

Modification of Development Consent

Section 4.55(1A) of the *Environmental Planning and Assessment Act 1979*

As delegate for the Minister for Planning and Public Spaces, under delegation executed on 11 October 2017, I approve the modification of the development consent referred to in Schedule 1, subject to the conditions outlined in Schedule 2.



Chris Ritchie
Director
Industry Assessments

Sydney 29 JULY

2019

File: EF19/1371

SCHEDULE 1

Development Consent

Development Consent:

SSD 5147 granted by the then Planning Assessment Commission on 14 January 2015

For the following:

Conversion of the existing Shell Clyde Refinery to a finished petroleum products import, storage and distribution terminal including demolition of redundant infrastructure

Modification 1

Modification Application:

SSD 5147 MOD 1 – Demolition works and administrative amendments

Applicant:

Viva Energy Australia Pty Ltd

Consent Authority:

Minister for Planning and Public Spaces

Land:

9 Devon Street, Rosehill

Lot 100, DP 1168951

Lot 1, DP 383675

Lot 101, DP 809340

Lot 2, DP 224288

SCHEDULE 2

This consent is modified as follows:

1. Delete all references to “shall” and replace with “must”, with the exception of conditions B3, B14, B18 and B20 of the consent.

In Schedule A

2. Delete the “Applicant:” section and replace with the following:

Applicant: Viva Energy Australia Pty Ltd

3. Delete the “Land:” section and replace with the following:

Land: 9 Devon Street, Rosehill

Lot 100, DP 1168951

Lot 1, DP 383675

Lot 101, DP 809340

Lot 2, DP 224288

4. Delete the definitions for “Applicant”, “Department”, “Minister” and “Secretary” and insert the following definitions in alphabetical order:

Applicant Viva Energy Australia Pty Ltd, or any person carrying out any development to which this consent applies

Department NSW Department of Planning, Industry and Environment

Minister NSW Minister for Planning and Public Spaces (or delegate)

Secretary Planning Secretary under the EP&A Act, or nominee

5. Insert the following definition in alphabetical order:

Modification Assessments The documents assessing the environmental impact of a proposed modification of this consent and any other information submitted with the following modification applications made under the EP&A Act:

- a) SSD 5147 MOD 1 prepared by AECOM Australia Pty Ltd and dated 14 January 2019, as amended by the Response to Submissions letter prepared by AECOM Australia Pty Ltd and dated 18 April 2019.

In Schedule B: Administrative Conditions

6. Delete Condition B2 and replace with the following:

B2. The development may only be carried out:

- (a) in compliance with the conditions of this consent;
- (b) in accordance with the EIS;
- (c) in accordance with Modification Assessments;
- (d) in accordance with the Development Layout in Appendix A; and
- (e) in accordance with the management and mitigation measures in Appendix C.

7. In Condition B6, delete the phrase “four (4)” and replace with the phrase “five (5)”.
8. In Condition B8, delete the phrase “date of this consent” and replace with the phrase “approval of SSD 5147 MOD 1”.

In Schedule C: Environmental Performance and Management

9. In Condition C2(d), delete the following dot points:

- include the number and assessment of LPG tanker transfer operations. The following items must be included in the analysis:
 - the analysis of all butane pool fire scenarios;
 - the analysis of leaks from butane road tanker pumps;

10. Insert new conditions C2A and C2B after Condition C2 as follows:

UPDATED CONSTRUCTION/DEMOLITION SAFETY STUDY

C2A. At least one month prior to the commencement of the additional demolition works described in SSD 5147 MOD 1 (specifically the demolition of the LPG spheres, the LPG tanker loading gantry and associated infrastructure), the Applicant must update the Construction/Demolition Safety Study required under Condition C2(a) to include a demolition management plan for the additional demolition works.

The additional demolition works must not commence until the updated Construction/Demolition Safety Study has been approved by the Secretary.

UPDATED FIRE SAFETY STUDY

C2B. The Applicant must update the Fire Safety Study required under Condition C2(b) to include the works described in SSD 5147 MOD 1.

A copy of the updated Fire Safety Study must be provided to the Secretary and Fire and Rescue NSW at least one month prior to the completion of the works described in SSD 5147 MOD 1.

11. Insert new Condition C3A after Condition C3 as follows:

UPDATED EMERGENCY PLAN

C3A. The Applicant must update and implement the Emergency Plan required under Condition C3(a) to include the scope of SSD 5147 MOD 1.

A copy of the updated Emergency Plan must be provided to the Secretary at least one month prior to the completion of the works described in SSD 5147 MOD 1.

12. Delete Condition C11.

13. Delete Condition C58(c) and replace with the following:

- (c) detail measures to be taken to minimise impacts on flora and fauna, including:
 - (i) inspection by a suitably qualified ecologist of buildings and structures (including exterior casings and insulations on stacks) to be demolished for the presence of microbats; and
 - (ii) procedures for the safe relocation of microbats by a suitably qualified ecologist prior to the commencement of demolition works;

14. Insert new Condition C59A after Condition C59 as follows:

C59A. Prior to the commencement of the additional demolition works described in SSD 5147 MOD 1, the Applicant must update the archival record required by Condition C59 of this schedule. The updated record must include photographic archival recording of:

- (a) the State Office Building;
- (b) the MTS1 35kV switch yard;
- (c) Tank T106;
- (d) LPG spheres V137 and V140; and
- (e) the LPG truck loading gantry.

In Schedule D: Environmental Management, Reporting and Auditing

15. In Condition D9, delete the words “the EIS” and replace with the following:

- the documents referred to in Condition B2 of this consent;

In the Appendices

16. Delete appendices A, B and C and replace with the following:

**APPENDIX A
DEVELOPMENT PLANS**

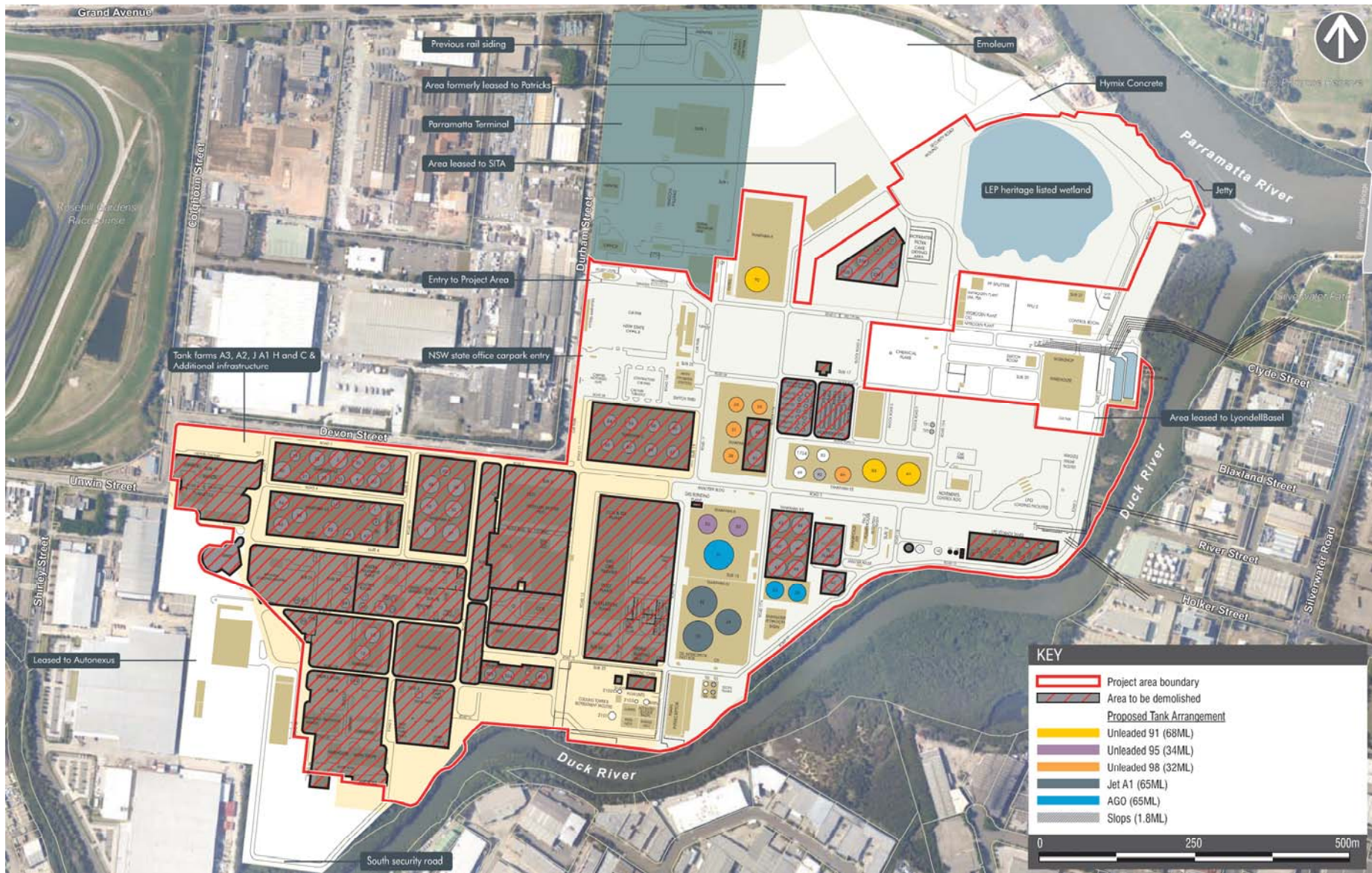


Figure 1: Conversion of existing infrastructure

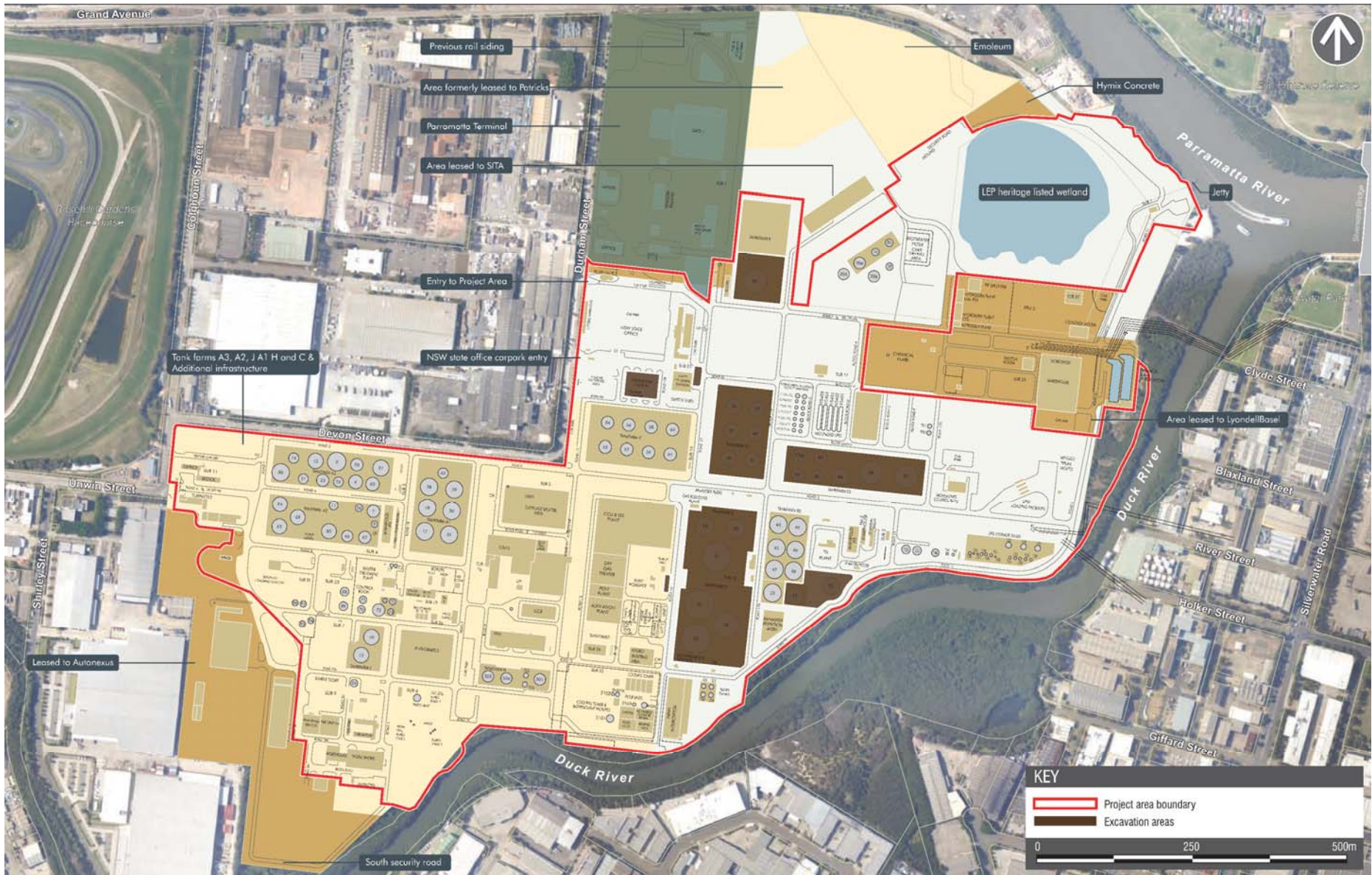


Figure 2: Excavation, profiling and grading activities



- KEY**
- Conversion project area boundary
 - Site Modifications
 - Retain
 - Demolish



AECOM

0 100 200 300 m

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Neither AECOM Australia Pty Ltd (AECOM) nor the Department of Planning, Services & Innovation make any representations or warranties of any kind, about the accuracy,

Figure 3: Overview of works associated with SSD 5147 MOD 1

Demolition – Phase 1
Areas 1 – 20

Demolition – Phase 2
Areas 21 – 22
(following completion of construction)

Demolition – Phase 3
MOD 1 Amendments

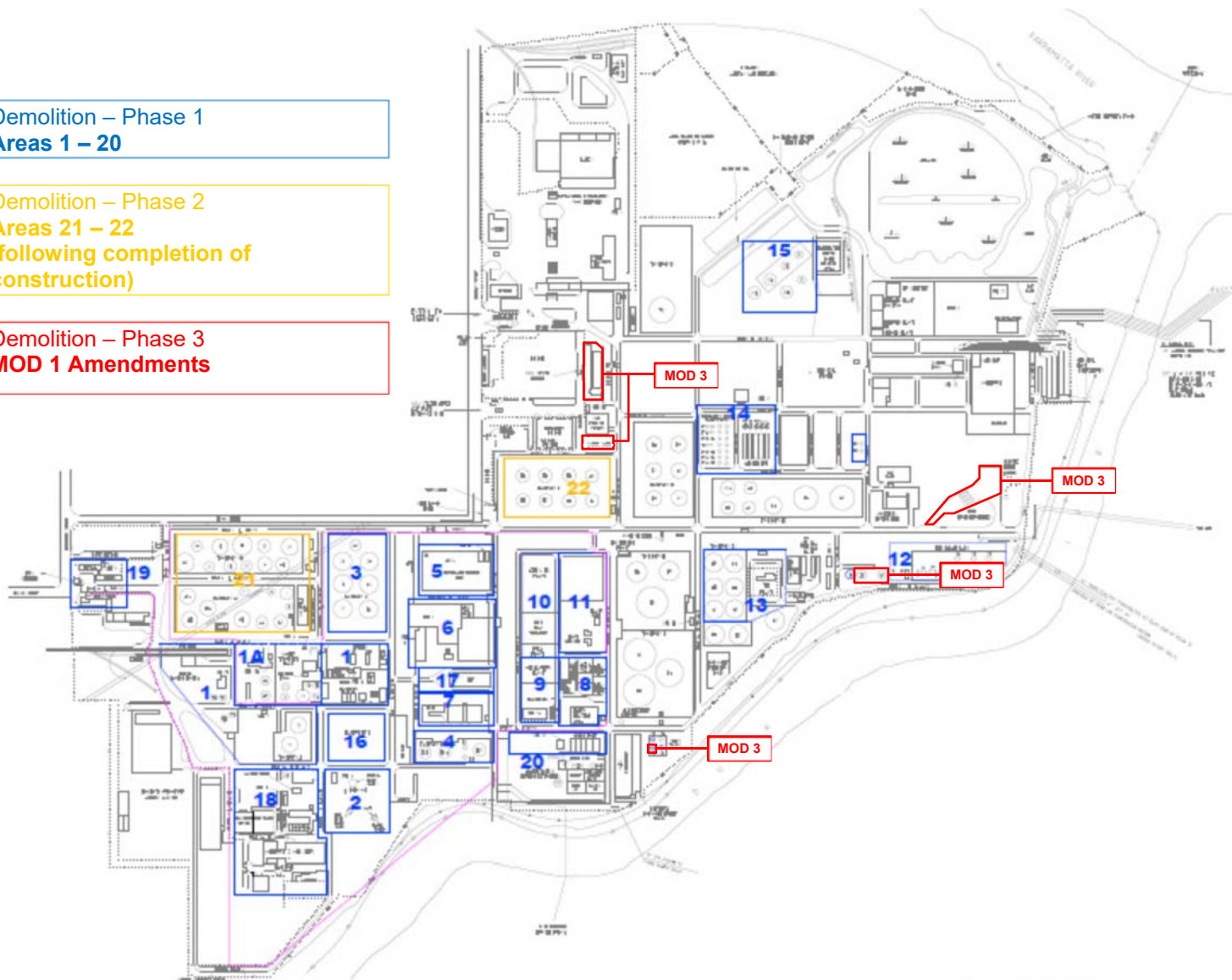


Figure 4: Demolition phasing

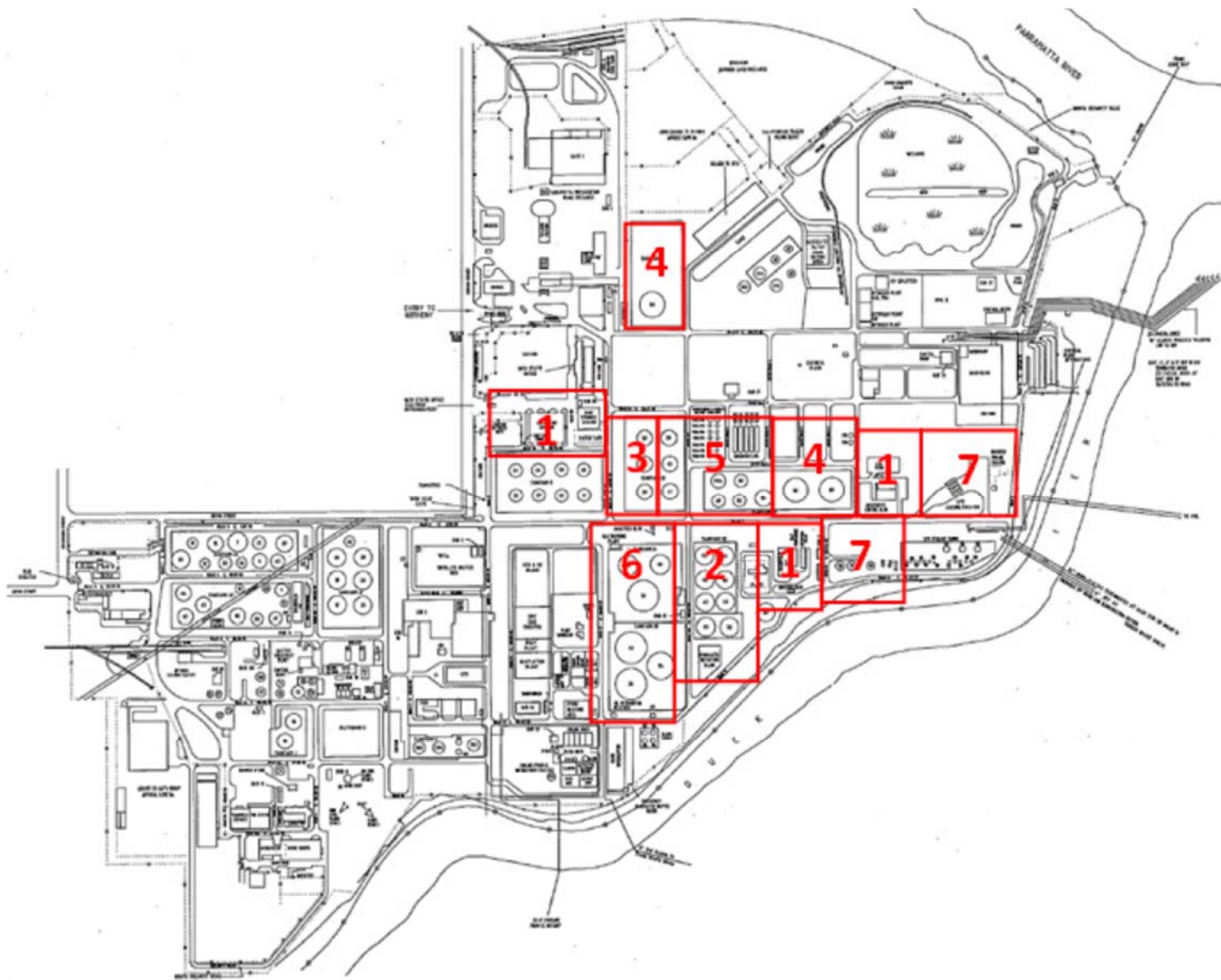


Figure 5: Construction phasing

**APPENDIX B
DEVELOPMENT CONSENTS TO BE SURRENDERED**

DA Number	Date	Project
DA/4233/1992	1992	Monomer Recovery Project (Submitted: 21/02/1992).
DA/925/2010	2010	Installation of an automated crude dehydrator to replace existing manual system (Submitted: 17/11/2010).
DA/87/2009	2009	Refurbishment of administration precinct, within the Shell refinery complex (Submitted: 19/02/2009).
DA/695/2008	2008	Construction of a workshop within Shell's Clyde Refinery (Submitted: 23/09/2008).
DA/912/2008	2008	Alterations and additions to the Shell Employee Credit Union Building within the Shell Refinery Complex, including the placement of a pre-fabricated portable office building on the site with an associated walkway (Submitted: 27/11/2008).
CC/722/2008	2008	A pre-fabricated portable office with a linkway connection to an existing brick veneer office (Submitted: 27/11/2008).
DA/07/0067	2008	Hydrodesulphurisation unit upgrade of existing unit and associated infrastructure to reduce sulphur content in Diesel (HDS2).
DA/06/0013	2008	Upgrade to fluidised catalytic cracking unit.
06_0013	2007	Fluidised catalytic cracking unit reactor and regenerator rejuvenation.
249-09-01-MOD 1	2007	Modification to HDS Unit – Demolition.
DA/769/2007	2007	Demolition and alterations and additions to old lift and stairwell (Submitted: 17/09/2007).
DA/1022/2006	2006	Construction of two metal catwalks within the Shell refinery site. (Submitted: 10/11/2006).
CC/752/2006	2006	Construction two metal catwalks (Submitted: 10/11/2006).
DA/222/2006	2005	Construction of a 26,000m ³ unleaded petrol storage tank (known as Tank No. 93) within Tank Farm K in the Shell Clyde Refinery (Submitted: 24/03/2006).
DA/1023/2004	2004	Reduction in height of existing above ground storage tank No. 28 within the Shell Refinery complex (Submitted: 13/08/2004).
CC/595/2004	2004	Reduction in height of storage tanks (Submitted: 24/09/2004).
DA/967/2004	2004	Use of part of an existing building as a cafe (Submitted: 03/08/2004).
DA-140-6-2004i	2004	Benzene reduction unit – Mogas Improvement.
DA/764/2003	2003	Minor alterations to existing amenities/office building (Submitted: 14/04/2003). Council records indicate withdrawn.
CC/206/2003	2003	Minor alterations to existing amenities/office building (Submitted: 14/04/2003). Council records indicate withdrawn.
249-09-01	2002	Upgrade hydrodesulphurisation plant.
DA/2384/2001	2001	Establishment of proposed landfarm area to construct land farming facility (oily sludge) ancillary to existing refinery (Submitted: 11/12/2001). Council records indicate withdrawn.
-	2001	Gasoline tankage construction.
CC/228/1999	1999	Alterations to existing refinery plant (Submitted: 03/03/1999).
DA/28/1996 BA/792/1996	1996	Additions to the side of the existing control room (Submitted: 09/01/1996).
DA/7/1995	1995	Refurbishing of the existing office building, with a minor atrium extension (Submitted: 05/01/1995).
DA/172/1993	1993	Construction of a Selective Hydrogenation Unit (Butane/Butlene Treater) (Submitted: 24/03/1993).
-	1993	Laboratory upgrade.
DA/14244/1992	1992	Install one additional cell to the water-cooling tower (Submitted: 08/07/1992).
DA/26534/1991	1991	Bitumen Loading Gantry (Submitted: 11/07/1991).
DA/42517/1991	1991	One Analyser House (Submitted: 23/12/1991).
-	1991	Hydrogen purification plant.

DA Number	Date	Project
-	1991	Bitumen substation installation.
-	1990	Prefabricated analyzer house installation.
-	1990	Platformer 3 motor upgrade.
-	1990	Refinery drainage upgrade.
-	1990	Alkylation operator amenities building.
-	1989	Poly II construction.
-	1989	Alkylation plant change room.
-	1988	Construction of catalytic reformer and gas turbine co-generation units.
-	1988	Canteen awning.
-	1987	Construction of new control centre.
-	1987	Hydrocarbon gas absorption unit.
-	1986	Installation of second desalter unit.
-	1986	Interceptor drainage improvements.
-	1986	Catalytic cracking unit auxiliary control room extension.
-	1986	Administration building gatehouse and entrance, Colquhoun St.
-	1986	Main office building extension.
-	1986	Establishment of a solid waste drying facility.
-	1985	LPG recovery facility.
-	1985	TA3 building.
-	1985	CPU 5600 LPG recovery system.
-	1985	Fire bin work area.
-	1985	Turbo alternator No. 3.
-	1985	Catalytic reformer and gas turbine co-generation.
-	1984	Construction of Platformer II Texas tower.
-	1984	Construction of oil storage tanks for interceptor skimming.
-	1984	Improved heat recovery system.
-	1984	Excess stabilization biomass drying area.
-	1982	Construction of Crude Distillation Unit Column C304.
-	1982	Construction of oil storage tank 12.
-	1982	Construction of oil storage tank 90.
-	1981	Construction of new distillation column.
-	1981	Mesityl oxide storage tank.
-	1980	Installation of mounded LPG bullets.
-	1980	Construction of oil storage tanks 88 and 89.
-	1980	Construction of main transformer substation No. 2.
-	1980	Construction of field office.
-	1980	Construction of two tanks for batching hexylene glycol.
-	1980	Construction of one solvent tank.
-	1980	Field office, drawing office, training centre construction.
-	1980	Construction of two new water tanks.
-	1980	Construction of tanks 737 A/B.
-	1979	Construction of Boiler No. 9.

DA Number	Date	Project
-	1979	Crude Distillation Unit control room extension.
-	1979	Ethylene plant modifications.
-	1979	Construction of LPG storage facilities.
-	1979	Conversion of existing office, workshop/amenities, provision of additional car parking and extension of loading platform.
-	1978	Install Crude Distillation Unit heat recovery plant.
-	1978	Installation of building No. 3 for quality testing instrumentation.
-	1978	Installation of building No. 2 for quality testing instrumentation.
-	1978	Operators amenities building extension project.
-	1978	Installation of radio antenna on main administration building.
-	1977	Installation of a sulphur reduction unit.
-	1977	Modify and extend the Crude Distillation Unit control centre.
-	1977	Extension to substation V.
-	1977	Extension to substation No. 6.
-	1977	Construction of oil storage tanks 86 and 87.
-	1977	Installation of building No. 1 for quality testing instrumentation.
-	1977	Construction of butane storage spheres.
-	1977	Construction of four buildings for testing instruments and amenities.
-	1977	Construction of heat recovery unit.
-	1977	Construction of Catalytic Cracking Unit and Alkylation complex.
-	1976	Additional sour water stripper.
-	1976	Construction of substation No. 23.
-	1976	Catalytic Cracking Unit control room extension.
-	1976	Catalytic Cracking Unit Colum C404 installation.
-	1976	Installation of an additional bathroom facility in the training centre.
-	1976	Construction of gas oil storage.
-	1976	Construction of epikote storage tanks.
-	1976	BDA project office.
-	1976	Flare area modifications.
-	1976	Sour water stripping unit and sulphur recovery unit.
-	1976	Chemical solvents plant.
-	1976	CCU control room and substation No. 5.
-	1976	Construction of Sulphur Recovery Unit.
-	1976	Construction of electrical substation.
-	1975	Epikote plant extension.
-	1975	BDA rebuild.
-	1975	Construction of tankfarm H and tanks.
-	1975	Construction of gas oil storage.
-	1975	Installation of substation No. 24.
-	1975	Building of gatehouse and change rooms.
-	1975	Construction of fire training grounds.
-	1975	Tank 505 oil storage tank.
-	1975	Butane de-asphalting unit.

DA Number	Date	Project
-	1975	Construction of 600t Butane storage vessel.
-	1975	Primary crude distillation unit expansion.
-	1974	Construction of Movements Control Room.
-	1974	Construction of oil storage tank 4.
-	1973	Laboratory bottle loading platform.
-	1972	Main refinery entrance modifications.
-	1971	Lawn locker.
-	1971	Construction of fire station extension.
-	1971	Shelter for Siebe Gorman trolley.
-	1970	Construction of contractor amenities building.
-	1970	Construction of oil storage tanks 84, 85 and 93.
-	1970	Power station installation.
-	1969	CO boiler.
-	1968	Construction of oil storage tank 33.
-	1968	Construction of laboratory and office extension for No. 2 pumphouse.
-	1968	Refinery drainage system modifications.
-	1967	Installation of hydrocarbon solvents unit and chemical solvents unit.
-	1967	Construction of chemical and hydrocarbon solvents plant.
-	1967	Refinery extension for capacity increase.
-	1966	Extension to sewer system.
-	1966	Construction of new hydrotreater and boiler.
-	1966	Construction of two concrete chimney stacks.
-	1966	Construction of CDU and NDT stacks.
-	1966	Construction of control room and switchrooms.
-	1966	Installation of cool water pump.
-	1966	Construction of heat exchanger.
-	1966	Construction of polypropylene bullets V134/135.
-	1966	Construction of oil storage tanks 50 and 51.
-	1966	Construction of boiler No. 7.
-	1966	Construction of chimney stack.
-	1966	Construction of CDU, Hydrotreater, Tail gas treater, polypropylene/propane splitter, 7 oil storage tanks and utilities.
-	1965	Modifications to roadway 9 and 12.
-	1962	HVU Control room.
-	1962	Construction of ethylene plant, control room, tea room, wet weather and field stores.
-	1962	Construction of catalyst store building.
-	1962	Addition to the Catalytic Cracking Unit control room.
-	1961	Construction of LPG storage.
-	1961	Crude oil storage tanks.
-	1961	Waiting room and pay office construction.
-	1960	Major extension to the Clyde Refinery. Part of this consent was to reconstruct the loading gantry in the northern area (now referred to as Parramatta Terminal). As such the surrender of this DA is only so far as it pertains to manufacturing operations within the SSD Development project area

DA Number	Date	Project
-	1958	Solvents tank fire water and foam lines.
-	1957	Construction of oil storage tank 34.
-	1957	Construction of vacuum bitumen plant.
-	1957	Renovation and modifications to solvents plant.
-	1957	Construction of column 5501.
-	1956	Construction of three monocrete residences.
-	1952	Construction of amenities building.
-	1951	Construction of laboratory.
-	1949	Construction of workshop.
-	1949	Construction of lubricating oil refinery processing units and storage tanks.
-	1949	Construction of various refinery buildings.
-	1980	Construction of Rosehill Service Station.
TA/306/2008	2008	Removal 1 Tree (Submitted: 05/05/2008).
TA/364/2008	2008	Removal of 2-4 Trees (Submitted: 29/05/2008).
TA/849/2006	2006	Pruning of 42 Tree/s (Submitted: 28/09/2006).
TA/277/2005	2005	Removal of 5 trees (Submitted: 03/03/2005).
TA/399/2006	2005	Removal of 1 Tree (Submitted: 16/05/2006).
TA/597/2005	2005	Removal of 41 trees (Submitted: 31/05/2005).
TA/388/2003	2003	Removal of 37 trees Various species in decline and inappropriate locations (Submitted: 25/02/2003).

APPENDIX C
REVISED MANAGEMENT AND MITIGATION MEASURES

SSD 5147 Management and Mitigation Measures

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
Commitment			
The Project is to be undertaken in accordance with the commitments provided within the EIS, the EIS Response to Submissions, this MR and the approval conditions.	✓	✓	✓
Transport			
<p>The TIA prepared by AECOM has concluded that the Project would not create significant impacts for the surrounding road network. However, it is nevertheless proposed that:</p> <ul style="list-style-type: none"> • Vehicular traffic would be minimised during peak hour traffic periods where practical do to so; • A Construction Traffic Management Plan be prepared prior to the works commencing; • Demolition and construction generated traffic would be parked at the Project Area to limit the numbers of vehicles situated in the streets surrounding the Clyde Terminal. • Movement of construction and demolition equipment at the terminal but outside the 'areas of control' for construction and demolition works will be co-ordinated with the Clyde Terminal Manager. If traffic control is identified as being required in the SimOps meeting for the movement, a detailed Traffic Control Plan will be produced; and • Transportation of oversized or overmass vehicles or loads will require appropriate permits from the relevant authority (Roads and Maritime Services or Parramatta City Council) prior to movement. 	✓	✓	
Social and Economic Effects			
<p>Mitigation measures proposed to minimise potential social and economic impacts of the Project on the surrounding Parramatta LGA during the demolition, construction and modification works, and during the continued operation of the converted Clyde Terminal include:</p> <ul style="list-style-type: none"> • Viva Energy would continue to undertake stakeholder engagement and consultation regarding the Project; • Environmental reporting procedures would continue to be implemented, including a complaints register; • A Construction Traffic Management Plan would be prepared to avoid and minimise potential impacts associated with access routes and major intersections; 	✓	✓	✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<ul style="list-style-type: none"> An Environmental Management Strategy (EMS) and Demolition Work Plan (DWP) (including relevant subplans) would be prepared to minimise potential environmental, heritage and social impacts during the demolition, construction and modification works; and An Environmental Management Manual (EMM) would be prepared to minimise potential environmental and social impacts during operation of the converted Clyde Terminal. 			
Surface Water, Industrial Water and Flooding			
In managing surface water, industrial water and flooding at the Project Area, Viva Energy would implement the following mitigation measures:			
<ul style="list-style-type: none"> A detailed ESCP is to be compiled and included in the EMS; Demolition and construction waste would be stored on a sealed and bunded surface whilst awaiting transfer or processing; Dust suppression and sediment runoff prevention would be undertaken during the demolition and construction works to prevent impacts to surface water quality as follows: <ul style="list-style-type: none"> Areas of demolition and construction activities would be watered down as required in order to suppress the migration of dust; In the event that excess industrial water is required, e.g. for dust suppression, sediment traps would be employed around the Project Area to prevent runoff and ensure that any contaminated water is treated and managed appropriately; Where excavation activities are undertaken soil exposure would be minimised where possible and land disturbance would occur for the shortest time possible. Access to the demolition and construction areas would be controlled and vehicles and machinery would be kept to well defined areas away from excavation sites; Runoff generated outside of demolition and construction areas would be diverted away from those areas to decrease the potential for contaminated runoff to migrate throughout the Project Area; and Stockpiles of excavated material would be clearly labelled, located away from trafficked areas and other potential disturbances, placed on geo-fabric lining prevent leachate and erosion, be no more than 5 m tall, and allow adequate room for transport around and management of each stockpile. Wastewater that has been potentially contaminated during the demolition, construction and modification works would be directed via CPIs to allow for sediment and oil to be removed; 	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<ul style="list-style-type: none"> • Temporary stormwater management measures (such as sandbags, sediment fences and berms) would be used to minimise the risks of sediment-laden runoff and other construction pollutants entering downstream systems; • During demolition works, potential chemical pollutants (e.g. fuels, oils, lubricants, paints, herbicides, etc.) would be stored in appropriate containers within bunded areas within construction compounds to minimise the risk of spillages and mobilisation of these pollutants into aquatic environments; and • Water saving devices would be installed wherever possible during the conversion and modification works to reduce wastage. 			
<ul style="list-style-type: none"> • Surface water quality and volume limits for discharge from the Project Area would continue to be monitored, for example as per the sampling of discharge points identified in EPL No. 570, or any replacement/ amended EPL as provided under the POEO Act; • All fuel products and other potentially hazardous substances at the Project Area would continue to be stored in sealed, bunded areas that would prevent their migration offsite in the event that a storm surge or flood event impacts the Project Area; • The Project would not involve the construction of extensive new infrastructure on land lying within the 1:100 year flood event; • Any new development or infrastructure at the Project Area related to the Clyde Terminal Conversion Project (SSD 5147) would be constructed with regard to the design principles and standards outlined in the Floodplain Matrix of Planning and Development Controls identified in the Floodplain Risk Management Policy; • Infrastructure at the Project Area would continue to be located outside of the riparian buffer zone along the southern and eastern borders of the Project Area; and • The Project would not result in a reduction of wetland or riparian vegetation. 	✓	✓	✓
<ul style="list-style-type: none"> • The <i>Clyde Terminal Water Management Manual</i> (Viva Energy, 2018) would be revised once the demolition, construction and modification activities are complete, so that it is up to date for operation of the converted Clyde Terminal; • Once operation of the converted Clyde Terminal commences, Viva Energy would undertake an internal audit of the Project Area to take stock of how reduced operations have reduced water consumption and improved water efficiency. Further recommendations of the audit would then be taken into consideration if further potential water resource savings or opportunities for reuse are identified; and 			✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<ul style="list-style-type: none"> Following testing, contaminated soil related to the Clyde Terminal Conversion Project (SSD 5147) that is unsuitable for reuse would be managed in accordance with the Waste and Resource Recovery Plan. 			
Land Use			
<p>It is considered that the Project would not have any significant impacts on land use as it would involve the continued use of the Project Area for purposes similar to its current use. Viva Energy would continue its dialogue with land users who are currently leasing land adjacent to the Project Area from Viva Energy.</p> <p>In considering a future use of the surplus land in the western and north-eastern sections of the Project Area, Viva Energy would take into account:</p> <ul style="list-style-type: none"> The extent of any contamination that is discovered in the western and north-eastern sections of the Project Area; The extent of any remediation that is required subsequent to those contamination investigations; and Consultation with relevant Government departments and agencies such as the EPA, DPE and Parramatta City Council, and Council's desired strategic planning outcomes for the Camellia Industrial Estate. 	✓	✓	✓
Air Quality and Odour			
<p>Potential fugitive dust and odour impacts resulting from demolition, construction and modification works would be managed by the EMS which would include the following measures:</p> <ul style="list-style-type: none"> Loads would be covered during transportation; Exposed surfaces and roads would be watered as required; Measures would be implemented to modify or suspend dust-generating activities during periods of high wind speeds or whenever dust plumes from the works are visible. A high wind value should be decided through discussions with regulators, however a typical value is 8 m/s averaged over a 1-hour period; Regularly trafficked surfaces would be sealed as soon as possible after construction; Roadway use would be controlled i.e. through defined road access to minimise dust; Complaints management system would be in place; and Accidental spills would be immediately cleaned up. 	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<p>Potential fuel combustion emissions resulting from vehicles and equipment associated with the demolition, construction and modification works would be managed with the following measures:</p> <ul style="list-style-type: none"> • Wherever possible, engines would be turned off while parked onsite; • Vehicular access would be confined to designated, sealed access roads; • Equipment, plant and machinery would be regularly tuned, modified or maintained to minimise visible smoke and emissions; • Project Area speed limits would be implemented; and • Haul road lengths would be minimised. 			
<p>The demolition construction and modification works would be undertaken with standard construction equipment and the emissions would be managed using best practice construction management and mitigation.</p> <p>To minimise potential impacts from the demolition activities pipework and tanks would be water washed, the oily water consolidated and the hydrocarbon removed before wastewater is treated and either disposed of as prescribed waste or treated through the Clyde waste water equipment.</p> <p>The Demolition Management Plan would be prepared by the Demolition Contractor.</p>	✓	✓	
Ecology			
<p>It is considered that the Project would not have a significant effect on the GGBF, Microbats, Grey-headed Flying-fox or any other flora and fauna in the vicinity of the Project Area. Any impacts to species can be adequately managed through development of the following mitigation measures. For the conversion and modification works, measures shall be incorporated into a EMS.</p>			
<p>Green and Golden Bell Frog</p> <p>A GGBF specific mitigation strategy is to be prepared and included as a sub-plan to the EMS for the proposed Project, in consultation with the NSW OEH. The EMS GGBF sub-plan shall include, but not be limited to:</p> <ul style="list-style-type: none"> • Design and implementation of pre-works surveys (conducted by a suitably qualified ecologist) to identify and, if necessary, relocate frogs found within the footprint of the actual conversion works; and • Should Green and Golden Bell Frogs be encountered during the conversion or modification project works, construction and/or demolition activities would cease in the immediate area. Green and Golden Bell Frogs would be relocated according to the relevant provisions of the NSW <i>Biodiversity Conservation Act 2016</i>. 	✓	✓	✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<p>Compensatory actions for the loss of opportunistic habitat sites within certain tankfarm bunds have been agreed with the Commonwealth and are presented in the approved <i>Revised Plan of Management: Restoration of Green and Golden Bell Frog Habitat, Clyde Terminal, January 2019</i>. This plan will be implemented and includes measures such as:</p> <ul style="list-style-type: none"> • Replacement of non-endemic vegetation such as <i>Juncus acutus</i> (Spiny rush) within the remnant wetland with alternative native sedges, rushes and grasses to provide GGBF shelter habitat; • Additional enhancement of land within the boundary of the remnant wetland to suit GGBF habitat such as developing additional pondage and/or by the placement of smaller prefabricated ponds to provide additional habitat during breeding season; • Design and implementation of a systematic monitoring, reporting and feedback program to assess GGBF relocation, mitigation measures undertaken, and population dynamics for this site; and • A small temporary refuge area will be established, surrounded by frog proof fencing while works are undertaken and the wetland area is reconstructed. <p>Management of Impacts A suitably qualified ecologist is to be engaged prior to the issue of plans for demolition, construction and modification works to improve tankfarm drainage to advise on the following:</p> <ul style="list-style-type: none"> • Proposed works to reduce the risk of potential impacts to GGBF, and • Proposed specific mitigation strategies contained within the EMS. <p>The EMS GGBF sub-plan is also to include:</p> <ul style="list-style-type: none"> • Management of site demolition, construction and modification works such that disinfection of demolition and construction plant and equipment is carried out at a safe distance from the remnant wetland, so that excess disinfecting solution or material does not contaminate waterways; and • Site inductions for all workers are to include emphasis on the special requirements for identifying and protecting GGBF. Inductions are to be mandatory prior to access permission to the construction site. Routine updates of the induction are to be provided at routine 'toolbox' meetings. 			
<p>Protection of Flora While it is recognised that the proposed Project would require negligible vegetation clearing, the following measures are proposed to ensure that minimal potential impacts occur to vegetation in and adjacent to the proposed works areas:</p>	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> The demolition plan should minimise the construction footprint and the requirement for clearing of native vegetation wherever possible and within reason given the need to minimise fire hazard risks onsite; There would be clear marking and delineation of the boundaries between the designated construction sites and “no-go” zones, including vegetation that is to be retained, prior to the commencement of construction. This would include signage, barrier fencing and tree guards, wherever they would be appropriate. There would be no storage of soil, building materials, tools, paints, fuel or contaminants, etc. within the no-go areas; The Australian Standard 4970 (AS4970) for the protection of trees on development sites should be adopted to reduce the impact of incursions into the root zone of trees to be retained; Viva Energy would continue to undertake ongoing bush regeneration in and around the vicinity of the Project Area; If any damage occurs to vegetation beyond the nominated work area the Project Manager should be notified so that appropriate remediation strategies can be developed and implemented; Should the proposed demolition footprint be changed such that works would encroach into more densely vegetated areas, then it is recommended that a suitably qualified ecologist is to be engaged to: <ul style="list-style-type: none"> Conduct pre-clearance surveys of the final footprint immediately prior to demolition commencing, and Undertake additional impact assessment if required. The riparian vegetation along the southern and eastern borders of the Project Area would continue to be preserved. 			
<p>Weed Management The following measures would be put in place to manage weeds:</p> <ul style="list-style-type: none"> Weed infestations found within the Project Area would be removed or controlled prior to works commencing; Earth-working equipment and vehicles would be cleaned of excess soil by brushing and/or hosing at the start and finish of construction works to minimise the risk of spreading of weed seeds and plant pathogens; Sediment fences and sediment traps would be installed for the duration of the construction works and stabilisation of disturbed areas by rehabilitation works. This is to contain any sediments containing weed seeds, propagules or plant pathogens at the Project Area; Soil and vegetation removed would be covered during transport and taken to an approved disposal sites to minimise the risks of spreading weeds and pathogens beyond the work sites; 	✓	✓	✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> Weeds (including vegetation, fruit and seed) removed during clearance would be disposed at an approved green waste site. Weed seed heads or flowers should be carefully removed and bagged immediately onsite before appropriate disposal; Where applicable, weed control would be undertaken in accordance with NSW Agriculture's noxious and environmental weeds control handbook; and Contractors undertaking weed removal or control would be trained or experienced in weed identification and removal (as per the <i>Pesticide Act 1999</i>). 			
<p>Plant Pathogen Hygiene <i>Phytophthora cinnamomi</i> is not known to be present in the Project Area and there is little likelihood that the proposed Project would lead to its establishment or spread. However, the consequences of infection can be severe. Therefore, the mitigation proposed for consideration for weed management would also provide a precautionary measure for limiting the risk of spread of soils and vegetation of origin other than the Clyde Terminal.</p>	✓	✓	
<p>Protection of Aquatic Environments The following additional measures are recommended to minimise potential impacts to aquatic flora and fauna and water quality of the aquatic environment of the Duck and Parramatta rivers.</p> <ul style="list-style-type: none"> A detailed ESCP is to be compiled and included in the EMS; Demolition and construction waste would be stored on a sealed and bunded surface whilst awaiting transfer or processing; Dust suppression and sediment runoff prevention would be undertaken during the demolition, construction and modification works; Wastewater that has been potentially contaminated during the demolition, construction and modification works would be properly treated via the Clyde Terminal wastewater treatment facilities to ensure compliance with the conditions of Viva Energy's EPL No. 570; Temporary stormwater management measures (such as sandbags, sediment fences and berms), are to be used to minimise the risks of sediment-laden runoff and other construction pollutants entering downstream systems; During demolition works, potential chemical pollutants (e.g. fuels, oils, lubricants, paints, herbicides, etc.) are to be stored in appropriate containers within bunded areas within construction compounds to minimise the risk of spillages and mobilisation of these pollutants into aquatic environments; 	✓	✓	✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> All fuel products and other potentially hazardous substances at the Project Area would continue to be stored in sealed, banded areas that would prevent their migration offsite in the event that a storm surge or flood event impacts the Project Area; Manage ASS in accordance with the mitigation measures detailed in Section 17.3 of the EIS and the Soil and Groundwater Contamination section below. The riparian buffer zone along the southern and eastern borders of the Project Area, which has the potential to further minimise the impacts of flooding at the Project Area, would continue to be preserved as follows: <ul style="list-style-type: none"> Contaminated stormwater and wastewater generally would continue to be treated before they are discharged in the vicinity of this riparian buffer zone; and The Project would not result in a reduction of wetland or riparian vegetation. 			
<p>Viva Energy will contact Parramatta City Council before any removal is undertaken for any native trees over 5 m high that are required to be removed.</p> <p>It is not Viva Energy's intention to remove any of the native trees in this area. This will be subject to review with the demolition contractor and if it is considered necessary to remove any trees, then this matter has been identified in the EIS and will involve discussions with Parramatta City Council before such action is taken to determine the most suitable course of action.</p>	✓	✓	
Soil and Groundwater Contamination			
Currently, soil and groundwater conditions at the Clyde Terminal site are regulated by Condition U1 of EPL No. 570 which references the need for the SGMP and an associated annual report. The ongoing operations at the Project Area would also continue to be regulated by the requirements of the POEO Act and CLM Act.			
<p>Demolition and Construction Mitigation Measures</p> <ul style="list-style-type: none"> Prior to demolition, and construction activities taking place, Viva Energy would develop an ESCP to manage those risks at the Project Area. The ESCP would be incorporated as part of the EMS and would be developed in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004); The ESCP would be reviewed and if necessary revised prior to the MOD1 works commencing; The SGMP would be revised as part of the conversion activities where necessary to take account of demolition and construction activities; 	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> • Viva Energy would undertake the following actions in accordance with the EMS for the Project. During the limited excavation activities that are planned for the conversion works, the following management measures would be applied: <ul style="list-style-type: none"> - Reference would be made to the identification of certain Contaminants of Concern in specific areas of the Project Area as per the most relevant Conceptual Site Model; - With reference to the Conceptual Site Model 2012, soil and groundwater conditions at the Project Area would continue to be managed through a series of triggers and appropriately designed response mechanisms; - Identify any required occupational hygiene monitoring for demolition and construction personnel in relation to VOCs; - Any subsurface works would be designed to control and protect the health and safety of people onsite; - The use of geotextile liners or temporary capping would be used to reduce infiltration of surface water runoff where soil is to be excavated during demolition and construction; - Groundwater routine reporting would continue to be undertaken as per Viva Energy's GWSAP, which would be revised as part of the Project; and - If trigger values are exceeded at the Project Area for soil and groundwater quality as outlined in the Environmental Conditions Summary Report (ERM, 2012), the Conceptual Site Model 2012 would be used to guide appropriate clarification or mitigation measures. • If contaminated soils are discovered during excavations, they would be separated and managed in accordance with Viva Energy's existing waste management system for the Project Area, which would be incorporated as part of the Project EMS; • Further investigations would be undertaken in areas that are currently unable to be accessed due to plant and equipment on these areas, once the aboveground infrastructure is removed and access to the relevant areas is available; • Throughout the Project, Viva Energy would continue to undertake the following management measures as part of the SGMP: <ul style="list-style-type: none"> - Contaminants of Concern would continue to be monitored as part of the ongoing SGMP. A data gap would be identified in the event that one or more of these Contaminants of Concern are detected at concentrations exceeding their applicable groundwater screening criteria and may have the potential to pose a risk to identified 			

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<p>receivers. Additional evaluation would then be completed to fill in those data gaps to confirm whether there is a risk that warrants further action; and</p> <ul style="list-style-type: none"> - In the event that remedial actions are required to mitigate the risk of pathway exposure to contamination, the Conceptual Site Model 2012 would serve as a design basis for that remedial action. <ul style="list-style-type: none"> • In general, Viva Energy would continue to use a hierarchy of controls, including engineering controls, to mitigate risks and prevent loss of containment during both the conversion works and operation of the converted Clyde Terminal. Viva Energy would continue to focus its incident prevention at the Project Area on strengthening preventative barriers against spills. The infrastructure upgrades undertaken as part of the conversion works would assist in preventing loss of containment by: <ul style="list-style-type: none"> - Upgrading safeguards to prevent tank overfills; and - Ensuring pipelines continue to be designed to withstand greater pressures than the maximum pump discharge pressures. • ASS would be managed according to an ASSMP which would be incorporated into the Soil and Water Management Plan, the WMP 2013 and the EMS to be prepared for the conversion works; • Identify any ASS impacted soils within the Project Area before excavation activities are undertaken; • Any ASS impacted soils excavated from the Project Area would be kept wet at all times until it is disposed of and managed in accordance with the <i>Waste Classification Guidelines Part 4: Acid Sulphate Soils</i> (Department of Environment and Climate Change, 2008e); and • Any residual impacts caused by lapses in the effectiveness of the ASSMP are likely to be identified through the continued implementation of the Soil and Groundwater Management Plan. The ASSMP would also include a contingency plan to manage impacts that have the potential to occur if specified management strategies fail, and to outline any remediation and restoration actions that may therefore be required. This would ensure that the ASSMP addresses its own effectiveness and reliability in managing any residual ASS impacts. 			

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<p>Ongoing Operational Mitigation Measures</p> <p>Soil & Groundwater Management</p> <ul style="list-style-type: none"> • The SGMP would be revised as part of the operation of the converted Clyde Terminal to take account of the upgraded operations; <ul style="list-style-type: none"> - Following the conversion works and when unimpeded site access is re-established in certain areas, additional investigation and remediation can be completed as required; - The three key barriers to receivers' exposure would be maintained: primary source management; operational area (internal) monitoring; and boundary containment monitoring. These three key barriers would continue monitoring to evaluate barrier effectiveness on a quarterly basis and when otherwise triggered. <p>Hazard & Risk Management</p> <ul style="list-style-type: none"> • Viva Energy's risk management systems would continue to be reviewed and amended before critical changes throughout the conversion works to identify and assess the risks that these changes pose both onsite and offsite, and to ensure multiple layers of controls exist to minimise the opportunity for incidents to occur; <ul style="list-style-type: none"> - Viva Energy would notify WorkCover of any changes to the levels of risk before critical changes occur throughout the conversion works and would submit safety reports to WorkCover as required, ensuring WorkCover's oversight of the risks and controls at the Clyde Terminal; - Viva Energy would continually review and amend the Emergency Procedure Plans to account for the changes in risks and the changes in fire fighting equipment at the Clyde Terminal throughout the conversion activities, and consult with Fire and Rescue NSW during this process; <p>Operations</p> <ul style="list-style-type: none"> • The following management measures would be incorporated as part of the Operational Environment Management Plan (OEMP) and undertaken to prevent and manage the implications of any loss of containment scenarios: <ul style="list-style-type: none"> - Current systems in place at the Project Area that would continue to prevent loss of primary containment and spill incidents include: <ul style="list-style-type: none"> ▪ Yokogawa Prosafe safeguarding system; 	✓	✓	✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> ▪ Water drain tanks through quick flush tanks to separate water from fuels, returning fuel to tanks and draining water to wastewater treatment facility, thus minimising the opportunity for fuel to enter the interceptor system; ▪ Decontaminate the tankfarms, drainage and wastewater systems across the Clyde Terminal area to ensure minimal opportunity for stormwater to be impacted by remnant hydrocarbon contact; ▪ Re-profile tankfarm floors to ensure adequate and effective stormwater draining and bund capacity is preserved to serve its primary purpose of protection of the environment from hydrocarbon spillage; and ▪ Review and repair tankfarm bund walls where required to ensure integrity in the event of a spill incident. <ul style="list-style-type: none"> - Tank overfill would continue to be prevented through a combination of: <ul style="list-style-type: none"> ▪ An automatic tank level gauging system with multiple level alarms including: target fill level; high level alarm with time for appropriate operator action at each point and before the next level; an alarm point; and manual dips to provide accuracy of the tank level gauging system; ▪ A final independent high-high level alarm system that provides an alarm independently from the other alarms and tank level gauging system. This system provides for sufficient response time before overfill is anticipated to occur and would trip inflow facility pumps shutting down product inflow to tanks; ▪ The movement management system that provides for the analysis of data and tank movement management; and ▪ Operational readiness planning with procedural support. - A series of facility integrity checklists would be developed consistent with other Viva Energy terminal facilities to ensure inspections and maintenance of safety and environmentally critical equipment and repairs are undertaken in a timely manner; - Viva Energy's existing Permit to Work system would be changed to be appropriate for converted Clyde Terminal operations and would be introduced with appropriate training and mentoring to ensure controls are in place across the Clyde Terminal to control all works, and to integrate these with non-routine activities during operation of the converted Clyde Terminal; - Operators would continue to be trained to look for spills and leaks in the course of their shift rounds; - Operators would be trained in the new environmental controls appropriate for the converted Clyde Terminal operations and specifically in the use of newly installed environmental control equipment; 			

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> - Existing interceptors within the Project Area would continue to be maintained as a means of tertiary containment; and - Spill incidents would be reported within the Viva Energy incident reporting system and, where required, to the EPA and WorkCover. • If a release event is known or suspected to have occurred, additional assessment may be justified to determine if there have been any soil and groundwater impacts under the SGMP as follows: <ul style="list-style-type: none"> - A program of works would be developed to cover any data gaps and determine whether any associated risks are within acceptable levels; - Investigation techniques to be employed would include, where relevant: <ul style="list-style-type: none"> ▪ Trial pit excavations; ▪ Advancement of soil bores; ▪ Monitoring well installations; and ▪ Analytical sampling of soil and groundwater quality. - If investigation shows that risks are greater than acceptable levels identified in the SGMP, some form of remedial action would be warranted in order to eliminate or reduce potential exposure pathways. This would be likely to involve one or more of the following: <ul style="list-style-type: none"> ▪ Excavation of surface soil and removal or treatment before reinstatement; ▪ Excavation of interception trenches and associated pumps as needed to remove and prevent further spread of shallow groundwater contamination; ▪ Installation of pumps in groundwater wells to remove or control the spread of contamination; and ▪ Emplacement of impermeable materials in soil trenches to contain the spread of contaminated groundwater. 			

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	C	D	O
European Heritage			
It is anticipated that the impacts to the historical and technical significance of the Refinery can be managed through a full photographic and documentary archival recording of the facility. Specifically, the following mitigation measures are recommended for the Project to minimise impacts on heritage significance.			
<ul style="list-style-type: none"> Parramatta Council requires consideration be given to provision of an Arts Plan. As such, oral histories are to be recorded from past and present staff regarding the operations of the former Clyde Refinery, and a full photographic and documentary archival recording of the Project Area would be used to manage the impact to the historical and technical significance of the former Clyde Refinery; Photographic recording would be undertaken in accordance with the NSW Heritage Branch guidelines <i>How to prepare archival records of heritage items</i> (NSW Heritage Office, 1998) and <i>Photographic recording of heritage items using film or digital capture</i> (NSW Heritage Office, 2006); Archival recordings would be undertaken to capture, prior to demolition works taking place, and for infrastructure that would be demolished; Documentary recording would contain a detailed timeline of each piece of equipment and tankfarm, together with copies of plans and schematics; A photographic archival recording would be undertaken prior to the demolition of the stacks. The recording would include broad views of the larger Clyde Refinery area; Archival recording will be updated to include the State Office Building, MTS1 33 kV switch yard, Tank 106, LPG spheres V137 and V140 and LPG truck loading gantry. 	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
Hazard and Risk			
<p>Risk Management in Design</p> <p>All tanks converted as part of the Project would be constructed to recognised Australian and International Standards, in line with the existing tanks at the Clyde Terminal. The design would be subject to the Viva Energy's risk management process. Risk management activities that directly relate to the NSW Government's DPE HIPAP Seven Stage Planning Process are outlined below:</p> <ul style="list-style-type: none"> • Preliminary Hazard Analysis; • Viva Energy's Hazard and Effects Management Process; • Hazard and Operability Study; • Fire Safety Study; • Final Hazard Analysis; • Emergency Response Plan Review bi-annually or prior to each critical modification; • Construction Safety Study; • Commissioning review; and • Safety Management System Update. 	✓		
<p>Terminal Safety Systems</p> <p>Safety Systems proposed for the Project are as follows:</p> <ul style="list-style-type: none"> • Process Control: The process control system (i.e. tank level gauging) is integrated with the existing Clyde Terminal process Distributed Control System; • Process Shutdown Systems: Existing pump interlocks would be retained and new tank high level trips would be provided as required to demonstrate as low as reasonably practicable risk; • Bund Walls and Drains: The existing bunds and drains would be retained; • Articulated and remotely operated foam application system would be installed; • Fire Water: The existing firewater main, monitors and hydrants would be modified for the converted Clyde Terminal operations; 	✓	✓	✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> Tank Rim Seam Foam Pourers: Rim seal foam pourers would be modified or installed to meet the revised tank configuration; and Hazardous Area Classification: Ignition sources would be controlled by the application of suitable hazardous area classification standards. 			
<p>Safety in Operation The existing Clyde Terminal Management System would be updated to align with operation of the converted Clyde Terminal. The ERP would be updated as required before operation of the converted Clyde Terminal commences, and in particular the Final Hazard Analysis would be prepared at this time. The implementation of the ERP would include the activation of external emergency services if required.</p>			✓
<p>Proposed Automation and Safeguarding Operation The following safeguards and automation upgrades are proposed:</p> <ul style="list-style-type: none"> Yokogawa Prosafe SGS would be installed to replace the functionality of the existing relay logic; Permissives (interlocks) would be improved to prevent the incorrect valves being opened; Motorised valves would be installed inside tank bunds to allow quicker acting valves and remote operation; The reliability of telemetry between Clyde/Gore Bay would be improved; The Independent High Level Alarm and tank gauging systems would be improved; Pump trip systems would be improved; The site fire system and dump valve logic would be improved; and Non-safeguarding controls would also be upgraded. 	✓		
Emergency Response Plans would include the actions to cease all product transfers and shut all valves and “lock the product inside the tanks”.			✓
<p>Ausgrid must be contacted before planning any work near Ausgrid’s underground power and control cables that run through the Clyde facility.</p> <p>It is imperative that any hand excavation or hand boring works within 2m of either side of these cables be classified as "Work Near Underground Assets" according to Work Cover Guidelines and must comply with Ausgrid's standard: NS156</p>	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<p>Working Near or around Underground Cables. Mechanical excavation or boring works within 2m of these cables is not permitted.</p> <p>Viva Energy's own internal standards require cable location to be determined using plans then locating equipment before undertaking hand digging and auguring around cable locations. Viva Energy will comply with Ausgrid's requirements.</p>			
<p>Emergency response will involve using a semi-automatic fire suppression system; a SIL-rated fire detection system or melt-tube technology that would alarm back to the Control Room for Operator verification of an incident before deployment of fire-fighting foam and/or water deluge systems. Activation of the fire system would shut all valves, shutdown pumps and transfer operations and activate fire systems as the first stage of the response with support provided by Fire & Rescue NSW.</p> <p>This fixed fire system will replace the mobile fire response that is currently in place.</p>	✓	✓	✓
Waste Management			
<p>Demolition and Construction Waste Mitigation Measures</p> <p>Demolition, construction and operational waste would be managed and disposed of in accordance with relevant State legislation and Government requirements. The existing WMP would be updated for demolition, construction and modification works, and this would be incorporated into the EMS. The following waste management mitigation measures would be incorporated as part of the EMS for the Project to eliminate or reduce the risk of environmental impacts:</p> <ul style="list-style-type: none"> • Demolition and construction contractors would be required to provide a detailed waste management plan and tracking system that incorporates available recycling options; • Before transfer to the designated locations as per the waste permit system, wastes may require stockpiling. Wastes would be: <ul style="list-style-type: none"> - Clearly labelled, to ensure that all such waste is clearly identified and stored separately from other types of materials and wastes, and particular to ensure that contaminated and non-contaminated wastes are stockpiled separately; - Located away from trafficked areas and other potential disturbances; - Placed on geo-fabric lining, or hand stand or bunded areas and covered to prevent leachate and erosion; and - Be no more than 3 to 5 m tall depending on the type of wastes stockpiled, and allow adequate room for transport around and management of each stockpile. 	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<ul style="list-style-type: none"> • Demolition and construction waste would be stored on a sealed and bunded surface whilst awaiting transfer or processing; • Radioactive substances waste would be disposed of as per the requirements of the <i>Radiation Control Regulation 2003</i> and the <i>Waste Classification Guidelines Part 3: Waste Containing Radioactive Material</i> (Department of Environment and Climate Change, 2008e); • A small amount of asbestos is present on the Project Area and would require removal during demolition activities. As such, Viva Energy and its contractors would comply with the following obligations set out in Chapter 8 of the WH&S Regulation: <ul style="list-style-type: none"> - Ensure that exposure to asbestos at the Project Area is eliminated as far as reasonably practicable; - Ensure an asbestos register is maintained; - Ensure an asbestos management plan is in place for the Project Area; - Engage a licensed asbestos contractor to carry out the removal of asbestos from the Clyde Terminal; - Ensure that health monitoring is provided to those personnel undertaking asbestos works as part of the Project; - Ensure access to the asbestos removal area is limited to those who are actually involved in the removal of the asbestos, including the placement of relevant signage and barriers; - If there is uncertainty as to whether the exposure standard is likely to be exceeded, Viva Energy would engage a competent contractor to perform air quality monitoring in the area; - Decontamination facilities would be provided at all times at the Project Area; and - Ensure that asbestos waste, and asbestos contaminated plant or clothing is decontaminated, sealed and labelled before it is removed from the Project Area to a site that is authorised to receive asbestos waste. • As per the requirements of clause 42 the POEO Waste Regulation, asbestos waste would be securely packaged, be in a sealed container, be wetted down, or be contained in a covered, leak-proof vehicle. 			

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<p>Operational Waste Mitigation Measures Waste management mitigation measures for operation of the Clyde Terminal would be incorporated into an updated version of the WMP. Operational waste management mitigation measures include:</p> <ul style="list-style-type: none"> Waste management would continue to be undertaken in accordance with the <i>Waste Avoidance and Resource Recovery Act 2001</i> and the <i>Waste Avoidance and Resource Recovery Strategy 2007</i> (Department of Environment and Conservation, 2007), in that resources would be used efficiently, and the hierarchy of waste avoidance, recovery and disposal would be followed; Waste would continue to be identified, characterised, classified and separated in accordance with the <i>Waste Classification Guidelines</i> (Department of Environment and Climate Change, 2008e), and records of these procedures would be maintained for the life of the conversion works, and beyond that, for the required statutory period; The waste permit system for the onsite and offsite transfer and disposal of waste would continue to be followed; EPL No. 570 would continue to provide the key guidelines for waste management at the Project Area. In particular: <ul style="list-style-type: none"> Waste designated for recycling would be stored separately from other wastes; All above ground tanks containing material with the potential to cause environmental harm would be bunded or have an alternative spill containment system in place; and Dewatered oily sludge would be treated in an onsite landfarm or disposed of offsite to a place that can lawfully accept that class of wastes. Waste materials would be stored in the designated locations as per EPL No. 570 and the WMP; Wastes scheduled under the POEO Waste Regulation would continue to be subject to waste tracking requirements, except where an exemption exists under EPL No. 570. A record of these waste movements would nevertheless be maintained by Viva Energy; Leachate or residual water from waste dewatering activities would be directed to the interceptors for treatment before being released as licensed discharge. Waste materials separated out at the interceptors would be disposed at an offsite licensed facility; In the unlikely event that waste or its leachate is released to the environment, the investigation and remediation measures outlined in the SGMP would be adhered to; and PCB wastes would be managed and disposed of according to the CCO issued by the EPA for the handling of PCB wastes. 			✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
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<p>Hazardous Waste Mitigation Measures Hazardous wastes generated during demolition and construction activities, and/or operation of the converted Clyde Terminal would be treated or immobilised in the following manner before being transported offsite by a licensed waste contractor:</p> <ul style="list-style-type: none"> Asbestos wastes according to the requirements of the POEO Waste Regulation, that it be securely packaged in a sealed container and wetted down or contained in a covered, leak-proof vehicle; PCB wastes according to the CCO issued by the EPA for the handling of PCB wastes; Oil filters and packing and used oily rags would be managed as prescribed waste. Any powdery used oil-absorbent materials would be bagged or drummed or otherwise contained to facilitate their safe handling and disposal; Oily sludges (for example, from tank cleaning during the ongoing operation of the Clyde Terminal) would continue to be treated in the sludge dewatering facility and/or the landfarm area, as per EPL No. 570 or disposed of at licenced facilities; Redundant equipment containing any radioactive isotopes would be disposed of as per the requirements of the <i>Radiation Control Regulation 2003</i> and the <i>Waste Classification Guidelines Part 3: Waste Containing Radioactive Material</i> (Department of Environment and Climate Change, 2008e); and Organic solvents, contaminated blue metal and empty drums would be managed by chemical fixation to convert the hazardous contaminants to a chemically stable form. Where this is not possible, macroencapsulation would be used to place a physical barrier between those contaminated wastes and the surrounding environment. 	✓	✓	✓

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
Aboriginal Heritage			
Whilst the ACHA predicts that the Project would not impact on the Aboriginal heritage values of the area, the following management measures would nevertheless be implemented if any potential Aboriginal objects or human remains are discovered at the Project Area.			
<ul style="list-style-type: none"> • Should any suspected Aboriginal objects be uncovered during demolition or construction works, all works in the vicinity should cease immediately to prevent any further impacts and a qualified archaeologist be brought onsite to make an assessment. If the object is found to be an Aboriginal object, it would be notified under the <i>National Parks and Wildlife Act</i> as soon as possible; • If suspected human remains are exposed, all construction work is to cease immediately in the near vicinity of the find location and the Project Manager is to be immediately notified to allow assessment and management: <ul style="list-style-type: none"> - An area of 20 m radius is to be cordoned off by temporary fencing around the exposed human remains site - construction work can continue outside of this area as long as there is no risk of interference to the human remains or the assessment of human remains; - The Police and the OEH are to be contacted immediately; and - A physical or forensic anthropologist would be commissioned by the Police to inspect the remains in situ (organised by the Police unless otherwise directed), and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or modern). • Subsequent management actions would be dependent on the findings of the forensic anthropologist: <ul style="list-style-type: none"> - If the remains are identified as modern and human, the area would become a crime scene under the jurisdiction of the NSW Police; - If the remains are identified as pre-contact or historic Aboriginal, the site would be secured and OEH and all Registered Aboriginal Parties notified in writing. Where impacts to exposed Aboriginal skeletal remains cannot be avoided, remains would be retrieved via controlled archaeological excavation and reburied outside of the Disturbance Boundary in a manner and location determined by Registered Aboriginal Parties; - If the remains are identified as historic non-Aboriginal, the site is to be secured and the NSW Heritage Branch contacted; and - If the remains are identified as non-human, work can recommence immediately. 	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<ul style="list-style-type: none"> The above process functions only to appropriately identify the remains and secure the site. From this time, the management of the area and remains is to be determined through one of the following means: <ul style="list-style-type: none"> If the remains are identified as a modern matter liaise with the Police; If the remains are identified as Aboriginal liaise with the proponent, OEH and Aboriginal stakeholders; If the remains are identified as non-Aboriginal (historical) liaise with the DPE and the Heritage Office; and If the remains are identified as not being human then work can recommence immediately. 			
Noise and Vibration			
<p>Demolition and Construction Waste</p> <p>Contractors would demonstrate best practicable means and include noise mitigation measures in the EMS plan, which could include:</p> <ul style="list-style-type: none"> Construction activities to be limited to between 7am and 6pm Monday to Friday and 8am to 5pm Saturday; Where work is undertaken outside of the standard working hours it would be in accordance with the <i>Interim Construction Noise Guideline</i> (EPA, 2009); Construction of noise bunds or barriers, where feasible and effective for noise suppression, at the early demolition and construction stage; Use of temporary barriers for stationary noisy equipment; Possible restrictions to construction hours (beyond the above hours) where noise impacts are significant; All plant items would be properly maintained and operated according to manufacturers' recommendations in such a manner as to avoid causing excessive noise; All pneumatic tools would be fitted with silencers or mufflers; Any compressors brought on to site should be silenced or sound reduced models fitted with acoustic enclosures; Consultation with property owners likely to be affected prior to works being carried out; and Noise monitoring at sensitive locations as agreed with EPA for any excessive noise or noise complaints being assessed with appropriate action taken. 	✓	✓	

Summary of Mitigation Measures	Conversion and Modification Works (SSD 5147 and SSD 5147 MOD1)		
	C	D	O
<p>Traffic Noise The existing OEMP includes provisions for vehicle protocols in and around the Clyde Terminal and the Parramatta Terminal. This would be revised for operations once the demolition, construction and modification works have been completed.</p>			✓
GHG Emissions			
<p>Viva Energy would undertake an internal energy audit of the Project Area following completion of the demolition and construction works to take stock of how the operation of the Clyde Terminal has reduced electricity consumption and improved energy efficiency. Recommendations arising from the audit would then be taken into consideration where significant further energy savings can be made.</p>			✓
Landscape and Visual Amenity			
<p>Dust control measures included in the EMS and outlined in the Surface Water, Industrial Water and Flooding section of this table would avoid or minimise potential visual impacts from dust.</p>	✓	✓	
<p>The riparian vegetation within the wetlands would be retained thereby conserving the visual amenity and landscape character of the area.</p>	✓	✓	✓
Ongoing Monitoring at the Converted Clyde Terminal			
<p>Viva Energy would continue to undertake existing environmental and safety monitoring at the Project Area following completion of the conversion including:</p> <ul style="list-style-type: none"> • Interceptor sampling; • Wetlands management; • Waste management; • Groundwater sampling and analysis; • Safety critical equipment inspection and maintenance; • Safety management system auditing; • Process safety observations and audits; • Emergency response exercises and plan reviews; • Hazard and effect management process reviews; and • Competency assessment of all operational staff. 	✓	✓	✓