Riskcon engineering

HAZARD AUDIT

Regain Services Pty Ltd

Regain Hazard Audit
Document No. RCE-25133[Regain-HA]-RPTFinal(Rev0)-28Mar25
Date 28/03/2025

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Prepared by

RiskCon Engineering Pty Ltd
37 Pogson Drive
Cherrybrook, NSW 2126
www.riskcon-eng.com
ABN 74 626 753 820

Quality Management

Report No: RCE-25133[Regain-HA]-RPTFinal(Rev0)-28Mar25

Rev	Date	Remarks	Prepared By	Reviewed By
A	24 March 2025	Draft for comment	Steve Sylvester	Renton Parker
0	28 March 2025	Final		

EXECUTIVE SUMMARY

Introduction, Objectives and Scope

Regain Services Pty Ltd (Regain) operates a Spent Potline (SPL) processing facility, at the Tomago Aluminium site. Tomago, NSW. As part of regulatory conditions of consent, on completion of a plant capacity expansion project, Regain are required to carry out a Hazard Audit for submission to the NSW Department of Planning, Housing & Infrastructure (DPHI). DPHI requires the study to be conducted by an independent auditor and, hence, Regain has commissioned RiskCon Pty Ltd (RiskCon) to conduct the Hazard Audit and prepare a report detailing the audit results.

The objectives of the audit are to conduct a hazard audit of the Regain facility at the Tomago Smelter following the requirements of Hazardous Industry Planning Advisory Paper No. 5 – Hazard Audit Guidelines.

The scope of the audit is for the Regian SPL plant only and does not include any facilities at the adjacent Tomago Aluminium Smelter. An audit of the Aluminium Smelter has been conducted and reported on in a separate Audit report

Methodology

The methodology selected for the hazard audit as that prescribed in NSW DPIE Hazardous Industry Planning Advisory Paper No.5, Hazard Audit Guidelines.

Brief Description of Plant Operations

The Regian SPL plant (the Plant) is located wholly within the Tomago Aluminium Company site at Tomago, NSW. The Plant processes spent potline materials, which are removed from the pots during the pot refurbishment process. SPL from the Tomago Smelter storage facility is transferred by conveyor to the SPL Plant, where it is crushed to size and loaded to a feed bin. SPL is also delivered to the site from other aluminium smelters for processing. SPL is then fed by covered conveyor to the rotary kiln feed hopper by an elevator. The SPL is then fed to the kiln where it is heated to a temperature exceeding 500^{o}C to ensure cyanide within the SPL is destroyed. On completion of the heating process, the heated SPL is fed from the furnace to the hydrolysis reactor where water is added to react with the SPL: to neutralise the flammable risk in the SPL and cool the material prior to transfer to storage.

Dust generated throughout the plant during the processing operations is collected and removed in bag-house units located around the plant. On completion of processing, the treated SPL is transferred to the treated SPL stockpile, where it is used to produce HiCAL, which is an additive to cement.

Audit Results, Conclusions

A review of the site operations, since the commencement of operations after the completion of the Capacity Expansion Project, identified that there had been no major site upgrades or changes, hence, the operations were essentially the same as those at the time of the Capacity Expansion Project Completion.

The audit reviewed the key hazards at the site and assessed the systems installed to manage the and control the risks. It was concluded that there were effective equipment and systems in place at the SPL facility to manage and control the risks at site. The 2025 audit also identified that the equipment and systems at the plant continue to operate successfully in managing the hazards at the site. The site inspections, during the 2025 audit, identified that the equipment on site was in

good operating condition, considering the heavy load placed in equipment by the SPL crushing and processing. It was identified that the operations and systems were well managed with many examples continuing to show good industry practices.

Like previous audits, the conclusion of the 2025 audit is that the SPL Plant at Tomago continues to develop its hazard, risk and safety systems using a range of tools based on the Lifecycle Management System (LMS) at the site. The LMS continues to provide an effective method of site safety management by maintaining information control via prompts and feedback loops within the system.

Notwithstanding the conclusions reached above, a number of recommendations and observations were made regarding the facility, these are included below.

Recommendations

The following recommendations were made:

R25/1 – The document control system was reviewed and it was identified that document control identification has been developed and is printed on each document. However, it was noted that whilst there is an issue date for the document included in the document identification, there is no document validity of date for review included, hence, it is not possible to confirm that the document is within its currency date (i.e. valid). It is recommended that Regain consider implementing a review date and author in their document control panel to assist ion overall document control.

R25/2 – It was identified that Pre-Startup Reviews are conducted both for significant changes to the plant and for normal operations. As there have been no significant changes to the plant since the commencement of operations, following the Capacity Expansion Upgrade, there have been no Pre-Startup Reviews performed. It is recommended that the where significant changes occur within the next three years, the Pre-Startup Review application to the plant be reviewed at the next audit (2028).

R25/3 – A review of the Management of Change (MoC) system at Regain identified that full application of the MoC standard at the site was applied based on the change being a “Significant Change”. Minor or temporary changes are documented in updated versions of relevant controlled documents. The review identified that there was no guidance or clear definition between a minor and significant change. It is recommended that regain provide some definition within the MoC process on how to identify what a constitutes a minor vs significant change so that the appropriate MoC process can be applied.

R25/4 – A review of the training system within Regain identified that a Training Matrix had been developed and was under review and update at threw time of the audit. Whilst it was evident that a training matrix was in the process of update, it was not possible to confirm its effectiveness. Hence, it is recommended that Regain complete the Training Matrix update and implement the matrix at the site. The application of the matrix and its effectiveness is recommended to be reviewed at the next Audit (2028).

R25/5 – An Emergency Response Plan (ERP) has been developed for the site and is available within the site control room and offices. A review of the plan validity date indicated that it was due for review and update in December 2024. The validity date on the plan reviewed remained at December 2024. Site management indicated that the plan was currently under review and update

and will be completed by the end of the first quarter of 2025. It is recommended that the ERP validity dates be reviewed at the next audit to confirm the ERP is being effectively reviewed (2028).

R25/6 – The site ERP contains a number of diagrams and evacuation instructions, however, the ERP does not include a diagram of the location of safe assembly points. It is recommended that a site layout plan be included within the ERP showing both the primary assembly point and the secondary assembly point (in the event the primary assembly point is impacted by the emergency event).

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Abbreviations

Abbreviation	Description
ADG	Australian Dangerous Goods Code
AGL	Australian Gas Light
AIDGC	Australasian Institute of Dangerous Goods Consultants
AS/NZS	Australia / New Zealand
BMS	Burner Management System
CHAZOP	Control Hazard and Operability Study
CoC	Conditions of Consent
DG	Dangerous Goods
DPHI	Department of Planning, Housing and Industry
DRA	Design Risk Analysis
FAT	Factory Acceptance Test
FSE	Functional Safety Engineer
HAZLEP	Hazard and Loss Event Prevention Analysis
HAZOP	Hazard and Operability Study
HF	Hydrogen Fluoride
HIPAP	Hazardous Industry Planning Advisory Paper
ID	Induction
ISO	International Standards Organisation
ITP	Inspection and test Plan
JSA	Job Safety Analysis
kg	kilograms
kms	kilometres
LMS	Lifecycle Management System
LNG	Liquefied Natural gas
m	metres
MoC	Management of Change
P&ID	Piping and Instrumentation Diagram
PFD	Process Flow Diagram
PLC	Programmable Logic Controller
PM	Preventative Maintenance

Abbreviation	Description
PPE	Personal Protective Equipment
PTW	Permit to Work
SCADA	Supervisory Control and Data Acquisition
SMS	Safety Management System
SPL	Spent Potline
SWMS	Safe Work Method Statement
TAC	Tomago Aluminium Company
UN	United Nations

1.0 INTRODUCTION

1.1 Background

Regain Services Pty Ltd (Regain) operates a Spent Potline (SPL) processing facility, at the Tomago Aluminium site. Tomago, NSW. As part of regulatory conditions of consent, on completion of a plant capacity expansion project, Regain are required to carry out a Hazard Audit for submission to the NSW Department of Planning, Housing & Infrastructure (DPHI). DPHI requires the study to be conducted by an independent auditor and, hence, Regain has commissioned RiskCon Pty Ltd (RiskCon) to conduct the Hazard Audit and prepare a report detailing the audit results. Approval for the auditor to conduct the audit is provided in **Appendix A**.

This document provides details the Hazard Audit objectives, scope of work, the audit methodology audit results for the initial Hazard Audit conducted at the Regain site, Tomago, NSW.

1.2 Objectives

The objectives of the study are to:

- conduct a hazard audit of the Regain SPL processing facility, and its operations, at Tomago, NSW in accordance with Department of Planning, Housing and Industry (DPHI) Hazardous Industry Planning Advisory Paper No. 5 – Hazard Audit Guidelines (HIPAP No.5 – Ref.1);
- review the Safety Management System elements that have been implemented at the site since the issue of the Conditions of Consent requiring a Hazard Audit of the Regain operations and the impact of the SMS on plant operations and management;
- recommend areas for improvement for the SMS and site operations in general, in relation to safety management, at major and occupational hazard levels; and
- report on the findings of the study, in a format compatible with HIPAP 5, for submission to DPHI.

1.3 Scope of Services

The scope of work is for a hazard Audit of the Regain SPL Plant (Tomago, NSW) in accordance with HIPAP No.5. The scope of the hazard audit is for the SPL Plant only and does not include any facilities at the adjacent Tomago Aluminium Smelter. An audit of the Aluminium Smelter has been conducted and reported on in a separate Audit report.

1.4 Qualifications and Competencies – Hazard Auditor

The audit was carried out by Mr. Steve Sylvester, Technical Director at RiskCon Engineering Pty Ltd (RiskCon). Steve is a mechanical engineer (BEng, mech.hons) with over 50 years of engineering experience in a wide range of fields including trade, sub-professional, graduate and postgraduate. This includes over 20 years in the marine, heavy industry and chemical manufacturing fields, and over 30 years in the risk and safety engineering fields. Steve is familiar with the aluminium industry and he has conducted a number of studies for aluminium smelters in Australia, including dross recycling and SPL processing facilities.

Steve has been responsible for over five hundred (500) hazard and risk studies, including HAZOP/CHAZOP studies, preliminary hazard analysis, safety case, fire safety, safety management, emergency planning and a number of major hazard audits for industrial clients for submission to the Department of Planning, Housing and Industry (DPHI). He is a founding member

of the Australasian Institute of Dangerous Goods Consultants (AIDGC), an internationally accredited Functional Safety Engineer (FSE) with TÜV Rhineland (2203/10) and a certified Hazardous Area Engineer (Competency Training Certificate Numbers - CT05984a&b & CR16285).

2.0 METHODOLOGY

2.1 Introduction

As noted in HIPAP No.5 (Ref.1), the main objective of the Hazard Audit is to evaluate the nature and scale of the hazards at a site, the potential impact of those hazards and the systems that are used to control the hazards, both software (procedures) and hardware (equipment).

The Regain SPL processing facility has not been the subject of previous hazard audits and this is the initial audit following planning conditions of consent requiring a hazard audit, hence, this audit has been conducted from “scratch”. The audit assesses the site operations and equipment condition and those systems used to manage particular hazards that were identified in the hazard and risk assessment documents.

The Hazard Audit consisted of the following main components:

Familiarisation with the site, including management hardware and software, (e.g. plant & equipment - hardware, processes, operations and procedures, etc. - software);

A review of operations carried out on site, focusing on the potential hazards that may occur, resulting in offsite impact, as a result of the SPL process at the site;

A review of the Safety Management Systems implemented at the site as part of the conditions of consent (documentation and application evidence was collected to demonstrate that these systems were being applied satisfactorily); and

A site history review (e.g. accident/incident history).

2.2 Site Familiarisation

The auditor visited the site to familiarise with the specific operations at the facility and to understand the SPL process so that pertinent audit questions can be raised. The initial visit was also arranged so that the auditor could conduct a site visitor’s induction to confirm this training is conducted as part of the site access provisions.

During the site familiarisation visit each of the production areas was visited and discussions held with the team leaders. The following subjects were discussed and reviewed:

Inspection of site facilities (i.e. building, plant and DG storage facility condition);

Process operations and new equipment that may have been in installed since the commencement of operations under the most recent Conditions of Consent (e.g. new equipment, new processes, process changes, formulation changes);

Changes to the Dangerous Goods storage areas (including quantities and locations) and additional depots (if any);

Condition review of Dangerous Goods storages (e.g. tanks, buildings, bunds); and

Review of security measures (entry & exit security, fences, alarms, etc.).

The results of the familiarisation and preliminary discussion with plant management was recorded for inclusion in the audit report.

As part of the audit process, documentation was also gathered to demonstrate SMS application was being implemented satisfactorily.

2.3 Review of Site Operations

On completion of the audit "kick-off' meeting, the auditor reviewed the site induction with the Site manager to identify how hazards are raised in the induction process and how inductees are informed of the site safety systems and emergency response requirements (e.g. evacuation, assembly areas, etc.). The induction is conducted by presentation and examination review. On successful completion, the inductee is provided with access to the specific areas where work or inspection access is required. The induction is valid for a period of 12 months, after which time a refresher induction is required.

The review of site operations was conducted during the walk-round with the regain director (see Table 2.1) which involved observation of operations handling hazardous materials and processes with the potential to impact the environment and adjacent operations on the Tomago site. The review included the following operations:

Loading and unloading operations for SPL including equipment and storage areas, quantities handled, mode of handling, transfer of SPL from Tomago to Regain.

Protection and fail-safe systems were reviewed for critical components such as furnace systems and operations, stormwater retention systems and stack discharge.

Continuing condition of alarms and their sensors were reviewed to determine functionality. Records of alarm operations and responses were also checked to determine continuing effectiveness of the alarm function.

The plant control system was reviewed to identify the relationship between manual and automatic operations and how verification of computer system readouts is performed for critical functions (i.e. back up through hardwired instruments). It is noted that the SPL is a fairly manual process with plant operations being controlled by PLCs within a safe operating envelope.

Fire safety systems were reviewed, although it is noted that beyond first attack fire-fighting, the fire safety response at Regain is provided by the Tomago emergency response team.

Environmental protection systems, (e.g. bunding, stormwater treatment retention, etc.) were assessed to determine their effectiveness, condition and whether, for example, bunding was adequate to cater for the contained material as well as storm or fire water; and

A review of any environmental and/or safety incidents (historical since the last audit) was also conducted as well as any changes to the arrangements for clean-up of spills, including the hazardous materials contractor used to dispose of the waste (if any).

A review of each of the operations was conducted to determine the potential for hazardous incident as a result of the operations at the site. Discussions were held with a broad range of personnel on site, including plant management, supervisors and operations staff, to identify the impacts of any changes that may have occurred since the previous audit. A record of discussion and results was made for inclusion in the audit report.

2.4 Reporting

On completion of the study a draft report was developed incorporating the following:

Executive Summary;

Introduction;

Objectives;

Scope of Work;

Brief Description of the Plant Operations;

Methodology; and

Study Results and Actions.

The draft report was issued to Regain for review and for comment on points of fact. Comments on the draft report and corrections for points of fact were incorporated and a final report issued.

2.5 Audit Programme

During the SPL visits a number of personnel were interviewed and discussions held to identify changes that had occurred since the previous hazard audit and to identify whether the various methods for controlling hazards and for the implementation of the Regain safety management system continued to be used at the site. The audit programme used for discussions with the various personnel at the Mill is shown at **Table 2-1**.

Table 2-1: Audit Programme - 2019 Audit

Audit Date	Section Visited/Personnel Interviewed	Task/System Audited
13 Feb 25	Initial site visit & Audit Kick Off. Attend site induction and audit induction procedures – Bernie Cooper – Regain Director, John Cooper – Regain Operations Manager	Visit site and establish audit approach, personnel involved with the audit, set appointments & meetings Review requirements of Conditions of Consent Brief site inspection (external areas) and walk-round, external operations observations
13 Feb 25	Bernie Cooper – Regain Director John Cooper – Regain Operations Manager Lea Williams – Regain Operations Administrator Ryan Linkson – Regain Operator (excavator)	Review of studies performed since the commencement of operation on completion of the SPL capacity expansion project Training systems, training records, training methods and approaches Document management systems, currency, access, update, control Safety Management System (, Hazard Identification/assessment, Risk Management. Management Responsibilities, Key Performance Indicators (KPIs), Safety/Environmental policies. Data and statistical methods (monthly reporting),

Audit Date	Section Visited/Personnel Interviewed	Task/System Audited
		Operator interview, induction, training, procedures, licenses to operate equipment, safety culture.
13 Feb 25	Bernie Cooper – Regain Director John Cooper – Regain Operations Manager Kane Rich – Wiley Electrical, Electrician and Site Supervisor Ethan Stewart – Regain Mechanical Engineer	Permit to Work/Lock Out-Tag Out systems, application and use. Function of the maintenance system, Maintenance systems, work orders, records, and Life Cycle Management System Emergency response, interactions with Tomago smelter, ERP document, ESIP Management of Change, Change Control Standard, Engineering Design Process. Equipment integrity. Accident/Incident investigation and reporting Contractor Management, induction processes, contractor pre-qualifications
17 Mar 25	Unannounced Visit John Cooper – Regain Operations Manager Kane Rich – Wiley Electrical, Electrician and	Site Walk-round, observe operations and plant equipment condition (un-announced). Review accident/incident data base, confirm accident/incident records since SPL production upgrade. Review stormwater systems and water retention pits.

2.6 Studies Since Commencement of Operations (SPL Capacity Expansion)

A review of the site modification control system identified that there had been no major projects and no additional studies (e.g. hazard analyses, HAZOPs, etc.) conducted at the site since the commencement of operations after the SPL capacity upgrade project.

3.0 BRIEF DESCRIPTION OF THE SPL OPERATIONS

A review of the Regain facility was conducted to identify the potential hazards as a result of SPL processing operations and whether any major changes had occurred since the initial approval provided for the SPL capacity expansion project at the site. It was identified that there had been no major changes to the plant since planning approval was granted for the “expansion” project. The processing of SPL at the site remains essentially unchanged since the initial approval of the SPL capacity expansion project, although minor upgrades and equipment replacement has been performed as part of normal plant maintenance and upkeep.

The description provided in this section has been included to provide clarity on the SPL process and the potential hazards that may occur from the plant.

3.1 Site Location and Surrounding Land Uses

The Regain SPL plant is located within the Tomago Aluminium Company (TAC) Smelter facility, Tomago, NSW. The TAC Smelter is located to the north of the Hunter River in Tomago, NSW. **Figure 3.1** shows the location of the TAC smelter, and hence, the Regain SPL facility, in the northern Newcastle area. The SPL plant is located wholly within the TAC Smelter property. **Figure 3.2** shows the location of the SPL plant on the TAC site and **Figure 3.3** shows the SPL plant layout.

The facilities surrounding the SPL plant on the TAC site are; main switchyard (north), SPL storage shed (operated by TAC, south), maintenance/spares warehouses (east), laydown yards (south) and TAC western site boundary (80m).

Surrounding land uses beyond the TAC site boundary to the south, west and east of the smelter are industrial, with a number of manufacturing plants and steel fabrication facilities located adjacent to the smelter boundary. The area to the north is an underground water reserve known as the Tomago sand-beds and is managed by Hunter Water Landholdings. Further afield the land is generally rural, however, a Liquefied Natural Gas (LNG) storage facility is operated by AGL to the northeast of the smelter. This facility is located over 1km from the TAC site, and over 1.8kms from the SPL plant, and is used as a gas supply buffer for the Newcastle region.

The closest privately owned residential property is located about 800m to the east from the TAC site boundary fence and over 1.8kms from the SPL plant. A residential caravan park is located to the east around 1.3kms from the SPL pant.

Table 3.1 details the adjoining properties and the current land uses around the TAC smelter site.

Table 3.1: Tomago Aluminium – Adjoining Property and Current Land Uses

Property Direction	Property Use	Current Owners/ Operators	Description of Use and Distance from the Smelter
North	Utility		Hunter Region Water reserve (Tomago Sandbeds) Sandbeds located directly adjacent to the north AGL LNG Storage (further afield)
East	Light Industrial	Varley Group	A number of smaller industrial businesses are located further afield

Property Direction	Property Use	Current Owners/ Operators	Description of Use and Distance from the Smelter
West	Industrial	Bushland	Bushland Reserve, between Tomago and the light industrial area to the west
South	Road/ Commercial/ Government	NSW Government Commercial Operators	Corrective Services Training Centre Tomago Bowling Club

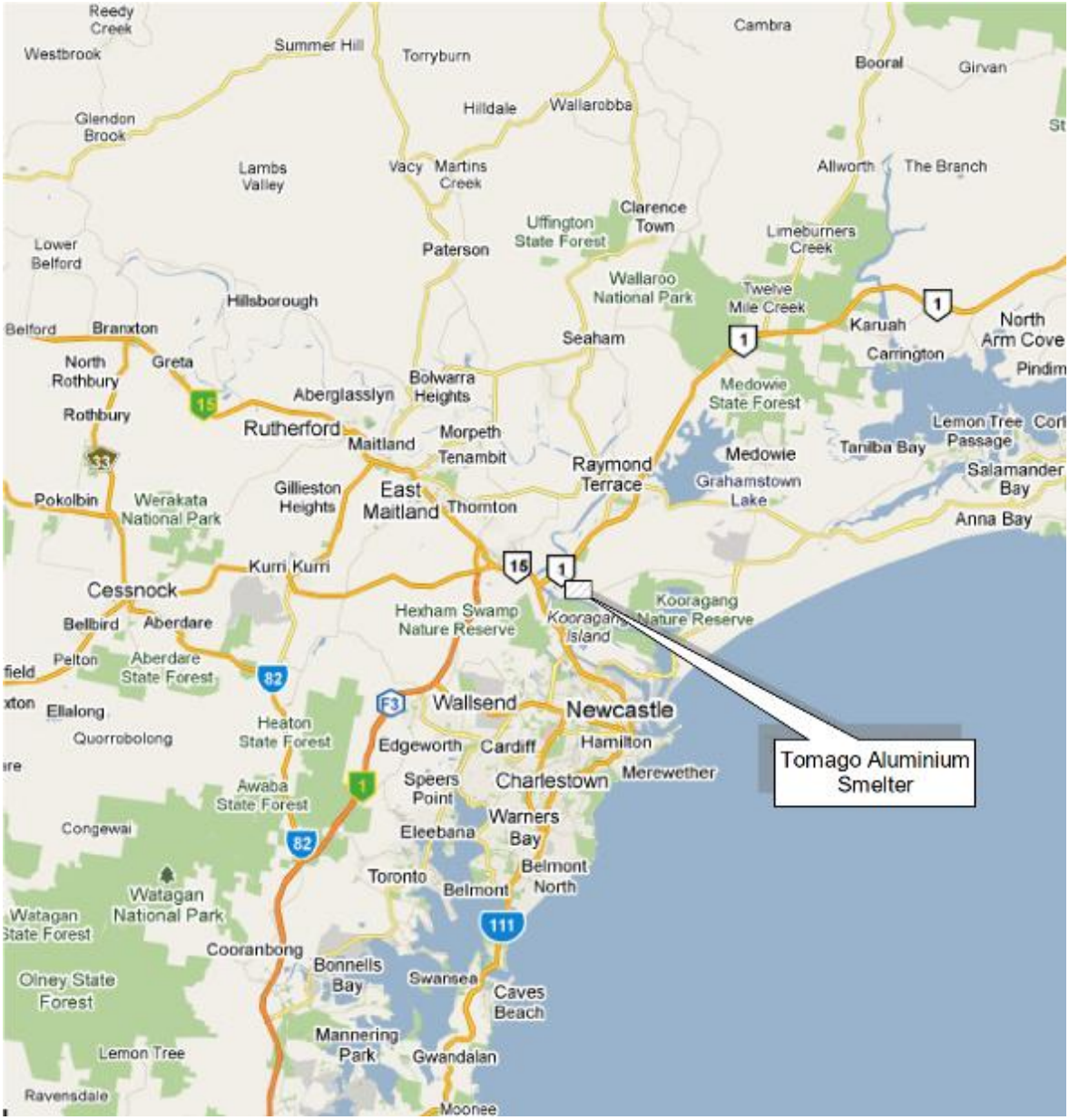

Figure 3.1: Site Regional Locational

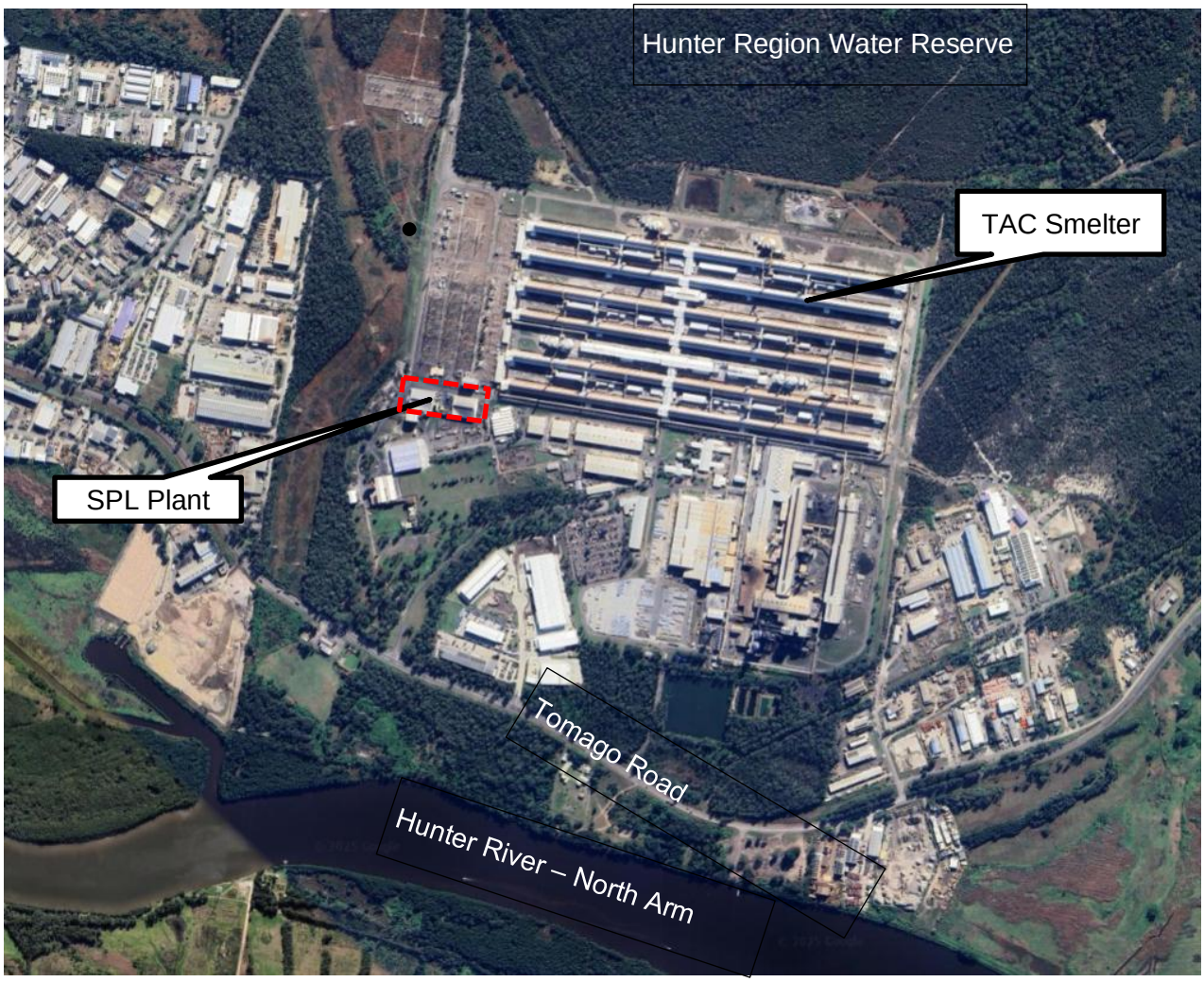

Figure 3.2: Location of the SPL Plant on the TAC Site

3.2 Brief Description of the TAC Smelter Operations and SPL Generation

The TAC smelter converts aluminium oxide to aluminium metal using an electrolysis process. The aluminium is produced in "pots" where electricity is passed through the aluminium oxide from anodes, above the surface of the oxide, to a cathode, which forms the base of the pot (i.e. the Potlining). The aluminium is produced in the presence of a flux, which is fed to the pot to assist in the production process.

Anodes are produced on site by compressing carbon and liquid pitch and baking the compressed block to form a solid carbon anode. A cast iron rod is fused to the block to form a connection for the transmission of electricity to the anode.

The aluminium oxide is fed to the "pot" by an oxide delivery system which consists of transmission ducts located above the "pots". Once the aluminium is produced it is tapped-off into crucibles and transported on a trailer to the metal casting area. In the metal casting area, the aluminium is cast into product forms including ingots, billets and slabs for transport and sale to market.

Over time, the Potlining becomes degraded, requiring removal and replacement. The Potlining material is removed from the pots using a manual process in the TAC de-lining facility, adjacent to

the SPL plant. The Potlining is broken off the pots and stored in the de-lining facility storage area adjacent to the SPL plant, ready for delivery to the SPL processing equipment. SPL from TAC and other smelters is processed at the Regain facility, SPL from other smelters is delivered to the facility by road transport. The de-lining facility and SPL storage area is owned and operated by TAC.

3.3 Brief Description of the SPL Processing Plant Operations

Figure 3.4 shows the process flow diagram for SPL processing at the Regain facility. This diagram can be used to assist in understanding the process operations at the plant. The key function of the SPL processing facility is to eliminate cyanide and toxic/flammable gas hazards that may result from unprocessed SPL.

SPL from the TAC operated de-lining facility is transferred by conveyor to the SPL plant crushing area, where the SPL is crushed and sized for feed to the SPL processing facilities. SPL is also delivered to site from other aluminium smelters for processing. The crushed & sized SPL is loaded by conveyor to the feed bin (TTP2) located at the “front-end” of the process. Dust generated during the crushing operation is controlled by dust extraction and treatment systems (i.e. bag-filter units), minimising dust release beyond the SPL crushing area.

Once the SPL has been crushed and sized to an appropriate size for furnace processing, the material is transferred to the SPL to feed elevator by a number of covered transfer conveyors. The SPL is raised and fed to the kiln feed hopper by the feed elevator. Dust extraction systems are installed on the SPL feed system to extract any dust generated during the transfer process and remove the dust via bag-filter units.

The SPL kiln is a rotating furnace in which the SPL is processed. The kiln operates at temperatures exceeding 500^{o}C to ensure any cyanides within the SPL are effectively destroyed during the heating operation. The rotary action of the kiln ensures all SPL is exposed to the heating cycle and all cyanide is destroyed. On completion of the heating process, the treated SPL is fed from the furnace to the cooling reactor where water is added to react with the substances in SP that generate flammable gases such as hydrogen, methane and acetylene and to cool the material prior to transfer to storage.

The hydrolysis reactor is vented via and extraction fan, which removes any gases generated during the cooling reaction and feeds them back into the kiln where they are burnt in the SPL hating process. Treated/cooled SPL is then transferred to the thermally treated material stockpile, where it is used to produce HiCAL, which are additives to reduce energy consumption and greenhouse gas emissions in the manufacture of cement.

3.4 Safeguards Associated with the SPL Processing Equipment

The following process safeguards are installed at the SPL processing facility:

- Dust Control – storage and handling areas within the SPL is processed are fitted with dust extraction units that deliver extracted dust to bag-house units. Dust collected in the bag-houses is fed back into the process to reduce waste.
- Building Pressure Control – all buildings are maintained at slightly negative pressure to prevent dust escape from the buildings (atmosphere extracted from buildings is fed to dust extractors (bag-houses).
- Equipment Dust Control – all equipment (e.g. crushers and material transfer stations on conveyors, furnaces, storage silos, etc.) are fitted with dust extraction that reports to bag-house units.

- Bag-houses – all bag-houses are fitted with real-time, continuous particulate monitoring systems.
- Bag-houses – all bag-houses are fitted with high differential pressure detection as backup to time-based system to activate bag switch-over and clogged bag cleaning processes (i.e. bag-pulse units).
- Furnace Operations – furnaces are monitored for real-time, continuous temperature monitoring and control to ensure temperatures are maintained above the cyanide destruction level.
- Furnace Thermal Load – the furnace contains a high thermal load (also aided by the refractory nature of the feedstock material) and loss of furnace heating would not result in an immediate drop in furnace temperature. The furnace would remain at elevated temperatures for an extended period (many hours) without further heating.
- Treated SPL Cooler/Reactor – cooler/reactor casing is steel, which eliminates the potential for failure of the casing from overheating (note that steel will not fail at 600°C).
- Water Ingress Control - Fully sealed and bunded buildings to prevent water ingress and impact of water on SPL (i.e. generation of toxic and flammable gases).

It is noted that SPL contains substances such as unoxidized aluminium metal and carbides, which react with water to form ammonia and/or hydrogen/methane/ acetylene. The concentration of, and specific reactive substances in, the SPL will dictate the gas generation type and quantity when in Contact with water. Notwithstanding this, gases are collected in the reactor and fed back to the furnace to ensure hazards are eliminated by burning the flammable gas in the furnace (Note: ammonia is a flammable gas at concentrations >14% in air and, hence, will combust in the furnace).

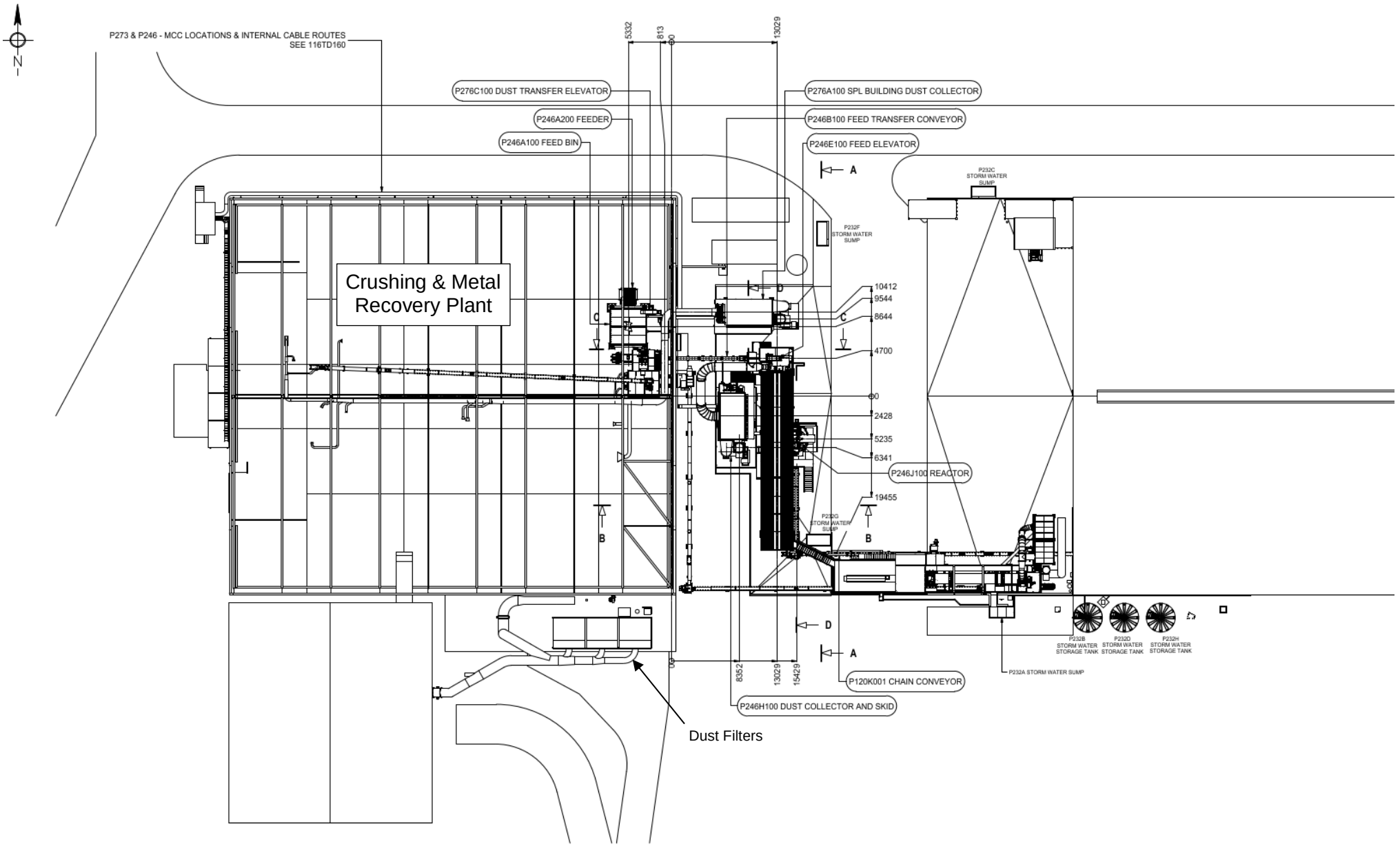

Figure 3.3: SPL Plant Layout showing Major Equipment Locations

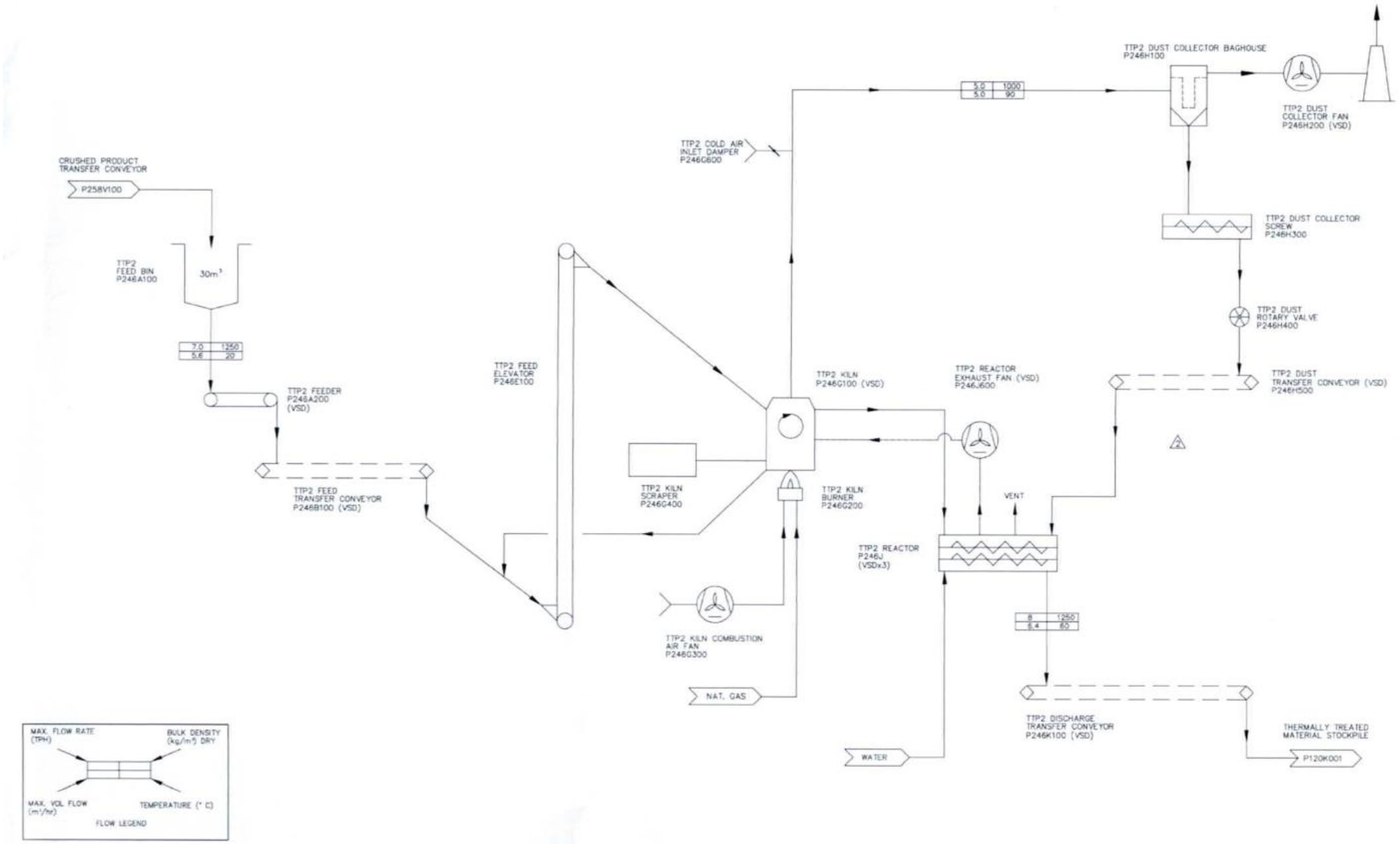

Figure 3.4: SPL Plant Process Flow Diagram

4.0 HAZARDS AND HAZARDOUS OPERATIONS

4.1 Identified Hazards that Could Result in Offsite Impact

As part of the audit, the previous site safety studies were reviewed and those hazards with the potential to result in offsite impact were identified and included in the audit. This section of the audit is aimed at identifying the safeguards installed and implemented at the site and the effectiveness of the management of the safeguards. The following hazards were identified from the existing site safety studies (Ref.2)

- Dangerous Goods (DG) – SPL is classified as UN3170 Class 4.3 PGIII Dangerous Goods. The proper chemical name is “Aluminium Smelting By-Products” (Ref.3). The Package Group (PG) for the material is PGIII, which is classified as low risk by the Australian Dangerous Goods Code (ADG, Ref.3). As a Class 4.3 PGIII, there is no requirement for Regain to notify SafeWork NSW, the Regulator of DGs, under the provisions of the Work Health and Safety Regulation 2017. Hence, Regain does not carry DG Notification documentation, hence, this is not assessed further in this document.
- Dust Generation in Buildings - the generation of SPL dust occurs inside the buildings associated with the storage and handling of SPL. All buildings at the site are fitted with dust control equipment, including baghouses for the control of dust prior to discharge of the extracted air stream to atmosphere via stacks. Baghouses are fitted with differential pressure instruments to identify bag failures that will initiate plant operations shut down. All personnel working inside buildings will be located inside operating equipment cabins fitted with air conditioning to prevent contact between personnel and SPL. Appropriate PPE (respirators, helmets, gloves, etc.) will be worn by operators moving through the facility.
- Rain-Water Leaks into the Buildings – in the event of water contact with the SPL there is a potential for toxic and flammable gas generation. Water may leak into the building from holes in the roofing or walls. An analysis of the quantity of water required to generate hazardous quantities of gases revealed that a water requirement of over 680kg is required for hazardous levels of toxic gas generation and over 8 tonnes for flammable gas, above LEL. It would not be possible for this amount of water to enter the shed through small holes in the roof or walls. However, building maintenance is important to ensure degradation of building structure is maintained to ensure large quantities of water cannot enter the SPL storage areas. The buildings have always-open vents at high points that allow the lighter than air flammable gases to rise and escape such that the level of flammable gases within the buildings is always well below 25% of LEL
- Carrying of Water into Sheds on Trucks - Trucks entering the SPL sheds during rain periods could carry water into the sheds which could contact the stored SPL. This could lead to the generation of toxic/flammable gas. However, as noted above, it would require around 680kg of water to generate hazardous levels of toxic gas and over 8 tonnes of water to generate quantities of flammable gas such that an explosive mixture was present in the building. It would not be possible to carry these quantities of water into the building on trucks that were passing through rain. Control of water on trucks is not considered a hazard requiring control in the SPL facility, hence, this is not addressed further in the audit.
- Kiln Failure - – in the event of a flame failure (i.e. flameout) gas may build up in the kiln and, if ignited, could result in explosion. However, the kiln burner is fitted with a burner management

system which incorporates a flame detector that will immediately isolate gas supply, preventing potential gas accumulation in the kiln. In the event of temperature excursions, above or below the optimum operating range (600-650^{o}C), there is a potential for failure to destroy contaminants or to generate hydrogen fluoride (HF). To minimise this risk, the kiln is fitted with a number of redundant temperature probes that will be monitored by a computer control system. In the event of any loss of temperature control the kiln will be shut down and feed ceased. This will eliminate the potential for continued release of contaminants from the kiln.

- Hydro Mixer Failure – the hydrolysis reactor or "hydro mixer" adds water to the treated SPL stream to react the water reactive substances in the SPL. This produces ammonia/acetylene and methane and other gases, which is fed back to the kiln for burning. In the event of an induction (ID) fan failure, the gas could accumulate in the mixer, resulting in release and/or ignition/explosion in the mixer. However, in the event of ID fan failure, the kiln operation will be shut down and no further processing of SPL will occur. Any gas accumulation in the mixer will rise through an open vent system and burn in the kiln combustion chamber which would be be at a temperature above 500^{o}C, well above auto-ignition temperature of the gases (i.e. ignition without an ignition source). Further, as noted above, it would require many tonnes of water addition to generate gases that would mix with air resulting in an explosive mixture within the building. Once the mixer is shut down, it would not be possible to mix many tonnes of SPL with many tonnes of water as the SPL feed would be stopped, eliminating the gas generating source.
- Stack Discharges – the kilns are fitted with exhaust systems, which discharge off-gases from the kiln operations. The exhaust systems incorporate cold air inlet dampers, introduces cold air to reduce the temperature of the off-gas such that it can be discharged through a bag-house filter unit. In the event of poor temperature control, the off-gas discharge could exceed the operating temperature of the filter bags, resulting in bag damage and untreated off-gas discharge to atmosphere. To ensure the temperature of the off-gas is controlled, four (4)m temperature sensors are installed in the kiln, these monitor the temperature at various points within the kiln, including the discharge temperature of the exhaust. The temperature of the gas leaving the kiln dictates the position of the damper. The damper has been designed to remain 50% open at its "closed" position, preventing loss of cooling air in the event of damper failure. To ensure the reliability of temperature monitoring instruments, all temperature instruments are replaced every 3 months.
- Discharge of Contaminated Water (stormwater) – the SPL site is fully "bunded" with kerbs and gutters preventing discharge of stormwater beyond the boundary of the site. Stormwater is directed to SPL site drains and into a collection pits (3 off) on the southern side of the plant. The plant using rainwater as process water and water in the stormwater tanks is pumped to the process water tanks at the site. This function minimises the potential for release of stormwater from the site. Notwithstanding this, in the event of a significant rainfall event, which causes the stormwater retention tanks to overflow, the discharge from the tanks is directed to the Tomago retention ponds, which have significant capacity to retain stormwater on both the Regain site and the Tomago site.

  Noting that in the event of a rainfall event, surface dusts may be carried into the stormwater tanks causing sediment to eventually fill the tanks making them ineffective. However, the site courtyard area (the main stormwater collection point), is swept daily (Mon.-Fri.) with a sweeping vehicle which prevents accumulation of dust and debris that can be carried into the

tanks. The auditor observed the sweeping vehicle in operation during the un-announced site visit. Regain indicate that tanks are inspected and cleaned annually.

4.2 Identified Hazards – Dust Generation in the Buildings

The key hazard associated with the control of dust release from the buildings is the detection of differential pressure in the bag-houses. This pressure is monitored by a differential pressure instrument. A review of the instrument location was conducted and the instrument appeared to be in good condition and well maintained. The scheduled maintenance documents for the instrument were inspected and identified to be current (i.e. the instrument scheduled maintenance had been completed in the required period).

In addition, bag monitoring systems are important to ensure bags do not become degraded and ineffective. A discharge stack discharge monitoring system has been implemented at the Site, which is conducted once every six (6) months. Records of this monitoring was viewed and details of stack discharge concentrations were identified to be maintained within permitted discharge limits (EPA License 13269) A copy of the stack discharge assessment results is included at **Appendix B**.

No further recommendations are made regarding dust control systems.

4.3 Identified Hazard – Rainwater Leaks into Buildings

As noted above, rainwater entering building where SPL is stored could result in the generation of toxic and flammable gas, however, significant quantities of water would be required in this instance. Notwithstanding this, building condition is important in confirming minimal water ingress can occur into buildings. A review of the building condition at the site indicated that all building structures were in good condition, with no signs of damage or corrosion which would allow water ingress into the buildings. All building drainage systems (gutters and downpipes) appeared to be in good condition and did not show any signs of leakage.

No further recommendations were made regarding water ingress to buildings.

4.4 Identified Hazard - Kiln Failure (Burner Management System)

The Kiln Burner Management system or BMS, operates to control the kiln burners and, among other functions, prevent burner failure and the continued feed of gas into the kiln chamber. This hazard could result in a major explosion. The BMS is fitted with flame detectors, which identify when the flame in the kiln has extinguished. Once the detector has identified “no-flam” the gas supply is shut-off to the burners, preventing gas accumulation in the kiln chamber. The safety requirement of this system is the regular inspection and testing of the burner control and gas isolation systems. These systems are included in the site scheduled maintenance system, which is part of the “Life Cycle Management System” (LMS). The test/inspection schedules and records were inspected and it was identified that these systems had been tested within the required maintenance period. A copy of equipment test/inspection is included at **Appendix C**.

No further recommendations were made regarding kiln failure (BMS).

4.5 Identified Hazard – Kiln Temperature Control Failure

In the event the kiln temperature control fails, the kiln temperature may fall below temperatures at which hazardous contaminants in the SPL are destroyed (e.g. cyanides or development of Hydrogen Fluoride). The key components in this system are the temperature probes that are fitted within the kiln. There is a total of three (3) probes, which are regularly replaced. Regain recognises

the critical nature of these temperature probes and replaces then every 3 months of operation. A design feature of the system is that the temperature probes are of thermocouple type which, in the event of failure send a signal to the control system. The electrical technician indicated that the probes are all installed such that in the event of failure the probes will default to open-circuit, which indicates very high temperature to the PLC, in this case the high temperature alarms will be initiated, the plant automatically goes to idle mode and the cooling air damper opened to full. This critical control circuit is well established and managed and provides a very reliable system.

No further recommendations were made regarding kiln temperature control failure.

4.6 Identified Hazard – Hydro-Mixer Failure (Induction Fan)

In the event of a failure of the hydro-mixer induction fan, continued water addition to the mixer results in the production of toxic and flammable gases, without the gases being extracted. This may result in an ignition of the gases and explosion in the mixer. In the event the induction fan fails, the fan operation is interlocked to the mixer operation, resulting in mixer and mixer feed shut down. This prevents continued water mixing with SPL and stops the generation of gases. The key component of this safeguard is the interlock between the induction fan and the hydro-mixing plant. This interlock is tested regularly to ensure it operates when required. A functional test of the interlock was conducted on 8 July 2024, which is within the scheduled test period for the equipment (see Appendix C). A copy of the first four pages of the interlock test procedure is included at **Appendix D**. The procedure is lengthy, hence, the first four pages have been included to demonstrate a procedure exists.

No further recommendations were made regarding hydro mixer failure (induction fan).

4.7 Identified Hazard - Stack Discharges

Discharges from the stacks are required to meet specific discharge conditions. Degradation of bag filters may lead to discharge from the stacks that exceeds the discharge limits. Hence, to confirm these discharge limits are met, Regain regularly conducts stack monitoring to confirm the permissible discharge conditions are met. This is performed every six (6) months. The results of the most recent test are provided at **Appendix B**.

As noted earlier, prior to discharge, the gas stream passes through a bag filter, which extracts particulates and maintains the discharge within the required conditions. Key factors associated with the bag filter system are the differential pressure instruments, which monitors filter gas condition (i.e. blocked bags result in failure to filter and allow gas to pass to the stack) and the bag-pulsing system. The pulsing system associated with the baghouses is time based and activates after a set period, not based on differential pressure. Hence, the bags are “cleaned” regularly and are not dependent on the differential pressure instruments.

In the event of bag failure (split bags or blocked bags) the instruments would read a differential pressure on the dP instrument. The differential pressure is reported on the SCADA system and can be accessed by operators at any time during the operation cycle. The differential pressure switches on the bag-houses are inspected regularly as part of general inspection cycle. Alarms are installed for pressure differential outside normal pressure ranges. Alarms are reported on SCADA and recorded in the alarms register.

No further recommendations were made regarding stack discharge (stack and bag-house instrument testing).

4.8 Identified Hazard – Stormwater Discharge

The site inspection, conducted as part of the audit, involved a review of the stormwater systems and water retention on site. All stormwater systems inspected were clear and did not contain large quantities of sediment. Regain indicated the drains and stormwater pits and collection tanks are cleaned every 12 months, based on long term experience and the fact that the courtyard is swept daily, 5 days per week. This was included in the scheduled maintenance system. The condition of the drains at the time of the audit (including the unannounced site visit) indicated that the scheduled maintenance of drains is performed as required in the maintenance system.

No further recommendations were made regarding stormwater drainage and retention systems .

5.0 SAFETY MANAGEMENT SYSTEM

5.1 Regain SMS

At the time of the audit (2025), the SPL processing business the Tomago Aluminium Smelter was operated by Regain Services Pty Ltd (Regain). Regain has operated the plant since its construction in 2000 and implemented the SPL Capacity Expansion Project in 2019.

As part of the Development Conditions of Consent (CoC), Regain was required to develop and implement a Safety Management System, which was developed and approved as part of the CoC. The SMS was developed based on the Hazardous Industry Planning Advisory Paper No.9 – Safety Management. The system developed by regain contains the following SMS Elements:

- Management Aspects of the SMS;
- Hazard Identification and Risk Assessment;
- Operating Procedures;
- Process Safety Information;
- Contractor Management;
- Pre-Startup Safety Reviews;
- Equipment Integrity;
- Safe Work Practices;
- Management of Change;
- Accident/Near Miss Reporting and Investigation;
- Training and Education;
- Procurement;
- Emergency Planning;
- Security Access and Control; and
- Auditing of the SMS

Each of the elements has been reviewed in the following subsections. It is noted that each of the SMS Elements has a number of sub elements. As this is an audit, not all sub elements have been included in the audit. However, important functions (sub-elements) within each element have been included (e.g. Permit to Work, Policies, Lock-out/Tag-out, inductions, safe control philosophy, etc.).

5.2 Management Aspects of the SMS

In this section a number of sub-elements are incorporated, including Policies, Iso-Standards Certification, document control. Each of these sub-elements has been audited in this section.

5.2.1 Policies

Regain has developed policies for implementation at the site. Copies of policies were reviewed and a copy of the safety policy was provided for inclusion in the audit report to demonstrate that policies exist. The policy, provided at **Appendix E**, presents a comprehensive approach to safety and is signed by the company director. No further recommendations are made with regards to the policies.

5.2.2 Regain Management Systems and ISO Standards

Regain is certified to the following Iso and AS Standards:

- AS/NZS 45001:2018, Occupational health and safety management systems - Requirements with guidance for use, Standards Australia
- ISO 14001:2015, Environmental management systems — Requirements with guidance for use, available through Standards Australia;
- AS/NZS(ISO) 9001:2015, Quality management systems — Requirements, available through Standards Australia,

Certification to, and compliance with, these standards demonstrate a high level of commitment to safety, environment and quality. Copies of the certificates are provided at **Appendix F**.

Notes on surveillance audits, etc., are made in **Section 16** of this document. No further recommendations are made with regards to these standards.

5.2.3 Document Control

The document control system is managed within the Lifecycle Management System (LMS). This system tracks documents throughout the whole document life cycle. All documents are held in electronic form within the LMS. Whilst documents can be printed, a note on the bottom of the document states that the printed version is uncontrolled, as all documents within the system have specific authors and access to document changes is by the author only. **Appendix E** shows the Safety Policy document with the document control numbering on the document in the lower right corner.

Whilst it can be seen from the document control panel that the documents review date is provided, there is no indication of when the document is valid to nor the author of the document. **It is recommended that Regain consider implementing a review date and author in their document control panel to assist ion overall document control**.

5.3 Hazard Identification and Risk Assessment

The SMS document states that hazard Identification, risk assessment and risk control are systematically identified and documented as part of the plant Capacity Expansion Project and ongoing operations. Regain has developed a Hazard and Risk Management Standard, which is included at **Appendix G**.

Plant Capacity Expansion Project hazard analysis and risk assessment/control was performed through the following techniques:

- Design Risk Analysis (DRA) (or Safety in design) processes in accordance with Australian/New Zealand AS/NZS 4024:1201 International standard ISO12100:2010.
- Hazard and Operability Study (HAZOP) in accordance with HIPAP 8 towards the end of the design phase.
- Construction Safety Study conducted in accordance with HIPAP 7.
- Hazard and Loss Event Prevention Analysis (HAZLEPs) for general activities.

These techniques are also used for any new projects requiring application of the Change Management process. Ongoing hazard identification, risk assessment and risk control processes include the following:

- Safe Work Method Statements (SWMS) for construction commissioning and decommissioning tasks with Safe Work Check-sheets (SWCs) for operations and maintenance tasks.
- Work Planning and Job Safety Analysis (JSA) for employee engagement and communication focussed on tasks during construction, commissioning, plant operations, maintenance and decommissioning tasks.
- Change Control to manage modifications to process plant, systems or products. Change Control can be expected to engender requirements for further Design Risk Analysis and, if significant, HAZOP analysis.
- Hazard and Incident reporting for use by employees, contractors and visitors.

Since the completion and commencement of operations associated with the Capacity Expansion Project, there have been no major works at the site that would require implementation of the change management or safety in design processes.

Ongoing risk control measures have been applied including:

- Safe Work Method Statements;
- Work Planning and Job Safety Analysis (JSA);
- Change Control;
- Hazard and Incident reporting process.

A number of these documents were sighted during the audit to confirm these processes were being implements at the site. A copy of an incident report and Work Planning JSA were selected at random from the documents reviewed. The Work Planning/JSA document is included at **Appendix H**, the Incident/Near Miss Report is included at **Appendix M**, demonstrating these systems are operating at the plant.

As part of the hazard identification and risk control process, Regain has also developed an SPL Recycling Safety Summary Chart, which identified the 7 key hazards in the SPL process, plus primary prevention controls, potential high consequence loss events and preventative control codes and descriptions. The chart provides an overall view of the identified hazards, risks and risk control measures, commensurate with this element of the SMS. The chart has been included at **Appendix I**.

Based on the review of documentation and the design processes used in the Capacity Expansion Project, it is considered that Regain are successfully implementing their Hazard and Risk Control process. No further recommendations are made with regards to this element.

5.4 Operating Procedures

Documented operating procedures have been developed for the plant in the form of Safe Work Check-sheets. This process has been adopted to maintain a fairly simple approach to procedures. Plant operation is controlled by the Process Control Software, which is established to maintain the plant within a safe operating control envelope. Plant startup & shut down is also controlled by the Process Control Software. Discussion with the plant operators indicated that operation of the plant within the control envelope maintains operational safety of the process. There are limited intervention opportunities for operators to reset parameters that are established to maintain the plant operations within the safe zone. Operational parameters can only be set by engineering staff, using an engineering work-station, ensuring changes are only performed under strict control conditions.

A number of Safe Work Check-sheets were reviewed as part of the audit to confirm this system is operating successfully at the plant. A copy of a Safe Work Check-sheet has been included at **Appendix J** to illustrate the operating process.

A review of the plant operating history indicates that there have been no process safety incidents in 18 years of operation.

Based on the review of the operating procedures and plant operational controls, the system is considered to be implemented successfully and no further recommendations are made with regards to this element.

5.5 Process Safety Information

Process safety information is held within the Plant Requirements Documents. Information provided includes the following:

- Chemistry of SPL and how it is stored;
- The process functions (functional locations) for treating SPL and the enabling technology;
- Equipment used in the processing plant for each process functional location,
- Design basis and design requirements;
- Operating philosophy;
- Maintenance requirements.

Key documents that define and describe the process are:

- Process Flow Diagrams (PFDs)
- Process and Instrumentation Diagrams (PIDs)
- Process Control Software Functional Descriptions

Figure 5.1 shows how the process information documents and software are established within the Regain system.

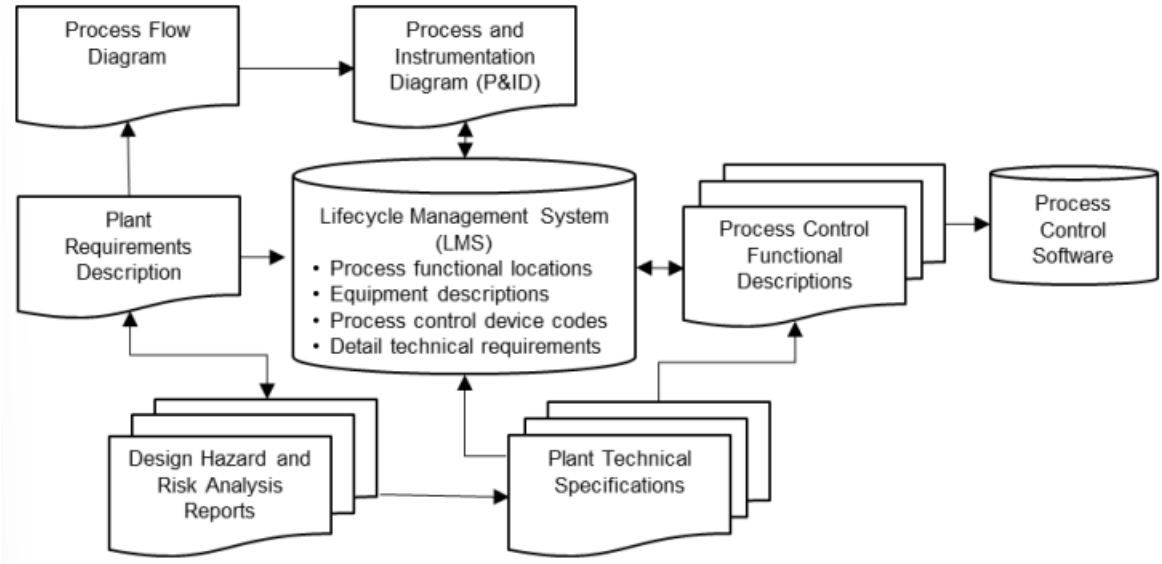

Figure 5.1: Process Information Documents and Software

A key operational function of the SPL facility is the monitoring and control of the process plant, which is largely automated and achieved with Process Control Software, consisting of programmable logic control (PLC) software and supervisory control and data acquisition (SCADA) Software. Process Control Software modules are managed as objects in the LMS. The LMS also functions as a repository of process experience and "lessons learned" through the operating life of the plant. Events such as production losses, unplanned outages and equipment failure are registered in the LMS along with the results of investigation and analysis of underlying causes and corrective actions taken.

The Plant Requirements Documents were reviewed, including the LMS, to confirm details were included in these documents. The Process Flow Diagram was extracted from the data base and is included at **Figure 3.4**. A number of documents were reviewed to confirm the information indicated in the SMS document (Ref.4) were included in the Plant Requirements Documents.

Details of the PLC operations and safeguards against PLC access and program changes were discussed with the plant engineer and operations personnel. The PLC program or functional parameters cannot be changed without access using an engineering workstation, which incorporates password protections. The site engineer explained the establishment of the safe operations philosophy and how this was implemented within the PLC control.

All documents reviewed included the appropriate information indicated in **Figure 5.1**. PLC protection was considered satisfactory to prevent inadvertent change of operation parameters. No further recommendations were made regarding the process safety information at the plant.

5.6 Contractor Management

The SMS document (Ref.4) indicates that all contractors who provide significant onsite services to regain complete the pre-qualification process, including the following:

- Contractor safety and environmental performance
- Contractor systems for safety and environmental management
- Competence and quality of contractor personnel
- Organisational culture and willingness of contractor employees to engage positively and comply with systems and procedures.

All contractors at the site are required to complete the Tomago Aluminium contractors site induction and the Regain Site induction. The Tomago site induction is conducted on-line and is a comprehensive process covering all safety aspects at the smelter required for contractors to access the site. Additional inductions are provided to contractors required to access specific areas where unique hazards are present. The Regain site induction is completed at the SPL plant and is conducted through a dedicated training package, presented manually to operators and contractors, who work for extended periods at the site.

The auditor completed the Tomago Aluminium contractor induction and confirmed the comprehensive nature of the induction.

Discussions were held with contractors at the SPL site to confirm they had completed the required inductions to access the Tomago smelter and SPL site. All contractors interviewed had completed the required inductions. Pre-qualification of contractors was also discussed with contractor personnel, all contractors at SPL at the time of the audit had completed the pre-qualification

The Regian Contractor Management system is considered to operate successfully and all contractors who work at the site are appropriately inducted and have provided the required pre-

qualification information such that regain would consider each contractor to be suitable to work on the plant with a comprehensive understanding of the safety requirements for the facility.

No further recommendations were made regarding Contractor Management at the plant.

5.7 Pre-Startup Safety Reviews

General pre-start up safety reviews are conducted using the Safe Work Check-sheets, which provide the procedure for regular startup of plant and equipment (see **Section 5.4**). Where major projects have been implemented, Inspection Test Plans (ITPs) and Factory Acceptance Test (FAT) documentation provide evidence that equipment and fabricated materials, provided as part of the project, meets the required specifications and standards. A quality checklist is provided in the ITP, which enables personnel involved with the pre-start to confirm the equipment and materials has been installed as per the intended design.

Pre-start checks also include:

- Review of electrical, mechanical and piping pre-operational tests;
- Familiarisation of plant operations with the process plant (training);
- Involvement of plant operators in work planning and job safety analysis for tasks associated with the process plant and the preparation of Safe Work Check-sheets for operating the plant.

Since the Capacity Expansion Project commencement of operations, there has been no project at the site requiring a detailed Pre-Startup Safety Review. Hence, it was no possible to audit this subject as part of this audit. A review of the pre-start documentation for the Capacity Expansion Project was conducted and the successful plant start up and operation is evidence that this system operates successfully.

It is recommended Pre-Startup Reviews be included in the next audit (2028) for projects that have been implemented at the site that require the application of this element (i.e. significant change projects).

5.8 Equipment Integrity

The SMS states that equipment integrity is assured through a process of Regain specifications provided to contractors and fabricators which sets out specific requirements regarding materials, qualification of trades, fabrication techniques, inspection, testing and certification, including quality of safety critical materials and equipment through a separate, independent inspection & testing process.

Maintaining equipment integrity is performed through a documented preventative maintenance (PM) programme, implemented as part of the LMS. The PM programme works on an asset-based approach, whereby assets at the site are entered into the data base, along with scheduled maintenance requirements (i.e. dates, work requirements, etc.).

The component of the Equipment integrity element assessed in this audit was the scheduled/ planned maintenance system operating within the LMS at the site. The auditor reviewed the operations of the LMS and the PM programme within this system. The equipment list within the LMS was reviewed and it was identified that all equipment at the site that would require a planned maintenance function was included in the list. Issue of work orders was reviewed and work order backlogs. It was identified that the work orders were reasonably up to date with little backlog requiring completion. It was identified that many maintenance tasks and plant checks are now

performed using an IPad, which is taken to the worksite and the required work schedule is listed on the IPad. Records of the work/check performed can then be directly loaded into the LMS along with any photos, checklists, etc., reducing the workload requiring input of manual forms to the LMS.

For tasks requiring plant access, which is not generally accessible during operations, the plant is shut down every Sunday (PM), so that specific tasks can be completed without the task extending and being incomplete for extended periods.

Discussions with the maintenance personnel indicated that the system operates successfully and maintenance tasks are generally completed within the required time period. The auditor considered that the plant maintenance system was operating successfully and as a result equipment integrity was being successfully maintain.

No further recommendations were made regarding the plant maintenance system.

5.9 Safe Work Practices

It was identified that the Regain facility had been operating for nearly 20 years, with a well-established SafeWork Practices system. The SMS document (Ref.4) states that one of the key Safe Work Practices is the control of work at the site using the Permit to Work (PTW) system. Hence, this system was audited as it was considered a key element within the Safe Work Practices component of the SMS.

Permits are issued for a range of tasks including:

- Hot work;
- Confined space entry;
- Excavation;
- Use of heavy equipment such as cranes;
- Electrical tagging of equipment and tools;
- Tagging of lifting equipment (a random check of tools at the site indicated tools were tagged as required); and
- Lock-out, tag-out (LOTO) and re-energisation work methods.

A review of the permits issued as part of the Safe Work Practices element, identified that the appropriate permits were being used at the site and that the PTW issue was in accordance with the permit form. An example of a Hot Work Permit and an Isolations Permit are included at **Appendix K**.

The PTW system was observed to operate successfully and no further recommendations were made regarding this component of the Safe Work Practices element.

5.10 Management of Change (MoC)

The MoC process is implemented using the MoC Standard at the site. A copy of this standard is included at **Appendix L**.

The SMS element for MoC states that change control for significant changes is essential when changing safety critical systems, hence, to initiate the MoC a significant change is required. A review of the standard indicates that; “Minor or temporary changes are documented in updated versions of relevant controlled documents. Significant changes are subject to formal review and approval”. The standard includes requirements for the review and approval process for a “significant” change, however, there does not appear to be a clear definition of what is a minor

change vs what is a significant change. **It is recommended that regain provide some definition within the MoC process on how to identify what a constitutes a minor vs significant change**.

Notwithstanding this, it was identified that a significant change to the plant had no occurred since the implementation of the Capacity Expansion Project. A review of the processes implemented as part of this project identified that the full MoC process was implemented, including full design documentation, manufacturing/construction/installation control and quality assessments. This is evidence of a successful implementation of a n MoC process, however, as noted above, it is difficult to discern what is minor and what is significant, hence, the recommendation made above.

5.11 Accident/Near Miss Reporting and Investigation

Regain operates an accident/near mis investigation and reporting system, which is managed by the Operations Manager. Anyone on site can raise an accident/near miss report, which is reviewed by the Operations Manager and an action implemented. The action may be to provide an immediate solution to an obvious issue or to conduct a detailed investigation. Once the action is identified it is included in the Register of Incidents and tracked to ensure completion. The Register of Incidents is reviewed at each weekly operations meeting to confirm progress occurs on action items in the list. Where an action requires engineering work, it is included in the maintenance tasks within the LMS so that it is tracked in that system.

An accident/near miss report is provided at **Appendix M**, demonstrating that this system is operating at the site. The auditor reviewed other documents associated with this system (e.g. Register of Incidents, weekly operations meeting minutes). Documents reviewed included the details referenced in the SMS document (Element 11, Ref.4).

Overall, the accident/near miss investigation and reporting system is considered to operate successfully at the site and includes both incidents and near misses. Near misses reporting allows response to events that may develop into incidents, hence, preventing the incident occurrence at a future date.

The accident/near miss register was reviewed and it was identified that the recorded incidents all related to near misses, there were no recorded events leading to harm to personnel. Typical events were reports of environmental issues (dust, unloading trucks in the incorrect location, contractor observed to be speeding, residual SPL in returned containers, excavator operation). There were no reported incidents associated with the process engineering or injuries to personnel.

The incident record register appears to be working successfully, hence, no further recommendations were made regarding this component of the SMS accident/near miss investigation and reporting element.

5.12 Training and Education

Training and education is covered at Regain by a comprehensive training programme, which is based on:

- Definition of the work to be performed at and/or in support of the SPL Processing Facility;
- Competencies required for people to be able to perform their work Processing Facility;
- The training and qualifications required to:
  - achieve a competency;
  - undertake a task; and
- Training modules to provide the required training.

Subjects covered by the training modules are:

- Site induction for employees and contractors (see **Section 5.6**);
- Properties of material handled at the facility, especially SPL;
- What the process plant does and the products produced;
- Work practices;
- Significant hazards with associated risks and controls;
- How to deal with an emergency; and
- Management systems as they apply to specific roles.

In addition to the training provided onsite, external training is also provided by Regain, including Safety for Supervisors, Licence for Loaders, forklift training & licensing.

Discussion with the site Operations Manager and regain Director indicated that a training matrix had been developed for the site, but this document was currently under review and update, hence, was not able to be reviewed in this audit. Hence, **it is recommended that Regain complete the Training Matrix update and continue its implementation at the site**.

Notwithstanding the status of the training matrix, a number of discussions were held with supervisors and operations personnel, all personnel indicated that had completed the Tomago Induction, completed the Regain Induction, had been trained in the work tasks for which they were responsible and had received emergency response training.

Whilst it appears the training is being implemented at the site, there is a potential for personnel to miss training/re-training due to lack of a document to effectively manage the training cycle. Hence, the completion of the training matrix is important in maintaining an effective training regime.

5.13 Procurement

The SMS document (Ref.4) states that the procurement activities focus on high quality PPE and ensuring parts and materials for maintenance of the plant meet the required specifications. Regain provide detailed specifications for material and equipment supply, which is passed to the suppliers as part of the procurement process.

Where equipment is manufactured, detailed Inspection Test Plans (ITPs) and Factory Acceptance Tests (FATs) are conducted (see **Section 5.7**) to ensure the equipment meets the design specifications. This level of procurement process is normally conducted for larger/significant projects, such as the Capacity Expansion Project. A review of this project indicates that these processes were implemented successfully within the project.

As noted above, during normal operations, the procurement process is aimed at ensuring parts and materials for maintenance of the plant meets specifications. This is commences when products are ordered with the issue of a specification for the product supply. A procurement report is established in the LMS and a purchase order raised. On receipt of the product, the delivery documentation is checked against the ordering documentation and the supplied component/material to ensure the delivery matches the order and that the equipment/material meets the specification. The procurement report is then completed in LMS to confirm the correct equipment/components/material was supplied.

A number of procurement reports were reviewed and all reports were confirmed to contain the appropriate ordering and checking documents required by this element of the SMS. No further recommendations are made with regards to procurement.

5.14 Emergency Planning

Regain has developed a site Emergency Response Plan (ERP). The plan index is provided below:

- Introduction and definition of an emergency;
- Aims and objectives of the Emergency Response Plan;
- Roles of stakeholders;
- Hazards;
- Types and levels of emergencies;
- Emergency functions and organisational structure;
- Emergency procedures and resources;
- Activation of the Emergency Response Plan, termination and reporting;
- Management of the Plan;
- Supporting information such as a site plan and emergency contacts; and
- Monitoring, audit and review of the Plan.

A review of the plan indicates it follows the principles of Hazardous Industry Planning Advisory Paper No.1 – Emergency Planning Guidelines for Industry. As the facility is not classified as a Manifest Site, under the provisions of the Work Health and Safety Regulation 2017 (the Regulation), it is not necessary to submit the ERP to the primary emergency services organisation as per Clause 361(2) of the Regulation.

Notwithstanding this, two(2) improvements to the plan are recommended:

- Section 12 of the plan states that the document would be reviewed every 12 months. The date of the plan was beyond the due date for review and update (around 4 weeks overdue). However, discussion with site personnel indicated that the plan was being reviewed and updated at the time of the audit. **It is recommended that the validity date of the Emergency Response Plan be reviewed at the next audit**.
- A review of the plan could not identify a site Layout Drawing showing the location of the primary and secondary safe assembly points. **It is recommended that a site plan be developed and the primary and secondary safe assembly points be shown clearly on the plan**. These two points should be well separated top ensure both points are no affected by incidents at the site.

5.15 Security Access and Control

It is noted that the SPL facility is located wholly within the Tomago Smelter site, hence, the Tomago security systems encompass the Regain site. The Tomago site is surrounded by a chainmesh fence with barbed wire around the full property. The entry gate is located on the southern side of the plant and comprises a gate house with boom gate entry for vehicles and swipe card turnstile entry for pedestrians. The gate is staffed 24/7. Entry to Tomago, and subsequently Regain, is by notification to the Tomago site gate that a visitor is expected. The visitor's details are provided to

the gate and the visitor must prove identity before entry is granted. As noted above, entry cannot be granted to the Tomago suite without the full induction has been completed and there is a reason for entry requirement (i.e. contractor doing work at the site). Visitors are required to be escorted by a Tomago or Regain employee throughout their whole stay on site.

The auditor first entered the Regain facility as a “visitor” and was required to prove identify at the Tomago site gate and complete the visitor’s induction before entry could be granted. Once the visitor’s induction was complete, a representative from Regian provided an escort to the SPL facility. Visitors to Regain are not required to do an induction where they are escorted throughout their whole stay at the plant. The visit process was exactly as stated in the SMS.

The SMS states that there are no DGs or other materials at the site that would attract criminal activities and the risk of vandalism is very low, if not negligible, due to the fact that the site is within the Tomago smelter complex.

The SMS document (Ref.4), states that site offices and control rooms are secured, when not attended, to prevent unauthorised access. Computer systems are automatically backed up, hence, in the event of systems failure, damage or fire, all software is recoverable and systems can be reinstalled and re-initiated. In the event of malicious damage to the process control equipment, such that the plant is no longer under the control of the process control software, the plant will automatically shut down. These security access controls were confirmed with the plant personnel during the audit.

Based on the site position (within the Tomago Smelter) and the security provisions implemented, it is considered that there is effective security at the Regain facility. No further recommendations are made with regards to security and access control.

5.16 Auditing of the SMS and ISO 45001 Accreditation

The Regain organisation employs a Safety, Environment and Quality Systems Officer who reports to the Managing Director. This person is responsible for ensuring the SMS complies with AS/NZS 45001 Safety Management Systems. As a AS/NZS 45001 accredited site, Regain are required to undergo audits as part of the accreditation process. Periodic audits are conducted as follows:

- Six monthly site inspection audits;
- Annual ISO 45001 Safety Management System surveillance audit;
- 3 year ISO 45001 Safety Management Systems re-certification audit.

Audit reports were reviewed as part of this audit to confirm recommendations and status of recommendation completion.

5.16.1 ISO-45001 Surveillance Audit

The most recent audit conducted as part of the ISO certification was a surveillance audit conducted in March 2024. This audit identified that the recommendations from the previous audit (conducted in 2023) had all been completed and all actions closed out.

The audit conducted in March 2024 raised three minor non-conformances and three observations. A review of the status of these items indicated that two had been

5.16.2 Independent Environmental Audit

The most recent environmental audit was conducted in August/September 2024. The audit was conducted to determine the environmental performance and compliance status of the Capacity Expansion Project at SPL.

The audit found that the site complies with the Development Approval DA MP_060050 MOD 2; the Environmental Assessment, including Statement of Commitments; Environmental Protection Licences #13269 and #20976 and the Environmental Hazardous Chemicals Act Licence #1630208. There are well managed systems of documentation to address these legislative requirements and there was evidence to demonstrate that these are well implemented. There were no non-compliances identified as by the audit.

6.0 REFERENCES

1. Hazardous Industry Planning Advisory Paper No.5 (2011) – Hazard Audits Guidelines, NSW Department of Planning & Industry.
2. Environmental Assessment - – Capacity Increase at the Regain Spent Potlining Facility, Tomago NSW, AECOM Report Revision 3 – November 2018
3. “The Australian Code for the Transport of Dangerous Goods by Road and Rail”, known as The Australian Dangerous Goods Code or ADG, ed. 7.8, 2023, Federal Office of Road Safety, Canberra, ACT
4. Safety Management System – Capacity Increase of SPL Processing Facility at Tomago, Regain Document No. 246R009v1.3-12 Dec 2024.

APPENDIX A
AUDITOR APPROVAL LETTER

Department of Planning, Housing and Infrastructure

NSW GOVERNMENT

Kevin Cooper
NSW Development Manager
Regain Services Pty Ltd
PO Box 1280
Newcastle NSW 2300
21 January 2025

Tomago Potliner Facility - 2024 Hazard Auditor approval

Dear Mr Cooper

I refer to your letter of 6 December 2024 requesting the approval of Mr Steve Sylvester of RiskCon Engineering to conduct the 2024 Hazard Audit at the Regain Potliner facility in accordance with Condition 16B of development approval MP 06_0050 as modified.

Having considered the qualification and experience of Mr Sylvester, approval is granted for Mr Sylvester to conduct the 2024 Hazard Audit in accordance with the condition.

Please ensure that the Hazard Audit is conducted and reported in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 5, 'Hazard Audit'*.

Please note that this approval is only applicable for the 2024 Hazard Audit and further approvals are required prior to conducting any future Hazard Audits under the approval.

Please contact me (02 9274 6344; nicholas.hon@planning.nsw.gov.au) if there are any queries on the above.

Thank you.

Yours sincerely

Nicholas Hon
A/ Team Leader – Hazards
Industry Assessments
As nominee of the Planning Secretary

4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150
Locked Bag 5022, Parramatta NSW 2124
www.dphi.nsw.gov.au
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APPENDIX B

STACK DISCHARGE ASSESSMENT RESULTS

Regain SPL Reprocessing Facility - Tomago Aluminium Smelter

Environmental Pollution Monitoring - Obtained Data

Environment Protection Licence Point 6 - Rotary Kiln Stack
Required Frequency - Special Frequency 2

Draft Regulatory Limit and Test Period	Material Processed	Carbon Monoxide (mg/cu m)	Cyanide (mg/cu m)	Dioxins and Furans - Lower Bound (ng/cu m)	Dioxins and Furans - Middle Bound (ng/cu m)	Dry Gas Density	Fine Particulate (mg/cu m)	Flow (cu m/sec)	Moisture (%)	Nitrogen Oxides (mg/cu m)	Oxygen (02) (%)	Polycyclic Aromatic Hydrocarbons (mg/cu m)	Sulphur Dioxide (mg/cu m)	Temperature (deg celcius)	Total Fluoride (mg/cu m)	Total Particulate (mg/cu m)	Type 1 & Type 2 Substances in Aggregate (mg/cu m)	Cadmium (mg/cu m)	Velocity m/sec	Volatile Organic Compounds (mg/m^3)	Date Sampled	Date Obtained	Date Published
Current Draft Regulatory Limit		tba	1.0	<-----0.1 in total----->		n.a.	10	n.a.	n.a.	25	n.a.	0.2	25	n.a.	5	20	0.5	0.025	n.a.	10			
Jun-July 2024	SPL	98	<0.014	0.00043	0.0012	1.29	0.21	10	1	3	20.4	0.0027	<3	77.7	0.029	0.5	0.012	<0.00025	12	0.089	Jun-Jul 2024	18-Jul-24	23-Jul-24
Oct-Nov 2024	SPL	195	<0.013	0.00042	0.0024	1.29	<0.11	9.8	1.6	2	20.1	0.0029	<3	89.9	2.3	0.09	0.027	<0.00034	12	0.86	Oct-Nov 2024	16-Dec-24	19-Dec-24

116G086 EPL Pollution Monitoring Data - P246 v1.2 - Oct 2024

Regain SPL Reprocessing Facility - Tomago Aluminium Smelter

Environmental Pollution Monitoring - Obtained Data

Environment Protection Licence Point 3 - Preparation Facility Stack
Required Frequency - Special Frequency 1

Draft Regulatory Limit and Test Period	Material Processed	Dry Gas Density	Fine Particulate (mg/cu m)	Flow (cu m/sec)	Moisture (%)	Oxygen (02) (%)	Temperature (deg celcius)	Total Particulate (mg/cu m)	Velocity m/sec	Date Sampled	Date Obtained	Date Published
Current Draft Regulatory Limit		n.a.	10	n.a.	n.a.	n.a.	n.a.	20	n.a.			
Jul-24	SPL	1.29	0.089	13	1	20.9	22.7	0.23	12	Jul-24	16-Aug-24	18-Aug-24
Oct-24	SPL	1.29	<0.098	13	1.1	20.9	29.9	0.2	13	Oct-24	27-Nov-24	29-Nov-24
Jan-25	SPL	1.29	0.69	12	1.5	20.9	27.8	0.7	12	Jan-25	14-Jan-25	15-Jan-25

116G092 EPL Pollution Monitoring Data - P276 v1.2 - Jan 2025

Regain SPL Reprocessing Facility - Tomago Aluminium Smelter

Environmental Pollution Monitoring - Obtained Data

Environment Protection Licence Point 1 - Rotary Kiln Stack

Required Frequency - Bi-Annually

Draft Regulatory Limit and Test Period	Material Processed	Carbon Monoxide (mg/cu m)	Cyanide (mg/cu m)	Dioxins and Furans - Lower Bound (ng/cu m)	Dioxins and Furans - Middle Bound (ng/cu m)	Dry Gas Density	Fine Particulate (mg/cu m)	Flow (cu m/sec)	Moisture (%)	Nitrogen Oxides (mg/cu m)	Oxygen (02) (%)	Polycyclic Aromatic Hydrocarbons (mg/cu m)	Sulphur Dioxide (mg/cu m)	Temperature (deg celcius)	Total Fluoride (mg/cu m)	Total Particulate (mg/cu m)	Type 1 & Type 2 Substances in Aggregate (mg/cu m)	Cadmium (mg/cu m)	Velocity m/sec	Volatile Organic Compounds (mg/m^3)	Date Sampled	Date Obtained	Date Published
Current Draft Regulatory Limit		tba	1.0	<-----0.1 in total----->		n.a.	10	n.a.	n.a.	25	n.a.	0.2	25	n.a.	5	20	0.5	0.025	n.a.	10			
Dec 2012 to Feb 2013	First Cut SPL	136	See Note 2	0.0045	0.0053	1.29	2.8	11.3	2.5	3	20.23	0.096	0	81.5	0.7	1.9	0.019 <		17.3	n.a.	26/27 Feb 13	31-Oct-13	8-Nov-13
	Second Cut SPL	116	See Note 2	0.00021	0.00099	1.29	0.27	10.7	3.1	1	21.3	0.056	0	81.3	1.4	1.1	0.02	0.0049	16.7	n.a.			
Mar 2012 to May 2013	First Cut SPL	116	See Note 2	0.00066	0.00098	1.21	0.26	6.2	2.1	7	20.32	0.085	4	76.9	0.098	2.7	0.1	0.0077	9.7	n.a.	23&27 May 13	31-Oct-13	8-Nov-13
	Second Cut SPL	59	See Note 2	0.0011	0.0017	1.29	1.2	8.2	1.7	10	20.49	0.011	5	78	0.089	0.56	0.1	0.0047	13	n.a.			
Note 1 - Plant under commissioning during August and September. Sampling deferred until October.																							
Note 2 - Cyanide sampling method not specified and under development during December, 2012 and March, 2013.																							
Note 3 - Test results from February and May 2013 sampling made available after verification of testing methods																							
Note 4 - Monitoring test for Poly Aromatic Hydrocabons for second cut SPL material not performed in October due to abnormal conditions (test to be performed in November)																							
Jun, Jul, Oct 2013	First Cut SPL	57	0.19	0.00067	0.003	1.29	1.4	11	2.2	10	20.45	0.16	8	76.3	0.077	0.92	0.016	0.0082	17	n.a.	3 & 8 Oct 13	31 Oct and 18 Nov 2013	8 Nov and 29 Nov 2013
	Second Cut SPL	58	0.044	0.003	0.0033	1.29	4.8	10.8	3.3	9	20.32	See Note 4	2	74.8	0.26	<0.34	0.064	0.0061	16.8	n.a.			
Nov 2013 (Supplement-ary testing)	First Cut SPL	n.a.	<0.11	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.21	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	14 & 20 November	16-Dec-13	20-Dec-13
	Second Cut SPL	n.a.	<0.084	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			
	First Cut SPL	n.a.	0.86	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			
	Second Cut SPL	n.a.	0.095	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.			
Note 5 - Two monitoring tests for cyanide were performed in November after development of cyanide sampling method in October 2013																							
Note 6 - Single monitoring test for Aromatic Hydrocabons for scond cut SPL material not performed in October due to abnormal conditions was done in November																							
Feb-14	First Cut SPL	8	0.0037	0.0011	0.0017	1.29	0.54	6.4	3.3	7	20.4	0.4	13	77.8	0.42	<0.28	0.013	0.0018	13.3	n.a.	17 & 21 Feb 14	28-Mar-14	29-Mar-14
	Second Cut SPL	56	0.021	0.0033	0.00072	1.29	3.1	8.6	3	8	20.3	0.039	9	78.9	0.6	1.9	0.028	0.015	18	n.a.			
Sep-14	First Cut SPL	112	<0.0031	0.0086	0.013	1.29	5.6	8.03	2.27	11	20.01	0.41	<3	80.3	0.85	8.7	0.03	<0.00016	17	5.8	24-25 Sept 14	5-Nov-14	28-Nov-14
	Second Cut SPL	112	<0.0028	0.016	0.02	1.29	2.1	8.3	3.03	1	20.29	0.19	<3	71.7	0.57	8.2	0.0054	<0.0002	17	0.3			
Note 7 - The addition of a 100 percentile concentration limit for volatile organic compounds at Point 1 (condition L2.3)																							
Mar - May 2015	First Cut SPL	56	0.1	0.0007	0.0011	1.29	7	8.8	3	4	20.24	0.0061	<0.1	77.5	1.8	8.9	0.12	0.0016	18.3	2.6	Mar - May 2015	17-Jun-15	19-Jun-15
	Second Cut SPL	31	0.7	0.00036	0.00084	1.29	6.6	8.7	3.5	6	20.49	0.0058	<0.1	76.5	2.7	3.8	0.066	0.0036	18.5	3.3			
Oct - Nov 2015	First Cut SPL	121	0.0075	0.0036	0.0041	28.9	1.4	7.9	2.8	5	20.12	0.23	<1	85.4	0.28	4.7	0.072	0.0087	17	<0.38	Oct - Nov 2015	4-Dec-15	4-Dec-15
	Second Cut SPL	67	0.23	0.0052	0.0055	28.9	1.2	8.5	3.5	2	20.19	0.071	<1	82.2	0.74	4.5	0.0085	0.0064	18	<0.37			
Apr - May 2016	First Cut SPL	122	0.29	0.0005	0.0022	1.29	2.1	8.9	3.15	8	20.32	0.0068	<1	83.1	0.074	2.6	0.00025	0.00017	18.75	<0.36	Apr-May 2016	30-Jun-16	1-Jul-16
	Second Cut SPL	66	0.57	0.0004	0.0022	1.29	2.1	9.4	1.98	3	20.27	0.0067	<1	83.5	0.38	1	0.017	0.0026	20	<0.36			
Sept - Nov 2016	First Cut SPL	95	0.41	0.000041	0.0009	1.29	1.5	8.9	2.6	4	20.2	0.02	<0.1	84	0.79	8.1	0.004	<0.00017	19	<0.36	Sept - Nov 2016	25-Nov-16	25-Nov-16
	Second Cut SPL	91	0.28	0.0000026	0.00095	1.29	1.8	9	2.3	6	20.3	0.029	<0.1	86	0.61	8	0.043	0.000085	19	<0.36			
Apr - May 2017	First Cut SPL	51.00	0.16	0.00045	0.00120	1.29	3.60	8.70	3.00	2.00	20.40	0.00084	<1	78.50	0.16	12.00	0.028	0.00710	18.00	0.40	Mar - May 2017	20-Jul-17	20-Jul-17
	Second Cut SPL	57	<0.072	0.0013	0.0014	1.29	9.9	8.3	3.8	<1	20.3	0.0029	<1	88.1	0.047	13	0.031	0.00089	18	0.3			
Aug - Nov 2017	First Cut SPL	73.00	<0.062	0.04000	0.04000	1.29	3.50	9.00	2.30	3.00	20.20	0.03900	2	82.00	0.25	15.00	0.017	0.00850	18.00	<0.27	Aug - Nov 2017	5-Dec-17	5-Dec-17
	Second Cut SPL	50	<0.066	0.013	0.013	1.29	6.6	8.7	2.5	8	20.1	0.22	8	81.5	0.34	7.5	0.0039	0.00017	18	<0.36			
Mar - May 2018	First Cut SPL	68.00	<0.063	0.00280	0.00300	1.29	2.40	8.60	1.80	5.00	20.50	0.01300	5	74.00	0.61	9.30	0.017	0.00060	18.00	<0.36	Mar - May 2018	12-Jul-18	17-Jul-18
	Second Cut SPL	36	<0.051	0.0035	0.0041	1.29	2.9	9.3	1.8	5	20.4	0.01	5	84	0.83	9.9	0.032	0.017	19	<0.36			
Aug - Oct 2018	First Cut SPL	84	0.034	0.0019	0.0022	1.29	3.4	8.8	2.3	7	20	0.0069	<1	80.5	0.073	5.2	0.192	0.00024	18.3	<0.33	Aug - Oct 2018	8-Nov-18	8-Nov-18
	Second Cut SPL	41	<0.077	0.00075	0.00094	1.29	3.9	8.9	1.8	2	20.2	0.0089	1	76.5	0.36	6.8	0.0137	0.00042	18.3	1.8			
Feb - Mar 2019	First Cut SPL	204	0.81	0.00013	0.0005	1.29	3.2	8.5	2.2	9	20.1	0.011	<1	80	0.76	7	0.011	0.0014	17.8	<0.18	Feb - Mar 2019	12-Apr-19	16-Apr-19
	Second Cut SPL	34	0.098	0.0027	0.0034	1.29	1.6	8.4	1.8	5	20.4	0.011	3	84	0.79	11	0.007	0.00053	17.5	<0.18			
Aug - Oct 2019	First Cut SPL	70	0.26	0.0003	0.00059	1.29	10	6.6	2.1	9	20.1	0.013	2	86	0.69	16	0.011	0.0027	14	<0.18	Aug - Oct 2019	12-Nov-19	12-Nov-19
	Second Cut SPL	68	0.25	0.00027	0.00076	1.29	2.8	6.4	1.9	3	20.2	0.028	2	79	0.39	3.5	0.038	0.023	13	1.8			
Feb-20	First Cut SPL	67	0.76	0.024	0.03	1.29	3.2	8.7	2.6	9	20.3	0.086	6	85	0.8	4.1	0.0089	0.0013	19	<0.19	Feb-20	20-Apr-20	20-Apr-20
	Second Cut SPL	85	1	0.011	0.015	1.29	0.67	9	2.2	6	20.6	0.11	6	85	0.75	10	0.02	0.00071	19	<0.19			
Sept - Nov 2020	First Cut SPL	66	0.28	0.0015	0.004	1.29	1.4	9	1.7	3	20.2	0.00092	2	86	0.098	2.5	0.019	0.00065	19	0.28	Sept - Nov 2020	17-Dec-20	22-Dec-20
	Second Cut SPL	82	0.49	0.0012	0.0038	1.29	2.0	8.8	2.1	5	20.4	0.0025	<1	88	1.2	3.4	0.0089	0.000035	18	0.42			
June - Aug 2021	SPL	79	0.51	0.00014	0.00043	1.29	<0.11	8.2	1.8	5	20.2	0.0000045	<1	87.1	0.071	0.56	0.13	<0.0001	17	<0.36	June - Aug 2021	7-Oct-21	15-Oct-21
Sept - Nov 2021	SPL	32	0.61	0.00035	0.00076	1.29	1.8	7.7	1.6	3	20.2	0.024	<1	93.2	0.41	3.7	0.29	<0.0001	16	<0.36	Sept - Nov 2021	27-Sep-21	4-Nov-21
March - May 2022	SPL	132	0.42	0.0014	0.0018	1.29	0.14	7.8	2.5	20	20.3	0.017	<3	96	0.19	0.78	0.016	0.00015	17	<0.38	March - May 2022	24-Jun-22	29-Jun-22
June-Sept 2022	SPL	100	<0.014	0.000015	0.00093	1.29	3.8	7.8	1.5	5	20.2	0.065	<3	82.3	0.095	2.4	0.1	<0.0019	16	0.2	June - Sept 2022	27-Oct-22	3-Nov-22
Nov 2022 - Feb 2023	SPL	77	0.022	0.00025	0.0011	1.29	2.3	6.4	2.2	7	20.1	0.025	<3	87.5	0.16	18	0.096	<0.002	13	<0.74	Nov 2022 - Feb 2023	28-Feb-23	2-Mar-23
April-May 2023	SPL	60	0.034	0.00071	0.0013	1.29	<0.23	6.8	2	16	20.3	0.0026	<3	79.8	0.11	<0.28	0.046	<0.0019	14	0.25	April - May 2023	15-Jun-23	20-Jun-23
Nov 2023 - Feb 2024	SPL	138	<0.012	0.0053	0.0064	1.29	0.6	7.5	1.6	3	20.5	0.0045	<1	80.2	0.71	2.5	0.036	<0.000086	16	0.59	Nov 2023 - Feb 2024	21-Feb-24	22-Feb-24
May-24	SPL	42	<0.014	0.00078	0.0021	1.29	0.092	8.7	1.7	4	20.4	0.0033	<1	82	0.027	0.47	0.0094	<0.00029	18	<0.36	May-23	27-Jun-24	2-Jul-24
Nov-24	SPL	425	<0.013	0.0012	0.0047	1.29	0.1	7.1	1.5	12	20.2	0.0038	<3	83.3	0.19	0.56	0.012	<0.00019	15	0.19	Nov-24	24-Dec-24	7-Jan-25

APPENDIX C

BURNER MANAGEMENT INSPECTION/TEST

INSTROCAL PTY LTD.
INSTRUMENTATION - CALIBRATIONS & COMBUSTION SERVICES

TYPE B COMBUSTION APPLIANCE AUDIT REPORT

SERVICE DATE: 08/07/2024

CUSTOMER: REGAIN MATERIALS
LOCATION / ADDRESS: 638 TOMAGO ROAD, TOMAGO, NSW, 2322
SERVICE TECHNICIAN: B.IPSEN

APPLIANCE DESCRIPTION: 246 PLANT
FUEL TYPE: NATURAL GAS

APPLIANCE SAFETY INTERLOCK TESTS

COMPONENT	LOCKOUT/TRIP	SETTINGS	NOTES
FLAME SUPERVISION (AS 3814 2.25-3.5)	✓		QRA53
MAIN OPSO (AS 3814 – 2.11)	✓	27.9 KPA	
PILOT OPSO (AS 3814 – 2.11)	✓	10.4 KPA	
PILOT HIGH GAS P/S (AS 3814 – 2.11)	NA		
PILOT LOW GAS P/S (AS 3814 – 2.12)	NA		
MAIN HIGH GAS P/S (AS 3814 – 2.11)	NA		
MAIN LOW GAS P/S (AS 3814 – 2.12)	✓	100 mbar	
COMBUSTION AIR (AS 3814 – 2.18/2.21)	✓	18 mbar	
RECIRCULATION AIR (AS 3814 2.18/2.21)	NA		
EXHUAST AIR (AS 3814 2.18/2.21)	NA		
HIGH / OVER TEMPERATURE (AS 3814 3.4)	✓	125'C	
OTHER LIMITS (AS 3814 3.4)	✓	3 mbar	INDICATION ONLY – DIRTY FILTER

	INLET/SUPPLY (KPA)	PILOT REG (KPA)	MAIN REG (KPA)	PILOT @ IGN (KPA)
APPLIANCE OPERATING GAS PRESSURES (STATIC)	102.2	5.95	21.6	2.68

APPLIANCE APPROVED BY TECHNICAL REGULATOR	YES			
LINKAGES / COUPLINGS SECURE	CHECKED – OK			
COMBUSTION AIR FILTER	CLEANED - OK			
MAIN GAS FILTER (AS 3814 2.14)	**INLET**	102.1 KPA	**OUTLET**	102.1 KPA
PILOT GAS FILTER (AS 3814 2.14)	**INLET**	101.9 KPA	**OUTLET**	101.9 KPA
PURGE TIME DURATION (AS 3814 2.20)	3 MIN EXT PURGE TIMER			
MAIN - SSOV PRESSURE TEST (AS 3814 2.9/3.6)	**1ST BLOCK**	PASS	**2ND BLOCK**	PASS
MAIN - SSOV SYSTEM (AS 3814 2.15)	**POSITION PROVING / LEAKAGE DETECTION / CPI**			
	PRESSURE SWITCH SET @ 100 mbar – KROM TC410-1T			
PILOT - SSOV PRESSURE TEST (AS 3814 2.9/3.6)	**1ST BLOCK**	PASS	**2ND BLOCK**	PASS
PILOT - SSOV SYSTEM (AS 3814 2.15)	**POSITION PROVING / LEAKAGE DETECTION / CPI**			
	MANUAL TEST			
SPARK ELECTRODE CONDITION	OK			
PIPEWORK AND FLEXIBLE HOSE CONDITION	OK			
UV DETECTOR SIGNAL – NORMAL OPERATION	50-60uA			

INSTROCAL PTY LTD. INSTRUMENTATION - CALIBRATIONS & COMBUSTION SERVICES
A: 4/5 Frost Drive, Mayfield West NSW, 2304
P: 02 4952 8222 F: 02 4952 8333
E: sales@instrocal.com.au
W: instrocal.com.au

- **Gas & Process Control Equipment**
- **Combustion Audits / Service / Breakdowns & Repairs**
- **Instrumentation & Calibrations**
- **Gas Detection & Monitoring**
- **Engineering & Design**

INSTROCAL PTY LTD.
INSTRUMENTATION - CALIBRATIONS & COMBUSTION SERVICES

NOTES:

- IC50-30W20E AIR ACTUATOR.
- IC20 GAS CONTROL.
- LGK16.635A27 BURNER CONTROLLER.
- NORTH AMERICAN 4384 BURNER.
- PILOT AIR VALVE SET @ 1/2.

COMBUSTION ANALYSIS DATA
(AS 3814-3.6/5.7)

	LOW FIRE		HIGH FIRE	
	AS FOUND	**AS LEFT**	**AS FOUND**	**AS LEFT**
FLUE TEMP'C	184	184	250	250
O2%	18.5	18.5	16.9	16.9
CO (ppm)	300	300	491	491
CO2%	1.39	1.39	2.17	2.17
CO/CO2 RATIO	0.0216	0.0216	0.0226	0.0226
EXCESS AIR	755	755	447	447
EFFICIENCY (g)	44.6	44.6	49.1	49.1
BURNER AIR PRESURE "inWC	2.6"	2.6"	2.7"	2.7"
BURNER GAS PRESSURE "inWC	0.9"	0.9"	31.2"	31.2"

*GAS PRESSURE MEASURED AT BOTTOM OF IC20 GAS VALVE.

TEST EQUIPMENT USED	
GAS ANALYSER	TESTO 300
DIGITAL MANOMETER	TPI 645

RECOMMENDATIONS:

- NEXT AUDIT DUE IN 6 MONTHS.
- RECOMMEND CHECKING SPARE PARTS STOCK LEVELS.

APPENDIX D

ID FAN & HYDROMIXER INTERLOCK TEST PROCEDURE

Tomago P246 Thermal Treatment Plant Combustion System Annual Interlock Testing Procedure

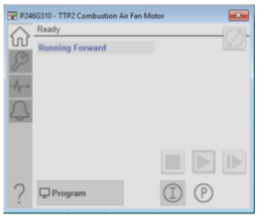
Objectives

1. To provide guidance for suitably trained personnel to carry out testing of each fault condition which will cause the P246G200 Kiln Burner to interlock, and aims to confirm successful;
   a. Shutdown of the P246G200 Kiln Burner to a safe state
   b. Shutdown of all other associated Thermal Treatment Plant equipment
   c. Recovery back to an operational state
2. To identify and rectify any issues with plant equipment which may prevent safe operations
3. To align with requirements in Australian Standard *AS1375; 2013 Industrial Fuel Fired Appliances* and *AS3814; 2018 Industrial and Commercial Gas Fired Appliances* which require Combustion System interlocks to be tested on an annual basis

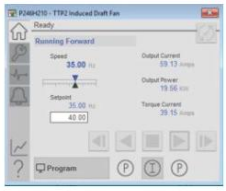
- **Procedure to be completed by trained personnel with detailed knowledge of appropriate methods for testing operation of gas and air train instrumentation**
- **A licenced electrician must also be present for completion of Steps 4A & 11 to allow access inside P246G750 Burner Control Panel**
- **Prior to commencing procedure user with maintenance level access must be logged onto HMI**

Date_____

For each interlock listed in the following section, confirmation of successful completion is shown under the "Confirmation" column, along with the procedure to recover from the fault prior to restarting the burner. *246E002 Tomago 246 Thermal Treatment Plant Start Up & Shut Down Procedure* should be followed in order to restart the burner between each interlock test.

Item	*Interlock*	*Procedure*	*Confirmation*	*Reinstate Supply*	*Check*
1	**Combustion Air Fan Motor (P246G310) Not Running**	- Transfer P246G310 Combustion Air Fan control to "Operator" and press "Stop"  ***Figure 1; Control Face Plate for P246G310 Combustion Air Fan Motor (on P246 Kiln page)***	- Combustion air fan immediately shuts down - P246G200 Burner immediately shuts down - White "Combustion Air Fan Run" and Blue "Combustion Air Proven" lights not illuminated on P246G750 Burner Control Panel - "Combustion Air Fan; Not Running" alarm shown on HMI	- Return P246G310 Combustion Air Fan control to "Program" - Press "Services Reset" button on P246G750 Burner Control Panel and "Reset" button on 246 MCC and ensure faults cleared - Acknowledge alarms on HMI alarm log and confirm all alarms reset - Follow *246E002 Tomago 246 Thermal Treatment Plant Start Up & Shut Down Procedure* and ensure all equipment is returned to normal operation	

Item	Interlock	Procedure	Confirmation	Reinstate Supply	Check
2	**Combustion Air Low Pressure (P246G275) Detected**	- Note existing setting of Combustion Air Low Pressure Switch (P246G275) - Remove top cover of pressure switch and increase set pressure until burner interlocks  *Remove pressure switch cover and increase setting* ***Figure 2; Combustion Air Instrumentation***	- P246G200 Burner immediately shuts down - "Combustion Air Fan Fault" red light lit and "Combustion Air Proven" blue light not lit on P246G750 Burner Control Panel - "P246G275; TTP2 Combustion Air Proven; Air Not Proven" alarm shown on HMI	- Return Combustion Air Low Pressure Switch (P246G275) to original setting and replace cover - Press "Services Reset" button on P246G750 Burner Control Panel and "Reset" button on 246 MCC and ensure faults cleared - Acknowledge alarms on HMI alarm log and confirm all alarms reset - Follow *246E002 Tomago 246 Thermal Treatment Plant Start Up & Shut Down Procedure* and ensure all equipment is returned to normal operation	

Item	Interlock	Procedure	Confirmation	Reinstate Supply	Check
3	**Induced Draft (Dust Collector) Fan (P246H210) Not Running**	- Transfer P246H210 Induced Draft Fan from "Program" to "Operator" and press "Stop"  ***Figure 3; Control Face Plate for P246H210 Induced Draft Fan (on P246 Dust Collector page)***	- Fan should commence decelerating - Due to deceleration time set in fan variable speed drive to reduce from operating speed to stop, P246H210 Induced Draft Fan Motor and P246G200 Burner will not immediately shut down - Burner will stop when speed of Induced Draft Fan drops below approximately 30 Hz, then fan will continue to decelerate until speed of 0 Hz is reached - "Dust Collector Fan Proven" blue light not lit on P246G750 Burner Control Panel - "P246H210; TTP2 Dust Collector Fan Proven; Fan Not Proven" alarm shown on HMI	- Transfer P246H210 Induced Draft Fan control back to "Program" - Press "Services Reset" button on P246G750 Burner Control Panel and "Reset" button on 246 MCC and ensure faults cleared - Acknowledge alarms on HMI alarm log and confirm all alarms reset - Follow *246E002 Tomago 246 Thermal Treatment Plant Start Up & Shut Down Procedure* and ensure all equipment is returned to normal operation	

APPENDIX E
SAFETY POLICY

Safety Policy

Regain

Regain actively controls the risks associated with our operations that may cause injury to people or that may adversely affect their health. The objective of this policy is to have no injuries or damage to the health of people as a result of Regain activities.

We do not compromise the safety and health of human beings in the false belief that efficiency or quality or cost savings can be increased by putting people at risk. This philosophy:

- Reflects the fundamental commitment by Regain management to safety and to ensuring that the resources required for safety are provided
- Guides the safety culture of the Regain organisation.

We are relentlessly mindful that we deal with hazards that have the potential for a major accident. Our work involves the transformation of hazardous materials to products that are safe to handle and use. We put special focus on these hazards in the manufacture of Regain products and, in the design, construction, operation and maintenance of Regain process plants.

The Regain approach to safety is summarised in the following six steps.

1. Identify the hazards and the ways accidents could occur and where people could be injured. We refer to the possibility of injury or damage to heath as a risk.
2. Remove the hazards where it is realistic to do so.
3. Develop methods for controlling the risks.
4. Provide training so that people know about the hazards and the methods for controlling the risks.
5. Have people take responsibility for their workplace and control safety and health risks.
6. Have a system of communication, reporting and investigation to constantly alert for new hazards and better ways to be safe.

Each person working with Regain is expected to learn about the hazards associated with the work in which they are involved. They are then required to take responsibility for their area of work and control the risks.

We foster communication and understanding by making sure that the words written in this Safety Policy and in the work systems used in the workplace are easily understood by all the people working with Regain.

Regain sets objectives and targets to ensure continual improvement aimed at advancing the objective of this Policy and to comply with all relevant regulatory requirements.

Safety systems are designed to comply with the requirements of the international health and safety system standard International Standards Organisation ISO 45000. Regain has a systematic, documented approach to safety management that has the following key elements:

- Policies that provide the guiding principles for management of the Regain organisation
- Standards that define the minimum set of requirements that support a coherent approach to safety across the Regain organisation
- A set of complementary Plans that are attuned to each Client or Customer requirements, regulatory requirements, particular objectives, how those objectives will be achieved and organisational responsibilities
- Periodic audit to verify conformance with Policies, Standards and the Plans.

Regain safety management systems are reviewed periodically by Regain management to ensure their continued relevance and effectiveness in meeting regulatory, Client and Customer needs.

For and on behalf of Regain
B. J. Cooper, Director

100B005 v7.2 – 17 Jan 2024

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APPENDIX F
SAFETY ENVIRONMENTAL QUALITY CERTIFICATES

SCI QUAL INTERNATIONAL

Safety Management Systems

Certificate of Registration

Regain Services Pty Ltd

G62/63-85 Turner St, Port Melbourne VIC 3207
Regain SPL Processing Facility
Tomago Aluminium Smelter
Tomago Road, Tomago NSW 2322

In recognition of the implementation of a management system conforming to

ISO 45001:2018

The Scope of Certification covers the following activities:

Reprocessing Spent Pot Lining (SPL) from Aluminium Smelting industry into non-hazardous product used in the cement industry. Design and project manage construction of SPL processing plant.

Certificate No.	Date of Issue	Certification Date	Expiry Date
5663	21 March 2023	16 March 2020	15 March 2026

Alain Etchegaray
GENERAL MANAGER

Signed for and on behalf of
Sci Qual International Pty Ltd

JAS-ANZ

Level 7, 10 Felix Street, Brisbane Qld 4000

The certificate of Registration, which remains the property of Sci Qual International Pty Ltd, is granted subject to the Regulations governing the certification scheme operated by Sci Qual International Pty Ltd and in respect of goods or services described in the schedule hereto, bearing the same number as this certificate.

SCI QUAL INTERNATIONAL

Environment Management Systems

Certificate of Registration

Regain Services Pty Ltd

G62/63-85 Turner St, Port Melbourne VIC 3207
Regain SPL Processing Facility
Tomago Aluminium Smelter
Tomago Road, Tomago NSW 2322

In recognition of the implementation of a management system conforming to

ISO 14001:2015

The Scope of Certification covers the following activities:

Reprocessing Spent Pot Lining (SPL) from Aluminium Smelting industry into non-hazardous product used in the cement industry. Design and project manage construction of SPL processing plant.

Certificate No.	Date of Issue	Certification Date	Expiry Date
5662	21 March 2023	16 March 2020	15 March 2026

Alain Etchegaray
GENERAL MANAGER

Signed for and on behalf of
Sci Qual International Pty Ltd

JAS-ANZ

Level 7, 10 Felix Street, Brisbane Qld 4000

The certificate of Registration, which remains the property of Sci Qual International Pty Ltd, is granted subject to the Regulations governing the certification scheme operated by Sci Qual International Pty Ltd and in respect of goods or services described in the schedule hereto, bearing the same number as this certificate.

SCI QUAL INTERNATIONAL

Quality Management Systems

Certificate of Registration

Regain Services Pty Ltd

G62/63-85 Turner St, Port Melbourne VIC 3207
Regain SPL Processing Facility
Tomago Aluminium Smelter
Tomago Road, Tomago NSW 2322

In recognition of the implementation of a management system conforming to

ISO 9001:2015

The Scope of Certification covers the following activities:

Reprocessing Spent Pot Lining (SPL) from Aluminium Smelting industry into non-hazardous product used in the cement industry. Design and project manage construction of SPL processing plant.

Certificate No.	Date of Issue	Certification Date	Expiry Date
5661	21 March 2023	16 March 2020	15 March 2026

Alain Etchegaray
GENERAL MANAGER

Signed for and on behalf of
Sci Qual International Pty Ltd

JAS-ANZ

Level 7, 10 Felix Street, Brisbane Qld 4000

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APPENDIX G

HAZARD & RISK MANAGEMENT STANDARD

Hazard and Risk Management Standard

Regain

Objective

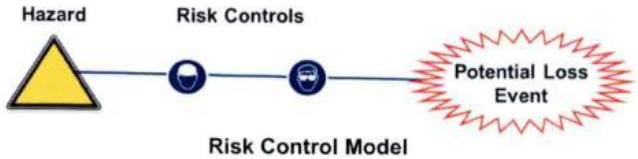
Risk is eliminated or minimised so far as is reasonably practicable.

Explanation

A hazard is a source of potential harm or damage that can cause a loss. Risk is defined as the probability of a loss. Risks are eliminated so far as is reasonably practicable. Where it is not reasonably practicable to eliminate risks, then those risks are minimised so far as is reasonably practicable. Reasonably practicable means realistic, practical and able to be done after considering:

- hazards and credible potential losses
- the options for preventing or mitigating losses
- what the people concerned know or should be expected to know.

Regain applies this framework for safety and environmental risk management and for other aspects of its business where there is a risk of substantial loss. The underlying approach is to (a) avoid events that could cause loss (loss events); or (b) to mitigate the extent of harm or damage if a loss event does occur. Risk controls provide (a) protection barriers in the form of controls such that loss events are avoided; or (b) mitigation controls to limit the extent of damage or harm if a loss event actually occurs.



Risk Control Model

Requirements

Hazard Identification and Risk Control

Hazards and risk controls are systematically identified and documented through:

- Engineering Design Risk Analysis for plant equipment
- Hazard and Operability Studies (HAZOPs) for process plants
- Hazard and Loss Event Prevention Analysis (HAZLEPs) for activities
- Work Planning for tasks including plant operations and maintenance
- Hazard and Incident reporting for use by employees, contractors and visitors.

Hierarchy of Controls

Controls are prioritised and implemented in accordance with the following hierarchy of controls with preference given to the controls at the highest level.

1. Elimination – eliminate the hazard where it is reasonably practicable to do so
2. Substitution – substitute the equipment or method with an alternate approach that is less hazardous
3. Engineering – implement engineering solutions to isolate the hazard
4. Administrative – implement administrative procedures such as safety rules
5. Personal Protective Equipment – wear body protection equipment such as safety glasses.

Consultation

Front line workers, Health and Safety Representatives and other stakeholders are consulted on hazards and control measures. A key feature of consultation is an emphasis on involvement of people through respectful face-to-face conversation.

Reinforcement of Awareness and Mindfulness

Hazard and control awareness and mindfulness are fostered with the people involved in work using Work Planning Forms and Safe Work Checksheets at the start of each task. Documents used by front line people are written at a literacy level and in a style that is relevant and engages the front line people.

APPENDIX H
WORK PLANNING FORM & JOB SAFETY ANALYSIS

Work Planning Form

Regain

Task Information

Site: Tomago Date: 14/01/25

Main Activity: operate forks

Location on the site:

Title of the task: operate forks.

People Involved In this Work Planning and Job Safety Analysis

	Name	Post	Signature
Task Leader			
Other participants	Luke Stenway	fitter	
	Eric Dennis	operator OP	Eric Dennis
	Clint Bentley		

Review (office use)

Reviewed by: John Cooper Date: 14/1/25

Safe Work Checksheet Reference Code: Date:

105F026 v2.0 – 22 Jan 2016

Work Planning Form

Regain

Job Hazard Checklist

Height Hazards
- ☐ People falling from height
- ☐ Objects falling from height
- ☐ Crane working overhead
- ☐ People working overhead
- ☐ People working underneath
- ☐ Loose materials overhead
- ☐ Engulfment (buried by material)
- ☐ Floor openings
- ☐ Open pits
- ☐ _____

Stored Energy Hazards
- ☐ Compressed air
- ☐ Compressed gases
- ☐ Hydraulic oil pressure
- ☐ Lubrication oil pressure
- ☐ Water pressure
- ☐ Exposed electrical cables
- ☐ Crane electric collector bus
- ☐ Overhead power lines
- ☐ _____
- ☐ _____
- ☐ _____

Dangerous Materials
- ☐ Acid or caustic material
- ☐ Explosive gases
- ☐ Toxic gases (e.g, ammonia)
- ☐ Exhaust gases from engines
- ☐ Hazardous materials
- ☐ Molten metal
- ☐ Chemicals
- ☐ Radiation
- ☐ _____
- ☐ _____

Tools & Equipment Hazards
- ☐ Electric tools in wet area
- ☐ Explosive tools, noise
- ☐ Gas cutting sparks & slag
- ☐ Metal grinding sparks, noise
- ☐ Electric welding flash,
- ☐ Concrete cutting - noise
- ☐ Air tools, noise
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

Process Plant Hazards
- ☐ Confined space
- ☐ Difficult access (getting stuck)
- ☐ Mechanical pinch points
- ☐ Sharp surfaces or points
- ☐ Equipment could move
- ☐ Suspended equipment
- ☐ Upstream plant could start
- ☐ _____
- ☐ _____

Body Hazards
- ☐ Manual lifting of heavy loads
- ☐ Heat stress
- ☐ Repetitive actions
- ☐ Ergonomics
- ☐ Tripping
- ☐ _____

External Environment Hazards
- ☑ Noise
- ☑ Airborne contaminants
- ☑ Mobile plant
- ☑ Road Traffic
- ☐ _____

Authorities, Permits & Notifications Checklist
- ☐ Isolation required
- ☐ Non-standard isolation
- ☐ Hot Work Permit
- ☐ Explosive Tools Permit
- ☐ _____
- ☐ Confined Space Entry Permit
- ☐ Roof Access Permit
- ☐ Handrail / floor removal permit
- ☐ Excavation Permit
- ☐ _____
- ☑ Notify Regain Supervisor/ Manager
- ☐ Notify Client representative
- ☐ Notify Workcover
- ☐ _____
- ☐ _____

Personal Protective Equipment (PPE) Checklist
- ☑ Hard hat
- ☑ Safety boots
- ☐ Half face respirator
- ☐ Fall protection harness
- ☑ Hearing protection
- ☑ Gloves
- ☐ Full face respirator
- ☐ _____
- ☑ Safety glasses
- ☐ Face mask
- ☐ Air stream helmet
- ☐ _____

Forms, Tools & Equipment Checklist
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____
- ☐ Portable electric tools & equip.
- ☐ Hand tools (shovel, broom, bar)
- ☐ Lifting slings & shackles
- ☐ Ladders
- ☐ Scaffolding
- ☐ Compressed air tools
- ☐ _____
- ☑ Forklift
- ☐ Loader
- ☐ Elevated work platform (EWP)
- ☐ Portable electric generator
- ☐ Crane
- ☐ _____
- ☐ _____

105F026 v2.0 – 22 Jan 2016

Work Planning Form

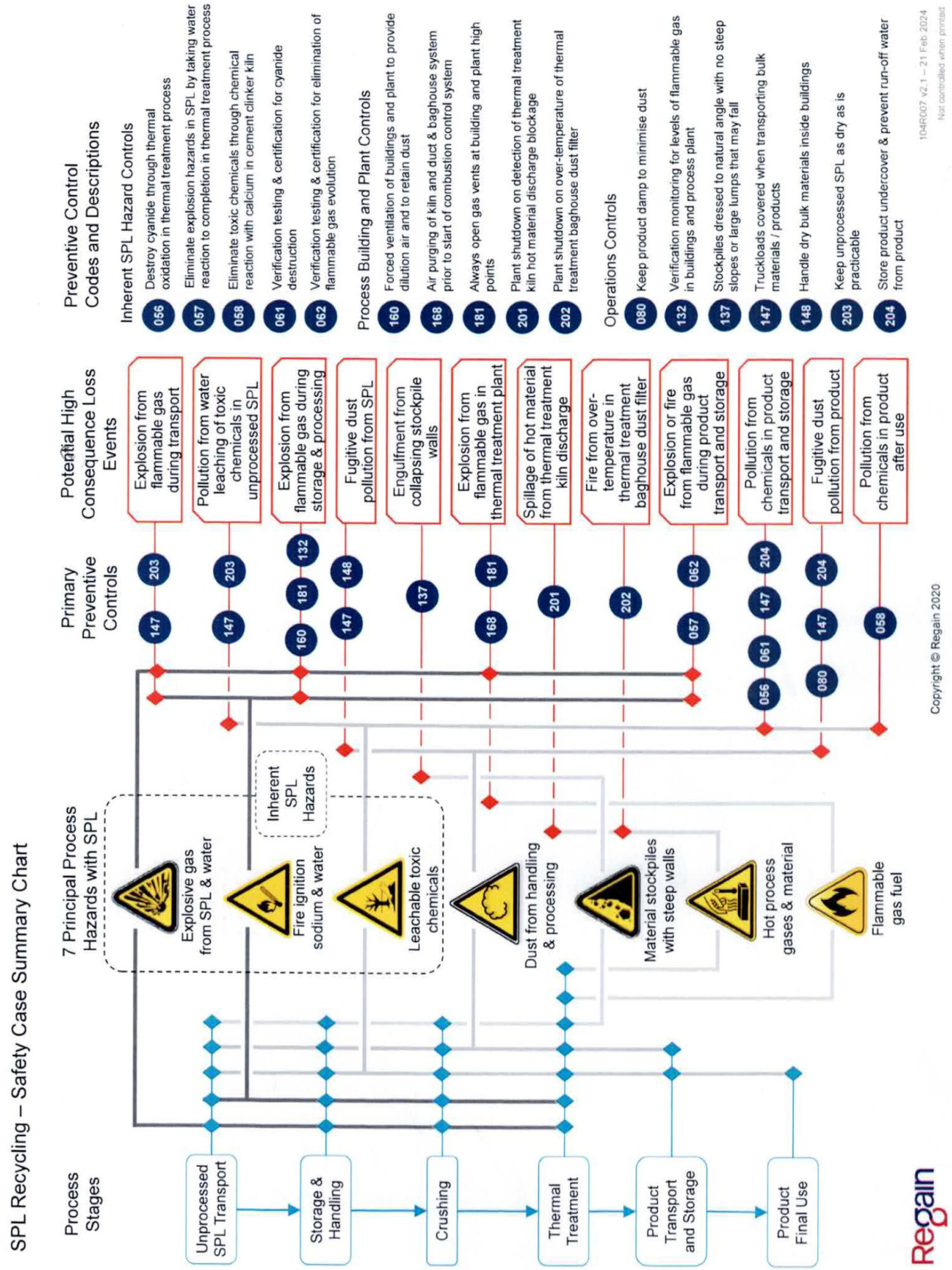
Regain

Job Safety Analysis (JSA)

Task Step	Hazards at Each Step	Safety Controls
Inspect forks before use.	• Slips / trips • Mechanical failure	• Tidy work area • Eyes on task • Trained / competent • Pre start completed.
Familiarise + test controls	• Crush / caught. • other people. • posture	• Exclution zone. • Poss comms • Sound horn. • Adjust seat + arm rest
make way to the Job	• collision • poor visability • Pedestrians	• Reduce Speed • drive to conditions • correct lighting • poss comms.
Operate forks in the sheds.	Projectile	• Ask for floors to be cleaned • Poss comms. • Stand clear of vehicals.
	Poor visability	• Inspect lights on forks + in the shed. • Stop to let dust settle • ensure dust collectors are running.
	~~Contact between~~ crush / caught.	• Poss comms. • Eyes on task • people to stand clear. • Sound horn in/out of sheds.
	Dust / gases.	• Let dust settle if needed • wear correct PPE • Annual gas inspections
	Vehical overturning	• Ensure Flat Stable ground. • correct weight to be lifted. • travel with load low to the ground • Ask for floors to be be cleaned •

APPENDIX I

SPL RECYCLING SAFETY SUMMARY CHART



APPENDIX J

SAFE WORK CHECK SHEET

Safe Work Checksheet

Operating the Thermal Treatment Plants **PLANT NUMBER** 120 - 246

Date 8-2-25

Beware of Heat Hazards.

PPE	Safe to use	Fitted
Hard hats	☑	☑
Safety boots	☑	☑
Safety glasses	☑	☑
Half face respirator	☑	☑
Hearing protection	☑	☑
Riggers gloves	☑	☑
Face masks	☑	☑
Coveralls	☑	☑
Barrier cream	☑	☑

Qualifications & Training Required	Yes?
Current Regain Induction	☑
Operator experienced in operating the Thermal Treatment Plant	☑
Operator with Fork Truck and front end loader license	☑

People Involved in This Work

Name	Signature
JUSTIN ALLEN	

Equipment and Reporting	Safe to use
One Fork Truck	☑
One front end loader	☑
Water Hose	☑
Shovel	☑
Broom	☑
Wheelbarrow	☑
Document any faults or downtime on SWCS comments page	☑
	☐

Before you start work, make sure that you have read both sides of this document, understand the work, the hazards and the safety controls and then sign beside your name.

Regain Page 1

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SWCS Operating the Thermal Treatment Plants

116F007 v8.0 – 24 March 2023

Task Step	Hazards or Issues	Safety Controls	Safe?	Done?
1. Check Scada • Alarms • Feed bin levels •	Damage to equipment	Only trained operators	☑	☑
2. Check housekeeping • Check for dust emissions • Leaks from plant or conveyors	Damage/injury to Equipment, operator and environment	.PPE	☑	☑
3. Check K120 to M120 Chute	Damage/injury to Equipment, operator and environment	PPE	☑	☑
4. Walk the plant LOOK/ LISTEN.	Damage/injury to Equipment, operator and environment	Document anything different	☑	☑

APPENDIX K

HOT WORK PERMIT AND ISOLATION PERMIT

HOT WORK PERMIT

Regain

PERMIT STARTS:		PERMIT ENDS:	
14/10/24 10:00 AM/PM		14/10/24 18:00 AM/PM	
PERMIT ISSUED BY: *(Manager or Supervisor)*		**PERMIT ISSUED TO:**	
Kane Fogh		Luke Stanway	
Signed:	Date 14/10/24	Signed:	Date 14/10/24
Contact No: 0401974848		Contact No:	

LOCATION OF WORKS:
246 Kiln

DESCRIPTION OF WORK TO BE CARRIED OUT: Note: Only the work listed below may be carried out under this permit:
weld on Sensor Mount.

RISK CONTROL MEASURES TO BE IMPLEMENTED (where applicable)

ISOLATION OF HAZARDS	Yes	N/A
Pipelines (oil, gas, fuel, etc) shut down, blanked off or effectively isolated	✓	
Drains, pits and depressions checked, isolated and covered or sealed	✓	
Traffic flow in work area suspended or controlled	✓	
Flammable liquids/Gas storages	✓	
Combustible liquids/Gas storages	✓	
Oxidising substances storages	✓	
Other flammable and combustible materials (solids, powders, dusts, etc)	✓	
Warning notices, locks or tags have been fixed to all means of isolation	✓	
ISOLATION OF FIRE SERVICES		
Smoke detectors and thermal detectors isolated		✓
Automatic sprinkler systems de-activated in work area		✓
Isolation of affected parts of Fire Control panel effected		✓
Security/Fire Warden notified of isolation	✓	
Means of manually raising emergency alarm and notifying fire service provided	✓	
FIRE PREVENTION MEASURES		
A Safety Observer has been assigned	✓	
Barriers or barricading of work areas to restrict entry	✓	
Ventilation of area to reduce build-up of gas and vapours	✓	
Fire extinguishers/hose reels/fire blankets provided and ready for use	✓	

HOT WORK PERMIT

RISK ASSESSMENT

Safe Work Checklist (SWC) or Work Planning Form (WPF) completed ☑ Yes ☐ No

Additional Equipment Controls required
(The following ticked items are required and have been checked to ensure serviceable condition)

☑ Helmet ☑ Harness ☑ Safety Boots ☑ Gloves ☑ Safety glasses
☑ Phone ☑ Torch / Lighting ☑ Radio ☑ Fire extinguisher

The following ticked items have been assessed in the WPF or SWC

☑ Weather ☑ Traffic ☑ Noise ☑ Barricades ☑ Signage ☑ Site Security

WORKING PARTY

We are medically fit, trained and competent to perform the work as detailed in the attached SWC or WPF. We understand the risks documented in the risk assessment and the controls to be implemented including the emergency procedures to be able to perform this Hot Work safely.

NAME	SIGNATURE	DATE
Luke Stevens		24/10/24

WORK COMPLETED OR SUSPENDED	Yes	No
All personnel have been withdrawn from the work area		
All tools and equipment have been removed from work area		
All hot work has been completed or suspended		
Work area is fit for use		
Fire and detection systems have been de-isolated and returned to service		
Authorities have been notified of completion of work and system reactivation		

SIGN OFF BY OBSERVER

Work area has been observed for 15 minutes after completion of hot works and no sign of fire, smoke or unsafe conditions have been observed.

Signature:		Date: 24/10/24

ISOLATION PERMIT

Regain

This permit is to be used in conjunction with the requirements set out within the Regain LOTO Procedures.

PERMIT STARTS:	PERMIT ENDS:
28/01/25 06:00 AM/PM	02/02/25 18:00 AM/PM
PERMIT ISSUED BY: *(Manager or Supervisor)*	PERMIT ISSUED TO:
Marc Rich	Luke Stanway
Signed: / Date: 28/1/25	Signed: / Date: 28/01/25
Contact No: 0407924848	Contact No:

Isolation Co-coordinator (Name):	Regain iso level 3:

	Yes	No
Equipment being work on is covered by the isolation SWC	✓	
Isolation SWC Completed		

Additional requirements / Special conditions:

28/01/25 - 255 - Pan Furnace
29/01/25 - 253 - " "
30/01/25 - 273 - " "
31/01/25 - 238 - " "

WORK COMPLETED OR SUSPENDED	Yes	No
All tools and equipment have been removed from work area	✓	
All isolated systems have been returned to service	✓	
Work area is fit for use	✓	
Authorities have been notified of suspension of work and what systems are still isolated	✓	
Authorities have been notified of completion of work and system reactivation	✓	

Permit Holder Name	Signature	Position	Date	Time
Luke Stanway		Fitter	31/01/25	12:30

Regain

Page 1

Isolation Permit
116R029 v2.0 – 5 October 2021

ISOLATION PERMIT

Regain

This permit is to be used in conjunction with the requirements set out within the Regain LOTO Procedures.

PERMIT STARTS: 13/01/25 05:00 AM/PM		PERMIT ENDS: 19/01/25 18:00 AM/PM	
PERMIT ISSUED BY: (Manager or Supervisor) Kane Kirk		PERMIT ISSUED TO: Luke Stanway	
Signed:	Date 19/1/25	Signed:	Date 19/01/25
Contact No: 0407 924848		Contact No:	

Isolation Co-coordinator (Name): LUKE STANWAY	Regain iso level 3:

	Yes	No
Equipment being work on is covered by the isolation SWC	✓	
Isolation SWC Completed		

Additional requirements / Special conditions:

14/01/25 - 258 - Maintenance
15/01/25 - 273 - " "

WORK COMPLETED OR SUSPENDED	Yes	No
All tools and equipment have been removed from work area	✓	
All isolated systems have been returned to service	✓	
Work area is fit for use	✓	
Authorities have been notified of suspension of work and what systems are still isolated	✓	
Authorities have been notified of completion of work and system reactivation	✓	

Permit Holder Name	Signature	Position	Date	Time
Luke Stanway		Fitter	18/01/25	11:30

APPENDIX L
MANAGEMENT OF CHANGE STANDARD

Change Control Standard

Regain

Objective

Effective administration and control of significant changes to systems or particular objects such as process plants, physical parts, application software and documents.

Explanation

Changes are typically undertaken to resolve problems, to implement improvements or in response to changed external requirements such as a regulatory change.

Minor or Temporary changes that present low risk, are done in the normal course of business and can be made with the knowledge and capability of people immediately involved.

A significant change is a change that presents a potential threat to important functionality. A significant change typically has risks that may not be well understood, may have unpredictable outcomes, and/or is a change that is not regularly made during the normal course of business. The degree of assurance required for a particular change should be proportional to the safety significance, complexity and economic impact of the proposed change and associated potential errors.

Pressure to make rapid changes to plant and systems without a formal review process often results in unexpected failure due to factors such as unforeseen technical problems, lack of knowledge of design requirements or lack of understanding of the effects of the change. Well-executed change control for significant changes lowers the risks associated with changing critical systems.

Requirements

Minor or temporary changes are documented in updated versions of relevant controlled documents.

Significant changes are subject to formal review and approval. Review may include the person or people who have initiated the change and the person who would authorise the change. However, review must involve one or more people who:

- Are not initiators of the proposed change
- Are not the person who would approve the proposed change
- Have knowledge of the plant or system design requirements and of potential effects of the proposed change.

Proposed significant changes are approved prior to implementation unless the time constraints of an urgent or emergency situation mean that the change must be implemented without approval, in which case approval is obtained after the change has been implemented.

Each significant change requires:

- Requirements Reference document(s)
- Hazard Identification & Risk Control.

APPENDIX M

ACCIDENT/NEAR MISS REPORT

Incident Report

Regain

Incident Details
Date 4/2/25 Time 6:30 am/pm
Site Tomago
Location Shed 6

Person Reporting Incident
Name Kane Fitch
Telephone No. 0407924848

People Involved (attach list if more than four people involved)
Name Kane Fitch — Telephone No. 0407924848
Name _____ — Telephone No. _____
Name _____ — Telephone No. _____
Name _____ — Telephone No. _____

Description of Incident
Temperature Spike due to Bayer Product being fines which sent our plant into a dusty state & our kiln was out of balance

Diagram of Incident (include measurements, attach a photograph if possible)

Signed _____ Date 4/2/25

Office use only

☐Safety ☐Environmental

Manager Comments/Corrective Actions
Investigate why the temp went high with out gas increasing. air pressure drop. that was the cause

Investigation Required? Yes ☑ No ☐
Signature _____ Date: 4/2/25

Incident Classification

Safety	Environment
☐Lost Time Injury	☑Complaint
☐Medical Treatment	☐Spill/Release
☐First Aid	
☐Near Miss/Hit	

Incident Number (from Windchill)

Not controlled when printed 105F004 v2.0 – 6 June 2019

Investigation Report

Regain

Investigation Details

Date 4/2/25 Time 9:30 ~~am~~/pm

Site Tomago

Location Shed 16 & 120 & 246 plant

Trigger Report Date __/__/____

☐ Safety ☑ Environmental ☐ Quality

Investigation Leader

Name TOHN COOPER

Address

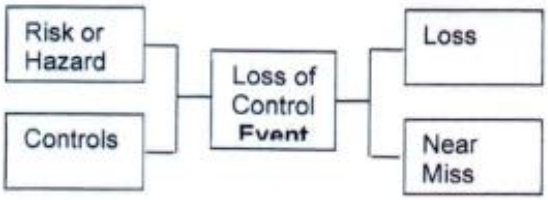
Telephone No. 0418341756

Investigation Team

Name Kane Rich Telephone No. 0407924848

Name John Cooper Telephone No. 0418341756

Cause Consequence Model



The **Objective of Investigation** is to identify problems and opportunities and to modify systems – NOT to attribute BLAME

Attach Additional information if Required

Description of Event

Dust from Shed 6 roof vents reported at 8:00am. Upon investigation 120 dust collector air valve had failed robbing air pressure / Boags SCL Made the TTP's go higher in temp as the SCL Fines Reacted. This caused the moisture to drop. That is why DUST was comming out of Shed 6

Risks, Hazards & Controls (Contributing factors)

as above

Description of Actual or Potential Loss and Near Miss

Preventative / Corrective Actions

Action	Responsibility	Target Date
Fix the air leak on P120 Dust collector		
Make sure that the SCL is Mixed More as not to put slugs of Fine SCL through at once. Adjust product temp to cut off at a Lower temp.		

Document Code 105F006 Rev 1.0