

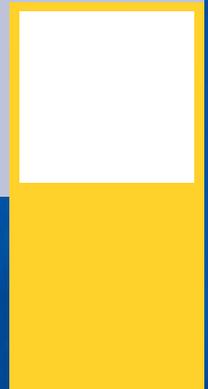


# CLYDE TERMINAL CONVERSION PROJECT

## **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

Prepared by

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## Table of Contents

Acronyms	i
Declaration under Part 3, Schedule 2 of the Environmental Planning and Assessment Regulation 2000	vii
Executive Summary	ix
1.0 Introduction	1
1.1 The Project	1
1.2 Background to the Project	2
1.3 Location and Setting	11
1.4 The Proponent	17
1.5 Environmental Impact Assessment Process	17
1.5.1 Decisions and Assessments	17
1.5.2 Impact Assessment Requirements	21
1.5.3 Purpose of this Report	21
1.5.4 Environmental Impact Statement Exhibition	22
2.0 Location and Context	23
2.1 Overview of Sydney Harbour	23
2.2 Overview of Parramatta and Surrounds	23
2.2.1 Parramatta Local Government Area	23
2.2.2 Catchment Area	23
2.2.3 Surrounding Industrial Area	24
2.3 Land Use Context	29
2.3.1 Clyde Terminal	29
2.3.2 Other Surrounding Land Uses	29
2.4 Strategic Land Use Planning	30
3.0 Site History	31
3.1 Historical Operation of the Former Clyde Refinery	31
3.1.1 Historical Relationship between the Clyde Refinery and the Gore Bay Terminal Operations	33
3.2 Current Operations at the Clyde Terminal	34
3.2.1 Existing relationship between Clyde Terminal and Gore Bay Terminal Operations	35
4.0 Project Need	37
4.1 Project Objectives	37
4.2 Background to Cessation of Refining	37
4.2.1 Regional Competition	37
4.2.2 Continuing Deregulation	38
4.2.3 Crude Oil Importation	38
5.0 Alternatives Considered	41
5.1 Decision Making Process	41
5.2 Key Alternatives Considered	41
5.2.1 Smaller Footprint	42
5.2.2 Alternative Terminal Facility	43
5.2.3 Use of Existing Third Party Distribution Terminal	43
5.2.4 Use of Existing Third Party Receiving Terminal	44
5.2.5 Do Nothing Approach	45
5.3 Conclusion	45
6.0 Project Description	47
6.1 Proposed Works	47
6.1.1 Demolition Works	53
6.1.2 Tank Works	54
6.1.3 Electrical and Instrumentation Works	61
6.1.4 Tank Overfill Prevention	61
6.1.5 Bunding and Spill Management	62
6.1.6 Drainage and Surface Water Management	62
6.1.7 Ancillary Works	62

	6.1.8	Sewerage	63
	6.1.9	Natural Gas	63
	6.1.10	Gore Bay – Clyde Pipeline	63
6.2		Demolition and Construction Programs	63
	6.2.1	Demolition and Construction Personnel	63
	6.2.2	Construction Workforce Recruitment	64
	6.2.3	Road Access	64
	6.2.4	Construction Vehicles and Equipment	64
6.3		Future Operations	65
	6.3.1	Future Relationship between the Clyde Terminal and Gore Bay Terminal Operations	66
6.4		Operational Workforce and Hours of Operation	66
6.5		Environmental Management and Monitoring	66
	6.5.1	Demolition and Construction	66
	6.5.2	Operation	67
6.6		Quality Assurance and Quality Control	67
	6.6.1	Quality Management System	67
	6.6.2	Roles and Responsibilities	68
	6.6.3	Control of Non-Conformance and Corrective Action	68
	6.6.4	Documentation and Communication Procedure	68
6.7		Additional Future Uses of the Project Area	68
7.0		Environmental Planning Considerations	69
	7.1	Permissibility	69
	7.2	Assessment Process	69
	7.2.1	Continuing Use Rights	69
7.3		Environmental Planning Instruments	76
	7.3.1	Parramatta Local Environmental Plan 2011	77
	7.3.2	State Environmental Planning Policy (State and Regional Development) 2011	78
	7.3.3	State Environmental Planning Policy No. 33 – Hazardous and Offensive Development	78
	7.3.4	State Environmental Planning Policy No. 55 – Remediation of Land	79
	7.3.5	Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	79
7.4		NSW Environmental Approvals	80
7.5		Other NSW Legislative Requirements	83
	7.5.1	Work Health and Safety Act 2011 (WH&S Act) and Regulation 2011 (WH&S Regulation)	83
	7.5.2	Threatened Species Conservation Act 1995	83
	7.5.3	Contaminated Land Management Act 1997	84
	7.5.4	Environmentally Hazardous Chemicals Act 1985	85
	7.5.5	Protection of the Environment Operations (Waste) Regulation 2005	85
	7.5.6	Radiation Control Regulation 2003	85
	7.5.7	Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008	85
7.6		Commonwealth Environmental Legislation	86
	7.6.1	Environment Protection and Biodiversity Conservation Act 1999	86
	7.6.2	National Greenhouse and Energy Reporting Act 2007	87
8.0		Environmental Management Framework	89
	8.1	Environmental Policy Statement	89
	8.2	HSSE Management System	89
	8.2.1	Standards and Manuals	89
	8.2.2	Environmental Management System Roles and Responsibilities	90
	8.2.3	Environmental Management and Monitoring Plans	91
	8.2.4	Occupational Health and Safety	92
8.3		Approvals and Licences	93
	8.3.1	Environment Protection Licence	93
	8.3.2	Other Environmental Approvals	94
	8.3.3	Major Hazard Facility	94
9.0		Stakeholder Engagement	97

	9.1	Stakeholder Identification	97
	9.2	Director General's Requirements	98
	9.3	Consultation	102
	9.3.1	Local Community and Business Consultation	102
	9.3.2	Aboriginal Interest Groups Consultation	103
	9.3.3	Public Authorities and Regulatory Consultation	105
	9.3.4	Workforce Consultation	107
	9.4	Other Department and Agency Key Issues and Assessment Requirements	107
10.0		Identification of Key Assessment Issues	127
	10.1	Approach to Identification of Key Environmental Issues	127
	10.1.1	Environmental Risk Screening	127
	10.1.2	Review of Expected Stakeholder Interest	128
	10.2	Screening of Environmental Assessment Significance	128
	10.3	Identification of Key Environmental Assessment Issues	131
11.0		Transport	133
	11.1	Existing Conditions	133
	11.1.1	The Local Road Network	133
	11.1.2	The Surrounding Road Network	137
	11.1.3	Daily Traffic Volumes	137
	11.1.4	Peak Hour Traffic Volumes	138
	11.1.5	Operational Performance	140
	11.2	Predicted Impacts	143
	11.2.1	Construction Hours, Workforce and Traffic Movements	143
	11.2.2	Operation of the Converted Clyde Terminal	145
	11.2.3	Capacity, Efficiency and Safety	146
	11.2.4	Potential Cumulative Impacts	146
	11.3	Mitigation Measures	147
	11.4	Residual Impacts	147
12.0		Social and Economic Effects	149
	12.1	Existing Social and Economic Conditions	149
	12.1.1	Parramatta Local Government Area	149
	12.2	Potential Impacts	149
	12.2.1	Workforce	149
	12.2.2	Other Potential Socio-Economic Impacts during Demolition and Construction	150
	12.2.3	Converted Terminal Impacts	150
	12.3	Mitigation Measures	151
	12.4	Residual Impacts	151
13.0		Surface Water, Industrial Water and Flooding	153
	13.1	Existing Conditions	153
	13.1.1	Water Catchment	153
	13.1.2	Surface Water and Industrial Water	157
	13.1.3	Flooding	161
	13.1.4	Riparian Vegetation	177
	13.2	Predicted Impacts	177
	13.2.1	General Project Impacts	177
	13.2.2	Changes to Surface Water and Industrial Water Management	178
	13.2.3	Demolition and Construction Impacts	178
	13.2.4	Flooding	183
	13.2.5	Riparian Vegetation	187
	13.3	Mitigation Measures	187
	13.4	Residual Impacts	188
14.0		Land Use	189
	14.1	Existing Conditions	189
	14.1.1	LEP Land Use Context	189
	14.1.2	Strategic Land Use Context	189
	14.2	Predicted Impacts	190
	14.2.1	Land Use Compatibility	190
	14.2.2	Compatibility with LEP Land Use Zoning	191

	14.2.3	Compatibility with Land Use Context	191
	14.3	Mitigation Measures	193
	14.4	Residual Impacts	194
15.0		Air Quality and Odour	195
	15.1	Existing Conditions	195
	15.1.1	Current Management of Air Quality	195
	15.1.2	Methodology	196
	15.2	Predicted Impacts	197
	15.2.1	Potential Pollutant Sources	197
	15.2.2	Pollutants of Interest	198
	15.2.3	Emissions Estimation	199
	15.2.4	Sensitive Receivers	200
	15.2.5	Annual VOC Emission Rates	200
	15.2.6	Dispersion Modelling Results	200
	15.2.7	Overall Project Impacts	201
	15.3	Mitigation Measures	202
	15.4	Residual Impacts	202
16.0		Ecology	203
	16.1	Methodology	203
	16.2	Existing Conditions	204
	16.2.1	Local Vegetation	205
	16.2.2	Threatened and Endangered Ecological Communities	206
	16.2.3	Weeds	206
	16.2.4	Threatened Flora	207
	16.2.5	Threatened Fauna	207
	16.2.6	Threatened Marine Fauna	211
	16.2.7	Migratory Fauna	215
	16.3	Potential Impacts	215
	16.3.1	Threatening Process	215
	16.3.2	Potential Impacts to Terrestrial Flora and Fauna	216
	16.3.3	Potential Impacts to Marine Species	226
	16.3.4	Potential Impacts to Migratory and Wetland Species	226
	16.3.5	Summary of Overall Impacts	226
	16.4	Mitigation Measures	227
	16.4.1	Protection of Fauna	227
	16.4.2	Protection of Flora	229
	16.4.3	Weed Management	229
	16.4.4	Plant Pathogen Hygiene	230
	16.4.5	Protection of Aquatic Environments	230
	16.5	Residual Impacts	231
17.0		Soil and Groundwater Contamination	233
	17.1	Existing Conditions	233
	17.1.1	Topography	233
	17.1.2	Soil and Geology	233
	17.1.3	Hydrogeology	235
	17.1.4	Acid Sulfate Soils	235
	17.1.5	History of Investigations	239
	17.1.6	Groundwater	243
	17.1.7	Contaminants of Concern	245
	17.1.8	Current Management of Soil and Groundwater	246
	17.2	Potential Impacts	252
	17.2.1	General Project Impacts	252
	17.2.2	Acid Sulfate Soils	253
	17.2.3	Groundwater Management Policies in NSW	253
	17.2.4	Groundwater Dependent Ecosystems	258
	17.2.5	Ecological and Human Health Risks	259
	17.3	Mitigation Measures	261
	17.3.1	Demolition and Construction Mitigation Measures	261

	17.3.2	Ongoing Operational Mitigation Measures	263
	17.4	Residual Impact	264
18.0		European Heritage	265
	18.1	Existing Conditions	265
	18.1.1	Methodology	265
	18.1.2	Desktop Investigations	265
	18.1.3	Previous Heritage Assessments	267
	18.1.4	Heritage Significance Assessment	267
	18.1.5	Site Inspection	268
	18.1.6	Archaeological Potential and Items of Heritage Significance	273
	18.2	Predicted Impacts	273
	18.2.1	Overview of Predicted Impacts	273
	18.2.2	Statement of Heritage Impact Assessment	274
	18.2.3	Statement of Significance	275
	18.3	Mitigation Measures	276
	18.4	Residual Impacts	276
19.0		Hazard and Risk	277
	19.1	Existing Environment	277
	19.1.1	Existing Clyde Terminal	277
	19.1.2	Surrounding Land Uses	278
	19.2	Methodology	278
	19.2.1	Multi-Level Risk Assessment	278
	19.3	Potential Impacts	279
	19.3.1	Hazard Identification	279
	19.3.2	Consequence Assessment	280
	19.3.3	Likelihood Assessment	286
	19.3.4	Risk Assessment	287
	19.3.5	Conclusions of the Preliminary Hazard Assessment	297
	19.3.6	Implementation of Recommendations from the Buncefield Incident Investigation	297
	19.4	Mitigation Measures	302
	19.5	Residual Impacts	304
20.0		Waste Management	305
	20.1	Existing Conditions	305
	20.1.1	Waste Management Guidelines	305
	20.1.2	Current Waste Management Practices	306
	20.2	Predicted Impacts	311
	20.3	Mitigation Measures	313
	20.3.1	Demolition and Construction Waste Mitigation Measures	313
	20.3.2	Operational Waste Mitigation Measures	314
	20.3.3	Hazardous Waste Mitigation Measures	315
	20.4	Residual Impacts	315
21.0		Aboriginal Heritage	317
	21.1	Existing Conditions	317
	21.1.1	Desktop Investigations	317
	21.1.2	Site Inspection	318
	21.2	Predicted Impacts	319
	21.3	Mitigation Measures	319
	21.4	Residual Impacts	320
22.0		Noise and Vibration	321
	22.1	Existing Conditions	321
	22.1.1	Noise and Vibration Criteria	321
	22.1.2	Receivers	323
	22.1.3	Noise Monitoring	327
	22.1.4	Unattended Noise Monitoring	329
	22.1.5	Attended Noise Monitoring	329
	22.2	Potential Impacts	330
	22.2.1	Demolition and Construction Noise	330

	22.2.2	Traffic Noise	333
	22.2.3	Blasting Noise and Vibration	335
	22.2.4	Operational Noise	340
22.3		Mitigation Measures	342
	22.3.1	Demolition and Construction	342
	22.3.2	Traffic Noise	342
	22.3.3	Blasting	342
	22.3.4	Operational Noise	343
	22.4	Residual Impacts	343
23.0		Greenhouse Gas Emissions	345
	23.1	Existing Conditions	345
	23.2	Predicted Impacts	346
	23.2.1	Scope 1 Emissions	346
	23.2.2	Scope 2 Emissions	346
	23.2.3	Scope 3 Emissions	347
	23.3	Mitigation Measures	347
	23.4	Residual Impacts	347
24.0		Landscape and Visual Amenity	349
	24.1	Existing Conditions	349
	24.2	Predicted Impacts	353
	24.3	Mitigation Measures	355
	24.4	Residual Impacts	355
25.0		Cumulative Impacts	357
	25.1	Existing Conditions	357
	25.2	Predicted Impacts	360
	25.3	Mitigation Measures	362
	25.4	Residual Impacts	362
26.0		Residual Risk Analysis	363
	26.1	Methodology	363
	26.2	Analysis	364
	26.3	Conclusion	365
27.0		Summary of Mitigation Measures	367
	27.1	Environmental Commitment	367
	27.2	Summary of Mitigation Measures	367
	27.3	Statutory Commitment	383
28.0		Environmental Management and Monitoring	385
	28.1	Construction Environment Management Plan	385
	28.2	Operational Environment Management Plan	385
	28.2.1	Training and Induction	386
	28.2.2	Emergency Response	386
	28.2.3	Incident Reporting	386
	28.2.4	Clyde Terminal HSSE MS	386
	28.2.5	Monitoring Program	386
	28.2.6	Environmental Reporting	387
	28.2.7	Auditing	387
29.0		Project Justification	389
	29.1	The Need for the Project	389
	29.2	Justification for the Project	389
	29.2.1	Biophysical Considerations	389
	29.2.2	Social and Economic Considerations	390
	29.2.3	Ecologically Sustainable Development	390
	29.3	Summary	395
30.0		Concluding Statement	397
		References	399
		Appendix A	
		Director-General's Requirements and Regulatory Authority's Key Issues for Assessment	A

Appendix B	Transport Impact Assessment	B
Appendix C	Air Quality and Odour Assessment	C
Appendix D	Ecological Assessment	D
Appendix E	Clyde Refinery Historical Archaeological Assessment	E
Appendix F	Preliminary Hazard Assessment	F
Appendix G	Aboriginal Cultural Heritage Assessment	G
Appendix H	Noise Impact Assessment	H
Appendix I	Greenhouse Gas Assessment	I

#### List of Plates

Plate 1	Relationship between the historical Clyde Refinery and the Gore Bay Terminal	33
Plate 2	Current relationship between the Clyde Terminal and Gore Bay Terminal	36
Plate 3	Tanks 53, 51, 42 and 35 to be Retained	56
Plate 4	Tanks 55, 57, 59 and 61 to be demolished	57
Plate 5	Proposed relationship between the Clyde Terminal and Gore Bay Terminal	66
Plate 6	Traffic Volumes on James Ruse Dr / Hassall St / Grand Ave Recorded in 2011- AM and PM Peaks (Source: AECOM, 2012)	139
Plate 7	Traffic Volumes on James Ruse Dr / Hassall St / Grand Ave Recorded in 2011 - Inter-Peak Period (Source: AECOM, 2012)	139
Plate 8	Traffic Volumes on James Ruse Dr / Berry St / Parramatta Rd Recorded in 2011 (Source: AECOM, 2012)	140
Plate 9	Traffic Volumes on Grand Ave / Grand Ave North Recorded in 2011 (Source: AECOM, 2012)	140
Plate 10	Intersection Layout - James Ruse Drive / Hassall Street / Grand Avenue (Source: AECOM, 2012)	142
Plate 11	Intersection Layout - James Ruse Drive / Parramatta Road / Berry Street (Source: AECOM, 2012)	142
Plate 12	Intersection Layout - Grand Avenue / Grand Avenue North (Source: AECOM, 2012)	143
Plate 13	Soil Landscapes within the Project Area and surrounds	234
Plate 14	Location of chimneys for which blasting works are required	336
Plate 15	Boiler Stacks at the Project Area	350
Plate 16	Views of the Clyde Terminal from the John Street Ferry Wharf Rydalmere, looking through Vegetation Screen	351
Plate 17	Views of the Clyde Terminal from the M4 Western Motorway toward the Project Area	351
Plate 18	Significant District View of the Clyde Terminal from Ermington, view taken from South Street, Ermington	352
Plate 19	Views of the Clyde Terminal from the John Street Ferry Wharf Rydalmere, looking past Native Vegetation Screen	353

## List of Tables

Table 1-1	Shell Clyde Terminal Property Ownership Details	11
Table 2-1	The Roles of the SMCMA, Sydney Ports Corporation and NSW Maritime in the Management of Sydney Harbour	23
Table 2-2	Surrounding Properties and Business Activities	24
Table 6-1	Proposed Future Use of Storage Tanks at the Clyde Terminal	55
Table 6-2	Clyde Terminal Current and Future Workforce Numbers	64
Table 7-1	Development Consents Applicable to the Project Area	70
Table 7-2	Land Use Objectives of Zone IN3 Heavy Industrial under LEP 2011	77
Table 7-3	Relevant Environmental Approvals	80
Table 7-4	Matters of National Environmental Significance	86
Table 9-1	Department of Planning and Infrastructure's Director General's Assessment Requirements	98
Table 9-2	Summary of local community and business consultation activities	102
Table 9-3	Registered Aboriginal Party Responses to Draft Report	104
Table 9-4	Key Issues and Assessment Requirements raised by the OEH and EPA	108
Table 9-5	Key Issues and Assessment Requirements raised by Parramatta City Council	118
Table 9-6	Key Issues and Assessment Requirements raised by Roads and Maritime Services	119
Table 9-7	Key Issues and Assessment Requirements raised by WorkCover NSW	119
Table 9-8	Key Issues and Assessment Requirements raised by NOW	119
Table 10-1	Significance Screening Matrix	127
Table 10-2	Screening Levels – Expected Stakeholder Interest	128
Table 10-3	Outcomes of Screening of Environmental Assessment Significance	128
Table 10-4	Identification of Key and Other Environmental Assessment Issues	131
Table 11-1	AADT on the Adjacent Road Network	138
Table 11-2	Intersection Performance Recorded in 2011	141
Table 11-3	Project Staff Numbers and Vehicle Movements	144
Table 13-1	Factors Affecting Water Quality in the Parramatta between 1990 and 2007 (Laxton et al, 2008)	153
Table 13-2	Monitoring Requirements for Water Discharged under EPL No. 570	155
Table 13-3	Clyde Terminal Catchment Areas	157
Table 13-4	Parramatta City Council Development Control Guidelines for Flood Liable Land	183
Table 14-1	Objectives for Special Precincts under the DCP 2011	191
Table 15-1	Benzene Impact Assessment Criterion 99.9 <sup>th</sup> Percentile	196
Table 15-2	Potential Pollution Sources from the Project Operation	198
Table 15-3	Source Parameters	199
Table 15-4	Emission Rates for Annual Return Periods and Predicted Emissions from the Project	200
Table 15-5	Maximum One Hour Average Concentration (99.9 <sup>th</sup> percentile) for VOCs	201
Table 16-1	Vulnerable, Endangered and Critically Endangered Terrestrial and Marine Flora and Fauna Identified within 10 km of the Project Area	204
Table 16-2	Summary of GGBF Detected or Where Potential Habitat May Occur	209
Table 16-3	EPBC Act and TSC Act Tests for Grey-headed Flying-fox	218
Table 16-4	TSC Act Test for Microbat Species	220
Table 16-5	Summary of Impacts to Known and Potential Green and Golden Bell Frog Habitat at the Project Area	221
Table 16-6	EPBC Act and TSC Act Tests for Green and Golden Bell Frog	223
Table 16-7	Grey-headed Flying-fox/Microbat Inspection Signs (Eco Logical, 2012)	229
Table 17-1	Soil Landscapes within the Project Area	234
Table 17-2	Detected Locations of Contaminants of Potential Concern	245
Table 17-3	Objects and Relevant Water Management Principles under the WM Act	254
Table 18-1	Listed Heritage Items within and adjacent to the Project Area	266
Table 18-2	Summary of the Nature of Direct Impacts	275
Table 19-1	Hazardous Properties of Materials Stored and Handled at the Clyde Terminal	277
Table 19-2	Scenarios Carried Forward for Analysis	280
Table 19-3	Impairment Criteria	281
Table 19-4	Equipment Parts Count for the Converted Clyde Terminal	286
Table 19-5	Summary of Failure and Event Frequencies used in QRA	286
Table 19-6	NSW Individual Fatality Risk Criteria (HIPAP No.4, 2011)	288

Table 19-7	NSW Individual Injury Risk Criteria (HIPAP No.4, 2011)	288
Table 19-8	Individual Fatality Risk Assessment	290
Table 19-9	Individual Injury Risk Assessment	290
Table 19-10	Accident Propagation (Escalation) Risk Assessment	297
Table 20-1	Current Waste Management at the Clyde Terminal	307
Table 20-2	Waste Generation during the Project	311
Table 22-1	Final Environmental Noise Criteria, dB(A)	322
Table 22-2	Residential and Non-residential Receivers	324
Table 22-3	Existing Background ( $L_{A90}$ ) and Ambient ( $L_{Aeq}$ ) Noise Levels, dB(A)	329
Table 22-4	Attended Noise Monitoring 24 August and 31 August 2012, dB(A)	330
Table 22-5	Construction Equipment Usage and Sound Power Levels	331
Table 22-6	Predicted Demolition and Construction Noise Impacts	331
Table 22-7	Existing and Proposed Traffic Volumes	334
Table 22-8	Summary of Traffic Flow Increase in the Peak Periods (Vehicles/hr)	334
Table 22-9	Chimney Stack Details Proposed for Demolition	335
Table 22-10	Predicted Vibration at Sensitive Receivers with a $K_g$ Value = 1140	337
Table 22-11	Predicted Noise at Receivers from Blasting ( $K_a = 100$ )	338
Table 22-12	Predicted noise at receivers from blasting ( $K_a = 10$ )	339
Table 22-13	Predicted Operational Noise Impacts, dB(A)	340
Table 24-1	Design Objectives and Principles under the DCP 2011	354
Table 25-1	Other Development Consents/Approvals and Development Applications within the Parramatta LGA since 2010	357
Table 26-1	Significance of Effects	363
Table 26-2	Manageability of Effects	363
Table 26-3	Residual Risk Matrix	364
Table 26-4	Residual Risk Profile	364
Table 27-1	Summary of Mitigation Measures	367
Table 29-1	Project Sustainability Initiatives	392

## List of Figures

Figure 1-1	Regional Context	5
Figure 1-2	Shell Sydney Fuel Transport Infrastructure	7
Figure 1-3	The Project Area	9
Figure 1-4	Local Context	13
Figure 1-5	Parramatta Local Environmental Plan Zoning	15
Figure 1-6	Environmental Assessment Process	19
Figure 2-1	Clyde Terminal and Parramatta Terminal Existing Infrastructure	27
Figure 4-1	Asian and Australian Oil Refinery Capacities 1965-2010 (Source: ACCC, 2011)	39
Figure 6-1	Proposed Conversion of Existing Infrastructure	49
Figure 6-2	Proposed Excavation, Profiling and Grading Activities	51
Figure 6-3	Demolition Phasing	59
Figure 11-1	Road Network Surrounding the Project Area Showing Locations of RMS Traffic Count Stations (AADT)	134
Figure 11-2	Local Road Network	135
Figure 13-1	Clyde Terminal Catchment Areas	159
Figure 13-2	Peak Flood Levels and Depths – 1% AEP Event (Figure 14H, courtesy of WMA, August 2011. <i>Duck River and Duck Creek Flood Study Review: Final Draft Report</i> )	163
Figure 13-3	Peak Flood Levels and Depth – 1% AEP Event (Figure 14I, courtesy of WMA, August 2011. <i>Duck River and Duck Creek Flood Study Review: Final Draft Report</i> )	165
Figure 13-4	Peak Flood Levels and Depths – PMF Event (Figure 15I, courtesy of WMA, August 2011. <i>Duck River and Duck Creek Flood Study Review: Final Draft Report</i> )	167
Figure 13-5	Peak Flood Levels and Depths – PMF Event (Figure 15H, courtesy of WMA, August 2011. <i>Duck River and Duck Creek Flood Study Review: Final Draft Report</i> )	169
Figure 13-6	Provisional Hydraulic Hazard – 1% AEP Event (Figure 19H, courtesy of WMA, August 2011. <i>Duck River and Duck Creek Flood Study Review: Final Draft Report</i> )	173
Figure 13-7	Provisional Hydraulic Hazard – 1% AEP Event (Figure 19I, courtesy of WMA, August 2011. <i>Duck River and Duck Creek Flood Study Review: Final Draft Report</i> )	175
Figure 13-8	Proposed Wastewater Management System for the Converted Clyde Terminal	181
Figure 16-1	Green and Golden Bell Frog (GGBF) Records	213
Figure 17-1	Acid Sulfate Soil Mapping	237
Figure 17-2	Conceptual Site Model 2012	241
Figure 17-3	Soil and Groundwater Management Plan	249
Figure 18-1	Clyde Terminal Precincts	269
Figure 19-1	Overview of PHA Hazard and Risk Methodology	283
Figure 19-2	Individual Fatality Risk Contours	291
Figure 19-3	Individual Fatality Risk Contours – including Crude Oil and Toxic Components of Previous Refining Operations	293
Figure 19-4	Individual Heat Radiation Injury Risk Contours	295
Figure 19-5	Accident Propagation (Escalation) Risk Contours	299
Figure 22-1	Receiver and Project Area Locations	325
Figure 22-2	Noise Monitoring Locations	327

## 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	<i>Contaminated Land Management Act 1997</i>
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	<i>Parramatta Development Control Plan 2011</i>
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	<i>Environmentally Hazardous Chemicals Act 1985</i>
EFR	External Floating Roof
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
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	<i>City of Parramatta Local Floodplain Risk Management Policy (Parramatta City Council, 2006)</i>
FM Act	<i>Fisheries Management Act 1994</i>
GHG	Greenhouse Gas
GGBF	Green and Golden Bell Frog

Abbreviation	Description
GDE	Groundwater Dependent Ecosystem
GWSAP	<i>Groundwater Sampling and Analysis Plan: Shell Clyde Refinery and Parramatta Terminal, Durham Street, Rosehill, NSW (ERM, 2010)</i>
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	<i>Interim Construction Noise Guideline (EPA, 2009)</i>
IFR	Internal Floating Roof
Infrastructure SEPP	<i>State Environmental Planning Policy (Infrastructure) 2007</i>
INP	<i>NSW Industrial Noise Policy (EPA, 2000)</i>
LEP 2011	<i>Parramatta Local Environmental Plan 2011</i>
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	<i>National Greenhouse and Energy Reporting Act 2007</i>
NML	Noise Management Level
NPW Act	<i>National Parks and Wildlife Act 1974</i>
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	<i>Sydney Regional Environmental Plan No. 28 - Parramatta</i>
PASS	Potential Acid Sulfate Soils
PCB	Polychlorinated Biphenyl
PFOS	Perfluorooctane Sulfonate
PHA	Preliminary Hazard Analysis
PHALMS	<i>Parramatta Historical Archaeological Landscape Management Study, (Godden Mackay Logan, 2001)</i>
PIRMP	Pollution Incident Response Management Plan
PMF	Probable Maximum Flood
Pmpy	Per million per year
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
POEO Clean Air Regulation	<i>Protection of the Environment Operations (Clean Air) Regulation 2010</i>
POEO Waste Regulation	<i>Protection of the Environment Operations (Waste) Regulation 2005</i>
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	<i>State Environmental Planning Policy No.33 – Hazardous and Offensive Development</i>
SEPP 55	<i>State Environmental Planning Policy No. 55 – Remediation of Land</i>

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

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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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Qualification: Bachelor of Laws  
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### Name and Address of the Responsible Person:

Name: Catherine Brady  
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<sup>3</sup> to 1,550 m<sup>3</sup> 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 economic 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 Exceedance 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<sup>3</sup> to 1,550 m<sup>3</sup> 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.

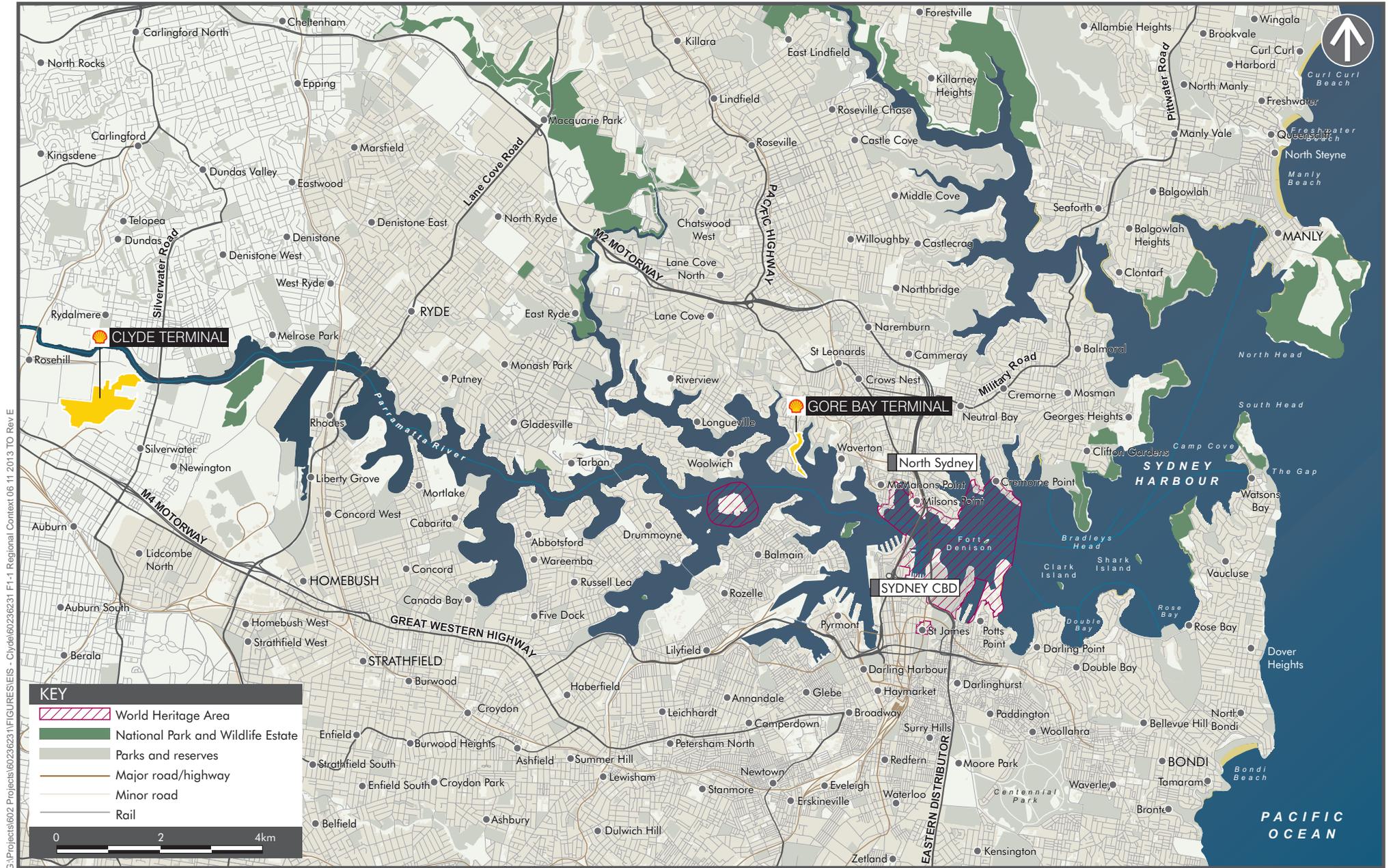
Furthermore, the Shell Clyde Terminal is remote to the Gore Bay Terminal and the scope of the proposed works, products to be stored and assessments required at the two locations are different. The potential for cumulative impacts from the two projects, other than both representing important works to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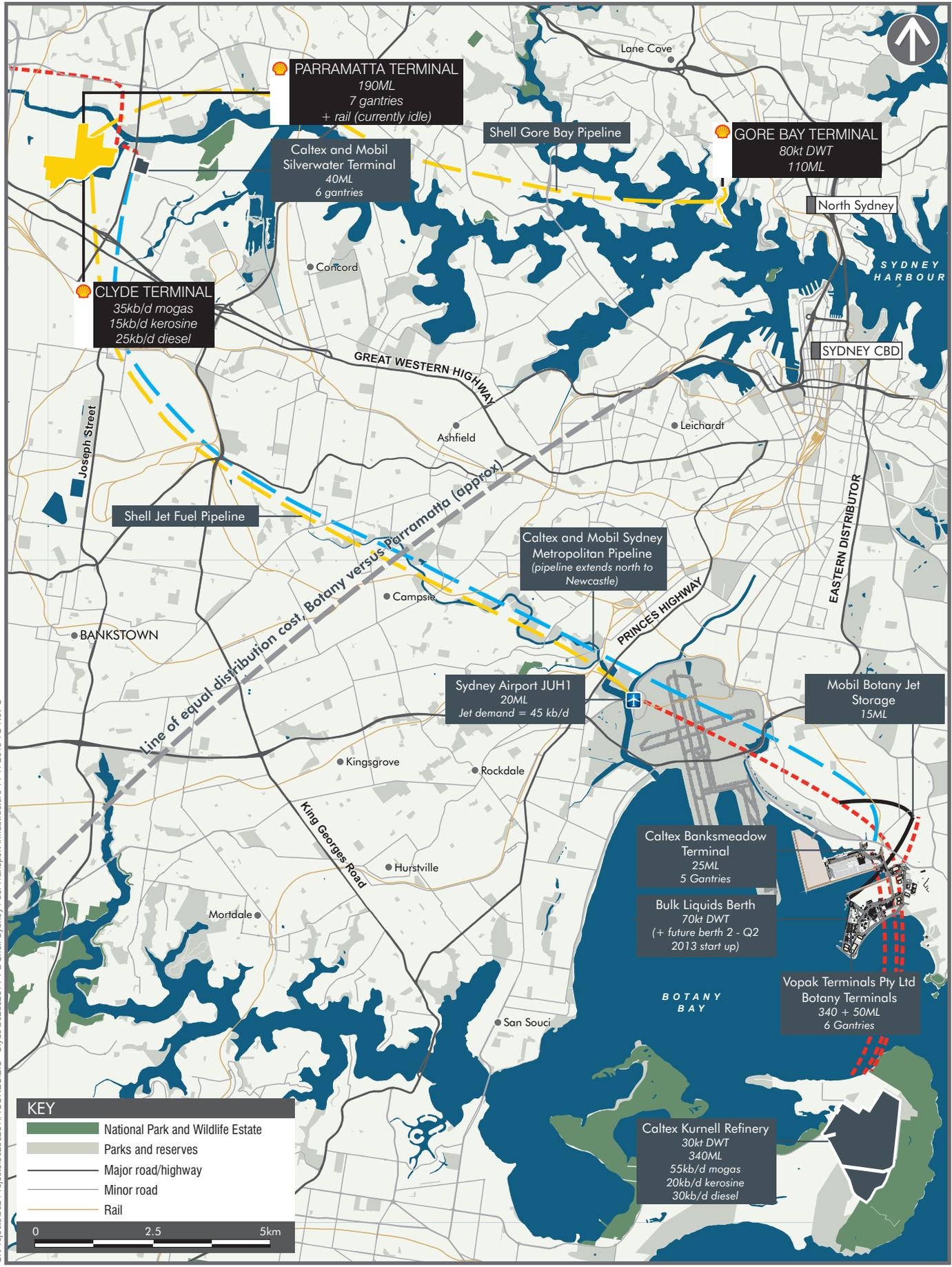


**REGIONAL CONTEXT**  
 Clyde Terminal Conversion Project  
 Environmental Impact Statement

FIGURE 1-1

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**KEY**

- National Park and Wildlife Estate
- Parks and reserves
- Major road/highway
- Minor road
- Rail

0 2.5 5km



**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\IEIS - Clyde\60236231 F1-3 The Project Area 06 11 2013 TO Rev G



**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

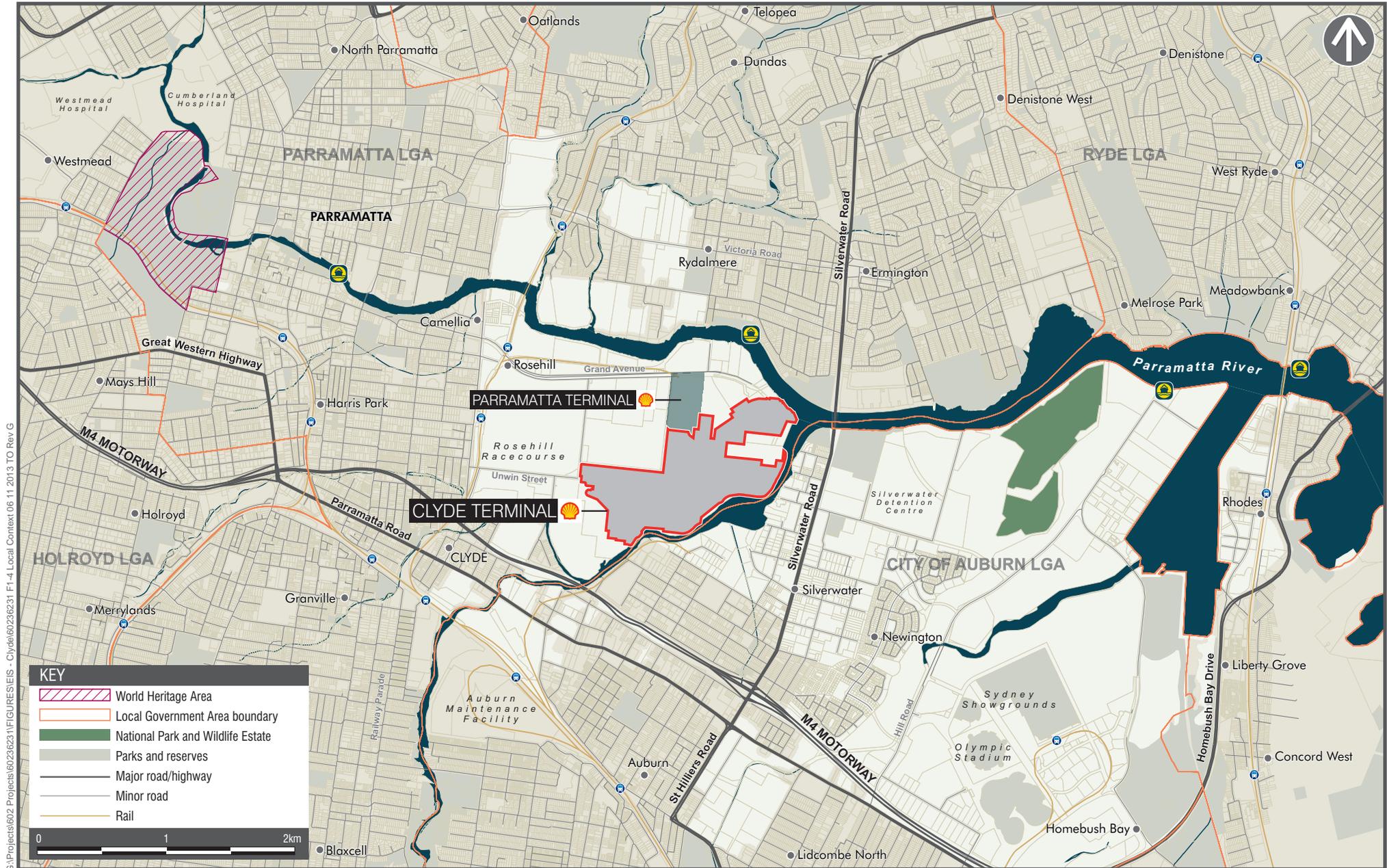
Shell Refining (Australia) Pty Ltd (SRAP) also owns parcels of land adjacent to the Project Area which are currently leased to third parties. A section of Lot 101 DP 809340 forms part of Shell's operations at the Project Area, however much of this lot is currently leased to tenants. Lot 1, DP 109739 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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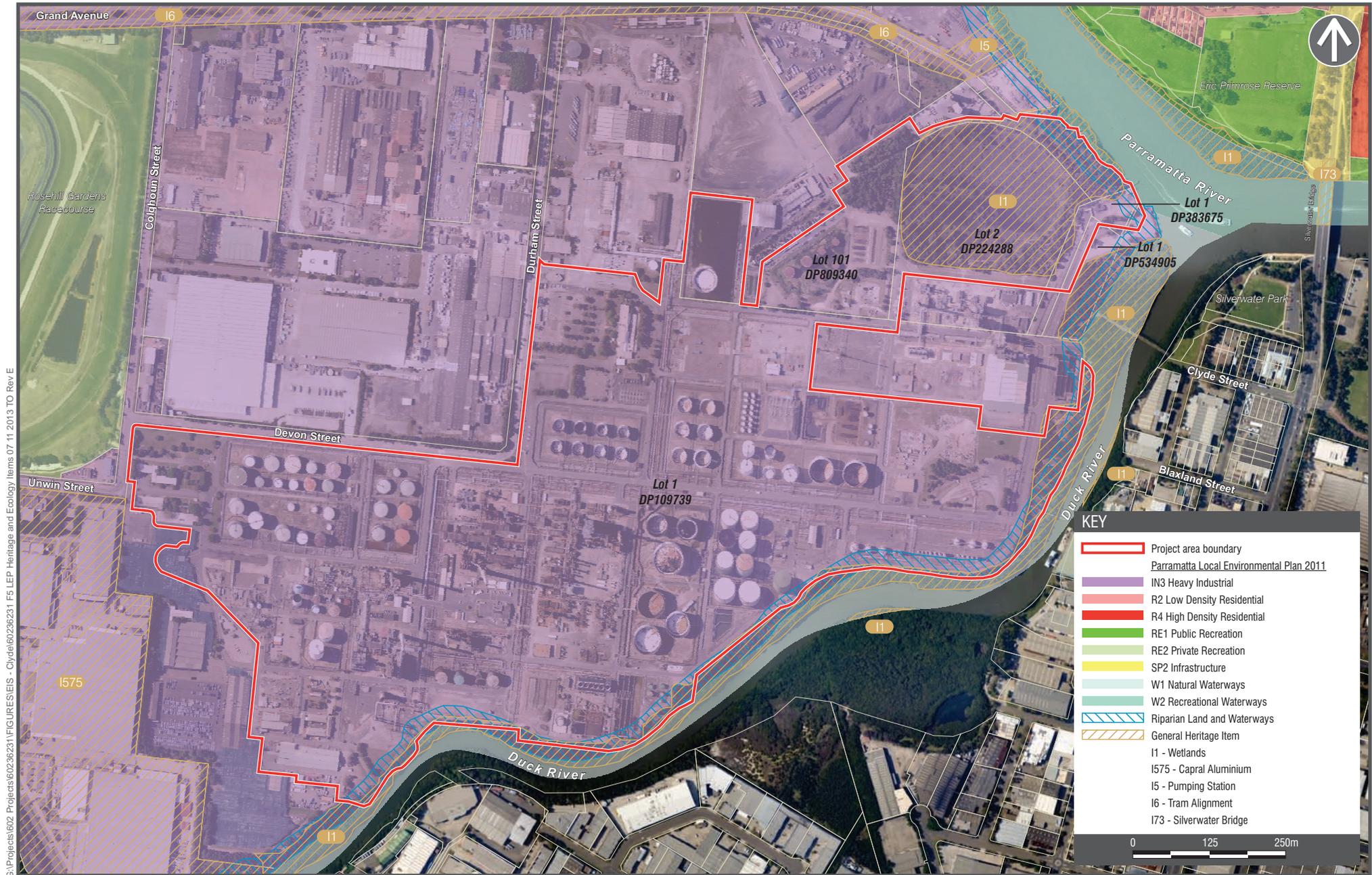
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**LOCAL CONTEXT**  
 Clyde Terminal Conversion Project  
 Environmental Impact Statement

FIGURE 1-4

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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**).

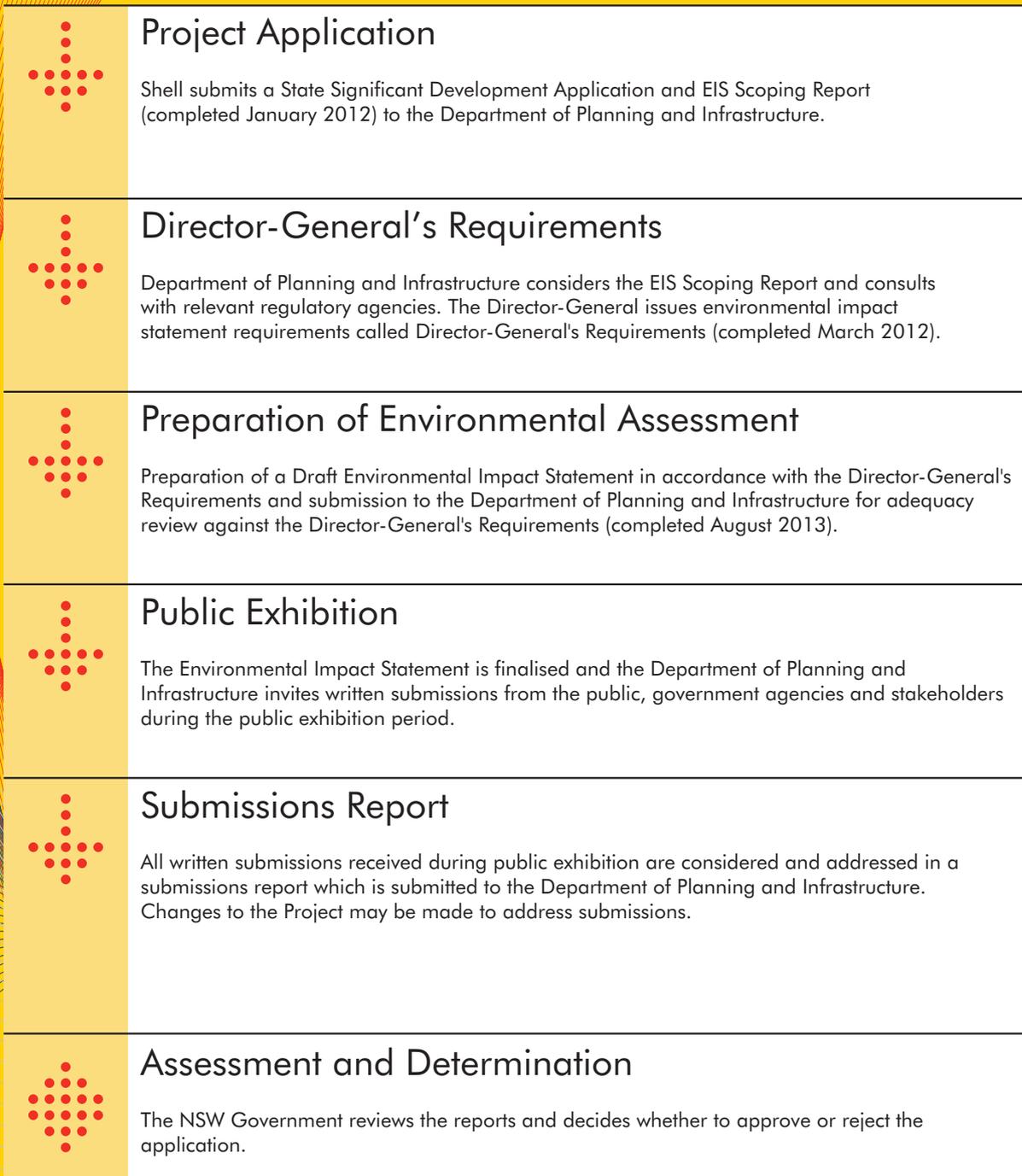
The cessation of crude refining and the subsequent change in products stored at the Clyde Terminal since late 2012 (from Crude Oils and finished petroleum products to finished petroleum products only) has already reduced the current risk profile of the Project Area. The Project Area, however, still remains 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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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