APPENDIX I

HAZARD IMPACT ASSESSMENT REPORT

SEPP 33 AND PRELIMINARY HAZARD ANALYSIS

CENTRAL SYDNEY INDUSTRIAL ESTATE INCORPORATING DOWNER SUSTAINABLE ROAD RESOURCE CENTRE

VE PROPERTY PTY LTD AND DOWNER EDI WORKS PTY LTD

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SEPP 33 and Preliminary Hazard Analysis **Central Sydney Industrial Estate Incorporating Downer Sustainable Road Resource Centre**	- **Date:** 14-Aug-2020

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ABBREVIATIONS

ADGC	Australian Dangerous Goods Code
AS	Australian Standard
DG	Dangerous Goods
DPIE	Department of Planning Industry and Environment
EIS	Environmental Impact Statement
EPL	Environment Protection Licence
IBC	Intermediate Bulk Container
LPG	Liquid Petroleum Gas
PG	Packing Group
PHA	Preliminary Hazard Analysis
QRA	Quantitative Risk Assessment
RAP	Reclaimed Asphalt Pavement
SEARs	Secretary's Environmental Assessment Requirements
SDS	Safety Data Sheet
SSD	State Significant Development
VEP	Viva Energy Property

1. SUMMARY

1.1. Background

Downer EDI Work Pty Ltd (Downer) is proposing to more closely integrate some of their road product operations onto a single site. The selected site is Lot 6 of the State Significant Development (SSD) Central Sydney Industrial Estate subdivision proposal of the Viva Energy Clyde Terminal (former Shell Refinery, referred to as the 'Clyde Terminal').

The proposal includes:

- The staged subdivision of the western area of Lot 100 DP 1168951 into eight new industrial lots.
- Preparing the lots via earthworks and civil works for future re-development (by future applications).
- Stage 1 (Sustainable Road Resource Centre). Downer EDI Work Pty Ltd (Downer) will occupy the newly created Lot 6 (the part of the subdivision closest to the Clyde Terminal boundary). Stage 1 includes construction and operation by Downer of the following facilities on Lot 6:
  - RAP processing operations.
  - Asphalt plant.
  - Reconomy facility.
  - A modern bitumen product manufacturing plant.

An Environmental Impact Statement (EIS) to obtain consent for the SSD is required.

Sherpa Consulting Pty Ltd (Sherpa) was engaged to undertake the hazard analysis of the Downer Stage 1 Lot 6 component of the development for input to the EIS. There are no specific facilities or operations proposed for other Lots therefore the hazard analysis is limited to Downer Stage 1 Lot 6 activities only.

1.2. Objectives

The objective of the hazard analysis is to:

- Conduct an assessment to determine whether the Downer Stage 1 Lot 6 development is 'potentially hazardous' within the guidelines of NSW State Environmental Planning Policy No.33 Hazardous and Offensive Development (Applying SEPP 33, Ref [1]) hence whether a Preliminary Hazard Analysis (PHA) is required.
- Conduct a PHA in line with the Hazardous Industry Planning and Advisory Paper No 6 – Hazard Analysis (HIPAP 6, Ref [2]) based on the SEPP 33 screening results for inclusion in the EIS.

1.3. Results and Conclusions

1.3.1. SEPP 33 screening assessment

A summary of results of the SEPP 33 assessment is provided in Table 4.1. The screening assessment found that the quantity of Class 8 materials to be stored and handled was above the screening threshold nominated in the DPIE's *Applying SEPP 33* guidelines (Ref [1]). Screening thresholds for other types of Dangerous Goods (DG) were not exceeded.

Whilst not explicitly covered under the defined SEPP 33 DG screening thresholds, bitumen also has some specific hazardous properties and there is potential for a fire or explosion incident in a bitumen storage tank with potential offsite safety effects. Therefore, the development is classified as 'potentially hazardous' and a PHA is required.

Screening thresholds for DG transportation were not exceeded and a route evaluation study is not required.

In the absence of controls, the proposal has the potential to cause pollutants to be discharged to the surrounding environment. Therefore, it is considered 'potentially offensive industry' under SEPP 33 and will require an Environment Protection Licence (EPL). Environmental impacts are addressed in other parts of the EIS.

1.3.2. Preliminary hazard analysis

All potentially hazardous materials are stored and handled in very small quantities and/or have large separation distances to the site boundary that comply with relevant Australian Standards. There are no surrounding sensitive land uses from a land use safety planning perspective. Therefore, a qualitative analysis was selected for this study. This approach is known as a Level 1 risk assessment under the NSW DPIE's Multi-Level Risk Assessment guidelines (Ref [3]). Refer to Table 5.2 for the potential hazardous incident scenarios identified for all types of DG to be handled at the development in above minor quantities, including Class 8 corrosives, kerosene (Class 3 flammable liquid) and bitumen (Class 9, also a combustible liquid).

The PHA found that:

- Offsite effects due to loss of containment of Dangerous Goods including Class 8 corrosives, Class 3 flammables and bitumen are extremely unlikely as dedicated, fully contained storage and handling areas compliant with the relevant standards (AS 1940 *The storage and handling of flammable and combustible liquids* and AS 3780 *The storage and handling of corrosive substances*) are provided in the design.
- These areas are also well separated from the site boundary (distances of 20m to 40m) exceeding the separation distances required under AS 3780 and AS1940. It is

therefore very unlikely that an accident event involving hazardous materials would have any effects that could extend off site.

- The nearest hydrocarbon storage tanks at the Clyde Terminal are more than 200m away and escalation between the sites is very unlikely.

Qualitative analysis of potential off-site safety effects to surrounding land uses or environmental effects to surrounding ecosystems due to accident events indicates that all HIPAP 4 qualitative risk criteria are met by the proposed Downer development as summarised in Table 1.1, hence the offsite risk is very low.

The PHA recommends that to ensure the assumptions made in the hazard analysis remain valid:

- that the final layout and design for the Stage 1 facilities meet the bunding and separation distance requirements of AS 1940 *The storage and handling of flammable and combustible liquids* and AS 3780 *The storage and handling of corrosive substances*).

Table 1.1: Comparison against HIPAP 4 qualitative risk criteria

Criteria	Comments	Complies?
a) All 'avoidable' risks should be avoided. This necessitates the investigation of alternative locations and alternative technologies, wherever applicable, to ensure that risks are not introduced in an area where feasible alternatives are possible and justified.	No identified events involving Class 8 corrosives or other DG materials with significant safety or environment effects beyond the boundary. The proposed technology is well understood with standard controls. Whilst fires have occurred in bitumen facilities consequences are typically localised to immediate plant and equipment. Combustible only grades of bitumen are handled (i.e. no higher hazard Class 3 (flammable) grades such as cutback bitumen), reducing the risk of fires. Bitumen heating will be electric. This eliminates the use of circulation/pumping of hot oil which further reduces fire risk in these plants.	Yes
b) The risk from a major hazard should be reduced wherever practicable, irrespective of the numerical value of the cumulative risk level from the whole installation. In all cases, if the consequences (effects) of an identified hazardous incident are significant to people and the environment, then all feasible measures (including alternative locations) should be adopted so that the likelihood of such an incident occurring is made very low. This necessitates the identification of all contributors to the resultant risk and the consequences of each potentially hazardous incident. The assessment process should address the adequacy and relevancy of safeguards (both technical and locational) as they relate to each risk contributor.	No identified events with significant safety or environment effects beyond the site boundary. The storage and use of all DGs would be compliant with relevant Australian Standards with respect to separation distances, bunding and segregation. Relevant standards are AS 1940 and AS 3780.	Yes
c) The consequences (effects) of the more likely hazardous events (i.e. those of high probability of occurrence) should, wherever possible, be contained within the boundaries of the installation	No identified events with significant safety or environment effects beyond the site boundary.	Yes

Criteria	Comments	Complies?
d) Where there is an existing high risk from a hazardous installation, additional hazardous developments should not be allowed if they add significantly to that existing risk.	The Clyde Terminal is adjacent to the eastern boundary. The Downer development does not add to this existing risk profile of the Clyde Terminal or the cumulative risk in the area as there are no identified events with offsite effects. There is no identified escalation risk between the Clyde Terminal and the Downer proposal. The location of the Downer facility is outside the risk criteria from the Clyde Terminal, i.e. meets all HIPAP4 risk criteria.	Yes

2. INTRODUCTION

2.1. Background

Downer EDI Work Pty Ltd (Downer) is proposing to more closely integrate its existing reclaimed asphalt pavement (RAP) processing and asphalt production operations onto a single site, along with its other sustainable road product ventures, to be known as the Downer Sustainable Road Resource Centre, or Stage 1 of VE Property's (VEP) Central Sydney Industrial Estate (estate).

The selected site for the estate is the western area of Viva Energy's Clyde Terminal (former Shell Refinery). The proposed estate would be a State Significant Development (SSD). VEP is the proponent of the estate.

VEP is required to submit an Environmental Impact Statement (EIS) to obtain consent for the development. VEP has commissioned Element Environment Pty Limited (Element) to prepare the EIS to address the Department of Planning Industry and Environment (DPIE) Secretary's Environmental Assessment Requirements (SEARs) for the proposal. Element has assembled a team of specialist consultants to assess the various environmental issues associated with the proposed facility.

Notwithstanding the above, this report has been prepared on behalf of Downer as Stage 1 will be the only operational component currently proposed at the estate.

2.2. Requirement for study

The SEARs for the proposed facility includes consideration of 'Hazards and Risk'. Sherpa Consulting Pty Ltd (Sherpa) was engaged by Element to undertake the hazard analysis component of the SEARs requirement. Refer to Table 2.1 for the specific SEARs requirements and where in this report it is addressed.

Table 2.1: SEARs addressed in this report

Government Agency	Requirement	Section of the report where the SEARs is addressed
DPIE	A preliminary risk screening completed in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33 (Ref [1])with clear indication of class, quantity and location of all dangerous goods (DGs) and hazardous materials associated with the development.	APPENDIX B provides a list of class and quantity of DGs and other hazardous substances. Table 4.1 provides a comparison against SEPP 33 risk screening thresholds. Figure 3.1 provides locations.
DPIE	Should the preliminary screening indicate that the development is 'potentially hazardous' a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis' and Multi-Level Risk Assessment (Ref [2]).	Section 5 contains the PHA covering DGs.

Government Agency	Requirement	Section of the report where the SEARs is addressed
DPIE	The EIS and PHA (if necessary) must also include: - verification that all combustible or potentially combustible materials such as bitumen will not be heated beyond their flash points during normal and abnormal operations within the development.	Section 4.3.2
SafeWork:	The only dangerous good the proposed site in significant quantities will be Bitumen. Since Bitumen is not a Major Hazard material and not listed as such in Schedule 15 of the WHS Regulation 2017, we do not have any specific issues that need to be addressed in the SEARS except for the following: The only specific issues we note under our jurisdiction that need to be addressed in the SEARs are: The EIA must address the possible impacts of any incident at the proposed facility on the nearby Viva petroleum (former Shell) storage terminal and the truck loading gantry	Section 5.3.3 Note: There is no truck loading gantry on the Viva Clyde Terminal. Truck loading operations occur at the Parramatta Terminal to the north of the Clyde Terminal
Endeavour Energy:	Endeavour Energy is aware that the provisions of State Environmental Planning Policy No 33— Hazardous and Offensive Development (SEPP 33) that in the preparation of a preliminary hazard assessment electricity infrastructure is not defined/regarded as sensitive land use. However, in similar situations Endeavour Energy has sought further advice from the consultants preparing the preliminary hazard assessment on the basis that, although not a sensitive land use in the traditional/environmental sense, if the electricity infrastructure on or in proximity of the site is damaged, the resulting outage could leave thousands of properties/customers without power. The consultants have been requested to specifically address the risks associated with the proximity of the electricity infrastructure i.e. detail design considerations, technical or operational controls etc. to demonstrate as required by SEPP 33 that the proposed business/development is suitably located and can be built and operated with an adequate level of safety and pollution control.	Section 5.3.4

2.3. Objectives

The objective of this report is to:

- Conduct an assessment to determine whether the Stage 1 Lot 6 development is 'potentially hazardous' or 'potentially offensive' within the screening guidelines of NSW State Environmental Planning Policy No.33 Hazardous and Offensive Development (SEPP 33) and hence whether a Preliminary Hazard Analysis (PHA) is required.
- Conduct a PHA in line with the Hazardous Industry Planning and Advisory Paper No 6 – Hazard Analysis (HIPAP 6, Ref [2]) if required based on SEPP 33 screening results.

2.4. Scope

The scope of this report assesses the potential offsite acute impacts associated with the proposed storage and use of Dangerous Goods (DG) for the operational phase of Stage 1 of the estate.

2.5. Exclusions and limitations

Excluded from the study are:

- Aspects of SEPP 33 covering management of potentially offensive aspects of the development. This is addressed in other parts of the EIS.
- Hazards unrelated to the use of hazardous materials, e.g. natural hazards such as floods.
- Construction activities.
- Any subsequent stages of development on lots other than Lot 6.

3. DESCRIPTION OF DEVELOPMENT

3.1. Site layout

The Stage 1 development will be located on Lot 6 of the Viva Energy Clyde subdivision.

Stage 1 operations will include:

- RAP processing operations.
- Asphalt plant.
- Reconomy facility.
- A modern bitumen product manufacturing plant.

These operations will include various hazardous materials including DGs.

Figure 3.1 shows the conceptual Stage 1 layout highlighting the locations of the DGs stored on site.

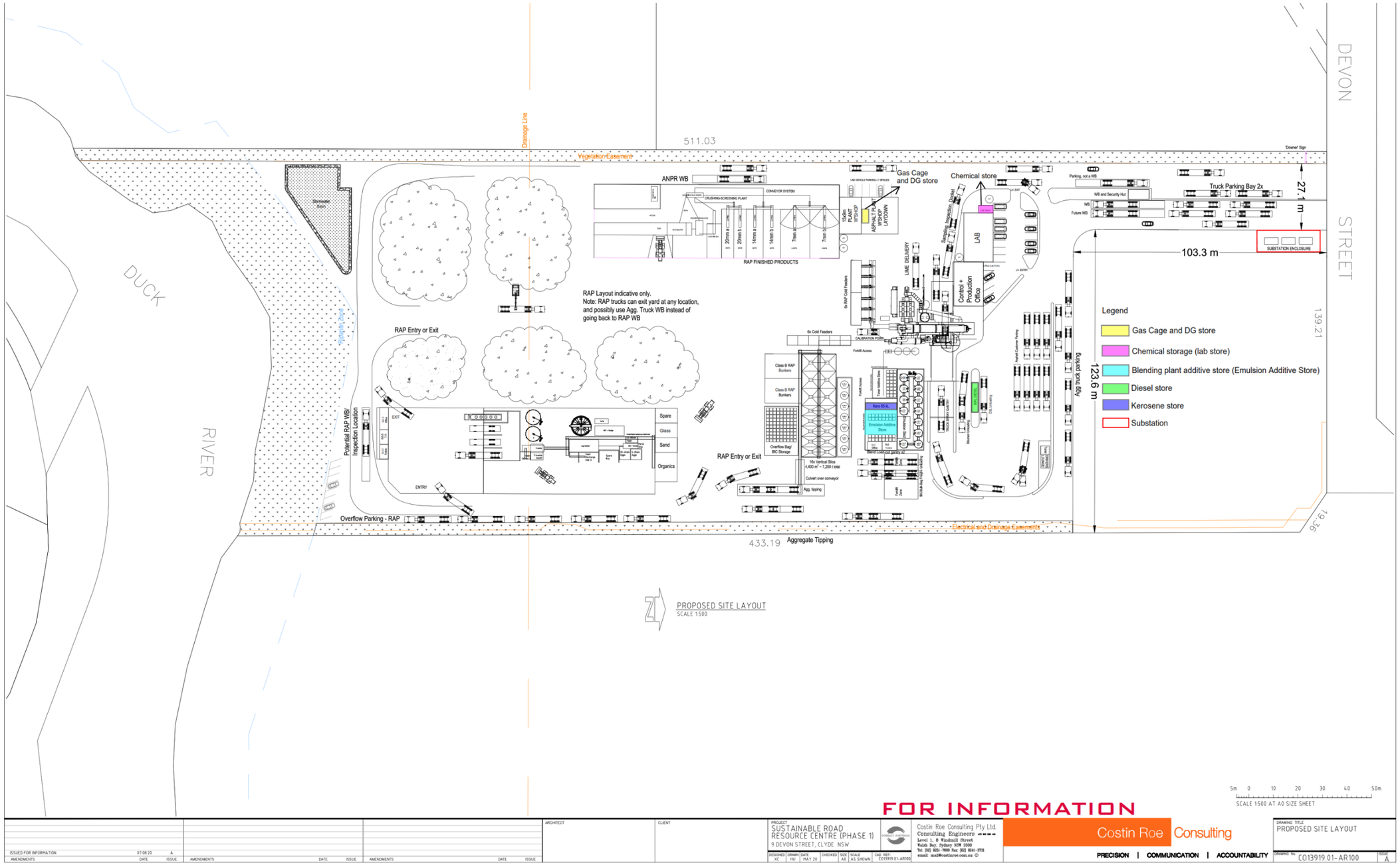
A description of the SSD scope and Downer Stage 1 development is provided in APPENDIX A.

3.2. Hazardous materials

Hazardous materials will be stored and used on site in the locations shown in Figure 3.1.

A list of the hazardous materials associated with Stage 1 operations is provided in APPENDIX B.

Figure 3.1: Stage 1 Concept site layout



4. SEPP 33 ASSESSMENT

4.1. Potentially hazardous development

SEPP 33 defines potentially hazardous industry as:

'Potentially hazardous industry' means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:

(a) to human health, life or property; or

(b) to the biophysical environment; and

includes a hazardous industry and a hazardous storage establishment.

The DPIE publication Hazardous & Offensive Development Application Guidelines – Applying SEPP 33 (Ref [1]), known as the 'Applying SEPP 33 guideline' was used to establish whether the development is 'potentially hazardous' or 'potentially offensive', hence whether further analysis is required.

The Applying SEPP 33 screening method is based on the Australian Dangerous Goods Code (ADGC) Edition 7 (National Transport Commission, 2009) (Ref [4]) and therefore refers to hazardous materials by their DG classification.

In this report, for consistency with the Applying SEPP 33 guideline, materials have been referred to by their DG classification, not their classification under the Globally Harmonized System (GHS), which is used in most recent ADGC Edition 7.6 (National Transport Commission, 2018, Ref [5]).

A summary of the expected types and quantities of materials to be stored or handled on site, with the relevant SEPP 33 screening threshold is presented in Table 4.1.

4.2. Potentially offensive development

SEPP 33 defines potentially offensive industry as follows:

'Potentially offensive industry' means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including, for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.

In the absence of controls, the proposal has the potential to cause pollutants to be discharged to the surrounding environment. Therefore, it is considered 'potentially offensive industry' and will require an Environment Protection Licence (EPL). Environmental impacts are addressed in other parts of the EIS.

4.3. SEPP 33 screening

4.3.1. Dangerous Goods

The total quantity of DGs cumulated by DG class has been summarised from the data in APPENDIX B. DGs with applicable SEPP 33 screening thresholds are summarised in Table 4.1. This shows that:

- The SEPP 33 threshold is exceeded by Class 8 materials only.
- The stored quantities of all other DGs are below the screening threshold hence as per the Applying SEPP 33 guidelines there is unlikely to be a significant off-site risk from these.

The development is 'potentially hazardous' in the context of SEPP 33 and requires a PHA.

Table 4.1: SEPP 33 hazardous material storage screening summary

DG			Quantities in tonnes		Potentially hazardous?	Location
Class	**PG**	**Materials**	**Stored**	**Threshold in Applying SEPP 33 guideline, Ref [1]**		
2.1	-	Various, e.g. acetylene	0.035	0.1[(a)]	No	DG Store/ gas cage
2.1	-	LPG	0.018	10 [(b)]	No	DG Store/ gas cage
3	II	Various hydrocarbons	1.6	5[(c)]	No	DG Store/ Chemical store
3	III	Kerosene	48	Quantity is potentially hazardous if less than 8 m from site boundary. Separation distance is more than 25m from tank to boundary. [(c). (d)]	No	Next to Emulsion Additive Store
8	II/III	Mixed corrosives, primarily caustic materials	62	25[(e)]	Yes	Emulsion Additive Store

Notes:

(a) Class 2.1 - pressurised (excluding LPG)

(b) Class 2.1 LPG aboveground

(c) Class 3 PGII and PGIII not cumulated as PG III is in a different separately contained location (more than 50m away)

(d) Flammables in self-bunded aboveground storage

(e) Class 8 PGII is the most hazardous subclass. PGIII is stored in the same location as PGII, so PGIII quantity is cumulated with PGII and the total compared to PGII screening threshold.

(f) Miscellaneous dangerous substances and articles, including environmentally hazardous substances are not considered to be hazardous.

4.3.2. Other hazards

Additional hazards to be considered under the Applying SEPP 33 guidelines that are not explicitly covered by the DG quantity screening levels include:

- reactions/incompatibilities between materials
- combustible dusts
- hazardous processing conditions (e.g. high temperatures and pressures).

A review of the material characteristics to be handled at the facility that are not specifically included in the DG screening thresholds was undertaken with the following outcomes:

- There are no combustible dusts handled or generated in the facilities.
- Combustible liquids such as bitumen will be handled at elevated temperatures, however these will not be handled at above flashpoint as follows:
  - Bitumen flashpoint is above 300^{o}C. Maximum heating temperatures will not exceed 200^{o}C. Electric heating for bitumen will be provided which will be equipped with industry standard safeguards to prevent abnormal high temperature excursions such as heater power limitation and high temperature shutdown. Hot oil will not be used at this facility.
  - Diesel is for refuelling or blending and is at ambient temperature i.e. is not heated.
- Bitumen is a complex mixture containing predominantly high molecular weight hydrocarbons with some lighter hydrocarbons. Accumulation of flammable vapours in the vapour space of bitumen storage tanks can occur resulting in an explosion internal to the tank if an ignition source is present. Boilover of bitumen due to free water accumulation can also occur. These scenarios could cause a tank fire, eject hot bitumen or cause tank failure resulting in tank debris and impact on people or equipment.
- Apart from the bitumen hazards, no chemical processing incompatibilities or reaction hazards with the potential to cause significant off-site impacts were identified.

4.4. Hazardous Material Transport

A list of the expected types and quantities of hazardous materials transport movements to and from the facility with the relevant SEPP 33 screening thresholds is presented in APPENDIX C.

A route evaluation study is not required, as all transport movements of DGs are below SEPP 33 screening thresholds.

4.5. Conclusion

The screening risk assessment demonstrates that the quantity of Class 8 materials to be stored and handled on site is above the screening threshold nominated in SEPP 33. Whilst not covered under the defined SEPP 33 DG screening thresholds, bitumen also has some specific hazards that could result in an incident with an offsite safety effect.

Therefore, the development is classified as 'potentially hazardous' in the context of SEPP 33 and a PHA is required.

5. PRELIMINARY HAZARD ANALYSIS

5.1. Study scope and objectives

The PHA has been developed in accordance with NSW DPIE guidelines. The objective of the study is to:

- undertake a PHA of the facility in accordance with NSW DPIE guidelines, Hazardous Industry Planning Advisory Paper No. 6 Hazard Analysis (HIPAP 6) (Ref [2]).
- The overall objective of the PHA is to determine whether the off-site risks associated with the development are acceptable according to the NSW DPIE land use safety planning risk criteria as detailed in HIPAP No. 4 Risk Criteria for Land Use Safety Planning (HIPAP 4) (Ref [6])

As suggested in the DPIE Multi-Level Risk Assessment (Ref [3]) guidelines, depending on the potential severity and complexity of the hazards, the consequence and risk analysis can be carried out either qualitatively or quantitatively, or using a combination of techniques.

As per the SEPP 33 screening, Class 8 (corrosives) are the only DGs on site which exceed the threshold. All other DGs are stored and handled in very small quantities and/or have large separation distances to the site boundary exceeding relevant Australian Standard requirements. There are no surrounding sensitive land uses. Therefore a qualitative analysis has been selected for this study. This approach is known as a Level 1 risk assessment.

The steps in the PHA are:

- identification of hazards and description of potential incident scenarios
- analysis of the consequences of these incidents on people and the biophysical environment
- comparison of risk levels with qualitative risk criteria.

5.2. Risk criteria

Risk criteria for qualitative analysis are given in HIPAP 4 as follows:

a) All ‘avoidable’ risks should be avoided. This necessitates the investigation of alternative locations and alternative technologies, wherever applicable, to ensure that risks are not introduced in an area where feasible alternatives are possible and justified.

b) The risk from a major hazard should be reduced wherever practicable, irrespective of the numerical value of the cumulative risk level from the whole installation. In all cases, if the consequences (effects) of an identified hazardous incident are significant to people and the environment, then all feasible measures (including alternative locations) should be adopted so that the likelihood of such an incident

occurring is made very low. This necessitates the identification of all contributors to the resultant risk and the consequences of each potentially hazardous incident. The assessment process should address the adequacy and relevancy of safeguards (both technical and locational) as they relate to each risk contributor.

c) The consequences (effects) of the more likely hazardous events (i.e. those of high probability of occurrence) should, wherever possible, be contained within the boundaries of the installation.

d) Where there is an existing high risk from a hazardous installation, additional hazardous developments should not be allowed if they add significantly to that existing risk.

5.3. Hazard identification

5.3.1. Dangerous goods (DGs)

Table 5.1 shows the hazards associated with the DGs.

Class 8 corrosives do not have widespread exposure effects on people. The hazardous effects associated with corrosives are occupational health and safety risks due to direct contact. If a spill occurs, burns and respiratory irritation may result. There is no significant safety impact outside the immediate area of the spill.

The SEPP 33 screening identified that the quantities for all other DGs apart from Class 8 were below thresholds and unlikely to present an off-site impact. Hazards of kerosene (Class 3 flammable liquid which is the only DG handled in bulk), and bitumen (not a DG but handled in bulk with potential fire/explosion hazards), and both well separated from the site boundary, are included in Table 5.1 to allow evaluation of other hazards in the PHA.

Table 5.1: Hazardous material properties

Material	State	DG Class	Hazard statement	Hazard type (for PHA)
Various corrosives (refer to APPENDIX B, mostly forms of aqueous caustic soda, some hydrochloric acid)	Liquid	8 PG II/III	H290 May be corrosive to metals. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H317 May cause allergic skin reaction. H335 May Cause respiratory irritation. H360D May damage the unborn child. H372 Causes damage to organs through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects.	Corrosive

Material	State	DG Class	Hazard statement	Hazard type (for PHA)
Kerosene	Liquid	3 PGIII	H226: Flammable liquid and vapour. H304: May be fatal if swallowed and enters airways.	Flammable
Bitumen	Hot liquid	9	(various health effects) Bitumen will solidify at temperatures < 100°C	Combustible

5.3.2. Potential hazardous incidents

Potentially hazardous incident scenarios were identified based on the facility activities, SEPP 33 screening and previous hazard identification work.

All Class 8 corrosives are handled in intermediate bulk containers (IBCs). They will be delivered to site by truck and moved into the dedicated store. Kerosene and bitumen will be delivered/exported via road tanker and stored in dedicated storage tanks.

Table 5.2 summarises:

- The potential hazardous incident scenarios.
- Potential causes.
- Control measures and safeguards included in the design.
- Qualitative assessment of the potential for off-site safety of environmental consequences.

All scenarios involve loss of containment of a liquid and were found to have containment, and also separation distance to the site boundary. As per Table 5.2 no offsite safety impacts were identified and the risk is therefore regarded as very low.

5.3.3. Potential interaction with Clyde Terminal

Escalation between the Downer proposal and the Clyde Terminal is extremely unlikely for the following reasons:

- The nearest hydrocarbon storage tanks on the Clyde Terminal are more than 200m from the Downer proposal on Lot 6. The only type of hazardous incident on the Downer site that could potentially affect the Clyde Terminal tanks is a fire. DG facilities on the Downer site are more than 40m from the site boundary. As per industry incidents, pool fire radiant heat effects causing a high probability of serious injury or fatality (12.5 kW/m^2) or damage to infrastructure (23 kW/m^2) as per effect levels defined in HIPAP4, (Ref [6]), are limited to tens of metres from the pool, i.e. will not extend outside the site boundary hence cannot affect the Clyde Terminal tanks.
- The SSD subdivision boundary was located to ensure that separation distances from the flammable and combustible tanks and bunds at the Clyde Terminal to any future

offsite protected places (such as the Downer proposal) will comply with the requirements of AS 1940:2017 *Storage and handling of flammable and combustible liquids* (i.e. the distance to the subdivision boundary from Clyde Terminal's hydrocarbon areas is at least equal to the required separation distance from tanks or bunds to offsite protected places).

- A detailed quantitative risk assessment (QRA) study for the Clyde Terminal was used to inform the location of the subdivision boundary. A report was prepared with input from Viva Energy that confirmed the SSD including the Downer Stage Lot 6 development was suited to the location from a land use safety planning perspective. (Ref [7]). This showed that the Downer proposal on Lot 6 is located such that all relevant HIPAP 4 land use safety planning individual and societal risk criteria as well as escalation risk criteria are met. Therefore, the risk of an event in the Clyde Terminal affecting Downer facilities is very low.

5.3.4. Potential impact to surrounding infrastructure

There is an electrical easement along the eastern boundary of Lot 6. All equipment is underground hence cannot be damaged by incidents at the Downer facility.

Some aboveground electrical infrastructure and equipment such as substations are located along Devon St on the northern Lot 6 boundary. As per Section 5.3.3 there were no incidents identified for the Downer facility that would result in damaging effects offsite.

No other significant infrastructure was identified in proximity to Lot 6.

Table 5.2: Potential hazardous incident scenarios

Risk event	Material	Causes	Controls and safeguards	Qualitative consequence	Potentially significant off-site consequence?	
					Environment	Safety
Loss of containment (LOC) of corrosives during delivery – small spills	Class 8 Corrosives	IBC valve leakage. Forklift impact/dropping/damage to containers during handling.	- IBCs only (no bulk corrosives). - Licensed forklift driver. - Kerbed and contained hardstanding in delivery area. - Spill kits and spill response - Site stormwater retention system	- Spill on to delivery pad area. Quantity up to 1000 L (i.e. single IBC), well within containment capacity. - Separation distance to site boundary > 20m. - No offsite consequence identified.	No	No
Loss of containment (LOC) of corrosives – large spills in storage	Class 8 Corrosives	IBC breached or pierced. Forklift impact/dropping/damage to containers during handling.	- Dedicated additives store. - Store fully bunded, capacity compliant with AS 3780 *The storage and handling of corrosive substances*. - Spill kits and spill response. - Site stormwater retention system	- Spill inside store. - Site boundary is > 25m. - - - No offsite consequence identified.	No	No
Mixing of spill of corrosives (alkalis) with incompatible material (Class 8 acids)	Class 8 Corrosives	Mixing with incompatible materials due to storage arrangement.	- Segregation within additive store complies with AS 3780 *The storage and handling of corrosive substances*.	Heat of reaction if acid and alkali mix, some localised fumes due to heat, no hazardous products of reaction for chemicals stored. No significant consequence.	No	No
Loss of containment of kerosene	Kerosene Class 3 PGIII	Overfill during delivery. Hose failure.	High level alarm in tank.	Fire, escalation to neighbouring combustible inventories. Asset	No	No

Risk event	Material	Causes	Controls and safeguards	Qualitative consequence	Potentially significant off-site consequence?	
					Environment	Safety
		Tank failure. Vehicle accident.	Attended delivery, i.e. driver can initiate shutdown of transfer. Self bunded tank compliant with AS 1940 *The storage and handling of flammable and combustible liquids*. Tank located in kerbed hardstand with containment. Spill kits and spill response. Hazardous area classification (control of ignition sources). Safe work practices to minimise ignition sources. Combustibles in separately bunded areas. Site traffic management plan and low speeds.	damage/onsite effects only. - Separation distance to site boundary > 40m. - Nearest Viva tanks > 200m away. - No offsite safety impacts or escalation consequence identified. - as per industry incidents and previous consequence modelling pool fire radiant heat effects causing serious injury or damage (12.5 to 23 kW/m2 as per HIPAP4, Ref [6]) are limited to tens of metres from the pool, i.e. will not extend outside the site boundary.		
Fire/Explosion in bitumen tank	Bitumen (Class 9)	Free water accumulation, boil off and physical explosion. Accumulation of flammable gases in tank vapour space. Overheating of bitumen to above flashpoint	Procedures to prevent water ingress to tanks. Tanks operated at above 100^{o}C to avoid water condensing/keep in vapour phase. Tanks are free vented. Hazardous area classification (control of ignition sources).	- Fire in tank, physical ejection of hot bitumen (localised issue/personnel safety). - Tank debris and impact on people/equipment - Separation distance to site boundary > 40m. -Nearest Viva tanks > 200m away. No occupied	No	No

Risk event	Material	Causes	Controls and safeguards	Qualitative consequence	Potentially significant off-site consequence?	
					Environment	Safety
			Safe work practices to minimise ignition sources. Bitumen flashpoint is above 300ºC. Maximum heating temperatures do not approach this. Electric heating for bitumen provided. Equipped with industry standard safeguards to prevent abnormal high temperature excursions such as heater power limitation and high temperature shutdown.	areas between Downer and Viva tanks. - No significant offsite safety impacts or escalation consequence identified.		

5.4. Risk assessment

5.4.1. Safety risk to off-site land uses

No hazardous incidents have been identified for the Downer proposal with potentially significant off-site safety impacts on surrounding land uses. Therefore, the risk is consistent with the HIPAP 4 qualitative risk criteria as summarised in Table 5.3 and the likelihood of any offsite safety impacts on people or property from the Downer Stage 1 Lot 6 proposal is minimal.

5.4.2. Risk to biophysical environment

The principal concern relating to environmental risk from accident events typically relates to effects on whole systems or populations. HIPAP 4 provides the following qualitative guidance for assessment of environmental risk due to accident events.

- Industrial developments should not be sited in proximity to sensitive natural environmental areas where the effects (consequences) of the more likely accidental emission may threaten the long-term viability of the ecosystem or any species within it.
- Industrial developments should not be sited in proximity to sensitive natural environmental areas where the likelihood (probability) of impacts that may threaten the long-term viability of the ecosystem or any species within it is not substantially lower than the background level of threat to the ecosystem.

The materials stored on site with the most serious potential environmental impact are the corrosives. If they are released into waterways there will be an acute toxic impact on aquatic life due to pH change. However corrosives have no persistent effect, i.e. do not accumulate in the environment.

The likelihood of a spill reaching Duck River to the south is extremely low as the corrosives are handled in IBCs (i.e. volume is limited to $1m^3$), the store will be bunded. If a IBC was damaged outside the store, quantities can be contained using a spill kit. If spill control measures didn't entirely contain the spill and the chemicals then the chemicals could be contained within the on-site stormwater management system.

Therefore no incidents were identified which could result in an offsite effect threatening the long-term viability of an ecosystem. Therefore environmental risk due to accident events is very low.

Table 5.3: Comparison against HIPAP 4 qualitative risk criteria

Criteria	Comments	Complies?
e) All 'avoidable' risks should be avoided. This necessitates the investigation of alternative locations and alternative technologies, wherever applicable, to ensure that risks are not introduced in an area where feasible alternatives are possible and justified.	No identified events involving Class 8 corrosives or other DG materials with significant safety or environment effects beyond the boundary. The proposed technology is well understood with standard controls. Whilst fires have occurred in bitumen facilities consequences are typically localised to immediate plant and equipment. Combustible only grades of bitumen are handled (i.e. no higher hazard Class 3 (flammable) grades such as cutback bitumen), reducing the risk of fires. Bitumen heating will be electric. This eliminates the use of/ circulation/pumping of hot oil which further reduces fire risk in these plants.	Yes
f) The risk from a major hazard should be reduced wherever practicable, irrespective of the numerical value of the cumulative risk level from the whole installation. In all cases, if the consequences (effects) of an identified hazardous incident are significant to people and the environment, then all feasible measures (including alternative locations) should be adopted so that the likelihood of such an incident occurring is made very low. This necessitates the identification of all contributors to the resultant risk and the consequences of each potentially hazardous incident. The assessment process should address the adequacy and relevancy of safeguards (both technical and locational) as they relate to each risk contributor.	No identified events with significant safety or environment effects beyond the site boundary. The storage and use of all DGs would be compliant with relevant Australian Standards with respect to separation distances, bunding and segregation. Relevant standards are AS 1940 and AS 3780.	Yes
g) The consequences (effects) of the more likely hazardous events (i.e. those of high probability of occurrence) should, wherever possible, be contained within the boundaries of the installation	No identified events with significant safety or environment effects beyond the site boundary.	Yes

Criteria	Comments	Complies?
h) Where there is an existing high risk from a hazardous installation, additional hazardous developments should not be allowed if they add significantly to that existing risk.	The Clyde Terminal is adjacent to the eastern boundary. The Downer development does not add to this existing risk profile of the Clyde Terminal or the cumulative risk in the area as there are no identified events with offsite effects. There is no identified escalation risk between the Clyde Terminal and the Downer proposal. The location of the Downer facility is outside the risk criteria from the Clyde Terminal, i.e. meets HIPAP4 risk criteria.	Yes

5.5. Conclusion

Offsite effects due to loss of containment of Dangerous Goods including Class 8 corrosives and Class 3 flammables are extremely unlikely as dedicated, fully contained storage and handling areas are provided in the design and these areas are well separated from the site boundary. It is therefore very unlikely that an accident event involving hazardous materials would have any effect that could extend off site.

Qualitative analysis of potential off-site safety effects to surrounding land uses or environmental effects to surrounding ecosystems due to accident events indicates all HIPAP 4 qualitative risk criteria are met by the proposed Downer development, hence that offsite risk is very low.

The PHA recommends that to ensure the assumptions made in the hazard analysis remain valid:

- that the final layout and design for the Stage 1 facilities meet the bunding and separation distance requirements of AS 1940 *The storage and handling of flammable and combustible liquids* and AS 3780 *The storage and handling of corrosive substances*).

APPENDIX A. PROJECT DESCRIPTION

1 PROJECT OVERVIEW

1.1 Existing activities

1.1.1 Viva Energy

State significant development 5147 was approved in 2015 comprising conversion of the former Oil Refinery at Clyde into a finished petroleum product import, storage and distribution terminal.

Works were approved to improve terminal efficiency and to consolidate the operational footprint including demolition and clearing of the old refinery. The Western Area lands were identified as future surplus industrial land for future reuse. The project will be on this land (the site).

State significant development 9302 was lodged in 2018 for the Western Area Remediation Project (WARP). This application has been determined and will result in the remediation and issuance of site audit certification of the site. The activities described in Section 1.2 will progressively occur on remediated areas once they are certified as appropriate for development.

1.1.2 Downer asphalt, reclaimed asphalt pavement and Reconomy operations

Reclaimed asphalt pavement (RAP) is asphalt which is removed from road and other surfaces during maintenance and reconstruction of those surfaces and requires crushing and/or screening to size to allow recycling into new asphalt.

Downer EDI Works Pty Ltd (Downer) operates a facility in Camellia that receives RAP from road construction and maintenance projects and processes these materials by crushing and screening to produce up to 235,000 tonnes per annum (tpa) of recycled road products. A large portion of this processed material is transported to Downer's Unwin Street site (the Rosehill site) for use in manufacturing asphalt.

Downer's lease at the Camellia site is coming to an end and Downer is seeking to more closely integrate RAP processing and asphalt production on a single site along with its other sustainable road product ventures.

The Rosehill site comprises:

- Asphalt plant, workshop and offices (subject to many consents since 1993 and most recently DA/115/2007/A).
- Reconomy facility (DA/1069/2016) – a recycling facility that receives material from the sweeping of Sydney's road network, cleaning of drainage systems and non-destructive excavation for washing and separating. This material is then repurposed for various activities including the manufacture of asphalt. Over 95% of the material is re-used and diverted from its traditional landfill disposal.

The Rosehill site is subject to compulsory acquisition by the NSW Government for use by the Sydney Metro West project. Loss of continuity of operations at the Rosehill site would have adverse consequences for the Government due to the significant compensation which would arise and delays in government road programs due to the loss of more than 25% of the road product manufacturing capacity in Sydney. Transport for New South Wales is working closely with Downer to avoid such disruption, but seeks possession of the site in early 2022.

1.2 Proposed activities

The application proposes:

- The staged subdivision of the western area of Lot 100 DP 1168951 into eight new industrial lots.
- Prepare the lots via earthworks and civil works for future re-development (by future applications).
- Stage 1 (Sustainable Road Resource Centre) – occupy the newly created Lot 6 and construct and operate the following on the lot:
  - RAP processing operations.
  - Asphalt plant.
  - Reconomy facility.
  - A modern bitumen product manufacturing plant.

These project components are described below.

1.3 Subdivision and lot preparation

VE Property Pty Ltd (VEP) proposes the staged development of the Central Sydney Industrial Estate on lands known as the Western Area of the former Oil Refinery at Clyde. Stage 1 of the development will comprise the Sustainable Road Resource Centre, to be operated by Downer, described in the following section.

VE Property proposes the following on the site:

- The staged subdivision of the site into eight lots. Development of the lots for new industrial uses (in accordance with current zoning), which will be subject to future applications.
- Earthworks/filling to bench the lots to form a flat pad in the northern half of the site then gradually grading down to towards Duck River in the southern half of the site.
- Construction of a new public access road running south from an intersection with Devon Street, providing access to those lots that don't front onto Devon Street, in accordance with Parramatta Council specifications.
- Implementation of erosion and sediment controls to manage water quantity and quality over the lots until they are sold and developed, when permanent water management infrastructure will be installed.
- The extension of key municipal services to suit the needs of each of the lots comprising:
  - Potable water – potentially construction of a ring main linking the main under Colquhoun Street to the main under Durham Street (subject to separate approval by Sydney Water).
  - Wastewater (sewer) – extension of the rising main along Devon Street and minor sideline extension of the gravity sewer along Colquhoun Street (subject to separate approval by Sydney Water).
  - Electricity – supply may be required to each lot from the high voltage line along Devon Street (subject to separate approval by Endeavour Energy).
- A 30 m riparian corridor along Duck River.
- Development of Lot 6 (Stage 1) for the land uses described below.

1.4 Stage 1 –Sustainable Road Resources Centre

1.4.1 Overview

The conceptual Stage 1 layout is shown in Figure 3.1. Stage 1 will be aligned north-south as per the Lot 6 orientation and will comprise the separate facilities described in the following sections.

1.4.2 Site preparation and construction

Site preparation (civil works) will take approximately 30 weeks and will comprise:

- Site establishment – installation of site office, generator and toilet.
- Earthworks/filling - to bench the lot to form two flat pads, one in the northern third of the lot and the other in the southern two thirds of the lot.
- Drainage – stormwater management structures will be constructed.
- Services – water, sewer, electrical, gas and telecommunications services will be installed.
- Footings and slabs – after the ground surface is prepared, footings will be excavated/piled and filled with concrete in areas where structures will require stabilisation, and concrete building pads will be poured.
- Pavement areas of Lot 6 requiring extra stabilisation and strengthening (eg heavily trafficked areas) will be paved with concrete and remaining areas will be paved with asphalt.
- Barriers – aluminium, concrete and/or water filled plastic barriers will be installed in areas where traffic must be separated from pedestrian areas and/or to prevent vehicles crossing lanes/protect structures.
- Line marking and signage – lines will be marked on internal roads and speed limit and other signs will be erected.

The Stage 1 components will be constructed simultaneously and some activities will overlap with the civil works. Construction of the Stage 1 components will typically comprise:

- Construction of concrete foundations including piled foundations for certain plant.
- Construction of frames for sheds.
- Erection and installation of plant.
- Installation of tanks and silos.
- Wall and roof cladding
- Stormwater connection.

1.4.3 Asphalt plant

A fixed Ammann Universal HRT Stationary asphalt plant will be constructed on Lot 6, which will produce up to 550,000 tpa of asphalt and will comprise:

- Cold feed bins to receive aggregate, sand and RAP.
- Conveyors to transport aggregates to a dryer.
- Conveyors to transport RAP to a mixer.
- Hot aggregate storage bins.
- Hot RAP storage bins.
- A mixer for mixing materials in weighted proportions.
- A batch tower with a screen deck for sizing the hot aggregates.
- Weigh hoppers for aggregates, bitumen, lime baghouse fines and RAP weighing.
- Enclosed bucket elevator for elevating the heated aggregates to the top of the batch plant.
- Hot bitumen storage tanks with bitumen pumped from these to the batch plant.
- Lime filler silo to receive lime and pneumatic conveyors to convey lime to the batch plant.
- Fabric filter baghouse for cleaning exhaust gases from the dryer.
- Fan and stack for exhausting the gases from the baghouse.
- Recycled filler silo for storage of baghouse reclaimed fines and pneumatic conveyors to convey recycled filler to the batch plant.
- Control room containing plant switchboard and controls.
- Soap spray station for lining truck trays with an anti-stick film.

The asphalt plant is 41 m high at its tallest point.

The asphalt manufacturing process will comprise drying and mixing aggregates and combining them in specified quantities with heated bitumen and a filler and discharging the resulting 'hot' and 'warm' mix into trucks. Operation of the asphalt plant will comprise:

- Delivery of virgin aggregates and sand from offsite, tipped into an underground hopper and transferred via conveyor for temporary storage in one of 16 vertical silos. Virgin aggregates and sand are then transferred to the cold feeder bins via conveyor. Reclaimed aggregates, sand and glass produced by the on-site Reconomy facility and processed RAP is temporarily stored in above ground storage bays, then transferred to the asphalt plant cold feeder bins by front end loader.
- Imported filler material will be pneumatically pumped into silos from tankers and bitumen will be stored in heated/insulated tanks at approximately 160˚C.
- Aggregates in the cold feeder bins will be metered by belt feeders into the rotary dryer.
- Filler will be pneumatically conveyed and bitumen pumped into a weigh hopper then discharged into a pugmill mixer for mixing with aggregates. Exhaust emissions will be drawn off into a bag house for treatment with recovered fines reused in the asphalt process.
- Asphalt will be transferred to hot asphalt storage bins.
- The inside of the truck bodies are sprayed with bitumen release agent at the spray station (truck spray gantry), then trucks drive below the hot storage bins and are loaded. Pre-mix (cold mix asphalt) can be loaded into trucks as required.

1.4.4 Reclaimed asphalt pavement facility

As Downer's lease at the Camellia site is coming to an end, it is proposing to relocate the RAP operations to Lot 6.

Up to 250,000 tpa of RAP will be cold planed from pavements with specialist equipment and transported in tip trucks (truck and trailers or semi-trailers) to the site. It will then be stored on gravel hard stand areas.

The RAP plant will be inside an approximately 12 m high shed that will be enclosed on the north, west and south sides. The east side will be open so the front-end loader can feed the RAP plant and remove the finished products.

The RAP will be crushed and screened on an as required basis for use in the onsite production of asphalt (as a substitute for aggregates and bitumen) or for export for pavement materials. Up to 90,000 tpa of RAP will be stored on site at any one time on a 10,000 m^2 stockpile area. Stockpiles will be a maximum 10 m high.

1.4.5 Bitumen products plant

A next generation, co-located bitumen emulsion plant is proposed on Lot 6 to produce approximately 15,000 tpa of bitumen products for use in onsite asphalt production and export offsite. This investment would mark a first for Downer to have not only a combined blending facility but also situating the investment on the same site as its asphalt and Reconomy plant.

The bitumen products plant will comprise:

- Maximum 6 m high shed with roller door access on the southern side containing:
  - 150 t emulsifier and emulsion additives store containing up to 150 intermediate bulk containers.
  - 60 kilolitre (kl) kerosene store.

- Office and toilet.

- An additional 8 m high shed for the overflow storage of emulsifier and emulsion additives.
- Maximum 6 m high toner additive storage shed with roller door access on the southern and western sides.
- Two 80 kl 12 m high (total 160 t) bitumen tanks.
- Four 80 kl 12 m high warm emulsion and seven 60 kl 12 m high cold emulsion tanks (total 740 t).

1.4.6 Reconomy facility

Downer proposes to replicate the Reconomy facility from the Unwin Street site at Lot 6. The facility will process up to 40,000 tpa of road sweepings, gully waste and mud from non-destructive excavation, and will comprise:

- Receipt of incoming material into handling pits adjacent to the resource recovery plant. The handling pits will be impermeable and partially sunk into the ground.
- Material will be separated during the recovery process and temporarily stockpiled adjacent to the recovery plant at the separation points and removed as required. Recovered aggregates will be beneficially reused almost immediately in the adjacent asphalt plant and will require an external storage bay as a collection point prior to transport to the asphalt plant by front end loader.

The Reconomy facility will comprise:

- Conveyors.
- Hoppers.
- Trommel.
- Log washer.
- Clarifier.
- Water tanks.
- Water pumps.
- Centrifuge.
- Screen deck (with vibrator).
- Wash screens (with vibrator).
- Eddy current separator.
- Hydrocyclone and ferromagnetic separator.

The maximum height of fixed equipment will be 8 m and an in-ground pit will be 2 m below ground surface.

Downer intends to beneficially reuse the recovered aggregates and sand (approximately 20,000 tpa) in asphalt production and application to road surfaces. The proposed beneficial reuse of recovered aggregate and sand will reduce the use of virgin aggregate and sand from quarries in NSW. Recovered plastics, toner cartridges, glass and rubber are also likely to be incorporated into the production of asphalt, replacing filler and/or aggregate.

Downer does not propose to reuse the recovered organic material in the production of asphalt. The recovered organic material will be transported to an approved composting facility for beneficial reuse. Recovered metals will be transported to an appropriate metal recycling facility for beneficial reuse.

Any remaining recovered material which cannot be directly reused in the asphalt plant could be transported to recycling facilities near the site.

There will be a water recycling plant to treat water used during the process and a storage tank for future re-circulation of treated water or disposal as trade waste. The water loss factor for the

resource recovery plant is low due to a portion of the incoming waste material being wet or semi-dry.

1.4.7 Ancillary infrastructure, hours of operation and employment

The Sustainable Road Resources Centre will also comprise the following ancillary infrastructure to facilitate the above land uses:

- 34 car parking bays.
- 25 truck parking bays.
- Site offices.
- Laboratory.
- Workshop building.
- Weighbridges.
- Stormwater management infrastructure.
- Services and utilities including an electrical substation.
- Landscaping, fencing and signage.

The Sustainable Road Resources Centre is proposed to operate 24-hours a day, seven days a week, 365 days a year. This reflects the demand for asphalt to be provided at night due to government demands that road works minimize interference with traffic.

Construction and operation of the Sustainable Road Resources Centre will employ the personnel over the shifts summarised in Table 1.

Table 1 Construction and operational personnel

Component	Role	Shift	Personnel
Construction	Civil works	6am-6pm	35
	Asphalt plant	6am-6pm	17
	RAP facility	6am-6pm	14
	Reconomy facility	6am-6pm	13
	Bitumen products plant	6am-6pm	6
Asphalt plant	Laboratory and plant	6am-6pm	10
		6pm-6am	11
RAP facility	Operator	6am-6pm	3
		6pm-6am	2
Bitumen products plant	Operator	6am-6pm	4
Reconomy facility	Manager	7am-5pm	1
	Supervisor	5am-3pm	1
	Operator	7am-7pm	1
		6pm-6am	1
Weighbridge	Operator	6am-2pm	3
		2pm-10pm	3
		10pm-6am	3
Other	Asphalt and RAP facility management staff	8am-5pm	5

APPENDIX B. HAZARDOUS MATERIAL SCREENING THRESHOLDS FOR STORAGE

Classification	Class	Sub	PG	Material	Storage location	Mode of storage	Storage quantity (tonnes)	Total quantity (tonnes)	SEPP 33 Threshold	SEPP 33 determination	Threshold exceeded?	Inclusion in PHA?	SDS Reference
Gases	2	2.1	-	Acetylene	Gas Cage (SE corner of asphalt plant workshop)	Cylinders	0.008	0.035	Class 2.1 Flammable gases - Pressurised (excluding LPG): Table 1, screening threshold is 100kg (0.1 tonnes).	Total Class 2.1 - Pressurised (excluding LPG) does not exceed SEPP 33 threshold.	No	No	Typical properties - information provided by client.
				Belt Grip	DG Store (SE corner of asphalt plant workshop)	Packages	0.005						
				Galmet Cold Galv	DG Store (SE corner of asphalt plant workshop)	Containers	0.012						
				WD40	DG Store (SE corner of asphalt plant workshop)	Packages	0.01						
		2.1	-	LPG gas	Gas Cage (SE corner of asphalt plant workshop)	Cylinders	0.018	0.018	Class 2.1 - LPG Aboveground: Table 1, screening threshold is 10 tonnes.	Total Class 2.1 - LPG Aboveground does not exceed SEPP 33 threshold.	No	No	
		2.2 SR 5.1	-	Oxygen	Gas Cage (SE corner of asphalt plant workshop)	Cylinders	< 0.1	5	No threshold for Class 2.2 (non-hazardous) based on SEPP 33 Class 5.1 has a screening threshold, so use sub risk.	Does not exceed SEPP 33 threshold.	No	No	
Flammable liquid	3	-	II	Unleaded Petrol	DG Store (SE corner of asphalt plant workshop)	Containers	0.016	1.6	Class 3PGII: Table 1, minimum quantity for further evaluation is 5 tonnes More than 50 m from kerosene Class 3 PGIII, not cumulated – treat as separate storages.	Total Class 3PGII does not exceed SEPP 33 minimum threshold and does not required assessment.	No	No	
				Toluene	Chemical storage (Lab store)	IBC	0.8						
				Ethanol	Chemical storage (Lab store)	IBC	0.8						
	3	-	III	Kerosene	Blending Plant Additive Store (see 'Emulsion Additive Store)	Fuel Tank (self bunded)	48	48	Class 3PGIII: Table 1, quantity greater than 5 tonnes, requires use of Figure 9 to evaluate. 65kL kerosene tank	Total Class 3PGIII exceeds SEPP 33 threshold for evaluation however is separated by more than 8 m from boundary as per Figure 9 so not potentially hazardous.	No	No	
Corrosive	8	-	II	Cationic Emulsifier - polyamine	Blending Plant Additive Store (see 'Emulsion Additive Store)	IBC	15	62	Class 8 PGII: Table 3, screening threshold is 25 tonnes. Note: Class 8 PGIII is stored in the same area as PGII and therefore falls under that threshold.	Total Class 8 does exceed SEPP 33 threshold.	Yes	Yes	Chemwatch : 23-0489 Issue date: 23/09/2017
				Cationic Emulsifier - tallow triethylenedia	Blending Plant Additive Store (see 'Emulsion Additive Store)	IBC	34						Chemwatch : 84-3402 Issue date: 01/11/2019

Classification	Class	Sub	PG	Material	Storage location	Mode of storage	Storage quantity (tonnes)	Total quantity (tonnes)	SEPP 33 Threshold	SEPP 33 determination	Threshold exceeded?	Inclusion in PHA?	SDS Reference
				mines ethoxylated									
				Hydrochloric Acid	Blending Plant Additive Store (see 'Emulsion Additive Store)	IBC	8						Chemwatch : 6095-44 Issue date: 01/11/2019
			III	Ceca Base	Blending Plant Additive Store (see 'Emulsion Additive Store)	IBC	5						Chemwatch : 23-0487 Issue date: 01/11/2019
Miscellaneous dangerous substances and articles, including environmentally hazardous substances	9	Combustible		Diesel	Immediately north of asphalt truck spray gantry	Fuel Tank	45	985	No threshold for Class 9 based on SEPP 33. Note for diesel and bitumen: Page 16 'If combustible liquids of class C1 are present on site and are stored in a separate bund or within a storage area where there are no flammable materials stored they are not considered to be potentially hazardous. If, however, they are stored with other flammable liquids, that is, class 3PGI, II or III, then they are to be treated as class 3PGIII, because under these circumstances they may contribute fuel to a fire'.	Diesel in separate self-bunded tank 60kL, immediately north of asphalt truck spray gantry. Diesel therefore not cumulated with kerosene inventory. Bitumen in bulk tanks in separate bund, not cumulated with kerosene inventory.	No	No	Typical properties - information provided by client
				Bitumen	Bitumen Tanks (6 x western tanks labelled PMB and C450 in the bitumen tank farm).	Tank	780		Not within same area/bund as Class 3. No threshold.	In process circuit only. Not cumulated with kerosene inventory.	No	No	Typical properties - information provided by client
				Bitumen Class 170 or 320	Blending Plant Tank Farm.	Bulk tank	160						
		-		Delvac 1330	DG Store (SE corner of asphalt plant workshop).	Containers		< 5	No threshold for Class 9 based on SEPP 33 - excluded from Screening.	Screening not required. Class 9 — are miscellaneous dangerous goods, which pose little threat to people or property. They may be substances which pose an environmental hazard.	No	No	Typical properties - information provided by client
				Mobilith SHC 220	DG Store (SE corner of asphalt plant workshop).	Containers							

Classification	Class	Sub	PG	Material	Storage location	Mode of storage	Storage quantity (tonnes)	Total quantity (tonnes)	SEPP 33 Threshold	SEPP 33 determination	Threshold exceeded?	Inclusion in PHA?	SDS Reference
Not classified as DG	n/a	-					No thresholds.						
				Caesium 137 (Nuclear gauge) * 5	Stored in cabinet complying with relevant standards next to Lab store.	Yellow case inside storage cage							
				Cationic Emulsifier - tall-oil maleated amidoamines	Blending Plant Additive Store (see 'Emulsion Additive Store').	IBC							
				Calcium Chloride	Blending Plant Additive Store (see 'Emulsion Additive Store').	IBC							
				Non Ionic Asphalt Emulsifier	Blending Plant Additive Store (see 'Emulsion Additive Store').	IBC							
				Cationic Styrene Butadiene Rubber Latex	Blending Plant Additive Store (see 'Emulsion Additive Store').	IBC							
				Polyfloculant	Reconomy Chemical Storage.	IBC							
				AntiFoam	Reconomy Chemical Storage.	IBC							
				Coagulant	Reconomy Chemical Storage.	IBC							
				Lubricants	Reconomy Chemical Storage.	packaged <5L							
				Hydrated Lime	Lime Silos (round circle with two squares on to east of lime delivery).	Bulk silos							

APPENDIX C. TRANSPORTATION SCREENING THRESHOLDS

Trip Type (Receipt of Goods by Truck)	Average Traffic Generation (indicative)		Average Annual Delivery (tonne)	DG Class	Load per quantity	SEPP 33 Threshold Vehicle Movements (Table 2)		Minimum Quantity Note 1 per Load (tonne)		Threshold Exceeded?
	Annually	Peak Weekly				Annually	Peak Weekly	Bulk	Package	
Acetylene	2	-	0.008	Class 2.1	1 x 7.0m3	>500	>30	2	5	No
Belt Grip	1	-	0.005		12 x 750g cans					
Galmet Cold Galv	1	-	0.012		12 x 750g cans					
WD40	2	-	0.010		12 x 750g cans					
LPG gas	8	-	0.018		2 X 9kg					
Unleaded Petrol	-	1	0.016	Class 3 PG II	20L	>750	>45	3	10	No
Toluene	26	-	0.8		1000L					
Ethanol	26	-	0.8		1000L					
Kerosene	26	1	48	Class 3 PG III	35000L	>1000	>60	10	No limit	No
Cationic Emulsifier - polyamine	2	-	15	Class 8 PG II/III	8 tonnes	>500	>30	2	5	No
Cationic Emulsifier - tallow triethylenediamines ethoxylated	3	-	34		15 tonnes					
Hydrochloric Acid	24	-	8		3 tonnes					
Ceca Base	4	-	5		5 X 1000L IBC					
Bitumen	-	15	480	Class 9	23 tonnes	>1000	>60	No limit	SEPP 33 does not have value	-
Delvac 1330	1	-	0.08		2 X 40L drum					
Mobilith SHC 220	1	-	0.06		2 X 40L drum					
Bitumen Class 170 or 320	-	7	160		25 tonnes					
Diesel	12	-	48		3.5 tonnes					

Notes:
1) load sizes below this quantity do not require assessment. As per the guideline, if quantities are below this level, the potential risk is unlikely to be significant.

APPENDIX D. REFERENCES

[1] NSW Department of Planning, “Hazardous and Offensive Development Application Guidelines - Applying SEPP 33,” 2011.

[2] NSW Department of Planning, “Hazardous Industry Planning Advisory Paper No 6 - Hazard Analysis,” 2011.

[3] NSW Department of Planning, “Assessment Guideline: Multi-Level Risk Assessment,” 2011.

[4] National Transport Commission, “Australian Dangerous Goods Code (ADGC) Edition 7,” 2009.

[5] National Transport Commission, “Australian Code for the Transport of Dangerous Goods by Road and Rail Edition 7.6,” July 2018.

[6] NSW Department of Planning, “Hazardous Industry Planning Advisory Paper No 4 - Risk Criteria for Land Use Safety Planning,” 2011.

[7] Sherpa Consulting Pty Ltd, “Risk Advice Land Use Safety Planning Implications SSD Application – Central Sydney Industrial Estate Incorporating Downer Sustainable Road Resource Centre doc ref 21334 RP-001,” 2020.