



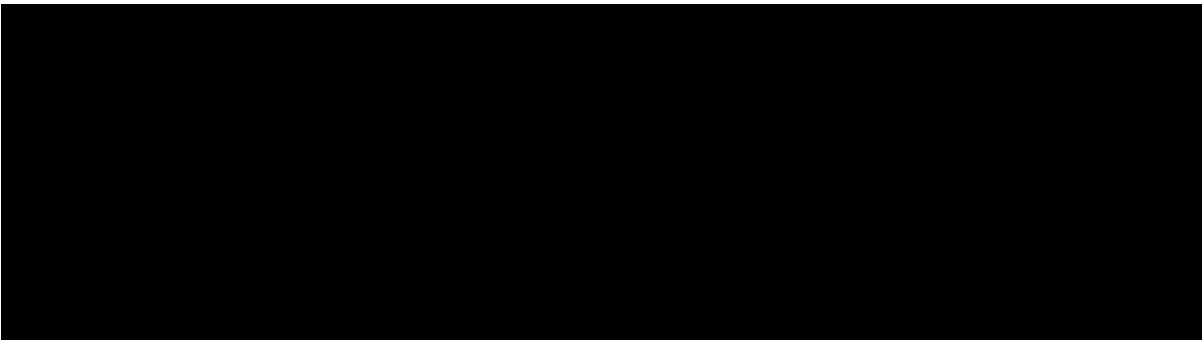
Environmental Commissioning Report

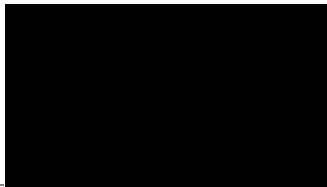
Nexus Recycling, 8 Winchester Road, Bibra Lake

Revision 0

February 2022

CALIBRE | COMMITMENT | COLLABORATION






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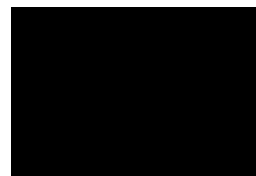
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1 Introduction

1.1 Project Overview

[REDACTED] were granted a Works Approval by the Department of Water and Environmental Regulation (DWER) to construct a Used Lead Acid Battery (ULAB) facility at 8 Winchester Road, Bibra Lake (the site).

The original Works Approval (W6304/2019/1) was granted on 3 April 2020. A subsequent application was submitted to amend the Works Approval to allow for time limited operations. The amended Works Approval was granted on 18 October 2021(Appendix 1).

1.2 Progress Summary

Construction of the facility in accordance with the Works Approval condition commenced in January 2020.

Installation of the equipment and infrastructure was completed on 11 November 2021. DWER were notified that the completion of equipment and infrastructure installation at the site on 26 November 2021. A Structural Engineering report was provided at this time to identify compliance with the Works Approval requirements (i.e. Condition 3).

DWER were notified of the intention to commence commissioning on 5 November 2021, with the commissioning commencement date being 24 December 2021.

The project has now completed the commissioning phase and is ready to move into the time limited operations stage.

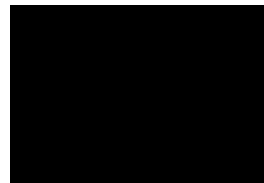
1.3 Purpose of this Report

This report has been prepared to address Condition 11 of the Works Approval which states:

11. *The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion of each stage of environmental commissioning as outlined in Table 2, which shall include:*
 - a. *a summary of the monitoring results recorded under Condition 9;*
 - b. *the quantity of material processed during commissioning;*
 - c. *the original monitoring reports submitted to the works approval holder from third parties during each stage of commissioning;*
 - d. *a review of performance against the works approval conditions; and*
 - e. *where they have not been met, measured proposed to meet the design specification and/or works approval conditions, together with timeframes for implementing the proposed measure.*

The above information requirements are presented in the following sections of this report:

- 11(a) – Section 2
- 11(b) – Section 3
- 11(c) – Appendix 3
- 11(d) – Section 4
- 11(e) – all requirements were met therefore no additional measures proposed.



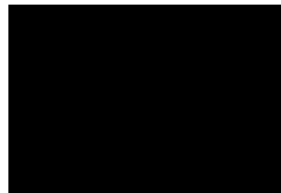
1.4 Time Limited Operations and Licence Application

Following submission of this report the project will commence time limited operations. Condition 12 addresses the requirements for commencement of time limited operation and states:

12. *The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1 when:*
 - a. *Results from monitoring required by condition 9 are compliant with the requirements of Workplace Exposure Standards for Airborne Contaminants (Safe Work Australia, 2019); and*
 - b. *The Environmental Commissioning Report for that item of infrastructure as required by condition 11 has been submitted to the CEO.*

It is noted that the requirements of Condition 12(a) have been met as described in Section 2. Condition 12(b) is addressed through the submission of this report.

A DWER licence application has also been prepared and will follow the submission of this report.



2 Pressure and Air Quality Monitoring

2.1 Monitoring Requirements

The following monitoring requirements were applicable to the environmental commissioning stage of the project (Table 2-1).

Table 2-1: Monitoring required during environmental commissioning

Commissioning Stage	Monitoring Location	Parameter	Unit	Frequency	Averaging Period
Wet testing	Mist eliminator inlet pipe	Negative pressure	N/m ² psi mm/Hg	Hourly	N/A
Full scale testing	Mist eliminator inlet pipe	Negative pressure	N/m ² psi mm/Hg	Hourly	N/A
	Mist eliminator outlet pipe (sample location 5 as depicted on Figure 1)	H ₂ SO ₄ ²	mg/m ³	Once off	8 hours
	Air sampler locations 1, 2, 3 and 4 (as depicted on Figure 1)	H ₂ SO ₄ ²	mg/m ³	Once off	8 hours

2.2 Monitoring Results

2.2.1 Pressure testing

Pressure levels at the mist eliminator inlet pipe were recorded by the [redacted] commissioning team on each day of the commissioning program as follows:

Wet Testing (5 days)

- 24/12/2021
- 29/12/2021
- 30/12/2021
- 31/12/2021
- 04/01/2022

Full Scale Testing (16 days)

- 05/01/2022
- 06/01/2022
- 07/01/2022
- 10/01/2022
- 11/01/2022
- 17/01/2022
- 18/01/2022
- 19/01/2022
- 21/01/2022
- 24/01/2022
- 14/02/2022
- 15/02/2022
- 16/02/2022
- 17/02/2022
- 18/02/2022
- 21/02/2022

A full copy of the pressure testing logs are provided in Appendix 2 with a summary of key findings provided below:

- Mist eliminator pressure during wet testing ranged from:
 - -0.36 kPa which equates to -360 N/m², to
 - -0.64 kPa which equates to -640 N/m²



- Mist eliminator pressure during full scale testing ranged from:
 - -0.55 kPa which equates to -550 N/m², to
 - -0.7 kPa which equates to -700 N/m²
- All results were found to be negative pressure therefore meeting the required criteria.

2.2.2 Ambient sulphuric acid testing

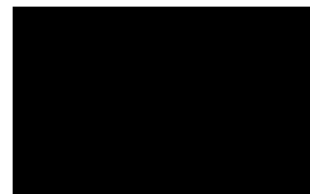
Monitoring of ambient sulphuric acid (H₂SO₄) concentrations at air sampler locations 1 to 5 was undertaken by [REDACTED] is a National Association of Testing Authorities (NATA) accredited company to ISO/IEC17025. Laboratory analysis was undertaken by ChemCentre who are also NATA accredited.

A copy of the [REDACTED] report is provided in Appendix 3 with a summary of the results provided below:

- The current SafeWork Australia time-weighted average (TWA) workplace exposure standard for H₂SO₄ is 1 mg/m³. The detected TWA concentrations for H₂SO₄ sampling, conducted on 21 January 2022, were found to be below this value for each of the five locations monitored (Table 2-2).

Table 2-2: Sulphuric acid monitoring results

Sample Location	Sample Time	Sample Duration (minutes)	Sulphuric Acid (mg/m ³)
TWA workplace exposure standard			1
Air Sampler Location 1	0707 – 1510	483	0.27
Air Sampler Location 2	0714 – 1515	481	0.19
Air Sampler Location 3	0717 – 1520	483	0.16
Air Sampler Location 4	0721 – 1528	487	0.21
Mist Eliminator Outlet Pipe (Location 5)	0725 – 1525	480	0.32



3 Material Processed

The quantity of material processed during the commissioning phase was 527 T (Table 3-1).

Table 3-1: Material processed during full scale testing

Date	Tonnes Crushed (daily)	Tonnes Crushed (cumulative)
05/01/2022	7.5	8
06/01/2022	9	17
07/01/2022	18	35
10/01/2022	6	41
11/01/2022	12	53
17/01/2022	34.5	87
18/01/2022	42	129
19/01/2022	55.5	185
21/01/2022	57	242
24/01/2022	15	257
14/02/2022	40.5	297
15/02/2022	63	360
16/02/2022	18	378
17/02/2022	48	426
18/02/2022	36	462
21/02/2022	64.5	527

The cumulative quantity crushed remained below the quantity limit of 1000 Tonnes of ULAB as outlined in Condition 6.

4 Performance Review

All performance requirements, assessed against the Works Approval conditions, have been met (Table 4-1).

Table 4-1: Summary of Performance

Condition No.	Requirement	Performance
Construction Phase		
1	Infrastructure and equipment constructed and installed to DWER requirements	Requirement met as outlined within the Structural Engineering Report supplied to DWER on 26 November 2021.
2	No departure from the construction and installation requirements unless the departure does not increase risks to public health, public amenity or the environment	No departures from the construction and installation requirements were necessary
3	Structural Engineering certification required within 30 days of construction completion	Structural Engineering Report supplied to DWER on 26 November 2021 which was 13 days after construction and installation had been completed.
4	Provide DWER a description of any departures from the construction and installation requirements	No departures from the construction and installation requirements were necessary
Environmental Commissioning Phase		
5	Notify DWER at least 1 week prior to commencement of commissioning	DWER notified of commencement of commissioning on 5 November 2021, with commissioning commencing on 24 December 2021.
6	Wet testing not to exceed 5 days Full scale testing not to exceed 30 days or 1000 tonnes of ULAB	Wet testing duration was 5 days Full scale testing duration was 16 days with 527 tonnes of ULAB processed
7	Commissioning activities restricted to 0700 to 1900 Monday to Saturday	Hour and day restrictions complied with
8	Roller doors to warehouse to be closed during commissioning	Roller doors were closed during commissioning
9	Pressure and air quality monitoring required as per Table 3	Monitoring undertaken as described in Section 2 with all results within required limits
10	Laboratory samples to be analysed by a NATA accredited laboratory for parameter listed in Table 3.	Laboratory analysis was undertaken by ChemCentre who are NATA accredited (see Section 4 of Appendix 3) for the air quality parameter listed in Table 3.
11	Environmental Commissioning Report to be prepared and submitted to DWER	This report
Time Limited Operations Phase		
12	Time limited operations to commence following compliance with condition 9 and submission of	All monitoring results complied with Condition 9. Environmental Commissioning Report now submitted.



Condition No.	Requirement	Performance
	the Environmental Commissioning Report to DWER	
13-32	See Appendix 1	Ongoing



Appendix 1 DWER Works Approval W6304/2019/1



Works approval number W6304/2019/1

Works approval holder [REDACTED]

ACN 634 958 179

Registered business address [REDACTED]
[REDACTED]
[REDACTED]

DWER file number DER2019/000504

Duration 03/04/2020 to 02/04/2040

Date of amendment 18/10/2021

Premises details [REDACTED]
[REDACTED]
[REDACTED]

Legal description -
Lot 82 on Deposited Plan 418427

Prescribed premises category description (Schedule 1, <i>Environmental Protection Regulations 1987</i>)	Assessed production capacity
Category 47 Scrap metal recovery: premises (other than premises within category 45) on which metal scrap is fragmented or melted, including premises on which lead acid batteries are reprocessed.	30 240 tonnes per annum

This works approval is granted to the works approval holder, subject to the attached conditions, on 18 October 2021, by:

[REDACTED]
MANAGER
WASTE INDUSTRIES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Works approval history

Date	Reference number	Summary of changes
03/04/2020	W6304/2019/1	Works approval granted.
18/10/2021	W6304/2019/1	Amended works approval to incorporate time limited operations

Interpretation

In this works approval:

- (a) the words 'including', 'includes' and 'include' in conditions mean "including but not limited to", and similar, as appropriate;
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a condition, each row in a table constitutes a separate condition;
- (d) any reference to an Australian or other standard, guideline, or code of practice in this works approval:
 - (i) if dated, refers to that particular version; and
 - (ii) if not dated, refers to the latest version and therefore may be subject to change over time;
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and
- (f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must:
 - (a) construct and/or install the infrastructure;
 - (b) in accordance with the corresponding design and construction / installation requirements; and
 - (c) at the corresponding infrastructure location;
 as set out in Table 1.

Table 1: Design and construction / installation requirements

Infrastructure	Design and construction / installation requirements
Used lead acid battery reprocessing plant	<ul style="list-style-type: none"> • Designed and constructed to receive and process up to 30 240 tonnes per annum of used lead acid batteries. • Reprocessing equipment to be free of leaks and defects.
Warehouse	<ul style="list-style-type: none"> • Floor to be free of leaks and defects and constructed with concrete with a permeability of $\leq 1 \times 10^{-9}$ m/sec. • Floor to be enclosed with a concrete bund • Floor to contain a drain that collects spills and discharges back into the reprocessing system.
Crusher (hammer mill)	<ul style="list-style-type: none"> • To be fitted with plastic curtains, spray bars and air bags. • To be fitted with a Mist Eliminator that ensures negative pressure during operation and captures, collects and returns acid mist into the reprocessing system. • Mist Eliminator to be fitted with a fine mesh filter with co-knit glass or teflon fibres, such as the Dupont Towergard mesh pad, or equivalent. • Mist Eliminator to be fitted with a pressure gauge.
Epoxy liner	<ul style="list-style-type: none"> • To be applied in accordance with the Manufacturer's instructions to meet the chemical resistance level of dilute sulphuric acid. • To be installed to sufficient distance to capture potential spillage by jetting. • To be installed under the following equipment: <ul style="list-style-type: none"> ○ ULAB storage area ○ Apron feeder ○ Crusher (hammer mill) & Shredder ○ Primary & Secondary screens ○ Lead metal classifying tank ○ Plastics classifying tank ○ Recirculation tank, surge tank and elutriator ○ Slurry tank, clean acid tank, wastewater treatment plant area.
Laundry	<ul style="list-style-type: none"> • Waste water from all washing machines is to be plumbed for disposal to the wastewater treatment system
Stormwater drainage	<ul style="list-style-type: none"> • External to the warehouse, to direct uncontaminated stormwater off the Premises and into the stormwater system

2. The works approval holder must not depart from the requirements specified in Table 1 except:
 - (a) where such departure does not increase risks to public health, public amenity or the environment; and
 - (b) all other Conditions in this works approval are still satisfied.
3. Within 30 days of the completion of the Works specified in Table 1, the works approval holder must provide to the CEO an engineering certification from a Suitably Qualified Structural Engineer confirming each item of infrastructure or component of infrastructure specified in Table 1 below has been constructed with no material defects and to the requirements specified in Table 1.
4. Where a departure from the requirements specified in Table 1 occurs and is of a type allowed by condition 2, the works approval holder must provide to the CEO a description of, and explanation for, the departure along with the certification required by condition 3.

Environmental commissioning phase

5. The works approval holder must notify the CEO in writing at least one (1) week prior to the commencement of commissioning.
6. The works approval holder must ensure that each stage of commissioning does not exceed the commissioning period and quantity limit specified in Table 2.

Table 2: Stages of environmental commissioning

Commissioning stage	Aspect	Commissioning period	Quantity limit
Wet testing	Used lead acid battery reprocessing plant	5 days	N/A
Full scale testing		Up to 30 days	1000 tonnes of ULAB

7. The works approval holder may only perform commissioning activities from 0700 to 1900 Monday to Saturday.
8. The works approval holder must ensure the roller doors of the warehouse are closed during commissioning activities involving operation of the crusher (hammer mill).
9. The works approval holder must undertake the monitoring specified in Table 3 during environmental commissioning.

Table 3: Monitoring during environmental commissioning

Commissioning stage	Monitoring location	Parameter	Unit	Frequency	Averaging Period
Wet testing	Mist eliminator inlet pipe	Negative pressure ¹	N/m ² psi mm/Hg	Hourly	N/A
Full scale testing	Mist eliminator inlet pipe	Negative pressure ¹	N/m ² psi mm/Hg	Hourly	N/A
	Mist eliminator outlet pipe (5)	H ₂ SO ₄ ²	mg/m ³	Once off	8 hours
	Air Sampler Locations 1, 2, 3 and 4 (as depicted in Figure 1)	H ₂ SO ₄ ²	mg/m ³	Once off	8 hours

Note 1: in-field, non-NATA accredited analysis permitted.

Note 2: Workplace Exposure Standards for Airborne Contaminants (Safe Work Australia, 2019)

10. The works approval holder must ensure that all laboratory samples collected under condition 9, are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in Table 3.
11. The works approval holder must submit to the CEO an Environmental Commissioning Report within 30 calendar days of the completion of each stage of environmental commissioning as outlined in Table 2, which shall include:
 - (a) a summary of the monitoring results recorded under Condition 9;
 - (b) the quantity of material processed during commissioning;
 - (c) the original monitoring reports submitted to the works approval holder from third parties during each stage of commissioning;
 - (d) a review of performance against the works approval conditions; and
 - (e) where they have not been met, measures proposed to meet the design specification and/or works approval conditions, together with timeframes for implementing the proposed measures.

Time limited operations phase

Commencement and duration

12. The works approval holder may only commence time limited operations for an item of infrastructure identified in condition 1 when:
 - (a) results from monitoring required by condition 9 are compliant with the requirements of Workplace Exposure Standards for Airborne Contaminants (Safe Work Australia, 2019); and
 - (b) the Environmental Commissioning Report for that item of infrastructure as required by condition 11 has been submitted to the CEO.
13. The works approval holder may conduct time limited operations for an item of infrastructure specified in condition 1:
 - (a) for a period not exceeding 180 calendar days from the day the works approval holder meets the requirements of condition 12 for that item of infrastructure; or
 - (b) until such time as a licence for that item of infrastructure is granted in accordance with Part V of the *Environmental Protection Act 1986*, if one is granted before the end of the period specified in condition 13(a).

Fire and emergency management

14. The works approval holder must implement a Fire and Emergency Management Plan that is consistent with Australian Standard AS 3745. The plan must include, but is not limited to:
 - (a) notification procedures for fire and major spill incidents;
 - (b) how fires will be prevented, detected, responded to, suppressed, contained and controlled for all approved activities addressing all waste types and for all stages of the waste handling, sorting and storage process;
 - (c) in the event of a fire occurring at the premises, how impacts to the environment and human health will be mitigated;
 - (d) how staff will be trained in fire and emergency response on an ongoing, annual basis;

- (e) details on the firefighting equipment in place and/or accessible at the premises and the fire response capabilities and responsibilities;
- (f) how major spills will be responded to and contained for all approved activities addressing all potential waste types;
- (g) a premises map displayed at the front of the premises depicting an after hours contact details, plus the location and layout of:
 - (i) fire hose reels, hydrants, sprinklers and isolation points;
 - (ii) electrical isolation points;
 - (iii) sub-surface drainage infrastructure, including details on flow direction and off-site discharge locations (if applicable);
 - (iv) system shutdown points; and
 - (v) fire response access points to the premises;

15. The works approval holder must ensure the fire and emergency management requirements in Table 4 are complied with in the event of a fire.

Table 4: Fire and emergency management requirements

Management Requirement		Fire and emergency management requirements
1.	Fire suppression system	The fire suppression system must be connected to mains water supply, or alternatively have a minimum water supply and capacity that provides the maximum hydraulic demand for a minimum of four hours.
2.	Firewater containment	<p>(a) Any firewater that is discharged at the premises must be contained within the areas that are covered by hardstand or low permeability surfaces.</p> <p>(b) The containment capacity for firewater must be calculated with the fire hydrant flow rates prescribed in Australian Standard AS 2419.1 and cumulatively the discharge densities prescribed in Australian Standard AS 2118.1 where automatic sprinklers are used:</p> <ul style="list-style-type: none"> (i) for all fully-enclosed structures; and (ii) individually for each outside hardstand and low permeability catchment area. <p>(c) The containment capacity for firewater, no less than the volumes calculated in Table 4, row 2(b), must be permanent or achieved automatically when the fire system is activated on the premises.</p> <p>(d) Where the premises storm water management system is integrated as part of the containment capacity for firewater, relevant drains and discharge points that discharge off the premises must automatically close when the fire system is activated on the premises.</p> <p>(e) Bunding must be available to prevent fire water from entering other drains and discharge points.</p> <p>(f) Contingency arrangements must exist for the removal of firewater, in excess of the containment capacity, by a carrier licensed under the <i>Environmental Protection (Controlled Waste) Regulations 2004</i>, to ensure firewater does not discharge to the environment.</p>
3.	Spill management	<p>(a) Spill kits are to be provided, be stocked and maintained; and</p> <p>(b) Adequate spill management practices are to be conducted on an as needs basis.</p>
4.	Notifications ¹	Notifications must follow procedures outlined in the Fire and Emergency Management Plan required by Condition 14.

Note 1: Notification requirements may include advising the Department of Fire and Emergency Services, Western Australian Police, Ambulance Services, the Department of Water and Environmental Regulation and neighbouring premises.

Infrastructure and equipment

16. During time limited operations, the works approval holder must ensure that the premises infrastructure and equipment listed in Table 5 is maintained and operated in accordance with the operational requirement set out in Table 5.

Table 5: Infrastructure and equipment requirements during time limited operations

Infrastructure	Operational requirements
Used lead acid battery reprocessing plant	<ul style="list-style-type: none"> The plant is to be operated to receive and process up to 30 240 tonnes per annum of used lead acid batteries. Reprocessing equipment is to be maintained in accordance with the manufacturer's specifications and to be free of leaks and defects.
Warehouse	<ul style="list-style-type: none"> Flooring is to be maintained to be free of leaks and defects and the concrete is to be maintained as impermeable. Floor drain is to be maintained to be free of leaks and defects, to collect spills and discharges, and direct spills and discharges back into the reprocessing system. Internal areas of the warehouse are wet cleaned and external areas vacuumed daily.
Crusher (hammer mill)	<ul style="list-style-type: none"> The plastic curtains, spray bars and air bags are to be maintained in accordance with the manufacturer's specifications and to be free of leaks and defects. The Mist Eliminator is to be maintained in accordance with the manufacturer's specifications to ensure negative pressure is maintained during operation and captures, collects and returns acid mist into the reprocessing system. The fine mesh filter of the Mist Eliminator is to be maintained and replaced in accordance with the manufacturer's specifications. The pressure gauge of the Mist Eliminator is to be maintained in accordance with the manufacturer's specifications and to be free of leaks and defects.
Epoxy liner	<ul style="list-style-type: none"> To be maintained in accordance with the manufacturer's specifications to meet the chemical resistance level of dilute sulphuric acid. Coverage of the liner must be maintained at a sufficient distance from the operational equipment to capture potential spillage by jetting. To be maintained under the following equipment: <ul style="list-style-type: none"> ULAB storage area; Apron feeder; Crusher (hammer mill) & Shredder; Primary & Secondary screens; Lead metal classifying tank; Plastics classifying tank; Recirculation tank, surge tank and elutriator; and Slurry tank, clean acid tank, wastewater treatment plant area.
Laundry	<ul style="list-style-type: none"> Washing machine filters are maintained in accordance with the manufacturer's specifications and to be free of leaks and defects. Plumbing is maintained to be free of leaks and defects and to ensure all waste water from all washing machines is directed for disposal to the wastewater treatment system.
Stormwater drainage	<ul style="list-style-type: none"> Maintained to ensure uncontaminated stormwater is directed off the Premises and into the stormwater system.

17. The works approval holder must only allow waste to be accepted onto the Premises if:
- (a) It is of a type listed in Table 6;
 - (b) The quantity accepted is below any limit listed in Table 6; and
 - (c) It meets any specification listed in Table 6.

Table 6: Waste acceptance

Waste	Waste Code	Quantity Limit
Used lead acid batteries	D221	30 240 tonnes per annum

18. The works approval holder may only perform time limited operational activities from 0700 to 1900 Monday to Saturday.
19. The works approval holder must ensure the roller doors of the warehouse are closed during time limited operational activities involving operation of the crusher (hammer mill).
20. The works approval holder must immediately recover, or remove and dispose of, spills of environmentally hazardous materials including lead, sulfuric acid, fuel, oil, or other hydrocarbons, whether they occur inside or outside an engineered containment system.

Monitoring

21. The works approval holder must undertake the monitoring specified in Table 7 during time limited operations.

Table 7: Monitoring of inputs and outputs during time limited operations

Inputs/Outputs	Parameter	Units	Averaging period	Frequency
Used lead acid batteries	Volume	Tonnes	Per load	Each load entering the premises
Lead paste	Volume	Tonnes	Per load	Each load leaving the premises
Gypsum	Volume	Tonnes	Per load	
Any other waste and/or product outputs from the premises ¹	Volume	Tonnes	Per load	

Note 1: excluding discharges to the sewer system that are in accordance with the Trade Waste Licence

22. The works approval holder must undertake the monitoring specified in Table 8 during time limited operations.

Table 8: Monitoring during time limited operations

Row	Monitoring location	Parameter ¹	Unit	Limit	Frequency	Averaging Period
1	Mist eliminator inlet pipe	Negative pressure	kPa (gauge)	N/A	Continuous	N/A
2	Mist eliminator outlet pipe (5)	H ₂ SO ₄ ²	mg/m ³	1.0	Quarterly	4 – 8 hours
3	Air sampler locations 1, 2, 3 and 4 (as depicted in Figure 1)	H ₂ SO ₄ ²	mg/m ³	1.0	Quarterly	4 – 8 hours

Note 1: in-field, non-NATA accredited analysis permitted.

Note 2: Workplace Exposure Standards for Airborne Contaminants (Safe Work Australia, 2019)

23. The works approval holder must, as soon as a limit specified in row 2 within condition 22 is identified as being exceeded, immediately isolate and cease operating that section of the plant, investigate the source of the limit breach and rectify any issues, prior to recommencing time limited operations.
24. The works approval holder must, as soon as a limit specified in row 3 within condition 22 is identified as being exceeded, immediately isolate and cease operating the plant, investigate the source of the limit breach and rectify any issues, prior to recommencing time limited operations
25. The works approval holder must ensure that monitoring is undertaken in each quarterly period such that there are at least 45 days in between the days on which samples are taken in successive quarters.
26. The works approval holder must ensure that all monitoring equipment used on the Premises to comply with the conditions of this works approval is calibrated in accordance with the manufacturer's specifications.
27. The works approval holder must ensure that all laboratory samples collected under condition 22 are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

Compliance reporting

28. The works approval holder must submit to the CEO a report on the time limited operations within 30 calendar days of the completion date of time limited operations or 30 calendar days before the expiration date of the works approval, whichever is the sooner.
29. The works approval holder must ensure the report required by condition 28 includes the following:
- a summary of the time limited operations, including timeframes and quantity of ULAB processed;
 - a summary of monitoring results obtained during time limited operations under conditions 21 and 22 .
 - a summary of the environmental performance of all infrastructure as constructed or installed;

- (d) a review of performance and compliance against the conditions of the works approval and the Environmental Commissioning Report; and
- (e) where the manufacturer's design specifications and the conditions of this works approval have not been met, what measures will the works approval holder take to meet them, and what timeframes will be required to implement those measures.

Records and reporting

- 30.** The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:
 - (a) the name and contact details of the complainant, (if provided);
 - (b) the time and date of the complaint;
 - (c) the complete details of the complaint and any other concerns or other issues raised; and
 - (d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.
- 31.** The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:
 - (a) the works conducted in accordance with condition 1;
 - (b) monitoring programmes undertaken in accordance with conditions 9, 21 and 22;
 - (c) any investigation outcomes and rectification works implemented in accordance with condition 23 and condition 24; and
 - (d) complaints received under condition 30.
- 32.** The books specified under condition 31 must:
 - (a) be legible;
 - (b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;
 - (c) be retained by the works approval holder for the duration of the works approval; and
 - (d) be available to be produced to an inspector or the CEO as required.

Definitions

In this works approval, the terms in Table 9 have the meanings defined.

Table 9: Definitions

Term	Definition
Australian Standard AS 2118.1	means Standards Australia AS 2118.1 <i>Automatic fire sprinkler system Part 1 General systems</i> .
Australian Standard AS 2419.1	means Standards Australia AS 2419.1 <i>Fire hydrant installations Part 1: System design, installation and commissioning</i> .
Australian Standard AS 3745	means Standards Australia AS 3745 <i>Planning for emergencies in facilities</i> .
books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the <i>Environmental Protection Act 1986</i> Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V Division 3 of the EP Act.
discharge	has the same meaning given to that term under the EP Act.
emission	has the same meaning given to that term under the EP Act.
environmental commissioning	means the sequence of activities to be undertaken to test equipment integrity and operation, or to determine the environmental performance, of equipment and infrastructure to establish or test a steady state operation and confirm design specifications.
Environmental Commissioning Report	means a report on any commissioning activities that have taken place and a demonstration that they have concluded, with focus on emissions and discharges, waste containment, and other environmental factors.
EP Act	<i>Environmental Protection Act 1986 (WA)</i> .
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i> .
firewater	means water that, in the event of a fire, has been used to extinguish a fire and all materials and combusting products dissolved or suspended within such water and includes other fire suppressant substances such as foams
H ₂ SO ₄	Sulfuric acid
kPa (gauge)	means kilopascal gauge pressure

Term	Definition
mg/m ³	means milligram per cubic meter
NATA	means the (Australian) National Association of Testing Authorities.
premises	the premises to which this licence applies, as specified at the front of this licence and as shown on the premises map (Figure 1) in Schedule 1 to this works approval.
prescribed premises	has the same meaning given to that term under the EP Act.
quarterly	means occurring once in each quarter of the year being January to March, April to June, July to September and October to December.
Suitably Qualified Structural Engineer	means a person who: (a) holds a Bachelor of Engineering recognised by the Institute of Engineers; and (b) has a minimum of five years of experience working in a supervisory area of structural engineering; and (c) is employed by an independent third party external to the works approval holder's business; or is otherwise approved in writing by the CEO to act in this capacity.
time limited operations	refers to the operation of the infrastructure and equipment identified under this works approval that is authorised for that purpose, subject to the relevant conditions.
ULAB	means used lead acid batteries.
waste	has the same meaning given to that term under the EP Act.
works approval	refers to this document, which evidences the grant of the works approval by the CEO under section 54 of the EP Act, subject to the conditions.
works approval holder	refers to the occupier of the premises being the person to whom this works approval has been granted, as specified at the front of this works approval.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in the map below (Figure 1).

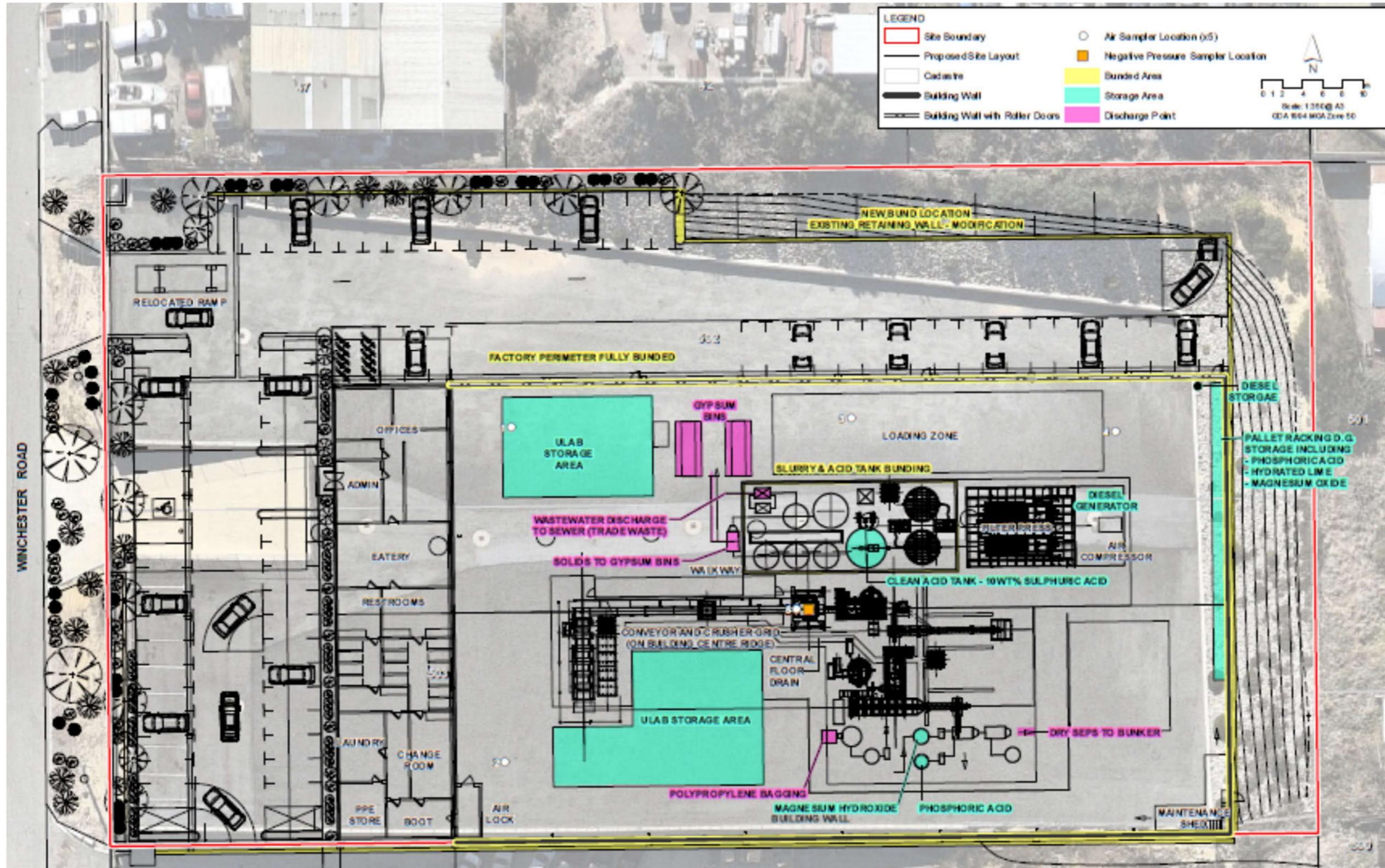


Figure 1: Map of the boundary of the prescribed premises

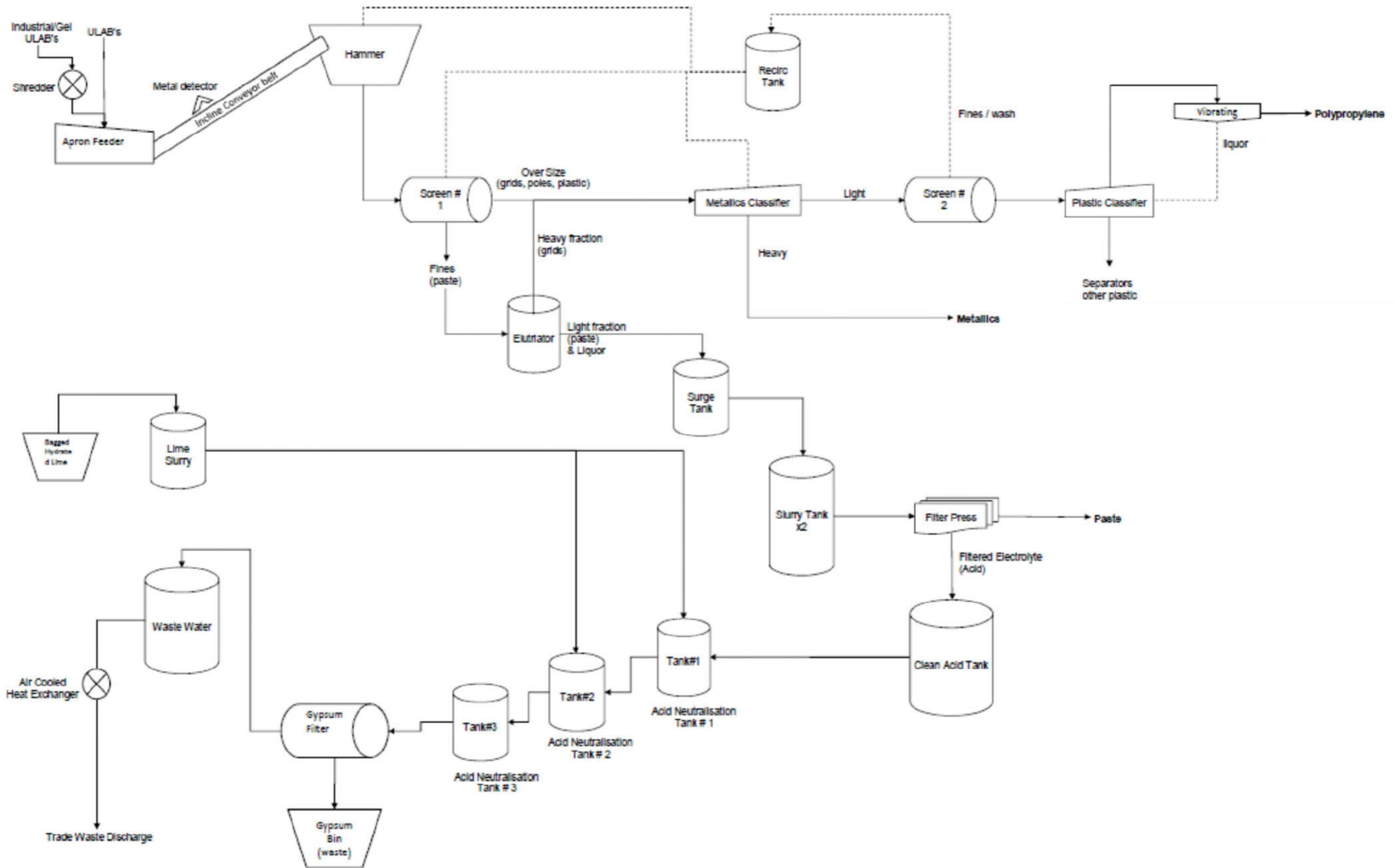


Figure 2: Process flow schematic



Appendix 2 Pressure Testing Logs

Day 1

Stage	Date	Time	Mist Eliminator Pressure (kPa)	Mist Eliminator Pressure (N/m ²)
Wet Commissioning	24/12/2021	12:00 PM	- 0.50	- 500
Wet Commissioning	24/12/2021	12:30 PM	- 0.46	- 460
Wet Commissioning	24/12/2021	1:00 PM	- 0.40	- 400
Wet Commissioning	24/12/2021	1:30 PM	- 0.38	- 380
Wet Commissioning	24/12/2021	2:00 PM	- 0.36	- 360

Day 2

Stage	Date	Time	Mist Eliminator Pressure (kPa)	Mist Eliminator Pressure (N/m ²)
Wet Commissioning	29/12/2021	1:00 PM	- 0.42	- 420
Wet Commissioning	29/12/2021	1:30 PM	- 0.46	- 460
Wet Commissioning	29/12/2021	2:00 PM	- 0.47	- 470
Wet Commissioning	29/12/2021	2:30 PM	- 0.47	- 470
Wet Commissioning	29/12/2021	3:00 PM	- 0.45	- 450

Day 3

Stage	Date	Time	Mist Eliminator Pressure (kPa)	Mist Eliminator Pressure (N/m ²)
Wet Commissioning	30/12/2021	1:30 PM	- 0.45	- 450
Wet Commissioning	30/12/2021	2:00 PM	- 0.44	- 440
Wet Commissioning	30/12/2021	2:30 PM	- 0.51	- 510

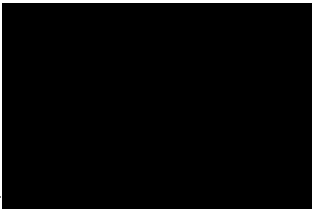
Day 4

Stage	Date	Time	Mist Eliminator Pressure (kPa)	Mist Eliminator Pressure (N/m ²)
Wet Commissioning	31/12/2021	10:30 AM	- 0.64	- 640
Wet Commissioning	31/12/2021	11:00 AM	- 0.64	- 640
Wet Commissioning	31/12/2021	11:30 AM	- 0.54	- 540
Wet Commissioning	31/12/2021	2:00 PM	- 0.49	- 490
Wet Commissioning	31/12/2021	2:30 PM	- 0.60	- 600

Day 5

Stage	Date	Time	Mist Eliminator Pressure (kPa)	Mist Eliminator Pressure (N/m ²)
Wet Commissioning	4/01/2022	8:30 AM	- 0.49	- 490
Wet Commissioning	4/01/2022	9:00 AM	- 0.64	- 640
Wet Commissioning	4/01/2022	9:30 AM	- 0.49	- 490
Wet Commissioning	4/01/2022	10:00 AM	- 0.60	- 600
Wet Commissioning	4/01/2022	10:30 AM	- 0.60	- 600
Wet Commissioning	4/01/2022	11:00 AM	- 0.52	- 520

Stage	Date	Hours Crushing	Mist Eliminator Pressure (kPa) Hourly Results	Mist Eliminator Pressure (N/m2) Hourly Results
Full Scale Testing	5/01/2022	3	-0.55, -0.60, -0.66	-550, -600, -660
Full Scale Testing	6/01/2022	2	-0.61, -0.60	-610, -600
Full Scale Testing	7/01/2022	3	-0.65, -0.63, -0.64	-650, -630, -640
Full Scale Testing	10/01/2022	1	-0.62	-620
Full Scale Testing	11/01/2022	2	-0.68, -0.70	-680, -700
Full Scale Testing	17/01/2022	5	-0.7, -0.7, -0.7, -0.7, -0.7	-700, -700, -700, -700, -700
Full Scale Testing	18/01/2022	6	-0.69, -0.72, -0.69, -0.68, -0.69, -0.67	-690, -720, -690, -680, -690, -670
Full Scale Testing	19/01/2022	7	-0.66, -0.65, -0.67, -0.66, -0.65, -0.68, -0.65	-660, -650, -670, -660, -650, -680, -650
Full Scale Testing	21/01/2022	7	-0.68, -0.69, -0.66, -0.67, -0.64, -0.66, -0.66	-680, -690, -660, -670, -640, -660, -660
Full Scale Testing	24/01/2022	2	-0.67, -0.65	-670, -650
Full Scale Testing	14/02/2022	6	-0.66, -0.68, -0.67, -0.68, -0.69, -0.68	-660, -680, -670, -680, -690, -680
Full Scale Testing	15/02/2022	6	-0.70, -0.67, -0.69, -0.71, -0.68, -0.67	-700, -670, -690, -710, -680, -670
Full Scale Testing	16/02/2022	2	-0.71, -0.70	-710, -700
Full Scale Testing	17/02/2022	5	-0.67, -0.69, -0.68, -0.68, -0.68	-670, -690, -680, -680, -680
Full Scale Testing	18/02/2022	4	-0.68, -0.69, -0.70, -0.69, -0.68	-680, -690, -700, -690, -680
Full Scale Testing	21/02/2022	6	-0.68, -0.68, -0.69, -0.65, -0.66, -0.67	-680, -680, -690, -650, -660, -670



Appendix 3 Sampling Report





Workplace Sampling Report

Report Number R011917



Reference: R011917

Date: 10/02/2022

Prepared for: [REDACTED]



Document Information

Template Version 211117

Client Name: [REDACTED]
Report Number: R011917
Date of Issue: 10 February 2022
Attention: [REDACTED]
Address: [REDACTED]
Testing Laboratory: [REDACTED]

Report Authorisation



This document is confidential and is prepared for the exclusive use of [REDACTED] and those granted permission by [REDACTED].
The report shall not be reproduced except in full.

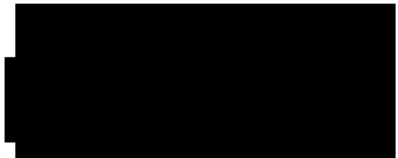


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1 Executive Summary

1.1 Background

[REDACTED] was engaged by [REDACTED] to perform workplace monitoring at their Bibra Lake plant. Testing was carried out in accordance with WA Department of Water and Environmental Regulation (DWER) Works Approval W6304/2019/1.

1.2 Project Objective

The objective of the project was to quantify ambient sulfuric acid (H₂SO₄) concentrations at five locations to determine compliance with Nexus Recycling's Works Approval W6304/2019/1.

Monitoring was performed as follows:

Location	Test Date	Test Parameters
Air Sampler Location – 1	21 January 2022	Sulfuric acid (H ₂ SO ₄)
Air Sampler Location – 2		
Air Sampler Location – 3		
Air Sampler Location – 4		
Mist eliminator outlet pipe – 5		

Test results are compared to SafeWork Australia Workplace Exposure Standards of airborne contaminants. Specifically, the relevant 8-hour Time Weighted Average (TWA) WES expressed as the airborne concentrations of that substance. This document can be found at:

<http://hcis.safeworkaustralia.gov.au/ExposureStandards>

All results are corrected to STP (standard conditions of temperature and pressure) i.e. 25°C and an atmospheric pressure of 101.325 kPa, unless otherwise specified.

1.3 Results Summary

The current SafeWork Australia time-weighted average (TWA) workplace exposure standard for H₂SO₄ is 1 mg/m³. The detected TWA concentrations for H₂SO₄ sampling, conducted on 21 January 2022, were found to be below this value for each of the five locations monitored.

1.4 Action Limits

These standards should not be viewed as a definitive line between safe and unsafe workplace atmospheres, and for this purpose action limits (that are set at 50% of the relevant workplace exposure standard) should trigger the implementation of control measures to prevent any future increases in airborne contaminant concentrations. In this case, the action limit should be the goal for airborne contaminant concentrations after relevant controls have been implemented.

2 Results

2.1 Sulfuric acid (H₂SO₄)

Compound	CAS-No	Units	TWA	Air Sampler Location 1	Air Sampler Location 3	Air Sampler Location 4	Air Sampler Location 2	Mist Eliminator Outlet Pipe (5)
Sample Time (hhmm)				0707 - 1510	0714 - 1515	0717 - 1520	0721 - 1528	0725 - 1525
Sample Duration (minutes)				483	481	483	487	480
Sulfuric Acid (H ₂ SO ₄)	7664-93-9	mg/m ³	1	0.27	0.19	0.16	0.21	0.32

3 Plant Operating Conditions

See [REDACTED] records for complete process conditions.

4 Test Methods

All sampling performed by [REDACTED] unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling Method	Analysis Method	Uncertainty*	NATA Accredited	
				Sampling	Analysis
Sulfuric acid	NIOSH Method 7908	ChemCentre iANIO1AFIC	not specified	x	x [†]

211028

* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

† Analysis conducted at ChemCentre, NATA accreditation number 8. Results were reported on 09/02/2022 in report 21S3039 R0.

5 Quality Assurance/Quality Control Information

[REDACTED] is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for [REDACTED] at NATA's website www.nata.com.au.

[REDACTED] is accredited by NATA (National Association of Testing Authorities) to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.



6 Definitions

The following symbols and abbreviations may be used in this test report:

NIOSH	The National Institute for Occupational Safety and Health
RPE	Respiratory Protective Equipment
PPE	Personal Protective Equipment
Peak Limitation	For some rapidly acting substances and irritants, the averaging of the airborne concentration over an eight-hour period is inappropriate. These substances may induce acute effects after relatively brief exposure to high concentrations and so the exposure standard for these substances represents a maximum or peak concentration to which workers may be exposed. Although it is recognised that there are analytical limitations to the measurement of some substances, compliance with these 'peak limitation' exposure standards should be determined over the shortest analytically practicable period of time, but under no circumstances should a single determination exceed 15 minutes.
STEL	(Exposure Standard - Short term exposure limit) expressed as airborne concentrations of substances, provides a guideline for which the worker should not be continuously exposed to for more than 15 minutes. A minimum of 60 minutes should be allowed between each exposure and the worker should not be exposed more than four times during the day. Reference : Exposure Standards for Atmospheric Contaminants in the Occupational Environment, 3rd Ed. Worksafe Australia Standard, May, 1995.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 25°C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa, unless otherwise specified.
TWA	(Exposure Standard - Time Weighted Average) expressed as airborne concentrations of substances, is an average concentration which provides a guideline value a worker should not be exposed to over an eight hour working day. Excursions above this value are permitted (within STEL limitations) providing these excursions are compensated with equivalent excursions below the standard during the working day. However, because some substances can give rise to acute health effects even after brief exposures to high concentrations, it is evident that excursions above the TWA concentration should be restricted. Reference : Exposure Standards for Atmospheric Contaminants in the Occupational Environment, 3rd Ed. Worksafe Australia Standard, May, 1995.
WES	Workplace Exposure Standard.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

