

EnviroWales Ltd. EP3230BW

PO1- Lead melting operations at the Direct Milling building

Introduction

EnviroWales Ltd. have installed a 70t nominal capacity lead melting kettle in accordance with the proposal in EPR_EP3230BW V006 application, which was approved in April 2014 and as varied to V007.

This kettle melts only lead scrap largely generated internally from the Jamestown Industries Ltd (JIL) Rolling Mill on the lower site within the installation boundary, also returned prime material from our subsidiary companies. The scrap is clean, unoiled 99.7% lead. (Largely BS EN 12588 specification)

Lead scrap is produced from the rolling mill when the tail ends are cut at the guillotine to achieve a square end to the lead being rolled, and also from the two finishing lines and two slitting machines. The finishing & slitting lines produce finished rolls of lead which are cut to length and the end off-cuts are scrapped. In addition the slitters generate chopped lead pieces from side trimming operations.

The lead melted within the 70t kettle is poured or pumped into a mould to make the same 8t slabs that are made on the EnviroWales "top site". This facility improves process efficiency by allowing scrap to be re-used on site. The slabs are then rolled on one of 2 mills already present.

An air recycling reverse pulse jet hygiene bag-filter unit services the emissions from the kettle and the two burners. The burners are a ultra low NOx natural gas design and combustion gases are vented to atmosphere through a 15m high 0.5m diameter chimney.

This document is in response to PO1 within the site permit as follows.

The Operator shall submit a written commissioning plan based on the final design to NRW, along with timescales for implementation.

The plan shall be designed to demonstrate that permit conditions will be met under all anticipated operating conditions and shall confirm the commissioning programme and plant monitoring protocols. The plan shall be implemented in accordance with NRW's written approval and commissioning shall not commence until that approval is provided.

Commissioning Plan

The kettle and associated equipment was installed during Q2 2018, with commissioning operations commencing upon completion of installation.

Schedule of works	WK 1	WK 2	WK 3	WK 4	WK 5	WK 6	WK 7	WK 8
Position kettle	✓							
Install associated equipment	→	→	→	✓				
Install gas pipework				→	✓			
Install bag-filter unit					→	✓		
Install extraction ducting					→	✓		
Commission burners						→	✓	
Commission bag-filter						→	✓	
Complete commissioning							→	✓

The kettle and mould are located inside the Jamestown Mill building, in the North West corner. The bag-filter unit is located outside the rear of the building in the North West corner, between the Mill building and the banking leading up to the EnviroWales site. The extraction ducting leads from the inside of the building, out through the bag-filter unit and is returned back into the building once filtered. The bag-filter unit is a proprietary design for the flow rate and temperature required, and includes a HEPA filter prior to the fan set.

- See attached drawing 004C, (Jamestown Mill building only) with 70t kettle & equipment shown in pink.
- See attached drawing 014 (full installation) with the location of kettle edged in red indicated by text box
- See attached drawing D1706067-4-2 Jamestown dust extraction

Compliance with Permit Conditions

Conditions of the permit will be complied with through a combination of operating techniques and plant technology as follows.

(1) Environmental Management System (EMS)

The site's EMS is certified by BSi under ISO14001:2015 (certificate no. EMS 567178).

(a) The new process will be added to the site EMS Aspects and Impacts register, and will include all operational control measures required.

Timescale: 1 month following full commissioning

(2) Energy Management

The company holds a Climate Change Agreement for the site through the Confederation of British Metalforming (CBM). Energy use is measured as kWh/t of product and performance is checked monthly, energy used by the new kettle will automatically be incorporated into the monthly calculations.

There is a natural gas supply installed in the area, the kettle is heated by two Hotwork EJ03 Ultra low NOx cold air natural gas burners with an operating maximum of 600kw each.

The kettle liner is lagged with refractory and insulating wool to reduce heat losses during operation.

(3) Accident and Emergency Management

The burners are fitted with safety lock-out devices in the event of flame failure or firing failure. This prevents the flow of gas in either of these events. Start-up and shutdown sequences are controlled electronically via PLC.

The routine burner servicing and maintenance will be included in the site preventative maintenance management system.

The kettle burners are interlocked to prevent operation in the event of a temperature exceedence in the kettle. Kettle temperature is controlled by thermocouple with high level set-points which will trigger a shutdown in the event of excess heat being detected. Planned preventative maintenance will include check of kettle liner thickness to assess risk of a breach of molten metal containment, the liner will be replaced in accordance with known wear-rates.

The bag-filter is installed with high and low differential pressure alarms which will be interlocked to the kettle burners such that it cannot be operated if the filters are blocked or have breached. These also control the automated filter cleaning cycle. In addition a Grecon spark arrestor system is fitted to prevent fires in the baghouse from smouldering particles.

HEPA & Bagfilter differential pressure monitors fitted.



GRECON spark arrestor system fitted.



There is a site-wide emergency response plan already in place which covers scenarios such as fire, flood, chemical spill and failure of key abatement equipment and the kettle system will be added into this. Specific emergency shutdown procedures will be written for the kettle and its associated equipment. The kettle will be housed in the existing Mill building and any external equipment will be banded to 110% of capacity (for liquids) or sufficient to contain water in the event of a fire.

The site operates an Emergency Response Team who are trained in emergency scenarios for all processes on site.

(a) The local Fire and Rescue service will receive updated site plans and equipment locations as a result of this new process.

(b) Procedures will be written and staff trained in the operation of the kettle and its associated equipment, these will include safe start-up and shutdown procedures and actions to take in emergency situations.

Timescale: 1 month following full commissioning

(4) Avoidance, Disposal and Recovery of Wastes

Already all process wastes are recovered throughout the installation. The purpose of the 70t kettle is to improve process efficiency by allowing localised re-use of wastes generated from the Mill rolling and finishing processes, this will provide greater capacity and flexibility for the refinery on the EnviroWales site. The waste will quite simply no longer need to be added to unrefined bullion in the refinery to achieve efficient recycling.

Due to the purity of the feedstock, there will be minimal dross generated but any produced will be re-used as a raw material in the EnviroWales refinery as usual. Drosses are loaded via automated de-drossing machinery from the kettle into barrels which will be allowed to cool before being sealed and transported back to the smelter raw materials area.

Dusts collected from the hygiene bag filter unit will also be collected in a sealed barrel and sent back to recovery in the smelter.

Emissions and Monitoring

Point source emissions

There are no point source emissions to air / water / sewer from this process.

The Non-Ferrous BREF and associated BAT conclusions document does not specify BAT AEL's for NO_x, CO or CO₂. However the burners are ultra low NO_x burners.

An automatic reverse pulse-jet hygiene bag-filter unit services the emissions from the kettle and the two burners. The filter bags are constructed from Nomex® which has a high temperature resistance. The unit is located outside the building housing the kettle but is completely re-circulatory with no emission point to atmosphere. Dust and fume generated from the top of the kettle is extracted via ducting, passes through the bag-filter and a final stage HEPA filter (HEPA 12 minimum) and clean air is then returned into the building.

The operational specification of the bag house is as follows;

- i. Total filtration area of 282 m²
- ii. Design volume flow rate is 21,000 m³/hr
- iii. Nomex high temperature bags will be installed
- iv. HEPA filters will be installed on the exit flue

The extraction system will be included in the site Local Exhaust Ventilation (LEV) checks and will be subject to the statutory Thorough Examination (TE) by a competent person.

Natural gas fuel is used in the ultra low NO_x burners. Only clean scrap from internally generated Group sources will be melted.

Fugitive emissions

Regular checks of the extraction system face and duct velocities will ensure that fume and dust are being captured efficiently and will minimise fugitive releases.

Lead in Air (LIA) measurements taken before and after kettle commissioning show no additional presence of lead in the air within the process building. Note the results relate to occupational exposure of Lead but allow confirmation that no fugitive emissions are present.

- See attached table LIA Testing Schedule 2018

All movements of dusty materials such as drosses and filter dusts will be carried out within sealed barrels.

Slabs are air-cooled prior to being released from the mould. Where water is used infrequently, any steam generated from the evaporation process will remain within the process building.

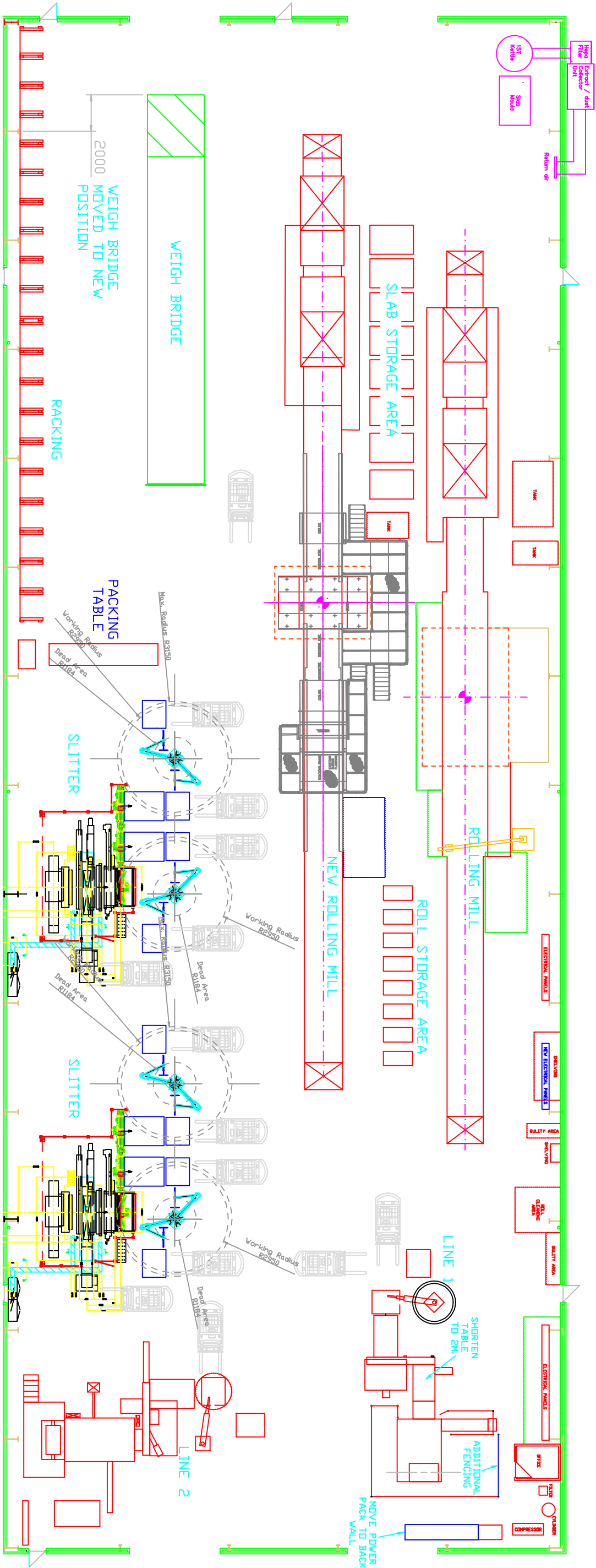
Any water collected within bunded areas around the external bagfilter unit will be tested for metals and pH prior to being disposed of – any contaminated water will be pumped into an IBC or similar receptacle before being treated via the EnviroWales effluent treatment system and then to sewer.

Noise & vibration

The only additional potential noise source from this process is the bagfilter fan. This will be located between the mill building and the EnviroWales site and is shielded from sensitive receptors by the Mill building on one side (South) and a tall bank to the North.

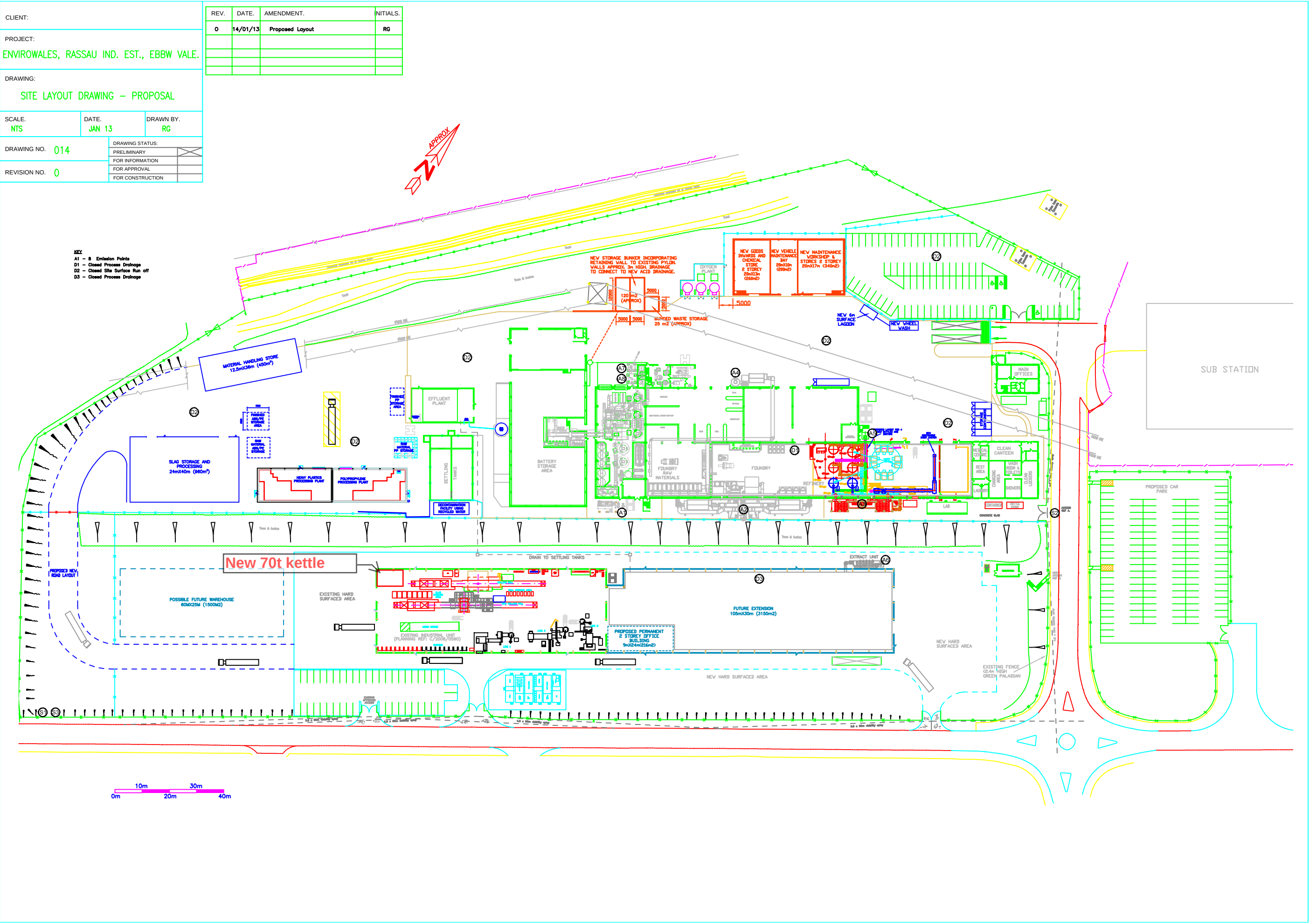
The bag filter has a sound pressure level of 80dBA.

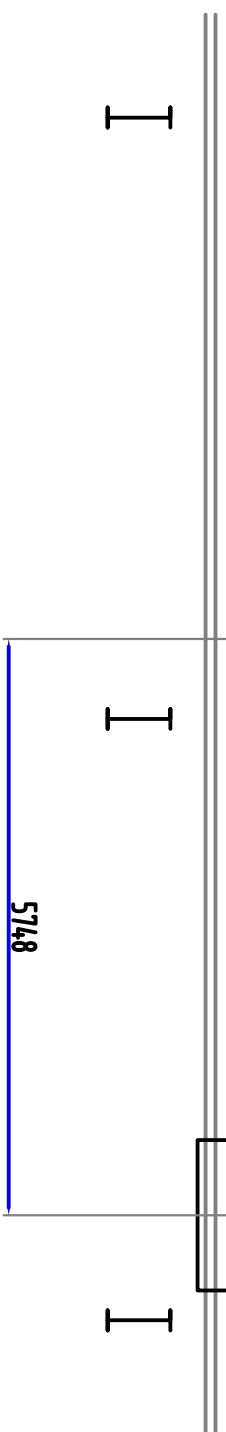
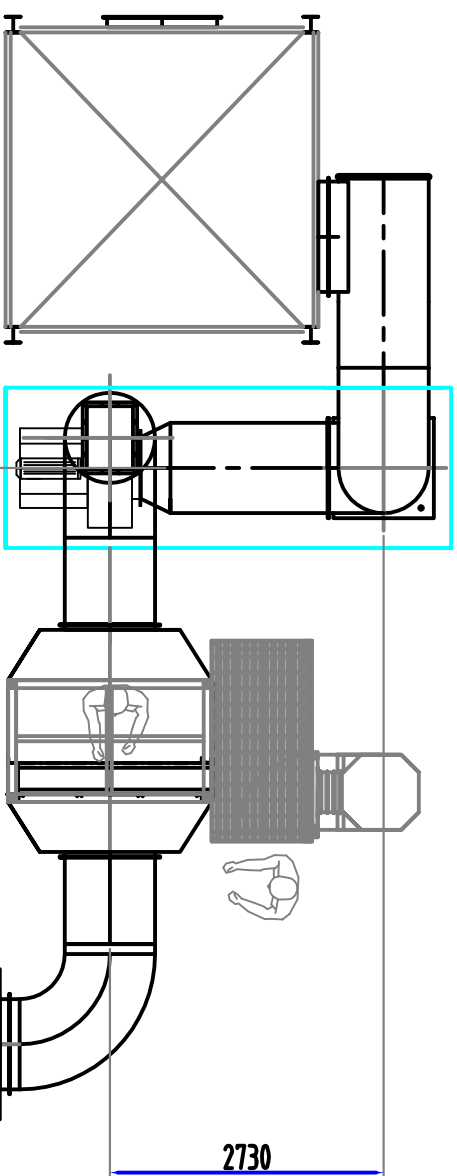
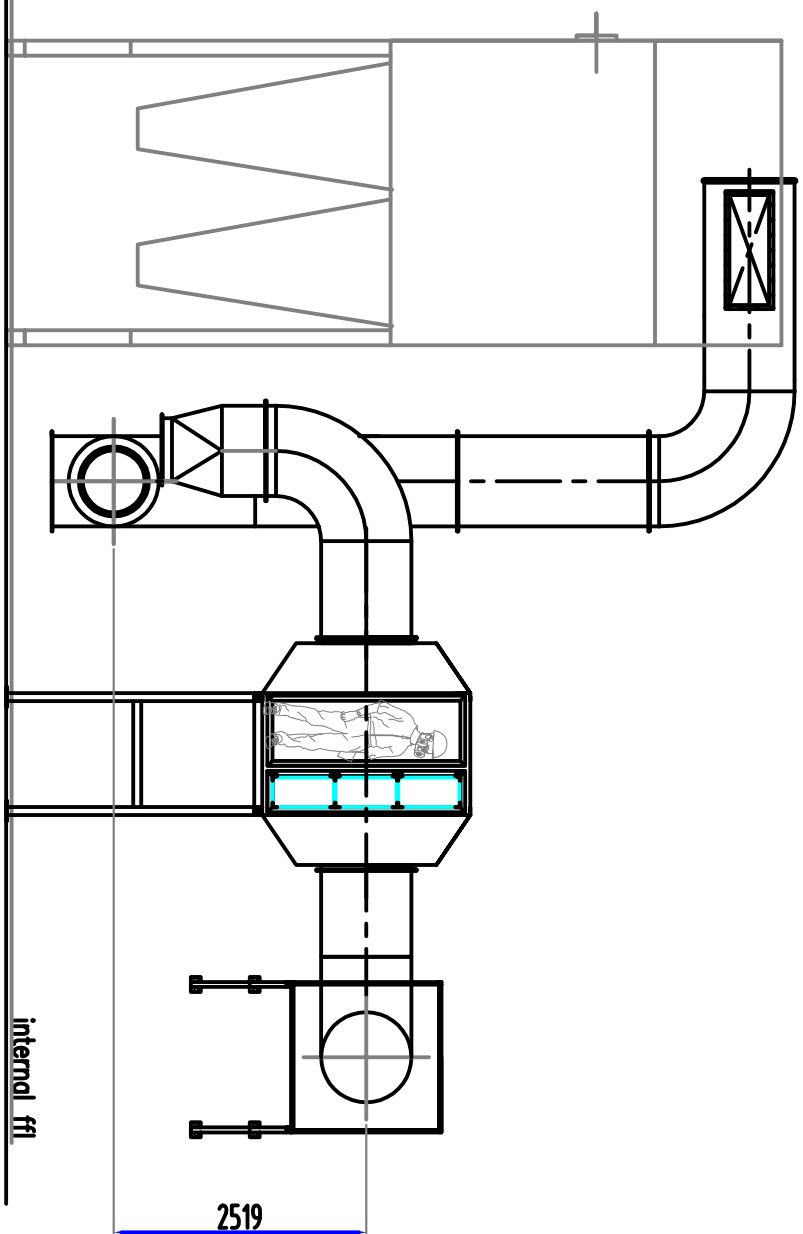
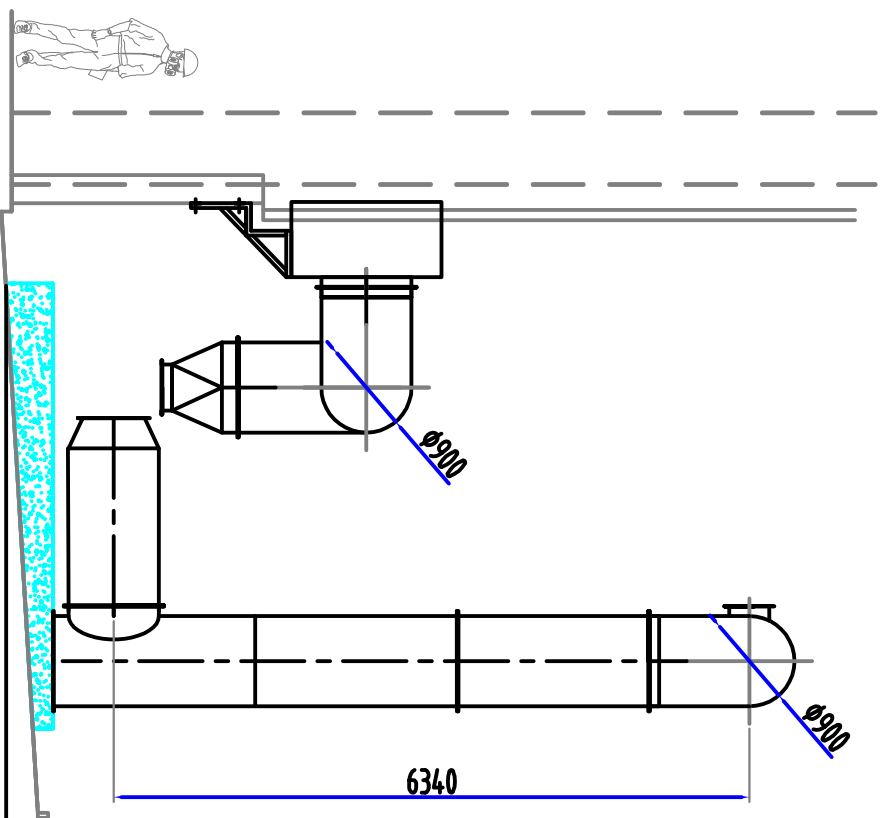
Lead scrap movements will all be indoors, in addition, lead metal does not have a reverberatory sound when moved compared to ferrous metals.



REV.	DATE	AMENDMENT	INITIALS
2	03/04/12	LATEST EIT LAYOUT ADDED	RG
1	30/03/12	REVISED LAYOUT	RG
0	NOV 11	REVISED LAYOUT	RG

CLIENT:		ALEXIA LTD	
PROJECT:		ENVIROWALES, RASSAU IND. EST., EBBW VALE.	
DRAWING:		MILL LAYOUT DRAWING REVISED EQUIPMENT LAYOUT	
SCALE:	DATE:	DRAWN BY:	
1:10 @ A1	NOV 2011	RG	
DRAWING NO.	DRAWING STATUS:		
004C	PANEL LAYOUT		
FOR APPROVAL			
FOR CONSTRUCTION			
REVISION NO.			
2			





			Issued to Client	A.Green	Date
			Approved By		Date
			Client		
			Envirowales		
			Project		
			Jamestown Dust Extraction		
Drawing Number n 1708067-4-2	Date	9.11.17	Drawn By	C J McGuire	

LEAD IN AIR TESTING SCHEDULE 2018

Month	W/C	Date Completed	AREA	Gross Pb	Notes - Brief Activity Log
January 2018	22/01/2018	24/01/2018	Rolling Mill	0.25	Before Kettle. Working on FL2/Mill (battery cut out early)
	22/01/2018	24/01/2018	Rolling Mill	0.24	Before Kettle. Static near extraction inlet (battery cut out early)
	22/01/2018	25/01/2018	Rolling Mill	0.05	Before Kettle.
	22/01/2018	25/01/2018	Rolling Mill	0.07	Before Kettle. operating mill, scraping slabs, dcoiling
	22/01/2018	26/01/2018	Rolling Mill	0.06	After Kettle. Approx 2.5hrs on Mill, 1hr 20mins on FL2, 1x1/2hr break.
	22/01/2018	26/01/2018	Rolling Mill	0.03	After Kettle. Pump picked up around 20:15 after end of shift
February 2018	12/02/2018	14/02/2018	Mill x 1	0.05	Working on FL3 Saw operating VAC lifter
March 2018	05/03/2018	08/03/2018	Rolling Mill (slitter)	0.09	Stacking, Driving FLT, emptying bins. 1x 1/2hr break
	05/03/2018	08/03/2018	Rolling Mill (slitter)	0.09	Static on the slit line nearest the wrapping station
	12/03/2018	14/03/2018	Rolling Mill	0.05	OPERTING SLITTER AND ROLLING MILL
	12/03/2018	14/03/2018	Rolling Mill	0.05	ON MEZZANINE FLOOR NEAR OPERATIOAL KETTLE
April 2018	24/04/2018	25/04/2018	Mill x 1	0.10	*Pump Cut Out* Moving FL2 load to pallet, lorry loading, cutting FL2 and FL3
June 2018	05/06/2018	05/06/2018	Mill x 1 (operator)	0.08	Operating mill, removing scrap
	05/06/2018	05/06/2018	Mill x 1 (static)	0.03	Pump left on Mezz floor
	25/06/2018	27/06/2018	Mill x 1	0.06	apprx 2hrs running slitter, stacking pallets, 1hr on mill, 2x1/2 hr breaks
September 2018	03/09/2018	11/09/2018	Mill x 1	0.11	Operating machine all shift