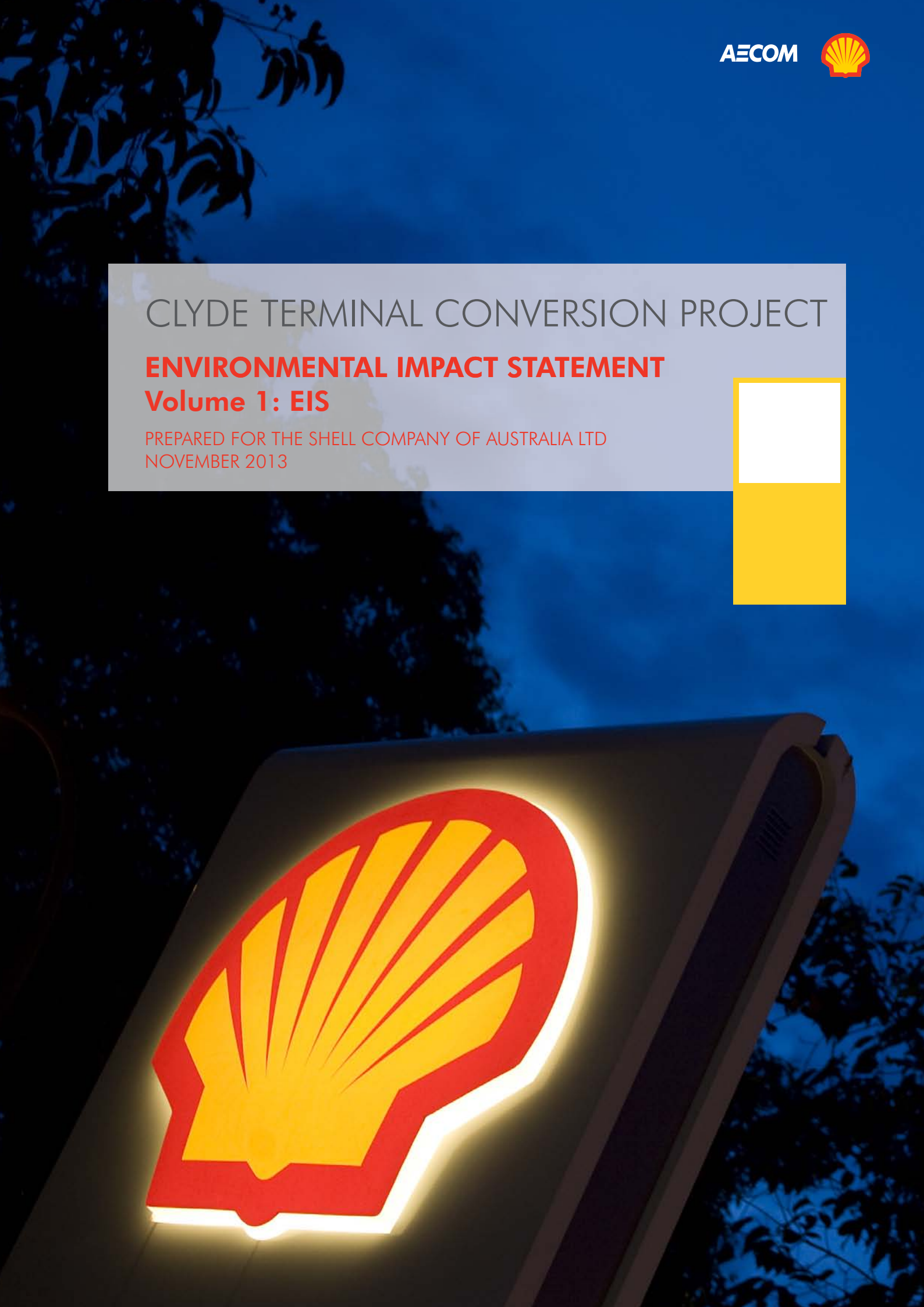

CLYDE TERMINAL CONVERSION PROJECT

ENVIRONMENTAL IMPACT STATEMENT
Volume 1: EIS

PREPARED FOR THE SHELL COMPANY OF AUSTRALIA LTD
NOVEMBER 2013

Clyde Terminal Conversion Project

Environmental Impact Statement

Client: The Shell Company of Australia Ltd

ABN: 46004610459

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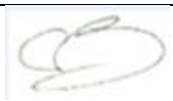
Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
A	20-Sep-2012	Draft for client review	Renae Gifford Associate Director Environment	
B	19-Mar-2013	Draft for client review	Ruth Baker Associate Director Environment	
C	19-Jun-2013	Draft for client review	Ruth Baker Associate Director Environment	
D	23-Aug-2013	Final for Statutory Submissions	Scott Jeffries Associate Director Environment	
E	18-Nov-2013	Final for Exhibition	Catherine Brady Technical Director Environment	

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Acronyms

Abbreviation	Description
AADT	Annual Average Daily Traffic
ABL	Assessment Background Level
ACHA	Aboriginal Cultural Heritage Assessment
AEP	Average Exceedance Probability
AGEIS	Australian Greenhouse Emissions Information System
AGO	Automotive Gas Oil
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment Conservation Council
AOC	Accidentally Oily Contaminated
AQIA	Air Quality Impact Assessment
AQMP	Air Quality Management Plan
ASS	Acid Sulfate Soils
ASSMP	Acid Sulfate Soils Management Plan
ACCC	Australian Competition and Consumer Commission
bgs	Below ground surface
BLEVE	Boiling Liquid Expanding Vapour Explosion
BLR	Basic Landholder Right
BP	British Petroleum
BPD	Barrels Per Day
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CBD	Central Business District
CCO	Chemical Control Order
CEMP	Construction Environment Management Plan
CLM Act	*Contaminated Land Management Act 1997*
COC	Continuously Oily Contaminated
CPI	Corrugated Plate Interceptor
CRC	Camellia Recycling Centre
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
Cr VI	Hexavalent Chromium

Abbreviation	Description
CSM	Conceptual Site Model
CTMP	Construction Traffic Management Plan
DACHA	Darug Aboriginal Cultural Heritage Assessments
DAL	Darug Aboriginal Landcare Inc
dB(A)	A-weighted decibels
DCAC	Darug Custodial Aboriginal Corporation
DCP 2011	*Parramatta Development Control Plan 2011*
Deerrubin LALC	Deerrubin Local Aboriginal Land Council
DGRs	Director-General's Requirements
DoS	Degree of Saturation
DLO	Darug Land Observations
DP	Deposited Plan
DP&I	Department of Planning and Infrastructure
DTAC	Darug Tribal Aboriginal Corporation
EEC	Endangered Ecological Community
EHC Act	*Environmentally Hazardous Chemicals Act 1985*
EFR	External Floating Roof
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ERP	Emergency Response Plan
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
FCCU	Fluidised Catalytic Cracking Unit
Floodplain Risk Management Policy	*City of Parramatta Local Floodplain Risk Management Policy* (Parramatta City Council, 2006)
FM Act	*Fisheries Management Act 1994*
GHG	Greenhouse Gas
GGBF	Green and Golden Bell Frog

Abbreviation	Description
GDE	Groundwater Dependent Ecosystem
GWSAP	*Groundwater Sampling and Analysis Plan*: *Shell Clyde Refinery and Parramatta Terminal, Durham Street, Rosehill, NSW* (ERM, 2010)
ha	Hectares
HIPAP	Hazardous Industry Planning Assessment Papers
HSSE	Health and Safety, Security and Environment
HSSE-MS	Health, Safety, Security and Environment Management Systems
HSSE & SP MS	Health and Safety, Security, Environment and Social Performance Management System
ICNG	*Interim Construction Noise Guideline* (EPA, 2009)
IFR	Internal Floating Roof
Infrastructure SEPP	*State Environmental Planning Policy (Infrastructure) 2007*
INP	*NSW Industrial Noise Policy* (EPA, 2000)
LEP 2011	*Parramatta Local Environmental Plan 2011*
LGA	Local Government Area
LNAPL	Light Non Aqueous Phase Liquid
LoS	Level of Service
LPG	Liquefied Petroleum Gas
Mbgs	Metres Below Ground Surface
MHF	Major Hazard Facility
MHRDC	Maximum Harvestable Right Dam Capacity
NEPM	National Environmental Protection Measure
NES	National Environmental Significance
NGA	National Greenhouse Account
NGER Act	*National Greenhouse and Energy Reporting Act 2007*
NML	Noise Management Level
NPW Act	*National Parks and Wildlife Act 1974*
NoW	NSW Office of Water
NPI	National Pollution Inventory
NSW	New South Wales
NWRL	North West Rail Link
OCP	Organochlorine Pesticides

Abbreviation	Description
OEH	NSW Office of Environment and Heritage
OEMP	Operational Environment Management Plan
OH&S	Occupational Health and Safety
OPP	Organophosphorus Pesticides
PAC	Planning Assessment Commission
PAH	Polycyclic aromatic hydrocarbons
Parramatta Plan 28	*Sydney Regional Environmental Plan No. 28 - Parramatta*
PASS	Potential Acid Sulfate Soils
PCB	Polychlorinated Biphenyl
PFOS	Perfluorooctane Sulfonate
PHA	Preliminary Hazard Analysis
PHALMS	*Parramatta Historical Archaeological Landscape Management Study*, (Godden Mackay Logan, 2001)
PIRMP	Pollution Incident Response Management Plan
PMF	Probable Maximum Flood
Pmpy	Per million per year
POEO Act	*Protection of the Environment Operations Act 1997*
POEO Clean Air Regulation	*Protection of the Environment Operations (Clean Air) Regulation 2010*
POEO Waste Regulation	*Protection of the Environment Operations (Waste) Regulation 2005*
PSH	Phase Separated Hydrocarbon
QRA	Quantitative Risk Analysis
QA/QC	Quality Assurance/Quality Control
RAP	Registered Aboriginal Party
RBL	Rating Background Level
RMS	NSW Roads and Maritime Services
RNE	Register of the National Estate
Shell	The Shell Company of Australia Ltd
SEPP	State Environment Planning Policy
SEPP 33	*State Environmental Planning Policy No.33 – Hazardous and Offensive Development*
SEPP 55	*State Environmental Planning Policy No. 55 – Remediation of Land*

Abbreviation	Description
SEWPAC	Department of Sustainability, Environment, Water, Populations and Communities (Commonwealth)
SGMP	*Soil and Groundwater Management Plan Shell Clyde Refinery and Parramatta Terminal, Durham Street, Rosehill, NSW* (Shell, 2010)
Sherpa	Sherpa Consulting Pty Ltd
SMCMA	Sydney Metropolitan Catchment Management Authority
SP	Social Performance
SPR	Source-pathway-receiver
SRAP	Shell Refining (Australia) Pty Ltd
SRD SEPP	*State Environmental Planning Policy (State and Regional Development) 2011*
SREP 2005	*Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*
SSD	State Significant Development
TIA	Traffic Impact Assessment
TSC Act	*Threatened Species Conservation Act 1995*
TRH	Total Recoverable Hydrocarbon
UPSS Regulation	*Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008*
VOC	Volatile Organic Compound
WH&S Act	*Work Health and Safety Act 2011*
WH&S Regulation	*Work Health and Safety Regulation 2011*
WM Act	*Water Management Act 2000*
WMP	*Waste Management Procedure: Shell Clyde Refinery (Australia) Pty Ltd* (Shell, 2013)
WSP	Water Sharing Plan
WSP 2011	*Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011*

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Declaration under Part 3, Schedule 2 of the Environmental Planning and Assessment Regulation 2000

Author of the Environmental Impact Statement

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Name and Address of the Responsible Person:

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Address: Level 21, 420 George Street, SYDNEY NSW 2000

Qualification: Bachelor of Arts (Geography and Economics)

Master of Regional and Urban Planning

Address of the Land to which this EIS Applies

The land subject to this EIS is located on Durham Street, Rosehill within the Parramatta local government area on parts of Lot 1 DP 109739, Lot 1 DP 383675, Lot 101 DP 809340 and Lot 2 DP 224288.

Description of the Project to which this EIS Applies

This EIS examines the works that would be required for the Project. The key components of the Project include:

- Demolition of the existing Clyde Terminal processing units and other redundant infrastructure at the Project Area, including storage tanks surplus to the ongoing operation of the Clyde Terminal.
- Reduction in the capacity and quantity of storage for petroleum fuels at the Clyde Terminal from 638 ML to 264 ML.
- Conversion of part of the existing Clyde Terminal assets to more efficiently receive, store, undertake product dosing activities and distribute solely imported finished petroleum products. These products would continue to be supplied from the Clyde Terminal to Shell's existing Parramatta Terminal (which lies adjacent to the Clyde Terminal), and directly via existing pipelines from the Clyde Terminal to Sydney Airport and Newcastle.

Assessment of the Environmental Impact of the Project

An assessment of the environmental impact of the Project is contained in this Environmental Impact Statement.

Declaration

Pursuant to clause 6(f), Part 3, Schedule 2 of the Environmental Planning and Assessment Regulation 2000, I declare that this Environmental Impact Statement:

a. Has been prepared in accordance with the requirements of the Environmental Planning and Assessment Act 1979 and the Environmental Planning and Assessment Regulation 2000;

b. Contains all available information that is relevant to the environmental assessment of the Project to which this Environmental Impact Statement relates; and

c. Contains information that is neither false nor misleading.

Catherine Brady

18 November 2013

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Executive Summary

Introduction

The Shell Company of Australia Ltd (Shell) is seeking development consent for the following conversion works at the Clyde Terminal:

- Demolition of the existing processing units, surplus storage tanks and other redundant infrastructure; and
- Upgrades and improvements to storage tanks to be retained at the site to enable more efficient receipt, dosing, storage and distribution of imported finished petroleum products.

Shell ceased refining operations at the Clyde Terminal in late 2012. Since that time, Crude Oil has not been imported to or refined at the Clyde Terminal. The Clyde Terminal currently receives, stores, and distributes finished petroleum products only.

The development application for the proposed Clyde Terminal Conversion Project (hereafter referred to as the Project) also seeks consent for continued maintenance of and conversion and upgrades to the existing or approved facilities and structures for the purpose of continuing to improve the efficiency of Shell's operations, to implement updated technology and control systems and to improve the environmental performance of the Clyde Terminal. The Project is for the receipt, storage, dosing and distribution of finished petroleum products.

The current application also seeks development consent for the continued use of the Clyde Terminal and associated Shell-owned land and infrastructure (referred to in this Environmental Impact Statement as the Project Area) for the receipt, storage and distribution of finished petroleum products. This continued use would assist in maintaining the security of liquid fuels supply within New South Wales.

The Project has been declared by the Minister for Planning and Infrastructure to be State Significant Development under section 89C of the *NSW Environmental Planning and Assessment Act 1979*, which requires assessment under Part 4, Division 4.1 of the Act.

The Clyde Terminal is one of a few key fuel supply operations servicing the New South Wales economy and is located adjacent to Shell's major distribution terminal (i.e. the Parramatta Terminal) at Rosehill in Western Sydney. There are multiple companies whose operations rely on fuel supplies from the Parramatta Terminal, particularly for distribution in Western Sydney but also throughout regional locations in New South Wales. The Project would retain a critical Jet fuel supply source, via Shell's dedicated pipeline into Sydney Airport to meet current and future Jet fuel demand that is not otherwise easily met due to economic and transport logistics constraints. The Project is critical to the Terminal and Shell's associated infrastructure supporting the current and future growth of the New South Wales economy in an efficient and effective manner.

In deciding to undertake the proposed Project, Shell has considered project alternatives including relocating its terminal operations with the subsequent distribution activities taking place at another location. However the project alternatives that were considered would not have provided the same level of economic, fuel supply security and environmental benefits as the current Project can.

AECOM Australia Pty Ltd has been engaged by Shell to prepare this Environmental Impact Statement to assess potential environmental impacts associated with the proposed Project. This Environmental Impact Statement has been prepared in accordance with the provisions of Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000*, together with the Environmental Assessment Requirements issued by the Director-General of the Department of Planning and Infrastructure in March 2012.

The Project

The key components of the conversion of the Project Area would comprise:

- Demolition of the existing Clyde Terminal processing units and other redundant infrastructure within the Project Area at the Clyde Terminal. Existing storage tanks to be retained would be reallocated into final grades of finished petroleum products. Storage tanks surplus to the ongoing operation of the Clyde Terminal would be demolished. This would reduce the capacity and quantity of storage for petroleum fuels at the Clyde Terminal from 638 ML to 264 ML;
- Conversion of part of the existing Clyde Terminal assets to more efficiently receive, undertake product dosing activities,store and distribute solely imported finished petroleum products. These products would continue to be supplied from the Clyde Terminal to Shell's existing Parramatta Terminal (which lies adjacent to the Clyde Terminal), and directly via existing pipelines from the Clyde Terminal to Sydney Airport and Newcastle. Product dosing and working product samples back into storage tanks as part of the quality assurance processes would continue to be undertaken.

The proposed Project would also include:

- Geodesmic domes over Jet fuel storage tanks within Tankfarm B2, designed to retain the majority of potential odours and emissions emitted from the Jet fuel storage tanks and to reduce rainwater ingress;
- Upgrades to tank instrumentation and tank control systems to enable remote and automated control;
- Upgrades to tank bunds where necessary;
- Reduction of the gas storage capacity of the Clyde Terminal from 10,851 m^3 to 1,550 m^3 to accommodate the continued receipt (by road tanker) and storage of Butane. Butane would be dosed with winter grades of Gasoline as part of the operation of the Project;
- Upgrades to the electrical supply, control and safeguarding systems;
- Increased automation of terminal systems;
- Installation of equipment to provide improved product quality segregation;
- Revised drainage and water treatment to suit reduced operations;
- Modification to the current fire system to provide articulated foam deployment and fire response for the converted Clyde Terminal arrangement;
- Revised internal facility pumping and piping arrangements;
- Ancillary works to increase the efficiency and effectiveness of the Clyde Terminal and to facilitate safe and efficient operations, such as lighting, safety shutdown systems, control room facilities and amenity upgrades; and
- Excavations to 300 mm deep to install concrete load-bearing slabs for three new electrical substations which are replacing existing aged infrastructure, for grading works within existing tankfarms, and for foundation works relating to firewater tanks. Excavation works are expected to be minor and isolated to specific areas in the Terminal. The redundant assets are expected to be demolished to grade; however, it is possible that in performing the demolition, some footings may require removal.

The proposed Project will result in an overall reduction in the operational footprint of the Terminal.

The Clyde Terminal would remain operational as a receipt (from the Gore Bay Terminal), storage and distribution facility for finished petroleum products during the proposed works. Once the Project is executed and implemented, the Clyde Terminal would continue to receive, store and distribute finished petroleum products.

Statutory Planning

The Project Area is situated on land within the Parramatta Local Government Area which falls under the *Parramatta Local Environmental Plan 2011*. The Clyde Terminal currently operates under a combination of continuing use rights (section 109(1) *Environmental Planning and Assessment Act 1979*), and various development consents that have been granted to Shell by Parramatta City Council and the Minister Planning and Infrastructure.

The Project Area is located on land zoned as IN3 Heavy Industrial under the *Parramatta Local Environmental Plan 2011*. Under this zone, development for the purposes of a liquid fuels depot is permissible with development consent. Demolition of any building or works lying within the Local Government Area is also permissible with development consent under the *Parramatta Local Environmental Plan 2011*.

The Minister for Planning and Infrastructure has declared the proposal to be State Significant Development under section 89C of the *Environmental Planning and Assessment Act 1979* as it meets the criteria of a State Significant Development under *State Environment Planning Policy (State and Regional Development) 2011*.

The assessment process has identified the relevant local, regional, State and Commonwealth legislative requirements for the proposed Project. An assessment of the relevant matters of consideration has been undertaken in this Environmental Impact Statement and has concluded that the Project is compliant with the requirements of the *Parramatta Local Environmental Plan 2011* and other relevant State and Commonwealth legislation.

This State Significant Development application seeks development consent to undertake the proposed conversion works at the Clyde Terminal and to replace existing development consents (as well as the continuing use rights that currently exist) with a modern planning approval which would authorise and regulate future operations at the Clyde Terminal.

Consultation

The Environmental Impact Statement has been prepared having regard to the outcomes of consultation with relevant authorities and community stakeholders, including:

- Department of Planning and Infrastructure;
- Office of Environment and Heritage;
- Environment Protection Authority;
- Parramatta City Council;
- Sydney Ports Corporation;
- Roads and Maritime Services;
- WorkCover;
- NSW Office of Water;
- Fire and Rescue NSW;
- Sydney Metropolitan Catchment Management Authority;
- Ministry of Health;
- Local Aboriginal interest groups;
- Community groups; and
- Gore Bay Terminal and Clyde Terminal workforce.

AECOM and Shell have consulted with the above stakeholders via meetings and letters.

Identification of Key Assessment Issues

The Environmental Impact Statement Scoping Report for the Project identified and prioritised potential environmental issues associated with the Project based on the likelihood of an environmental impact occurring and the consequence of that impact should it not be mitigated.

The risk screening for this Environmental Impact Statement considered the significance of each potential environmental impact from the preliminary environmental risk screening, in addition to the likely level of stakeholder interest in each issue. This led to the following prioritisation of environmental issues for this Environmental Impact Statement:

- High risk issues: Transport; socio-economic effects; surface water, industrial water and flooding; and land use.

- Medium risk issues: Air quality and odour; ecology; soil and groundwater; European heritage; hazard and risk; waste management; and greenhouse gas.
- Low risk issues: Landscape and visual amenity; Aboriginal heritage; and noise and vibration.

Transport

The Traffic Impact Assessment concluded that the Project would result in increases to light vehicle and heavy vehicle numbers during the demolition and construction works. However, this increase in vehicles would not significantly impact the surrounding road network, and as such, the levels of service for impacted intersections are not predicted to change. The Project Area has established vehicular connections to nearby arterial roads and the Sydney motorway network, mainly via Grand Avenue. The Clyde Terminal can also be accessed from Parramatta Road via Wentworth Street, Kay Street and Unwin Street. The use of this route enables access to the Project Area without using James Ruse Drive or Grand Avenue. Access provisions would remain unchanged for the demolition, construction and future operational phases of the Project, as site access is already designed to accommodate heavy articulated vehicle movements.

Traffic movements to and from the Clyde Terminal would increase marginally during the demolition and construction activities before reducing further once the conversion works are complete. Demolition activities would see the addition of 16 heavy vehicles in each direction to transport waste materials. Construction activities would require approximately one heavy vehicle trip per day to deliver construction materials and initially to mobilise construction plant and equipment. This is in addition to the approximately 257 heavy vehicles that currently access the Project Area and its adjoining Parramatta Terminal each day, including fuel tankers, waste transport trucks, as well as other delivery and courier vehicles. A Construction Traffic Management Plan (as part of the Construction Environment Management Plan) would be prepared prior to the works commencing to ensure that traffic associated with the demolition and construction components of the Project is managed appropriately.

There would be no need for additional parking allocations, as existing car parking arrangements at the Project Area would be adequate to service the needs of the Clyde Terminal, both during the demolition and construction works, and once the Clyde Terminal has been fully converted.

Vehicular traffic to and from the Clyde Terminal has already reduced significantly since the cessation of refining in late 2012. Light vehicle traffic at the converted Clyde Terminal would be further reduced compared to current operations. Once the works are completed, the number of light vehicle trips would be approximately 32 per day, which is approximately 20 percent fewer than the current number. Heavy vehicle movements at the converted Clyde Terminal are not predicted to differ significantly from the current operations. Traffic associated with the converted Clyde Terminal would therefore not significantly impact the surrounding road network. An Operational Environment Management Plan to be prepared for the Project would include traffic and transport provisions to minimise the potential for adverse traffic impacts.

Social and Economic Effects

The Project is not anticipated to result in detrimental residual social and economic impacts. Rather, it would provide a number of benefits to the locality, region and State.

The primary benefit of the Project is the continued efficient supply of liquid fuels for New South Wales including growth in this market. The Project provides Jet fuel supply to Sydney Airport via direct pipeline and reduces trucking across Sydney given the Terminal's advantageous location in the growing suburbs of Western Sydney. In addition, the Project would provide social and economic benefits including:

- A reduced hazard profile for the Project Area;
- Improvements to environmental and safety controls at the Project Area, including visual amenity;
- Direct employment for a demolition and construction contractor workforce of approximately 170 personnel; and
- The western and north-eastern portions of the Project Area would be freed up (i.e. infrastructure removed) thereby allowing potential future uses of the area which could result in future socio-economic benefits. These potential future uses would be subject to separate assessment and approval in accordance with legislative requirements.

Approximately 30 contractors would be required for demolition works, and about 70 for the construction works. The concurrent operation of the Clyde Terminal would also require approximately 33 operations contractors. Once the project works have been completed, the Clyde Terminal would require approximately 35 employees and 23

contractors. Many of these operational employees would be rostered on a shift basis and would therefore not all be onsite at the one time. The staff and contractor workforce at the Project Area would therefore fluctuate throughout the Project, depending on the type and amount of activities being undertaken at any one time.

The assessment identified that the conversion works may result in temporary adverse social and econmic impacts on the local region, such as short-term air quality and noise impacts associated with demolition and construction works. The proposed mitigation measures would avoid, minimise or manage potential adverse socio-economic impacts, including the implementation of a Construction Environment Management Plan, continued consultation with the community and employees, and continued support of the Employee Assistance Program.

Surface Water, Industrial Water and Flooding

Since the cessation of refining activities at the Project Area in late 2012, Shell's industrial water usage at the Clyde Terminal has already reduced significantly (by around 50 percent). Industrial water usage for the Project Area is anticipated to remain consistent with the current requirements, or to decrease once the conversion activities are complete. During the conversion works, water saving devices would be installed wherever possible to reduce wastage. Once the conversion works are complete, the water consumption of the Clyde Terminal would be reviewed again to confirm if any further savings can be made on the use of potable water.

The Project is also not anticipated to increase overall stormwater runoff from the Project Area as the majority of the Project Area is already hardstand. The Project would continue to collect stormwater onsite. Clean stormwater would be diverted and discharged directly to Duck Creek and the existing discharge points regulated under Environmental Protection Licence No. 570 or the remnant wetland in the north-eastern section of the Project Area. Potentially contaminated stormwater at the Project Area would continue to be captured and treated onsite, before being discharged offsite in accordance with Shell's Environment Protection Licence No. 570. Water quality and volume monitoring and any required notifications would continue throughout the life of the Project as per the requirements of the Environment Protection Licence.

Drainage arrangements would be upgraded where required as part of the Project. Portions of the Project Area are considered to be flood prone and these areas may be affected by flooding impacts particularly for a one percent Average Exceedance Probability flood, or for a Probable Maximum Flood event. The Project itself is not anticipated to affect flooding or tidal regimes in the area as it would not result in a net increase in built structures within the floodplain, and would therefore not divert water from the existing floodway into other less flood prone areas. Further, any new developments within the flood prone areas would be constructed with regard to the appropriate design principles and standards for such areas. In addition an Emergency Response Flood Plan would be prepared demonstrating Shell's ability to secure or move goods and substances above the one percent Average Exceedence Probability flood within the warning time that is likely to be available. .

The demolition and construction components of the Project have the potential to generate dust and sediment runoff impacting on surface water quality at the Project Area. However, it is anticipated that the proposed management measures would be adequate to mitigate any such impacts to a negligible level. These include the development of an Erosion and Sediment Control Plan (as part of the Construction Environment Management Plan). An Operational Environment Management Plan would also include provisions for the management of surface water, industrial water and flooding.

Provided the proposed mitigation and management measures are implemented, the Project is not anticipated to have significant residual impacts for surface water, industrial water and flooding.

Land Use

The Project is permissible with consent within the Project Area and constitutes a compatible use of the IN3 Heavy Industrial land use zoning. 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 not dissimilar to its current use.

A future use of the surplus land in the western and north-eastern portions of the Project Area has yet to be determined. However, it is likely that any such future use would be industrial in nature, and would thus be compatible with the strategic land use objectives for this part of the Parramatta Local Government Area. A separate development application would be prepared for the future redevelopment of this land, in accordance with legislative requirements.

Air Quality and Odour

An Air Quality Impact Assessment was prepared to assess potential impacts of the Project on air quality. Overall the Project is not anticipated to result in residual air impacts provided the proposed mitigation measures are put in place during demolition and construction works.

The ongoing operation of the Clyde Terminal once the conversion works are complete is predicted to comply with applicable air quality criteria and yield significantly improved air quality and odour emissions from the Project Area compared to previous years due to the cessation of refining activities at the Clyde Terminal. Potential odour impacts from operation of the Clyde Terminal are also predicted to be negligible, as these impacts have continued to be minor since the cessation of refining activities. These minimal operational impacts are further evidenced by the amendment of Shell's Environment Protection Licence No. 570 to reflect the reduced requirements for air quality monitoring at the Clyde Terminal since the cessation of refining activities in late 2012.

The ongoing operation of the converted Clyde Terminal would be undertaken in accordance with Shell's existing Environment Protection Licence to ensure compliance with the *Protection of the Environment Operations Act 1997*. The engineering design and upgrade works for tanks at the Clyde Terminal would continue to be undertaken with reference to the requirements of the *Protection of the Environment Operations Act 1997* and the *Protection of the Environment Operations (Clean Air) Regulation 2010*.

Ecology

The proposed demolition and construction works would take place on sections of the Project Area that have been subject to historical vegetation clearing and which no longer contain native vegetation. The majority of native vegetation at the Project Area is located along the boundary of the Clyde Terminal (i.e. fringing the Duck and Parramatta Rivers). Occasional trees or shrubs may be impacted due to their proximity to buildings and structures that are to be demolished. However any such clearing or root damage to retained vegetation would:

- Only be minimal and would not include significant flora species, and
- Not lead to increased fragmentation of vegetation communities within the locality.

The Project does not require the removal or direct disturbance to foreshore vegetation (including wetland habitat) within the Project Area.

The Project would involve improvements to existing drainage and wastewater treatment systems and consequently is not anticipated to impact water quality in the vicinity of the Project Area, or for the Duck and Parramatta River catchments, and would support continuing efforts to improve water quality. Improved water quality is expected to contribute to positive aquatic ecological outcomes over time.

The Green and Golden Bell Frog (*Litoria aurea*) has been previously identified within the Project Area, and the Grey-headed Flying Fox (*Pteropus poliocephalus*) has been previously sighted in the locality. There is also potential for parts of the Project Area to provide suitable habitat for microbat species. Assessments of significance have been conducted for each of these species under the *Threatened Species Conservation Act 1995*, and where relevant, the *Environment and Protection Biodiversity Conservation Act 1999*. These assessments have concluded that the Project is unlikely to significantly affect threatened species, populations or communities.

A referral has been made under the *Environment and Protection Biodiversity Conservation Act 1999* with respect to the Green and Golden Bell Frog.

Soil and Groundwater Contamination

A number of soil and groundwater contamination studies have been prepared throughout the Project Area since the 1990's. Petroleum hydrocarbons and metals are present in soil and groundwater within the Project Area and findings to date suggest that contaminants are contained within the Project Area. The Project Area also contains Potential Acid Sulfate Soils.

Soil and groundwater at the Project Area are currently managed under the Conceptual Site Model 2012 (a risk-based model to consider and manage potential contamination on the site) and the Soil and Groundwater Management Plan 2010. Soil and groundwater conditions at the Clyde Terminal are currently regulated by Condition U1 of Environment Protection Licence No. 570 which requires an annual report to be submitted to the Environment Protection Authority each year.

Groundwater within the Project Area is not currently extracted for use nor is it likely to be extracted for future operational uses at the Clyde Terminal. There are no known groundwater users in the vicinity of the Project and groundwater is unlikely to be used for any beneficial purposes in the area.

The Project would only require minor and shallow soil excavation activities, therefore it is considered extremely unlikely that the Project would impact on groundwater levels at the Project Area, or that the Project would require groundwater interception or extraction approvals under the *Water Management Act 2000* or the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011*.

Potential for project activities to intercept, disturb, or mobilise contaminated soils and groundwater, including Acid Sulfate Soils would be managed through an Acid Sulfate Soils Management Plan. There is limited residual potential for impacts to occur to soil and groundwater during all phases of the Project, including those resulting from accidental spills, which would be minimised via appropriate storage and work procedures.

Both the current and future operations of the Clyde Terminal and the demolition and construction works would be undertaken in accordance with a Construction Environment Management Plan and an Operational Environment Management Plan, incorporating the conditions of Conceptual Site Model 2012 and the Soil and Groundwater Management Plan 2010. The Construction Environment Management Plan would include an Erosion and Sediment Control Plan and an Acid Sulfate Management Plan to ensure appropriate measures are implemented to identify, contain and manage contaminated materials that may be encountered during the demolition and construction works and to prevent new sources of contamination.

Further soil and groundwater investigations would be completed during the conversion works. Following the conversion works and when unimpeded site access is established, additional investigation and remediation can be completed as required, subject to regulatory approval in the form of a future development application. This would be undertaken for land identified as surplus to the converted Clyde Terminal requirements. Any required remediation would be detailed in subsequent development applications relevant to this surplus land.

It is considered that the adherence to these mitigation measures and conditions would result in low residual impacts to soil and groundwater associated with the Project. The Conceptual Site Model 2012 and Soil and Groundwater Management Plan 2010 have procedures in place for managing exceedances of soil and groundwater trigger criteria, and would continue to be updated as new information is identified to fill in recognised data gaps.

European Heritage

The heritage assessment found that the Project Area is of State significance on historical, associative, rarity and representative grounds. It was also found to be locally significant, holding aesthetic, social, technical, and research values. An assessment of the proposed works found that the demolition of the old Clyde Refinery infrastructure would have a negative impact on the historical, rarity and representative significance of the Project Area. It would also have a moderately negative impact on the assessed local aesthetic, social, technical and research significance of the Project Area. Conservation of old refining infrastructure, however, was determined not to be a viable option due to financial, safety and practical reasons around the ongoing management and maintenance of the Project Area.

It is recommended that oral histories be recorded of past and present employees regarding the day to day operations of the previous refinery in order to capture some of the historical significance of the Project Area. A full photographic and documentary archival recording is also been recommended in order to capture the physical fabric of the Project Area. In relation to the areas of archaeological potential, an Archaeological Research Design and Methodology would be developed and implemented to manage these archaeological values if those areas are to be disturbed during the Project.

The old Shell Wharf would be retained for the continued spill control requirements associated with terminal operations and the plaque commemorating the John Fell & Co Refinery would be positioned in a suitable location allowing the public to access this historical heritage item.

Hazard and Risk

With the proposed mitigation measures in place, it is unlikely that the Project would increase the magnitude of hazards and risks associated with the Project Area. Rather, the Project is considered to reduce the overall hazard profile of the Project Area, principally due to the removal of hazardous materials and infrastructure associated with previous refining activities. In the event that an emergency scenario did eventuate as a result of the Project, the incident response measures provided in the Emergency Response Plan would be implemented in order to

minimise impacts to life, property or the environment. This would include the activation of external emergency services if required. The Project would therefore not create additional, significant hazards or risks at the Project Area.

A Preliminary Hazard Analysis was prepared for the proposed operations at the converted Clyde Terminal to determine if the facility would meet the definition of 'hazardous' and/or 'offensive' in the context of *State Environmental Planning Policy No.33 – Hazardous and Offensive Development.* The Preliminary Hazard Analysis identified the hazards associated with the Project and conservatively assessed their risks. The Clyde Terminal was found to be below the New South Wales Land Use Planning Risk Tolerability Criteria set by the Department of Planning and Infrastructure and the Clyde Terminal was not deemed to present a significant risk to surrounding land uses. The Preliminary Hazard Analysis indicated that the Clyde Terminal complies with all relevant Hazardous Industry Planning Advisory Paper criteria; and is therefore considered 'potentially hazardous' rather than 'hazardous,' and 'potentially offensive' rather than 'offensive,' in the context of *State Environmental Planning Policy No.33 – Hazardous and Offensive Development*.

Shell has in place systems for ensuring that risks are effectively managed during demolition and construction works, and also for managing the residual risks associated with the ongoing operation of the converted Clyde Terminal. This would include the implementation of the Emergency Response Plan and adequate safeguarding systems. The proposed design of the conversion works has been assessed against relevant safety standards, as well as against Shell's own internal standards.

Waste Management

The Clyde Terminal currently operates under Environment Protection Licence No. 570, which provides for the scheduled activity of waste processing by non-thermal treatment (amongst other things). In addition, the Clyde Terminal provides for the receipt, storage, processing and disposal of certain wastes scheduled under the *Protection of the Environment Operations (Waste) Regulation 2005* from Shell's Parramatta Terminal, Gore Bay Terminal and from the Joint User Hydrant Installation (JUHI) associated with Sydney Airport.

Waste at the Project Area is generally managed in accordance with the *Waste Management Procedure: Shell Clyde Terminal (Australia) Pty Ltd* (Shell, 2013), New South Wales and Commonwealth legislation, and Shell global standards. The Project is anticipated to result in various streams of waste that are managed under separate regulatory requirements, and in particular under Environment Protection Licence No. 570 at the existing Clyde Terminal.

The majority of wastes would be generated during the demolition and construction works. Wastes would include:

- General solid waste, such as scrap metal, concrete, soil, timber, glass and plastics;
- Additional liquid wastes from the use of amenities by demolition and construction personnel;
- Restricted solid waste, such as contaminated soil and spent erosion and sediment control materials; and
- Special waste, such as asbestos and Polychlorinated Biphenyls. Asbestos waste would be managed in accordance with the requirements of Chapter 8 of the *Work Health and Safety Regulation 2011*.

The ongoing operation of the Clyde Terminal both during and after the conversion works are completed would generate similar waste streams as those currently generated and these would be managed in a similar manner as currently approved. Wastes that would be generated during operation of the Clyde Terminal include:

- General solids, such as scrap metal, empty drums, soil, office and domestic waste; and
- Hazardous waste, such as sludges (including oily sludges from tank cleaning), oil filters, solvents, contaminated materials; and small amounts of radioactive wastes from diagnostic equipment.

The approach for the management of waste in the *Waste Management Procedure: Shell Clyde Refinery (Australia) Pty Ltd* (Shell, 2013) and for the waste streams generated throughout the project works is based on the waste hierarchy principles of waste avoidance, reuse/recycle, onsite management, transport and disposal.

Waste management procedures would be developed as part of the Waste Management Procedure (incorporated into the Construction Environment Management Plan) and the Operational Environment Management Plan for the Project, which would ensure that wastes are appropriately handled, stored and reused, recycled or disposed. Wastes would be appropriately managed and reused or recycled where possible.

Aboriginal Heritage

An Aboriginal Cultural Heritage Assessment involving a site inspection with members of the Registered Aboriginal Parties was prepared for this Environmental Impact Statement.

No Aboriginal archaeological sites were identified during the field inspection. As predicted prior to visiting the Project Area, all proposed impact areas within the Project Area can be classified as grossly disturbed, with all areas of the site observed to consist of active or redundant components of the Clyde Terminal's operation (i.e. existing infrastructure areas). Proposed ground disturbing works are to be conducted in areas that have been extensively modified by the construction of the refinery and, by extension, are considered to retain no potential for the preservation of Aboriginal archaeological materials. In addition, none of the proposed impact areas within the Project Area have been flagged by Registered Aboriginal Parties as culturally sensitive or valuable.

In the unlikely event that Aboriginal objects would be found within the Project area, mitigation and management measures (to be included in the Construction Environment Management Plan) would minimise potential impacts. The Project is not predicted to result in any additional residual impacts for Aboriginal heritage at the Project Area or its surrounds.

Noise and Vibration

A Noise Impact Assessment considered the potential for adverse noise, vibration and blasting impacts resulting from the Project.

The demolition and construction works may result in minor exceedances of construction noise management levels of up to 4 dB(A) at three residential receivers. This predicted outcome is based on a conservative assumption that all plant (aka machinery) and equipment is operating simultaneously, which is unlikely to be the case in practice. Mitigation measures and management procedures have been recommended to reduce construction noise impacts and to minimise disturbance to residences. Demolition blasting is anticipated to comply with the relevant criteria. Traffic noise from demolition and construction vehicles is predicted to increase existing noise levels by less than 2 dB(A), representing a minor impact. There is an existing Operational Environment Management Plan which 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. Construction vibration impacts for surrounding receivers are considered to be highly unlikely, and blasting impacts are also predicted to be minimal.

Noise associated with operation of the Clyde Terminal once the conversion works are completed is anticipated to be consistent with current operations at the Clyde Terminal and to be within acceptable noise criteria.

Greenhouse Gas Emissions

The Project is considered to present a neutral impact (albeit a very slight reduction) in the overall Greenhouse Gas emissions of the Project Area. Greenhouse Gas emissions from the Project Area have already reduced significantly since the cessation of refining activities in late 2012.

A Greenhouse Gas Assessment was prepared to calculate Scope 1, Scope 2 and Scope 3 Greenhouse Gas emissions associated with the current operations at the Clyde Terminal and operations of the Clyde Terminal once the conversion works have been completed.

The Project is anticipated to result in minor increases in Greenhouse Gas emissions during the demolition and construction works due to additional personnel onsite and the additional generation of emissions associated with demolition wastes. Once the conversion works are completed, the Project would result in slightly lower emissions compared to current operations, predominantly due to the expected reduction in the workforce. Aside from the general mitigations provided in the Construction Environment Management Plan, no specific management measures are considered necessary to manage project related impacts during the demolition and construction components of the Project.

Once the Project is completed, Shell would undertake an internal energy audit of the Project Area to take stock of how the converted operations have reduced electricity consumption. Further recommendations of the audit would then be taken into consideration if further potential energy savings are identified.

Landscape and Visual Amenity

The Project Area is located in the Camellia Industrial Estate, which supports a range of industrial and light industrial uses. The existing riparian vegetation lining the banks of the Parramatta and Duck River provides a visual buffer for low-lying machinery and infrastructure at the Clyde Terminal for the use of cranes and other

equipment during the demolition and construction phases are expected to have a negligible impact on the surrounding visual amenity owing to the industrial context of the Project Area. The demolition and construction components of the Project have the potential to result in minor temporary visual disturbances within the Project Area and to a lesser extent the surrounding road network associated with the movement of heavy vehicles and cranes.

The removal of redundant infrastructure within the Project Area is anticipated to improve views and vistas for nearby residents and from surrounding recreational areas and commercial users. The continued use of the Clyde Terminal for the receipt, handling and distribution of finished petroleum products would be consistent with the industrial character and historic use of the Project Area.

The riparian buffer zones along the southern and north-eastern boundaries of the Project Area would not be impacted by the Project, and would therefore continue to provide visual screening for nearby recreational and residential land users. Overall the Project is considered to result in improved views and vistas for surrounding land users. As such, it is not considered necessary to implement additional mitigation measures regarding visual amenity during operation of the converted Clyde Terminal.

Cumulative Impacts

Cumulative impacts have been considered in relation to potential cumulative effects with other relevant projects in the region. Other proposed developments in the vicinity of the Project Area are not predicted to result in significant cumulative impacts for the Project.

There is the potential for residual cumulative impacts that cannot be anticipated in this Environmental Impact Statement, as further development applications may be progressed in the Parramatta Local Government Area and the region. Nevertheless, Shell would continue to undertake consultation with other members of the business community in the Camellia Industrial Precinct to ensure that cumulative impacts that may arise are appropriately managed if required.

Residual Risk Analysis

A residual risk analysis was undertaken to assess the residual risk of the Project following the implementation of safeguards and mitigation measures. Residual environmental risk was assessed on the basis of the significance of environmental effects of the proposed Project and the ability to manage those effects to minimise harm to the environment.

The residual risk analysis indicates that the proposed Project presents an overall low to medium risk in relation to each of the identified environmental issues, provided that the recommended mitigation, management and monitoring measures are implemented.

Project Justification

The Project is justified from a number of perspectives including social and economic benefits to the New South Wales economy through a robust fuel supply chain for New South Wales including Sydney Airport, and in terms of environmental performance improvements to heavy industry in the Western Sydney region.

The Project supports the principles of Ecologically Sustainable Development and through incorporation of a range of environmental safeguards and measures recommended throughout this Environmental Impact Statement would avoid minimise or manage potential impacts. The Project itself would not have a significant adverse impact on the biophysical environment.

The Environmental Impact Statement has assessed economic considerations and potential economic impacts associated with the proposed Project. The Clyde Terminal would continue to be an important contributor to the local, regional and State economies by providing local direct and indirect employment opportunities by ensuring the security and supply of a significant portion of fuels within New South Wales, including the direct supply to Sydney Airport, as well as supporting demand for local goods and services, particularly during the demolition and construction activities. The potential future reuse of the surplus land created by the Project also has the potential to provide future economic benefits to the local area and region. Given these anticipated benefits, the proposed Project is considered to be justifiable from an economic perspective.

The assessments presented in this Environmental Impact Statement regarding social impacts indicate that provided the mitigation and management measures outlined in the Summary of Mitigation Measures are implemented, the proposed Project would have a minimal and acceptable social impact. The proposed Project is therefore justifiable taking into account potential social impacts.

Conclusion

In summary the Project would involve the demolition of existing surplus and redundant infrastructure at the Project Area and the conversion of a number of remaining assets within the existing Clyde Terminal to more efficiently receive, undertake product dosing activities, store and distribute solely imported finished petroleum products. The Clyde Terminal is one of a few key fuel supply routes servicing the New South Wales economy and is located adjacent to Shell's major distribution terminal (i.e. the Parramatta Terminal). There are multiple companies whose operations rely on fuel supplies from the Parramatta Terminal, particularly for distribution in Western Sydney but also throughout regional locations in New South Wales. The Project would retain a critical Jet fuel supply, source, via Shell's dedicated pipeline into Sydney Airport to meet current and future Jet fuel demand that is not otherwise easily met due to economic and transport logistics constraints.

Provided that the recommended mitigation, management and monitoring measures are implemented, the proposed Project presents an overall low to medium risk in relation to each of the identified environmental issues.

Overall the Project is considered justifiable on biophysical, economic and social grounds, and is considered to be consistent with the principles of Ecologically Sustainable Development.

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1.0 Introduction

1.1 The Project

The Shell Company of Australia Ltd (Shell) is seeking development consent for:

- Demolition of redundant tanks and other infrastructure; and
- Upgrades and improvements to site infrastructure.

The proposed conversion works aim to improve the efficiency of the Clyde Terminal by upgrading existing facilities and structures, improve environmental performance and further improve the safety of the Clyde Terminal while continuing to operate as a viable and efficient finished petroleum product receipt storage and distribution terminal.

The works would include:

- Demolition of existing processing units and other redundant infrastructure within the Project area at the Clyde Terminal.
- Demolition of storage tanks surplus to the ongoing operation of the Clyde Terminal. Storage tanks to be retained at the Terminal would be reallocated into final grades of finished petroleum products.
- Conversion of the retained Clyde Terminal assets to more efficiently receive, store and distribute solely imported finished petroleum products. Products would be distributed by pipeline from the Clyde Terminal to the adjacent Parramatta Terminal road gantry, to Sydney Airport, the Silverwater terminal and to Newcastle. The supply of products would be via the existing distribution infrastructure. Product dosing to enhance product specifications and to aid in product handling, and working product samples back into tanks as part of the quality assurance process would continue to be undertaken at the Clyde Terminal.
- Installation of geodesic domes over Jet fuel storage tanks within Tankfarm B2 to retain the majority of potential odours and emissions emitted from these tanks and to reduce rainwater ingress;
- Upgrades to tank instrumentation and tank control systems to enable remote and automated control;
- Upgrades to tank bunds where necessary;
- Reduction of the gas storage capacity of the Clyde Terminal from 10,851 m^3 to 1,550 m^3 to accommodate the continued receipt (by road tanker) and storage of Butane. Butane would continue to be dosed with winter grades of Gasoline;
- Upgrades to the electrical supply, control and safeguarding systems;
- Increased automation of terminal systems;
- Installation of equipment to provide improved product quality segregation;
- Revised drainage and water treatment to suit reduced operations;
- Modifications to the current fire system to provide articulated foam deployment and fire response for the converted Clyde Terminal arrangement;
- Revised internal facility pumping and piping arrangements;
- Ancillary works to increase the efficiency and effectiveness of the Clyde Terminal and to facilitate safe and efficient operations, such as lighting, safety shutdown systems, control room facilities and amenity upgrades; and
- A reduction in the operational footprint of the Clyde Terminal.

The Project would involve minimal excavation to install concrete load-bearing slabs to 300mm depth for three new electrical substations which are replacing existing aged infrastructure, for grading works within existing tankfarms, and for foundation works associated with the firewater tanks. This is expected to be very minor in nature and isolated to specific areas in the Terminal. The redundant assets are expected to be demolished to grade however, it is possible that in performing the demolition, some footings may require removal.

The Clyde Terminal would remain operational as a receipt (from the Gore Bay Terminal), storage and distribution facility for finished petroleum products during the proposed works. Once the Project is executed and implemented, the Clyde Terminal would continue to operate to receive, store and distribute finished petroleum products, albeit in a more efficient manner.

The development application also seeks development consent for the continued use and maintenance of the Clyde Terminal for the receipt, storage, product specification improvement and distribution of finished petroleum products, as well as to implement updated technology and control systems.

A detailed description of the proposed works is provided in **Section 6**. The project objectives are described in **Section 4.1**.

1.2 Background to the Project

The Shell Clyde Refinery ceased refining Crude Oil in late 2012. The cessation of refining at Shell's Clyde Terminal (hereafter referred to as the Clyde Terminal), has provided an opportunity for the removal of redundant infrastructure and the simplification and improvement of operations as a terminal facility.

In the meantime the Clyde Terminal is continuing to operate as a receipt and storage facility for products from the Gore Bay Terminal, but is now receiving only finished petroleum products from the Gore Bay Terminal rather than the previous mix of crude oils and finished petroleum products. With the exception of Bitumen, Fuel Oil Blending Component and Liquid Petroleum Gas (LPG), the distribution of finished petroleum products would remain unchanged. Distribution would be via the pipeline to the adjacent Parramatta Terminal road gantry, Sydney Airport and the Silverwater Terminal.

Bitumen would no longer be stored and distributed at the Clyde Terminal. As LPG and Fuel Oil Blending Component are by-products of the refining process and would therefore no longer be generated or distributed from the Clyde Terminal. the

Shell is currently progressing two separate applications for development consent. One application is for the modification of Shell's Gore Bay Terminal and its continued post-modification use (the Gore Bay Terminal Modification Project, Application Number: SSD-5148). Upon completion of the Gore Bay Terminal Modification Project, the Gore Bay Terminal would continue to act primarily as a port facility for importing finished petroleum products. Products imported into the Gore Bay Terminal would continue to be transferred to the Clyde Terminal via the existing 19 km underground pipeline that connects the Gore Bay Terminal to the Clyde Terminal.

The second application (and the subject of this Environmental Impact Statement (EIS)) is for the demolition of disused refining infrastructure and other surplus tanks and infrastructure at Shell's Clyde Terminal (The Clyde Terminal Conversion Project, hereafter referred to as the Project), and the conversion of the Clyde Terminal into a more efficient terminal for importing finished petroleum products. It would continue to receive, store undertake product dosing activities and distribute finished petroleum products (Application Number: SSD-5147). The current Project would remove Crude Oil refining infrastructure from the Clyde Terminal, remove redundant storage facilities, increase the storage capacity for finished petroleum products, and upgrade safeguarding, electrical and control systems to create a more effective and efficient finished petroleum products import terminal.

The Clyde Terminal is located at 9 Devon Street, Rosehill within the Camellia Industrial Estate. It is linked to the Gore Bay Terminal via a 19 km pipeline. The location of the Clyde Terminal and the Gore Bay Terminal within a regional context is illustrated in **Figure 1-1** and further described in **Section 2.0**. The Project at the Clyde Terminal would not involve works to the pipeline from the Gore Bay Terminal shown in **Figure 1-2**. The Project Area is illustrated in **Figure 1-3**.

Given the fact that the projects at the Clyde and Gore Bay Terminals are about 19 kilometres apart, and each terminal undertakes different operations, it was not considered practical to assess the impacts of both of these developments within the one EIS. The projects at the Clyde and Gore Bay Terminals are considered independent of each other, and are not reliant on each other's completion.

Demolition of redundant assets at Clyde and the improved efficiency and modernization of the Clyde Terminal is independent of any works proposed for the Gore Bay Terminal. Petroleum products can continue to be pumped directly to the Clyde Terminal from ships berthed at Gore Bay without change to the Gore Bay Terminal. The separate Gore Bay Terminal proposal seeks to introduce environmental and community benefits as well as increase the efficiency and safeguarding systems at this terminal, separate to the Clyde Terminal improvements.

Furthermore, the Shell Clyde Terminal is remote to the Gore Bay Terminal and the scope of the proposed works, products to be stored and assessments required at the two locations are different. The potential for cumulative impacts from the two projects, other than both representing important works to maintain the viability of Shell's operations, is considered to be low.

It is expected that a third application would be submitted at a later stage for remediation (if required) and redevelopment of land at the Clyde Terminal that would become surplus to the requirements for the smaller footprint of the converted Clyde Terminal.

The current Project meets the definition of State Significant Development (SSD) as development for the purposes of a liquid fuels depot with a capital investment value of more than $30 million, and also due to its continuing status as a Major Hazard Facility (MHF) (refer to **Section 1.5.1**). The conversion works and redundant asset removal ;the subject of this EIS (as described in **Section 6.1**) would not commence until Shell obtains development consent for the works. It is expected that the conversion works would be undertaken progressively and would be completed within five to 10 years after the grant of development consent.

It is important to note that 'petroleum products' is a generic term given to hydrocarbon products that range from Crude Oil and feedstocks through to Gasoline, Diesel, Jet fuel, Fuel Oil and gases such as LPG and Butane. However 'finished petroleum products' or 'refined petroleum products' refer to that sub-category of petroleum products that are produced through refining processes such as Gasoline, Diesel, Jet fuel and Fuel Oil, and a range of petroleum gases such as LPG, Propane and Butane. This EIS uses the term 'finished petroleum products' in a collective sense for all of these materials, with reference made to individual classes of finished petroleum products as required for clarity.

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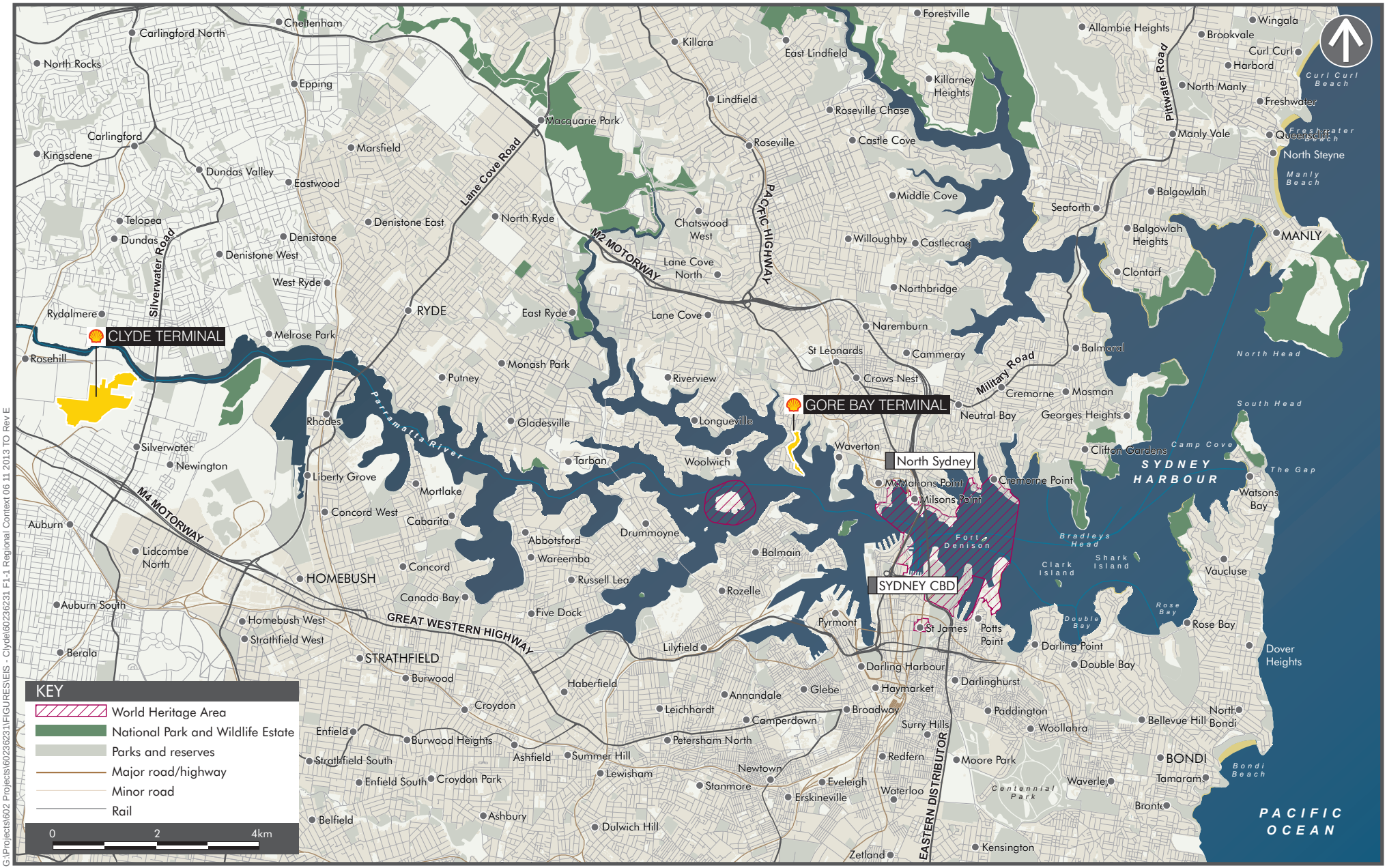

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REGIONAL CONTEXT

Clyde Terminal Conversion Project
Environmental Impact Statement

FIGURE 1-1

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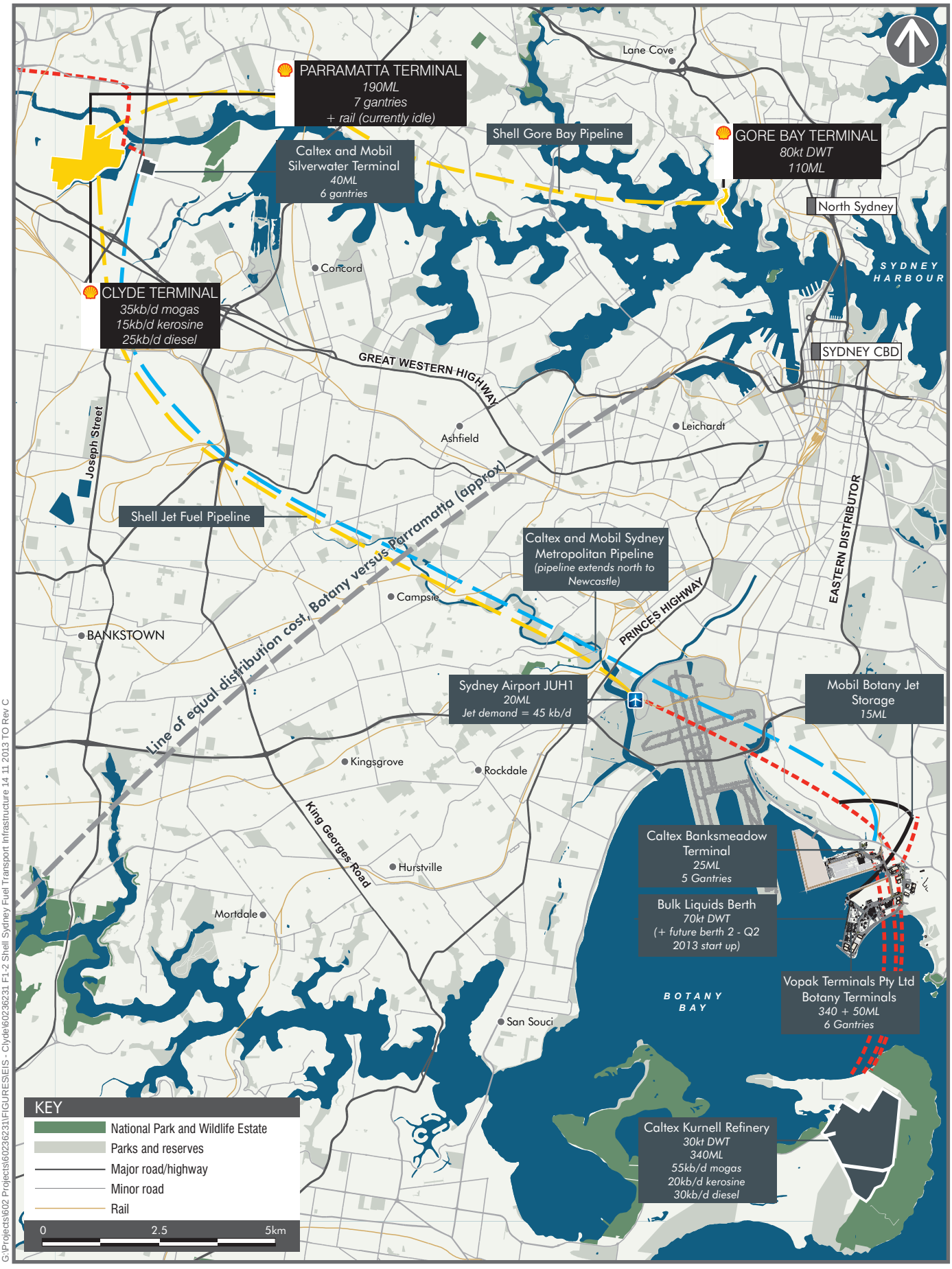

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SHELL SYDNEY FUEL TRANSPORT INFRASTRUCTURE

Clyde Terminal Conversion Project
Environmental Impact Statement

FIGURE 1-2

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G:\Projects\602 Projects\60236231\FIGURES\EIS - Clyde\60236231 F1-3 The Project Area 06 11 2013 TO Rev G

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THE PROJECT AREA

Clyde Terminal Conversion Project
Environmental Impact Statement

FIGURE 1-3

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1.3 Location and Setting

Shell's Clyde Terminal is located at 9 Devon Street, Rosehill, in the Sydney Metropolitan area on the upper reaches of Sydney Harbour in NSW (refer to **Figure 1-4**). The Project Area is situated within the Camellia Industrial Estate in the suburb of Rosehill and lies at the confluence of Parramatta River and Duck River. The Project Area comprises the existing Clyde Terminal, including various tankfarms, support areas and administration buildings and is shown on **Figure 1-3**..

The Clyde Terminal covers 86 hectares (ha) and is located in the Parramatta Local Government Area (LGA) on parts of Lot 1, Deposited Plan (DP) 109739, Lot 1 DP 383675, Lot 101 DP 809340, and Lot 2 DP 224288 which are owned by Shell. Shell's Clyde Terminal operations also take place on a small parcel of land adjoining Parramatta River (Lot 1 DP 534905) that is leased by Shell from NSW Roads and Maritime Service (RMS). On this parcel of land, Shell operates a small wharf area including administrative buildings and a small jetty which extends into the Parramatta River (refer to **Figure 1-3**). Historically, the site of this jetty was an old barge unloading area, but it now serves as a spill control boat launching site.

The Project Area includes the Shell Refinery Warehouse which is located on Lot 1, DP 109739, but which is surrounded by Shell's Parramatta Terminal operations. These properties and their ownership details are provided in **Table 1-1**.

Table 1-1 Shell Clyde Terminal Property Ownership Details

Lot and DP details	Ownership Information
Lot 1, DP 109739	Shell Refining (Australia) Pty Ltd
Lot 1, DP 383675	Shell Refining (Australia) Pty Ltd
Lot 101, DP 809340	Shell Refining (Australia) Pty Ltd
Lot 2, DP 224288	Shell Refining (Australia) Pty Ltd
Lot 1, DP 534905	NSW RMS (outside of the current Project Area) – leased by Shell

Shell Refining (Australia) Pty Ltd (SRAP) also owns parcels of land adjacent to the Project Area which are currently leased to third parties. A section of Lot 101 DP 809340 forms part of Shell's operations at the Project Area, however much of this lot is currently leased to tenants. Lot 1, DP 109739 also includes Shell's operations at the adjoining Parramatta Terminal and a small section is also leased to a third party. These areas are not included as part of this assessment. Lot 398 DP 41324 is a small parcel of land that also comprises Shell's operations at the Parramatta Terminal which adjoins the Project Area.

The Project Area abuts Devon, Unwin, Colquhoun and Durham Streets to the west. Grand Avenue runs along the northern side of the Project Area. The southern and eastern sides of the Project Area are bounded by Parramatta River and Duck Rivers (refer to **Figure 1-3**).

The Project Area and much of the surrounding area are zoned as IN3 Heavy Industrial under the *Parramatta Local Environmental Plan 2011* (LEP 2011). There is a SP2 Infrastructure (Railway Corridor) zone to the north of the Project Area which is not currently used. The Parramatta River which is located to the north and east of the Project Area is zoned as W2 Recreational Waterways, and the Duck River to the south and east of the Project Area is zoned W1 Natural Waterways. LEP 2011 classes the strip of land running along the southern to eastern boundary of the Project Area as Riparian Land and Waterways, and also as an LEP heritage listed wetland (refer to **Figure 1-5**). A remnant wetland which receives clean waste water from the Project Area lies in the north-eastern section of the Project Area and is heritage zoned under LEP 2011. These areas of riparian vegetation fall outside of the project footprint and would not be directly affected by the Project (refer to **Section 16.3** and in particular **Figure 6-1**).

Surrounding landowners, including the companies that lease parcels of land owned by SRAP are discussed in **Section 2.2.3**.

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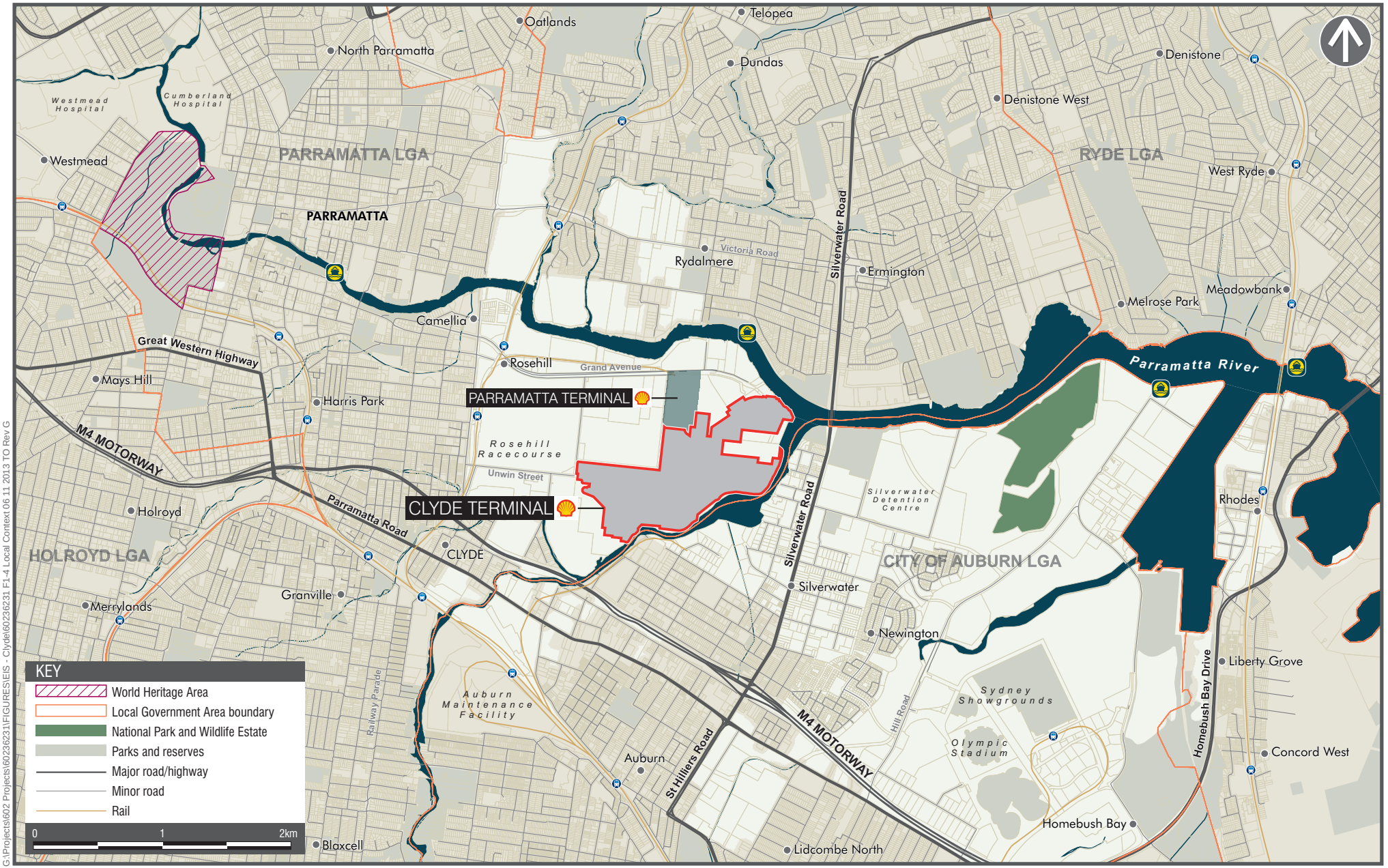

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LOCAL CONTEXT

Clyde Terminal Conversion Project
Environmental Impact Statement

FIGURE 1-4

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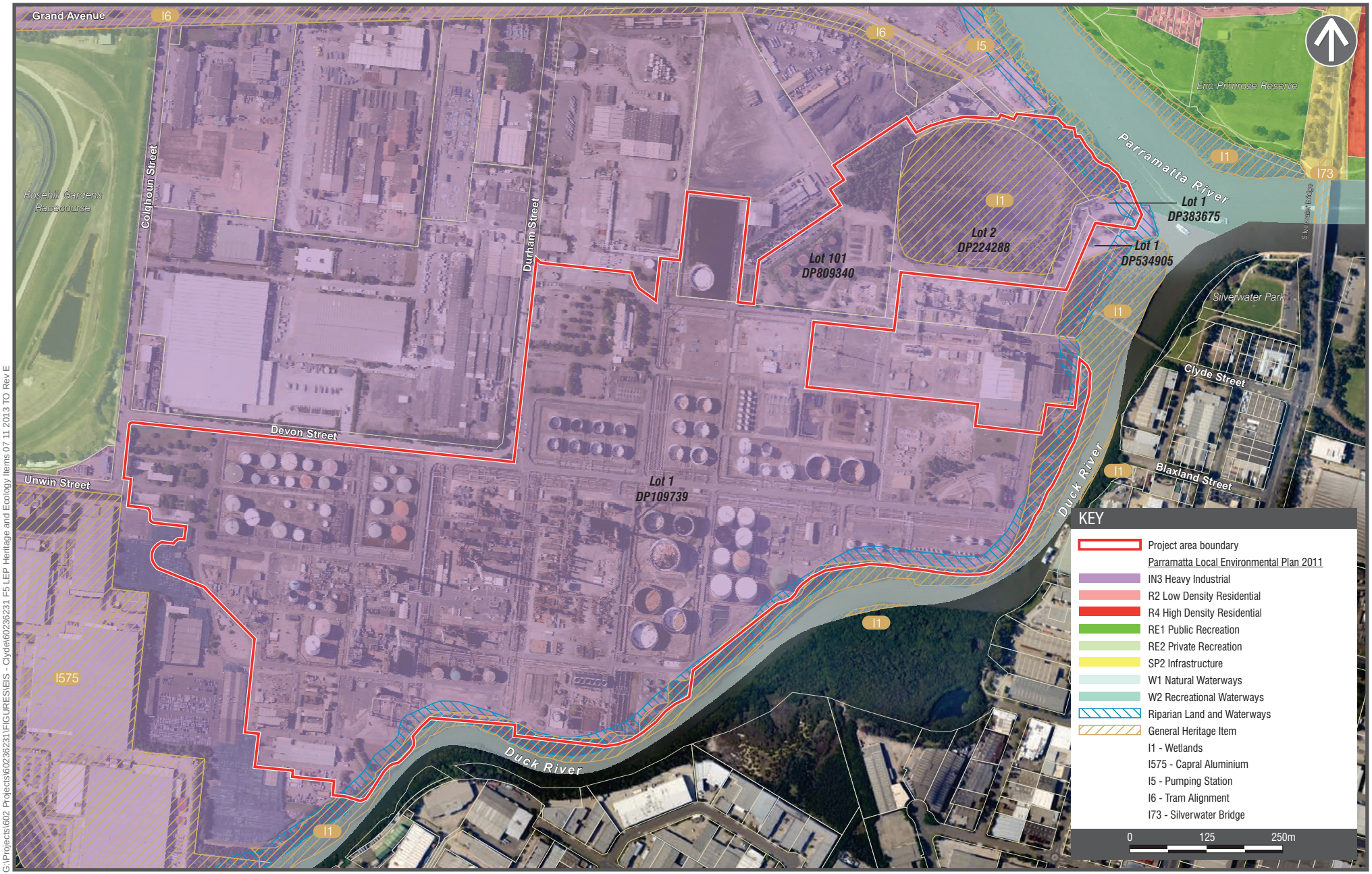

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PARRAMATTA LOCAL ENVIRONMENT PLAN ZONING

Clyde Terminal Conversion Project
Environmental Impact Statement

FIGURE 1-5

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1.4 The Proponent

The Applicant, The Shell Company of Australia Limited, is the primary trading entity for the downstream operations of the Shell Group in Australia, including its supply, distribution and marketing businesses. The Applicant is a wholly owned subsidiary of Shell Australia Limited, as is SRAP, which currently owns the land at Clyde. SRAP has consented to the Applicant making this application.

The Shell Group is a global group of energy and petrochemical companies parented by Royal Dutch Shell plc. The Group's international headquarters are located in The Hague, Netherlands. In 2011, the Shell Group reported global revenue in excess of $470 billion (Shell, 2012d). Across the global business in 2011, the Shell Group had operations in more than 80 countries and employed over 90,000 personnel (Shell, 2012d). Globally, the Shell Group operated more than 30 refineries worldwide in 2011, with the capacity to process more than three million barrels of Crude Oil per day. The Shell Group also operated more than 43,000 service stations in over 80 countries during this time, as well as 150 distribution facilities in over 25 countries (Shell, 2012d).

Shell Group companies have been operating in Australia since 1901 and the Group's Australian downstream headquarters are located in Melbourne, Victoria. The Shell Group's Australian business ventures are separated into upstream and downstream activities, which in total employ approximately 2,500 people. Upstream activities in Australia include the exploration, development and supply of Liquefied Natural Gas to overseas markets, the supply of natural gas in Western Australia and Queensland, as well as joint venture partnerships in a number of petroleum product exploration projects. The downstream component of The Shell Group's business in Australia comprises the refining, supply, manufacture, distribution and marketing of oil products. In Australia, Shell supplies approximately 25 percent of Australia's petroleum products. This includes the supply of Gasoline to more than 900 Shell branded service stations, which are operated by Coles Express and individual operators. The Shell Group's Australian downstream business activities also supply more than one third of the country's bitumen for use on private and Government roads. Nationally, the Shell Group also operates a refinery in Geelong, Victoria, a lubricants blending plant and 16 coastal terminals.

Shell's operations in NSW include:

- The Gore Bay Terminal which is a port facility for the import of petroleum products, and also for the supply of marine Fuel Oil and Diesel from the Gore Bay Terminal to shipping customers including cruise and container lines, tankers and ferries from the Gore Bay Terminal;
- The Clyde Terminal which receives, stores, undertakes product dosing and distributes around 40 percent of the NSW refined petroleum requirements (i.e. around 4.4 billion litres per annum), and which also provides the bulk supply of Jet Fuel to Sydney Airport via a direct pipeline from the Clyde Terminal, as well as the bulk supply of products to Newcastle via the Hunter pipeline from the Clyde Terminal;
- The Parramatta Terminal; a seven bay main fuels gantry joint facility with British Petroleum (BP) handling an annual throughput of around 2.7 billion litres. The Parramatta Terminal also includes a packed lubricants warehouse and lube oil tankfarm which stores finished bulk products;
- The pipeline between the Gore Bay Terminal and the Clyde Terminal;
- Supply to more than 240 retail sites operated by Coles Express and individual operators; and
- Import and supply of road bitumen from interstate sources following the shutdown of the Bitumen plant at Clyde.

1.5 Environmental Impact Assessment Process

1.5.1 Decisions and Assessments

The Clyde Terminal operates under a combination of continuing use rights in accordance with section 109 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and development consents that have been granted over time. Recent major development approvals that were granted under the now repealed Part 3A of the EP&A Act include the Hydrodesulphurization Unit Upgrade and Fluidised Catalytic Cracking Unit Reactor and Regenerator Rejuvenation projects.

This development application seeks to replace current development consents and continuing use rights by obtaining a modern development consent which authorises and regulates the proposed conversion and ongoing activities at the Clyde Terminal. The Project would be assessed under Part 4, Division 4.1 of the EP&A Act as SSD. The Project falls under the category of SSD as it:

- Initially triggers the requirement for development consent under the EP&A Act as per the provisions of LEP 2011; and
- Falls under the definition of SSD in *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP) Schedule 1, clauses 10 (2) and (3) as both redevelopment of an MHF and a liquid fuels depot with a capital investment value of more than $30 million (refer to **Section 7.2**).

The cessation of crude refining and the subsequent change in products stored at the Clyde Terminal since late 2012 (from Crude Oils and finished petroleum products to finished petroleum products only) has already reduced the current risk profile of the Project Area. The Project Area, however, still remains classified as a MHF (refer to **Section 7.5.1**). As noted in **Section 7.1**, development for the purposes of a liquid fuel depot is permissible with consent under LEP 2011.

Section 89D of the EP&A Act states that the Minister for Planning and Infrastructure is the consent authority for all SSD. However on 1 October 2012, these functions of the Minister were largely delegated to the Planning and Assessment Commission (PAC) and in some cases to senior staff of the Department of Planning and Infrastructure (DP&I). The PAC will determine the development application for this Project, unless the following criteria are met, in which case a senior staff member of the DP&I may act on delegated authority to determine the application:

- Where less than 25 public submissions in the nature of objections are received;
- Where the local council does not object to the Project; and
- Where there have been no reportable political donations made in relation to the Project.

Should the consent authority role be filled by the PAC, it would not alter the statutory environmental assessment process. The DP&I would prepare its assessment report on the Project as it would otherwise do for the Minister. The PAC or senior DP&I staff would consider this EIS, any submissions on the EIS and other relevant input. The consent authority may also call on Shell and other stakeholders to provide additional input into its consideration of the Project if required. The consent authority would produce a brief report on its assessment of the Project and would proceed to determine the application (i.e. approve or refuse). The environmental impact assessment process for the Project is illustrated in **Figure 1-6**.

The development application is accompanied by this EIS as required under section 78A(8A) of the EP&A Act and the EIS has been prepared in accordance with the Director-General's Requirements (DGRs) issued for the Project on 16 March 2012 (refer to **Appendix A** of **Volume 2** of this EIS).

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AECOM

ENVIRONMENTAL ASSESSMENT PROCESS
Clyde Terminal Conversion Project
Environmental Impact Statement

FIGURE 1-6

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1.5.2 Impact Assessment Requirements

An EIS Scoping Report for the Project was prepared in January 2012 and provided to the DP&I and other relevant regulatory agencies. The EIS Scoping Report provided a description of the proposed Project and justification for the Project, set out a preliminary environmental assessment undertaken for the Project, and outlined the potential environmental issues that are considered more thoroughly in this EIS.

Various meetings have been held between Shell, AECOM, regulators and authorities that have focused on key environmental issues associated with the proposed Project. The regulators and authorities that have been consulted include:

- DP&I;
- NSW Office of Environment and Heritage (OEH);
- NSW Environment Protection Authority (EPA);
- Parramatta City Council;
- Sydney Ports Corporation;
- RMS;
- WorkCover;
- NSW Office of Water (NOW);
- Fire and Rescue NSW;
- Sydney Metropolitan Catchment Management Authority (SMCMA); and
- Ministry of Health.

Various stakeholder meetings have been held in relation to this development application (refer to **Section 9.0** for stakeholder consultation). Consultation prior to and during the preparation of this EIS has also been undertaken with the local community, including nearby businesses and landowners, and Aboriginal Interest Groups. Consultation activities are detailed further in **Section 9.3**.

DGRs for the Project are discussed in more detail in **Section 9.2**.

1.5.3 Purpose of this Report

This EIS has been prepared by AECOM Australia Pty Ltd (AECOM), on behalf of Shell and in accordance with Division 4.1, Part 4 of the EP&A Act and the DGRs issued by the Director-General. The purpose of this EIS is to describe the nature of the activities proposed as part of the Project and to assess the potential impacts of these activities on the natural, built and social environments. This EIS presents:

- A detailed description of the Project;
- Assessment of the nature and extent of the potential environmental, social and economic impacts of the Project; and
- A description of the management and mitigation measures to be implemented during demolition, construction and operation of the Project to minimise potential impacts on the environment.

A range of specialist technical reports have been prepared to address the key environmental issues associated with the Project. These technical reports are presented in the appendices to this EIS and are summarised in relevant Sections of this EIS. It is therefore important that the EIS is read in conjunction with these technical assessments.

1.5.4 Environmental Impact Statement Exhibition

The development application and accompanying EIS will be placed on public exhibition by DP&I for a minimum statutory period of 30 days. During the exhibition period any person may make a submission regarding the Project, and these submissions will be considered in the assessment of the development application. Submissions can be made online at http://majorprojects.planning.nsw.gov.au/ or in writing (citing development application number SSD – 5147) and addressed to the planning officer listed below:

Department of Planning and Infrastructure
Attention: Ms Deana Burn
GPO Box 39
Sydney NSW 2001