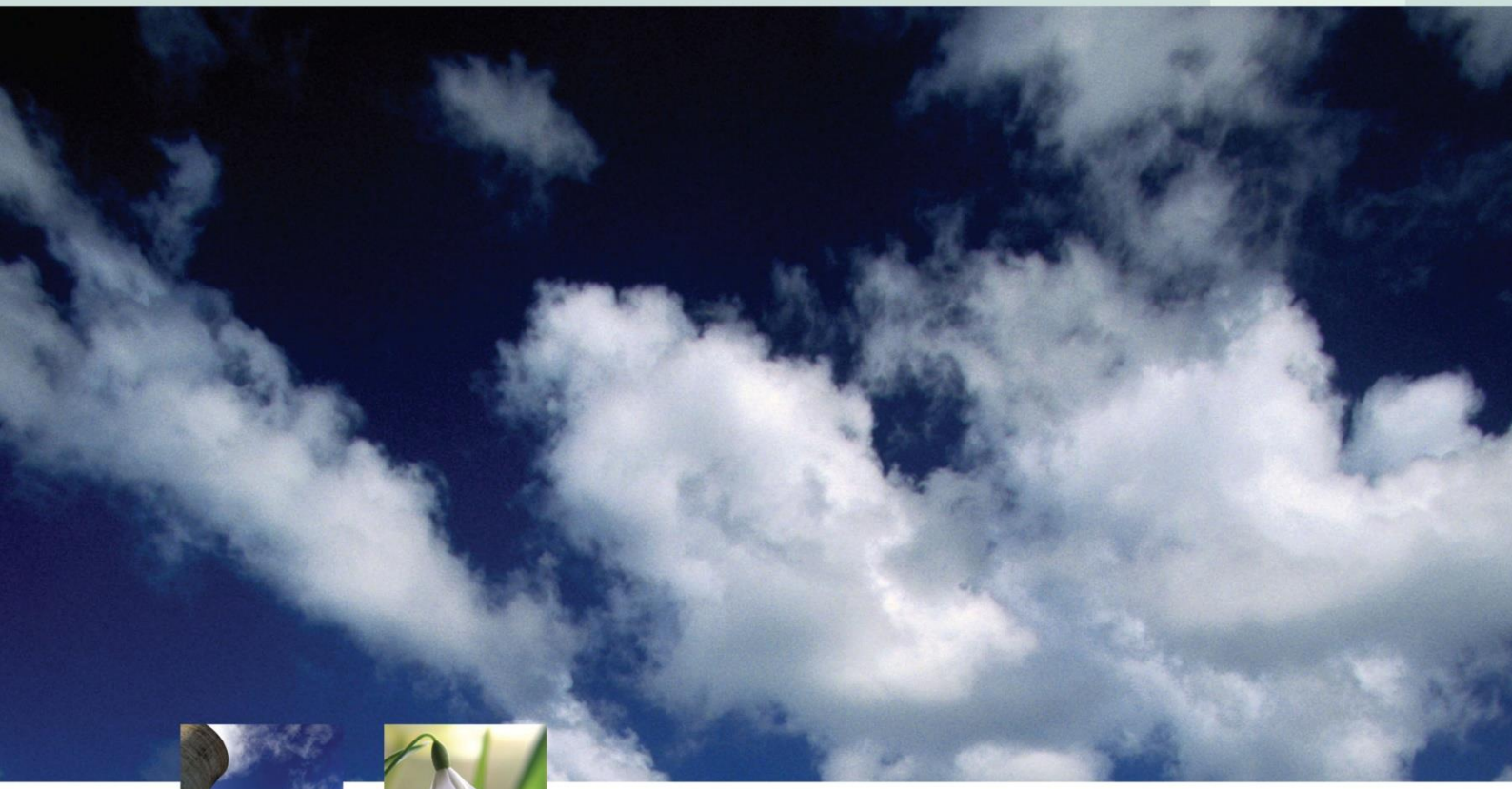

EPR APPLICATION VARIATION: VOLUME 1

Real Alloy (UK) Ltd
Waunarlwydd, Swansea
EPR/EP3935UC

Prepared by:
Sol Environment Ltd

Date:
July 2015

Project or Issue Number:
SOL1503RA01

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Contract/Proposal No:	SOL1503RA01
Issue:	1
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Date:	July 2015

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VERSION CONTROL RECORD

Issue	Description of Status	Date	Reviewer Initials	Authors Initials
1	First Issue to Natural Resources Wales	July 2015	SB	SP

Contents

NON TECHNICAL SUMMARY

This document has been prepared on behalf of Real Alloy (UK) Ltd ('the applicant' hereafter) by Sol Environment Ltd and provides supporting evidence as required by Environmental Permit Application Forms Part C2 and C3 issued by Natural Resources Wales (NRW).

Real Alloy (UK) Ltd[1] ('*Real Alloy*' or '*The Applicant'* hereafter) is making this application to carry out a 'Minor Technical' Variation of their existing EPR permit under The Environmental Permitting (England and Wales) Regulations 2013 (as amended) to the following reasons:

- Installation Boundary – To increase the installation boundary of the Part A(1) activities to include additional raw material storage; and
- Rotary Sample Furnace – To include the installation of a 1 ½ tonne single rotary furnace which will be used for the sampling and analysis of materials.

The Real Alloys site is located at Waunarlwydd Works, Waunarlwydd, Swansea, SA5 4SF.

The secondary aluminum recycling process meets the description of an Installation as defined by Schedule 1, Section 2.2 '*Non Ferrous Metals*,' paragraph A(1)(b)(i) of the EPR Regulations namely;

'Melting, including making alloys, of non-ferrous metals, including recovered products and the operation of non-ferrous metal foundries where -

i) The pant has a melting capacity of more than 4 tonnes per day for lead or cadmium or 20 tonnes per day for all other metals'

The site is currently permitted under the conditions established by Environmental Permit EP3935UC.

The permit (previously operated by Aleris Recycling (Swansea) Ltd) was varied in 2013 which brought about the following changes to the process:

- *Raw Materials* – Key changes were made to the quantity, type and location of materials stored and used at site;
- *Installation Boundary* – The Installation Boundary was increased to include an external yard area (part of the former Alcoa Extrusion Plant) to the south of the site for the storage of clean scrap metal;
- *Operational Techniques* – The combustion technologies used at the Installation were modified to include oxygen enrichment resulting in a significant reduction in combustion products from the process; and
- *Air Emissions* – The main bag house abatement plant was replaced with all emissions now being release from the Authorised Release Point A4.

An administrative variation (EPR/EP3935UC/V003) was granted by NRW in June 2015 to reflect the purchase of the company and change of name to Real Alloy (UK) Ltd.

1 Aleris Recycling (Swansea) Ltd were purchased and renamed Real Alloy (UK) Ltd in March 2015.

Real Alloy operate and maintain a formal environmental management system which has been certified to meet the requirements of the International Standard BS EN ISO14001:2004 and EMAS. This changes brought about by this permit variation will not result in any functional or material changes to the existing environmental management system (EMS) used on site.

Emissions to Air

All atmospheric emissions from the site are released via emission point A4 and are controlled and abated through the use of a large dedicated baghouse filtration system. The introduction of the 'small' 1.5 tonne rotary sample furnace will not have any material impacts on the performance of the baghouse plant and will not lead to an increase in emissions.

All emissions impacts currently modelled and permitted have assumed have been modelled assuming likely worst case scenario (100% ELV releases, 100% of the time). The abatement plant operates well within these parameters and therefore the modelled emission impacts of the existing plant will remain unchanged.

Therefore there are no proposed changes or increases in impacts to air emissions resulting from this permit variation.

Emissions to Controlled Water (including sewer)

All surface water emissions discharged from the site via the existing authorised release point WA1 and are controlled by an oil/water interceptor.

All new storage areas are fully enclosed and will not give rise to any contaminated or potentially contaminated discharges.

There are no changes to water emissions resulting from this permit variation.

Emissions to Land

There are no emissions to land arising from the Installation.

1 INTRODUCTION

This document has been prepared on behalf of Real Alloy (UK) Ltd ('*the applicant'* hereafter) by Sol Environment Ltd and provides supporting evidence as required by Environmental Permit Application Forms Part C2 an C3 issued by Natural Resources Wales (NRW).

This 'Minor Technical' Variation application is being made under Regulation 20 of The Environmental Permitting (England and Wales) Regulations 2013 (as amended) to reflect the following changes to the installation/activity:

- Change to the Installation Boundary – Real Alloy (UK) Ltd wish to formally increase the installation boundary of the Part A(1) activities to include a new raw materials storage area; and
- Inclusion of a new rotary sample furnace – A new 1 ½ tonne capacity rotary sample furnace will be installed to enable the sampling and analysis of product alloys.

The Installation is located at Waunarlwydd Works, Waunarlwydd, Swansea, SA5 4SF.

The secondary aluminum recycling process meets the description of an Installation as defined by Schedule 1, Section 2.2 '*Non Ferrous Metals*,' paragraph A(1)(b)(i) of the EPR Regulations namely;

'Melting, including making alloys, of non-ferrous metals, including recovered products and the operation of non-ferrous metal foundries where -

i) The pant has a melting capacity of more than 4 tonnes per day for lead or cadmium or 20 tonnes per day for all other metals'

The site is currently permitted under the conditions established by Environmental Permit EP3935UC/003.

All aspects of the Installation will essentially remain unchanged and will operate in a similar manner as currently permitted. The process description and site information provided in the previous permit variation is unchanged as a result of this proposed variation. The applicant has included the previous Application Support Document in Annex B of this application for reference.

The remainder of this application support document is structured accordingly:

- Section 2: Provides specific nature of the proposed changes associated with the variation application;
- Section 3: Provides specific nature and detailed description of the emissions to air and water associated with the installation;
- Section 4: Provides an Environmental Impact and Assessment of the varied installation.

The boundary of the current Installation Boundary and the new proposed Installation Boundary is provided below and in Annex A - Figures.

2 DESCRIPTION OF VARIED CHANGES

2.1 Description of the Proposed Changes

Real Alloy (UK) Ltd is making this application under Regulation 20 of The Environmental Permitting (England and Wales) Regulations 2013 (as amended) to carry out a '*Minor Technical'* Variation of their existing EPR permit under for the following reasons:

- Change to the Installation Boundary – Real Alloy (UK) Ltd wish to formally increase the installation boundary of the Part A(1) activities to include a new raw materials storage area; and
- Inclusion of a new rotary sample furnace – A new 1 ½ tonne capacity rotary sample furnace will be installed to enable the sampling and analysis of product alloys.

The processes operated at the site fall under the activity description provided by Schedule 1, Section 2.2 '*Non Ferrous Metals*,' paragraph A(1)(b)(i) of the Environmental Permitting Regulations, namely;

'Melting, including making alloys, of non-ferrous metals, including recovered products and the operation of non-ferrous metal foundries where -

i) The plant has a melting capacity of more than 4 tonnes per day for lead or cadmium or 20 tonnes per day for all other metals'

The proposed changes brought about by this variation are provided in the revised Table 2.1 (marked in red). All other Activities and Directly Associated Activities are shown in black and essentially remain unchanged:

Table 2.1:Permitted Activities

Schedule 1 Activity Reference	Activity under Schedule 1 of the Regulations	Description of Specified Activity	Limits of Specified Activity
2.2 A(1)(a)	A manufacturing process involving the metallurgical recovery of non-ferrous from secondary raw materials	Recovery of aluminum	Melting of aluminum waste within 2 furnaces, removal of molten aluminum and transfer of remaining waste for recycling
Directly Associated Activity	Storage and handling of raw materials	Storage, sorting, baling and pre-treatment of scrap aluminum	Receipt of raw materials to transfer to furnaces
Directly Associated Activity	Storage and handling of solid wastes	Storage and handling of dross, slag, and bag filter dust	From separation of wastes to dispatch from installation
Directly Associated Activity	Filtration of solid wastes	Filtration of treated furnace fumes and removal of salt cake extraction fumes	Removal of solid waste from extraction system before emission to air
Directly Associated Activity	Sampling of and analysis of aluminium alloys	Melting and sampling of batch alloys	Use of 1.5 tonne rotary sampling furnace to produce batch samples for analysis

2.2 Changes to the Existing Activities

2.2.1 Installation Boundary

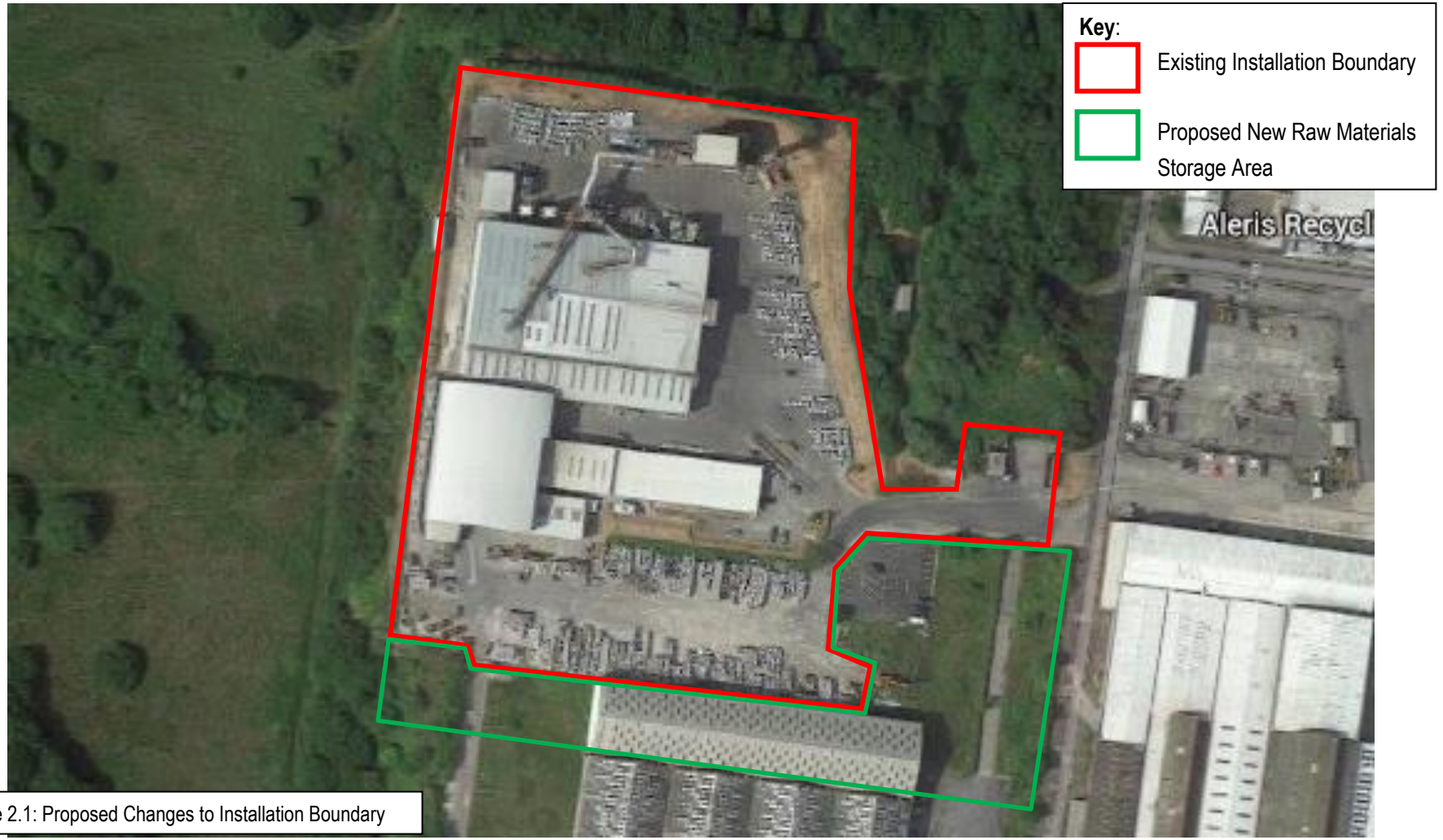

Figure 2.1: Proposed Changes to Installation Boundary

Figure 2.1 above shows the existing Installation Boundary (in red) and the proposed new area (in green). The building located in the proposed new area will be used for raw material storage (baled scrap aluminium and alloy additions) purposes only.

Due to the changes in the Installation Boundary, an updated H5 assessment has been provided within Annex C of this Application Support Document. Due to the 'low risk' and uncontaminated nature of the materials stored, the increased boundary does not increase the potential for ground contamination from the site.

The nature of the proposed changes does not introduce any new potentially contaminating chemicals or materials. Therefore, the Site Condition Report remains the same and has only been updated to include a Phase II Site Investigation Report carried out by EAME Ltd in December 2014.

2.2.2 Site Infrastructure and Design

There will be no changes to the site infrastructure or design of the Installation. The new raw materials storage building does not contain any internal drains and hence the site drainage infrastructure for the Installation, remains unchanged.

All drainage systems on the main site are as per the original permit application document and discharge under consent to the Gors Fawr Brook.

Please refer to the Previous Application Support Document provided in Annex B for more details.

2.3 Description of the Process

There will be no changes to the process resulting from this proposed permit variation apart from the inclusion of a new rotary furnace.

The proposed new tilting testing rotary furnace will be supplied by Bartz Ltd and is configured for re-melting of dry and small sized aluminium scrap in the form of dross, dross from presses, oxides, cans, foils, bulk and briquetted chips, baled scarp, casts in one piece and shredded or allow-forming elements.

The purpose of the testing furnace is to determine the alloying constituents of the existing groups of scrap, dross, UBC's and swarf. The new furnace will be connected to the existing fume extraction systems serving the main melting furnaces.

The new furnace will be located internally within the main processing building immediately adjacent to the existing rotary furnace No. 1.

Summary technical data of the rotary sample furnace is provided in Table 3.1.

All other aspects of the site remain unchanged, therefore please refer to the previous Application Support Document provided in Annex B for a detailed process description.

Further technical information relating to the tilting rotary sample furnace is provided within Annex D.

Table 2.2: Technical Data	
Process Data Furnace	
Load Capacity Aluminium and Salt	1.500 kg
Average Scrap Density	Scrap ca. 300 – 600 kg/m^3 Dross ca. 1.400 kg/m^3
Temperature of Liquid Aluminium	700 – 750°C
Tilting Angle Furnace	-18° – 37°
Tilting Angle Burner	-9° – 9°
Rotary Speed	2 – 12 r/min
Furnace Dimensions Including Refractory Lining	
Furnace Opening Diameter	950 mm
Furnace Drum Inner Diameter	1.535 mm
Furnace Drum Outer Diameter	2.000 mm
Outer Length Furnace Drum	2.000 mm
Hydraulics	
Type	Assfalg Hd-Aggregate 12339
Power	4 kW
Pressure Maximum	140 bar
Delivery Volume	15 l/min
Tank Capacity	100 litre

Hydraulic Cylinder	
Tilting Cylinder	Piston diameter 120mm Stroke 1.100mm
Door Cylinder	Piston diameter 80mm Stroke 400mm
Rotary Drive	
Power	11kW
Speed Control	Frequency Inverter
Torque	3.0120 Nm (50 Hz)
Gear Drive Ratio	41,87:1
Total Gear Ratio	164,68:1
Combustion Burner System	
Type	BG02-1000
Power Maximum	1.000 kW
Power Minimum	200 kW
Fuel	Natural Gas
Consumption Gas Maximum	ca. 100 mn^3/h
Consumption Gas Minimum	ca. 20 mn^3/h
Consumption Oxygen Maximum	ca. 200 – 250 mn^3/h
Consumption Gas Minimum	ca. 40 mn^3/h
Ignition	Electrical
Monitoring	UV-Scanner with display (0 – 100 µA)
Natural Gas	
Heating Value	$H_µ$ ca. 10 $kWh/m_N^3/H$
Nominal Diameter	DN 50
Inlet Pressure Minimum	240 mbar
Inlet Pressure Maximum	4 bar
Pressure reduction	200 mbar
Oxygen	
Nominal Diameter	DN40
Inlet Pressure Minimum	5 bar
Inlet Pressure Maximum	16.5 bar
Electric	
Input 400V	400V, 50 Hz, 50 A, 5 x 16 mm^2
Digital I/O	64/32

The layout of the furnace is provided in Figure 3.1 overleaf.

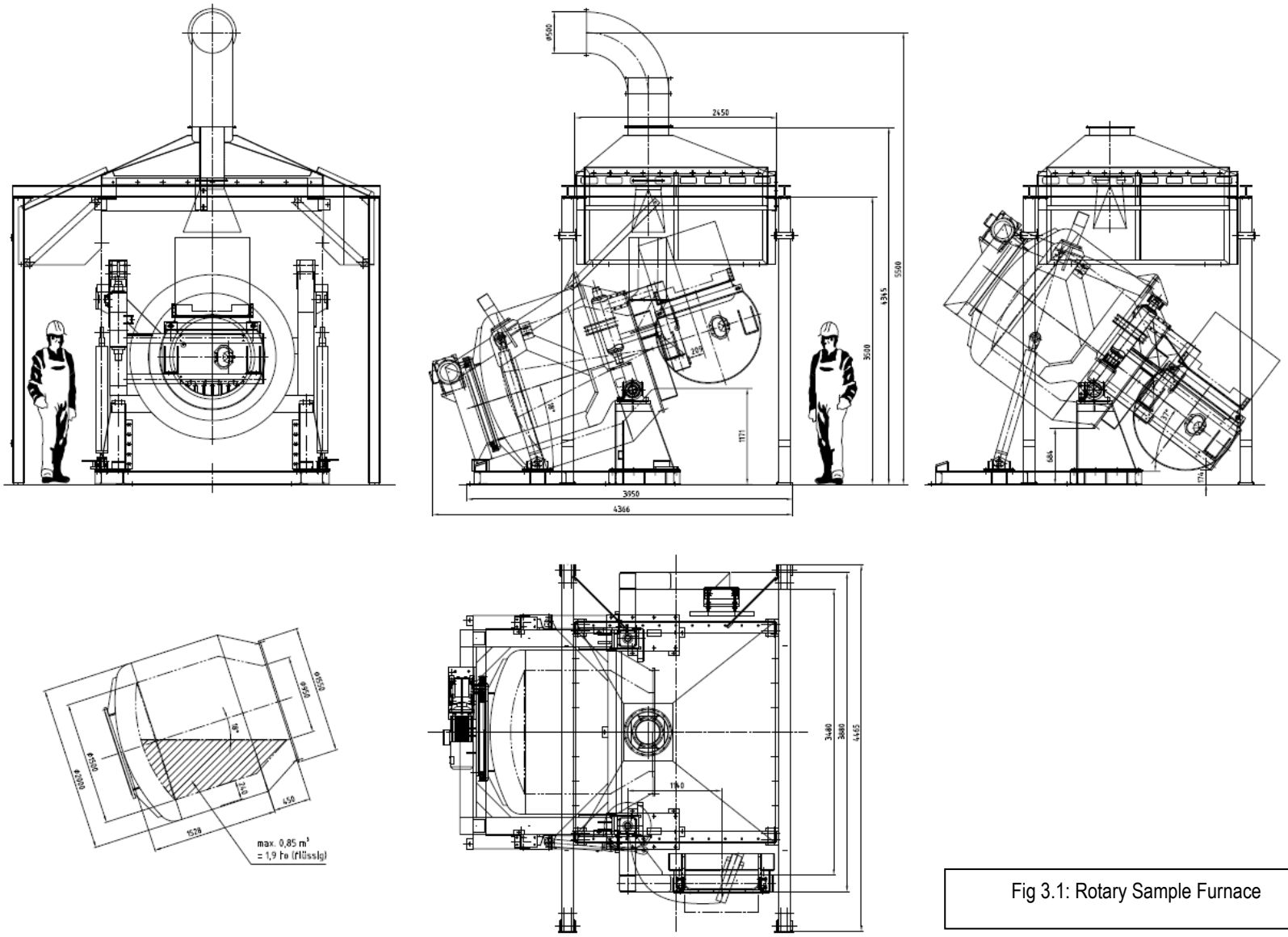

Fig 3.1: Rotary Sample Furnace

2.4 Environmental Management System

Real Alloy operate and maintain a formal environmental management system which has been certified to meet the requirements of the International Standard BS EN ISO14001:2004 and EMAS. This proposed permit variation will not result in any changes to the existing environmental management system used on site.

A summary of the management system currently used on site is provided in Table 2.3 below. This will **remain exactly the same** once the permit has varied.

Table 2.3: Environmental Management System	
Standards	
Number	**Description**
HSE 01	Investigation, Communication & Corrective Action for Incidents
HSE 02	Aluminium Molten Metal Safety
HSE 03	Mobile Equipment Standard
HSE 04	LOTO Standard
HSE 05	Industrial Hygiene & Medical Standard
HSE 06	Personal Protective Equipment
HSE 07	Cellular Phone & Electronic Devices Policy
Shipping & Receiving Work Instructions	
Number	**Description**
WI SR 1.0	Testing Raw Materials (Basics)
WI SR 2.0	Shipping Ingots
WI SR 3.0	Truck Loading Safety
Shipping & Receiving Short Instructions	
Number	**Description**
SI SR 1.0	Radioactivity Test
SI SR 1.1	Visual Inspection of Raw Material
SI SR 1.2	Moisture and Oil Check
SI SR 1.3	Loading a Bulk Carrier with Salt Cake
SI SR 1.4	Mudroom Control Measures
SI SR 1.5	Pre-Notification Procedure
SI SR 1.6	Receipt of Sodium Bicarbonate / Lime
SI SR 1.7	Liquid Oxygen Deliveries – Out Side Normal Working Hours
Production Work Instructions	
Number	**Description**
WI PR 1.0	Preparing Production
WI PR 2.0	Running a Melting Furnace (Basics)
WI PR 2.1	Starting Up & Shutting Down of Melting Furnaces
WI PR 2.2	Charging Raw Material & Flux
WI PR 2.3	Running a Melting Furnace (Detailed)
WI PR 2.5	Pouring Molten Metal

WI PR 2.6	Mudding Out Salt Cake
WI PR 3.0	Running a Holding Furnace
WI PR 3.1	Charging Melting & Allying in Holding Furnaces
WI PR 3.2	Treatment Molten Metal
WI PR 3.7	D.E.O.X
WI PR 4.0	Taking a Sample From Molten Metal
WI PR 4.1	Recording & Evaluating Operating Data
WI PR 4.2	Cleaning Crucibles
Production Short Instructions	
Number	**Description**
SI PR 2.0	Material Identity Control

3 EMISSIONS AND THEIR ABATEMENT

3.1 Emissions to Air

Point-source Emissions to Air

There will be no change to emissions to air from the proposed variation.

Due to the size of the proposed sampling furnace, once the emissions from the furnace have gone through the baghouse they will be insignificant, resulting in no change to the current emissions.

Table 4.1 below provides details of the emission point, ELV's, specific sources and monitoring frequency[2].

Table 4.1: Emissions to Air

Emission point	Parameter	ELVs	Unit	Source	Monitoring Frequency
A4	PM	5	mgm^{-3}	Release from furnace, post baghouse filter	Continuous and Annual Extractive
	NOx	60	mgm^{-3}		Bi-Annual Extractive
	HCl	10	mgm^{-3}		Quarterly Extractive
	VOC	50	mgm^{-3}		Quarterly Extractive
	SO_2	50	mgm^{-3}		Quarterly Extractive
	HF	2	mgm^{-3}		Bi-Annual Extractive
	Dioxin	0.1			Annual Extractive

2 All extractive monitoring is carried out using MCERTS qualified contractors and approved methodology as agreed with Natural Resources Wales.

3.2 Emissions to Controlled Water

There will be no changes to the releases to the Gors Fawr Brook (WA1) resulting from this permit variation. As such, Table 4.2 below remains the same.

Table 4.2: Emission Limits into Water		
Parameter	**Emission Point WA1**	**Monitoring Frequency**
Total Suspended Solids – Spot Sample	50 mg/l	Monthly
Total Dissolved Solids – Spot Sample	1200 mg/l	Monthly
Oil and Grease Spot Sample	10	Monthly
Copper and its compounds as Cu (mgl^{-1}) Spot Sample	0.25	6 Monthly
Lead and its compounds as Pb (mgl^{-1}) Spot Sample	0.1	6 Monthly
Tin and its compounds as Sn (mgl^{-1}) Spot Sample	0.1	6 Monthly
Zinc and its compounds as Zn (mgl^{-1}) Spot Sample	0.5	6 Monthly
Aluminium and its compounds as Al (mgl^{-1}) Spot Sample	1.5	Monthly
Mercury and its compounds as Hg (mgl^{-1}) Spot Sample	0.075	6 Monthly
Arsenic and its compounds as (mgl^{-1}) Spot Sample	0.1	6 Monthly
Nickel and its compounds as Ni (mgl^{-1}) Spot Sample	0.5	6 Monthly
Ammoninical nitrogen as N (mgl^{-1})	1.5	Monthly
pH max	9	Monthly
pH min	6	Monthly

3.3 Emissions to Sewer

There are no emissions to sewer arising from the Installation.

3.4 Emissions to Land

There are no emissions to land arising from the Installation.

3.5 Emissions of Waste

Table 4.3 overleaf provides information relating to the typical disposal quantities and environmental fates of all waste materials arising at the Installation.

Table 4.3: Waste Arisings and Disposal			
Substance	**Quantity (Tonnes)**	**Waste Type (E.G. Hazardous)**	**Fate**
Salt Slag	~25,000	Hazardous	R04
Main baghouse filter dust	0	Hazardous	R04
Main baghouse filter dust	~ 1500	Non-Hazardous	D09
Mudroom baghouse filter dust	0	Hazardous	R04
Refractory Waste	<0.5	Hazardous	R04
Interceptor Residue	<0.5	Hazardous	R04
Oily Waste	2	Hazardous	R13
Main baghouse filters	<0.1	Hazardous	D10
Mudroom baghouse filters	<0.1	Hazardous	D10
General Non-hazardous Waste	<100	Non-Hazardous	R3 / R4
Canteen waste	<20	Non-Hazardous	D1
Vehicle wash waters	~ 100	Hazardous	D09

4 IMPACTS TO THE ENVIRONMENT

4.1 Impacts to Air

There will be no changes to emissions impacts to air from the proposed permit variation.

Please refer to the previous Application Support Document provided in Annex B for a detailed Air Quality H1 Assessment and Dispersion Modelling that was carried out for the previous permit variation application.

4.2 Impacts to Land

There are no impacts to Land arising from this variation.

4.3 Impacts to Controlled Water

There are no impacts to water arising from this variation.

All proposed emissions to controlled water are within the existing permitted consents / emission limit values.

4.4 Impacts to Sewer

There are no emissions to sewer arising from the Installation.

ANNEX A: FIGURES

ANNEX B: PREVIOUS APPLICATION SUPPORT DOUCMENT

ANNEX C: UPDATED H5 ASSESSMENT

ANNEX D: SAMPLING FURNACE INFORMATION