	Polypropylene blend bunkers.
NA	1986	Main office building extension.
NA	1986	Establishment of a solid waste drying facility.
NA	1985	LPG recovery facility.
NA	1985	TA3 building.
NA	1985	CPU 5600 LPG recovery system.
NA	1985	Fire bin work area.
NA	1985	Turbo alternator No.3.
NA	1985	Catalytic reformer and gas turbine co-generation.

DA	Year DA was approved	Details of DA
NA	1984	Construction of Platformer II Texas tower.
NA	1984	Construction of oil storage tanks for interceptor skimming.
NA	1984	Improved heat recovery system.
NA	1984	Excess stabliization biomass drying area.
NA	1984	Storage and mooring facilities and skimmer boat Clyde wharf works.
NA	1984	Oil boom, work boat and oil skimming at wharf.
NA	1982	Construction of Crude Distillation Unit Column C304.
NA	1982	Construction of oil storage tank 12.
NA	1982	Consruction of oil storage tank 90.
NA	1981	Construction of polypropylene unit warehouse awning.
NA	1981	Berthing facilities upgrade.
NA	1981	Construction of new distillation column.
NA	1981	Mesityl oxide storage tank.
NA	1981	Construction of awning at loading/unloadingarea for PPU warehouse.
NA	1980	Installation of mounded LPG bullets.
NA	1980	Construction of oil storage tanks 88 and 89.
NA	1980	Construction of main transformer substation no.2.
NA	1980	Construction of field office.
NA	1980	Construction of Rosehill Service Station.
NA	1980	Repairs and upgrades to Parramatta River wharf.
NA	1980	Construction of 2 tanks for batching hexylene glycol.
NA	1980	Construction of 1 solvent tank.
NA	1980	Field office, drawing office, training centre construction.
NA	1980	Construction of 2 new water tanks.
NA	1980	Construction of tanks 737 A/B.
NA	1979	Construction of Boiler no.9.
NA	1979	Crude Distillation Unit control room extension.
NA	1979	Ethylene plant modifications.
NA	1979	Construction of LPG storage facilities.
NA	1979	Conversion of existing office, workshop/amenities, provision of additional car parking and extension of loading platform.
NA	1978	Install Crude Distillation Unit heat recovery plant.
NA	1978	Installation of building No.3 for quality testing instrumentation.
NA	1978	Installation of building No.2 for quality testing instrumentation.
NA	1978	Operators amenities building extension project.
NA	1978	Polypropylene storage silos.

DA	Year DA was approved	Details of DA
NA	1978	Installation of radio antenna on main administration building.
NA	1977	Installation of a sulphur reduction unit.
NA	1977	Modify and extend the Crude Distillation Unit control centre.
NA	1977	Extension to substation V.
NA	1977	Extension to substation No.6.
NA	1977	Construction of oil storage tanks 86 and 87.
NA	1977	Installation of building No.1 for quality testing instrumentation.
NA	1977	Construction of butane storage spheres.
NA	1977	Construction of 4 buildings for testing instruments and amenities.
NA	1977	Construction of heat recovery unit.
NA	1977	Construction of Cataylitic Cracking Unit and Alkylation complex.
NA	1976	Additional sour water stripper.
NA	1976	Construction of substation No.23.
NA	1976	Catalytic Cracking Unit control room extension.
NA	1976	Catalytic Cracking Unit Colum C404 installation.
NA	1976	Installation of an additional bathroom facility in the training centre.
NA	1976	Construction of gas oil storage.
NA	1976	Construction of epikote storage tanks.
NA	1976	BDA project office.
NA	1976	Flare area modifications.
NA	1976	Polypropylene rain shelter.
NA	1976	Sour water stripping unit and sulphur recovery unit.
NA	1976	Chemical solvents plant.
NA	1976	CCU control room and substation no.5.
NA	1976	Construction of Sulphur Recovery Unit.
NA	1976	Construction of electrical substation.
NA	1975	Epikote plant extention.
NA	1975	BDA rebuild.
NA	1975	Construction of tankfarm H and tanks.
NA	1975	Construction of gas oil storage.
NA	1975	Bus shelter and bike storage.
NA	1975	Installation of substation No. 24.
NA	1975	Building of gatehouse and change rooms.
NA	1975	Construction of fire training grounss.
NA	1975	Tank 505 oil storage tank.
NA	1975	Butane de-asphalting unit.

DA	Year DA was approved	Details of DA
NA	1975	Construction of 600t Butane storage vessel.
NA	1975	Primary crude distillation unit expansion.
NA	1974	Construction of Movements Control Room.
NA	1974	Construction of oil storage tank 4.
NA	1974	Polypropylene loading facilities.
NA	1973	Laboratory bottle loading platform.
NA	1972	Main refinery entrance modifications.
NA	1971	Polypropylene Unit upgrade project.
NA	1971	Lawn locker.
NA	1971	Construction of fire station extension.
NA	1971	Shelter for Siebe Gorman trolley.
NA	1970	Constructionof contractor amenities building.
NA	1970	Construction of oil storage tanks 93, 85, 84.
NA	1970	Power station installation.
NA	1970	Construction of oil storage tanks 84, 85 & 93.
NA	1969	Polypropylene Unit plant.
NA	1969	CO boiler.
NA	1968	Installation of interceptor adjacent to Duck River.
NA	1968	Construction of oil storage tank 33.
NA	1968	Construction of laboratory and office extention for No.2 pumphouse.
NA	1968	Refinery drainage system modifications.
NA	1967	Installation of hydrocarbon solvents unit and chemical solvents unit.
NA	1967	Construction of chemical and hydrocarbon solvents plant.
NA	1967	Refinery extension for capacity increase.
NA	1966	Extension to sewer system.
NA	1966	Construction of new hydrotreater and boiler.
NA	1966	Construction of 2 concrete chimney stacks.
NA	1966	Construction of CDU and NDT stacks.
NA	1966	Construction of control room and switchrooms.
NA	1966	Installation of cool water pump.
NA	1966	Construction of heat exchanger.
NA	1966	Construction of polypropylene storage sphere.
NA	1966	Construction of polypropylene bullets V134/135.
NA	1966	Construction of oil storage tanks 50 & 51.
NA	1966	Construction of boiler no.7.
NA	1966	Construction of polypropylene treater and splitter units.

DA	Year DA was approved	Details of DA
NA	1966	Construction of chimney stack.
NA	1966	Construction of CDU, Hydrotreater, Tail gas treater, polypropylene/propane splitter, 7 oil storage tanks and utilities.
NA	1965	Modifications to roadway 9 and 12.
NA	1962	HVU Control room.
NA	1962	Construction of ethylene plant, control room, tea room, wet weather and field stores.
NA	1962	Construction of catalyst store building.
NA	1962	Addition to the Catalytic Cracking Unit control room.
NA	1961	Construction of LPG storage.
NA	1961	Crude oil storage tanks.
NA	1961	Waiting room and pay office construction.
NA	1960	Major extension to the Clyde Refinery.
NA	1958	Solvents tank fire water and foam lines.
NA	1957	Construction of oil storage tank 34.
NA	1957	Construction of vacuum bitumen plant.
NA	1957	Renovation and modifications to solvents plant.
NA	1957	Construction of column 5501.
NA	1956	Construction of 3 monocrete residences.
NA	1952	Construction of amenities building.
NA	1951	Construction of laboratory.
NA	1949	Construction of workshop.
NA	1949	Construction of lubricating oil refinery processing units and storage tanks.
NA	1949	Construction of various refinery buildings.

APPENDIX C
MANAGEMENT AND MITIGATION MEASURES

Summary of Mitigation Measures	Project Phase
Commitment	
The Project is to be undertaken in accordance with the commitments provided within this EIS.	All
Transport	
The TIA prepared by AECOM has concluded that the Project would not create significant impacts for the surrounding road network. However, it is nevertheless proposed that: - Vehicular traffic would be minimised during peak hour traffic periods where practical do to so; - A Construction Traffic Management Plan be prepared prior to the works commencing; and - Demolition and construction generated traffic would be parked at the Project Area to limit the numbers of vehicles situated in the streets surrounding the Clyde Terminal.	Demolition and Construction
Social and Economic Effects	
Mitigation measures proposed to minimise potential social and economic impacts of the Project on the surrounding Parramatta LGA during the demolition and construction works, and during the continued operation of the converted Clyde Terminal include: - Shell would continue to undertake stakeholder engagement and consultation regarding the Project; - Environmental reporting procedures would continue to be implemented, including a complaints register; - A Construction Traffic Management Plan would be prepared to avoid and minimise potential impacts associated with access routes and major intersections; - A CEMP would be prepared to minimise potential environmental, heritage and social impacts during the demolition and construction works (refer to **Section 28.1**); and - An OEMP would be prepared to minimise potential environmental and social impacts during operation of the converted Clyde Terminal (refer to **Section 28.2**). Shell would continue to communicate and consult with staff regarding possible alternative redeployment opportunities for those that would no longer be required at the Clyde Terminal once the conversion works have been completed, where this is reasonable and feasible. Further, mechanical trade and instrument electrical trade apprenticeship roles would be retained where possible to enable completion of those apprenticeships. Shell would also continue to support its Employee Assistance Program.	All

Surface Water, Industrial Water and Flooding	
In managing surface water, industrial water and flooding at the Project Area, Shell would implement the following mitigation measures:	
- A detailed ESCP is to be compiled and included in the CEMP; - Demolition and construction waste would be stored on a sealed and bunded surface whilst awaiting transfer or processing; - Dust suppression and sediment runoff prevention would be undertaken during the demolition and construction works to prevent impacts to surface water quality as follows: • Areas of demolition and construction activities would be watered down as required in order to suppress the migration of dust; • In the event that excess industrial water is required, e.g. for dust suppression, sediment traps would be employed around the Project Area to prevent runoff and ensure that any contaminated water is treated and managed appropriately; • Where excavation activities are undertaken soil exposure would be minimised where possible and land disturbance would occur for the shortest time possible. Access to the demolition and construction areas would be controlled and vehicles and machinery would be kept to well defined areas away from excavation sites; • Runoff generated outside of demolition and construction areas would be diverted away from those areas to decrease the potential for contaminated runoff to migrate throughout the Project Area; and • Stockpiles of excavated material would be clearly labelled, located away from trafficked areas and other potential disturbances, placed on geo-fabric lining prevent leachate and erosion, be no more than 5 m tall, and allow adequate room for transport around and management of each stockpile. - Wastewater that has been potentially contaminated during the demolition and construction works would be directed via CPIs to allow for sediment and oil to be removed; - Temporary stormwater management measures (such as sandbags, sediment fences and berms) wouldto be used to minimise the risks of sediment-laden runoff and other construction pollutants entering downstream systems; - During demolition works, potential chemical pollutants (e.g. fuels, oils, lubricants, paints, herbicides, etc.) would be stored in appropriate containers within bunded areas within construction compounds to minimise the risk of spillages and mobilisation of these pollutants into aquatic environments; and - Water saving devices would be installed wherever possible during the conversion works to reduce wastage.	Demolition and Construction
- Surface water quality and volume limits for discharge from the Project Area would continue to be monitored, for example as per the sampling of discharge points identified in EPL No. 570, or any replacement/ amended EPL as provided under the POEO Act; - All fuel products and other potentially hazardous substances at the Project Area would continue to be stored in sealed, bunded areas that would prevent their migration offsite in the event that a storm surge or flood event impacts the Project Area; - The Project would not involve the construction of extensive new infrastructure on land lying within the 1:100 year flood event; - Any new development or infrastructure at the Project Area would be constructed with regard to the design principles and standards outlined in the Floodplain Matrix of Planning and Development Controls identified in the Floodplain Risk Management Policy; - Shell would consult with Parramatta City Council and WMA concerning the results of *Duck River and Duck Creek Flood Study Review: Final Draft Report* (WMA, 2011) whilst this report is still in draft format; - In consultation with Parramatta City Council as the WMA Final Draft Report is finalised	All

Summary of Mitigation Measures	Project Phase
and is officially adopted by Council, Shell would develop a site specific Emergency Response Flood Plan demonstrating Shell's ability to secure or move plant, goods and substances above the one percent AEP flood level within the flood warning time that is likely to be available. This Emergency Response Flood Plan would also include requirements for personnel evacuation drills and procedures for equipment and product protection; - Infrastructure at the Project Area would continue to be located outside of the riparian buffer zone along the southern and eastern borders of the Project Area; and - The Project would not result in a reduction of wetland or riparian vegetation.	
- The *Clyde Terminal Conversion Project: Clyde Waste Water Management System* (Shell, 2012a) would be revised once the demolition and construction activities are complete, so that it is up to date for operation of the converted Clyde Terminal; and - Once operation of the converted Clyde Terminal commences, Shell would undertake an internal audit of the Project Area to take stock of how reduced operations have reduced water consumption and improved water efficiency. Further recommendations of the audit would then be taken into consideration if further potential water resource savings or opportunities for reuse are identified.	Operation
Land Use	
It is considered that the Project would not have any significant impacts on land use as it would involve the continued use of the Project Area for purposes similar to its current use. Shell would continue its dialogue with land users who are currently leasing land adjacent to the Project Area from Shell. In considering a future use of the surplus land in the western and north-eastern sections of the Project Area, Shell would take into account: - The extent of any contamination that is discovered in the western and north-eastern sections of the Project Area; - The extent of any remediation that is required subsequent to those contamination investigations; and - Consultation with relevant Government departments and agencies such as the EPA, DP&I and Parramatta City Council, and Council's desired strategic planning outcomes for the Camellia Industrial Estate.	All
Air Quality and Odour	
Potential fugitive dust and odour impacts resulting from demolition and construction works would be managed by the CEMP which would include the following measures: - Loads would be covered during transportation; - Exposed surfaces and roads would be watered as required; - Measures would be implemented to modify or suspend dust-generating activities during periods of high wind speeds or whenever dust plumes from the works are visible. A high wind value should be decided though discussions with regulators, however a typical value is 8 m/s averaged over a 1-hour period; - Regularly trafficked surfaces would be sealed as soon as possible after construction; - Roadway use would be controlled i.e. through defined road access to minimise dust; - Complaints management system would be in place; and - Accidental spills would be immediately cleaned up. Potential fuel combustion emissions resulting from vehicles and equipment associated with the demolition and construction works would be managed with the following measures: - Engines would be turned off while parked onsite; - Vehicular access would be confined to designated, sealed access roads; - Equipment, plant and machinery would be regularly tuned, modified or maintained to minimise visible smoke and emissions; - Project Area speed limits would be implemented; and	Demolition and Construction

Summary of Mitigation Measures	Project Phase
- Haul road lengths would be minimised.	
Ecology	
It is considered that the Project would not have a significant effect on the GGBF, Microbats, Grey-headed Flying-fox or any other flora and fauna in the vicinity of the Project Area. Any impacts to species can be adequately managed through development of the following mitigation measures. For the conversion works, measures shall be incorporated into a CEMP.	
Green and Golden Bell Frog A GGBF specific mitigation strategy is to be prepared and included as a sub-plan to the CEMP for the proposed Project, in consultation with the NSW OEH OEH. The CEMP GGBF sub-plan shall include, but not be limited to: - Design and implementation of pre-works surveys (conducted by a suitably qualified ecologist) to identify and, if necessary, relocate frogs found within the footprint of the actual conversion works; and - Any frogs found would be relocated to the remnant wetland (within the Project Area boundary), by appropriately trained personnel adopting the *Frog Hygiene Protocol* (Department of Environment and Climate Change, 2008d). This would not require licensing for translocation of threatened species under the NSW TSC Act. Compensatory actions considered to date for the loss of opportunistic habitat sites within certain tankfarm bunds include those in accordance with Shell's *Wetland Management Plan – Clyde Wetlands Shell Refinery Rosehill, 2007*. This management plan would be updated to include management measures for GGBF, and would continue to be applied to the remnant wetlands as follows: - Creation and management of refuge habitat such as rock piles (being a less complicated refuge habitat option) for long term placement within the subject areas to provide over-wintering habitat; - Replacement of non-endemic vegetation such as *Juncus acutus* (Spiny rush) within the remnant wetland with alternative native sedges, rushes and grasses to provide GGBF shelter habitat; - Additional enhancement of land within the boundary of the remnant wetland to suit GGBF habitat such as developing additional pondage and/or by the placement of smaller prefabricated ponds to provide additional habitat during breeding season; and - Design and implementation of a systematic monitoring, reporting and feedback program to assess GGBF relocation, mitigation measures undertaken, and population dynamics for this site. ***Management of Impacts*** A suitably qualified ecologist is to be engaged prior to the issue of plans for demolition and construction works to improve tankfarm drainage to advise on the following: - Proposed works to reduce the risk of potential impacts to GGBF, and - Proposed specific mitigation strategies contained within the CEMP. The CEMP GGBF sub-plan is also to include: - Management of site demolition and construction works such that disinfection of demolition and construction plant and equipment is carried out at a safe distance from the remnant wetland, so that excess disinfecting solution or material does not contaminate waterways; and - Site inductions for all workers are to include emphasis on the special requirements for identifying and protecting GGBF. Inductions are to be mandatory prior to access permission to the construction site. Routine updates of the induction are to be provided at routine 'toolbox' meetings.	All (as appropriate)
Grey-headed Flying Fox and Microbat Species Prior to demolition works, inspection of exterior casings and insulations on towers (i.e. potential habitat where microbats have historically been observed) is to be undertaken	Demolition and Construction

Summary of Mitigation Measures	Project Phase
regularly for signs of microbat occurrence. Regular inspections would also be undertaken of buildings scheduled for demolition.	
Protection of Flora While it is recognised that the proposed Project would require negligible vegetation clearing, the following measures are proposed to ensure that minimal potential impacts occur to vegetation in and adjacent to the proposed works areas: - The final demolition plan should minimise the construction footprint and the requirement for clearing of native vegetation wherever possible and within reason given the need to minimise fire hazard risks onsite; - There would be clear marking and delineation of the boundaries between the designated construction sites and "no-go" zones, including vegetation that is to be retained, prior to the commencement of construction. This would include signage, barrier fencing and tree guards, wherever they would be appropriate. There would be no storage of soil, building materials, tools, paints, fuel or contaminants, etc. within the no-go areas; - The Australian Standard 4970 (AS4970) for the protection of trees on development sites should be adopted to reduce the impact of incursions into the root zone of trees to be retained; - Shell would continue to undertake ongoing bush regeneration in and around the vicinity of the Project Area; - If any damage occurs to vegetation beyond the nominated work area the Project Manager should be notified so that appropriate remediation strategies can be developed and implemented; - Should the proposed demolition footprint be changed such that works would encroach into more densely vegetated areas, then it is recommended that a suitably qualified ecologist is to be engaged to: • Conduct pre-clearance surveys of the final footprint immediately prior to demolition commencing, and • Undertake additional impact assessment if required. - The riparian vegetation along the southern and eastern borders of the Project Area would continue to be preserved.	Demolition and Construction
Weed Management The following measures would be put in place to manage weeds: - Weed infestations found within the Project Area would be removed or controlled prior to works commencing; - Earth-working equipment and vehicles would be cleaned of excess soil by brushing and/or hosing at the start and finish of construction works to minimise the risk of spreading of weed seeds and plant pathogens; - Sediment fences and sediment traps would be installed for the duration of the construction works and stabilisation of disturbed areas by rehabilitation works. This is to contain any sediments containing weed seeds, propagules or plant pathogens at the Project Area; - Soil and vegetation removed would be covered during transport and taken to an approved disposal sites to minimise the risks of spreading weeds and pathogens beyond the work sites; - Weeds (including vegetation, fruit and seed) removed during clearance would be disposed at an approved green waste site. Weed seed heads or flowers should be carefully removed and bagged immediately onsite before appropriate disposal; - Where applicable, weed control would be undertaken in accordance with NSW Agriculture's noxious and environmental weeds control handbook; and - Contractors undertaking weed removal or control would be trained or experienced in weed identification and removal (as per the *Pesticide Act 1999*).	All
Plant Pathogen Hygiene *Phytophthora cinnamomi* is not known to be present in the Project Area and there is little likelihood that the proposed Project would lead to its establishment or spread. However, the	Demolition and Construction

Summary of Mitigation Measures	Project Phase
consequences of infection can be severe. Therefore, the mitigation proposed for consideration for weed management would also provide a precautionary measure for limiting the risk of spread of soils and vegetation of origin other than the Clyde Terminal.	
Protection of Aquatic Environments The following additional measures are recommended to minimise potential impacts to aquatic flora and fauna and water quality of the aquatic environment of the Duck and Parramatta rivers. - A detailed ESCP is to be compiled and included in the CEMP; - Demolition and construction waste would be stored on a sealed and bunded surface whilst awaiting transfer or processing; - Dust suppression and sediment runoff prevention would be undertaken during the demolition and construction works; - Wastewater that has been potentially contaminated during the demolition and construction works would be properly treated via the Clyde Terminal wastewater treatment facilities to ensure compliance with the conditions of Shell's EPL No. 570; - Temporary stormwater management measures (such as sandbags, sediment fences and berms), are to be used to minimise the risks of sediment-laden runoff and other construction pollutants entering downstream systems; - During demolition works, potential chemical pollutants (e.g. fuels, oils, lubricants, paints, herbicides, etc.) are to be stored in appropriate containers within bunded areas within construction compounds to minimise the risk of spillages and mobilisation of these pollutants into aquatic environments; - All fuel products and other potentially hazardous substances at the Project Area would continue to be stored in sealed, bunded areas that would prevent their migration offsite in the event that a storm surge or flood event impacts the Project Area; - Manage ASS in accordance with the mitigation measures detailed in **Section 17.3** and the Soil and Groundwater Contamination section below. - The riparian buffer zone along the southern and eastern borders of the Project Area, which has the potential to further minimise the impacts of flooding at the Project Area, would continue to be preserved as follows: • Contaminated stormwater and wastewater generally would continue to be treated before they are discharged in the vicinity of this riparian buffer zone; • Infrastructure at the Project Area would continue to be located outside of this riparian buffer zone; and • The Project would not result in a reduction of wetland or riparian vegetation.	Demolition and Construction All Demolition and Construction All All
Soil and Groundwater Contamination	
Currently, soil and groundwater conditions at the Clyde Terminal site are regulated by Condition U1 of EPL No. 570 which references the need for the SGMP 2010 and an associated annual report. The ongoing operations at the Project Area would also continue to be regulated by the requirements of the POEO Act and CLM Act.	
Demolition and Construction Mitigation Measures - Prior to demolition and construction activities taking place, Shell would develop an ESCP to manage those risks at the Project Area. The ESCP would be incorporated as part of the CEMP and would be developed in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004); - The SGMP 2010 would be revised as part of the conversion activities where necessary to take account of demolition and construction activities; - Shell would undertake the following actions in accordance with the CEMP for the Project. During the limited excavation activities that are planned for the conversion works, the following management measures would be applied: • Reference would be made to the identification of certain Contaminants of Concern in specific areas of the Project Area as per Conceptual Site Model 2012; • With reference to the Conceptual Site Model 2012, soil and groundwater conditions at the Project Area would continue to be managed through a series of triggers and appropriately designed response mechanisms;	Demolition and Construction

Summary of Mitigation Measures	Project Phase
• Identify any required occupational hygiene monitoring for demolition and construction personnel in relation to VOCs; • Any subsurface works would be designed to control and protect the health and safety of people onsite; • The use of geotextile liners or temporary capping would be used to reduce infiltration of surface water runoff where soil is to be excavated during demolition and construction; • Groundwater routine reporting would continue to be undertaken as per Shell's GWSAP, which would be revised as part of the Project; and • If trigger values are exceeded at the Project Area for soil and groundwater quality as outlined in the Environmental Conditions Summary Report (ERM, 2012), the Conceptual Site Model 2012 would be used to guide appropriate clarification or mitigation measures. - If contaminated soils are discovered during excavations, they would be separated and managed in accordance with Shell's existing waste management system for the Project Area (refer to **Section 20.0**), which would be incorporated as part of the Project CEMP; - Further investigations would be undertaken in areas that are currently unable to be accessed due to plant and equipment on these areas, once the aboveground infrastructure is removed and access to the relevant areas is available; - Throughout the Project, Shell would continue to undertake the following management measures as part of the SGMP 2010: • Contaminants of Concern would continue to be monitored as part of the ongoing SGMP 2010. A data gap would be identified in the event that one or more of these Contaminants of Concern are detected at concentrations exceeding their applicable groundwater screening criteria and may have the potential to pose a risk to identified receivers. Additional evaluation would then be completed to fill in those data gaps to confirm whether there is a risk that warrants further action; and • In the event that remedial actions are required to mitigate the risk of pathway exposure to contamination, the Conceptual Site Model 2012 would serve as a design basis for that remedial action. - In general, Shell would continue to use a hierarchy of controls, including engineering controls, to mitigate risks and prevent loss of containment during both the conversion works and operation of the converted Clyde Terminal. Shell would continue to focus its incident prevention at the Project Area on strengthening preventative barriers against spills. The infrastructure upgrades undertaken as part of the conversion works would assist in preventing loss of containment by: • Upgrading safeguards to prevent tank overfills; and • Ensuring pipelines continue to be designed to withstand greater pressures than the maximum pump discharge pressures. - Existing bund walls at the Clyde Terminal would be inspected prior to the conversion works commencing to identify any necessary improvements. These improvements would include either: • The demolition of the existing bund walls; or • Injection of concrete into the existing bund walls to strengthen the structure or repair any faults. - ASS would be managed according to an ASSMP which would be incorporated into the existing *Soil and Groundwater Management Plan Shell Clyde Refinery and Parramatta Terminal, Durham Street, Rosehill, NSW* (Shell, 2010), the WMP 2013 and the CEMP to be prepared for the conversion works; - Identify any ASS impacted soils within the Project Area before excavation activities are undertaken; - Any ASS impacted soils excavated from the Project Area would be kept wet at all times until it is disposed of and managed in accordance with the *Waste Classification Guidelines Part 4: Acid Sulphate Soils* (Department of Environment and Climate Change, 2008e); and	

Summary of Mitigation Measures	Project Phase
- Any residual impacts caused by lapses in the effectiveness of the ASSMP are likely to be identified through the continued implementation of the Soil and Groundwater Management Plan. The ASSMP would also include a contingency plan to manage impacts that have the potential to occur if specified management strategies fail, and to outline any remediation and restoration actions that may therefore be required. This would ensure that the ASSMP addresses its own effectiveness and reliability in managing any residual ASS impacts.	
Ongoing Operational Mitigation Measures - The SGMP 2010 would be revised as part of the operation of the converted Clyde Terminal to take account of the upgraded operations; - Shell would determine if the surplus land in the western and north-eastern portion of the Project Area is to be made available for an alternative use and a separate development application would need to be submitted so that any necessary remediation and also redevelopment of this land can take place (the Clyde Remediation and Redevelopment Application); - Following the conversion works and when unimpeded site access is re-established in certain areas, additional investigation and remediation can be completed as required; - The three key barriers to receivers' exposure would be maintained: primary source management; operational area (internal) monitoring; and boundary containment monitoring. These three key barriers would continue monitoring to evaluate barrier effectiveness on a quarterly basis and when otherwise triggered; - Shell's risk management systems would continue to be reviewed and amended before critical changes throughout the conversion works to identify and assess the risks that these changes pose both onsite and offsite, and to ensure multiple layers of controls exist to minimise the opportunity for incidents to occur; - Shell would notify WorkCover of any changes to the levels of risk before critical changes occur throughout the conversion works and would submit safety reports to WorkCover as required, ensuring WorkCover's oversight of the risks and controls at the Clyde Terminal; - Shell would continually review and amend the Emergency Procedure Plans to account for the changes in risks and the changes in fire fighting equipment at the Clyde Terminal throughout the conversion activities, and consult with Fire and Rescue NSW during this process; - The following management measures would be incorporated as part of the OEMP and undertaken to prevent and manage the implications of any loss of containment scenarios: • Current systems in place at the Project Area that would continue to prevent loss of primary containment and spill incidents include: ▪ Log checklists carried out every shift by operators to ensure that equipment such as valves are in the correct position; ▪ Water drain tanks through quick flush tanks to separate water from fuels, returning fuel to tanks and draining water to wastewater treatment facility, thus minimising the opportunity for fuel to enter the interceptor system; ▪ Decontaminate the tankfarms, drainage and wastewater systems across the Clyde Terminal area to ensure minimal opportunity for stormwater to be impacted by remnant hydrocarbon contact; ▪ Re-profile tankfarm floors to ensure adequate and effective stormwater draining and bund capacity is preserved to serve its primary purpose of protection of the environment from hydrocarbon spillage; and ▪ Review and repair tankfarm bund walls where required to ensure integrity in the event of a spill incident.	All (as appropriate)

Summary of Mitigation Measures	Project Phase
• Tank overfill would continue to be prevented through a combination of: ▪ An automatic tank level gauging system with multiple level alarms including: target fill level; high level alarm with time for appropriate operator action at each point and before the next level; an alarm point; and manual dips to provide accuracy of the tank level gauging system; ▪ A final independent high-high level alarm system that provides an alarm independently from the other alarms and tank level gauging system. This system provides for sufficient response time before overfill is anticipated to occur and would trip inflow facility pumps shutting down product inflow to tanks; ▪ The movement management system that provides for the analysis of data and tank movement management; and ▪ Operational readiness planning with procedural support.	
• A series of facility integrity checklists would be developed consistent with other Shell terminal facilities to ensure inspections and maintenance of safety and environmentally critical equipment and repairs are undertaken in a timely manner; • Shell's existing Permit to Work system would be changed to be appropriate for converted Clyde Terminal operations and would be introduced with appropriate training and mentoring to ensure controls are in place across the Clyde Terminal to control all works, and to integrate these with non-routine activities during operation of the converted Clyde Terminal; • Operators would continue to be trained to look for spills and leaks in the course of their shift rounds; • Operators would be trained in the new environmental controls appropriate for the converted Clyde Terminal operations and specifically in the use of newly installed environmental control equipment; • Existing interceptors within the Project Area would continue to be maintained as a means of tertiary containment; and • Spill incidents would be reported within the Shell incident reporting system and, where required, to the EPA and WorkCover. - If a release event is known or suspected to have occurred, additional assessment may be justified to determine if there have been any soil and groundwater impacts under the SGMP 2010 as follows: • A program of works would be developed to cover any data gaps and determine whether any associated risks are within acceptable levels; • Investigation techniques to be employed would include, where relevant: ▪ Trial pit excavations; ▪ Advancement of soil bores; ▪ Monitoring well installations; and ▪ Analytical sampling of soil and groundwater quality. • If investigation shows that risks are greater than acceptable levels identified in the SGMP 2010, some form of remedial action would be warranted in order to eliminate or reduce potential exposure pathways. This would be likely to involve one or more of the following: ▪ Excavation of surface soil and removal or treatment before reinstatement; ▪ Excavation of interception trenches and associated pumps as needed to remove and prevent further spread of shallow groundwater contamination; ▪ Installation of pumps in groundwater wells to remove or control the spread of contamination; and ▪ Emplacement of impermeable materials in soil trenches to contain the spread of contaminated groundwater.	
European Heritage	
It is anticipated that the impacts to the historical and technical significance of the Refinery can be managed through a full photographic and documentary archival recording of the facility. Specifically, the following mitigation measures are recommended for the Project to minimise impacts on heritage significance.	

Summary of Mitigation Measures	Project Phase
- Parramatta Council requires consideration be given to provision of an Arts Plan. As such, oral histories are to be recorded from past and present staff regarding the operations of the former Clyde Refinery, and a full photographic and documentary archival recording of the Project Area would be used to manage the impact to the historical and technical significance of the former Clyde Refinery; - Photographic recording would be undertaken in accordance with the NSW Heritage Branch guidelines *How to prepare archival records of heritage items* (NSW Heritage Office, 1998) and *Photographic recording of heritage items using film or digital capture* (NSW Heritage Office, 2006); - Archival recordings would be undertaken to capture, prior to demolition works taking place, and for infrastructure that would be demolished; - Documentary recording would contain a detailed timeline of each piece of equipment and tankfarm, together with copies of plans and schematics; - A photographic archival recording would be undertaken prior to the demolition of the stacks. The recording would include broad views of the larger Clyde Refinery area; - Subsurface impacts to the area of archaeological potential identified around the bitumen gantry through the removal of foundations or other invasive works, are to be managed through the preparation and implementation of an Archaeological Research Design and Methodology; - The memorial to John Simpsom Fell, Horace Liddon Spencer and Albert Edward Ward, located near the bitumen gantry, is to be relocated to a publicly accessible area (e.g. visitor car park or Project Area). Shell would investigate the feasibility of undertaking a memorial relocation ceremony involving family and descendants of the three men and use of the plaque as a teaching aid for the importance of workplace safety; and - A brief management section is to be prepared within the Project Area's OEMP to guide the management of archaeological potential at the historical residential area along Devon Street and at the second bitumen gantry.	Demolition and Construction
Hazard and Risk	
Risk Management in Design All tanks converted as part of the Project would be constructed to recognised Australian and International Standards, in line with the existing tanks at the Clyde Terminal. The design would be subject to the Shell risk management process. Risk management activities that directly relate to the NSW Seven Stage Planning Process are outlined below: - Preliminary Hazard Analysis; - Shell's Hazard and Effects Management Process; - Hazard and Operability Study; - Fire Safety Study; - Final Hazard Analysis; - Emergency Response Plan Review annually or prior to each critical modification; - Construction Safety Study; - Commissioning review; and - Safety Management System Update.	Design and Construction
Terminal Safety Systems Safety Systems proposed for the Project are as follows: - Process Control: The process control system (i.e. tank level gauging) is integrated with the existing Clyde Terminal process Distributed Control System; - Process Shutdown Systems: Existing pump interlocks would be retained and new tank high level trips would be provided as required to demonstrate as low as reasonably practicable risk; - Bund Walls and Drains: The existing bunds and drains would be retained; - Articulated and remotely operated foam application system would be installed; - Fire Water: The existing firewater main, monitors and hydrants would be modified for the converted Clyde Terminal operations;	All

Summary of Mitigation Measures	Project Phase
- Tank Rim Seam Foam Pourers: Rim seal foam pourers would be modified or installed to meet the revised tank configuration; and - Hazardous Area Classification: Ignition sources would be controlled by the application of suitable hazardous area classification standards.	
Safety in Operation The existing Clyde Terminal and Gore Bay Terminal Management System would be updated to align with operation of the modified Gore Bay Terminal and converted Clyde Terminal. The ERP 2012 would also be updated again as required before operation of the converted Clyde Terminal commences, and in particular the Final Hazard Analysis would be prepared at this time. The implementation of the ERP would include the activation of external emergency services if required.	Operation
Proposed Automation and Safeguarding Operation The following safeguards and automation upgrades are proposed: - Yokogawa Prosafe SGS would be installed to replace the functionality of the existing relay logic; - Permissives (interlocks) would be improved to prevent the incorrect valves being opened; - Motorised valves would be installed inside tank bunds to allow quicker acting valves and remote operation; - The reliability of telemetry between Clyde/Gore Bay would be improved; - The Independent High Level Alarm and tank gauging systems would be improved; - Pump trip systems would be improved; - The site fire system and dump valve logic would be improved; and - Non-safeguarding controls would also be upgraded.	Design and Construction
Waste Management	
Demolition and Construction Waste Mitigation Measures Demolition, construction and operational waste would be managed and disposed of in accordance with relevant State legislation and Government requirements. The existing WMP 2013 would be prepared for demolition and construction works, and this would be incorporated into the CEMP. The following waste management mitigation measures would be incorporated as part of the CEMP for the Project to eliminate or reduce the risk of environmental impacts: - Demolition and construction contractors would be required to provide a detailed waste management plan and tracking system that incorporates available recycling options; - Before transfer to the designated locations as per the waste permit system, wastes may require stockpiling. Wastes would be: • Clearly labelled, to ensure that all such waste is clearly identified and stored separately from other types of materials and wastes, and particular to ensure that contaminated and non-contaminated wastes are stockpiled separately; • Located away from trafficked areas and other potential disturbances; • Placed on geo-fabric lining and covered to prevent leachate and erosion; and • Be no more than 3 to 5 m tall depending in the type of wastes stockpiled, and allow adequate room for transport around and management of each stockpile. - Demolition and construction waste would be stored on a sealed and bunded surface whilst awaiting transfer or processing; - Radioactive substances waste would be disposed of as per the requirements of the *Radiation Control Regulation 2003* and the *Waste Classification Guidelines Part 3: Waste Containing Radioactive Material* (Department of Environment and Climate Change, 2008e); - A small amount of asbestos is present on the Project Area and would require removal during demolition activities. As such, Shell and its contractors would comply with the following obligations set out in Chapter 8 of the WH&S Regulation: • Ensure that exposure to asbestos at the Project Area is eliminated as far as reasonably practicable; • Ensure an asbestos register is maintained; • Ensure an asbestos management plan is in place for the Project Area;	Demolition and Construction

Summary of Mitigation Measures	Project Phase
• Engage a licensed asbestos contractor to carry out the removal of asbestos from the Clyde Terminal; • Ensure that health monitoring is provided to those personnel undertaking asbestos works as part of the Project; • Ensure access to the asbestos removal area is limited to those who are actually involved in the removal of the asbestos, including the placement of relevant signage and barriers; • If there is uncertainty as to whether the exposure standard is likely to be exceeded, Shell would engage a competent contractor to perform air quality monitoring in the area; • Decontamination facilities would be provided at all times at the Project Area; and • Ensure that asbestos waste, and asbestos contaminated plant or clothing is decontaminated, sealed and labelled before it is removed from the Project Area to a site that is authorised to receive asbestos waste. - As per the requirements of clause 42 the POEO Waste Regulation, asbestos waste would be securely packaged, be in a sealed container, be wetted down, or be contained in a covered, leak-proof vehicle.	
Operational Waste Mitigation Measures Waste management mitigation measures for operation of the Clyde Terminal would be incorporated into an updated version of the WMP 2013. Operational waste management mitigation measures include: - Waste management would continue to be undertaken in accordance with the *Waste Avoidance and Resource Recovery Act 2001* and the *Waste Avoidance and Resource Recovery Strategy 2007* (Department of Environment and Conservation, 2007), in that resources would be used efficiently, and the hierarchy of waste avoidance, recovery and disposal would be followed; - Waste would continue to be identified, characterised, classified and separated in accordance with the *Waste Classification Guidelines* (Department of Environment and Climate Change, 2008e), and records of these procedures would be maintained for the life of the conversion works, and beyond that, for the required statutory period; - The waste permit system for the onsite and offsite transfer and disposal of waste would continue to be followed; - EPL No. 570 would continue to provide the key guidelines for waste management at the Project Area. In particular: • Waste designated for recycling would be stored separately from other wastes; • All above ground tanks containing material with the potential to cause environmental harm would be bunded or have an alternative spill containment system in place; and • Dewatered oily sludge would be treated in an onsite landfarm or disposed of offsite to a place that can lawfully accept that class of wastes. - Waste materials would be stored in the designated locations as per EPL No. 570 and the WMP 2013; - Wastes scheduled under the POEO Waste Regulation would continue to be subject to waste tracking requirements, except where an exemption exists under EPL No. 570. A record of these waste movements would nevertheless be maintained by Shell; - Leachate or residual water from waste dewatering activities would be directed to the interceptors for treatment before being released as licensed discharge. Waste materials separated out at the interceptors would be disposed at an offsite licensed facility; - In the unlikely event that waste or its leachate is released to the environment, the investigation and remediation measures outlined in the SGMP 2010 would be adhered to; and - PCB wastes would be managed and disposed of according to the CCO issued by the EPA for the handling of PCB wastes.	Operation

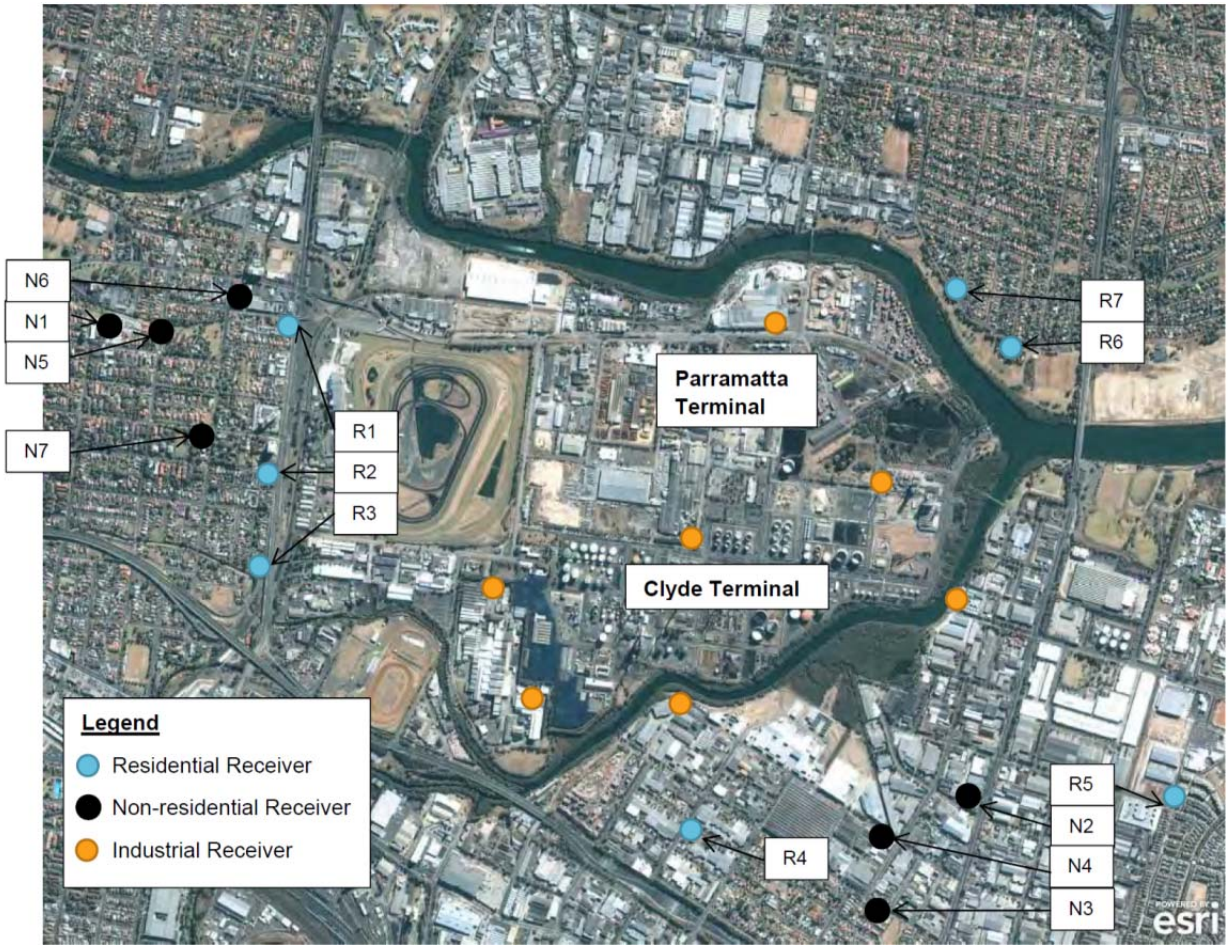
Summary of Mitigation Measures	Project Phase
Hazardous Waste Mitigation Measures Hazardous wastes generated during demolition and construction activities, and/or operation of the converted Clyde Terminal would be treated or immobilised in the following manner before being transported offsite by a licensed waste contractor: - Asbestos wastes according to the requirements of the POEO Waste Regulation, that it be securely packaged in a sealed container and wetted down or contained in a covered, leak-proof vehicle; - PCB wastes according to the CCO issued by the EPA for the handling of PCB wastes; - Oil filters and packing and used oily rags would be managed as prescribed waste. Any powdery used oil-absorbent materials would be bagged or drummed or otherwise contained to facilitate their safe handling and disposal; - Oily sludges (for example, from tank cleaning during the ongoing operation of the Clyde Terminal) would continue to be treated in the sludge dewatering facility and/or the landfarm area, as per EPL No. 570; - Redundant equipment containing any radioactive isotopes would be disposed of as per the requirements of the *Radiation Control Regulation 2003* and the *Waste Classification Guidelines Part 3: Waste Containing Radioactive Material* (Department of Environment and Climate Change, 2008e); and - Organic solvents, contaminated blue metal and empty drums would be managed by chemical fixation to convert the hazardous contaminants to a chemically stable form. Where this is not possible, macroencapsulation would be used to place a physical barrier between those contaminated wastes and the surrounding environment.	All
Aboriginal Heritage	
Whilst the ACHA predicts that the Project would not impact on the Aboriginal heritage values of the area, the following management measures would nevertheless be implemented if any potential Aboriginal objects or human remains are discovered at the Project Area.	
- Should any suspected Aboriginal objects be uncovered during demolition or construction works, all works in the vicinity should cease immediately to prevent any further impacts and a qualified archaeologist be brought onsite to make an assessment. If the object is found to be an Aboriginal object, it would be notified under the *National Parks and Wildlife Act* as soon as possible; - If suspected human remains are exposed, all construction work is to cease immediately in the near vicinity of the find location and the Project Manager is to be immediately notified to allow assessment and management: • An area of 20 m radius is to be cordoned off by temporary fencing around the exposed human remains site - construction work can continue outside of this area as long as there is no risk of interference to the human remains or the assessment of human remains; • The Police and the OEH are to be contacted immediately; and • A physical or forensic anthropologist would be commissioned by the Police to inspect the remains in situ (organised by the Police unless otherwise directed), and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or modern). - Subsequent management actions would be dependent on the findings of the forensic anthropologist: • If the remains are identified as modern and human, the area would become a crime scene under the jurisdiction of the NSW Police; • If the remains are identified as pre-contact or historic Aboriginal, the site would be secured and OEH and all Registered Aboriginal Parties notified in writing. Where impacts to exposed Aboriginal skeletal remains cannot be avoided, remains would be retrieved via controlled archaeological excavation and reburied outside of the Disturbance Boundary in a manner and location determined by Registered Aboriginal Parties; • If the remains are identified as historic non-Aboriginal, the site is to be secured and	Demolition and Construction

Summary of Mitigation Measures	Project Phase
the NSW Heritage Branch contacted; and • If the remains are identified as non-human, work can recommence immediately. - The above process functions only to appropriately identify the remains and secure the site. From this time, the management of the area and remains is to be determined through one of the following means: • If the remains are identified as a modern matter liaise with the Police; • If the remains are identified as Aboriginal liaise with the proponent, OEH and Aboriginal stakeholders; • If the remains are identified as non-Aboriginal (historical) liaise with the DP&I and the Heritage Office; and • If the remains are identified as not being human then work can recommence immediately.	
Noise and Vibration	
Demolition and Construction Waste Contractors would demonstrate best practicable means and include noise mitigation measures in the CEMP plan, which could include: - Construction activities to be limited to between 7am and 6pm Monday to Friday and 8am to 1pm Saturday; - Where work is undertaken outside of the standard working hours it would be in accordance with the *Interim Construction Noise Guideline* (EPA, 2009); - Construction of noise bunds or barriers, where feasible and effective for noise suppression, at the early demolition and construction stage; - Use of temporary barriers for stationary noisy equipment; - Possible restrictions to construction hours (beyond the above hours) where noise impacts are significant; - All plant items should be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise; - All pneumatic tools would be fitted with silencers or mufflers; - Any compressors brought on to site should be silenced or sound reduced models fitted with acoustic enclosures; - Consultation with property owners likely to be affected prior to works being carried out; and - Noise monitoring at sensitive locations as agreed with EPA for any excessive noise or noise complaints being assessed with appropriate action taken.	Demolition and Construction
Traffic Noise The existing OEMP includes provisions for vehicle protocols in and around the Clyde Terminal and the Parramatta Terminal. This would be revised for operations once the demolition and construction works have been completed.	Operation
Blasting The CEMP would include a blast plan and control measures to minimize the impact of ground vibration and noise as a result of blasting at a particular site. Items to be considered in the development of this part of the CEMP are: - Reducing maximum instantaneous charge, for example by reducing blasthole diameter or deck loading; - Using a combination of appropriate delays; - Allowing for excessive humps or toe in the blast design; - Optimising blast design by altering drilling patterns, delaying layout or altering blasthole inclination from the vertical; - Exercising strict control over the location, spacing and orientation of all blastholes and using the minimum practicable sub-drilling that gives satisfactory to conditions; and - Establishing times of blasting to suit the situation; - Using experienced blast contractor to be used; - Using a series of test blasts to be used to determine site specific conditions. As a result	Demolition

Summary of Mitigation Measures	Project Phase
of these tests the maximum instantaneous charge should be determined; - Restricting blasting or ceasing blasting if the predictions indicate that air blast overpressure levels are likely to be exceeded at neighbouring dwellings unless agreed with the owner(s); - Ensuring all reasonable attempts are made to contact sensitive receivers located within 500 m of a blast location; - Using linear enclosures or shielding would be used to assist in airblast attenuation if required; - Ensuring stemming type and length is adequate; - Eliminating exposed detonating cord and investigating alternative initiation method; - Making extra efforts to eliminate the need for two shots (e.g. better control of drill patterns); - Using survey methods, as appropriate, to ensure burden is adequate; - Considering delaying or cancelling the blast by not loading if the weather forecast is unfavourable; - Allowing for the effects of temperature inversion and wind speed and direction on the propagation of airblast to surrounding areas; - Orientating faces where possible so that they do not directly face residences; - Varying the direction of initiation; - Exercising strict control over the burden, spacing and orientation of all blastholes; - Taking particular care where the face is already broken or where it is strongly jointed, sheared or faulted; - Considering deck loading where appropriate to avoid broken ground or cavities in the face (e.g. from back break); - Adequately monitoring the blasts to help minimise complaints and also to provide documentation in the event of any claims for damages arising from blasting; and - Recording of complaints associated with blasting, identifying the nature of the complaint, the particular operation that initiated the complaint, and documenting action taken.	
GHG Emissions	
Shell would undertake an internal energy audit of the Project Area following completion of the demolition and construction works to take stock of how the operation of the Clyde Terminal has reduced electricity consumption and improved energy efficiency. Recommendations arising from the audit would then be taken into consideration where significant further energy savings can be made.	Operation
Landscape and Visual Amenity	
Dust control measures included in the CEMP and outlined in the **Surface Water, Industrial Water and Flooding** section of this table would avoid or minimise potential visual impacts from dust.	Demolition and Construction
The riparian vegetation within the wetlands would be retained thereby conserving the visual amenity and landscape character of the area.	All

Summary of Mitigation Measures	Project Phase
Ongoing Monitoring at the Converted Clyde Terminal	
Shell would continue to undertake existing environmental and safety monitoring at the Project Area following completion of the conversion including: - Interceptor sampling; - Wetlands management; - Waste management; - Groundwater sampling and analysis; - Safety critical equipment inspection and maintenance; - Safety management system auditing; - Process safety observations and audits; - Emergency response exercises and plan reviews; - Hazard and effect management process reviews; and - Competency assessment of all operational staff.	All

APPENDIX D
NOISE RECEIVER LOCATIONS



APPENDIX E
HIGH HYDRAULIC HAZARD AREAS