

F.1 Treatment, Abatement and Control Systems

A2-2, A2-3, A2-4, A2-5, A2-6, A2-7, A2-8 Dust Extractors

Stryker Orthopaedics Limerick has a total of seven dust extractors serving the metal finishing cells. The units comprise of a series of fabric sock filters rated at 99% efficiency at 5 micron particle size, that are reverse-pulsed with compressed air to release the trapped dust. This dust is collected into bins at ground level and emptied weekly.

A plan of the Extractors layout is attached.

A2-9 Thermidor Rotary Furnace & A2-10 Solar Impianti Batch Furnace both with Afterburners

Two natural gas fired furnaces in the casting section of the foundry have afterburner abatement system fitted to the discharge systems. The purpose of these systems is to ensure all smoke particles generated by the furnaces are routed through a high temperature burner eliminating discharges of VOC and particulates to atmosphere.

Critical equipment:

The Thermidor Rotary Furnace operates on a continuous 24 hours day basis. Shell cases are loaded and unloaded to the furnace every 10mins. The shell cases remain within the furnace for 90 minutes and the wax residues within the component burns off within the first 3 minutes after loading to the furnace. The furnace operates at a temperature of ~1090 °C (2000 °F) and afterburner temperature is set at ~870 °C (1600 °F). Alarm mechanisms are in place in the event that afterburner temperature falls 100 °C below the temperature set point.

A plan of the Thermidor Rotary Furnace is attached.

The Solar Impianti Batch Furnace operates on a batch basis. A load of shells are loaded to the furnace, the cycle consists of wax burn-off for 25 minutes followed by period when temp rises to ~1090 °C (2000 °F), followed by a soak time at ~1090 °C (2000 °F) for 45min. During the wax burn-off stage of the process, ~50g of wax per case is burnt-off. The afterburner temperature is set at ~900 °C (1650 °F). The total cycle time is ~3 hours, followed by a cooling down period which lasts for 12 hours..

A plan of the Solar Impianti Batch Furnace is attached.

A2-11, A2-12, A2-13 & A2-14 Peri-Apatite Coating Machines

Peri-Apatite coating is a process by which hydroxyapatite (calcium phosphate) is manufactured and applied as a thin layer to beaded surfaces of metal implants.

The process is currently performed using two identical coating machines (A2-11 & A2-12). The aqueous discharge from the existing PA machines contains ammonia, which is discharged on a batch basis throughout the day and varies depending on the level of activity within the operational area at the time. Each machine is fitted with a lid to the reaction chamber and are fully enclosed to limit the ammonia emissions from the machine. An extract fan is also fitted to each machine which extracts ammonia fumes which are generated during the process.

Two new PA machines are being developed and installed within the same operational area over the coming months. Aqueous discharges from the new machines will be pH neutralized within the machines as part of the process cycle, prior to discharge to the SE-1 drain. The new machines have fully enclosed reaction tank which limit the ammonia emissions during the process. The two new machines will be ducted to the same extraction fan which will extract the residual ammonia fumes generated during the process.

The ammonia aerial emissions from the combined PA operations are considered main emissions and will be monitored on an annual basis as agreed with the Agency to show compliance with BAT Limits and Guidance.

Critical Equipment

pH Probes and Meters: Daily process calibration, maintenance spares held.
Extraction Fans: Calibrated on a 6 monthly basis, maintenance spares held.

SE1 Effluent Monitoring Station

Process effluent from around the plant is fed into the effluent monitoring station, before entering the main sewer drain for the Industrial Estate.

In some cases we have localized neutralization before the effluent enters the final effluent tank. There are three local pH neutralization systems in place to neutralize the liquid discharge to process drains within the plant. These are in Periapatite, Layton Passivation and the Baseplate cleaning line.

Process effluent leaving the plant is accumulated in an underground 30m³ concrete bund where the contents are agitated. The pH of the effluent is continuously monitored. A manual penstock valve is fitted to the outlet of the holding tank to contain the contents. When effluent leaves the underground bund it is monitored for Flow, and pH.

If any of these control parameters are outside the limits of the IPPC licence, an alarm is generated in the security office and the reason for the alarm is immediately investigated.

Critical Equipment

pH Probes & Meter, Calibration: 3 – Monthly, maintenance spares held.

Flow Meter, Calibration: 6-Monthly, maintenance spares held.

A schematic of the Effluent Monitoring Station is attached.

SE2 Effluent Monitoring Station

The process effluent from Simplex manufacturing lines discharge to sewer at SE-2. The mother liquor and the first wash from the simplex powder process (SM1 & SM2) are discharged to a holding tank and subsequently disposed as hazardous waste. Subsequent batch discharges are monitored for Ethanol and MMA at in-plant monitoring point's locations SE-2A (SM1) and SE-2B (SM2). The Simplex process effluent discharge is subsequently combined with the laboratory washings, canteen facilities and toilet discharges at SE-2. The Canteen waste passes through a grease trap prior to discharge at SE-2. No other effluent treatment is undertaken at present except the removal of the mother liquor and first wash from the simplex powder process, but plans are in place to develop, install and commission a in-pipe pH monitoring and control system for trade discharges through SE-2.

To control the aqueous discharge within the current limits outlined in the IPPC License, it is planned to design, develop and install a in-line acid and caustic dosing system for the combined aqueous discharges from the Simplex operation prior to combining with the laboratory washings, canteen and toilet discharges at SE-2. This new acid and caustic dosing system will operate along similar lines to the dosing system at SE-1 and will ensure that discharges at SE-2 will meet the limits of the IPPC License for discharges at SE-2.

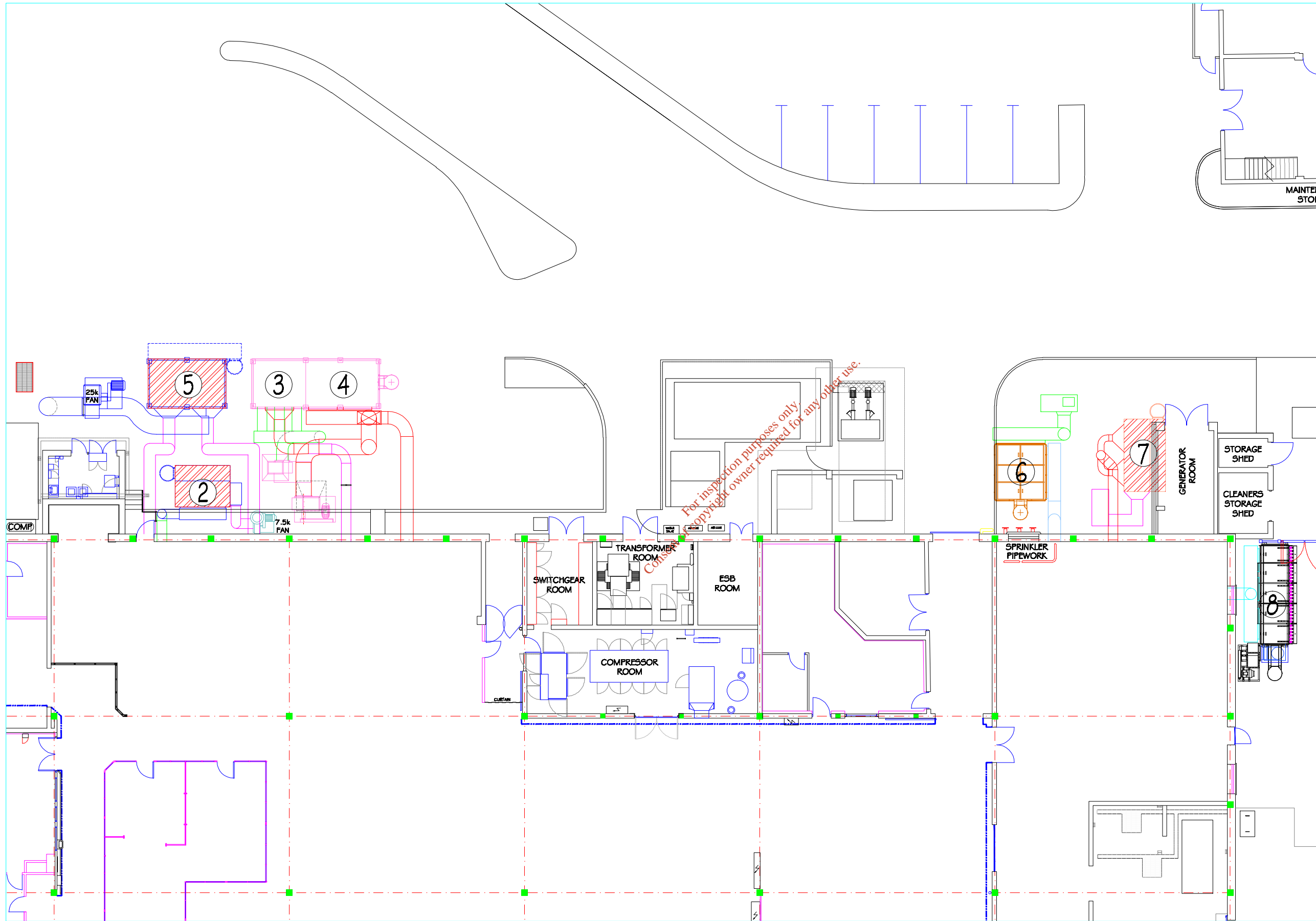
Critical Equipment

pH Probes & Meter, Calibration: 3 – Monthly, maintenance spares held.

Flow Meter, Calibration: 6-Monthly, maintenance spares held.

Attachment F1_2 A2-2 to A2-8 Dust Extractors

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LEGEND

- A2-2) BASEPLATE - 7.5K CFM
- A2-3) KINEMAX - 14K CFM
- A2-4) DURACON - 24K CFM
- A2-5) TRIATHLON - 25K CFM
- A2-6) HOJ - 15K CFM
- A2-7) UTILITY - 10K CFM
- A2-8) STAHL 1#2 - 6K CFM
FULL CAPACITY 12K CFM

NOTE:-
EXTRACTORS WITH HATCHING
EXISTED ON 1996 LICENCE

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Job Title
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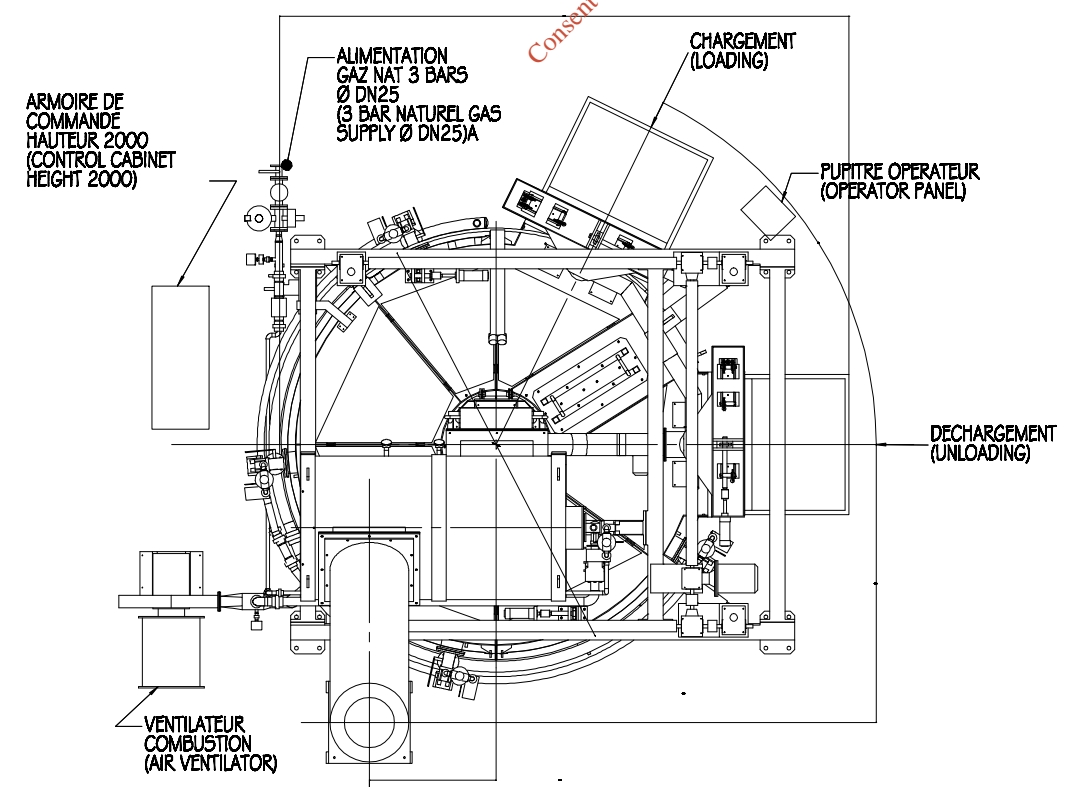
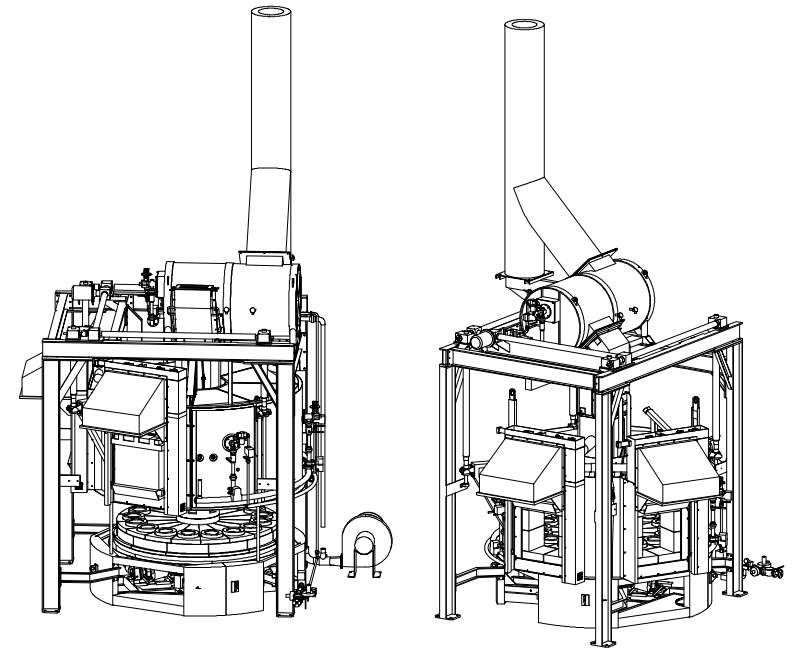
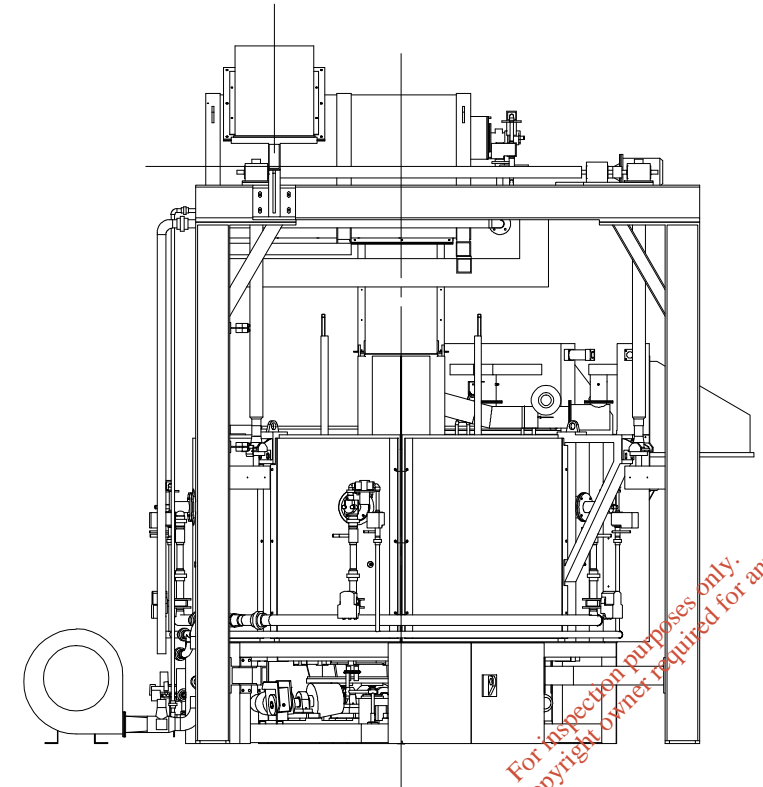
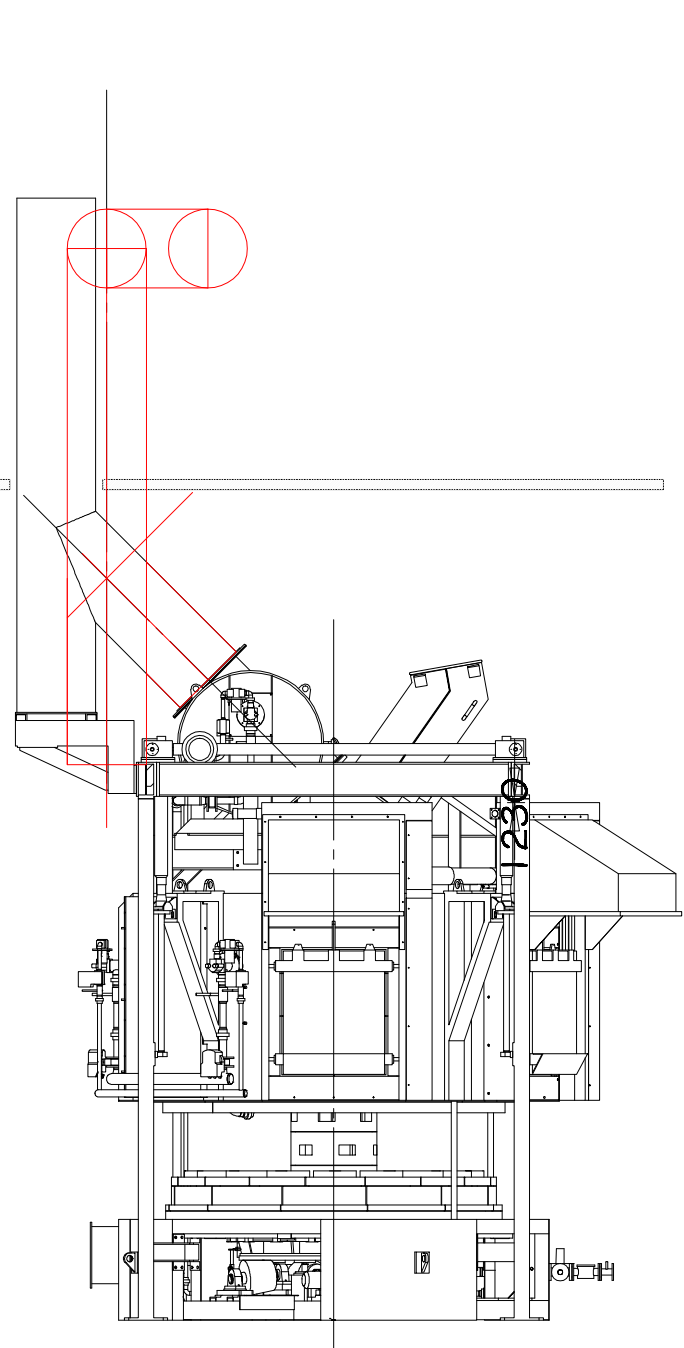
Drawing Title
**Extractor changes
1996 and 2007**

Scale	1:200	Designer	C.H
Checked	Approved	Date	10 Oct 07

Drawing Status	Sheet
INFORMATION	A3
Drawing No.	Rev.
	0

Attachment F1_3 A2-9 Rotary Hearth Furnace

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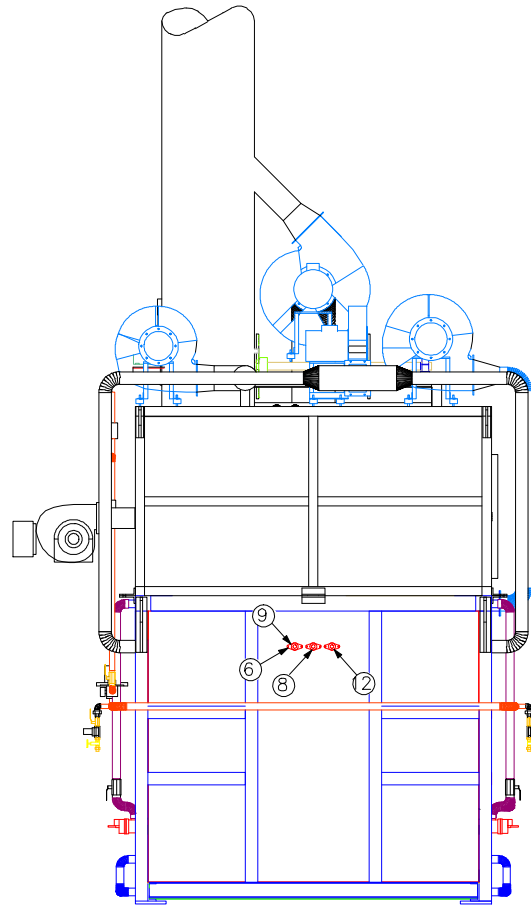
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Rotary hearth furnace

Scale	W/S	Operator	C.N

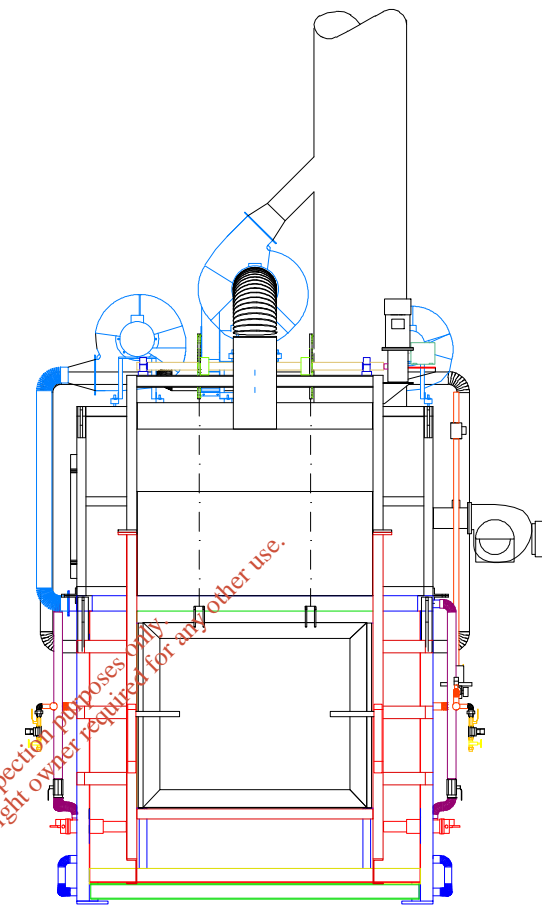
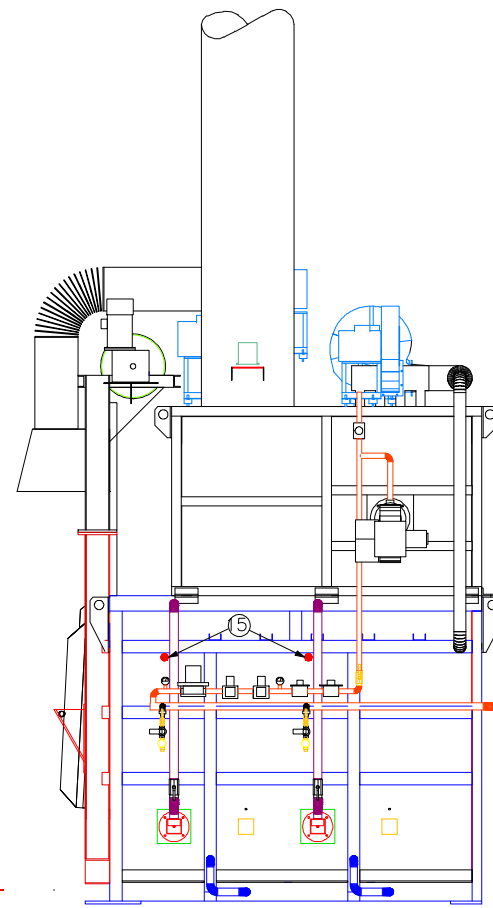
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Attachment F1_4 A2-10 Batch Furnace

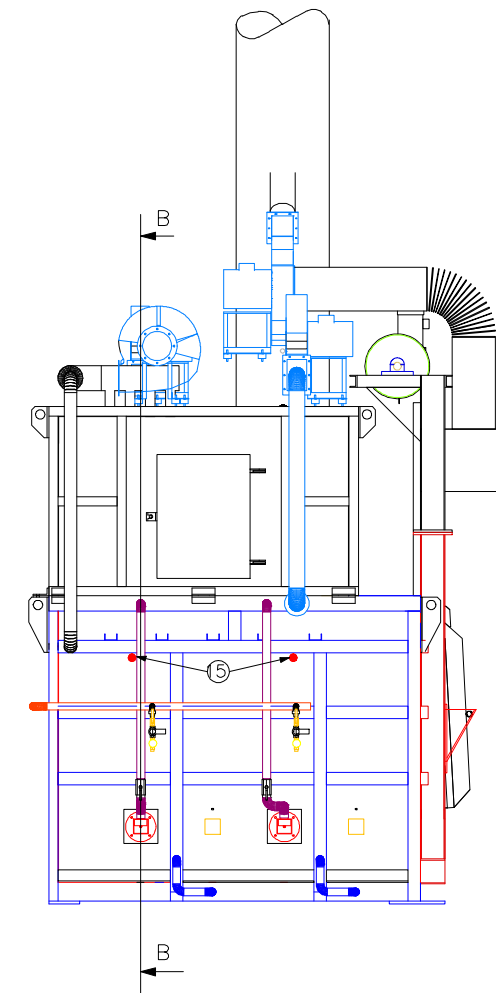
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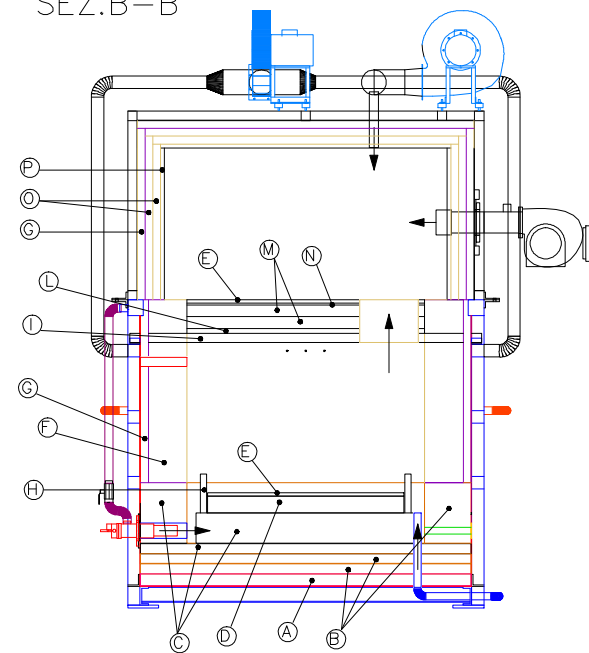
- 6- TEMPERATURE REGULATION/PROBE KILN
- 8- O2 REGULATION PROBE
- 9- OVER TEMPERATURE/PROBE KILN
- 12- PRESSURE PROBE
- 13-TEMPERATURE REGULATION/PROBE AFTERBURNING CHAMBER
- 14-OVER TEMPERATURE/PROBE AFTERBURNING CHAMBER
- 15-OFF TEST PORT HOLES



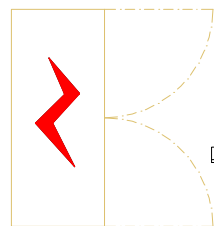
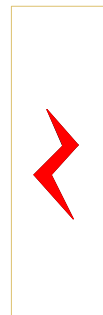
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SEZ.B-B



- A-BRICK JM23
- B-BRICK JM26
- C-BRICK JM28
- D-SLEBJ JM28
- E-RIBBED REFRACTORY PLATE 300X300X16+3mm
- F-CERABLOCK 800 Sp.50 mm
- G-CERABLOCK 800 Sp.50 mm
- H-REFRACTORY PLATE 250X380X30 mm
- I-JOIST MADE BY RE-SIC 60X60X2270
- L-REFRACTORY PLATE 695X460X30 mm
- M-SLABJ JM26
- N-CERAFELT Sp.10 mm
- O-CERABLOCK 1100 Sp.50 mm
- P-CERABOARD 100 Sp.25 mm



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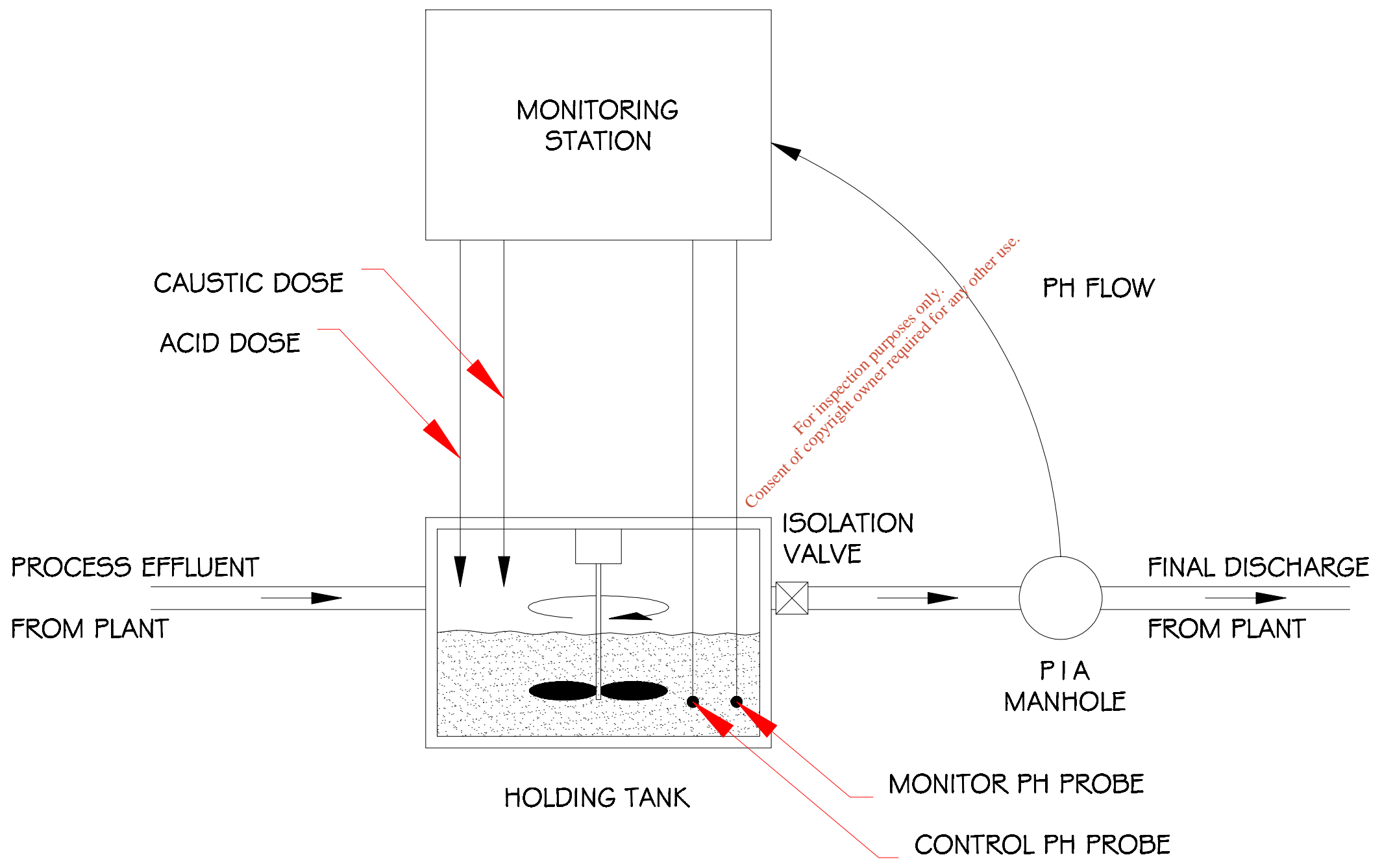
Drawing Title
Batch furnace

Scale	W/S	Operator	C.N

Drawing Status	Sheet
INFORMATION	A3

Attachment F1_5 SE1 Effluent Monitoring Station

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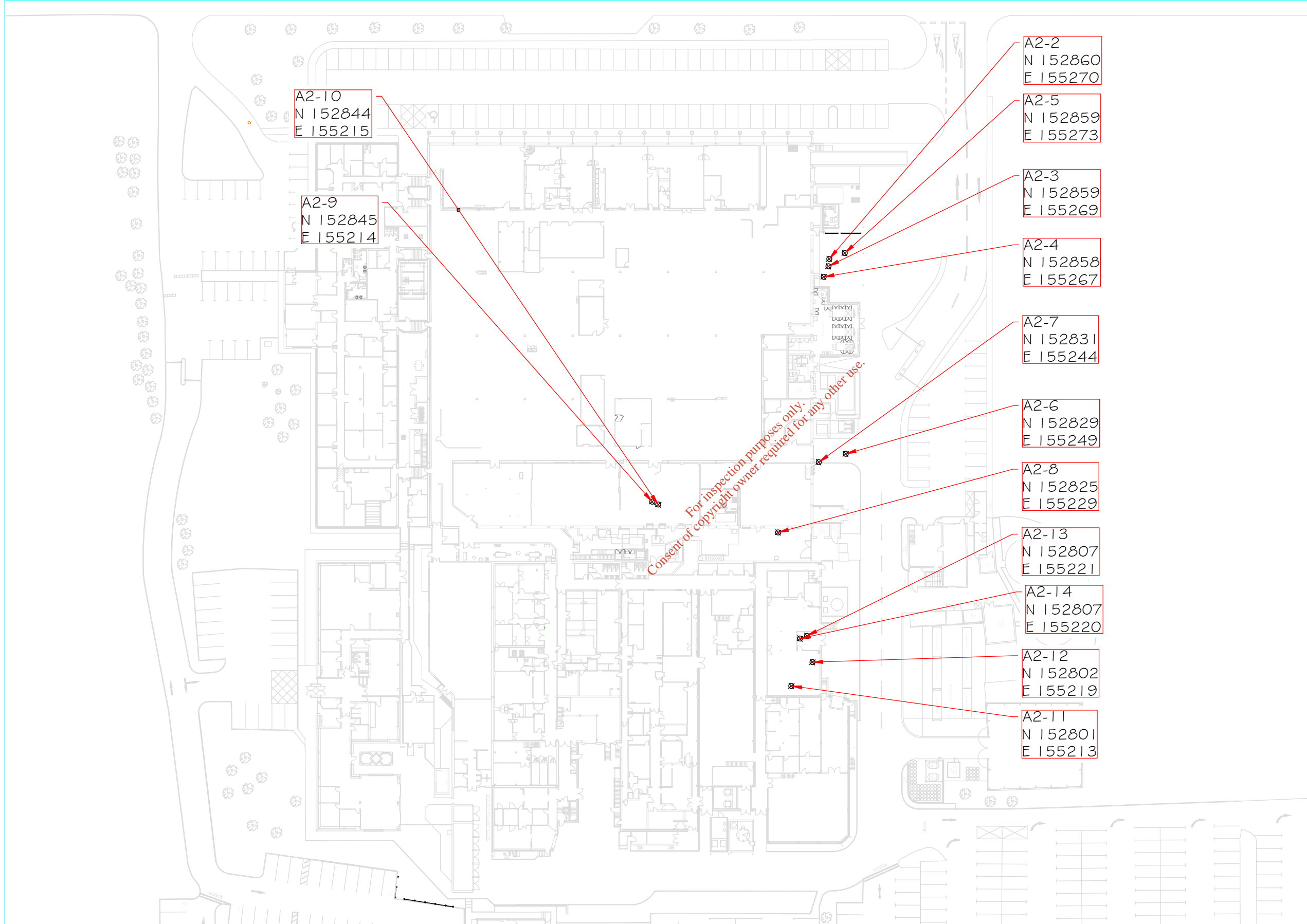
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Job Title: IPPC LICENCE

Drawing Title: Effluent monitoring station

Scale	W/S	Operator	C.N

Drawing Status	Sheet
INFORMATION	A3



A2-10
N 152844
E 155215

A2-9
N 152845
E 155214

A2-2
N 152860
E 155270

A2-5
N 152859
E 155273

A2-3
N 152859
E 155269

A2-4
N 152858
E 155267

A2-7
N 152831
E 155244

A2-6
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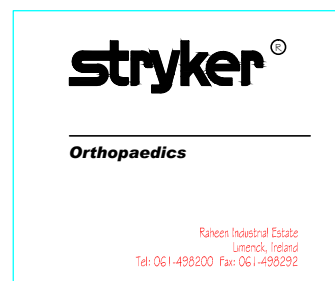
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E 155219

A2-11
N 152801
E 155213

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LEGEND:
MAIN EMISSIONS A2-1 TO A1-N
MINOR EMISSIONS A3-1 TO A1-N

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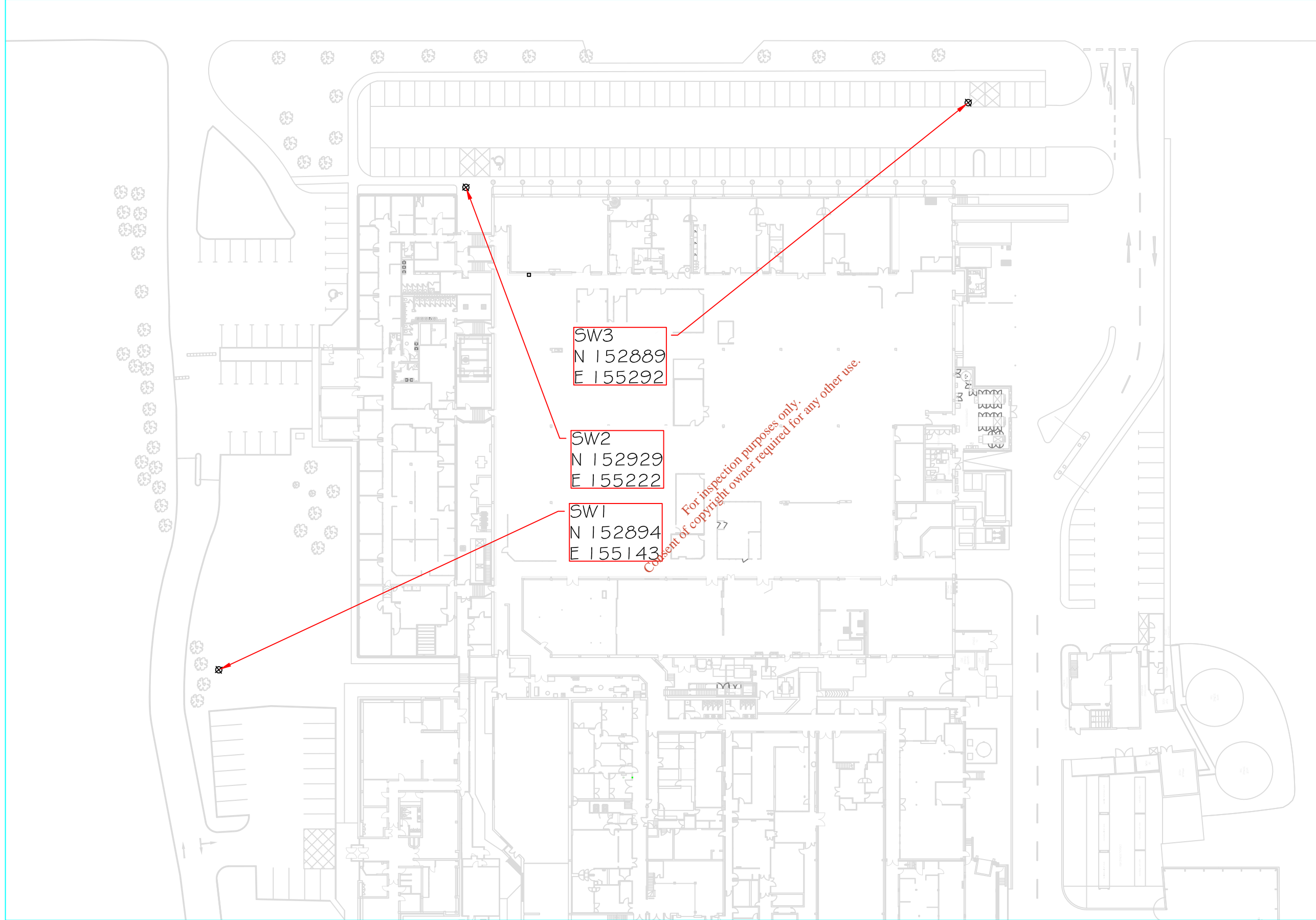
Site Title
IPPC LICENCE 2010

Drawing Title
Drawing 7 Atmosphere Monitoring and Sampling Points

Scale	MTS	Originator	C.H
Checked	Approved	Date	3 Nov 10

Drawing Status	Sheet
ISSUED	A3

Drawing No.	Rev.
Attachment F2_1	0



SW3
N 152889
E 155292

SW2
N 152929
E 155222

SW1
N 152894
E 155143

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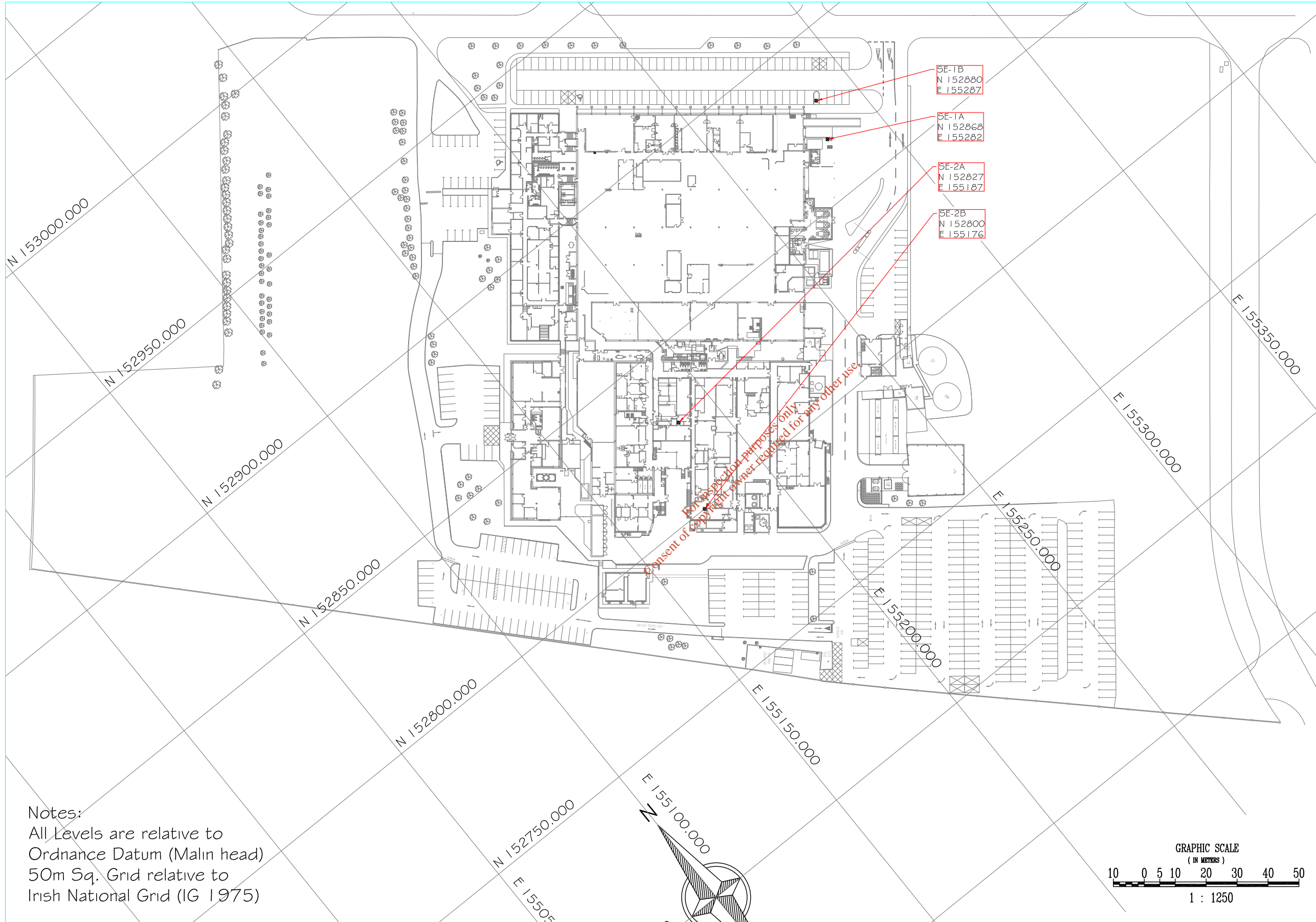
Job Title
IPPC LICENCE 2010

Drawing Title
Drawing 8 Surface water monitoring
And sampling points

Scale	NTS	Originator	C.H
Checked	Approved	Date	3 Nov 10

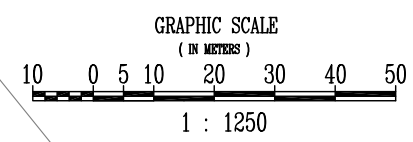
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Drawing No.	Attachment F2_2	Rev.	0
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Notes:
 All Levels are relative to
 Ordnance Datum (Malin head)
 50m Sq. Grid relative to
 Irish National Grid (IG 1975)



SCALE 1:1250

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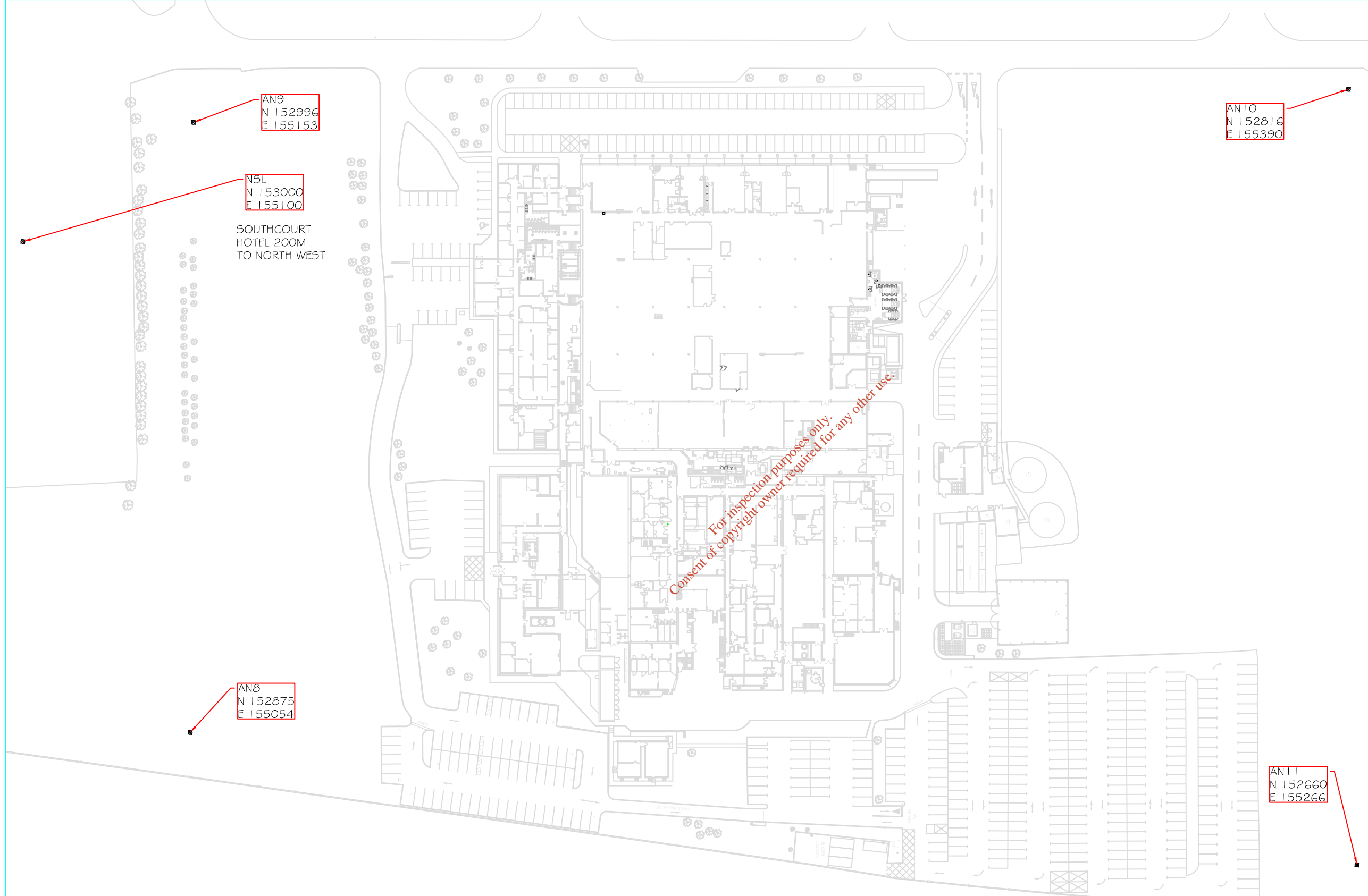
Rahen Industrial Estate
 Limerick, Ireland
 Tel: 061-499200 Fax: 061-499292

Job Title
 IPPC LICENCE 2010

Drawing Title
 Drawing 9 Sewer Monitoring and
 Sampling Points

Scale	1:1250	Originator	C.H
Checked		Date	3 Nov 10

Drawing Status	ISSUED	Sheet	A3
Drawing No.	Attachment F2_3	Rev.	0



AN9
N 152996
E 155153

NSL
N 153000
E 155100

SOUTHCOURT
HOTEL 200M
TO NORTH WEST

AN8
N 152875
E 155054

AN10
N 152816
E 155390

AN11
N 152660
E 155266

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Drawing Title
**Drawing 10 Noise monitoring and
Sampling points**

Scale	NTS	Originator	C.H
Checked		Date	3 Nov 10

Drawing Status
ISSUED

Sheet
A3

Drawing No.
Attachment F2_4

Rev.
0

TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-2 Midac Carter Extractor No 2](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metal	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-2

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access and suitable sampling platforms	CEN 14385	ICP
Total Particulates	Annually	Good access and suitable sampling platforms	CEN 13284	Gravimetric

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-3 Midac Carter Extractor No. 3](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metal	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-3

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access and suitable sampling platforms	CEN 14385	ICP
Total Particulates	Annually	Good access and suitable sampling platforms	CEN 13284	Gravimetric

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-4 Midac Carter Extractor No. 4](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metal	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-4

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access and suitable sampling platforms	CEN 14385	ICP
Total Particulates	Annually	Good access and suitable sampling platforms	CEN 13284	Gravimetric

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-5 Midac Carter Extractor No. 5](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metal	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-5

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access and suitable sampling platforms	CEN 14385	ICP
Total Particulates	Annually	Good access and suitable sampling platforms	CEN 13284	Gravimetric

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TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-6 Midac Carter Extractor No. 6](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metal	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-6

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access and suitable sampling platforms	CEN 14385	ICP
Total Particulates	Annually	Good access and suitable sampling platforms	CEN 13284	Gravimetric

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TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-7 Midac Carter Extractor No. 7](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metal	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-7

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access and suitable sampling platforms	CEN 14385	ICP
Total Particulates	Annually	Good access and suitable sampling platforms	CEN 13284	Gravimetric

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-8 Midac Carter Extractor No. 8](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metal	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Filters	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-8

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access and suitable sampling platforms	CEN 14385	ICP
Total Particulates	Annually	Good access and suitable sampling platforms	CEN 13284	Gravimetric

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : A2-9 Hearth Furnace

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metals	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
VOC	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Dioxins / Furans	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Attachment F2_6: Abatement & Treatment Control, Tables F.1(i), F.2(i) and F.2(ii)

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications
VOC	Annually	As per reports	In accordance with manufacturers specifications
Dioxins / Furans	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

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TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-9

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access to roof.	CEN 14385:2004	Isokinetic Sampling and ICP
Total Particulates	Annually	Good access to roof.	CEN 13284-1:2002	Isokinetic Sampling and Gravimetric Analysis
VOC	Annually	Good access to roof.	CEN 12619:1999 Or CEN13649:2002	Flame Ionization Detection (FID) Or Sampling onto AC Tubes and Analysis by GC-MS
Dioxins / Furans	Annually	Good access to roof.	BS EN 1948-1:2006	Isokinetic Sampling, Sample Preparation and Analysis by GC-MS.

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TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-10 Batch Furnace](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Heavy Metals	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Total Particulates	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
VOC	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies
Dioxins / Furans	Afterburner	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Attachment F2_6: Abatement & Treatment Control, Tables F.1(i), F.2(i) and F.2(ii)

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Heavy Metal	Annually	As per reports	In accordance with manufacturers specifications
Total Particulates	Annually	As per reports	In accordance with manufacturers specifications
VOC	Annually	As per reports	In accordance with manufacturers specifications
Dioxins / Furans	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

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TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : A2-10

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Heavy Metal	Annually	Good access to roof.	CEN 14385:2004	Isokinetic Sampling and ICP
Total Particulates	Annually	Good access to roof.	CEN 13284-1:2002	Isokinetic Sampling and Gravimetric Analysis
VOC	Annually	Good access to roof.	CEN 12619:1999 Or CEN13649:2002	Flame Ionization Detection (FID) Or Sampling onto AC Tubes and Analysis by GC-MS
Dioxins / Furans	Annually	Good access to roof.	BS EN 1948-1:2006	Isokinetic Sampling, Sample Preparation and Analysis by GC-MS.

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TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-11 Peri-Apitate Coating machine No 1](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Ammonia	--	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Ammonia	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : [A2-11](#)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Ammonia	Annually	Good access to roof.	As per report	As per report

TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-12 Peri- Apitate Coating machine No 2](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Ammonia	--	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Ammonia	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : [A2-12](#)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Ammonia	Annually	Good access to roof.	As per report	As per report

TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-13 Peri- Apitate Coating machine No 3](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Ammonia	--	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Ammonia	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : [A2-13](#)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Ammonia	Annually	Good access to roof.	As per report	As per report

TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [A2-14 Peri- Apitate Coating machine No 4](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Ammonia	--	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Ammonia	Annually	As per reports	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : [A2-14](#)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Ammonia	Annually	Good access to roof.	As per report	As per report

TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [SW-1](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
pH	pH meter	As per report	As per report	As per report
COD	As per report	As per report	As per report	As per report
Visual Inspection				

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
pH	Weekly	As per reports	In accordance with manufacturers specifications
COD	Weekly	As per reports	In accordance with manufacturers specifications
Visual Inspection	Weekly	NA	NA

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : SW-1

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
pH	Weekly	Good access and suitable sampling platforms	Grab	APHA-4500-H-B
COD	Weekly	Good access and suitable sampling platforms	Grab	APHA-5220-D
Visual Inspection	Weekly	Good access and suitable sampling platforms	Visual	

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [SW-2](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
pH	pH meter	As per report	As per report	As per report
COD	As per report	As per report	As per report	As per report
Visual Inspection				

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
pH	Weekly	As per reports	In accordance with manufacturers specifications
COD	Weekly	As per reports	In accordance with manufacturers specifications
Visual Inspection	Weekly	NA	NA

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : SW-2

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
pH	Weekly	Good access and suitable sampling platforms	Grab	APHA-4500-H-B
COD	Weekly	Good access and suitable sampling platforms	Grab	APHA-5220-D
Visual Inspection	Weekly	Good access and suitable sampling platforms	Visual	

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : [SW-3](#)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
pH	pH meter	As per report	As per report	As per report
COD	As per report	As per report	As per report	As per report
Visual Inspection				

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
pH	Weekly	As per reports	In accordance with manufacturers specifications
COD	Weekly	As per reports	In accordance with manufacturers specifications
Visual Inspection	Weekly	NA	NA

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : [SW-3](#)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
pH	Weekly	Good access and suitable sampling platforms	Grab	APHA-4500-H-B
COD	Weekly	Good access and suitable sampling platforms	Grab	APHA-5220-D
Visual Inspection	Weekly	Good access and suitable sampling platforms	Visual	

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TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : SE-1

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
Flow	Flow meter	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	6 monthly	Maintenance Supplies
pH	Dosing Pump, Agitator and pH meter	As per above	3 monthly	As per above
Toxicity	As per report	As per report	As per report	NA
Respirometry	As per report	As per report	As per report	NA
Ammonia (as N)	As per report	As per report	As per report	NA
Sulphate	As per report	As per report	As per report	NA
Suspended Solids	As per report	As per report	As per report	NA
Total Phosphorous (as P)	As per report	As per report	As per report	NA
Nitrates (as N)	As per report	As per report	As per report	NA
Oils, Fats and Grease	As per report	As per report	As per report	NA
BOD	As per report	As per report	As per report	NA
COD	As per report	As per report	As per report	NA
Chloride	As per report	As per report	As per report	NA
Cobalt	As per report	As per report	As per report	NA
Chromium	As per report	As per report	As per report	NA
Molybdenum	As per report	As per report	As per report	NA
Titanium	As per report	As per report	As per report	NA

Attachment F2_6: Abatement & Treatment Control, Tables F.1(i), F.2(i) and F.2(ii)

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
Flow	Continuous	Flow Meter	In accordance with manufacturers specifications
pH	Continuous	pH electrode / meter and recorder	In accordance with manufacturers specifications
Toxicity	Annually	As per reports	As per reports
Respirometry	Annually	As per reports	As per reports
Ammonia (as N)	Daily	As per reports	As per reports
Sulphate	Daily	As per reports	As per reports
Suspended Solids	Weekly	As per reports	As per reports
Total Phosphorous (as P)	Weekly	As per reports	As per reports
Nitrates (as N)	Weekly	As per reports	As per reports
Oils, Fats and Grease	Weekly	As per reports	As per reports
BOD	Weekly	As per reports	As per reports
COD	Weekly	As per reports	As per reports
Chloride	Weekly	As per reports	As per reports
Cobalt	Monthly	As per reports	As per reports
Chromium	Monthly	As per reports	As per reports
Molybdenum	Monthly	As per reports	As per reports
Titanium	Monthly	As per reports	As per reports

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : SE-1

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
Flow	Continuous	Good access and suitable sampling platforms	Flow meter	—
pH	Continuous	As per above	Flow porportional	pH electrode / meter and recorder
Toxicity	Annually	As per above	As per above	Daphnia Magna Vibrio Fischeri
Respirometry	Annually	As per above	As per above	ISO8192: 2007
Ammonia (as N)	Daily	As per above	As per above	APHA-4500-NH3-D
Sulphate	Daily	As per above	As per above	APHA-4110-B
Suspended Solids	Weekly	As per above	As per above	APHA-2540-D
Total Phosphorous (as P)	Weekly	As per above	As per above	APHA-4500-P
Nitrates (as N)	Weekly	As per above	As per above	AOHA-4110-B
Oils, Fats and Grease	Weekly	As per above	As per above	APHA-5220-B
BOD	Weekly	As per above	As per above	APHA-5210-B
COD	Weekly	As per above	As per above	APHA-5220-D
Chloride	Weekly	As per above	As per above	APHA-4110-B
Cobalt	Monthly	As per above	As per above	APHA-3120-B
Chromium	Monthly	As per above	As per above	APHA-3120-B
Molybdenum	Monthly	As per above	As per above	APHA-3120-B
Titanium	Monthly	As per above	As per above	APHA-3120-B

TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : SE-2A (In-Plant Simplex Powder #1, prior to discharge at SE-2)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
MMA	As per report	As per report	As per report	NA
Ethanol	As per report	As per report	As per report	NA

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
MMA	Quarterly	As per reports	As per reports
Ethanol	Quarterly	As per reports	As per reports

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

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TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : [SE-2A](#)

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
MMA	Quarterly	As per above	As per above	G14 ASTM D3695-95
Ethanol	Quarterly	As per above	As per above	G14 ASTM D3695-95

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TABLE F.1(i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : SE-2B (In-Plant Simplex Powder #2, prior to discharge at SE-2)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
MMA	As per report	As per report	As per report	NA
Ethanol	As per report	As per report	As per report	NA

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
MMA	Quarterly	As per reports	As per reports
Ethanol	Quarterly	As per reports	As per reports

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

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TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : SE-2B

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
MMA	Quarterly	As per above	As per above	G14 ASTM D3695-95
Ethanol	Quarterly	As per above	As per above	G14 ASTM D3695-95

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TABLE F.1 (i): ABATEMENT / TREATMENT CONTROL

Emission point reference number : SE-2C (Proposed Combined In plant , pH neutralisation station-Plant Simplex Powder # 1 & #2, prior to discharge at SE-2)

Control ¹ parameter	Equipment ²	Equipment maintenance	Equipment calibration	Equipment back-up
pH	Dosing Pump, Agitator and pH meter	Equipment will be routinely inspected and maintained as part of a PM system and in accordance with manufacturers specifications.	In accordance with manufacturers instructions.	Maintenance Supplies

Control ¹ parameter	Monitoring to be carried out ³	Monitoring equipment	Monitoring equipment calibration
pH	Continuous	pH electrode / meter and recorder	In accordance with manufacturers specifications

¹ List the operating parameters of the treatment / abatement system which control its function.

² List the equipment necessary for the proper function of the abatement / treatment system.

³ List the monitoring of the control parameter to be carried out.

TABLE F.2(i) : EMISSIONS MONITORING AND SAMPLING POINTS

(1 table per monitoring point)

Emission Point Reference No. : SE-2C

Parameter	Monitoring frequency	Accessibility of Sampling Points	Sampling method	Analysis method/ technique
pH	Continuous	Good access and suitable sampling platforms	Flow proportional	pH electrode / meter and recorder

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TABLE F.2(ii): AMBIENT ENVIRONMENT MONITORING AND SAMPLING POINTS (1 table per monitoring point)

Monitoring Point Reference No : [Not Applicable](#)

Parameter	Monitoring frequency	Accessibility of Sampling point	Sampling method	Analysis method / technique
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F.3 Tabular Data on Monitoring and Sampling Points

Point Code	ACTIVITY	Point Type	EASTING	NORTHING	VERIFIED
Emissions to Atmosphere					
A2 - 2	Midac Carter Extractor No. 2	M	155,270	152,860	Yes
A2 - 3	Midac Carter Extractor No. 3	M	155,269	152,859	Yes
A2 - 4	Ammerpulse Extractor No. 4	M	155,267	152,858	Yes
A2 - 5	Midac Carter Extractor No. 5	M	155,273	152,859	Yes
A2 - 6	Midac Carter Extractor No. 6	M	155,249	152,829	Yes
A2 - 7	Midac Carter Extractor No. 7	M	155,244	152,831	Yes
A2 - 8	Midac Carter Extractor No. 8	M	155,229	152,825	Yes
A2 - 9	Rotary Furnace	M	155,214	152,845	Yes
A2 - 10	Batch Furnace	M	155,215	152,844	Yes
A2 - 11	Peri-Apitate Machine #1	M	155,213	152,801	Yes
A2 - 12	Peri-Apitate Machine #2	M	155,219	152,802	Yes
A2 - 13	Peri-Apitate Machine #3	M	155,220	152,807	Yes
A2 - 14	Peri-Apitate Machine #4	M	155,221	152,807	Yes
Emissions to Surface Water					
SW - 1	In the Grass at road	M	155,143	152,894	Yes
SW - 2	In Front of Security	M	155,222	152,929	Yes
SW - 3	In the car park	M	155,292	152,889	Yes
Emissions to Sewer					
SE - 1A	COMPOSITE SAMPLER	M	155,282	152,868	Yes
SE - 1B	ISCO pH & Flow meter	M	155,287	152,880	Yes
SE - 2A	SE2 - Sim Powder 1	M	155,187	152,827	Yes
SE - 2B	SE2 - Sim Powder 1	M	155,176	152,800	Yes
SE - 2C	Proposed Combined In plant , pH neutralisation station-Plant Simplex Powder # 1 & # 2, prior to discharge at SE-2	M	TBA	TBA	No