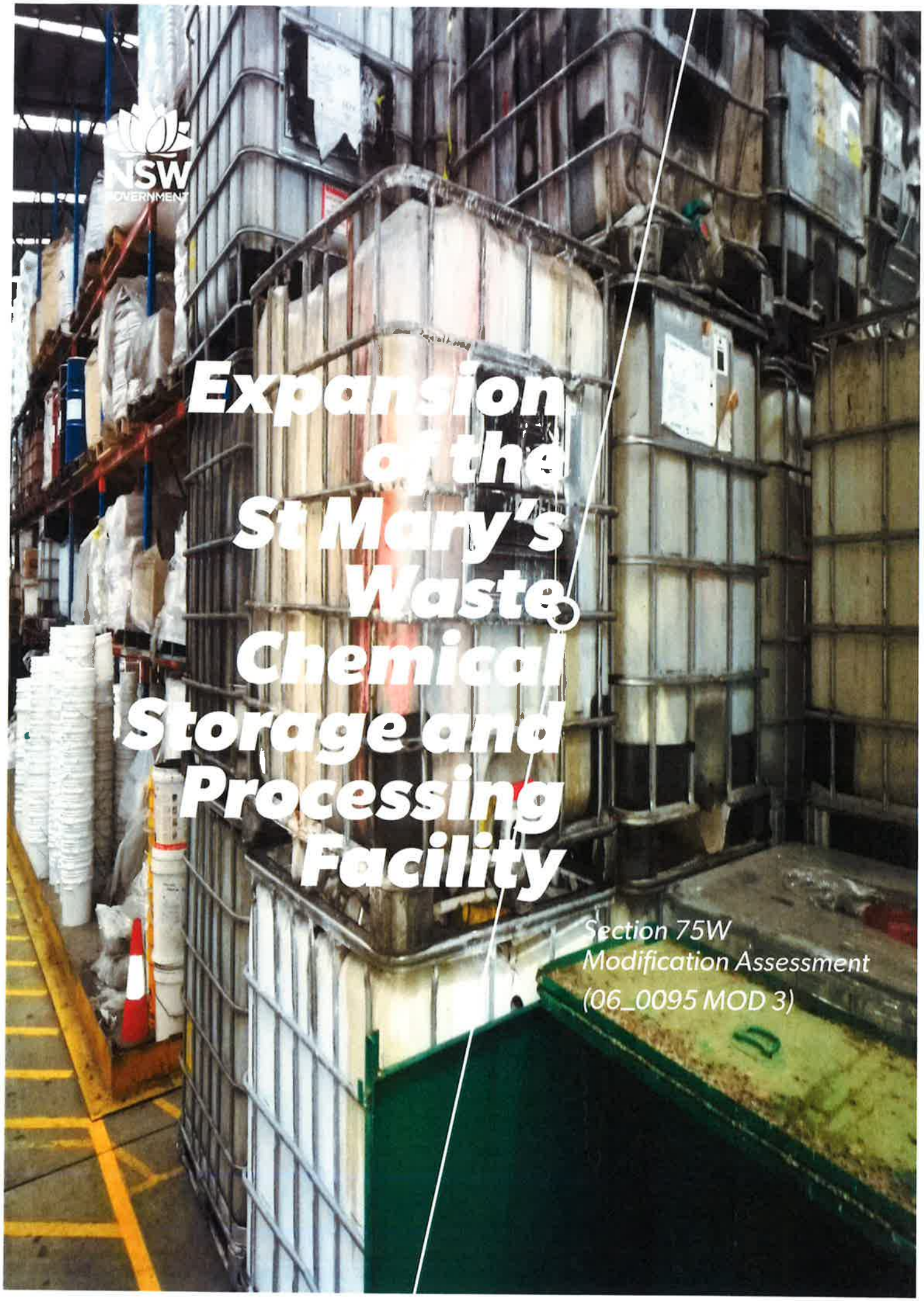

Expansion of the St Mary's Waste Chemical Storage and Processing Facility

Section 75W
Modification Assessment
(06_0095 MOD 3)

December 2018

Waste Storage at the St Mary's Waste Chemical Storage Facility

Disclaimer

Copyright notice

Glossary

Abbreviation	Definition
AAN	Acid Alkaline Neutralisation
ADGC	Australian Dangerous Good Code
AS	Australian Standard
CIS	Chemical Immobilisation and Stabilisation
CIV	Capital Investment Value
Dangerous Goods	As defined in the *Australian Dangerous Goods Act 1985* and classified in the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG 7.4 Code)
Approval	Project Approval
Council	Penrith City Council
Department	Department of Planning and Environment
EA	Environmental Assessment
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
FRNSW	Fire and Rescue NSW
General solid waste (non-putrescible)	As defined in Part 3 Schedule 1 of the POEO Act
Hazardous waste	As defined in Part 3 Schedule 1 of the POEO Act
LEP	Local Environmental Plan
Liquid Waste	As defined in Part 3 Schedule 1 of the POEO Act
Minister	Minister for Planning
Pmpy	Chance of a fatality occurring in a million years
Restricted solid waste	As defined in Part 3 Schedule 1 of the POEO Act
RtS	Response to Submissions
Secretary	Secretary of the Department of Planning and Environment
SEPP	State Environmental Planning Policy
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
SSD	State Significant Development
Waste	Has the same meaning as the definition of the term in the Dictionary POEO Act

Contents

1. Introduction

This report assesses a modification request by Toxfree Australia Pty Ltd (the Proponent). The proposal seeks to establish an acid and alkaline neutralisation (AAN) treatment system, expand the scope of treatment capability of the existing chemical immobilisation and stabilisation (CIS) plant, extend the hours of operation, remove the requirement for biennial emergency drills to be undertaken with Fire and Rescue NSW (FRNSW) and increase the storage limits of existing approved wastes at the existing waste management facility (WMF) at 40 Christie Street, St Marys (the site). The request has been lodged pursuant to section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The project was originally approved under Part 4 of the EP&A Act. The project is a transitional Part 3A project under Schedule 2 to the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* (EP&A (STOP) Regulation). The power to modify transitional Part 3A projects under the former section 75W of the Act as in force immediately before its repeal on 1 October 2011 is being wound up – but as the request for this modification was made before the 'cut-off date' of 1 March 2018, the provisions of Schedule 2 (clause 3) continue to apply. Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister (or his delegate) may approve or disapprove the modification of the project under the former section 75W of the EP&A Act.

1.1 Background

The Proponent operates a waste chemical, storage, treatment and processing facility at 40 Christie Street, St Marys (the site) (see **Figure 1**). The site currently receives hazardous and non-hazardous waste from a range of industrial, educational and commercial facilities as well as from State Government and Council clean-ups. Waste is collected and transported by truck to the site where the liquid waste is segregated, treated and/or stored and then transported off-site for further recycling or disposal. The site is currently permitted to store approximately 126 tonnes of Dangerous Goods (DGs) waste and treat selected hazardous waste through chemical immobilisation and solidification (CIS) process; however, the Proponent advises that the building could comfortably store between 850 tonnes to 900 tonnes of waste. All DG waste received at the site is presently stored in accordance with SafeWork NSW's Storage and Handling of Dangerous Goods Code of Practice, 2005.

The Proponent is an Australian Securities Exchange (ASX) listed company that specialises in hazardous and medical waste management with a network of waste management facilities across Australia. In April 2018, Cleanaway Waste Management Limited (Cleanaway) acquired Toxfree Australia Pty Ltd. Cleanaway is the largest waste management company in Australia.

The site is zoned IN1 General Industrial under the Penrith Local Environmental Plan 2010 (Penrith LEP) and is primarily surrounded by industrial land uses also zoned IN1 General Industrial. The site is bordered by Christie Street to the north and immediately adjoins industrial allotments to the south, east and west.

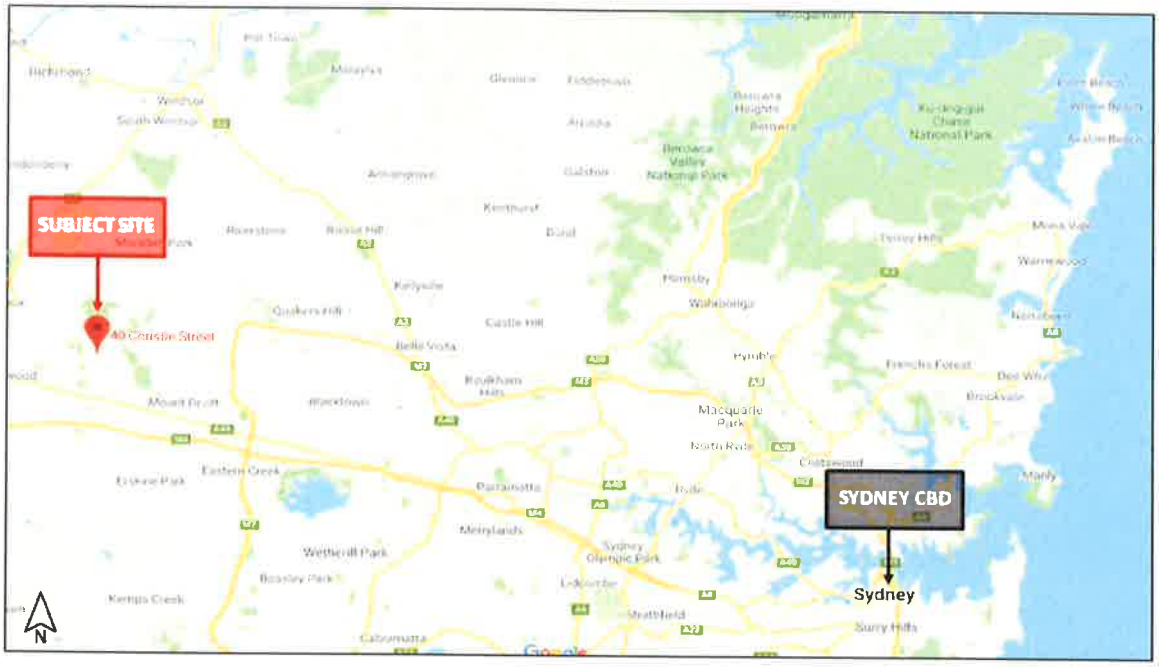

Figure 1 | Site Context

The nearest residential receiver is approximately 570 metres (m) to the south-east of the subject site and is located in a low density residential area predominantly characterised by detached single storey dwellings. Approximately 620 m to the east of the site is a residential aged care facility. Around 600 m to the west of the site is green open space zoned for recreation and environmental conservation purposes including Dunheved Golf Course (see **Figure 2**).

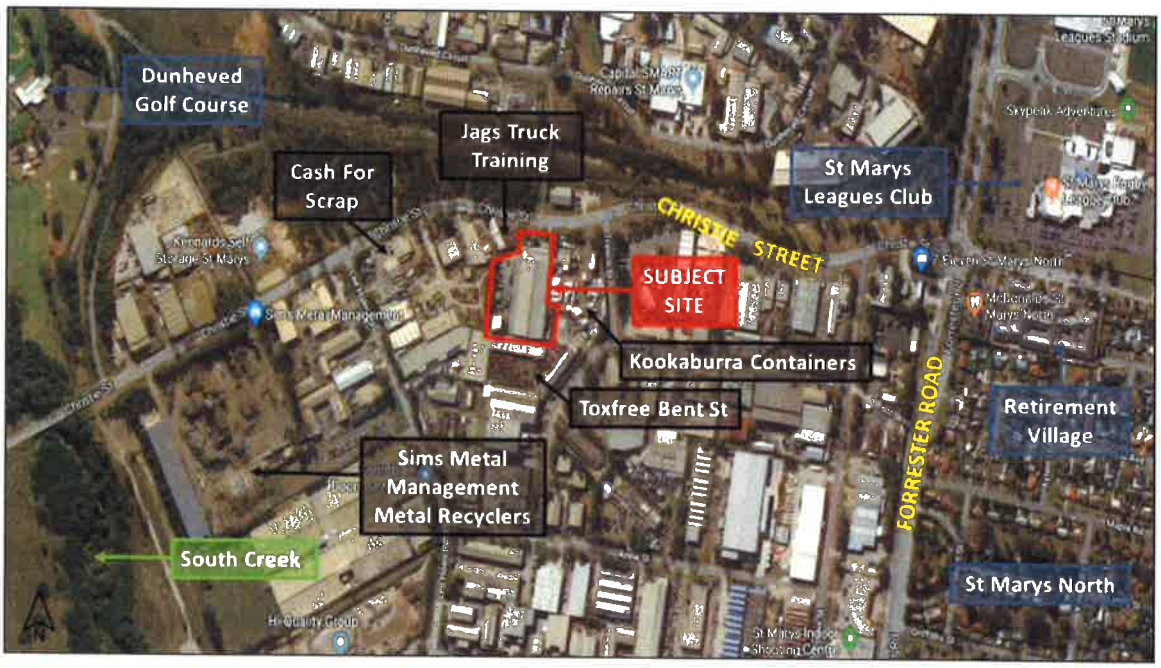

Figure 2 | Site Location

The site contains the existing WMF in a warehouse with ancillary office space, undercover outdoor storage, hardstand, light vehicle car parking, two driveways and some vegetation at the site boundaries (see **Figure 3**).

Figure 3 | The WMF

1.2 Approval History

On 22 December 2006, the then Minister for Planning granted approval to MP 06_0095 for the fit-out of an existing building and operation of a WMF (MP 06_0095) pursuant to Part 3A of the EP&A Act. The approval permitted the following:

- receipt, processing and storage of up to 5,000 tonnes per annum (tpa) of chemical waste, classified under the ADGC between the hours of 6 am to 6 pm
- fit-out of an existing warehouse
- construction and operation of a flammable goods storage area
- transportation of residual waste to specialised recycling facilities.

Since 2006, the project approval has been modified on three occasions, as summarised in **Table 1**. The modifications primarily relate to site layout changes to improve operational efficiency, increase in the waste storage capacity and the introduction of waste processing capabilities.

Table 1 | Summary of Modifications to the Project Approval

Scenario Name	Summary of Modifications	Approval Date
MOD 1	• alterations to the site layout • storage of up to 10 litres (L) of chloropicrin a DG Class 6.1, Packaging Group I material • modification of the on-site gas detection system to include cyanide detection.	6 July 2007

Scenario Name	Summary of Modifications	Approval Date
MOD 2	• chemical immobilisation and solidification (CIS) treatment of selected hazardous wastes • modifications to the internal layout of the WMF • additional treatment technologies - oil filter crushing - aerosol crushing - container cleaning - fluorescent tube crushing - secure product destruction.	3 March 2010
MOD 4	• processing of electronic waste (E-waste) • installation of a weighbridge • relocation and additional car parking at the WMF.	24 May 2018

2. Proposed Modification

The Proponent has lodged a modification request under the former section 75W of the EP&A Act to modify the St Marys WMF. The modification is described in full in the Environmental Assessment (EA) included in **Appendix B** and is illustrated in **Figure 4.**

The proposed modification has five parts:

1. treat and neutralise acid and alkaline liquid waste
2. expand the scope of the treatment capability of approved CIS process to handle a variety of waste streams already approved to be processed on site
3. increase waste storage limits and introduce new waste streams
4. remove the requirement to perform biennial fire drills with Fire and Rescue NSW (FRNSW)
5. amend operating hours.

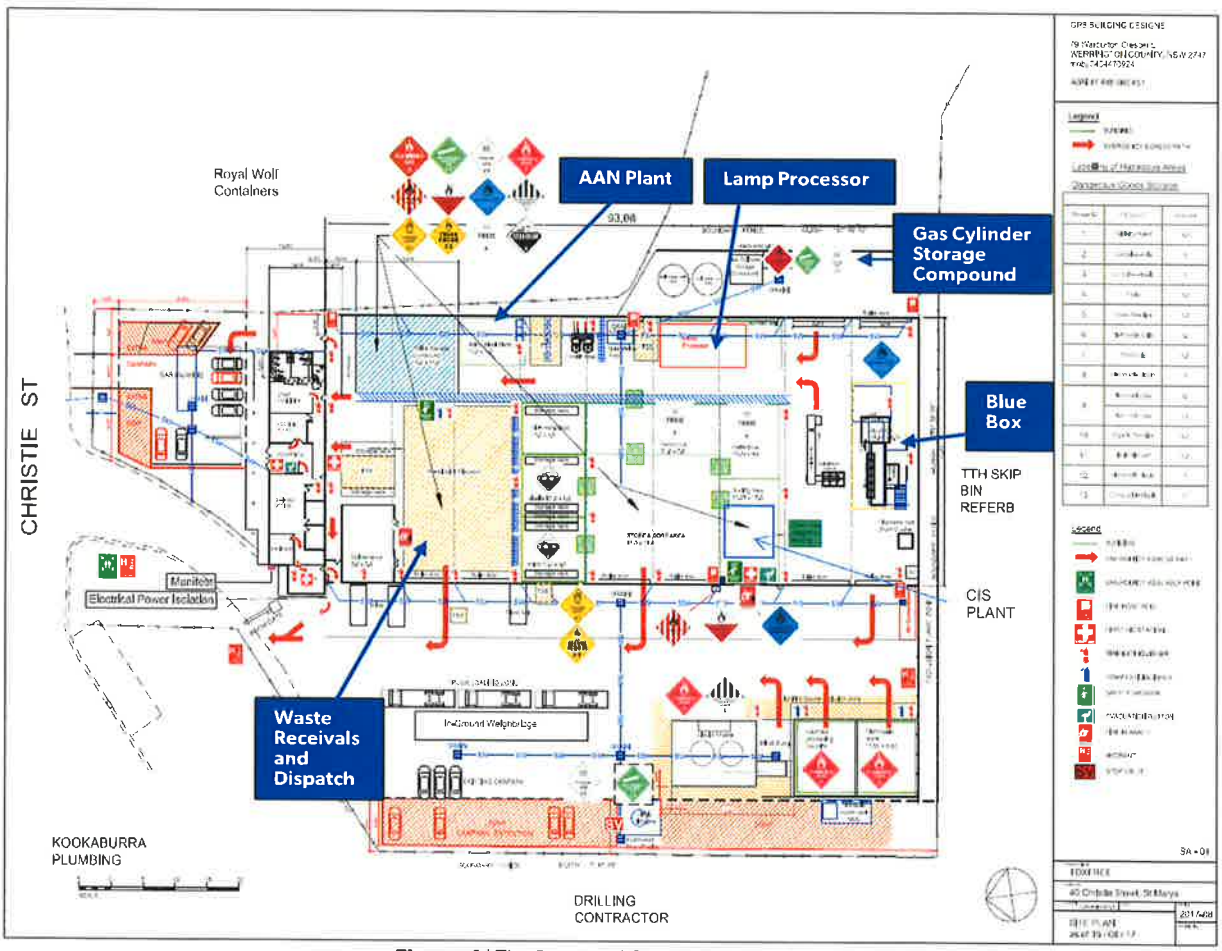

Figure 4 | The Proposed Site Layout

2.1 Acid and Alkaline Neutralisation

The WMF currently receives Class 8 DG (corrosive) (both acidic and alkaline waste) containers (containers of less than 25 L) which have residual quantities of corrosive waste chemicals (namely sulphuric acid, hydrochloric acid, lime, caustic soda and sodium hydroxide) from educational (schools and universities), and commercial and industrial and domestic sources (the residual waste may have been originally used as a chemical product in variety of processes including the manufacturing of goods and services). Currently, the containers received at the WMF are packed onto pallets and transported to the Proponent's waste facility at Wetherill Park where the liquid waste is decanted into intermediate bulk containers (IBC) and pumped out and transported (as a Class 8 DG (corrosive) waste) to a licenced liquid waste facility for disposal.

As an alternative to transporting the containers of residual Class 8 DG (corrosive) waste to its Wetherill Park facility, the Proponent seeks to neutralise the corrosive liquid waste at the site (thereby rendering the hazardous waste as non-hazardous waste) before transporting the waste off-site for waste disposal at a licenced liquid waste facility such as Cleanaway's liquid waste facility at Olympic Park. The following steps are the key components of the AAN process:

- each liquid waste stream is consolidated into a separate 1,000 L IBC
- the AAN stainless steel mixing tank is prefilled with 500 L of consolidated alkali liquid waste
- consolidated acid liquid waste is added to a 1,500 L tank in 1,000 L batches
- pH is continually monitored by a pH/temperature probe with alarms, and caustic would be automatically added if the pH drops below pH 7
- heat from the exothermic reaction is controlled by a refrigerated cooling system which is continuously monitored
- more acid or alkaline would be added as required to achieve a pH of between pH 7 and pH 9.5
- once the pH stabilises within the pH range above, the contents would be pumped to an empty IBC and allowed to settle for one day
- following settling, the liquid would be pumped by a vacuum tanker and transported off-site to a licenced waste facility
- up to four batches would be processed daily, with a maximum of one batch processed per hour.

A caustic scrubbing system would be located within the building and would be used to scrub the air extracted from the decanting station and above the neutralisation tank. The caustic scrubber exhaust would discharge through a three-metre stack above the roof height. The proposed AAN process is summarised in **Figure 5**. The proposed location of the AAN process at the facility is depicted in **Figure 4**. The proposed location of the ANN plant is currently being used to store empty containers in open top IBCs.

The modification also proposes to increase the volume and tonnages of acid and alkaline waste received at the premises for the AAN process. The Proponent has requested to increase the volume of Class 8 DG (corrosive) (acidic) waste stored from 5,000 L to 35,000 L at any given time and Class 8 DG (corrosive) (alkaline) waste stored from 5,000 L to 25,000 L at any given time.

The Proponent has estimated the AAN process would generate up to 5,040 kg/day of liquid waste and 560 kg/day of general solid waste (non-putrescible) or restricted solid waste (sludge) as a by-product of the proposed process (the classification of the sludge would need to be confirmed through laboratory analysis). The neutralised liquid waste would be transferred into IBCs and stored in the load out area, which can store approximately 20 IBCs (up to 4 days of storage). A vacuum tanker would pump out the IBCs and take the liquid waste to a licenced liquid waste treatment facility once confirmation is received from a NATA accredited laboratory that the waste is not hazardous. The sludge would then be transferred to a hook lift bin on-site, prior to being sent off-site as restricted

solid waste to the Kemps Creek Resource Recovery Park. The site has five hook lift bins ranging from 15 m^3 to 32 m^3. The hook lift bin would contain any residual liquid waste.

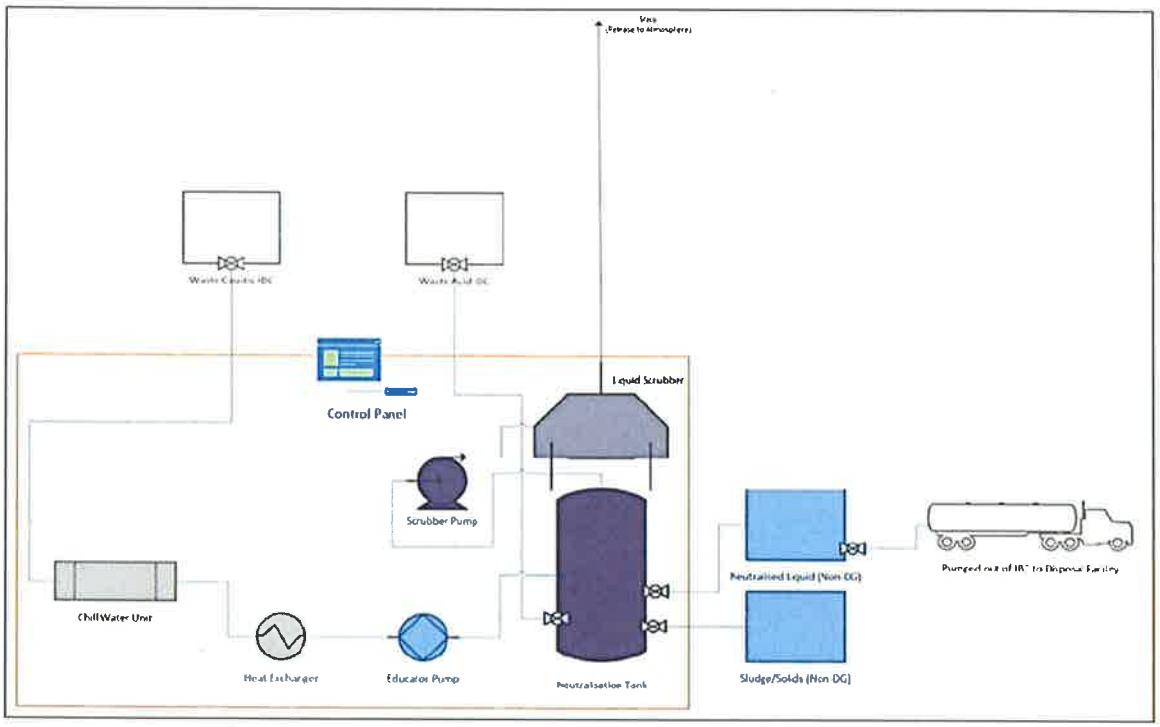

Figure 5 | Acid Alkali Neutralisation Process Flow Diagram

2.2 Chemical Immobilisation and Stabilisation (CIS)

The facility is currently permitted to treat hazardous wastes through the CIS process (approval granted in MOD 2), although the Proponent has stated that CIS treatment of waste is not currently occurring at the site due to changes in contractual arrangements. As such, incoming waste intended for the CIS plant is currently received on-site (the waste is generated from a variety of product applications including residues from industrial waste operations and/or production and formulation of resins, glues and adhesives and/or surface treatment of metals and plastics) then sent off-site for treatment and processing once there are sufficient volumes for transport.

The modification proposes to process wastes approved to be treated in MOD 2 as well as wastes that are currently only approved for storage secured through new contracts. The CIS process would also vary compared to what was approved in MOD 2, in that the waste would be processed within a sealed vessel and in smaller batches as opposed to larger open vessels approved for MOD 2. This is due to different wastes requiring different reagents (chemical or cement based) for immobilisation.

The CIS treatment process involves the addition of chemical reagents to a waste stream to immobilise the contaminant in a non-leachable form and solidify waste into a rigid mass. CIS treatment is typically used to treat inorganic contaminants such as heavy metals but can also be used to treat organic contaminated waste.

The waste would be stored in the assigned storage areas prior to processing. Once a batch is arranged for processing, it would be moved to the sorting area (see **Figure 4**) where the CIS process would occur. The treatment would involve decanting the waste into a small reaction vessel (approximately 250 L in size). The reaction vessel would stir (mix) the waste with reagent(s) continuously until it is cured. A mobile scrubber would be used to extract any vapours emitted through the process as approved in MOD 2.

The Proponent expects to generate 1,000 to 1,500 tonnes of waste per annum from the CIS process. Treated wastes would be stored on-site (in the load out area). The classification of the immobilised waste would need to be confirmed through laboratory analysis in accordance with NSW EPA Waste Classification Guidelines and specific and generic Immobilisation Approvals (2008). Any batch failing these quality assurance tests would be reprocessed by crushing, and then re-immobilised through the CIS process. If the treated waste meets quality control criteria upon curing it is proposed that the immobilised waste would be disposed of as either general solid waste (non-putrescible) or restricted solid waste off-site at a suitably licenced landfill.

2.3 Proposed Maximum Storage Limits

The modification seeks to increase storage limits of waste received and processed at the facility. The modification is also seeking to store additional non-DG waste. A summary of the existing and proposed storage limits is summarised in **Table 2**. The issues associated with the increase in quantity of wastes are assessed and discussed further in **Sections 6**.

Table 2 | Waste and Proposed Waste to be treated through CIS Process

Transport Waste Code	Waste Description	Currently Approved Maximum Storage Limits	Proposed Maximum Storage Limits[1]
Class 2.1	Flammable gases	500 kg	8.64 tonnes
Class 2.2	Non-Flammable non-toxic gases	Not approved	18 tonnes
Class 2.3	Toxic gases	Not approved	100 kg
Class 3	Flammable liquids	92,000 L	92,000 L
Class 4.1	Flammable solids (and other reactive substances)	10 kg	2.5 tonnes
Class 4.2	Substances liable to spontaneous combustion	10 kg	850 kg
Class 4.3	Substances that in contact with water emit flammable gases	10 kg	250 kg
Class 5.1	Oxidising substances	200 kg	2.5 tonnes
Class 5.2	Organic peroxides	200 kg	1 tonne
Class 6.1	Toxic substances	10.5 tonnes	17.5 tonnes
Class 6.2	Infectious substances	Not approved	500 kg
Class 8 – Acidic	PG I, PG II and PG III - Corrosive substances	5,000 L	35,000 L
Class 8- Basic	PG I, PG II and PG III - Corrosive substances	5,000 L	25, 000 L
Class 9	PG II and PG III Miscellaneous DGs and articles		5 tonnes

[1] Not Inclusive of Packaging Mass

Transport Waste Code	Waste Description	Currently Approved Maximum Storage Limits	Proposed Maximum Storage Limits[1]
Class 2 - Combustible Liquids	Flash point <23°C and initial boiling point >35°C.	2,000 L	10,000 L

A summary of the maximum tonnage limit is provided below in **Table 3.**

Table 3 | Waste Storage Limits

Storage Area	Estimated Storage Capacity (Tonnes)	DG Classes Stored
Non-DG Area	200	Non DG
Lamp processing area	70	Non DG, DG 9
Paint sorting area	20	Non-DG, DG 3, DG 9
Flammable Store	92	Non-DG, DG 2.1, DG 3
Toxic Store	70	DG 6.1, DG 6.2, DG 9
Acid Store	40	DG 8
Caustic Store	40	DG 8
DG Storage Cabinets	1-5	DG 4.1, DG 4.2, DG 4.3, DG 5.1, DG 5.2
Gas Cages	Multiple cages 40 tonnes	

The proposed modification is expected to increase truck movements by approximately 10 vehicle movements per week. The heavy vehicle capacity ranges from 2 tonnes to 20 tonnes per load.

2.4 Extension of Operating Hours

The facility is currently approved to operate from 6 am to 6 pm seven days a week. The modification seeks to:

- increase operating hours from 5 am to 10 pm, seven days a week
- allow access to the facility between 10 pm and 5 am to collect equipment in an emergency call out.

The modification to the proposed hours would allow two staffing shifts to be established at the facility. The Proponent stated that no truck movements (except in emergency situations for emergency call-outs) would occur between 6 pm and 6 am.

2.5 Remove Requirement for Biennial Emergency Drills with FRNSW

The modification seeks to amend Condition 13e which requires the Proponent to conduct biennial emergency drills with Dunheved Fire Station. Dunheved Fire Station was previously located adjacent to the facility at 50 Christie St, Dunheved, but now has been relocated to nearby Ropes Creek (located within the Penrith LGA) in 2015.

3. Strategic Context

Greater Sydney Region Plan

In March 2018, the Greater Sydney Commission released the Greater Sydney Region Plan: A Metropolis of Three Cities (the Plan). The Plan is built on a vision of three cities, the Western Parkland City, the Central River City and the Eastern Harbour City. The 40-year vision to 2056 brings new thinking to land use and transport patterns to boost Greater Sydney's liveability, productivity and sustainability by spreading the benefits of growth. The proposed project is located within the Western City District, which was identified as one of the fastest growing districts in Greater Sydney.

The modification request is consistent with the directions and objectives outlined in the Plan, primarily as it would assist in industrial land being retained and managed to support the retention of local recycling and waste management facilities and the recycling of municipal, commercial, industrial and hazardous wastes (Objective 23). The proposed modification would ensure more waste is recycled to support the development of a circular economy (Objective 35).

The modification request would assist in meeting Actions 83 and 84 of the district plan as it supports the reduction of waste volume through increased waste recycling.

NSW Waste Avoidance and Resource Recovery Strategy

The NSW Waste Avoidance and Resource Recovery (WARR) Strategy 2014-21 is a key component of the Government's vision for the environmental, social and economic future of the state that is supported financially by the Waste Less and Recycle More Initiative. Reducing waste and keeping materials circulating within the economy are priorities for the NSW Government. The strategy sets waste recovery targets to be achieved by 2021-22 including the establishment or upgrade of 86 drop-off facilities or services for managing household problem wastes state-wide.

By reducing the amount of problem waste or hazardous waste transported off-site, the proposed expansion of the WMF would reduce the potential harm to the environment and human health and/or and ensure that the recovery and recycling is economic and attainable.

4. Statutory Context

4.1 Scope of Modifications

Under Schedule 2 of the EP&A (STOP) Regulation, the power to modify transitional Part 3A projects under former section 75W of the EP&A Act as in force immediately before its repeal on 1 October 2011 is being wound up – but as the request for this modification was made before the 'cut-off date' of 1 March 2018, the provisions of Schedule 2 (clause 3) continue to apply.

The Department notes that:

- the primary function and purpose of the approved project would not change as a result of the proposed modification
- the modification is of a scale that warrants the use of former section 75W of the EP&A Act
- any potential environmental impacts would be appropriately managed through the existing or modified conditions of approval.

Therefore, the Department is satisfied the modification request is within the scope of former section 75W of the EP&A Act and does not constitute a new development application. Accordingly, the Department considers that the request should be assessed and determined under former section 75W of the EP&A Act rather than requiring a new development application to be lodged.

4.2 Consent Authority

Minister's delegate as consent authority

The Minister for Planning is the approval authority for the request. Under the Minister's delegation of 11 October 2017, the Director, Industry Assessments, may determine the request under delegation as:

- the relevant local council has not made an objection and
- a political disclosure statement has not been made and
- there are no public submissions in the nature of objections.

5. Engagement

5.1 Department's Engagement

Under former section 75W of the EP&A Act, the Department is not required to notify or exhibit the modification request. The modification request was not notified or advertised, however it was made publicly available on the Department's website. The Application was also referred to Penrith City Council (Council), the Environment Protection Authority (EPA) and Fire and Rescue NSW (FRNSW) for comment.

5.2 Key Issues – Government Agencies

Council did not object to the proposed modification request but provided comments on noise, the Preliminary Hazard Analysis (PHA), compatibility of chemicals stored at the site, storage of chemical waste at the site, DG storage and waste volumes.

Environment Protection Authority (EPA) did not object to the modification request with the exception to the Proponent's initial proposal to solidify liquid waste. The EPA did not consider the process of solidifying liquid waste as an appropriate treatment option for disposing of liquid. Accordingly, the Proponent withdrew the proposal to solidify liquid waste from its modification request.

FRNSW did not object to the proposed modification and recommended a condition of approval requiring the Proponent to prepare an updated Fire Safety Study.

The Department raised concerns that the Proponent had not provided an Odour Impact Assessment (OIA) due to the nature of the wastes proposed to be stored on the premises (food waste and sewage waste) and the additional AAN process which had the potential to create odours. As such, the Department requested the Proponent submit an OIA as well as an Air Quality Impact Assessment (AQIA) to ensure the facility would meet the relevant air quality criteria in the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (Approved Methods), especially for Cl_2 and SO_2. The Department discussed these concerns with the EPA who upon further review of the modification request by their Air Technical Unit, reiterated the need for such assessments to be carried out by the Proponent.

The Department's Hazards Team also requested additional information on the technical assumptions associated with the likelihood that a failure may occur as a result of the increase storage and processing of waste.

5.3 Response to Submissions

Between September 2016 and June 2017, the Proponent submitted an OIA and AQIA (prepared by SLR Consulting Australia Pty Ltd) to respond to the issues raised during the exhibition of the modification request. The Proponent also provided responses to some of the issues raised in the submissions in a Response to Submissions (RTS) report.

The RTS was made publicly available on the Department's website and was provided to key agencies to consider whether it adequately addressed the issues raised. A summary of the agencies responses is provided below.

FRNSW and **Council** made no further comments in relation to the RTS.

The Department's Hazards Team was satisfied with the additional information provided in the revised PHA.

Following a review of the AQIA, the **EPA** requested further information in relation to the following:

- an assessment of air emissions from the ANN plant specifically, in relation to potential emissions of Cl_2 and SO_2
- demonstration that the facility would be designed to meet ground level concentrations contained in the Approved Methods for Modelling and Assessment of Air Pollutants in NSW.

The Proponent provided additional information on 22 February 2018 from SLR concerning the emissions rates to ensure compliance with the Clean Air Regulation and a guarantee from the scrubber manufacturer Total Air Pollution Control Pty Ltd (TAC) relating to the performance of the scrubber to address the EPA's concerns. On 12 March 2018, the EPA suggested in a letter that they were satisfied with the information provided and therefore recommended project approval conditions.

The RTS and additional information received in February 2018 unfortunately did not include a response to or a clarification of a number of issues raised by the Department including:

- discrepancies between the PHA and the EIS on the amount of waste to be stored and processed at the site
- further details on the alternative pollution control systems available if the scrubber were to fail to avoid the unmitigated release of Cl_2 and SO_2
- the waste processing and management procedures for the site were not sufficiently detailed
- details on the waste storage capacity of the site due to the discrepancies between the PHA and the EIS on the amount of waste to be stored and processed at the site and a lack of certainty on storage capacity
- updated design drawings for the WMF were needed which included all proposed components of the modification request

The Department met with the Proponent in June 2018 to discuss the outstanding information required to complete the assessment of the proposed modification request. The Proponent indicated they were previously unable to provide the required information in a timely manner due to the availability of their consultant and difficulties they were having with manipulating data from their existing waste recording systems.

Following the meeting, the Proponent submitted updated design drawings and the additional information required by the Department between July and October 2018.

The Department has considered the issues raised in submissions, the RTS and additional information provided in its assessment of the Project. The RTS and additional information is provided at **Appendix D** to this report.

6. Assessment

The Department has assessed the merits of the proposed modification request. During this assessment, the Department has considered the:

- EIS and assessment report for the original application
- existing conditions of approval (as modified)
- EA supporting the proposed modification request **(Appendix B)**
- submissions from State government authorities and Council **(Appendix C)**
- Proponent's RTS (**Appendix D**)
- relevant environmental planning instruments, policies and guidelines
- requirements of the EP&A Act, including the objects of the EP&A Act.

The Department considers the key assessment issues are:

- Hazards and risks
- Air quality and human health

The Department's assessment of other issues is provided in **Table 6**.

6.1 Hazards and Risks

The modification request would introduce new DG classes, increase the quantity of DG waste classes transported and stored at the facility, expand the treatment of DG waste of the existing CIS, treat and neutralise DG waste acid and alkaline waste) and increase trading hours. The modification request and the facility would therefore be considered potentially hazardous and could introduce potential hazard and risk impacts to the locality. This section provides the Department's assessment of the hazard and risk impacts on off-site receivers from the facility as well as impacts of gas releases and incidents.

Preliminary Hazard Analysis (PHA)

The PHA undertaken by Advitech Pty Limited (Advitech) was performed and reported in accordance with the Department's Hazardous Industry Planning and Advisory Paper No. 6 - Hazard Analysis (HIPAP 6). The PHA included the following steps:

- identification of hazards and any risks introduced from operations with potential off-site impacts
- assessment of the consequences of scenarios with off-site and on-site impact potential
- comparison of estimated total risk against the criteria in in Department's Hazardous Industry Planning Advisory Paper No. 4, Risk Criteria for Land Use Safety Planning (HIPAP 4).

Following review of PHA, the Department requested some additional information on the technical assumptions associated with the likelihood that a failure might occur. The Proponent, through the RTS, provided sufficient clarification to supplement the PHA.

The PHA identified the hazards of the expanded facility along with the relevant safeguards. In accordance with HIPAP 6, consequence analysis was performed only for five identified hazardous scenario that may pose off-site impacts. The Department considers the adopted approach is appropriate and a summary of findings is provided in **Table 4**.

Table 4 | Summary of Assessment Results for the Potential Off-site Scenarios

Scenario Type	Scenario Description	Assessment
Release of toxic gas	Release of toxic gases from the AAN process	Consequence modelling determined a potential off-site impact from Cl or SO_2 releases. However, the risks from the toxic releases are well below the relevant individual risk criteria associated with toxic release as listed in HIPAP No. 4. The risk is therefore satisfied.
	Release of toxic fumes/vapour due to spillage of 205 L of volatile toxic liquid – perchloroethylene (PERC) waste	Consequence modelling determined no potential off-site impact from PERC waste release. A release of PERC waste would remain within the site boundary and comply with the relevant individual risk criteria associated with toxic release as listed in HIPAP No. 4. The risk is therefore satisfied.
Heat radiation	A heat radiation scenario involving a pool fire within the 40 kilolitre (kL) flammable liquids bund	Consequence modelling confirmed a potential off-site impact to the neighbouring industrial area. However, the risks from the heat radiation impact is well below the individual risk criteria for industrial land uses as listed in HIPAP No. 4. The risk is therefore satisfied.
Explosion overpressure	A boiling liquid expanding vapor explosion (BLEVE) of a 40 kL flammable liquid	Consequence modelling determined that incident explosion overpressure does not extend to the residential landuse. As such the risk criteria for explosion overpressure as listed in HIPAP No. 4 is satisfied.
	BLEVE of a 45 kg liquified petroleum gas (LPG) cylinder from heating by a pool fire	

The risk analysis in the PHA indicates that the modification request complies with all relevant risk criteria. The individual fatality risk is well below 50 pmpy for industrial land uses. The risk of injury and irritation from toxic releases are below 10 pmpy and 50 pmpy respectively. The individual risks from overpressure and heat impacts (property damage and accident propagation) also satisfy the relevant risk criteria. As such, the Department considers the overall risks from the expanded facility would be below the risk criteria listed in HIPAP 4.

FRNSW were satisfied with the PHA and recommended that the Proponent revise the Fire Safety Study (FSS) for the site. FRNSW requested that they be consulted during the preparation of the FSS.

Overall, the Department is satisfied that the PHA was suitably conservative as the worst-case scenarios were assessed in the PHA. The Department considers the development as modified can continue to comply with the HIPAP 4 risk criteria, provided that all control measures and barriers (safeguards) described in the PHA would be implemented.

The Department has recommended a number of hazards related conditions of approval consistent with HIPAP No. 12 – Hazards-Related Conditions of Consent including:

- limiting the maximum quantity of DG that can be store on-site
- pre-construction requirements including a FSS, Hazard and Operability Study (HAZOP), Final Hazard Analysis Study (FHA) and Construction Safety Study (CSS)
- updating the site Emergency Plan (EP) and Safety Management System (SMS)
- a comprehensive hazard audit of the modification, 12 months after the commencement of operations of the modification and every five years thereafter.

Conclusion

The Department's assessment concludes the methodology used by the Proponent to analyse the consequences, frequencies and off-site impacts of the modification request was appropriate and conservative. The results of the PHA showed that the hazard and risk impacts of the modified facility to off-site receivers is low. The Department's requirements for hazard studies are included in the recommended hazards related conditions of approval, these studies will further reduce the potential risks from the modified facility.

6.2 Air Quality Impacts

The proposed modification has the potential to cause air quality impacts if not appropriately managed. An Air Quality Impact Assessment (AQIA) was prepared by SLR in accordance with the Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales (Approved Methods) (EPA 2017). The aim of the assessment was to quantify the air quality impacts of chlorine (Cl_2) and sulphur dioxide (SO_2) to be emitted from the AAN plant. The AQIA included a quantitative assessment for the AAN plant assessing ground level concentrations of Cl_2 and SO_2. Emissions from the site have been modelled using CALPUFF.

As there are no proposed changes to the CIS process, the AQIA did not include an assessment of the CIS plant. The EPA was satisfied that the air quality impacts of the CIS were not required to be assessed. Whist the modification proposes to treat additional hazardous waste through the CIS plant, the Department is satisfied that the treatment process would remain the same as assessed in MOD 2.

The AQIA used ambient air quality monitoring data from the Bureau of Meteorology (BOM) Penrith meteorological monitoring station (located approximately 9 km west of the site), and the NSW Office of Environment and Heritage's (OEH) Vineyard Air Quality Monitoring Station (AQMS) (located approximately 5 km south of the site) and Richmond AQMS (located approximately 14 km north-west of the site). The EPA raised no issue with the background monitoring data obtained and considered it to be representative of ambient air quality conditions in the local air environment.

The AQIA modelled the potential air quality impacts of the AAN plant at sensitive receivers including residential receivers located approximately 570 m to the south-east in St Mary's North (see **Figure 6**). In addition to sensitive receivers, ground level concentrations for Cl_2 were also assessed along the boundary of the site to identify any impacts on industrial receivers as required by the Approved Methods.

The AQIA predicted the SO_2 and Cl_2 concentrations at sensitive receivers would be well below the project criterion of 50 $\mu g/m^3$ for Cl_2 and 570 $\mu g/m^3$ for SO_2 (for the 99th percentile 1-hour average). The AQIA predicted for industrial receivers, exceedances of the 99.9th percentile 1-hour average ground level concentrations criterion of 50 $\mu g/m^3$ for Cl_2 along all the boundaries of the site (see **Table 5**). However, the AQIA predicted the maximum 8-hour average concentrations predicted along the site boundary are well below the worker exposure standard (WES) time weighted average (TWA) of 3000 $\mu g/m^3$ (the WES TWA is the average airborne concentration of Cl_2 permitted for a worker over an eight-hour working day and a 5-day working week).

The AQIA noted the dispersion modelling is viewed as conservative as it assumes a worst-case chemical reaction between a concentrated acid and alkali in the AAN process, thereby releasing more Cl_2 gas. The modelling does not include the use of pollution control equipment to manage any gas release. To achieve compliance with the EPA ambient air quality criterion, the assessment noted that a scrubbing system with a minimum 99 % removal efficiency would be installed to neutralise the hydrochloric acid and capture the resulting Cl_2 gas emission.

Table 5 | Dispersion Modelling Predicted Chlorine Concentrations

Receptor	Predicted Cl_2 Concentrations (µg/m³)	
Industrial Area	99.9th Percentile 1-Hour Average Criteria: 50 µg/m³	Maximum 8-Hour Average Criteria: 3,000 µg/m³
Highest along northern boundary	**204**	76
Highest along eastern boundary	**665**	281
Highest along southern boundary	**228**	91
Highest along western boundary	**256**	105

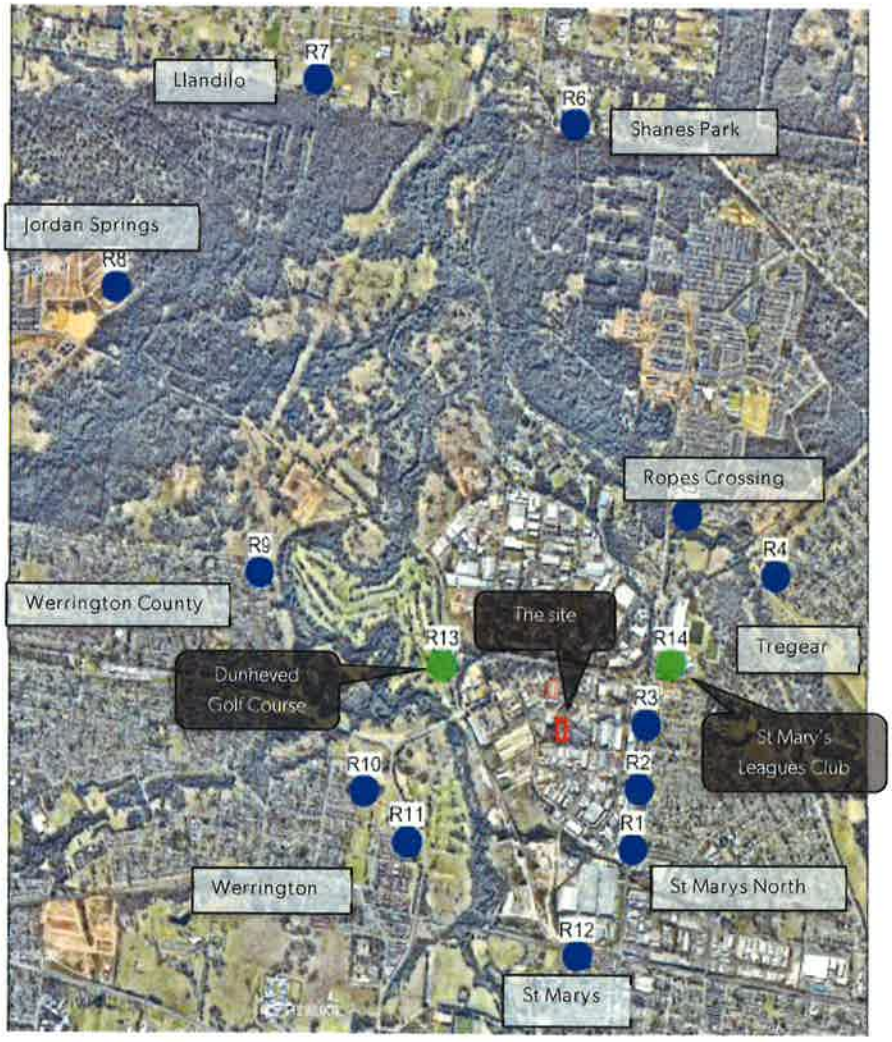

Figure 6 | Sensitive Receivers

As part of the modification request, the Proponent proposed to install a scrubber to remove any gas generated from the AAN plant. The EPA requested additional information regarding the ground level modelling presented in the AQIA and requested that the Proponent demonstrate compliance with the *Protection of the Environment*

Operation (Clean Air) Regulation, 2010 (the Clean Air Regulation) (for Cl_2). Further, the EPA also requested the Proponent demonstrate that the scrubber proposed to be installed can be designed and operated to comply with the impact assessment criteria contained in the Approved Methods for Cl_2 at the boundaries of the site (i.e. 99.9th percentile 1-hour average ground level concentrations criterion of 50 µg/m^3). The Department requested further information on the mechanisms that would be available if the scrubber failed.

The Proponent provided additional information on the emissions rates from SLR and a manufacturer guarantee from Total Air Pollution Control Pty Ltd (TAC) with information on the performance of the scrubber to address the EPA's concerns. The Proponent also provided further correspondence from TAC on the plant shut down mechanism should the scrubber fail.

The additional stack emission data provided by SLR, included detailed calculations which demonstrated the modelling used in the impact assessment criteria (99.9th percentile 1-hour average criteria of 50 µg/m^3 measured at or beyond the boundary of the facility) would be achieved with a maximum allowable discharge concentration of 1,500 mg/m^3 for Cl_2 at the stack. However, the Clean Air Regulation emission limit is 200 mg/m^3 for Cl_2 and therefore a scrubber has been proposed to achieve this limit.

TAPC have guaranteed that the scrubber technology has a removal efficiency of over 99 % for both Cl_2 and SO_2 gas discharged from the scrubber (equivalent to a maximum of 15 mg/m^3 of Cl_2 or a 99 % reduction). The resultant discharge concentration with the scrubber installed would meet the Clean Air Regulation emission limits of 200 mg/m^3 for Cl_2 and would be well below the maximum discharge concentration established by SLR to achieve compliance with the impact assessment criteria at the boundaries of the site (1,500 mg/m^3).

In relation to scrubber failure, the Proponent advised the Department the Australian Standards (AS) 4024 .1 - Safety of machinery requires an emergency stop function to the mixer and feed process. If the scrubber were to fail the automated program would give staff a direct warning via alarm and message for the system to be shut down immediately.

The Department and the EPA were satisfied the AQIA was modelled sufficiently as it assumes a worst-case emission scenario without the use of pollution control equipment to manage any gas release. The EPA advised that the additional information provided adequately addressed the remaining issues and no additional modelling was required. The EPA stated that the stack discharge concentration provided by the manufacturer for Cl_2 is an order of magnitude lower than the discharge concentration initially outlined in the AQIA and as a result, the Proponent would be able to achieve compliance with the impact assessment criteria contained in the Approved Methods.

The Department is satisfied that the Proponent provided sufficient information to demonstrate that if the scrubber were to fail during the AAN process, a fail-safe system would be in place to prevent an unmitigated discharge of Cl_2 and SO_2.

The EPA had no further comments in relation to the scrubber performance. The EPA recommended the Proponent conduct post commissioning stack sampling to confirm the performance of the proposed scrubber once operational. The EPA stated that it would consider including emission limits on the EPL following the post commissioning of the scrubber. The Department has considered the comments from the EPA and recommended the following conditions of approval which require the Proponent to:

- ensure that the scrubber is designed, constructed, operated and maintained to achieve a minimum control efficiency of 99 % for Cl_2 and SO_2
- conduct post commissioning stack sampling to confirm the performance of the scrubber
- prepare a post commissioning test report which will compare the sampling results with the emission concentrations contained in the AQIA.

Conclusion

The Department has reviewed the AQIA and the EPA's submission. The EPA advised it was satisfied the AQIA has been modelled sufficiently to ensure compliance with the Approved Methods at all receivers including those industrial receivers immediately adjacent to the facility and the Clean Air Regulation limit would be achieved through the installation of a scrubber with 99 % removal efficiency. The Department has incorporated the EPA's recommended conditions of approval into the modification approval. The Department is satisfied that if the scrubber system was to fail an emergency stop function and alarm system would be in place to prevent emissions during AAN process.

The Department's assessment concludes the predicted Cl_2 concentrations are well below the Approved Methods criteria at all adjoining boundaries immediately adjacent to the facility and the Clean Air Regulation limit would be achieved through the installation of a scrubber with 99 % removal efficiency. The Department has recommended stringent-conditions on the modification approval (including requirements for a minimum control efficiency of 99 % for the wet scrubber and air emissions verification report) which would adequately manage any residual air quality impacts.

6.3 Other Issues

Table 7 | Summary of other issues raised

Findings	Recommended Condition
Operational Waste Management • There is a risk that increased volumes of waste has the potential to cause impacts on the surrounding area if not appropriately stored or managed. • The proposed modification seeks to increase the maximum quantities of various DGs waste and non-DGs stored at the facility and would generate additional waste from the processing of hazardous waste through the AAN and CIS process. (see **Table 3**). The EA included the maximum DG storage capacity for each DG storage area which was summarised in **Table 4**. • All wastes containers with residue are stored within the warehouse and a concrete lip sits across the doorway of the warehouse which contains any spills internally. • The wastes created from the AAN processes are proposed to be stored in designated and bunded areas within the warehouse. Wastes from AAN process would be stored in IBCs with sufficient capacity to store four days of waste. • Waste from the CIS process would be stored in hook-lift bins with sufficient capacity to store up seven days of waste. • Based on the proposed maximum quantities of all classes of DGs waste, the storage capacity of the waste storage areas and the environmental controls at the site, the Department considers that the WMF has adequate capacity to store the proposed increase in DGs. • The EPA and FRNSW were satisfied with the storage arrangements at the site. • The Department has recommended maximum storage limits based on the PHA as well as additional conditions including a requirement for the Proponent to prepare a waste management plan (WMP) and an operational waste monitoring program (OWMP) to address receipt, acceptance, storage, processing and disposal. The Proponent would also be required to undertake a Hazard Audit which would assess compliance with AS and the ADGC. • The Department's assessment concludes the facility can manage the increase in waste volumes as there is sufficient storage capacity and appropriate controls in place in the event of a spill.	Require the Proponent to: • prepare a waste management plan • prepare a waste monitoring process • ensure maximum DG storage limits are adhered to • ensure maximum non-DG storage limits are adhered to.

Findings	Recommended Condition
Odour • The processing of waste has the potential to cause offensive odours in the surrounding area if not managed appropriately. • SLR carried out a qualitative risk assessment following a request by the Department for the Proponent to carry out an Odour Impact Assessment to address any potential odour impacts from the site on surrounding industrial and residential receivers. The EPA were generally satisfied with this approach. • SLR found that: o given the small scale of the AAN plant (the scrubber would remove any potential odour sources), the potential odour impact was considered to be negligible (the impact is predicted to cause no significant consequence) and considered unlikely to impact industrial receivers and residential receivers (due to distance with nearest residential receivers approximately 570 m to the south east) with a frequency duration and/or intensity that that could be considered offensive in nature. o odour impacts if a spill occurred from liquid food waste and sewage was negligible and unlikely to occur as these waste streams would not be processed or decanted into other containers and would remain stored in sealed containers and transported off-site. • The EPA did not provide any comments in relation to the odour impact assessment and did not recommend any conditions. SLR did not recommend any mitigation or management measures in the odour impact assessment. • The Department's assessment concludes there would be negligible odour impacts from the storage or processing of waste at the facility on industrial and residential receivers as the scrubber used by the AAN plant would remove any potential odours generated from the processing of DG waste, and food and sewage waste would not be processed or decanted and would remain within sealed containers. • Furthermore, condition 5 of the project approval requires the Proponent to ensure no offensive odours are emitted from the facility.	Require the Proponent to: • keep food and sewage waste contained within an enclosed container • not process food or sewage waste.
Traffic • The expansion of the facility would generate additional traffic movements to and from the site which could impact on the safety, capacity and efficiency of the surrounding road network. • The facility has access to Christie Street and Werrington Road to the west and Forrester Road and Glossop Street to the east which both have direct access to Great Western Highway to the south and Great Northern Road to the north-west. All roads have been designed for B-double heavy vehicles, however the facility would operate with a maximum sized heavy vehicle of a semi-trailer. • The Proponent noted that currently the facility generates approximately 44 heavy vehicle movements per day (vmd) and approximately 60 small vmd (staff movements). • The Proponent advised the increased tonnages delivered to the site would be accommodated primarily in available capacity in existing trucks and only 10 additional heavy vehicle movements would be created per week. • The Proponent advised in relation to staff movements there would not be any additional employment from the expansion. The existing number of employees would be divided into two shifts to allow the increased operational hours. Therefore, existing on-site parking arrangements approved under MOD 4 would remain sufficient.	• No additional conditions required.

Findings	Recommended Condition
• As part of the MOD 4 approval, the Department recommended a condition of approval that required the Proponent to prepare an Operational Traffic Management Plan (OTMP) for the modification. The Department considers the OTMP plan required in MOD 4 and the existing traffic management conditions are adequate to address any Traffic Management issues that may arise. • The Department's assessment concludes that the minor increase in heavy vehicle movements would not be expected to impact the capacity or efficiency of the road network in the industrial area.	
Noise	
• Additional trucks movements, extended operating hours (from 6 am to 6 pm to 5 am to 10 pm) and the storage and processing of additional waste has the potential to create additional noise impacts compared to existing site noise levels. • The Proponent did not submit a Noise Impact Assessment (NIA) for the modification request. However, a NIA was submitted as part of the MOD 4 request which considered the proposed extended operating hours and assessed the potential noise impacts of the increased processing capacity of electronic waste (E-waste) at the facility (using machinery known as a Blue Box). The AAN treatment process was not considered in the NIA. • The Department considers that the noise impacts from the AAN treatment process would be significantly less than automated machinery shredding E-waste, additionally the site is surrounded by industrial receivers and the closest residential receiver is located is approximately 570 m to the south-east of the site. • The NIA identified the main noise sources at the site to be truck and forklift movements. The NIA predicted the primary source of additional noise would be shredding of electronic waste (E-waste) and the minor increase in truck movements. • The NIA concluded that despite the additional noise sources, the modified facility would comply with noise criteria prescribed in the Industrial Noise Policy (INP) at the nearest industrial and residential receivers. The modelling was conservative as it considered that the building roller doors would remain open during operation which would not be the case. • As part of the MOD 4 approval the Department recommended a condition of approval that required the roller doors to be kept closed or alternatively be fitted with fast opening/closing shutters to be operated from 5 am to 7 am and 9 pm to 10 pm. • The Proponent also advised it would not permit heavy vehicle movements to and from the site between 6 pm and 6 am. • The EPA did not provide any comments in relation to noise impacts from the proposed Project. Council requested that potential noise impacts associated with the proposed extension of operating hours be considered to ensure compliance with the Industrial Noise Policy (2000). • The Department has recommended a condition that prohibits heavy vehicle movements between 6 pm and 6 am. • The Department's assessment concludes the additional trucks movements, extended operating hours and the storage and processing of additional waste at the site would comply with the relevant noise criteria and the proposal would result in minimal additional noise impacts.	Require the Proponent to: • limit the operation of the facility to proposed hours • ensure no heavy vehicle movements to and from the site occur between the hours of 6 pm and 6 am • establishment of standard noise and vibration criteria.

Findings	Recommended Condition
Removal of the Biennial Emergency Drills • The modification request seeks to amend Condition 13a and the requirement to undertake biennial emergency drills with FRNSW's Dunheved Fire Station (the Fire Station). • The Fire Station is no longer located adjacent to the site and for this reason, the Proponent advised it was no longer necessary to have FRNSW involvement in emergency drills. • FRNSW did not object to the modification and confirmed that the Fire Station relocated from Christie Street St Marys to Plasser Crescent, St Mary's and therefore considers it is no longer necessary to perform the biennial fire drills with the Proponent. • The Department is satisfied that Condition 13a can be amended to remove the requirement to perform the biennial fire drills as it is no longer relevant due to the location change of the Fire Station.	• Delete the requirement to undertake emergency drills with Fire and Rescue NSW in condition 13a

7. Evaluation

The Department has assessed the modification request in accordance with the relevant requirements of the EP&A Act. The Department considers the modification request is appropriate on the basis that:

- it would result in minimal environmental impacts beyond the approved facility
- it would result in less hazardous waste being transported on roads
- the proposed hazardous waste and dangerous goods waste handling and disposal process is robust and appropriate
- the modified Project would result in an acceptable hazard and risk impacts on off-site receivers
- the modified Project would meet relevant air quality limits at sensitive receivers

The Department is satisfied that the modification request should be approved, subject to conditions.

8. Recommendation

It is recommended that the Director, Industry Assessments, as delegate for the Minister for Planning:

- **considers** the findings and recommendations of this report
- **determine** that the request (06_0050 MOD 3) falls within the scope of former section 75W of the EP&A Act
- **determine** that the environmental assessment requirements have been addressed
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application
- **modify** the consent MP 06_0050
- **signs** the attached modification of approval **(Appendix A)**.

Recommended by:

12/12/18

Susan Fox
Senior Planning Officer, Industry Assessments

Recommended by:

12/12/18.

Kelly McNicol
Team Leader, Industry Assessments

9. Determination

The recommendation is: **Adopted by:**

C. Ritchie 19/12/18.

Chris Ritchie
Director
Industry Assessments

Appendices

Appendix A – Notice of Modification

Appendix B – Environmental Assessment

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7641

Appendix C – Submissions

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7641

Appendix D – Submissions Report

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7641

Appendix E – Consolidated Approval

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7641