SECTION 75W
ENVIRONMENTAL ASSESSMENT
FOR UPGRADING AND COMPLETION OF STAGE IV
OF THE DEVELOPMENT CONSENT FOR REDOX PTY LTD
2 SWETTENHAM ROAD, MINTO

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Benbow
ENVIRONMENTAL

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) has been prepared by Benbow Environmental (BE) on behalf of the proponent, Redox Pty Ltd.

Redox operate a chemical logistics business from their site at 2 Swettenham Road, Minto. The site gained original approval in 2003 for four stages of development. The original consent as presented in EA Attachment 5 (Reference S01/01687).

Stages I, II and III have been in operation since 2003. These comprise a series of warehouses used for storage of a number of Classes of dangerous goods and non-dangerous goods chemicals.

Stage IV involves Construction and use of Building H and Tank Farm and Drumming Facility (Building "F") including storage of Class 8 corrosive substances in bulk tanks for diluting and dispensing into road tankers for bulk delivery and into packages, containers and intermediate bulk containers (i.e. IBCs). The consent for Stage 4 remains current as approved in 2003.

This Section 75W application requests the following changes to the conditions of consent:

- Increase the size of the largest packages /containers use to hold Class 3 flammable liquids and Class 6 toxic substances to include intermediate bulk containers i.e. IBCs. These were precluded from being able to be used in the original consent.

- Increase the total quantity of chemicals that can be stored on site to the original quantity requested in the original development application, 4,650 tonnes of dangerous goods and 15,795 tonnes of non-dangerous goods (20,445 tonnes total).
- Increase storage quantity of Class 8(3) and Class 8(F1) corrosive substances – a total quantity stored at the Stage IV area would be increased from 250 T to 540 T. The total quantity of dangerous goods on site would remain at 4,650 tonnes.

- Alter the site activities to allow for the supply of food grade chemicals.

- Allow site activities to include dilution.

- Allow operations of the wastewater treatment plant.

- Alter the traffic routes to make use of the Raby Road link to the ramps onto the Motorway. At present trucks are required to avoid the southern half of Campbelltown Road and use a circuitous route to join the Motorway. The ramp did not exist at the time the original consent was granted. Use of the Raby Road link will still avoid the main residential area along Campbelltown Road.

The EA addresses environmental issues related to the proposed development at 2 Swettenham Road, Minto. The environmental issues addressed within this report include noise, air quality, surface water, hazards and risks, fire safety, transport/traffic, waste and the associated environmental safeguards for the operation of the site.

Noise

Noise issues are not anticipated to occur as a result of the proposed modification (see EA Attachment 9).

Air

The operations of the proposed modification would require air quality controls including scrubbers to clean the air of any air contaminants released during the decanting processes. See section 4.1.2.10 for more details. The predicted levels of air quality criteria were found to be well below the NSW EPA guidelines with the controls in place.

An Air Quality Assessment, EA Attachment 10, has been conducted.

Chemical Management

Redox have in place a Safety Management System and the proposed modification would require the Safety Management System to be extended.

Redox are holders of an Environment Protection Licence No. 12041 for chemical storage. Chemical quantities are provided in Section 4.3.

Surface Water and Stormwater

The chemical storage and processing areas will be bunded to AS 1940–2017 and would satisfy AS 3780–2008. The building associated with the process areas would be bunded. Tanker loading/unloading bays would be bunded. The internal floor area of the building and the site would hold 90 minutes of fire-fighting water. Fire water containment already exists on-site.

Spill kits are in place and site personnel have been fully trained in chemical management.

An emergency plan is in place.

The site has in place an extensive bunding system and safeguards. Stormwater pits have particulate filters installed.

The bank of the site adjoining Bow Bowing Canal has been landscaped reducing the potential for sediment runoff occurring from this area of the site.

Hazards and Risks

The NSW EPA have considered the site to have an Overall Environmental Risk Level of 1.

The site has been designed to prevent cumulative hazards occurring. The original design of the warehouses were developed with the then NSW Fire Brigade.

The proposed modifications would not cause a cumulative hazard to occur as the existing warehouses being used for basic logistics operations with no decanting or processing, the level of risk is very low.

The Preliminary Hazard Analysis and a Fire Safety Study re-examines the risks relating to the two flammable liquid warehouses B1/B2 as IBC's are proposed to be used. The Preliminary Hazard Analysis also assesses the increased quantity of Class 8 usage. Findings are provided in EA Attachment 12.

Traffic

The original development consent restricted the truck routes that would be used. Since the original consent was granted, the roadway system has been updated. Restrictions that were formerly applied to the routes trucks could use are now considered to be redundant.

The proposed change is for transport efficiency and would require the original conditions of consent to be altered.

The recommendations of the Commissioner to exclude bulk liquids being transported south along Campbelltown Road were made before the construction of the north bound access ramp from Raby Road to the Hume Motorway (M31), the southbound access to the M31 from the intersection of Campbelltown and Williamson Roads and also made before Campbelltown City Council reviewed load limits and set restrictions over certain bridges in the Minto Area. The result of the review now creates a liability for drivers that follow the Commissioner's recommendations when exiting the site southbound.

A change in traffic routes to:

- Vary the restriction along Campbelltown Road south of Ben Lomond Road to Raby Road to allow trucks transporting bulk and packaged loads travelling north from the site to travel along Campbelltown Road to Raby Road and thence along Raby Road to the northbound access ramp to the M31, and
- Allow southbound vehicles transporting bulk and packaged loads to utilize the southbound access to the M31 from the intersection of Campbelltown and Williamson Roads.

The Commissioner's recommendations would remain for the section of Campbelltown Road south of Raby Road.

A change in the consent conditions relating to allowable traffic routes is therefore requested as detailed in the traffic engineer's report prepared by Transport and Urban Planning (EA Attachment 6).

The traffic engineer's report finds that the preferred traffic routes have adequate capacity.
The preferred truck routes would also enable the weight restrictions of Council to be satisfied.
The preferred truck routes would marginally reduce the trip times of trucks to and from the site.
The increase in traffic numbers is not considered to have an adverse impact on the capacity of the road system. Road traffic noise is assessed in Section 4.4.1. Noise impact associated with road traffic was predicted to readily comply with the project specific noise levels, no controls are warranted.

Waste Management

There would be two main waste streams at the site:

1. Office & domestic waste - General solid waste (putrescible), and
2. Process waste – Liquids from the diluting/decanting tank would generate liquid waste. This would be essentially wastewater. This would be treated in the wastewater treatment plant and not generate liquid wastes requiring transport off site.

The wastewater treatment plant will precipitate metals and other impurities as solid waste which will be loaded in a skip bin and disposed of via a contractor. Treated water is to be tested and discharged in to the sewer under consent from Sydney Water. The process is strictly controlled to Sydney Water guidelines and regularly tested by an on-site chemist employed by Redox.

There is a small amount of "high-sulphate" liquid waste (possible 2,000 L/month) and Redox will have this sent offsite by a contractor.

Comparison Quantities of Chemicals

The following table shows a comparison of the quantities of chemicals between the following situations:

- Proposed in the original EA (2003)
- Existing situation as a result of Commission of Inquiry; and
- Proposed in this Modification.

Chemical Type by non-DG or Dangerous Goods Class	Original EA (2003)	Existing Tonne	Proposed in this Modification Tonne	Additional as a result of this Modification Tonne
Non Dangerous Goods	15,795	11,195	15,795	4,600
Class 3 flammable liquids	900	900	900	Nil
Class 5.1 Oxidising substances	250	250	250	Nil
Class 6.1 Toxic substances	850	850	850	Nil
Class 8 Corrosive substance in Packages (Assumes IBCs and F IBCs for solids)	2,400	2,400	2,110	–290 (reduction)
Class 8 corrosive substances n Bulk (i.e. aboveground tanks)	250	250	540	290
TOTAL	**20,445**	**15,845**	**20,445**	**4,600**

The 20,445 T is the original quantity requested in the EIS. This was reduced to 15,845 T as a result of removal of the bulk storage of soda ash as this required 24 hour access. Redox request the approval of the 4,600 T of non-dangerous goods that was removed.

Need for the Project

The S75W Application is needed to support changes that are required to the existing consent as a result of the original need altering for two main reasons:

- Redox purchased the Deltrex business which would be relocated from its present location at Girraween to Minto. As a result, the size of the original Stage IV of the development would be larger with increased storage capacity required in aboveground roofed and bunded tanks.
- In addition, the increased capacity is due to the need for food grade chemicals to be made, decanted and made available to end users.

Justification

The justification for the requested changes to the original Stage IV development is based on several factors:

- Changes in traffic flow due to ramps now being available onto the M7 Motorway at St Andrews. Redox wish to take advantage of these ramps and shorten the truck routes hence benefiting productivity and fuel consumption.
- Changes in the need for the production of food grade chemicals resulting from Sydney's increased population and the growth in the food processing industries in Australia.
- At the time of the original consent, Redox did not own Deltrex. Deltrex's business needs to be relocated to a new facility purpose designed for the range of products provided by Deltrex.

Approval is requested.

R T Benbow
Principal Consultant

ABBREVIATIONS

AS	Australian Standard
BCA	Building Code of Australia
BE	Benbow Environmental
CO_2	Carbon Dioxide
DCP	Development Control Plan
DoP&E	Department of Planning and Environment
EP&A	Environmental Planning & Assessment Act 1979
ERPG	Emergency Response Planning Guidelines
FRL	Fire rating level
IBC	Intermediate Bulk Container
IDLH	Immediately Dangerous to Life or Health
LEL	Lower Explosive Limit
LEP	Local Environmental Plan
NPI	National Pollutant Inventory
NPWS	National Parks & Wildlife Service
NSW EPA	New South Wales Environment Protection Authority
ODU	Odour Detection Unit
OOCI	Combustible liquid of Class C1
OOC2	Combustible liquid of Class C2
Pa	per annum
PHA	Preliminary Hazard Analysis
PIRMP	Pollution Incident Risk Management Plan
POEO	Protection of the Environment Operations Act 1997
QA	Quality Assurance
QC	Quality Control
REP	Regional Environmental Plan
SEPP	State Environmental Planning Policy
UEL	Upper Explosive LImit
VOC	Volatile Organic Compound

UNITS OF MEASUREMENT

°C	degree centigrade	(unit of temperature)
dB(A)	A-weighted decibels	(unit of noise)
dB(lin)	Linear-weighted decibels	(unit of noise)
D/T	Dilutions to threshold	(unit of odour)
g	gram	(unit of mass)
g/s	Grams per second	(mass flow rate)
kg	kilogram	(unit of mass)
kg/s or kg/sec	Kilograms per second	(mass flow rate)
kPa	Kilopascal	(unit of pressure)
kW	kilowatt	(unit of power)
kW/m^2	Kilowatt per square metre	(unit of heat flux)
L	litre	(unit of volume)
m	metre	(unit of length)
m^3	cubic meter	(unit of volume)
mg	Milligram	(mass)
mg/m^3	Milligrams per cubic metre	(concentration)
m/s or m/sec	Metres per second	(unit of speed)
T	Tonnes	(measurement of weight)
μg	microgram	(10^{-6} gm – unit of mass)
$\mu g/m^3$	microgram/cubic meter	(concentration)
ODU	odour detection unit	(unit of odour)

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1. INTRODUCTION

Benbow Environmental was commissioned by Redox to prepare an Environmental Assessment (EA) to support a S75W application for changes to the original development of the project described as construction and operation of a chemical storage and distribution centre and associated infrastructure at 2 Swettenham Road, Minto.

The original consent was granted in 2003 by the then Minster for Infrastructure and Planning, the project being State Significant.

The original conditions of consent are provided in EA Attachment 5.

Correspondence provided in EA Attachment 1 was provided to the Department of Planning and Environment. Preparation of a S75W report, titled an Environmental Assessment (EA) has been completed.

1.1 S75W REPORT STRUCTURE

The S75W report is structured in the following way.

The Introduction includes information on the Findings of the Commission of Inquiry, a brief description of Redox, land use type, summary of the existing operations and a series of photographs.

Section 2 discusses development issues, aerial photographs of the site, the general locality and the surrounding development.

Legislation that may apply to the site's land use type and the site's activities are discussed.

Outcomes from the consultation programme are also discussed in this section.

Section 2.2.3 provides a description of the site and surroundings.

Each of the activities in the buildings on site is described. A description of the proposed facility is detailed. The chemical details are discussed in significant detail to enable the changes that are proposed to be interpreted.

The description of the surrounding area also details locations of newest potentially affected receivers that have been considered. Traffic and carparking is discussed.

Section 5 presents assessment of environmental aspects.

Section 5 discusses environmental aspects of the Redox site in relation to chemicals and chemical storage.

Section 6 presents a Summary of the Fire Safety Study and Section 7 lists the environmental management and safeguards. It also provides a summary of potential environmental aspects.

Section 8 lists recommendations and Section 9 concludes the report.

A draft of the S75W supportive documents was submitted to the Department and clarification of various technical aspects has been included.

A detailed community consultation programme has been conducted. Campbelltown City Council have been consulted.

1.2 PROPOSED MODIFICATION

This Environmental Assessment (EA) considers the potential impacts of the development with respect to the following changes to the original consent.

- Increase the size of the largest packages /containers use to hold Class 3 flammable liquids and Class 6 toxic substances to include intermediate bulk containers i.e. IBCs. These were precluded from being able to be used in the original consent.
- Increase the total quantity of chemicals that can be stored on site to the original quantity requested in the original development application, 4,650 tonnes of dangerous goods and 15,795 tonnes of non-dangerous goods (20,445 tonnes total).

In the original 2003 EA 4,600 tonnes per year of soda ash (non-dangerous goods) was proposed. The storage of soda ash in bulk was removed from the original application during the Commission of Inquiry due to the need to deliver the soda ash over evening and night time periods. This reduced the total quantity of non-dangerous goods from 15,795 tonnes to 11,195 tonnes. Redox request that the consent be altered as part of this application to increase the quantity of non-dangerous goods to be permitted on site to 15,795 tonnes.

- Increase storage quantity of Class 8(3) and Class 8(F1) corrosive substances – a total quantity stored at the Stage IV area would be increased from 250 T to 540 T. The total quantity of dangerous goods on site would remain at 4,650 tonnes. This would require a larger number of bulk storage tanks and a redesign of the facility.

- Alter the site activities to allow for the supply of food grade chemicals.
- .

  Due to market opportunities, especially in the growing food industries Class 8 sub risk 3 and sub risk C1 combustible liquid dangerous goods, further acids used in the food industry (phosphoric acid) and food grade liquids need to be stored and dispensed.

- Allow site activities to include dilution.

  The Department notes that the existing development consent allows for *"any activity required for, or associated with, the receival, warehousing, handling, decanting, packaging or distribution of dangerous and non-dangerous goods at, on or from the site".*

  However the Consent Conditions under Scope of Work at Section 1.2 state "*The Applicant shall carry out the development generally in accordance WITH:" AND AT Point (b) Environmental Impact Statement: Greenfield Development for Major Storage and Distribution Centre, Redox Chemicals Pty Ltd (two volumes) prepared by Dick Benbow & Associates Pty Limited and dated October 2002"*.

The description of Stage 4 in the EIS in Section 2.2.4 at page 2-6 states:

The addition of facilities for the storage of bulk liquid products in above ground tanks would allow for the dilution and decanting of products into either drums, carboys or IBCs would finalise the development.

Furthermore Benbow Environmental is unaware of intention to remove dilution from the proposed activities during the commission of inquiry.

Therefore it is required the consent be modified to allow: *"any activity required for, or associated with, the receival, warehousing, handling, decanting, dilution, packaging or distribution of dangerous and non-dangerous goods at, on or from the site".*

- Alter the traffic routes to make use of the Raby Road link to the ramps onto the Motorway. At present trucks are required to avoid the southern half of Campbelltown Road and use a circuitous route to join the Motorway. The ramp did not exist at the time the original consent was granted. Use of the Raby Road link will still avoid the main residential area along Campbelltown Road.

The EA considers the potential impacts of the proposed modification with respect to the following environmental aspects:

- Noise;
- Air Quality;
- Waste;
- Surface Water;
- Chemical risks and hazards;
- Compliance with Australian Standards for the storage of chemicals that belong to Classes of dangerous goods;
- Fire safety;
- Potential impacts on amenity of the commercial area and residents; and
- Transport.

1.3 INTRODUCTION TO THE PROPONENT

Redox is a leading chemical and ingredients distributor active in more than 1000 specialty and commodity products. Products are supplied to 140 different industries throughout Australia, New Zealand, Malaysia and the West Coast of the USA.

The site at Minto is Redox's corporate International Head Office with the Managing Director and Executive Management working from this site. Redox started as a small trader of speciality products in 1965, and has grown to become one of the largest privately owned chemical raw material importers and distributors in the Asia Pacific region.

Redox operate chemical storage and logistics sites across major capital cities. Redox have established a high standard of safety and environmental management and operate their sites free of any polluting incidents.

The Minto site has in place a Safety Management System that has served their operations and enabled this site to be free of any incidents since it began operating.

The Redox Minto operations have been assessed for Overall Environmental Risk by the NSW EPA and have been given the lowest risk level of 1.

Redox have also had their Environmental Management rated at Category A which resulted in a 5% reduction in licensing fees.

These are very positive outcomes supporting the commitment Redox have made with their operations.

The NSW EPA have also classified the Deltrex site at the same level of risk and the same Category for Environmental Management.

Redox purchased the operations of Deltrex. This continues to be operated at a Girraween site. These activities form the basis of the revised Stage IV operating area. The success of the Deltrex operations has resulted in the need for a larger quantity of chemicals to be stored at the Stage IV development.

The S75W application will enable Redox to further assess the potential outcomes of their Stage Iv activities on industry adjacent to their site and to residences west of the site.

There would also be growth in the supply of products generated at the existing Deltrex site. The current annual production of 12,000 T per year could increase to 30,000 T per year.

The delay in installing the Stage IV development has been beneficial to Redox as it has enabled a larger market for chemicals used in the food industry to expand considerably.

1.4 SUMMARY OF FINDINGS OF COMMISSION OF INQUIRY

A Commission of Inquiry was held in public so that all stakeholders' views were able to be heard as a result of concerns raised by residents, NSW EPA, Campbelltown City Council and the Department of Planning.

As a result of concerns raised by the stakeholders, Redox modified the original proposal to reduce those concerns through the following actions:

- Bulk soda ash (non-dangerous good) aspect was removed.
- The Commissioner noted the total quantity of chemical products would be 15,900 tonne.
- Removal of bulk liquid transportation of Class 5.1 and Class 6.1 products.
- Removal of decanting Class 5.1 and Class 6.1 products.
- No Class 5.1 liquids stored on site.
- Methanol, Class 3 sub risk Class 6.1 not stored on site.
- Largest package size for Class 5.1 goods in 1,000 kg bulka bags.
- Largest package size for Class 3 goods is 205 L drums.
- Largest package size for Class 6.1 goods is 205 L drums for Class 6.1 liquids and 1000 kg bulka bags for Class 6.1 solids.
- No bulk goods on-site with the exception of Class 8 and non-dangerous goods.
  In this respect bulk implies tanks of capacity greater than 1,000 L.

Also specific to the Stage IV of the development:

- Recommendations 24 and 25 (from Appendix 8 of the Commissioner's Report).
  Implement a Noise Construction Plan. The recommendation and a number of bullet points which are relevant, have been adopted.
- Recommendation 26 – Construction noise auditing.
  Roofing of the tank farm and decanting areas.
  Prior to the commencement of construction
- Recommendation 32 – Construction dust management
  Prepare and implement a construction dust management plan.
- Environmental management Plan
  The recommendation included several bullet points which are also relevant when this Plan is prepared.
- Recommendation 33 – Air quality emissions during decanting.
  In summary, the Applicant provide the detailed design of the scrubber and relevant documentation prior to the commencement of construction of this component.

  The Stage IV development as modified would now use three scrubbers. The scrubbers recommended are proprietary and designed by the manufacturer (located in Melbourne) for each of the chemical fumes that may be released.

  Exact details would be provided before construction and would be provided to the NSW EPA in a change to the Environment Protection Licence of the site (EPL #12041).

- Recommendation 34 – Air quality auditing.
  Within three months of commissioning the acetic acid scrubber and decanting area, undertake an audit of the operations to confirm that the development is not generating any off-site impacts. This would apply to the three scrubbers.

- Recommendation 35 – Air quality monitoring during ongoing operations.
  As instructed in this recommendation quarterly monitoring of the acetic acid scrubber would be undertaken. This would be included in the recommended Air Quality Operations Environmental Management Plan.

  After successful four quarters of results it would be reasonable to apply to the NSW EPA to reduce the incidence of testing to an annual audit.

  The audit would include checking records of the operational history, preventative maintenance records and any corrective actions that were found to be necessary that these were undertaken.

There are a number of operational plans that would have been prepared in accordance with the Commissioner's Recommendations and the Conditions of Consent. These will need to be updated to suit the modifications proposed.

The three yearly independent environmental audit would be expected to have audited for any deficiencies. The Section 75W does not consider this aspect.

The above recommendations of the Commissioner are requested to be modified in regard to the following aspects:

- The largest size container of flammable liquids be 1000 L IBCs. Justification is provided in this report.
- Alter the traffic route from the restriction shown on Figure 1 from the Commissioner's report:

Figure 1: Locality site showing Proposed Heavy Vehicle Haul Route

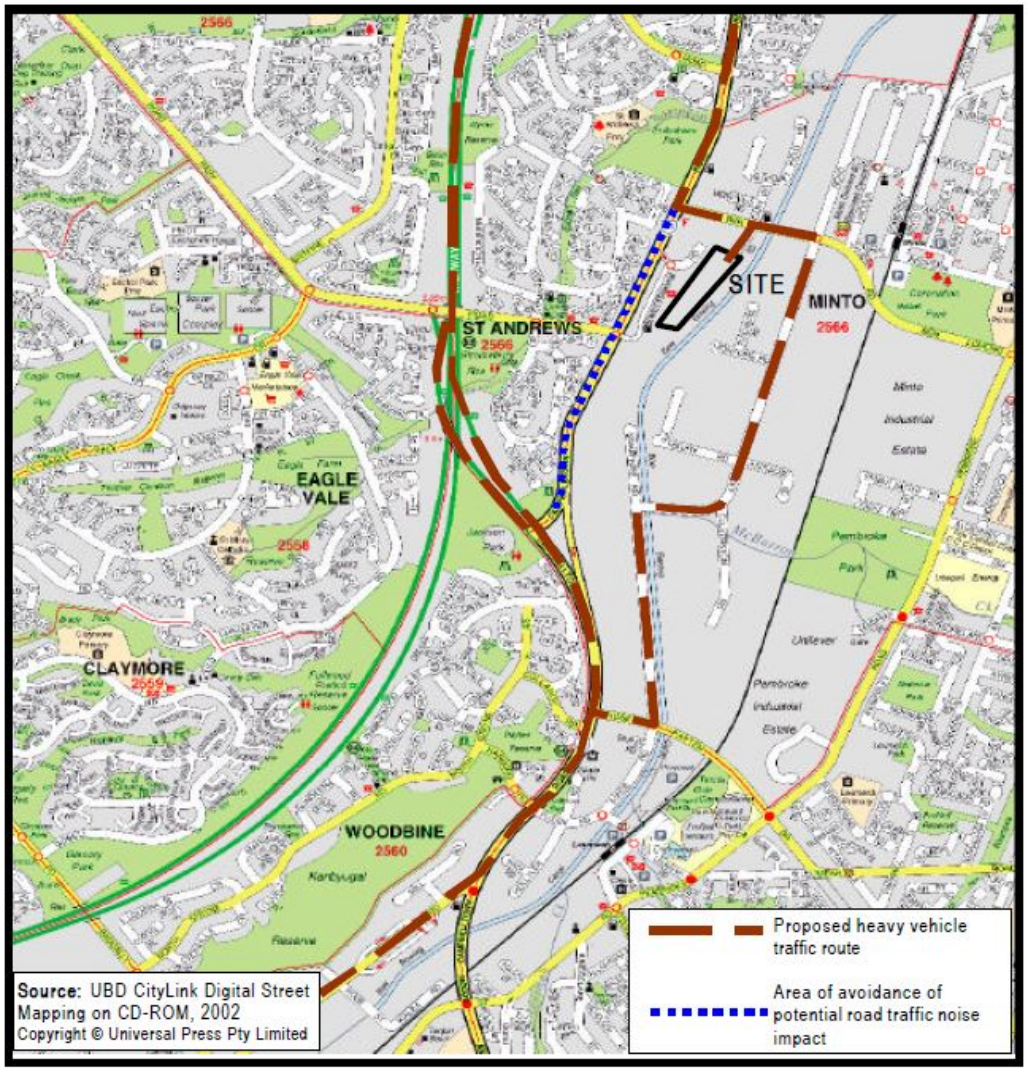
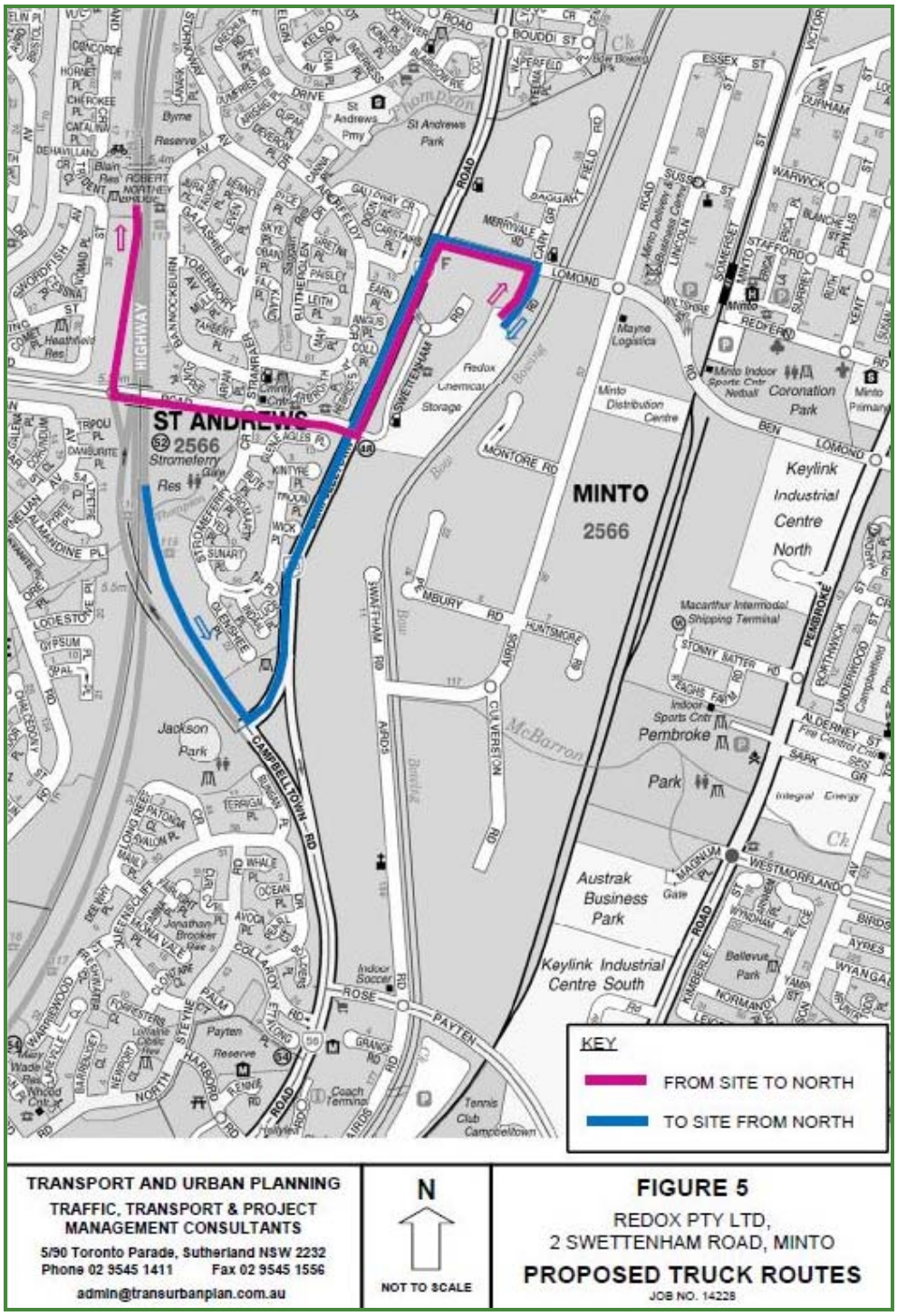


Figure 1-1 shows the recommended traffic route.

Figure 1-1: Recommended Traffic Route



The requested change to distribution of traffic is to allow the ramp off Raby Road at St Andrews to be used for trucks travelling to the north. The ramps off Raby Road did not exist at the time of the Commission of Inquiry.

1.4.1 Implementation of Commission of Inquiry Requirements and Additional Safeguards

A review of the recommendations of the Commission finds that Redox is satisfying the requirements and has added additional safeguards to the design of the warehouses. The main ones being the following:

- The roof of the Class 3, C1 and C2 warehouse B1 and B2 are of a three hour fire rated concrete. This provided reduction of the risk of drums of these liquids becoming airborne because of the "BLEVE" phenomenon.

  The warehouses are able to withstand the heat of a fire for the length of time that the contents would combust.

  It is for these reasons and the demand of industry to transport these liquids using IBCs as approved in the ADG Code, the restriction on the size of the containers being increased from 205 L to 1000 L IBCs.

- The warehouses C1-C3, D1-D3 and E1-E3 are built with common walls. These have all be constructed with 240/240/240 fire rated level concrete walls. This was a decision made in support of the Commissioner's desire expressed in the following statement:

  "*The Commission is satisfied, subject to the adoption of stringent measures, including monitoring, community involvement and a* ***proactive impact avoidance strategy by Redox****, that environmental and safety aspects do not preclude approval of the proposed chemical storage and distribution facility."*

  The pertinent words are bolded, the bolding added by the writer.

The recommendations of the Commissioner included ongoing community involvement. Redox have found that there has been little ongoing need for this. There have been no recorded instances of negative responses to the operations of the site since the site commenced.

A complaints register shows an absence of contact.

During the recent community consultation programme for the Section 75W modification, the responses were limited to one family.

1.5 CHANGE TO USE OF IBCS FOR CLASS 3 AND CLASS 6.1 DANGEROUS GOODS

Intermediate bulk containers of the composite type have widely replaced the use of steel and plastic drums due to the ease of filling and handling one container – the IBC – instead of drums made from either steel or plastic (referred to as mausers).

IBCs are used for a range of flammable liquids, C1 and C2 combustible liquids and Class 6.1 toxic substances. Their use on the site has been extensive for Class 8 corrosive substances, and liquid chemicals that are non-dangerous and not hazardous.

End users find the use of IBCs more convenient as dispensing from one container of 1,000 L requires less work and less risk of an accident occurring than changing the connections used in dispensing four drums. Composite IBCs are preferred by end users as these are simpler for repackaging product.

Environmental advantages for recycling are another advantage IBCs provide – one container replacing four containers. AS IBCs are blow moulded they are free of seams which require extensive internal washing and rinsing.

Use of composite IBCs decreases the risks of handling and storage as there are less movements involved compared to pallets of drums or mausers.

Stacking IBCs two high is considered to be safer as the IBCs are more convenient with less human error than pallets of drums/mausers which need constraints usually provided by strapping. IBCs interlock together.

The benefits of using IBCs are summarised as follows:

- Easy to stack for transport and storage;
- Designed to enable multiple reuses;
- Reduced product handling as 1000 L replaces 800-820 L for the same cubic space, saving 25% space for shipping and warehousing;
- Approved by the UN and ADG Code for transport of a wide range of chemicals;
- Easier to fill at a quicker rate and decant.

1.5.1 Bulk Storage vs. IBC Storage

Redox request approval to store chemicals belonging to Class 3 flammable liquids and Class 6.1 toxic substances in Intermediate Bulk Containers (i.e. IBCs).

The Commission of Inquiry excluded storage of these Classes of dangerous goods in bulk.

As confirmed in an email from Melissa Prochazka, Senior Planning Officer, Department of Planning & Environment based on advice from the Department of Planning & Environment Hazard Team dated 29 August 2018, IBC storage is not considered bulk storage.

2. PLANNING

This section of the S75W application details the planning requirements and was prepared in conjunction with Gary Rhodes of Rhodes Haskew Associates.

2.1 INTRODUCTION

This section of the Section 75W provides an assessment of the proposed development (amendment to the previously approved but not constructed Stage 4) in accordance with all relevant statutory planning controls that need to considered.

This section has been prepared by Rhodes Haskew Associates - Consulting Town Planners.

On 16th September 2003 the then Minister for Infrastructure and Planning issued a determination, by granting consent subject to conditions, for a "*State Significant, Designated and Integrated Development pursuant to Section 80 of the Environmental Planning and Assessment Act 1979*" (Integrated DA No. 367-11-2002.1). The applicant for the development was Redox Chemicals Pty Ltd and the application was in respect of Lot 171 DP 878463 (now Lot 1711 DP 1089572) Swettenham Road Minto. The approved use was for "*the construction and operation of a chemical storage and distribution centre and associated infrastructure".* A copy of the determination is included at EA Attachment 5.

The development as determined involved four development stages being:

- Stage I – Construction and use of the Administration Building (Building A), Transport Office (Building G), Building B, Building C, Building D, Building J, Decanting Area (Area "K"), and associated infrastructure.
- Decanting Area K did not proceed and its purpose is superseded by the development now proposed.
- Stage II – Construction and use of Building E
- Stage III – Construction and use of Building I
- Stage IV – Construction and use of Building H and Tank Farm and Drumming Facility (Building "F").

Stages 1 to 3 inclusive have been completed. The consent for Stage 4 remains current as approved in 2003.

It is now intended to complete Stage IV albeit in a slightly modified construction form and use as detailed in this S75W application. The application also seeks to amend Condition 4.10 in respect of nominated transport routes.

2.2 SITE DETAILS

The subject land is situated to the east of Campbelltown Road within the Minto Industrial Area. Swettenham Road is a service road, which adjoins and is parallel to Campbelltown Road. The service road provides direct access although in the case of the subject land the topography of the subject site is such that access is limited to passenger vehicles as well as emergency vehicles. Heavy vehicle access is obtained from Holmes Road being a cul de sac running southerly off Ben Lomond Road.

The subject land is an irregular shaped parcel now described as Lot 1711 DP 1089572 (formerly Lot 171 DP 878463) No. 2 Swettenham Road Minto. The site is comprised of approximately 6.05 ha. The proposed site is located within the Campbelltown City Council Local Government Area. The subject site was zoned 4(b) Industry in the 2002 LEP and is now zoned IN2 in the 2015 LEP.

2.2.1 Existing Development

As detailed above, the subject land is currently used for the purposes of a "chemical storage and distribution centre". Figure 2-1 and Figure 2-2 provide an aerial view of the land and the surrounding development. Figure 2-2 shows the area on site where Stage IV would be located in a larger view. Figure 2-3 shows the surrounding development in more detail.

Figure 2-1: Aerial View of Subject Land

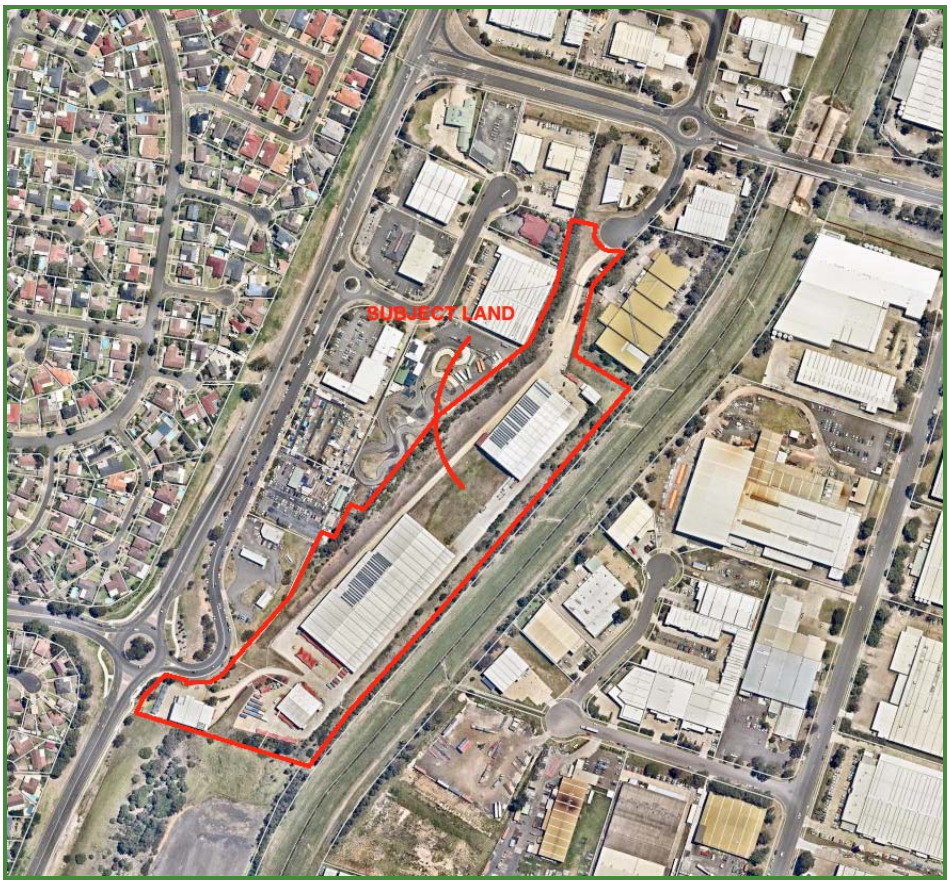
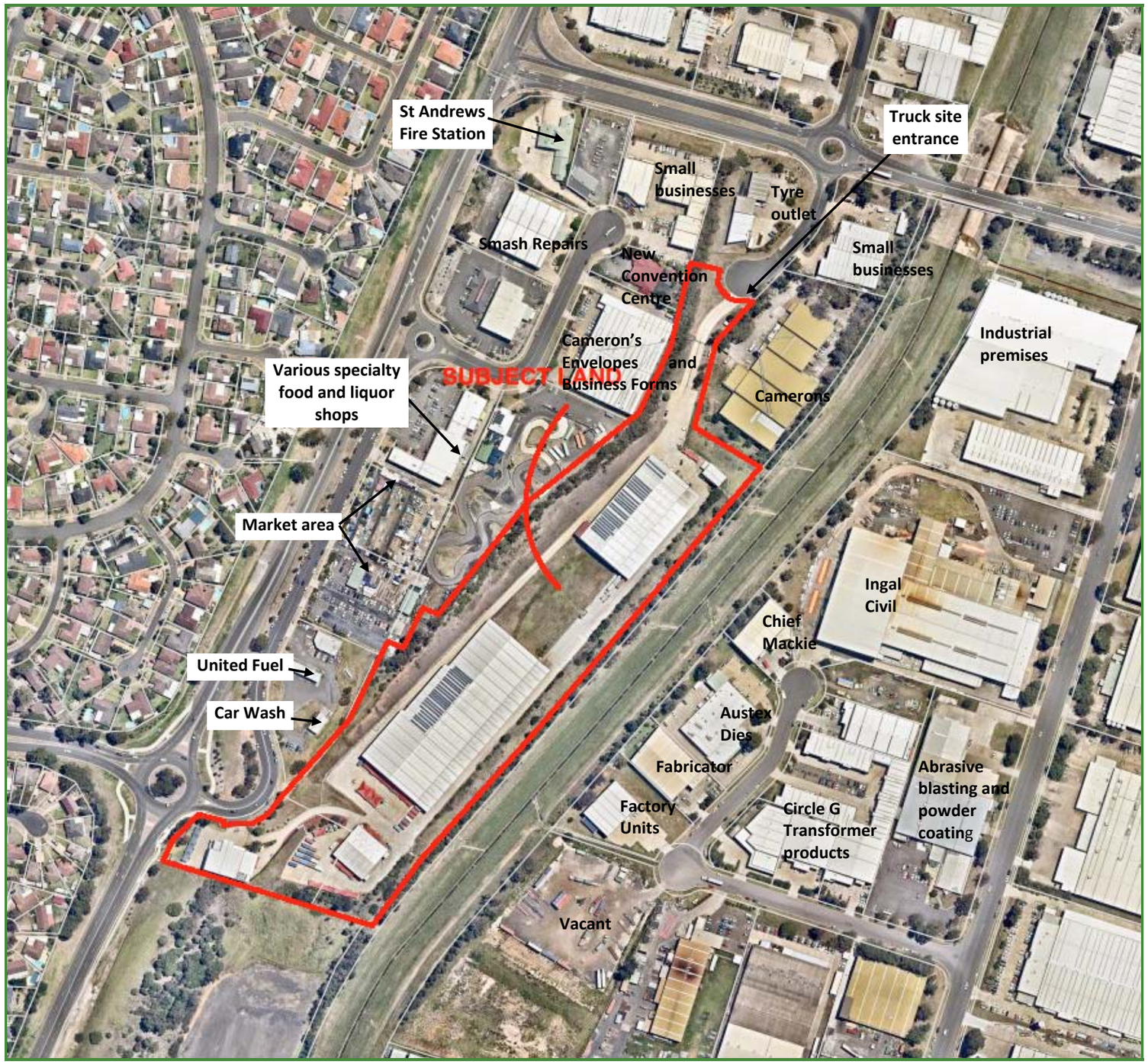


Figure 2-2: Aerial View of the Subject Land to be Developed

Figure 2-3: Aerial View of Subject Land and Surrounding Development



2.2.2 Existing Operations

The existing operations of the Redox Minto site are presented with reference to the existing site layout. The purposes of each of the buildings on site is summarised. Notification from SafeWork NSW is presented in EA Attachment 2 and the Notification lists the actual quantity of Classes of dangerous goods stored in each building.

The current site layout is shown on Figure 2-4. This is provided in A3 and therefore may not be completely legible. An A1 copy is provided as EA Attachment 3. The current operations are described as a chemical logistics and distribution centre which services the needs of a wide range of businesses across Australia.

In the north-west corner of the site is the Head Office which functions for the Redox operations across Australia. These functions include the technical support services to end users of the broad range of chemicals provided by Redox.

Figure 2-4 shows the site where it adjoins Campbelltown Road in the far south-west corner. Entrance to the site in this part of the site is off Swettenham Road and this entrance is for employee vehicles mainly as the access road down to the warehouses is unsuitable for articulated vehicles.

Trucks enter from the north eastern end of the site off Holmes Road and travel along the eastern side of the site to access the warehouses. The products being unloaded are either in pallet loads, bulky bags, drums or IBCs (with the current exception of Class 3, and C1/C2 combustible liquids) which are not permitted in IBC's on site as IBC's are considered to be bulk. The intention of the original EIS in excluding bulk quantities of Class 3, C1/C2 combustible liquids was to exclude tanks of these chemicals, not IBC's.

The products are unloaded in front of the warehouse where storage is being provided.

The original development of the site included security with sliding lockable entrance gates and high electric fencing around the full perimeter of the site.

The stormwater drainage system includes stormwater sumps and isolation valves. As this exists, it is not discussed in detail.

The stormwater isolation system and bunding across the site was originally developed in conjunction with the then NSW Fire Brigade (now Fire and Rescue NSW).

Photographs of the existing operations are provided in EA Attachment 14.

The list of chemicals currently being stored on site is presented in Section 2.2.2.2. A list of chemicals comparing what was originally approved and what would now be required with the Deltrex Operations forming the Stage IV of the development is provided in Section 4.3.1.

2.2.2.1 Warehouse Construction

There are currently 14 warehouses as shown on the site plan. The warehouse buildings have been constructed on a large relatively flat concrete platform with perimeter bunding. The original design of the site placed the higher risk activities, being the storage and handling of flammable and combustible liquids, away from the other activities. A lettering system denotes the various warehouses commencing with B1 and B2 in the far south-western end of the site.

B1 and B2 provide the fire rated buildings for the flammable and combustible liquids.

B1 and B2 share a common wall and are isolated from the other warehouses to satisfy requirements of AS 1940, reduce risk of cumulative hazards occurring, and to suit the functions of the site.

Warehouses C1–C3, D1–D3 and E1–E3 are built with common walls.

Each of the warehouses has been developed to store specific types of chemicals.

C1 stores non-hazardous chemicals.

Where a warehouse stores liquid chemicals then the perimeter of the warehouse is bunded to the requirements of the relevant Australian Standard.

C2 stores only non-hazardous.

C3 stores non-hazardous and Class 8 corrosive substances which are alkali. These would mainly be liquids.

C4 stores non-hazardous and Class 8 corrosive substances which are acidic in nature. Again these would mainly be liquids. The separation of alkali and acids into separate warehouses reduces the risk of incompatible or reactive chemicals being able to mix during a spill or fire. This reduces the risk of cumulative hazards occurring.

D1 stores non-hazardous and Class 6.1 toxic substances.

D3 stores food grade product.

E1, E2 and E3 store non-hazardous chemicals. These may be solid and liquid.

H1 and H2 warehouses are located on the northern side of the vacant land set aside for the Stage IV development. These warehouses as well as the most northern warehouse J1, store food grade products.

2.2.2.2 Existing Chemical Quantities

The existing chemical quantities are provided in Table 2-1:

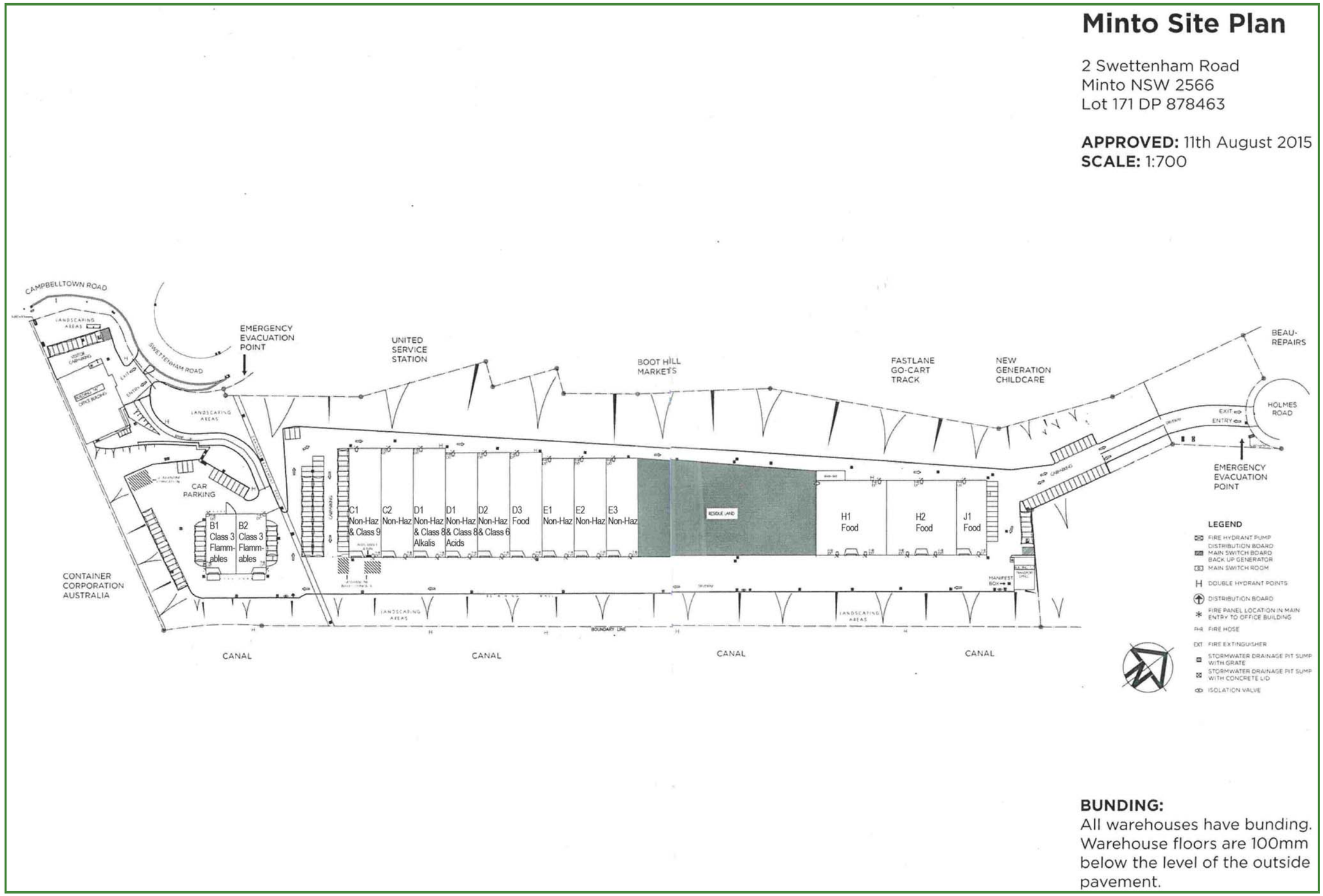
Table 2-1: Existing Chemical Quantities

Chemical Type by non-DG or Dangerous Goods Class	Existing (Tonne)
Non Dangerous Goods	11,195
Class 3 flammable liquids	900
Class 5.1 Oxidising substances	250
Class 6.1 Toxic substances	850
Class 8 Corrosive substance in Packages (Assumes IBCs and F IBCs for solids)	2,400
Class 8 corrosive substances in Bulk (i.e. aboveground tanks)	250
TOTAL	**15,845**

A list of the manifest quantities of chemicals stored in these and the other warehouses is provided in the Notification from SafeWork NSW. A very detailed Manifest is held by the site which lists every single chemical and the quantity. This Manifest includes the small quantities held by QA/QC. The detailed Manifest is not included as an Attachment.

EA Attachment 4 provides a brief description of each of the Classes of dangerous goods.

Figure 2-4: Location of Existing Operations



2.2.3 Surrounding Development

Development surrounding the subject site primarily consists of industrial and associated activities. In this regard, the site is adjoined to the north and northeast by industrial manufacturing facilities, a tyre repair premises, factory units and bulky goods retail premises.

Adjoining to the east of the site is the Bow Bowing Canal and thence a number of large-scale industrial and warehousing activities. Adjoining to the south of the site is vacant land.

To the west of the site on significantly higher land is a child care centre, go kart track, manufacturing facilities, retail shops, bulky goods showrooms, an open air market and a service station.

Within the broader locality, is the Minto Fire Station, which is located on the south-eastern corner of Campbelltown Road and Ben Lomond Road, Residential development is located on the western side of Campbelltown Road.

Figure 2-3 shows the surrounding developments.

2.2.3.1 Nearest Sensitive Receptors

Figure 2-5 shows the nearest sensitive receiver locations R1 to R13.

Figure 2-5: Aerial Photograph of the Project Site Location and the Nearest Potentially Affected Receptors

↑N Not to scale	LEGEND: Receptor ●	Benbow Environmental 25-27 Sherwood Street, Northmead NSW 2152

2.2.4 Topography and Vegetation

The site was originally developed as a "cut and fill" construction on a steeply sloping site. Consequently the subject land is contains two distinct levels. The higher level fronts Swettenham Road (and Campbelltown Road) and contains the administration building with associated parking with this served off Swettenham Road. The lower level is located along the edge of a drainage channel (Bow Bowing Creek) and contains the warehouse component of the use. This level is served off Holmes Road. There is no heavy vehicle access between the two levels other than for emergency vehicle access. The site plan shows a number of commercial premises along the western side of the site at the Campbelltown Road level. The batter between the top of the site and the location of the warehouses is steep and inaccessible.

Topographic mapping indicates Bow Bowing Creek by a "blue line" and consultation with the NSW Office of Water is triggered as the proposed development is within 40 m of this "river". As part of the consent for the current use of the subject land a permit was issued under (then) Part 3A of the Rivers and Foreshores Improvement Act 1948. The conditions of the permit were satisfied with the required works implemented and the bonds as required under condition 48 of the permit were subsequently released.

Planning Framework

The now proposed development involves a modification of the 2003 consent in terms of the then proposed Stage 4 component of that consent. Minor amendments to the then proposed built form are proposed whilst the use of that building also involves some amendment as detailed elsewhere in this Statement. These amendments do not involve a change from the approved use of the site. Additionally this application seeks an amendment of the current transport routes as detailed in EA Attachment 6.

The following sections detail the planning controls as now apply.

2.2.5 Employment

The current levels of employment are separated into the Head Office functions and those directly involved with the management of the NSW operations and the Minto site.

Head Office currently employs 106 staff. The NSW State operations and the site employs 37 staff.

The development of the Stage IV with Deltrex merged into this Stage of the site would bring 7 staff to the site.

2.3 COMMONWEALTH CONTROLS

2.3.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) would apply to the development of the subject land. The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places—defined in the EPBC Act as matters of national environmental significance.

The nine matters of national environmental significance to which the EPBC Act applies are:

- world heritage sites;
- national heritage places;
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed);
- nationally threatened species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions; and
- water resources in relation to coal seam gas and large coal mining.

In addition, the EPBC Act confers jurisdiction over actions that have a significant impact on the environment where the actions affect, or are taken on, Commonwealth land, or are carried out by a Commonwealth agency (even if that significant impact is not on one of the nine matters of 'national environmental significance'). Information about this special Commonwealth category is not included in this fact sheet.

Specifically, the EPBC Act aims to:

- provide for the protection of the environment, especially matters of national environmental significance;
- conserve Australia's biodiversity;
- protect biodiversity internationally by controlling the international movement of wildlife;
- provide a streamlined environmental assessment and approvals process where matters of national environmental significance are involved;
- protect our world and national heritage; and
- promote ecologically sustainable development.

The Federal Environment Minister's role under the EPBC Act is to protect areas of national environmental significance in accordance with the guiding principles of the EPBC Act. The Minister's role does not extend to development where there is no significant impact on one of the nine matters of national environmental significance set out above.

The proposed modified development would not have a significant impact on matters of National environment significance and, as it is not on Commonwealth land, the Provisions of the Act do not have application and the approval of the Minister is not required.

2.3.2 Native Title Act 1993

This Act is administered by the National Native Title Tribunal who maintain a Register of Claimants. There are no Native Titles issues in respect of the subject land.

2.3.3 National Green House and Energy Reporting Act 2007

Provides for a framework for the reporting and dissemination of information in respect of greenhouse gas emissions and greenhouse gas projects. The proposed development does not trigger the provisions of this Act.

2.4 STATE CONTROLS

2.4.1 Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A) and the Environmental Planning and Assessment Regulation 2000 made thereunder contain Provisions to provide the framework for environmental planning in NSW. The Act and the Regulations include Provisions to ensure that proposals, which have the potential to impact on the environment, are subject to detailed assessment. Provisions for public involvement are also included.

2.4.1.1 Designated development

Section 77A of the Act contains Provisions in respect of Designated Development being:

> *Designated development is development that is declared to be designated development by an environmental planning instrument or the regulations.*

Clause 4 (1) of the Regulations provide for development as described in Part 1 of Schedule 3 of the Regulations to be declared designated development. In this regard the following definitions have relevance:

> *10* ***Chemical storage facilities***
> *Chemical storage facilities:*
> *(a) that store or package chemical substances in containers, bulk storage facilities, stockpiles or dumps with a total storage capacity in excess of:*
> *(i) 20 tonnes of pressurised gas, or*
> *(ii) 200 tonnes of liquefied gases, or*
> *(iii) 2,000 tonnes of any chemical substances, or*
> *(b) that are located:*
> *(i) within 40 metres of a natural waterbody or wetland, or*
> *(ii) in an area of high watertable or highly permeable soil, or*
> *(iii) in a drinking water catchment, or*
> *(iv) on a floodplain.*

Apart from handling capacity, whether or not the proposed current use constitutes Designated Development is determined from the considerations set out under sub clause 1 (d) of the above definition. In this regard the following is noted:

The subject land is:

- within 100 metres of a natural waterbody, wetland, coastal dune field or environmentally sensitive area.
- not within an area of high watertable, highly permeable soils, acid sulphate, sodic or saline soils.
- not within a drinking water catchment.
- not within a catchment of an estuary where the entrance to the sea is intermittently open.
- not on a floodplain.
- Is within 500 metres of a residential zone
- within 250 metres of a dwelling not associated with the development.

The current use is also designated development given the subject land's proximity to a natural waterbody. Proximity to residentially zoned land and/or dwelling houses is somewhat discretionary and the consideration rests with the opinion of the consent authority, having regard to topography and local meteorological conditions, as to whether the proposed use is likely to significantly affect the amenity of the neighbourhood by reason of noise, visual impacts, air pollution (including odour, smoke, fumes or dust), vermin or traffic.

The current application therefore seeks amendment of the current designated development use.

2.4.1.2 Section 79C Matters

The general matters for consideration are set out in Section 79C of the Act. The Table provided at the end of this section comments on these matters for consideration.

2.4.2 Integrated development

Division 5 contains provisions in respect of Integrated Development and Section 91 details what development requires other approvals. In this regard, the following additional approvals are required:

- Protection of the Environment Operations Act 1997 - The proposed use is listed as Item 41 of Schedule 1 of the Act and an Environment Protection Licence (EPL) may be required prior to carrying out any work.
- Water Management Act 2000 – The land is within 40 m of a "river".

2.4.3 Crown Lands Act 1989

The subject development does not involve Crown Land.

2.4.4 National Parks and Wildlife Act 1974

Provides for the protection of Aboriginal cultural heritage in NSW. There are no issues in respect of the proposed development.

2.4.5 Threatened Species Conservation Act 1995

The subject land is not biodiversity certified within the meaning of Part 7AA of the Threatened Species Conservation Act 1995. There is no biobanking agreement under Part 7A. The subject land has not been identified as containing a threatened species.

2.4.6 NSW Heritage Act 1977

No indigenous heritage issues have been identified within the subject land. There are no other heritage issues.

2.4.7 Native Vegetation Act 2003

The subject land does not contain Native Vegetation.

2.4.8 Roads Act 1993

Section 138 provides consent to erect structures or carry out work on or over a public road. The proposed development does not involve these actions other than the construction of a footpath crossing.

2.4.9 Contaminated Lands Management Act 1997

Provides for a system of investigating and where necessary remediating contaminated lands. The subject land is not contaminated.

2.4.10 State and Regional Environmental Planning Policies

Table 2-2 summarises those policies that apply to the subject land.

Table 2-2: State and Regional Environmental Planning Policies

Policy	Comments
SEPP No 19 – Bushland in Urban Areas	No application
SEPP No 21 – Caravan Parks	No application
SEPP No 30 – Intensive Agriculture	No application
SEPP No 32 – Urban Consolidation (Redevelopment of Urban Land)	No application
SEPP No 33 – Hazardous and Offensive Development.	No application. It has been determined that the use is neither offensive nor hazardous.
SEPP No 44 – Koala Habitat Protection.	No application
SEPP No 50 – Canal Estate Development.	No application
SEPP No 55 – Remediation of Land.	The subject land is not contaminated.
SEPP No 64 – Advertising and Signage.	Subject to future application.
SEPP No 65 – Design Quality of Residential Flat Development.	No application
SEPP No 70 – Affordable Housing (Revised Schemes)	No application
SEPP (Infrastructure) 2007.	No application. The use is not a type covered by the Provisions of this SEPP
SEPP (Miscellaneous Consent provisions)2007	No application.
SEPP (Mining, Petroleum Production and Extractive Industries) 2007	No application.
SEPP (Major Development) 2005	No application as now amended
SEPP (Building Sustainability Index: BASIX) 2004	No application
SEPP (Exempt and Complying Development Codes) 2008.	No application
SEPP (Affordable Rental Housing) 2009.	No application
SEPP (State and Regional Development) 2011.	Refer to Note 1 below.
Greater Metropolitan REP No.2 – Georges River Catchment	Refer to comments below as Note 2.

NOTE 1: State Environmental Planning Policy (State and Regional Development) 2011.

As indicated earlier the current use was approved as a State Significant Development being a development type to which (then) SEPP No. 34 – Major Employment Generating Industrial Development applied. This Policy has now been repealed and SEPP (State and Regional Development) 2011 now applies. Clause 21 of Part 4 contains provisions in respect of Regional Panels being:

Part 4 Clause 21 Council consent functions to be exercised by regional panels

(1) A regional panel for a part of the State may exercise the following consent authority functions of the council or councils for that part of the State for development to which this Part applies:

(a) the determination of development applications, and applications for the modification of development consents previously granted by the panel, in accordance with Part 4 of the Act,

(b) without limiting paragraph (a), the functions of a consent authority under Divisions 2 and 2A of Part 4 of the Act and sections 89A, 93I, 94, 94A, 94B, 94C, 94CA, 94EF, 94F, 95(2), 96(2) and 96AA of the Act.

(2) However, the following functions of a council as a consent authority are not conferred by this clause on a regional panel:

(a) the functions conferred by section 79B of the Act (other than section 79B (9)),
(b) the functions conferred by section 80A (7)–(10) of the Act,
(c) the functions conferred by section 82B of the Act,
(d) the functions conferred by sections 94 (5) and 94EF (5) of the Act,
(e) the receipt and assessment of development applications,
(f) the determination and receipt of fees for development applications,
(g) notification of determination of development applications,
(h) the functions conferred by section 95A of the Act,
(i) the determination of applications for modification of consents on the ground of a minor error, misdescription or miscalculation under section 96 (1) of the Act,
(j) the functions conferred by section 96 (1A) of the Act,
(k) the functions conferred by section 96AA of the Act, if the original development application was not determined by a regional panel.

(3) The council remains the consent authority for development to which this Part applies, subject to the exercise by regional panels of functions conferred on them by this clause.

***Note.** The Environmental Planning and Assessment Regulation 2000 also provides that a regional panel is taken not to be the council for specified provisions of the Environmental Planning and Assessment Act 1979.*

NOTE 2:

The Greater Metropolitan Regional Environmental Plan No. 2 – Georges River Catchment.

The Aims and Objectives of this Plan are:

(1) The general aims and objectives of this plan are as follows:

(a) to maintain and improve the water quality and river flows of the Georges River and its tributaries and ensure that development is managed in a manner that is in keeping with the national, State, regional and local significance of the Catchment,

(b) to protect and enhance the environmental quality of the Catchment for the benefit of all users through the management and use of the resources in the Catchment in an ecologically sustainable manner,

(c) to ensure consistency with local environmental plans and also in the delivery of the principles of ecologically sustainable development in the assessment of development within the Catchment where there is potential to impact adversely on groundwater and on the water quality and river flows within the Georges River or its tributaries,

(d) to establish a consistent and coordinated approach to environmental planning and assessment for land along the Georges River and its tributaries and to promote integrated catchment management policies and programs in the planning and management of the Catchment,

(e) (Repealed)

(f) to provide a mechanism that assists in achieving the water quality objectives and river flow objectives agreed under the Water Reform Package.

(2) The specific aims and objectives of this plan are as follows:

Environmental protection and water quality and river flows

(a) to preserve and protect and to encourage the restoration or rehabilitation of regionally significant sensitive natural environments such as wetlands (including mangroves, saltmarsh and seagrass areas), bushland and open space corridors within the Catchment, by identifying environmentally sensitive areas and providing for appropriate land use planning and development controls,

(b) to preserve, enhance and protect the freshwater and estuarine ecosystems within the Catchment by providing appropriate development,

(c) to ensure that development achieves the environmental objectives for the Catchment.

Regional role and land use

(a) to identify land uses in the Catchment which have the potential to impact adversely on the water quality and river flows in the Georges River and its tributaries and to provide appropriate planning controls aimed at reducing adverse impacts on the water quality and river flows,

(b) to conserve, manage and improve the aquatic environment within the Catchment which is a significant resource base for the aquaculture industry, by providing controls aimed at reducing pollution entering the Catchment's watercourses,

(c) to protect the safety and well being of the local and regional community in accordance with standards and processes aimed at improving the water quality and river flows in the Catchment to enable recreation,

(d) to aid in the improvement of the environmental quality of Botany Bay in conjunction with other regional planning instruments.

Clause 11(4) includes particular Provisions in respect of Chemical or Fuel Storage on Land being:

CHEMICAL OR FUEL STORAGE ON LAND

Definition

Use of land for chemical, fuel or fertiliser storage.

Planning controls

Prohibited on flood liable land.
Development consent required for all other land.

Specific matters for consideration

That adequate provisions have been made to contain water that may be contaminated by its use for fire control purposes.
Whether the proposal meets the requirements of the local council's stormwater management plan or, if no such plan is prepared, the local council's stormwater management objectives or policy determined by the council.
Whether the proposal is in accordance with the local council's soil erosion and sediment management plan or policy.
Any impacts on groundwater.
Provision for on-site bush fire hazard reduction where relevant.

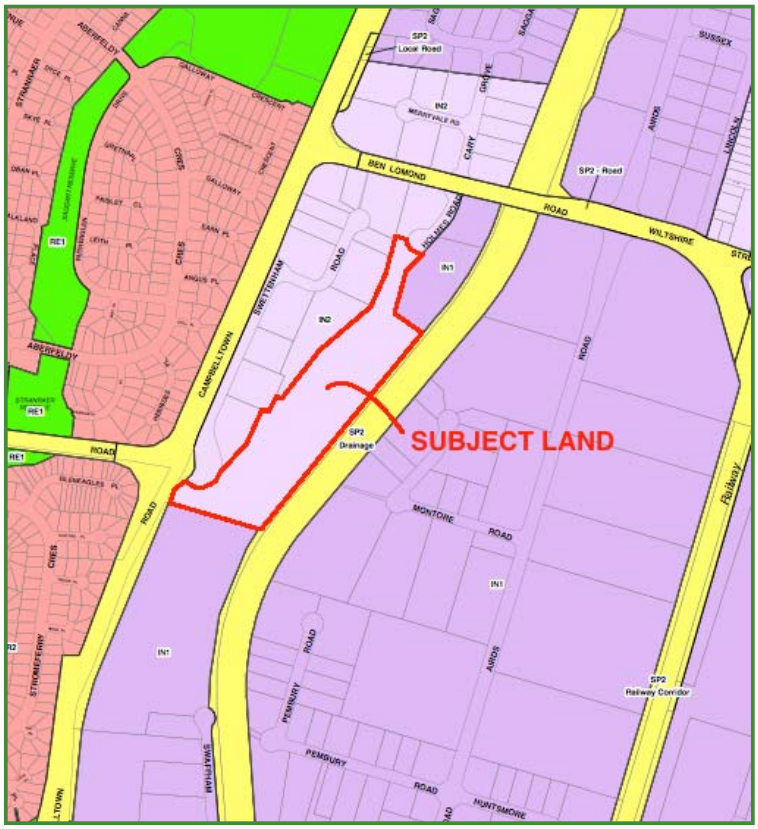
These matters have been considered in the assessment of the proposal as set out in the EIS. It can be determined that the proposed use is not inconsistent with the Aims and Objectives of the Policy, whilst the matters for consideration are satisfied.

2.4.11 Local Planning Instruments

The subject land is located within the Local Government Area of Campbelltown City Council. Campbelltown Local Environmental Plan 2015 (CLEP 2015) applies to the land.

The subject land is within Zone IN2 - Light Industrial under CLEP 2015. Figure 2-6 is an extract of the Zoning Map with the subject land indicated.

Figure 2-6: Extract of Zoning Map



The Land Use Table for this zone is:

Zone IN2 Light Industrial

1 Objectives of zone

- *To provide a wide range of light industrial, warehouse and related land uses.*
- *To encourage employment opportunities and to support the viability of centres.*
- *To minimise any adverse effect of industry on other land uses.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.*
- *To support and protect industrial land for industrial uses.*
- *To enable non-industrial land uses that are compatible with and do not detract from industrial and warehouse uses or impact on the viability of existing centres.*
- *To ensure that any commercial, retail or other non-industrial development is not likely to adversely affect employment generating activities or opportunities.*
- *To facilitate diverse and sustainable means of access and movement.*

2 Permitted without consent

Nil

3 Permitted with consent

Agricultural produce industries; Bulky goods premises; Car parks; Depots; Environmental facilities; Environmental protection works; Flood mitigation works; Garden centres; Hardware and building supplies; Industrial retail outlets; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Mortuaries; Neighbourhood shops; Places of public worship; Recreation facilities (indoor); Research stations; Roads; Rural supplies; Self-storage units; Service stations; Sex services premises; Signage; Take away food and drink premises; Timber yards; Vehicle repair stations; Vehicle sales or hire premises; Veterinary hospitals; Warehouse or distribution centres; Wholesale supplies

4 Prohibited

Any development not specified in item 2 or 3.

The current use of the subject land operates under a consent for "the construction and operation of a chemical storage and distribution centre and associated infrastructure" as issued on the 16th September 2003. At that time the Provisions of Campbelltown LEP 2002 applied with this instrument containing the following relevant definitions.

storage establishment *means a building or place used principally for the storage of goods, materials or products and includes facilities for the loading and unloading of vehicles carrying those goods, materials or products, but (in Part 2) does not include a road transport terminal.*

warehouse *means a building or place used for the storing, handling and subsequent distribution of goods, materials or merchandise, but (in Part 2) does not include a shop or other building or place elsewhere specifically defined in this Schedule.*

The now current CLEP 2015 contains the following definitions.

storage premises *means a building or place used for the storage of goods, materials, plant or machinery for commercial purposes and where the storage is not ancillary to any industry, business premises or retail premises on the same parcel of land, and includes self-storage units, but does not include a heavy industrial storage establishment or a warehouse or distribution centre.*

warehouse or distribution centre *means a building or place used mainly or exclusively for storing or handling items (whether goods or materials) pending their sale, but from which no retail sales are made.*

Taking into account the current definitions the current use would fall within the definition of "warehouse or distribution centre" being a use permissible with consent. The current and to be extended use is not inconsistent with the Zone Objectives.

Two further definitions require consideration being:

hazardous storage establishment *means a building or place that is used for the storage of goods, materials or products and that would, when in operation and when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the building or place from existing or likely future development on other land in the locality), pose a significant risk in the locality:*
(a) to human health, life or property, or
(b) to the biophysical environment.
Note. *Hazardous storage establishments are a type of* ***heavy industrial storage establishment****—see the definition of that term in this Dictionary.*

offensive storage establishment *means a building or place that is used for the storage of goods, materials or products and that would, when all measures proposed to reduce or minimise its impact on the locality have been employed (including, for example, measures to isolate the building or place from existing or likely future development on other land in the locality), emit a polluting discharge (including, for example, noise) in a manner that would have a significant adverse impact in the locality or on existing or likely future development on other land in the locality.*
Note. *Offensive storage establishments are a type of* ***heavy industrial storage establishment****—see the definition of that term in this Dictionary.*

In the assessment resulting in the approval of the current use it was determined that the current use was neither offensive nor hazardous.

Table 2-3 provides details of principal development standards as contained within Part 4 of the LEP.

Table 2-3: Part 4 Principal development standards

CLAUSE	COMMENTS	COMPLIANCE
4.1 Minimum subdivision lot size	The proposed development does not involve the subdivision of land.	No application
4.1A Minimum subdivision lot size for community title schemes	The proposed development does not involve community title subdivision of land.	No application.
4.1B to 4.1D, 4.2, 4.2A to 4.2E. Various provisions in respect of certain subdivisions	The proposed development does not involve the subdivision of land.	No application.
4.3 Height of buildings and 4.3A	A 12 m height limitation applies under the LEP. Clause 43A does not apply	The proposed height is 10.46 m
4.4 Floor space ratio	There are no controls under the LEP that would restrict the floor space of buildings to be erected on the land.	No application.
4.5 Calculation of floor space ratio and site area	Not applicable	No application.
4.6 Exceptions to development standards	No variation of development standards is required.	No application.

Table 2-4 provides details of miscellaneous as contained within Part 5 of the LEP.

Table 2-4: Part 5 Miscellaneous provisions

CLAUSE	COMMENTS	COMPLIANCE
5.1 Relevant acquisition authority	No part of the land is required to be acquired for a public purpose.	No application.
5.1A Development on land intended to be acquired for public purposes	No part of the land is required to be acquired for a public purpose.	No application.
5.2 Classification and reclassification of public land	No part of the subject land is public land.	No application
5.3 Development near zone boundaries	No zone boundary variation is required.	No application
5.4 Controls relating to miscellaneous permissible uses	The proposed development is not of a type provided for in the sub clause.	No application
5.5 Development within the coastal zone	Subject land is not within a coastal zone	No application
5.6 Architectural roof features	Not adopted in the LEP	No application
5.7 Development below mean high water mark	The application does not involve development below the mean high water mark	No application
5.8 Conversion of fire alarms	The application does not involve conversion of fire alarms	No application
5.9 Preservation of trees or vegetation	The proposed development does not involve the removal of any trees or vegetation.	Complies
5.9AA Trees or vegetation not prescribed by development control plan	The proposed development does not involve the removal of any trees or vegetation.	Complies
5.10 Heritage conservation	The subject land does not contain a heritage item nor is the land within the vicinity of land containing such an item.	No application
5.11 Bush fire hazard reduction	The subject land is not identified as being bush fire prone.	No application
5.12 Infrastructure development and use of existing buildings of the Crown	Does not involve use of Crown buildings	No application
5.13 Eco-tourist facilities	The application does not involve eco-tourist facilities	No application

Table 2-5 provides details of additional local provisions as contained within Part 7 of the LEP.

Table 2-5: Part 7 Additional local provisions

CLAUSE	COMMENTS	COMPLIANCE
7.1 Earthworks	No significant earthworks are proposed. The proposed building has been positioned to adopt the natural contours of the land.	Complies
7.2 Flood Planning	The stage 4 construction adopts the floor levels of the existing buildings and there are no flood planning issues.	Complies
7.3 Riparian Land and Watercourses	Riparian treatment has been completed as part of the current development.	Complies
7.4 Salinity	There are no salinity issues.	Complies.
7.5 Preservation of the natural environment	This Clause does not apply to the subject land	No application.
7.6 Scenic protection and escarpment preservation	The subject land is not identified as "Escarpment Preservation Area".	Complies
7.7 Consideration of development on environmentally constrained land	The subject land is not environmentally constrained land.	Complies.
7.8 and 7.9	These Clauses do not apply to subject land	No application.
7.10 Essential services	The subject land is fully serviced and amplification of services is not required.	Complies
7.11 to 7.17	These Clauses do not apply to subject land	No application
7.18 Restrictions on access to and from public roads	Access is well established and is to be maintained. No additional access points are proposed.	Complies
7.19	This Clause does not apply to subject land	No application

The subject land is not affected by the operation of Section 38 or 39 of the Coastal Protection Act 1979.

The subject land is not within a proclaimed Mine Subsidence District.

The subject land is not bushfire prone, affected by tidal inundation, acid sulphate soils or contamination.

2.4.12 Campbelltown Development Control Plans

The following Development Control Plans apply to the subject land:

DCP No. 99 – Advertising signs

No additional signage is proposed.

Campbelltown (Sustainable City) DCP 2015 Parts 2 and 7 apply.

This application involves the completion of the previously approved stage 4 with only minor change to built form and use. The changes are not inconsistent with the DCP and compliance is achieved.

2.4.13 Section 79C Matters

The general matters for consideration are set out in Section 79C of the Act. Table 2-6 comments on these matters for consideration.

Table 2-6: Matters for Consideration Pursuant to Section 79C of the Act

Matter	Comments
(a) the provisions of:	
(i) any environmental planning instrument, and	The proposed use is permissible with consent as a "warehouse" pursuant of the Provisions of Campbelltown LEP 2015.
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Director-General has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and	There are no Draft Planning Instruments that would apply.
(iii) any development control plan, and	Campbelltown DCP No. 99 and Campbelltown (Sustainable City) DCP 2015 Volume 1 apply. The proposed development is not inconsistent with the relevant provisions.
(iiia) any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F, and	There is no Planning Agreement applying.
(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and	The current use is designated development pursuant to Schedule 3 of the Regulations.
(v) any coastal zone management plan (within the meaning of the Coastal Protection Act 1979), that apply to the land to which the development application relates,	Not applicable.

Table 2-6: Matters for Consideration Pursuant to Section 79C of the Act

Matter	Comments
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,	As assessed and determined within this EIS.
(c) the suitability of the site for the development,	As assessed in this EIS the site is considered to be suitable for the proposed development.
(d) any submissions made in accordance with this Act or the regulations,	None made at this stage.
(e) the public interest.	The proposed development is considered to be in the public interest. No further public participation is considered to be warranted.

3. CONSULTATION PROGRAMME

A consultation programme was undertaken that involved the following:

- A community consultation leaflet was placed in letterboxes of the residential and commercial areas within the vicinity of the site.

- A representative of Benbow Environmental visited commercial premises immediately east and north of the site. The community consultation leaflet was hand delivered with an explanation of the Stage IV development.

- A representative of Benbow Environmental specifically visited the Childcare Centre located to the north of the site. A member of the management team of the Childcare Centre was shown the site layout and the details of hazards and risks and safeguards was explained.

- Two community meeting nights were arranged. These dates were advised on the community consultation leaflet (EA Attachment 13).

- A meeting with the Development Team of Campbelltown City Council, Directors and Senior Management of Redox and Principal Consultant of Benbow Environmental.

With Regulatory Authorities this extended to the following:

- Campbelltown City Council;
- NSW EPA;
- RMS; and
- Sydney Water (see EA Attachment 15).

Information has been provided and at the time of submitting this S75W application for approval, no written comments have been received.

The Office of Water was not contacted as the development is beyond 40 m from the nearest waterway and does not require their consultation.

Further, the site has in place environmental safeguards to prevent a chemical spillage being released from the site. These have been proven to be highly effective since the site commenced operations.

The site is SafeWork NSW regulated under the Work, Health and Safety Regulation 2017. The site is holder of a notification from SafeWork. Expansion of the storage volumes will be submitted to SafeWork NSW after approval of the S75W Application is granted. It is not needed before the application is submitted. Correspondence is provided in EA Attachment 15.

3.1 OUTCOMES

3.1.1 Campbelltown City Council

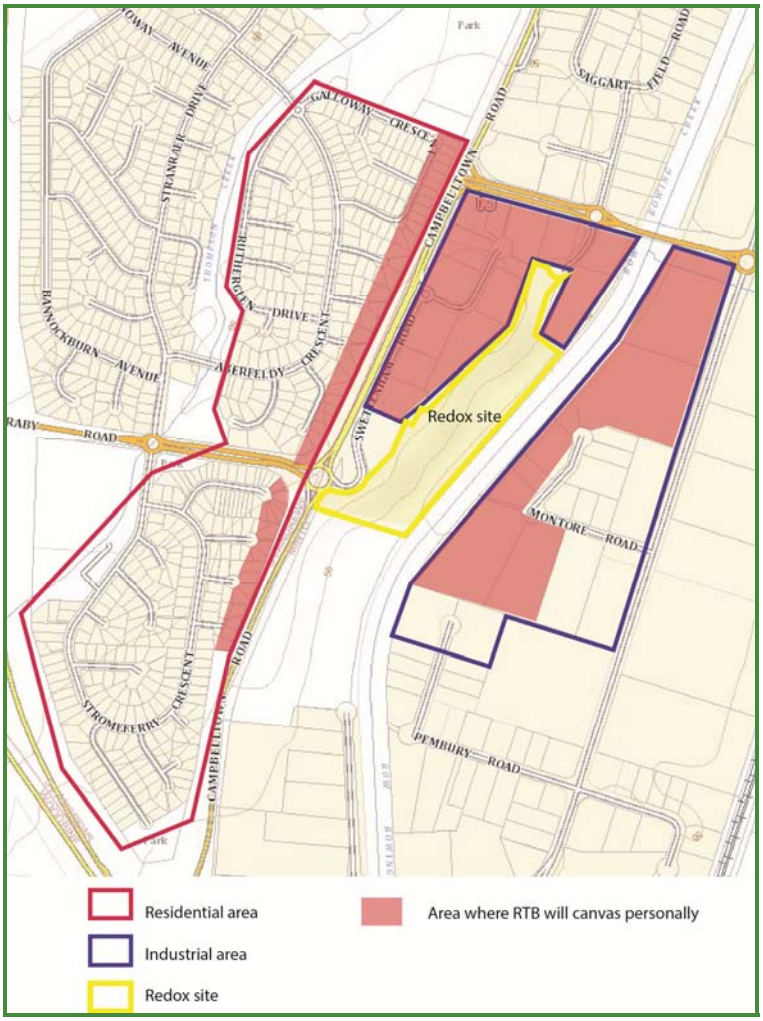
At the meeting the Executive Summary of the EA was discussed and the focus of the discussion was mainly traffic. The proposed alterations to traffic routes was discussed with reference to the diagrams showing the traffic route preferred by the traffic engineering consultants.

No further contact has been made.

3.1.2 Community

At the two community awareness nights, only the first one received any attendees. Two family members raised their concerns which were generally able to be reduced by explanation of the history of the operation of the Minto site and the extensive number of safeguards designed into the buildings.

The following diagram shows the area canvassed by letterbox drop or personal visit to commercial premises on the east and northern site boundaries by the Principal Consultant of Benbow Environmental.



4. PROPOSED DEVELOPMENT

This section describes the proposed modification:

- Increase the size of the largest packages /containers use to hold Class 3 flammable liquids and Class 6 toxic substances to include intermediate bulk containers i.e. IBCs. These were precluded from being able to be used in the original consent.
- Increase the total quantity of chemicals that can be stored on site to the original quantity requested in the original development application, 4,650 tonnes of dangerous goods and 15,795 tonnes of non-dangerous goods (20,445 tonnes total).
- Increase storage quantity of Class 8(3) and Class 8(F1) corrosive substances – a total quantity stored at the Stage IV area would be increased from 250 T to 540 T. The total quantity of dangerous goods on site would remain at 4,650 tonnes.
- Alter the site activities to allow for the supply of food grade chemicals.
- Allow operations of the wastewater treatment plant.
- Alter the traffic routes to make use of the Raby Road link to the ramps onto the Motorway. At present trucks are required to avoid the southern half of Campbelltown Road and use a circuitous route to join the Motorway. The ramp did not exist at the time the original consent was granted. Use of the Raby Road link will still avoid the main residential area along Campbelltown Road.

The increase in Class 8 corrosive substances and the production of food grade chemicals will occur in the Stage IV area and are discussed in detail in Section 4.1 and 4.2 respectively. Overall changes to chemical quantities are detailed in 4.3.1 and traffic modifications are presented in section 4.4.

Figure 4-1 represents the site layout.

Figure 4-2 shows the details of where the dangerous goods would be located as permitted by the SafeWork NSW Notification.

Figure 4-1: Site Plan

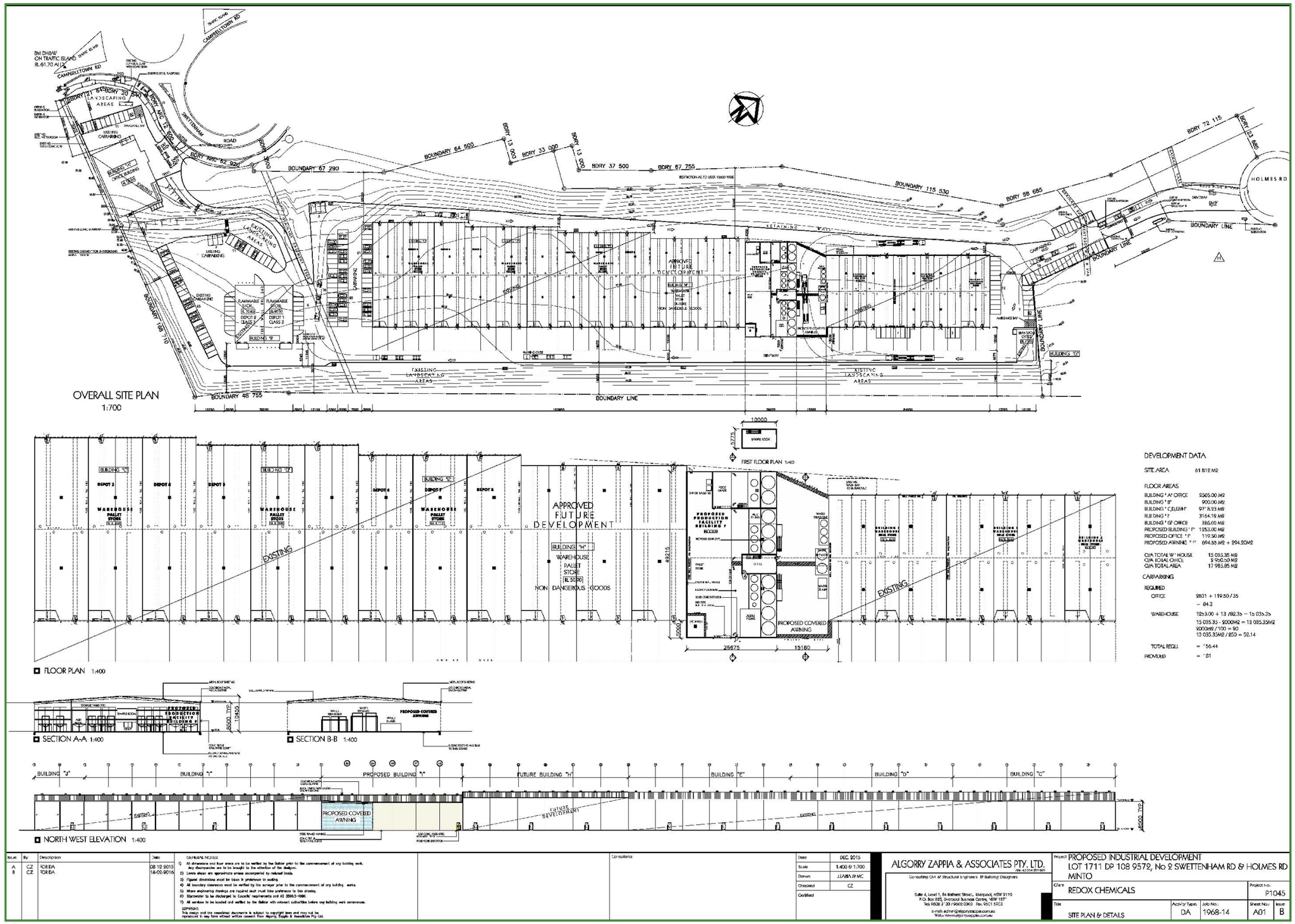
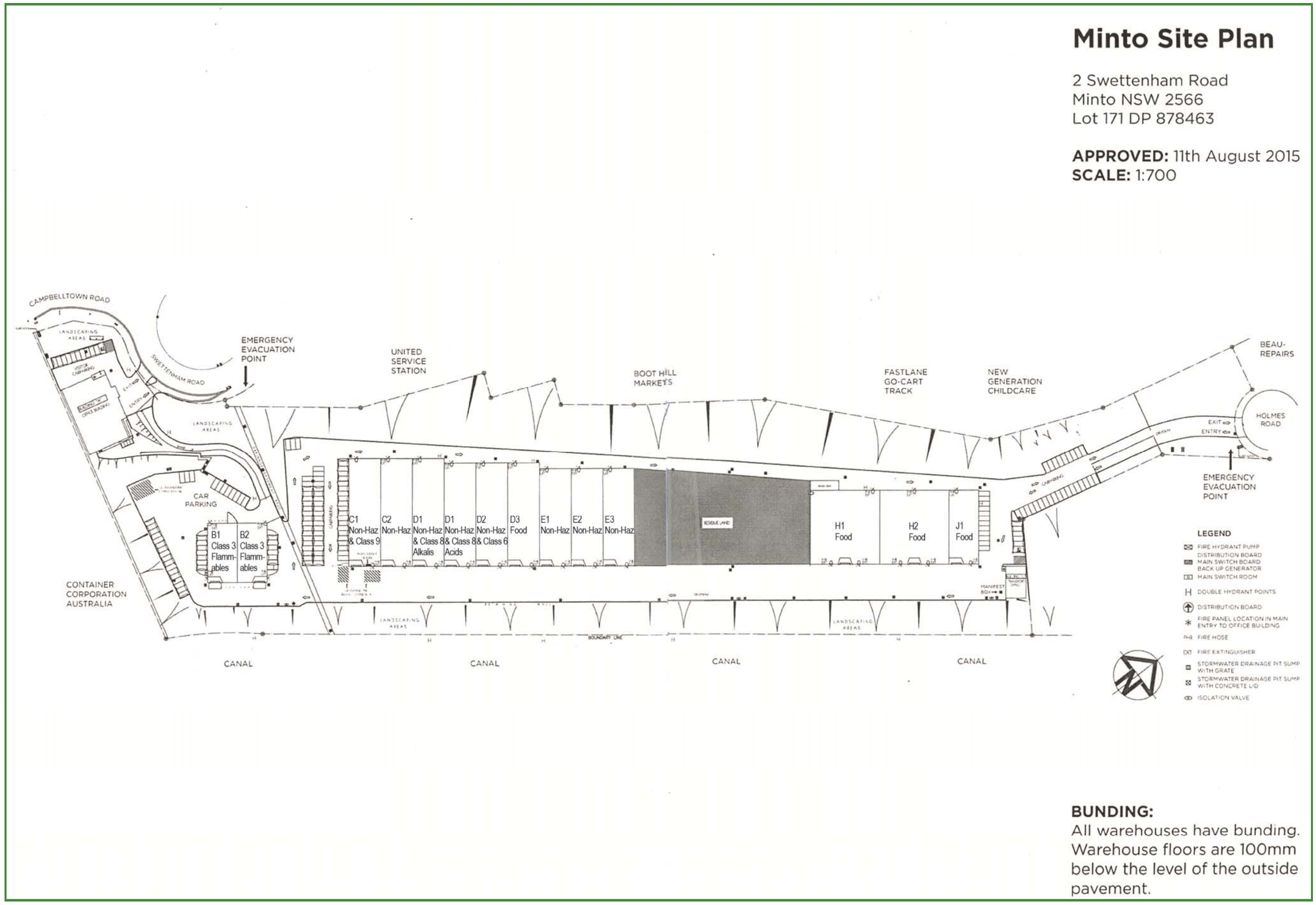


Figure 4-2: Dangerous Goods Locations



4.1 DESCRIPTION OF THE PROPOSED FACILITY (STAGE IV AREA)

The site plan showing the redesigned Stage IV of the development is shown in Figure 4-1.

The Stage IV operations would consist of the following components:

- A set of eighteen above ground storage tanks filled by road tanker, all roofed for weather protection and separately bunded into the three types of chemicals to be stored i.e. acid separated from alkali separated from food grade;
- There are storage tanks on two levels;
- Three separate diluting and dispensing tank areas each isolated from the other by fire rated walls, separate bunding and separate air scrubbers. There would be nine of these mixing tanks;
- There would be a solid material debagging operation and auger to add the dry chemicals to the mixing tank. This operation would have either a reverse pulse dust collector or be connected by ducting to one of the three packed bed scrubbers;
- An IBC washing area that uses a gurney to clean IBC's.
- Water demineralisation plant;
- A wastewater treatment plant; and
- Road tanker loading/unloading bays.

4.1.1 Building H

The figure shows the proposed warehouse Building H for pallet storage. Warehouse Building "H" is not solely for the storage of non-dangerous goods. It is proposed that of the three separate fire compartments that comprise Warehouse Building "H" that the compartment adjoining the diluting and decanting operations be restricted to the storage of non-dangerous goods and Class 8 corrosive substances with no sub risks of flammable, combustible or oxidising i.e. no Class 8(3) or Class 8(5.1) or combustible C1/C2 whilst the other two compartments be dedicated to the storage of Class 8 products with acidic products and alkali products stored in separate dedicated compartments.

The use of the adjoining building to the diluting and decanting operations is deliberate as it reduces the risk of a fire being able to expose the contents of this building to levels of heat of radiation that would ignite flammable liquids or cause the evaporation of other Classes of dangerous goods. Similarly, the contents of Building H not containing flammable or combustible liquids, would have a low risk of being able to initiate a fire that would expose the bulk tank storage of Stage IV diluting and decanting area to significant levels of heat of radiation.

Each bulk tank would have a maximum storage capacity of 30,000 L. Each diluting/decanting tank would have a maximum storage capacity of 12,000 L.

A 240/240/240 fire rated wall would be constructed along the wall of warehouse H adjoining the diluting and decanting area. This along with the separation distance shown on this figure provides further protection from a "domino" effect. Further 240/240/240 fire rated walls are used to separate the three production areas. The use of fire rated walls reduces the potential for cumulative hazards to arise.

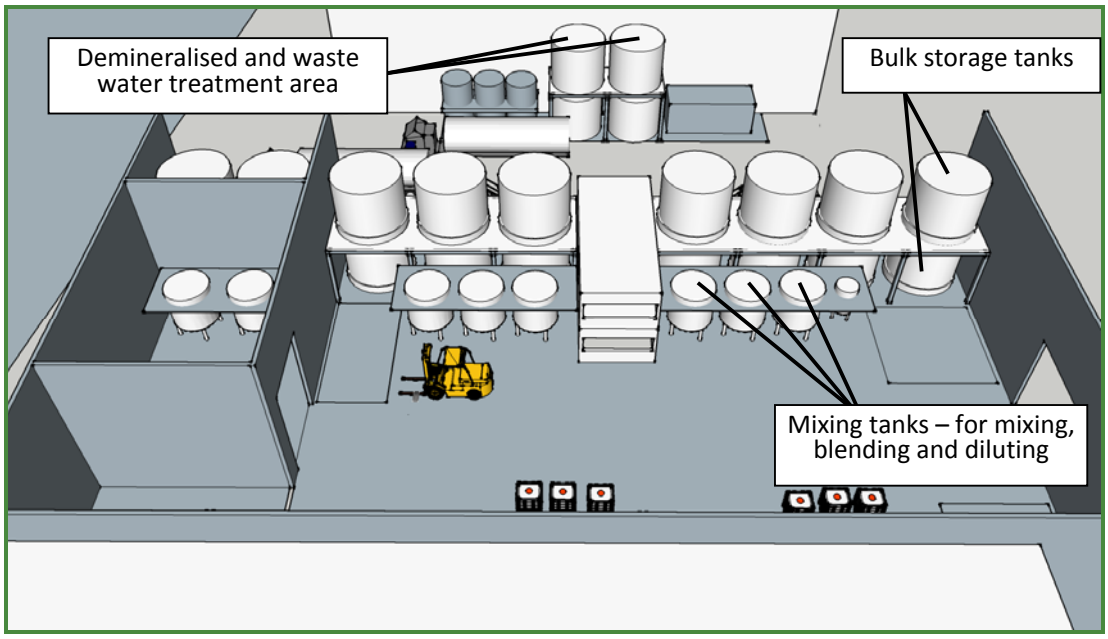
4.1.2 Building F

4.1.2.1 Operational Overview

The following schematic diagrams illustrate what the facility would look like.

Figure 4-3 provides an overall view of the facility. The number of tanks shown may vary from the site plan which is the facility as proposed. The text of this document refers to 9 mixing tanks. This figure shows the two levels of bulk storage tanks. Initially there may not be 9 mixing/blending/diluting tanks installed however the final number would not exceed 9.

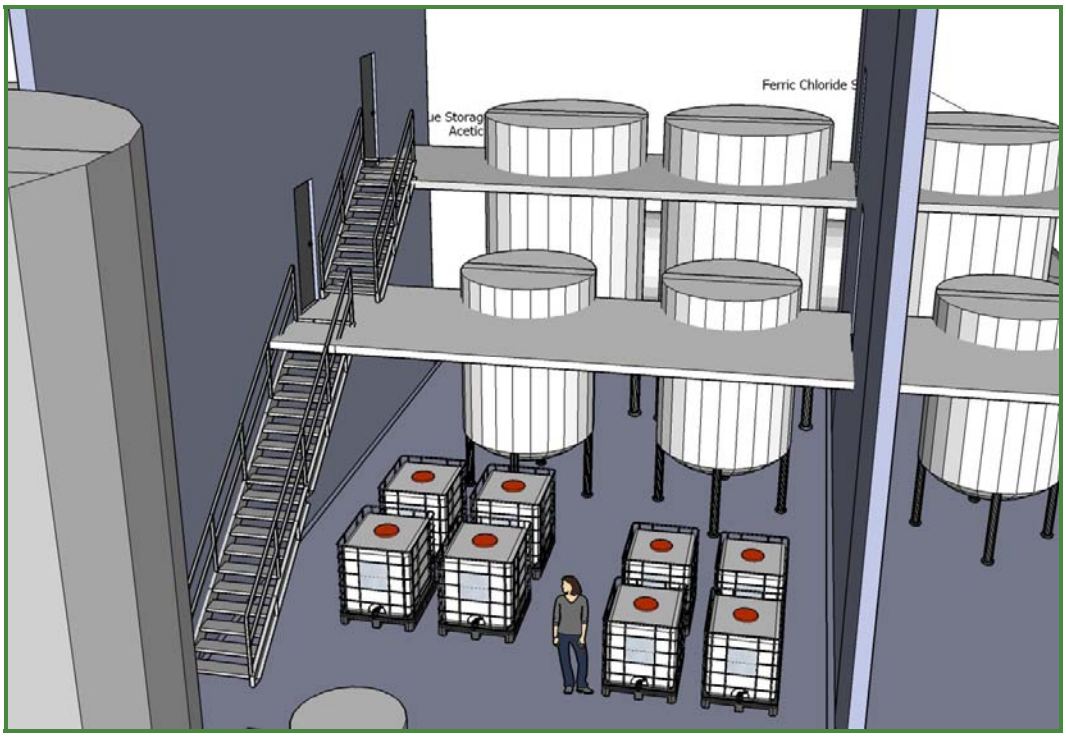
Figure 4-3: Overall view of the facility



The two large tanks shown in the middle of the diagram are the purified water storage tanks from the operations of a demineralised water plant that may in the future be updated to reverse osmosis.

Figure 4-4 provides a closer view of the food grade area.

Figure 4-4: Close up view of the food grade area



4.1.2.2 Decanting and Diluting Areas

Figure 4-1 shows the location of the three separate decanting and diluting areas within Building F. These may also be referred to as mixing/blending areas, there will be no mixing and blending of multiple chemicals, only diluting and blending with water is proposed. A SCADA or similar control system would control the volumes being transferred.

- Alkali filling.

  This area has eight bulk storage tanks and three diluting/decanting mixing and blending tanks. An area for filling packages (typically 15-25 L capacity), containers (typically 180-205 L drums) and bulk tanks being IBC's (typically 1,000 L) is provided. It would also be possible to fill bulk tankers and ISO containers.

  A 240/240/240 fire rated wall is at both ends of the alkali filling area.

  There would be a packed bed scrubber for the alkali filling operation. This would capture and treat fume from the bulk storage tank vents and the diluting/decanting vessels.

  A debagging operation would also enable flakes or powdered forms of alkali to be added into the diluting/decanting vessels. The debagging operation may also be used for the food grade production.

- Acid filling.

  This area has six bulk storage tanks and three diluting/decanting mixing and blending tanks.

  An acid filling area with similar operations as the alkali filling operations would be provided.

  A 240/240/240 fire rated wall would separate the acid filling area from the food grade area (one would exist in the other direction as described above between the alkali area).

  A packed bed scrubber would also be provided for the acid bulk storage tanks and the diluting/decanting vessels used to dilute the acids.

- Food grade products.

  Four bulk storage tanks and two diluting/decanting vessels would be provided.

  A fire rated wall separates this area from both the acid filling area (already described above) and the end of the Building F which would house the Stage IV diluting/decanting operations.

  The food grade area is fully enclosed with fire rated walls and a roller shutter door so that it is sealed from the other areas of Stage IV.

  The food grade filling operation would be within this enclosed space.

  Each of the bulk storage tanks would be within bunded areas.

4.1.2.3 Water Treatment System

A proposed covered awning that runs the full width of the building. Ramps are shown with separation across the awning so that road tankers can park and unload with segregation between incompatible chemicals i.e. the alkali and acids.

Within the proposed covered awning area are the water treatment – either a reverse osmosis or demineralisation plant – and two water storage tanks. Mains water is processed through such a plant to remove mineral content so that product quality (purity) is not affected. Demineralised water would be used in the diluting operations at the start of the operation of the facility. Reverse osmosis may be used in the future. Neither type of water cleaning process causes environmental hazards or generation of odours. A demineralisation or reverse osmosis plant would occupy a small footprint of 10 sq m within the building housing Stage IV.

Adjacent to the water storage tanks in a separate area is the wastewater treatment plant. This plant collects washing and rinsing water from the diluting/decanting tanks and enables the water used for washing/rinsing to be neutralised and impurities removed to Sydney Water's requirements.

The wastewater treatment plant would be located within the building housing the Stage IV development. The plant is designed to adjust the pH of the wastewater so that it is acceptable to Sydney Water.

A trade waste agreement would be organised during construction.

The wastewater treatment plant would occupy a footprint of 20 sq metres.

There are dosing chemicals used to adjust the pH of the wastewater.

The waste water is mainly generated from washing down of the floor areas. The wastewater drains to sumps where it is transferred to a tank so that all wastewaters are collected and so the pH can be monitored. To neutralise the wastewater either acid (usually nitric acid) or alkali (usually liquid sodium hydroxide) are added by dosing pumps controlled by pH sensors.

There are no gases or fumes generated.

The plant does not generate odour. The plant would be similar to the one operating at Deltrex and available for inspection.

Usually the process requires separate 25 L containers of acid and alkali for pH adjustment and other water treatment chemicals connected to dosing pumps for use in the water treatment process. Fumes are not generated by this process on the scale undertaken.

4.1.2.4 Vehicle Movements

Road tankers would enter, park and then depart in a forward direction through the covered awning area. The two separate bunded areas would drain to central sumps so that in the event of a spillage, the spilt liquid would be able to be pumped into the bulk storage tank for use or into the wastewater treatment plant.

The tanker unloading areas will also be used to fill bulk road tankers. There may be 4–10 road tankers filled per week.

Redox personnel are present at all times when a bulk tanker is to deliver chemical and the tanker driver would be supervised. These aspects would need to be written into a set of work practice procedures that would be needed as part of an expanded Safety Management System for the site. Redox have already in place an extensive set of work practice procedures.

A similar practice would be in place for filling road tankers and ISO containers.

4.1.2.5 Debagging

The Building “F” would also have an area for dry debagging of bulky bags, a pallet storage area and a separately bunded and enclosed area for washing of IBC’s.

The debagging area would enable sacks of chemical to be emptied into a hopper.

The hopper would use an auger to transfer the chemical into the respective diluting/decanting tank.

Debagging of dry chemicals may result in dust generation, dust control measures will be in place as detailed in Section 4.1.2.10. There is no risk of dust explosions.

4.1.2.6 Powder Operations

The dry powder chemicals that are added to the blending/diluting tanks are stored on pallets nearby when the production process requires the powders.

The powders are in a range of package and container sizes. These will vary from sacks of 20–25 kg weight to bulk bags of 1,000 kg weight. The sacks are lifted onto a grate that sits above a hopper. The sacks may be lifted with a vacuum assisted lifting device that enables a hoist to lift the sacks one at a time. Bulk bags are lifted by hoist and emptied through valves placed in an outlet built into the bulk bag. The auger in the base of the hopper transfers the powder to the respective blending/diluting tank. The amount to be added decides the number of sacks emptied into the hopper.

The need for this aspect is the production of dilute solutions of sodium and potassium hydroxide, urea and citric acid. There may be others.

4.1.2.7 Storage

The pallet storage area would be a staging area for short term storage of product that has been decanted and is to be transferred into the respective dangerous goods storage warehouses on site. The pallet storage area could have pallets with 15, 20 or 25 L packages, or 200-205 L drums or IBC's stored waiting for transfer to the warehouses for the types of chemicals that are permitted to be stored in these warehouses.

Labelling of the pallet of packages/drums and placarding of the IBC's will ensure forklift drivers are aware of the contents.

Signage would be used to establish separate storage staging areas for alkali and acid based products, separate bunding of these areas is not warranted in the staging area and would detrimentally affect the productivity of the operations. There could be up to 20,000 L of product stored in the staging area.

Each of the bulk storage tanks would have the full set of level controls, alarms, and separate filling lines with bottom filling as required by the respective Australian Standards AS 1940 and AS 3780.

Tank materials would also be specified in compliance with requirements of these Australian Standards and as recommended in the expert report prepared by Lycopodium. Lycopodium prepared a Facility Upgrade Design Report which provides a detailed design of the Facility. This document contains proprietary information that should not be on the public register. The contents are available on request from a regulatory authority. This detailed information is in the Australian Standards and does not warrant inclusion in this document. Detailed construction drawings would be prepared prior to construction proceeding and would require review by a member of the Australasian Institute of Dangerous Goods Consultants (AIDGC).

Each bulk storage tank would be individually placarded in accordance with the Work Health and Safety Regulations 2017. Each tank would be given a tank number or letter. Tanks with fixed roofs would be used. Tanks would have diameters of 4.10 m and typical heights of 3.1 m.

Each pipeline would have direction of flow arrows and labelling.

At each bulk tank connection point for filling would be signage indicating the tank identification number or letter the filling point connects to and what the contents of the tank are.

4.1.2.8 Chemical Use

No Class 3, Class 5.1, Class 6.1 dangerous goods would be stored or decanted at Area F.

Therefore the preliminary hazard analysis and the fire safety study do not consider any hazards associated with the above dangerous goods as none would be permitted in Area F. It does consider the consequences of the sub Class 3 acid combustible C1 in detail.

The above table from the development consent did not prohibit Class 8 sub risk 3 dangerous goods. Redox have made the 75W application to ensure they are fully complying with the original consent which did not specifically address Class 8 (sub risk 3) dangerous goods being stored and decanted. It follows that other sub risk Classes e.g. Class 8 (sub risk 5.1) or Class 8 (sub risk 6.1) would not be stored or decanted.

The following are the chemicals that may be used in the proposed Stage IV operations.

The information is presented separately for the three "families" of chemicals being acids, alkali and food grade.

- Acids.

Phosphoric acid	Class 8 PGIII	UN1805	79-95 wt%
Sulphuric acid	Class 8 PGII	UN1830	70 wt% and 98 wt%
Ferric chloride	Class 8 PGIII	UN2582	30-60 wt%
Formic acid	Class 8(3) PGII	UN1779	85 wt%
Fluorosilicic acid	Class 8 PGII	UN1778	27 wt%

- Alkali.

Sodium hydroxide	Class 8 PGII	UN1823 solid	99 wt%
		UN1824 liquid	50 wt%
Potassium hydroxide	Class 8 PGII	UN1813 solid	90 wt%
		UN1814 liquid	50 wt%
Hypochlorite solution	Class 8 PGIII	UN1791	12-15 wt%

- Food grade.

Acetic acid	Class 8 (3) PGII	UN2790	75 wt%
		UN2789	90-95 wt%
Citric acid	Non DG		
Urea ammonium nitrate	Non DG		

Phosphoric acid in food grade may also be diluted in the food grade area of the facility.

The above list is the majority of the chemicals to be used but flexibility is needed to allow other chemicals with similar characteristics to be processed especially as the processes are limited to simple diluting and decanting.

4.1.2.9 Heat Exchanger

As specific chemicals are diluted with water, excess heat would be generated. Sulphuric acid and sodium hydroxide (as well as potassium hydroxide) both exhibit this characteristic.

To control the temperature a heat exchanger would be used. A cooling tower would provide the source of cooling. The cooling tower would be located outside of the building.

A heat exchanger for this purpose is made from stainless steel. It is typically 1 m sq and 200 mm thick. Water from the cooling tower passes across jackets on the outside of the heat exchanger. The liquid that has been heated is pumped through the internal areas of the heat exchanger so that the heat in the liquid is transferred through the stainless steel that in turn makes contact with the cooled water from the cooling tower. It is a sealed device and has no air emissions. There are other methods used that have the heat exchange built around the outside of the tank where the blended liquid generates the heat. The same process is, in effect, as that described above.

No chemical reactions would occur. The processes used are simple diluting and decanting.

Incompatible chemicals are present and are segregated by establishing the separate “tank farms” and separate mixing and decanting areas. This segregation and the use of labelling, signage and having the presence of Redox personnel during deliveries of the chemicals will reduce the risk of mixing of incompatible materials to a minimum.

4.1.2.10 Air Quality Control Equipment

Each of the receiving tanks have fume collection that would also capture dust.

The hopper receiving the contents of the sacks would have a dust hood that would be connected to either a small reverse pulse dust collector or to the respective scrubbers for the type of chemical being debagged i.e. alkali or food grade. Specialist advice on the types of packed bed scrubbers to be used is being received from Lab Systems Group of Melbourne who produce a range of packed bed scrubbers.

The scrubbers are made from polyethylene welded together so there is no corrosion. The scrubbers have two sections. The bottom section is the liquid storage tank to hold the liquid used to scrub i.e. wash the air stream collected from the hoods which are at the top of the blending/decanting tanks.

The liquid in the storage tank is pumped up to sprays which sit inside and at the top of the scrubber column. This column sits above the scrubber liquid storage tank so that as the sprayed liquid drains down through the scrubber column – a vertical cylindrical section of typically for a small scrubber, like this installation, 1 m in diameter.

The scrubber column is filled with tellerettes made from plastic. Tellerettes have many surfaces and are around the size of a tennis ball.

The scrubber liquid is able to flow through the tellerettes, wetting many surfaces.

The air collected from the tanks is forced to pass through and around the tellerettes so that the air is wetted.

The chemical in the scrubber liquid washes the air clean and also neutralises the scrubber liquid – a 90–95% water solution – so that moisture carried in the cleaned air has a neutral pH.

A mesh filter above the scrubber column usually made from stainless steel gauze, removes the moisture from the cleaned air discharged from the scrubber.

Each scrubber would have a footprint of ~1.5 sq m and be of 2–2.5 m high. These are only small scrubbers.

Each sack is cut open and the contents flow into a hopper. As noted the dust emissions are captured by a hood and the air filtered as noted above.

4.2 FOOD GRADE PRODUCTS

The plant is not manufacturing food itself, these are ingredients used in food, and are low risk products. The relatively low or high pH of the products preclude any biological risks. The food grade and diluted food grade products are stored in the plant are acids or alkalis or concentrated salt solutions such as acetic acid solutions, phosphoric acid solutions, and calcium chloride solutions, so there is no additional risk due to incompatibility from a chemical reaction perspective. The risk is the same as if they were technical grade solutions of the same strength. The issue is to control the risk of chemical or physical contamination of the food grade materials from chemicals or foreign objects, so the dilution of food grade products is in an area separated from the technical grade chemicals. A manufacturing procedure will be adopted following a hazard and critical control point (HACCP) analysis. This will ensure that food grade products are diluted in vessels that are dedicated to specific products, using dedicated equipment and hoses, and the process equipment used is to a food grade finish and standard. Other control measures such as the use of bunding would be the same as for technical grade products.

Filtration and the avoidance of foreign object risks from glass or hard plastics is managed by the adoption of appropriate materials of construction in the area and by procedures.

Various pre-requisite programs such as pest control, swabbing, cleaning/sanitation, and training of staff complete the risk control measures that will be in place to control the dilution of the food grade products.

4.2.1 The NSW Food Authority

The site will not require a licence under the NSW Food Act 2003. Although the proposed factory does not require a food licence, the existing operations are already regarded as a food wholesaler, so the food authority has to be notified of the facility, refer to http://www.foodauthority.nsw.gov.au/industry/manufacturers-and-wholesalers. This would also be relevant to the food ingredient trading operations at the Minto plant so notification would not be new but a change in scope.

We are required to notify and report any changes, which would be relevant when we commission the plant. The NSW food authority has issued an information pack, EA Attachment 16, that goes into the detail of requirements that Redox already meet for traded food products as part of company and site procedures – sanitation, recall, pest control, worker hygiene and allergen control (not relevant for proposed product mix). These procedures would also apply or be modified to mitigate risk for the new facility.

4.2.2 Council Regulations

Local council regulate some food product businesses such as restaurants, take away shops and health care facilities. These uses are not relevant to the proposed development.

4.2.3 Food Standards Australia New Zealand (FSANZ)

The Food Standards Australia New Zealand (FSANZ) that is an independent statutory agency established by the Food Standards Australia New Zealand Act 1991 (FSANZ Act). This body regulates what can be regarded as foods, food labelling, food premises and equipment design, individual food standards for certain foods amongst many other issues. In particular in Clause 3.2.1 of the FSANZ, this Standard codifies the requirement for a HACCP system in a factory, and this is adopted from the joint WHO/FAO Codex Alimentarius Commission, which is the global food safety standard. The food processing section of the proposed facility, in common with the food handling section of the current facility, will have a HACCP system that is independently audited by a suitably qualified food safety auditing business and auditor. In a HACCP analysis, a food business must –

(a) systematically examine all of its food handling operations in order to identify the potential hazards that may reasonably be expected to occur;
(b) if one or more hazards are identified in accordance with paragraph (a), develop and implement a food safety program to control the hazard or hazards;
(c) set out the food safety program in a written document and retain that document at the food premises;
(d) comply with the food safety program; and
(e) conduct a review of the food safety program at least annually to ensure its adequacy.

The food safety program must –

(a) systematically identify the potential hazards that may reasonably be expected to occur in all food handling operations of the food business;
(b) identify where, in a food handling operation, each hazard identified under paragraph (a) can be controlled and the means of control;
(c) provide for the systematic monitoring of those controls;
(d) provide for appropriate corrective action when that hazard, or each of those hazards, is found not to be under control;
(e) provide for the regular review of the program by the food business to ensure its adequacy; and
(f) provide for appropriate records to be made and kept by the food business demonstrating action taken in relation to, or in compliance with, the food safety program.

Plant design is a key part of the risk control strategy. Good plant design and plant layout through the use of walls and separate handling areas separates food grade products from technical grade products to avoid chemical contamination. Good design allows complete drainage of food product mixing tanks and lines so that cleaning and sanitation processes leave no residue. Good design also ensures that drains are properly located so that bacteria in the drains cannot contaminate products. Ventilation/dust collection ensures that dusts and mists from non-food areas do not cross-contaminate the food production area or product to product within the food production area. Good design will implement procedures which avoid potential physical contaminants such as glass, blades, and hard plastics in the processing areas. The use of non-porous materials for construction will be used so that walls and surfaces can be cleaned easily.

Redox already has HACCP plans for activities such as food grade acetic acid dilution and food grade phosphoric acid handling at Girraween. Very similar plans would be prepared for the Minto plant. The plans would illustrate the content and concept of the HACCP plans to assist the regulator/auditor in understanding how the food handling activities are managed. HACCP plans would not be prepared for non-food processing activities in the facility.

Once processed and packed, food products in small packs are sealed and therefore are at very low risk of contamination. They will be stored in the area appropriate to the chemical hazard of the product – Class 8 corrosive (acid), Class 8 corrosive (alkaline) or non-dangerous goods. The products are stable, require no special temperature control and are not allergens so no special storage requirements are relevant other than would apply from their dangerous goods classification.

4.3 CHEMICAL QUANTITIES

This section details the chemical quantities related to the site. Storage locations are shown in Figure 4-2.

4.3.1 Storage Quantities

The following table shows a comparison of the quantities of chemicals between the following situations:

- Proposed in the original EA (2003);
- Existing situation as a result of Commission of Inquiry; and
- Proposed in this Modification.

Table 4-1: Storage Quantities Comparison

Chemical Type by non-DG or Dangerous Goods Class	Original EA (2003) Tonne	Existing Tonne	Proposed in this Modification Tonne	Additional as a result of this Modification Tonne
Non Dangerous Goods	15,795	11,195	15,795	4,600
Class 3 flammable liquids	900	900	900	Nil
Class 5.1 Oxidising substances	250	250	250	Nil
Class 6.1 Toxic substances	850	850	850	Nil
Class 8 Corrosive substance in Packages (Assumes IBCs and F IBCs for solids)	2,400	2,400	2,110	–290 (reduction)
Class 8 corrosive substances in Bulk (i.e. aboveground tanks)	250	250	540	290
TOTAL	**20,445**	**15,845**	**20,445**	**4,600**

The 20,445 T is the original quantity requested in the EIS. This was reduced to 15,845 T as a result of removal of the bulk storage of soda ash as this required 24 hour access. Redox request the approval of the 4,600 T of non-dangerous goods that was removed.

4.3.2 Storage Quantities by size of Package, Container and bulk

The quantities stored by bags, bulkers, drums, IBCs, other and bulk (being aboveground storage tanks) is summarised in the following table.

Table 4-2: Quantities Stored

Class	Sub Risk 1	Sub Risk 2	Bags Tonne	Bulkers Tonne	drums Tonne	IBCs Tonne	Other Tonne	Bulk Tonne	Total Tonne
Non-DG			10500	2500	1000	965	595	235	15795
3			0	0	595	300	4	0	899
3	8		0	0	1	0	0	0	1
5.1	6.1		234	0	1	10	0	0	245
5.1	8		0	0	0	5	0	0	5
6.1			100	400	250	0	100	0	850
8			380	180	190	1285	40	270	2345
8	3		0	0	50	35	15	35	135
8	5.1		0	0	50	5	10	0	65
8	6.1		0	0	5	0	0	0	5
8	6.1	C1	0	0	0	0	1	0	1
8	C1		0	0	26	16	47	0	89
8	C2		0	0	10	0	0	0	10
Total									20,445

4.3.3 Production Quantities

The production quantities are based on the following estimates provided by Redox.

The bulk tanks are each of 30,000 L storage.

A bulk tank of a particular chemical could require refilling on a 24 hour basis.

The mixing tanks would hold 12,000 L of chemical.

The average time taken for a mix to be prepared would be 2-3 hours.

There could be 3-6 mixes occurring simultaneously in the nine mixing tanks.

The current level of production is 35,000 L/day.

It is envisaged that the production level could initially double and gradually increase to 100,000 L/day.

These daily production levels equate to 12,000 T per annum at the current production level and increasing to 30,000 T per annum.

4.4 TRAFFIC AND ONSITE CAR PARKING

The following has been referenced from the traffic report.

A Traffic and Parking Impact Assessment report has been carried out for Stage 4 of the Redox Pty Ltd chemical logistics facility at 2 Swettenham Road, Minto by Transport and Urban Planning.

This report is provided in EA Attachment 6. The traffic route approved as per the Commission of Inquiry is provided in Figure 4-5 and the proposed traffic route is shown in Figure 4-6.

In summary the report has found the following.

“The Redox site is a large chemical logistics facility originally approved as a State Significant Project in 2003 by the Minister for Infrastructure and Planning. The development was approved as a 4 stage project and Stages 1, 2 and 3 have been completed. This new application is for Stage 4, with a request to modify the consent conditions for changes to types of chemicals to be stored and decanted and to modify heavy vehicle access routes. The proposed changes to these routes are the result of new road developments in the area.

The proposal will not require any alteration to the existing internal traffic or parking arrangements, which are all well designed and adequate for their use. The internal arrangements and vehicle access driveway are fully in accordance with AS 2890.1–2004 and AS 2890.2–2002. Currently the industrial component of the site provides 197 car parking spaces, which is a significant over supply for the current and future demand. The driveway to the site on Holmes Road caters for entering and exiting trucks, including an internal gate set back 40 metres to allow up to two articulated vehicles to queue at the gate while remaining within the property.”

The site has good access to the surrounding classified road network, however the 2003 approval included truck routes which are no longer the most appropriate routes.

During 2011, a new M31 Motorway access ramp was constructed from Raby Road. The truck routes should now be altered as detailed in Section 5.3 of the Transport and Urban Planning Traffic Report (EA Attachment 6) in order to significantly reduce the truck impacts on local roads, confine trucks to the classified road network which has the traffic and structural capacity to accommodate trucks and to reduce noise and air pollution in the surrounding area (see Figures 4 and 5 of Traffic Report).

Figure 4-5: Existing Truck Route

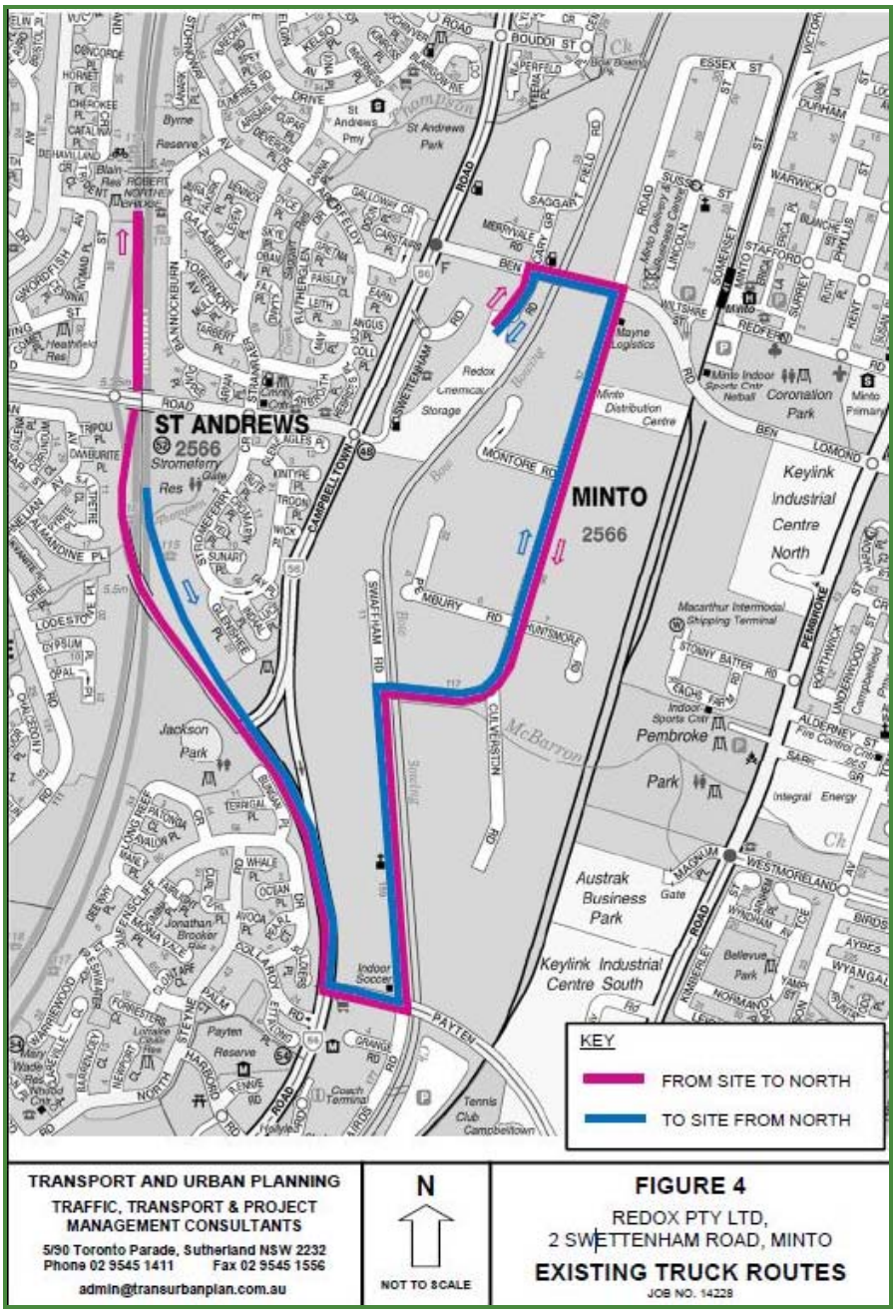
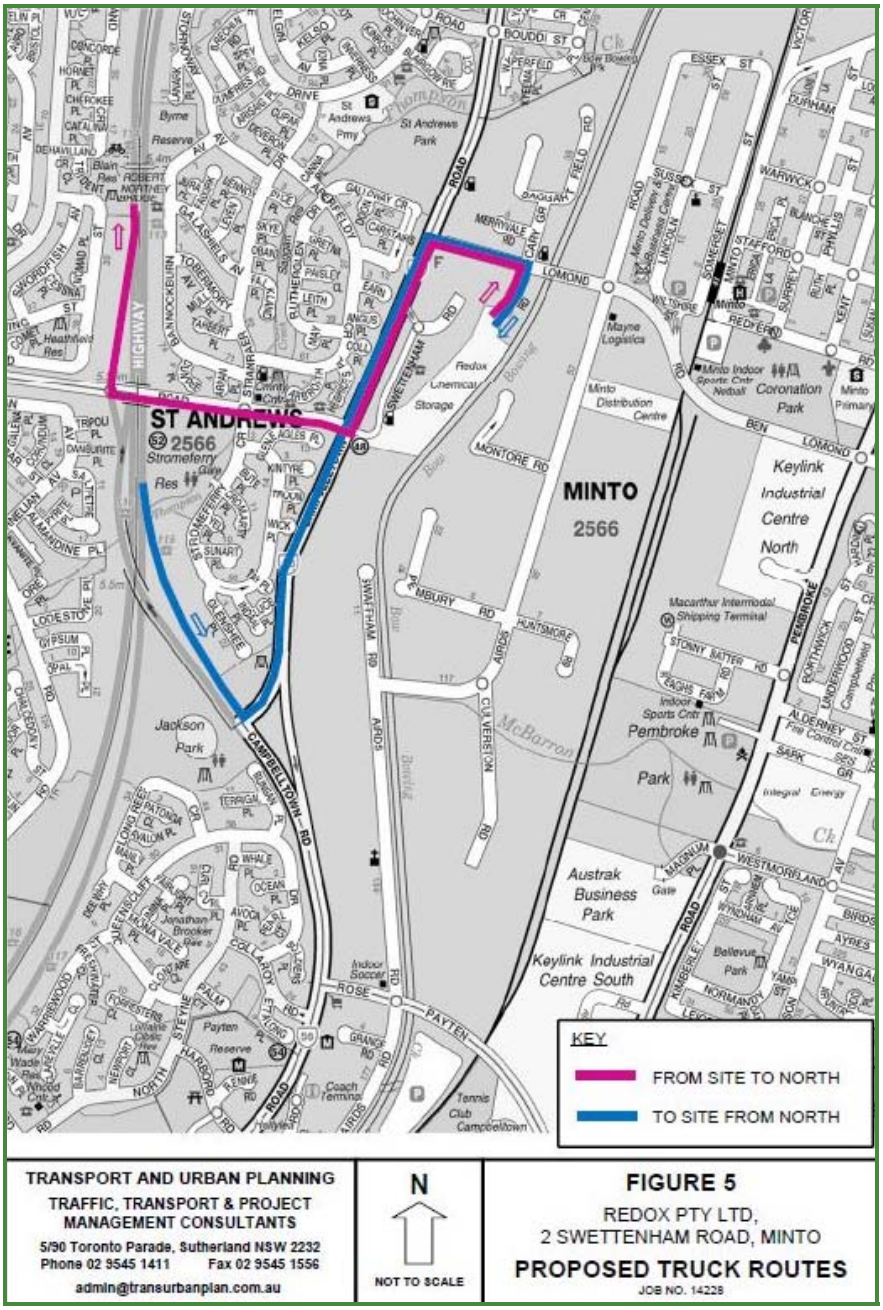


Figure 4-6: Proposed Truck Route



Analysis of the existing site's traffic generation and the size and nature of the Stage 4 infill proposal, shows the following additional traffic trips will be generated:

Total additional daily vehicle trips:

Light vehicles : 24 trips per day (12 in, 12 out)
Heavy vehicles : 20 trips per day (10 in, 10 out)

AM Peak Hour (8am – 9am)

Light vehicles : 5 trips (5 in, nil out)
Heavy vehicles : 1 trip (1 in)

PM Peak Hour (5pm - 6pm)

Light vehicles : 5 trips (nil in, 5 out)
Heavy vehicles : 1 trip (1 out)

These vehicle numbers support the increased volume of chemicals that would be stored, decanted and distributed from the Stage IV development.

The above peak hour trip generation of the Stage 4 proposal equates on average to an additional car trip every 12 minutes and an additional truck trip every 60 minutes. This additional traffic volume is assessed as low traffic generation which can easily be absorbed on the surrounding road network.

In summary, the proposed development will generate a low volume of additional traffic which can easily be accommodated on the surrounding road network. It is well located in an industrial area with good access to the classified road network. It is well designed internally for trucks and cars and will not require any new parking or traffic facilities. The truck routes for the site are recommended to be altered to use the recently completed Raby Road on ramp to the M31 Motorway, due to the substantial benefits that will accrue to both the operator and the local community in terms of reduced traffic, noise and air pollution impacts. The proposed truck routes are all on classified roads which have the traffic, geometric and structural capacity to accommodate the truck traffic from the Redox site.

The new truck routes that would use the new M31 on-ramp are:

- From site to north
  Holmes Road, left onto Ben Lomond Road, left onto Campbelltown Road, right onto Raby Road, right onto M31 on-ramp.

  Bulk liquids would not use this route. Bulk meaning tankers.

- To site from north
  M31 off-ramp, left onto Campbelltown Road, right onto Ben Lomond Road, right onto Holmes Road.

  Bulk liquids would use this route but within the following weight restrictions known to Redox and included in the traffic management plan – Campbelltown Council have imposed weight restrictions across the bridges over Bow Bowing Channel. For the Ben Lomond Road Bridge the weight restriction is 40 tonne and the Airds Road Bridge weight restriction is 32 tonne. Any bulk liquid tanker exceeding this restriction is prohibited from using the route designated in Figure 4-5. Further north of the site the bridge between Fraser Street and Salisbury Avenue, Glenfield has a load limit of 18 tonne. Therefore the use of the new routes using Raby Road to access the M31 are preferred and provide advantages for traffic flow as well as considerably reducing the use of local roads.

The traffic assessment has found that the use of Raby Road and accessing the M31 resolves the weight restriction limitations of Council.

4.4.1 Road Traffic Noise

Road traffic noise is assessed in the Noise Impact Assessment (EA Attachment 9). Noise impact associated with road traffic was predicted to readily comply with the project specific noise levels, no controls are warranted.

5. ENVIRONMENTAL ASPECTS

The site exists and has operated since December 2005 free of any adverse environmental impact or pollution incident.

The following studies have been conducted:

- A preliminary hazard analysis (Section 5.8).

  Although similar chemicals are already present on the Minto site and there is in place an approval to operate the Stage IV part of the development, it was not originally envisaged to dilute and decant formic acid and acetic acid both having sub risk Class 3 flammable liquid.

  A preliminary hazard analysis has been prepared for this aspect of the diluting and decanting operation.

  This follows the HIPAP6 guidelines and analyses the outcomes of many credible events.

- A fire safety study (EA Attachment 11)

  Fire and Rescue NSW were involved in the design process of the original development and instrumental in many of the design aspects incorporated into the fire services and environmental safeguards.

  A fire safety study is considered to be warranted due to the presence of Class 8 corrosive sub risk Class 3 flammable substances formic acid and acetic acids.

  A fire could be initiated at the tanker unloading area or within the tank farm or during the diluting operations. However an extensive set of safeguards have been considered and designed into the proposed facility.

  The safeguards would isolate any fire to areas that are bunded and have fire walls in place (FRL of 240/240/240) that would adequately contain a fire and prevent heat of radiation exposing adjoining warehouses. In the awning area of the new Building “F”, the separation distance of the bulk storage tanks to Building “I” is 15 m and is adequate for protection of this building from heat of radiation from a pool fire in the bunded area provided for the bulk storage tanks.

  The second level of bulk storage tanks for those storing flammable liquids (i.e. Class 8(3)) and combustible liquid, the supporting structures need a 180/180/180 FRL.

  Fire services would consist of the requirements to satisfy the National Code of Construction. As an added precaution, as certain Class 8 substances have a sub risk of Class 3, hose reels would have the facility of being able to be connected to foam. In addition a 205 L drum of AFFF foam would be available for the use of Fire and Rescue NSW if needed in an emergency. An updated emergency plan would detail where this is kept on a pallet.

  A fire safety study is included with this report (EA Attachment 11). This has been prepared in accordance with the methodology required by Fire and Rescue NSW and as outlines in HIPAP2.

A summary is provided in Section 6.

- Emissions to land and water (Section 5.2).

  This section examines the potential release of contaminants to land and water.

  It examines the safeguards that are required.

- Waste (Section 5.4).

  This section considers the legislation pertaining to wastes and the relevance to the proposed changes.

- An air impact assessment following guidelines of NSW EPA (EA Attachment 10).

- A noise impact assessment (EA Attachment 9).

- A traffic engineer's report prepared by Urban and Transport Planning is summarised in the S75W document. The traffic engineer's report is provided in EA Attachment 6.

5.1 CHEMICALS AND DANGEROUS GOODS

The site stores non-dangerous goods as well as large quantities of Classes of dangerous goods in keeping with the original development.

The NSW EPA EPL currently allows up to 5,000 kL of general chemicals storage on site. Chemical quantities are presented in Section 4.3.1.

At present the WorkCover Notification lists the following Classes of dangerous goods and quantities of the following classes. A brief description of each Class is provided to assist the reader not familiar with dangerous goods.

Class 3

Flammable liquids.

Flammable liquids and the other remaining classes are divided into three further descriptions depending on the characteristics of the dangerous goods – PGI, PGII or PGIII.

PG stands for packing group.

The level of danger diminishes from PGI to PGIII.

PGI represents great danger – e.g. ether.

PGII represents medium danger e.g. acetone, petrol.

PGIII represents minor damage e.g. kerosene, turpentine.

The storage of Class 3 flammable liquids requires a detailed assessment and safeguards are numerous. Reference to AS 1940—2017 provides detailed guidance on storage and use and handling of flammable and combustible liquids. Combustible liquids are placed into either of two Classes; Class C1 or C2. An example of C1 is diesel; C2 examples are cooking oil and lubricating oil.

Class 5.1

Oxidising substances.

These provide a source of oxygen. Examples are perchloric acid, ammonium nitrates.

These substances are also highly reactive with other classes of dangerous goods such as acids, alkali. Main safeguard is to provide segregation.

Class 6.1.

Toxic substances.

These are poisonous substances and a number of safeguards are required for their storage, use and handling. Disposal of empty containers is also a critical issue. Preventing contamination of work surfaces and long-term soil or groundwater contamination are important issues. Environmental damage from spillage is a key issue requiring safeguards and training.

Class 8

Corrosive substances.

There are large families of these that are commonly encountered. Acids and alkali both being reactive belong to Class 8 and need special care.

Class 8 substances can be reactive with other Classes such as Divisions 5.1, 5.2 and 6.1. Safeguards are detailed. AS 3780—2008 provides a comprehensive set of guides.

Class 9

Miscellaneous substances.

This Class is becoming more frequently encountered and an Australian Standard provides guidance on storage use and handling

The following quantities of dangerous goods are usually on site.

Class 3	Packing Group II	5 T	
	Packing Group III	15 T	
Class 5.1	Packing Group III	5 T	
Class 6.1	Packing Group III	150 T	
Class 8(3)	Packing Group II	55 T	
	Comprised of Formic acid	40 T	These would be in bulk in the Stage IV
	Acetic acid solution	15 T	development
Class 8	Packing Group II	876 T	
	Packing Group III	345 T	

The chemicals currently used at the "Deltrex" Girraween operation that would be relocated to the Minto site include the following. Many are already present on the Minto site.

Class 3		Nil
Class 5 (6.1)	Packing Group III	4.7 T
Class 5.1 (8)	Packing Group II	6.6 T
Class 8	Packing Group II	707 T
Class 8 (3)	Packing Group II	1.4 T
Class 8	Packing Group III	622 T
Class 8 (C1)	Packing Group III	12.8 T
Combustible liquids C1		23 T

The following chemicals within this above summary are already on the Minto site:

- Acetic acid;
- Formic acid;
- Hydrochloric acid;
- Sulphuric acid;
- Phosphoric acid;
- Potassium hydroxide; and
- Sodium hydroxide.

New chemicals to Minto are the following:

Urea Phosphate	Class 8	Packing Group III	4.8T
Hypochlorite Solution	Class 8	Packing Group III	35T
Fluorosilicic acid	Class 8	Packing Group III	70T
Ferric Chloride	Class 8	Packing Group III	30.7T

There are specific chemicals at the Girraween site that would not be brought to the Minto site under Clause 4.1 of the 2002 Consent:

Class 5 1(6.1) Packing Group II
Class 5.1 Packing Group II

By examining this information it can be seen that the Stage IV development as now proposed would not be bringing chemicals to the Minto site that are significantly different to what are already on site. The need for a preliminary hazard analysis may not be a formal requirement but has been undertaken since the original PHA was prepared for the 2002 consent. The PHA is included as EA Attachment 12.

The main difference is that the chemicals would be brought in bulk. The quantity brought in bulk in much less than the quantity already on site in containers.

For example, formic acid is present based on the SafeWork notification at a quantity of 40 T.

A bulk storage would be 30 T.

Acetic acid currently 15 T on site in containers would be 30 T in bulk.

Hence the conclusion can be reached that the chemicals being added to the Stage IV operation will not be new to the site but would be handled in bulk.

The handling of chemicals in bulk under controlled conditions requires less handling and less opportunity for human error. The main aspects to be considered are the consequences of major spillages, incorrect mixing of incompatible and react dangerously chemicals and the consequences of a fire on the existing Minto facility.

5.1.1 Major Hazard Facility

The facility would not be considered to be a *Major Hazard Facility* as the chemicals to be stored on-site do not meet the exceed the thresholds outlined in the Dangerous Goods Regulations relating to Major Hazard Facilities.

5.1.2 Chemical Storage Legislation

Storage of chemicals at the facility will be in accordance with the requirements of the *Work Health and Safety Regulation 2017* as well as following Australian/New Zealand Standards:

- AS 1940–2017 *The storage and handling of flammable and combustible liquids*;
- AS/NZS 3833:2007 T*he storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers*;
- AS 3780–2008/Amdt 1–2009 *The storage and handling of corrosive substances.*

5.1.3 Assessment of Chemical Storage

The site operates an extensive dangerous goods and non-dangerous goods storage and logistics business with an extensive set of safeguards that have proven to be very effective since 2005.

The installation of the Stage IV development in today's environment will not require many new safeguards for the site as those that are existing are best practice even for today.

The design of the Stage IV development however will benefit from inclusion of additional safeguards that would not have necessarily been required in 2005 and these mainly relate to fire containment and reduction in human factors in causing an incident to occur.

These additional safeguards are more extensive use of fire rated walls and bunding so that containment of a pool fire, and preventing the spread of a fire are more easily contained by the design of the facility and allow Fire and Rescue NSW greater time in bringing an emergency incident under control.

The characteristics of the chemicals now proposed to be diluted and decanted vary from the original Class 8 corrosive substances. There is also the need to now include food grade products.

The characteristics of the chemicals of most relevance are vapour pressure and flash point for chemicals that are flammable or combustible.

The propensity for release of pungent fume/odour that would have an adverse effect on fire officers and more distant potential receivers during an emergency has been considered by using the air quality assessment to predict ground level concentrations of uncontrolled release of formic and acetic acid during spillages, heat of radiation causing fume to be released or during incomplete combustion during a fire.

The majority of sites have terrain which can be considered flat for distant receivers and products of combustion are usually not incident at ground level.

However, the Minto site is located adjoining a sharp relief and during an emergency incident with breeze or wind from the easterly sectors, a plume could be incident within the residential area located on the western side of Campbelltown Road.

The findings of this part of the assessment is provided in the preliminary hazard analysis.

The following table present the characteristics of the chemicals proposed to be stored, diluted and decanted. Water leads the table as a reference for vapour pressure.

Table 5-1: Characteristics of Chemicals

Chemical	Vapour Pressure at °C	Flash Point	Pungency and Odour	Flammable or Combustible	Toxic combustion	Incompatible	Risk rating for off site impacts
Water	24 mm Hg @ 25°C						
Phosphoric acid Class 8 PGIII UN1805	0.03 mm Hg @ 20°C 43 mm Hg @ 25°C	Not relevant	Slight acidic odour	No	Oxides products of phosphorus	Alkali Sulphuric acid Water	Low
Formic acid Class 8(3) PGII UN1778, 1779	35 mm Hg @ 20°C 43 mm Hg @ 25°C	69°C Depends on % strength[1]	Highly pungent	Combustible C1	Carbon monoxide Acrid smoke Irritating fumes	Alkali Sulphuric acid	Moderate
Acetic acid Class 8(3) PGII UN2789, 2790	11.4 mm Hg @ 20°C 15.7 mm Hg @ 25°C	39°C	Highly pungent	Flammable	Irritating fumes	Violent reaction with alkali Incompatible with strong acids	Moderate
Ferric chloride Class 8 PGIII UN1830	Negligible at ambient conditions	Not relevant	Slight odour similar to hydrochloric acid	No	Toxic fumes of hydrogen chloride	Reacts with sulphuric acid to produce toxic gases	Moderate
Sulphuric acid Class 8 PGIII UN1778	Negligible at ambient conditions	Not relevant	Very slight acidic odour	No	Toxic fumes of sulfur oxides	Alkali Acetic acid Ferric chloride Fluorosilicici acid	Low
Fluorosilicic acid Class 8 PGII UN1778	22 mm Hg @25°C	Not relevant	Pungent	No	Toxic fumes of fluoride	Alkali Sulphuric acid Water	Low
Citric acid Non DG	Negligible	100°C	Odourless	Combustible C2	Acrid smoke Irritating fumes	Alkali	Low to negligible
Hypochlorite solution Class 8 PGIII UN1791	12-17 mm Hg @ 20°C	Not relevant	Slight chlorine (bleach) odour, disagreeable.	No	Toxic fumes of hydrogen chloride and sodium oxide	Acids with generation of toxic gas chlorine	Low

Table 5-1: Characteristics of Chemicals

Chemical	Vapour Pressure at °C	Flash Point	Pungency and Odour	Flammable or Combustible	Toxic combustion	Incompatible	Risk rating for off site impacts
Sodium hydroxide Class 8 PGII UN1823, 1824	Nil at ambient conditions	Not relevant	Odourless	No	Toxic fumes of sodium oxide	Water Acids	Low
Potassium hydroxide Class 8 PGIII UN1813, 1814	Nil at ambient conditions	Not relevant	odourless	No	Toxic fumes of potassium oxide	Water Acids	Low
Urea ammonium nitrate Non DG	Nil	Not relevant	odourless	No	Not relevant	None	Negligible

Note: [1]Flash point also reported as 50°C at 90% aqueous solution so dependent on strength of the solution.

The above list is the majority of the chemicals to be used but as noted earlier flexibility is needed to allow other chemicals with similar characteristics to be processed through the diluting and decanting steps.

A report entitled "*Lycopodium Upgrade Design Report 4418-REP-06*" dated September 2015 reviewed the operational design of the proposed Stage IV facility. This report is not included in this public document as it provides proprietary information. It would be available at request.

The characteristics that are of most relevance to be considered in the design of the facility to prevent off site amenity or hazard effects are the following:

- Vapour density would readily allow for fumes to be released.

  These are formic acid and acetic acid as the fumes released are pungent.

- Flammable.

  Formic acid and acetic acid have flash points that allow the vapours to ignite in presence of an ignition source or source of heat.

- React dangerously or incompatible.

  The table shows there to be many of the chemicals that are not to mix or come into contact.

  This characteristic is well understood by Redox and the basis of the design of their facility has been to provide the following safeguards which would prevent mixing of incompatible chemicals being a credible event.

  Separate storage tank areas are provided, with separate bunding, separate tanker unloading areas and separate diluting/decanting systems.

  For an emergency event further safeguards consisting of fire rated walls have been provided.

5.1.3.1 Bunding Requirements

The bulk storage tank bunding volumes are based on 110% of a tank in each of the three separate "tank farms".

The plans do not clearly show that there are two rows of the bulk storage tanks, one above the other.

The second row of tanks would be supported on a structure. The Class 8 (3) chemicals and the citric acid would require this structure to have a 180/180/180 fire rating level.

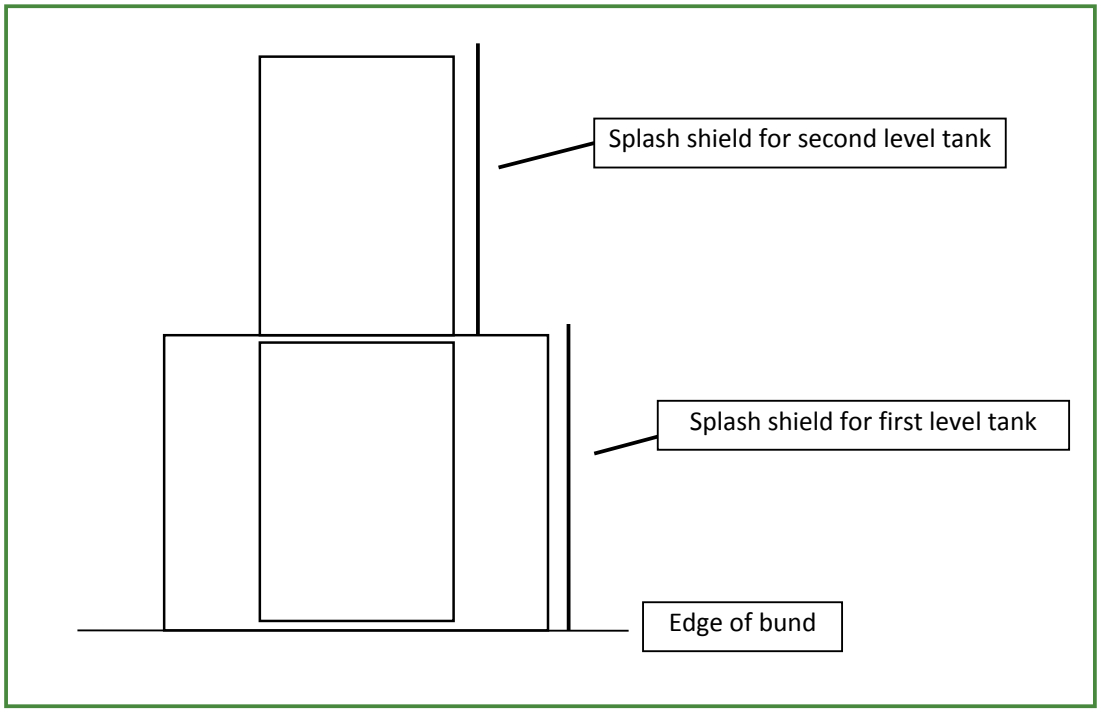
To satisfy the crest locus limit one of three solutions could be adopted:

- Make the footprint of the bunded area with a very large floor area. This is impractical as the space is not available.
- Use splash shields around the bund reaching up to the height of the second tank so that any overfilling or other release of chemical from the second level tank would drain down the inside of the splash shield into the bunded area.

  This is a commonly used method.

- Place a splash shield around the outside of the second level tank fixed to the surface of the tank as shown in the diagram below. The bottom end of the shield from the upper level tank must satisfy the crest locus limit so that any leaking from the top of the tank will always be directed into the bund.

Figure 5-1: Splash Shields



This bund is not shared with the diluting/dispensing vessels. For each of the three families of chemicals i.e. alkali, acids and food grade, separate bunded areas are required as it is standard practice to have separate bunded areas for alkali and acids.

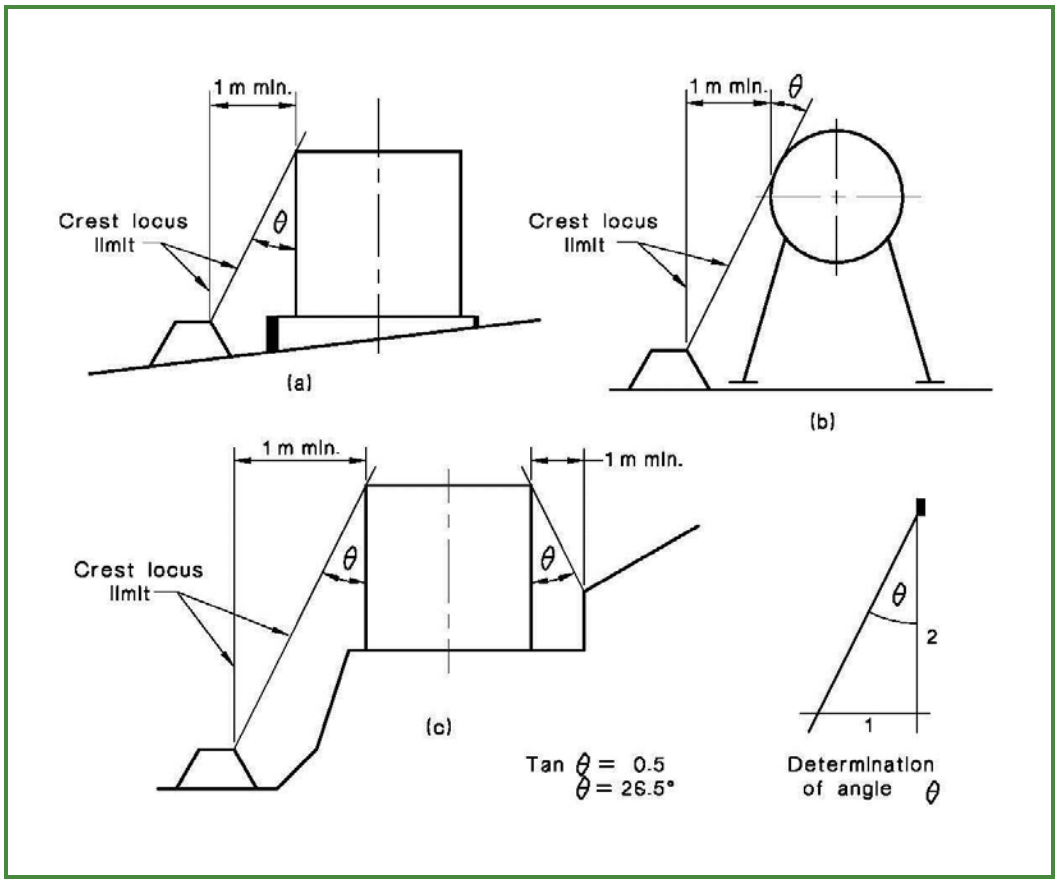
The bunded areas will need to have the concrete and any steel within the bunded areas sealed with epoxy resin to prevent corrosion.

Each of the bunded areas and the two tanker unloading/loading areas will need to drain to sumps in the event of a spillage occurring.

The filling lines would require spill trays beneath these lines or an equivalent means of ensuring chemicals do not make contact with the concrete floor. Use of polypropylene trays that drain to a sump is a useful means.

Walls of suitable materials would be needed around the long sides of the bunds so that the crest locus limits in the Australian Standards AS 1940 and AS 3780 would be satisfied. The following diagram shows what this means, courtesy of AS 3780.

Figure 5-2: Bund Location Limits *(from Figure 5.1, AS 3780*)



5.2 EMISSIONS TO LAND AND WATER

This section addresses the potential impacts on land and water and the management of these impacts as a result of proposed activities.

Emissions to land are prevented so that the sub soil and ground water are protected from risk of acid leaching through the concrete.

The operational areas also need to be kept in a clean state free of deposits of chemicals.

This is especially so for chemicals such as sodium hydroxide which is hygroscopic.

The following method of protecting the concrete and work surfaces would be used:

- Bunded areas of the “tank farms” and the mixing tanks would be sealed with a high quality epoxy resin.
- Preventative maintenance of piping system and transfer pumps.
- Areas immediately below filling lines would have polypropylene trays or a equivalent method of capturing potential releases from filling packages.

Routine washing of the operational areas is common practice.

5.2.1 Water Use

Water would be used in the demineralisation plant to provide the water for dilution of the decanted products. There would be industrial wastewater generated requiring a licence from Sydney Water.

5.2.2 Stormwater System

The site's stormwater system exists on site and would not be altered. Safeguard measures were included during the original development of the site. As already discussed, the design of the Stage IV facility includes further safeguards consisting of bunding, splash shields, separate production areas for incompatible chemicals and roofed and bunded road tanker unloading areas.

Stormwater pits have particulate filters installed. The area between the site and Bow Bowing Creek has been landscaped to reduce the potential for erosion.

5.2.3 Potential Impacts and Safeguards

Potential contaminant pathways that may lead to impacts on land and water from the revised Stage IV development have been identified as follows:

- Spillages or incidents from the unloading of chemicals;
- Spillages or incidents resulting from the storage and handling of chemicals;
- Release of contaminated firefighting water;
- Fuel, oil, grit/soil from car parking and use of driveways; and
- Litter.

These potential incidents, impacts and safeguard measures have been summarised in the following table.

Table 5-2: Potential Contaminants and Control

Potential Contaminant and Source	Potential Impact on Stormwater	Control
Spillages or incidents from the unloading of chemicals	Contamination of stormwater and/or land	Sealed site, stormwater particulate filters in place, spill kits, use of epoxy resin, housekeeping practices
Spillages or incidents resulting from the storage and handling of chemicals	Contamination of stormwater and/or land	Bunding of chemical storage areas, epoxy resin work areas, spill kits.
Release of contaminated fire fighting water	Contamination of stormwater and/or land	Building bunding, bunding of "tank farms", site's isolation system for stormwater

Table 5-2: Potential Contaminants and Control

Potential Contaminant and Source	Potential Impact on Stormwater	Control
Fuel, oil, grit/soil from car parking and use of driveways	Spills of fuel, release of grit causing contamination of stormwater and sedimentation of local waterways	Stormwater particulate filters, housekeeping practices, routine use of ride-on sweeper
Litter	Contamination of land and or stormwater	Designated waste storage areas

Safeguard measures include:

- Bunding to contain spillages or leaks of chemicals and to retain 90 mins of fire fighting water;
- Stormwater pollution control devices;
- Spill kits; and
- Designated waste storage areas

5.3 CONSTRUCTION OF STAGE IV

Construction of Stage IV would need to proceed while the existing site operations are continuing, although a Construction Environmental Management Plan would be prepared.

The proposed construction works would include the following activities:

- Preparation:
  - Establish construction route. This may lead to a roadway specific for construction related traffic;
  - Construction offices and amenities;
  - Remove soils from the areas to be concreted;
  - Excavate soils for foundations and services;
  - Storage areas for construction materials;
  - Parking areas for mobile equipment and construction workers.
- Construction:
  - Placement of fill materials;
  - Placement of concrete steel work
  - Place services
  - Concreting;
  - Erection of steelwork for the buildings;
  - Erection of pre-cast concrete panels;
  - Complete installing services;
  - Install bulk storage tanks, associated pipework and services;
  - Install decanting equipment, water treatment plant, debugging machinery, powder loading plant, air cleaning equipment, process controls;
  - Complete process controls.
- Commissioning
- Initiate operations

The following summarises the construction for the activities that would potentially occur, the hazards and the safeguards required.

The hazards arising from construction are summarised in the points below.

- Construction traffic associated with construction workforce– mechanical impacts.
- Mobile equipment movements – mechanical impacts; fuel spillages.
- Crane activities – mechanical impacts.
- Delivery of construction materials – mechanical impacts.
- Removal of soils – potential for contamination with construction wastes.
- Release of sediments from construction area as fill is placed and concrete is poured.
- During commissioning a number of specific potential hazards would need to be addressed. Safeguards are outlined in summary as the detailed controls need to be developed in association with the process equipment suppliers.
- Hazards that could escalate and extend to include the existing chemical storage areas on the forecourt or in the warehouses are limited to fire and release of fume as a result of a spillage during the commissioning period.

The Stage IV facilities will be the first introduction of bulk chemical deliveries to the site. Several of the chemicals are incompatible and must be transferred into dedicated tanks. Frequent mishaps occur when unfamiliar external contractors deliver chemicals and cause incompatible chemicals to mix. The facility would include safeguards to minimise the risk of this occurring however, induction, training and supervision needs to be established prior to this stage of the commissioning occurring.

The existing Safety Management System supporting procedures, the Hazard Audit and the Emergency Plan, provide the necessary means of ensuring hazards during the critical period of commissioning are adequately assessed and risks minimised. Initial commissioning of the facility using water as the chemical to be decanted is recommended.

5.3.1 Safeguards

5.3.1.1 Traffic Movements

- Entry of construction related traffic will require traffic wardens to prevent congestion and to minimise or remove risks of impact between the traffic and the operations at the existing warehouses.
- A demarcated construction traffic route is needed either in the forecourt area under the control of traffic wardens or at the rear of warehouse where a construction traffic road could be constructed from roadbase and avoid the risk of traffic accidents.

5.3.1.2 Construction Workforce

Hazards frequently occur due to human error and the risks are increased from this factor when truck drivers, mobile plant operators and construction workers are on an operating chemical storage site. Emphasis therefore will be needed on managing this risk through the following safeguards:

- Preparation of a Construction Safety Plan.
  This document would include an induction training programme specific for this site.

  As the construction activities concluded and prior to commissioning, procedures would be needed from the process designers on how the commissioning would proceed. These procedures would need to be reviewed by an AIDGC dangerous goods consultant.

5.3.2 Construction Management Plan

The outline of a Constructional Environmental Management Plan (CEMP) is provided below and is based on the experience of Redox when they constructed the previous stages of the development of the Minto site.

The CEMP was appropriate for the earlier development of the site and would serve as a framework to develop a CEMP for the higher levels of risk that will be present when the Stage IV is developed.

The structure of the CEMP would contain the following:

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FIGURES

ATTACHMENTS

Due to the addition of Stage IV occurring while the site's existing activities are operating, additional assessment of a number of other risks is required. These relate to the following:

- Onsite traffic management and control.
- Storage and handling of dangerous goods and hazardous materials during the construction phase and during commissioning.
- Fire fighting equipment.
- Construction noise management.
- Dust control management.
- Erosion and sediment control. Sediment and erosion controls would be installed prior to construction commencing.
- Waste management. Soils will be excavated and classified before removed from site.
- Bulk tanker deliveries.
- Certification of the hazardous area installation.
- Commissioning of pipelines, transfer pumps.
- Audit of the facility I compliance with recommendations in the Preliminary Hazard Analysis and the fire Safety Study.
- Preparation of an environmental procedures manual following undertaking of a Job Safety and Environmental Risk Analysis.

5.4 WASTE

This section addresses the waste generation and management of the Stage IV development.

Waste is described within the NSW EPA Waste Classification Guidelines as:

> *a) any substance whether solid, liquid or gaseous that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment; or*
> *b) any discarded, rejected, unwanted, surplus or abandoned substance; or*
> *c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, reprocessing, recovery or purification.*

Minor quantities of inert waste would be generated and handled as the proposed activities are carried out at the site. The raw materials of the operation are also considered to be a recyclable waste product. All waste material handled on site must be classified in accordance with the NSW EPA Waste Classification Guidelines as one of the following:

- Special waste;
- Liquid waste;
- Hazardous waste;
- Restricted solid waste;
- General solid waste (putrescible); and
- General solid waste (non-putrescible).

Classification of waste enables the generator to determine the appropriate handling, transport and disposal requirements if the waste cannot be reused or recycled.

5.4.1 Relevant Legislation

5.4.1.1 Protection of the Environment Operations Act 1997

The Protection of the Environment Operations (Waste) Regulation 2005 is administered under the POEO Act 1997. This regulation identifies provisions relating to waste management and disposal.

Part 3 of this Regulation details the requirements associated with tracking waste. Certain types of waste (listed in Schedule 1 of this legislation) which have the potential to be harmful to the environment are required to be tracked from the source to the waste disposal facility. The proposed development would not generate waste that requires tracking under this legislation.

Section 48 of this Regulation also states: "A person who stores waste on premises (whether or not the waste was produced on the premises) must ensure that it is stored in an environmentally safe manner." Storage of waste generated on site is discussed in Section 5.4.2.

5.4.1.2 Waste Avoidance and Resource Recovery Act 2001

The Waste Avoidance and Resource Recovery Act 2001 do not directly identify waste management requirements for companies. Rather, it provides an overview of the guiding principles of waste management.

The objective of this Act is to ensure, among other items, the following:

- Efficient resource use is encouraged in accordance with the principles of Environmentally Sustainable Development;
- Waste management is considered where avoidance of unnecessary resource consumption is considered first, resource recovery is the second option, and finally disposal where alternative management methods are exhausted;
- The amount of waste being generated is continually reduced; and
- Waste management – reduce, reuse, recycle is further encouraged to minimise consumption and waste disposal.

5.4.1.3 NSW Waste Classification Guidelines

To ensure appropriate waste management and disposal, all waste must be classified according to waste classification guidelines.

Waste classification guidelines were updated in November 2014. In accordance with this document, waste can be classified into 6 different streams.

Table 5-3: Waste Classes Identified in the NSW Waste Classification Guidelines

Class	Example
1) Special waste	• Clinical and related wastes. • Asbestos waste. • Waste tyres.
2) Liquid waste	• Waste that has an angle repose <5 degrees. • Waste that becomes free flowing at or below 60ºC. • Is not generally capable of being picked up by a spade or shovel.
3) Hazardous waste	• Waste with a pH ≤ 2 or ≥12.5. • Containers that have not been cleaned and contained dangerous goods within the meaning of the Australian Code for the Transport of Dangerous Goods by Road and Rail.
4) Restricted solid waste	• This type of waste is determined by chemical tests.
5) General solid waste (putrescible)	• Waste from litter bins collected by local councils. • Food waste. • Grit or screenings from sewage treatment systems that have been dewatered so that the grit of screenings do not contain free liquids.
6) General solid waste (non-putrescible).	• Paper or cardboard. • Glass, plastic, rubber, plasterboard, ceramic, bricks, concrete or metal. • Containers previously containing dangerous goods as defined under the Australian Code for the Transport of Dangerous Goods by Road and Rail, from which residues have been removed by washing or vacuuming.

Waste produced by the activities at the site would need to be classed into the categories listed above.

5.4.2 Waste Streams and Management

There would be two main waste streams at the site:

1. Office and domestic waste - General solid waste (putrescible), and
2. Process waste – Liquids from the diluting/decanting tank would generate liquid waste. This would be essentially wastewater. This would be treated in the wastewater treatment plant and not generate liquid wastes requiring transport off site.

The wastewater treatment plant will precipitate metals and other impurities as solid waste which will be loaded in a skip bin and disposed of via a contractor. Treated water is to be tested and discharged in to the sewer under consent from Sydney Water. The process is strictly controlled to Sydney Water guidelines and regularly tested by an on-site chemist employed by Redox.

There is a small amount of “high-sulphate” liquid waste (possible 2,000 L/month) and Redox will have this sent offsite by a contractor.

5.5 SURFACE WATER ASSESSMENT

There is construction required as part of this development. This area would have sediment controls in place.

The facility is located wholly within a building.

This facility is provided with bunding.

Bunded areas have sumps so that any spillages can be rapidly removed. There are no external activities to the Stage IV facility.

5.6 SUMMARY OF NOISE IMPACT ASSESSMENT

Provided within EA Attachment 9 is a detailed noise impact assessment prepared to the detail required by the NSW Industrial Noise Policy and Road Noise Policy.

The cumulative noise impact associated with the existing and proposed operational activities is predicted to comply with the project specific noise levels at all residential receptors and industrial receptors when assessing the L_{Aeq} descriptor. A noise exceedance of 3 dB was predicted at the school located in the northern entry/exit of the site during adverse weather conditions. This exceedance is considered to be insignificant primarily due to the fact that noise generated by off-site traffic unrelated to Redox activities is likely to generate higher noise levels at the school. In addition, considering that the school is located in an industrial area, an external noise level of 48 dB(A) Leq is considered to be acceptable.

In addition, the expected traffic associated with Redox activities along the proposed routes is minimal compared to current unrelated Redox traffic flows in the area. Further noise predictions were carried out and found to readily comply with the project specific noise levels at all residential receptors.

5.7 AIR IMPACT ASSESSMENT

The activities associated with the diluting/decanting operations will have air emissions.

An air quality impact assessment has been conducted. The full report is presented in EA Attachment 10.

There are the following sources of release:

- During bulk tank filling; and
- During transfer of the chemicals into the diluting/decanting tanks.

Once the chemicals are diluted with water, the vapour pressure reduces and releases of chemicals are not evident. A safeguard approach has been adopted. Each of the mixing vessels would have the head space placed until negative pressure to ensure there are no uncontrolled emissions.

The air releases would be captured by ducting and be transferred to packed bed scrubbers. These have the emission control levels detailed in this air impact assessment section of this document.

Without the scrubbers installed localised odour levels may be unsatisfactory. Further details regarding the air quality control equipment is provided in Section 4.1.2.10.

The Air Quality Impact Assessment is provided in EA Attachment 10 used a quantitative approach to estimate air emissions, used packed bed scrubbers that would be provided with a manufacturer's performance guarantee and conducted air dispersion modelling using AERMOD.

The predicted levels of air quality criteria were found to be well below the NSW EPA guidelines with the controls in place.

The findings are not sensitive to error from the assumptions that are made.

The proposed operations would have negligible impact on air quality.

5.8 PRELIMINARY HAZARD ANALYSIS

A preliminary hazard analysis (PHA) (EA Attachment 12) has been prepared in accordance with the Multi-Level Risk Assessment and Hazardous Industry Planning Advisory Paper (HIPAP) guidelines stipulated by the Department of Planning and Environment (DoP&E) NSW.

The PHA has identified and examined a number of potential events/consequence scenarios that could occur on site.

Safeguard measures have also been considered and included in the design and operation of the facility to ensure that the safety and amenity of the neighbouring premises would not be affected by the proposed development.

Recommendations to control risks associated with chemical storage and use are provided.

6. SUMMARY OF FIRE SAFETY STUDY

A fire safety study has been prepared to the requirements of Fire and Rescue NSW and HIPAP No.2. This is presented in EA Attachment 11.

The fire safety study finds the following:

- The use of fire rated walls as detailed on the site plan would protect the nearest building.
- The use of the combined strategies of bunding, fire rated walls and fire services with the facility of readily adding foam to reduce the availability of air (i.e. oxygen) would provide limitations for fire to develop.

The fire safety study has examined the historical incidence of fires involving flammable and combustible liquids.

For the proposed developments the following precautions need to be built into the management system:

- The control of ignition sources. There are a large number of potential ignition sources that could cause an incident.

  These are the following:

- Flames;
- Direct fired space and process heating;
- Use of cigarettes/matches;
- Cutting and welding flames;
- Hot surfaces;
- Space heating equipment;
- Mechanical machinery;
- Electrical equipment and lights ;
- Vehicles, unless specially designed or modified are likely to contain a range of potential ignition sources;
- Hot work;
- Filaments from lighting;
- Failure of training in hazardous areas, risks associated with flammable liquids;
- Failure of operator procedures to provide adequate instruction;
- "Emu" policy is endemic in an organisation and management are unwilling to face realities of the weaknesses that exist;
- Spontaneous heating;
- Friction heating or sparks;
- Impact sparks;
- Sparks from electrical equipment;
- Stray currents from electrical equipment;
- Electrostatic discharge sparks;
- Lightning strikes;
- Electromagnetic radiation of different wavelengths;
- Static electricity discharges from clothing, transfer of fuels, polythene wrapping (shrink wrapping);
- Forklift trucks;
- Inadequate ventilation control of spillages
- Failure of induction systems to acquaint contractors with the risks that exist on site; and
- Operator enthusiasm for management procedures begins to wain and needs regular reinforcement.

- There is also the opportunity for a first response fire crew to take action if there should be a fire.
  This is able to be provided without a life threatening situation if appropriate fire safety is undertaken in conjunction with Fire and Rescue NSW.

Otherwise the provision of fire services is limited to the limited use of fire extinguishers, hose reels with foam and fire hydrants.

If bulk storage tanks storing the formic acid and acetic acid should be involved in a fire then the Emergency Plan will need to have in place an Evacuation Plan for the residences on the western side of Campbelltown Road as the acrid fumes may cause a health risk.

A number of additional safeguards have been recommended to counter the potential consequences of a large scale fire.

These measures are summarised in the following section of the Environmental Assessment.

7. ENVIRONMENTAL MANAGEMENT AND SAFEGUARDS

7.1 SUMMARY OF PHA

The PHA examined a large number of credible events and also considered several large incidents to show why the recommended safeguards are required. These safeguards basically prevent a large incident from being a credible event.

The recommendations are summarised from the findings of the PHA and consist of the following:

- Level indicators near the filling points.
- Level indicators within the PLDC system graphic displays in the control room.
- Level alarms at the desired levels of liquid in the tank.
  High level alarm if this level is exceeded. Alarms are a flashing light and alarm audible within the Stage IV facility.
- The filling line for the acetic and formic acid tanks would both have a shut off valve on the filling line if the high level alarm is activated.
- The overflow pipe on these tanks would be piped into a 100 L pit that is able to be filled with water and used to dilute the spilt liquid.
- The bunded area is able to be fogged using hose reels and as well the tank cooling water is able to be used to provide a large volume of water to cover the spill.

7.2 SUMMARY OF FIRE SAFETY STUDY

The fire safety study has established the need for fire rated walls between each of the three areas – acids, alkali and food grade chemicals.

The fire safety study also established the need to provide cooling water above the acid bulk storage tanks where sub risk Class 3 flammable liquids would be stored.

The fire safety study also established the need for intermediated bunding between each of the acid bulk storage tanks and the separation if practical of the acetic acid and formic acid to the respective far ends of the acid “tank farm”.

Hose reels would need to have foam available with injector kits. At least three hydrants would be needed around the building that would house the Stage IV facility.

- A fire hydrant system is to be provided in accordance with the NCC and AS 2419.1–2017;
- A hose reel system is to be provided in accordance with the NCC and AS 2441–2005/Amdt 1-2009;
- Foam injection kits and 20 L of foam need to be installed and training undertaken;
- Fire extinguishers to be provided at the site in accordance with the NCC and AS 2444–2001;
- Fire services at the site are to be maintained in accordance with AS 1851–2012;
- Emergency lighting and exit signage are to be provided in accordance with the NCC and AS 2293 (2005);
- An occupant warning system in accordance with the NCC and AS 1670.4–2015;
- A comprehensive Emergency Plan and a Pollution Incident Risk Management Plan need to be developed for the site;
- Specific on-site personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels;

- Strict control of ignition sources to be enforced on site;
- Fire alarm and detection system in accordance with Clause 5(b) of specification E2.2a of the BCA and AS 1670.1–2015.
- Fire services as described in Section 6 of this report;
- The tank farm separated into at least four areas with dividing concrete walls 1.5 m high;
- The external walls of the building constructed to 240/240/240 FRL;
- All access doorways designed to –/180/30 FRL;
- A triple bunding system provided from application of the following approach:
  - Tank farm bunded to AS 1940–2017;
  - Tanker unloading/loading area bunded;
  - Filling area/staging area of filled containers, drums and IBC's bunded;
  - Building would have bunding; and
  - Site already has stormwater isolation in place.

7.3 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

The summary of environment aspects, the aspects of the proposed development and the positive and negative potential environmental impacts are presented in Table 7-1. Where required, mitigation measures and safeguards to minimise any negative impact are presented. There is no free chlorine gas involved with the operation of this facility and hence no release of chlorine gas has needed to be considered.

Table 7-1: Summary of Potential Impacts

Environmental Aspect	Aspect of Proposed Development	Potential Impacts	Safeguards and Control Measures
Environmental Noise	Operation of equipment	• None expected	• Housing the facility within a building is a sufficient control measure.
Air Quality	• Generation of pungent fumes	• Odour at sensitive receivers	• Installation of packed bed scrubbers; • Regular housekeeping practices; and • Employee training and awareness in operation of scrubbers.
Waste	• Sorting activities		• Regular housekeeping practices; • Regular housekeeping checks; • Designated waste receptacles; and • Recycling or disposal through contractors.
Water and Stormwater	• Movement of containers, drums and IBC's	• Spillage	• Tanker unloading/loading confined to a bunded area within the building housing the Stage IV facility; • Staging area of filled containers, drums and IBC's within the building; • Warehousing of finished product is immediately nearby; • Site already has in place filters in the stormwater pits and stormwater isolation; and • High standard of housekeeping being maintained.
Soil & Land Contamination	• Waste • spillages	• Soil and land become littered with waste. • Spillages leach through concrete	• Maintaining a high standard of housekeeping practices; • Regular housekeeping checks; • Designated waste storage areas; • Recycling or disposal through contractors; • The bunded areas coated with a suitable high quality epoxy resin; and • Each bunded area has a sump and a grade to the sump so that spills drain to a collection point.

Table 7-1: Summary of Potential Impacts

Environmental Aspect	Aspect of Proposed Development	Potential Impacts	Safeguards and Control Measures
Fire Safety	• Use of the site	• Scenarios that trigger fire events	• Fire services provided in accordance with the FSS; • Emergency response procedures; • Housekeeping practices; • Control of ignition sources and security from arson; and • Employee training and awareness.
Flora & Fauna	• Site in a developed area	• Not considered relevant	• None required.

7.4 ENVIRONMENTAL SAFEGUARDS AND CONTROL MEASURES

The environmental safeguards refer to mitigation measures taken or incorporated into the site activities to protect local amenity from the potential impacts of the proposed development.

These are summarised below.

The design of the Stage IV facility will comply with the following standards and guidelines:

- *Work Health and Safety Act 2011*;
- *Work Health and Safety Regulation 2017*;
- *Dangerous Goods (Road and Rail Transport) Act 2008*;
- *Dangerous Goods (Road and Rail Transport) Regulation 2009;*
- How to Manage Work Health and Safety Risks Code of Practice 2011;
- AS/NZS 4804:2001 – *Occupational Health and Safety Management Systems – General Guidelines on Principles, Systems and Supporting Techniques*;
- AS 3780–2008 – *The storage and handling of corrosive substances*;
- AS/NZS 4452:1997 – *The storage and handling of toxic substances*;
- AS/NZS 3833:2007 – *The Storage and Handling of Mixed Classes of Dangerous Goods in Packages and Intermediate Bulk Containers*;
- SafeWork Australia – National Standard for the Storage and Handling of Dangerous Goods [NOHSC:1015 (2001)];
- SafeWork Australia – National Code of Practice for the Storage and Handling of Dangerous Goods [NOHSC:2017 (2001)];
- SafeWork Australia – *Managing Risks of Hazardous Chemicals in the Workplace* Code of Practice, 2012;
- Globally Harmonised System of Classification and Labelling of Chemicals 7th Revised Edition (2017); and
- Australian Dangerous Goods (ADG) Code Edition 7.5 (2017).

Tank farms

- The three families of chemicals i.e. acids/ acid compounds, alkali and food grade would be in three separate but adjacent tank farms.
- Each tank farm would meet the crest locus limits in AS 1940 and AS 3780;
- The tank farm between each family of chemicals would have a 240/240/240 FRL wall separating them;
- Each tank farm would have a sump for collection of spillages or washing down water so the liquid can be either used or treated in the wastewater treatment tank;
- The tank farm for the acids will need a larger volume sump e.g. 100 L; and
- The tanks used for formic acid and acetic acid need to be at opposite ends of the acid tank farm and an intervening wall (below the height of the perimeter wall of the tank farm) is needed to contain spread of a pool fire.

Cooling water deluge is required above the acid tank.

All tank farms are to be sealed with a high quality epoxy resin coating.

Tanks are each to have the following:

- Filling point labelled with direction arrows and contents;
- Pipelines labelled with direction arrows and contents;
- Level indicators at the tanker connecting point as well as on the operator's console (computer PLDC schematics);
- Fill level alarm – audible and flashing lights to both the control room and the site's Operations Manager's office;
- Over fill level alarm – audible and flashing lights to both locations (as listed above) and to activate a shut off value on the filling line;
- Over flow pipes to have outlets near the floor of the bund and near the filling points; and
- Vent pipes connected to the respective scrubbers.

The Class 8(3) tank storage area, transfer pipelines, pumping equipment and the decanting/diluting tanks will require hazardous area zones.

The citric acid, being combustible, will need pumping and piping to be unable to spray a mist of this liquid onto electrical equipment.

- **Tanker unloading/loading areas.**

  There would be two areas separated by a drive over ramp.

  Each area would drain away from each other and spillages or wash down water would be collected in sumps.

  The adjacent warehouse wall would be 240/240/240 FRL.

  Very clear signage advising which products are unloaded or loaded from each respective tanker parking area would be erected.

  Two of the hydrants would be able to protect this area of the Stage IV facility.

- **Diluting/decanting vessels.**

  These vessels would each have an exhaust duct connected to the respective scrubbers.

  The chemical to be diluted would be added to the bottom of the vessel to avoid splash filling added to water that has already been metered into the tank.

  The dilution of any of the chemicals that generates heat warranting temperature control would be piped to a heat exchanger. A cooling tower would provide the source of cooling for the heat exchanger.

  The filling of these vessels is controlled by the vessels being on weigh cells. An over fill alarm with shut off valves would be considered as a precaution. The mixing of the chemicals with control is controlled from the control room with operator override at each vessel for an emergency situation.

- **Filling Lines.**

  Polyurethane trays beneath the filling lines or equivalent method to catch spills.

- **Staging Area.**

  Signage would be erected so that in compatible chemicals are separated as hypochlorite is reactive with acids.

- **Air pollution controls.**

  Packed bed scrubbers would be required, one for each of the families of chemicals.

  Each scrubber would have level control and alarm on the tank holding the scrubber liquor.

  Routine testing using pH or another indicator would test the usable life of the scrubber liquor.

  Interlocks would be provided between the operation of the scrubber liquor pump, the exhaust fan and the operation of the facility.

  Scrubber efficiency would be at least 85%. This would need to be measured during commissioning. An odour compliance audit would be needed during commissioning by stack testing and confirm the findings of modelling of odour.

- **Dust collector.**

  If a dust collector is used for the debagging operation, it would be of the reverse pulse type.

  It would have interlocks between the compressed air supply, the exhaust fan and the operations of the debagging process.

- **Spill kits.**

  Spill kits for the different families of chemicals would be provided at the tanker unloading/loading areas near the bulk tank fill points and also near the filling lines.

7.5 EMERGENCY PLAN

An Emergency Plan would be redeveloped for the site to include the Stage IV facility. The aims of the plan would be to:

- Provide a clear understanding of how to handle and react to any emergency or pollution situation that may occur at the Site in the form of effective control structures, procedures and directives;
- Prevent or minimise the impact of an emergency and pollution incident on human life, the community and surrounding environment; and
- Facilitate a return to normal or safe operations as soon as possible.

The procedures contained in the plan would be designed to protect life and where possible prevent or minimise damage to the equipment, site and installations at the site and facilitate a return to normal operations by providing effective utilisation of the safety features, systems and equipment installed at the site to protect people from fire and other emergencies.

The plan would contain information and instructions that provide a basis for handling various types of emergency situations, such as:

- Release of pungent fumes from a spillage;
- fire,
- explosion,
- pollution incident,
- medical emergency,
- spills,
- gas-leaks, and
- bomb threats.

These instructions would be provided as continually improving guidelines to be adapted to cope with unanticipated situations.

8. RECOMMENDATIONS

- Greater flexibility in the truck routes from the Redox site.
- Movement of trucks and mobile equipment on-site is to be restricted. Site management is to ensure that the necessary timetabling and organisation of contractors is conducted in a manner that accommodates this requirement.
- Low on-site speed limits.
- No use of horns or engine brakes when entering/exiting the site.
- Adequate access road design/maintenance.
- Maintenance of Equipment: It is important to ensure that all vehicles, machinery and ancillary equipment meet the appropriate environmental noise requirements.
- Include adequate fire protection and cooling water to prevent these events causing off site hazards.
- Cooling water to be placed above the Class 8(3) tanks.
- Level indicators near the filling points.
- Level indicators within the PLDC system graphic displays in the control room.
- Level alarms at the desired levels of liquid in the tank.
- High level alarm if this level is exceeded. Alarms are a flashing light and alarm audible within the Stage IV facility.
- The filling line for the acetic and formic acid tanks would both have a shut off valve on the filling line if the high level alarm is activated.
- The overflow pipe on these tanks would be piped into a 100 L pit that is able to be filled with water and used to dilute the spilt liquid.
- The bunded area is able to be fogged using hose reels and as well the tank cooling water is able to be used to provide a large volume of water to cover the spill.

9. CONCLUDING REMARKS

The redesigned Stage IV facility is able to benefit from the current best practice standards which have advanced since the original development was approved.

A detailed assessment has developed the safeguards considered necessary from the lessons learnt during this intervening interval.

The addition of IBC's of flammable and combustible liquid to the B1/B2 warehouses would not require addition of further safeguards as these warehouses have fire rated construction.

The addition of acetic and formic acids to the chemicals to be diluted and dispensed has been rigorously assessed and safeguards identified for inclusion in the design of the facility to prevent off site hazards from occurring.

A new M31 Motorway access ramp was constructed from Raby Road. The truck routes should now be altered as detailed in Section 5.3 of the Transport and Urban Planning Traffic Assessment (EA Attachment 6) in order to significantly reduce the truck impacts on local roads, confine trucks to the classified road network which has the traffic and structural capacity to accommodate trucks and to reduce noise and air pollution in the surrounding area.

Approval to proceed with the proposed development is requested.

R T Benbow
Principal Consultant

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