Bailieboro Foods Ltd. and Bailie Foods Ireland Ltd.
Application for an IPPC Licence Review

Attachment D –

Infrastructure and Operation

1.0 Operational Information Requirements

1.1 Development and Operational History of the Site

The following sets out the development and operational history of the plant.

1902 Bailieboro Co-op formed.
1965 Evaporator was built on Bailieboro site by MacCormac's (Prictchitts) and Engineering business.
1973 The evaporator became a joint venture with Bailieboro Co-op.
1979 Spray drier (Bailie Foods), water and effluent treatment plant were built.
1981 Spray drier was replaced and comissioned for Fat filled powder.
1985 Feta cheese factory and engineeering offices were built.
1986 New milk intake and water treatment plant was erected.
1988 Entire business was sold to Food Industries leading to the closure of the cheese plant and the sale of Engineering works.
1989 The Evaporator was upgraded to facilitate the evaporation of high heat heat stable products and in the powder plant a final single effect evaporator (Finisher) was installed and the Fluidized Bed was replaced to incorporate a well mix section. Improved product output.
1990 Golden Vale Plc. purchased from Food Industries the Bailieboro milk division.
1992 A bulk powder tanker and mini bulk filling system was installed and the boilers were converted to natural gas.
2000 Bailieboro Foods Ltd. and Bailie Foods Ireland Ltd was granted an IPC licence (Reg. No. 406) under section 83(1) of the Environmental Protection Agency Act, 1992
2001 A washable Bag Filter system was installed which reduced our particulate emissions to less than 10 mgs per m3.
2001 Golden Vale PLC was taken over by Kerry Group PLC in 2001.
2002 Lakeland Dairies purchased the Bailieboro Milk Division from Kerry Group PLC.
2006 A review of the licence was granted (IPPCL Reg. No. 406-02) for the installation of a Combined Heat and Power Plant with a new emission to air point and for the installation of an Integrated Constructed Wetland (ICW) to treat wastewaters arising at the plant prior to discharge to the River Lear by a new emission point.
2010 A new additional dryer is expected to be commissioned in April 2010 at the facility subject to EPA approval.

2.0 Operational Information: Proposed Upgrades

2.1 Milk Intake

The milk intake area will be upgraded to increase storage capacity as very low storage capacity has been a problem in the past. A layout of the milk intake process with the new proposed tanks is enclosed with this Attachment (Figure 9. Proposed additional tank locations).

Whole Milk Storage

The current design includes the installation of 2 additional whole milk storage silos, each with a volume of 250,000 litres. There are 4 existing silos each with a capacity of 110,000 litres. The total whole milk storage capacity will therefore be 890,000 litres.

Separation/Pasteurisation

One new separation stream is to be installed and will have a capacity of 50,000 litres/hour (replacing an existing stream with a capacity of 25,000 litres/hour). Two existing separation streams will remain, one with a capacity of 32,000 litres/hour and the other at 25,000 litres/hour. Therefore the total processing capacity will be 107,000 litres/hour.

Processed Milk Storage

There are 5 existing processed (skim) milk silos. 4 of the silos have a capacity of 110,000 litres and the 5th has a capacity of 180,000 litres. It is planned to install 3 additional silos (dedicated to the new evaporator/dryer process) each with a capacity of 250,000 litres. The total storage volume will therefore be 1,370,000 litres.

Cream Handling

Additional plates will be added to an existing cream pasteuriser and the other existing pasteuriser will be replaced to give the planned flexibility and capacity. There should be limited overall increase in cream handling operations.

2.2 Drying process: New proposed dryer

The spray drying plant is designed for drying of whole milk, buttermilk and skim milk to produce an agglomerated powder at a capacity of approx. 7,000 kg/h of final dried instant whole milk powder. The potential capacity on skim milk powder is 6,300 kg/h. The concentrate to be dried is pumped from the evaporator through a filter, by means of a centrifugal pump, and to the nozzle unit by means of a high-pressure pump with homogenizer. The drying air is passed through air filters and heated in an indirect steam-heated air heater and an indirect gas-heated booster before entering a specially designed air disperser. An operational flowchart is enclosed with this attachment.

The exhaust air is discharged through a new emission point (A27) from the ceiling of the drying chamber and is passed through a high-efficient bag filter for collection of powder entrained in the air. The bag filter is in a sanitary design, and it can be wet Cleaning In Place (CIP) cleaned. The fines fraction is returned to the drying chamber or the VIBRO-FLUIDIZER® for obtaining the desired agglomeration degree. The drying chamber is equipped with an integrated fluid bed for a lenient secondary drying and agglomeration, in order to improve the final product quality and drying economy. The powder is finally dried and cooled in a VIBRO-FLUIDIZER® before sieving and bagging off. For production of instant whole milk, a lecithination unit has been included. The technology includes a safety system, independent of the CIP equipment. The evaporator and spray dryer operation is fully automated inclusive of start-up and shut-down procedures ensuring optimal performance and minimal product loss and down time.

Cleaning takes place by means of lye followed by flushes of water, acid and caustic soda. A new CIP plant with two new 12m^{3}tanks will be installed. The CIP plant will be bunded in accordance with EPA guidelines 'Storage and Transfer of Materials for Scheduled Activities' (2004).

The heat recovery system utilises the hot condensate from the evaporator. Some of the hot condensate from the evaporator is used to preheat the incoming feed. The hot condensate not used for preheating the feed is used to preheat the air for the spray dryer.

The new dryer is to be installed adjacent to the existing dryer in the current storage area. The majority of the new development will be within the existing building footprint. Figure 1 in Attachment D shows the location of the proposed changes to the existing building footprint within the context of the overall site. The new dryer will be controlled from a common control room within the existing plant. A new set of locker rooms and changing rooms will be provided to segregate the store, wet and dry areas. It is planned to install a new powder packing line adjacent to the existing one. The existing ground floor layout and proposed layout is shown in figures 2 and 2a (Attachment D). Figures 3 and 4 (Attachment D) show the elevation of the proposed dryer building. Figure 5 (Attachment D) shows the location of the proposed new dryer emission to air point on the roof. Figure 6 shows all the air emission points applicable to the licence review including the existing and new dryer emission points. The coordinates of the new dryer emission point are 267,795E 298,045N.

3.0 Existing emission points A1-5 (Boiler), A1-6 (Boiler) and A25 (CHP plant)

A review of the IPPC licence was carried out in 2006. At the time the EPA approved the operation of the CHP plant (A25) and the licence was amended. The changes to the licence in 2006 in order to accommodate the CHP plant were sufficient to support existing operations. Scheduled B1 of the licence set out the emission limit values for the CHP plant (A 25) and boilers (A1-1, A1-2, A1-5, A1-6) and stated that A1-5 had to be decommissioned prior to installation of the CHP plant.

Following a review of the energy requirements to facilitate the installation of the new dryer and increase the capacity of the plant, it has been concluded that four boilers (emission points A1-1, A1-2, A1-5 and A1-6) will be required to run both dryers simultaneously in the event of a malfunction of the CHP plant.

Since the last review, the location of the CHP plant has been revised. The revised coordinates of the CHP emission point are E267804 N297972.

Figure 8 (Attachment D) shows the location of the boilers and CHP plant. Figure 6 and 7 (Attachment D) shows the location of the boiler (A1-1, A1-2, A1-5 and A1-6) and CHP (A25) emission points.

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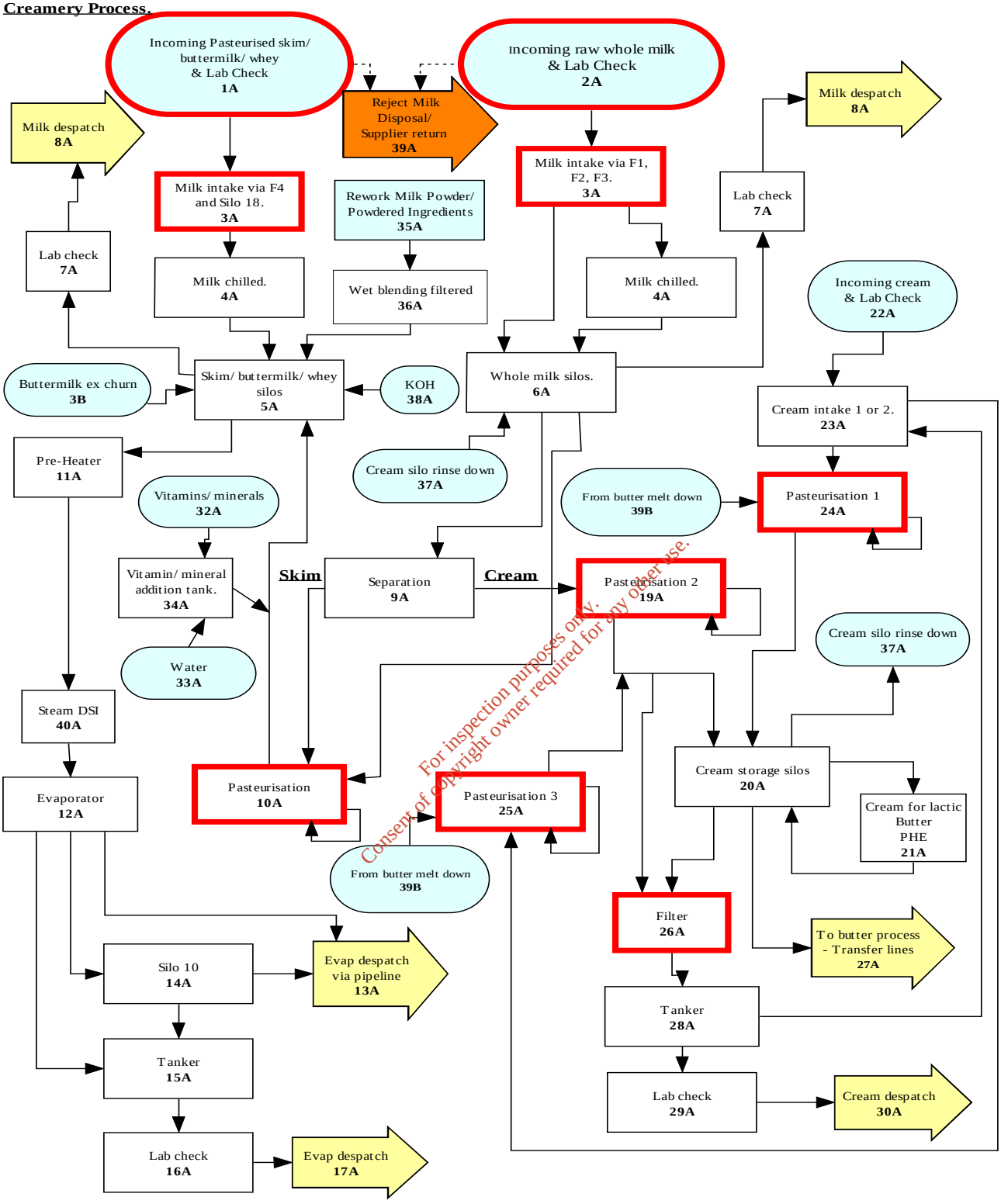
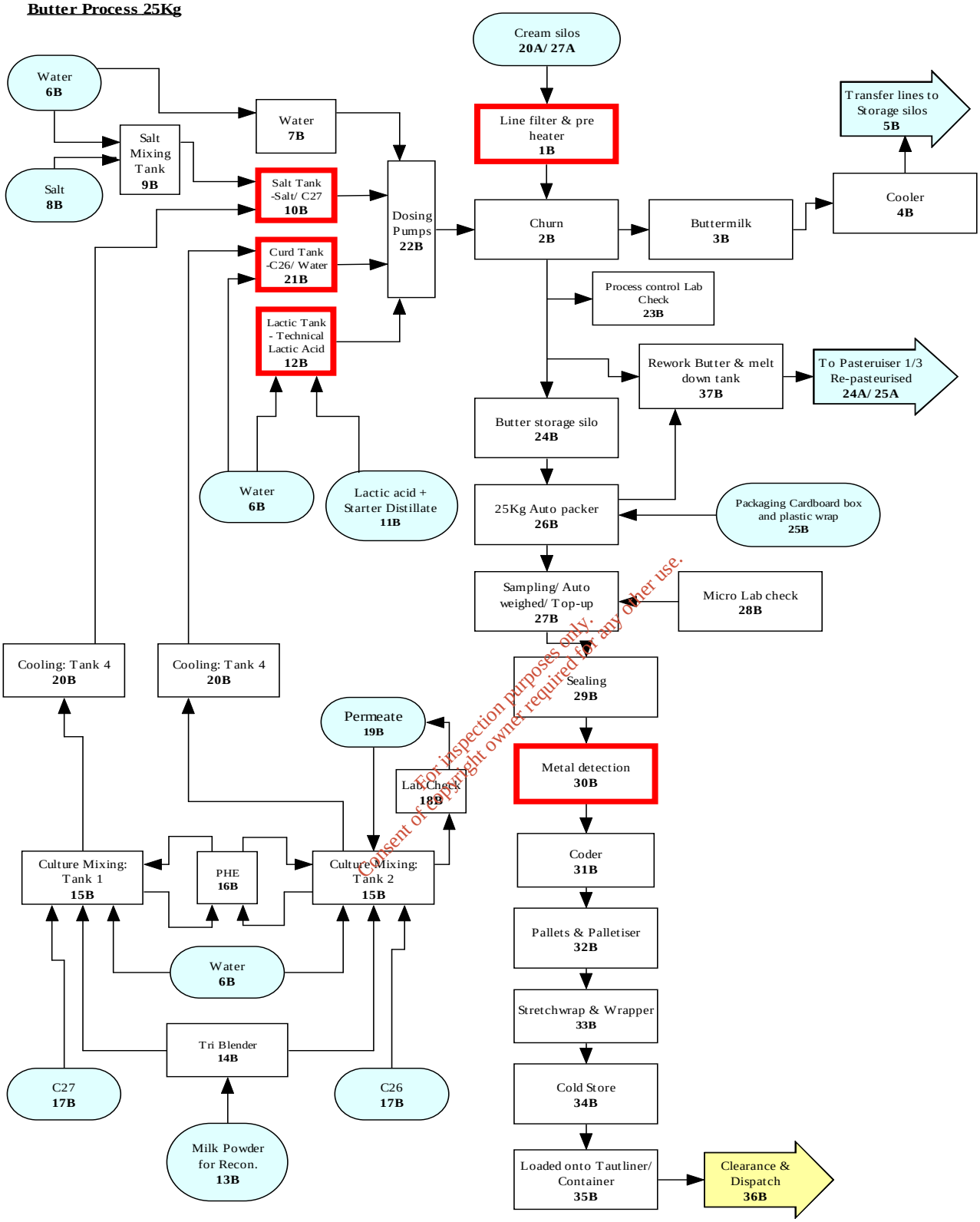
Operational Flowcharts

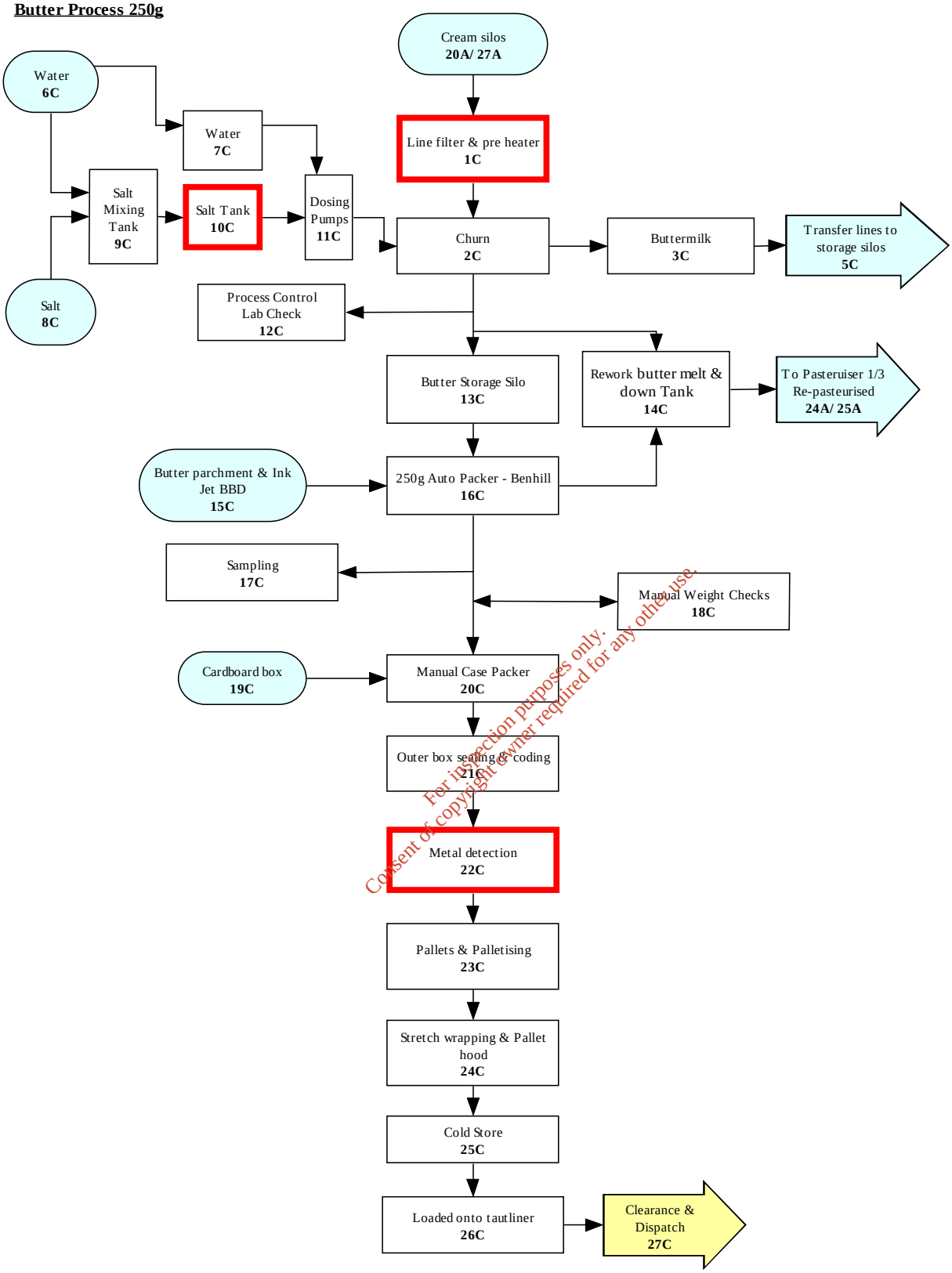
Creamery Process.

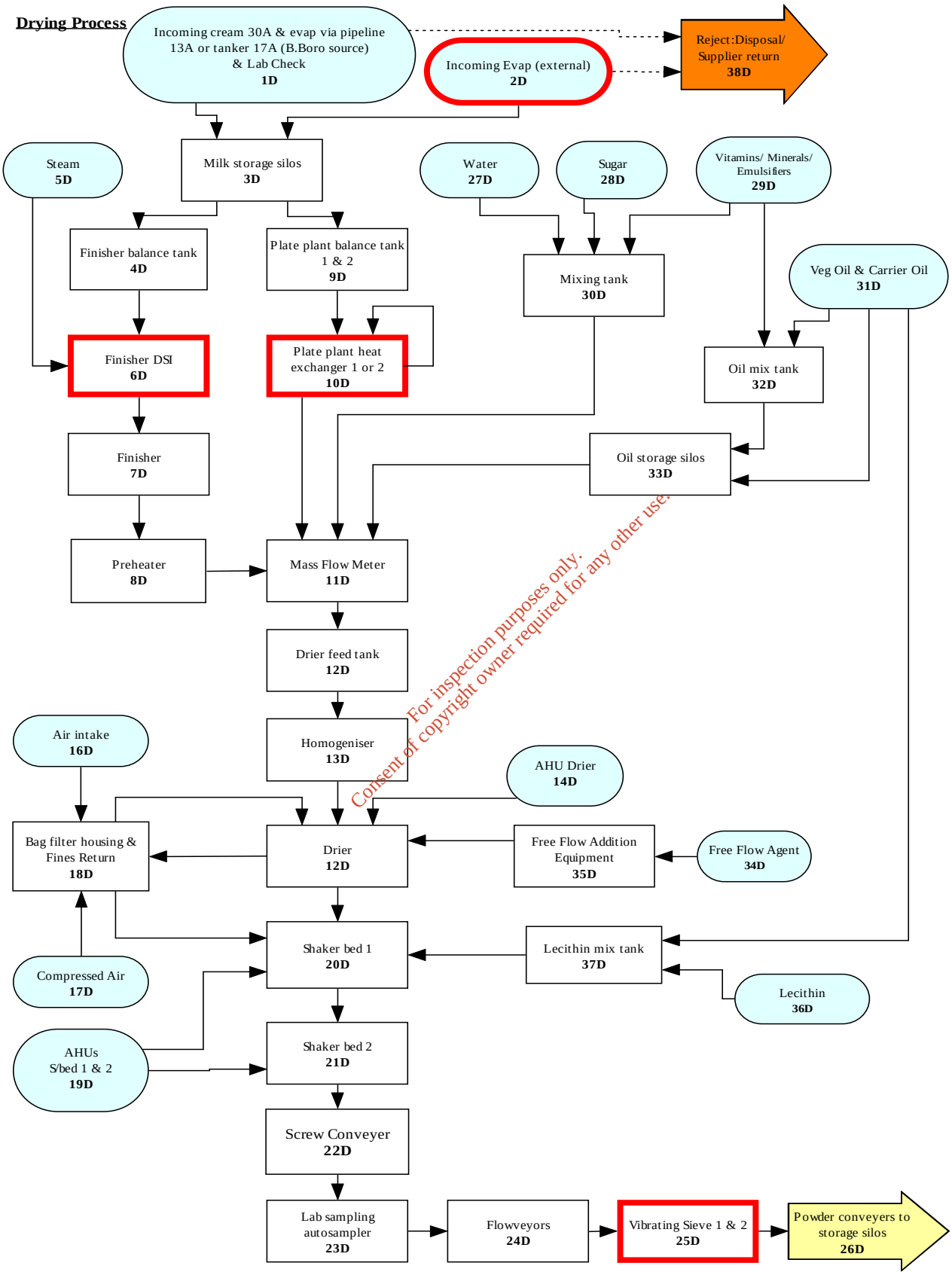


Butter Process 25Kg

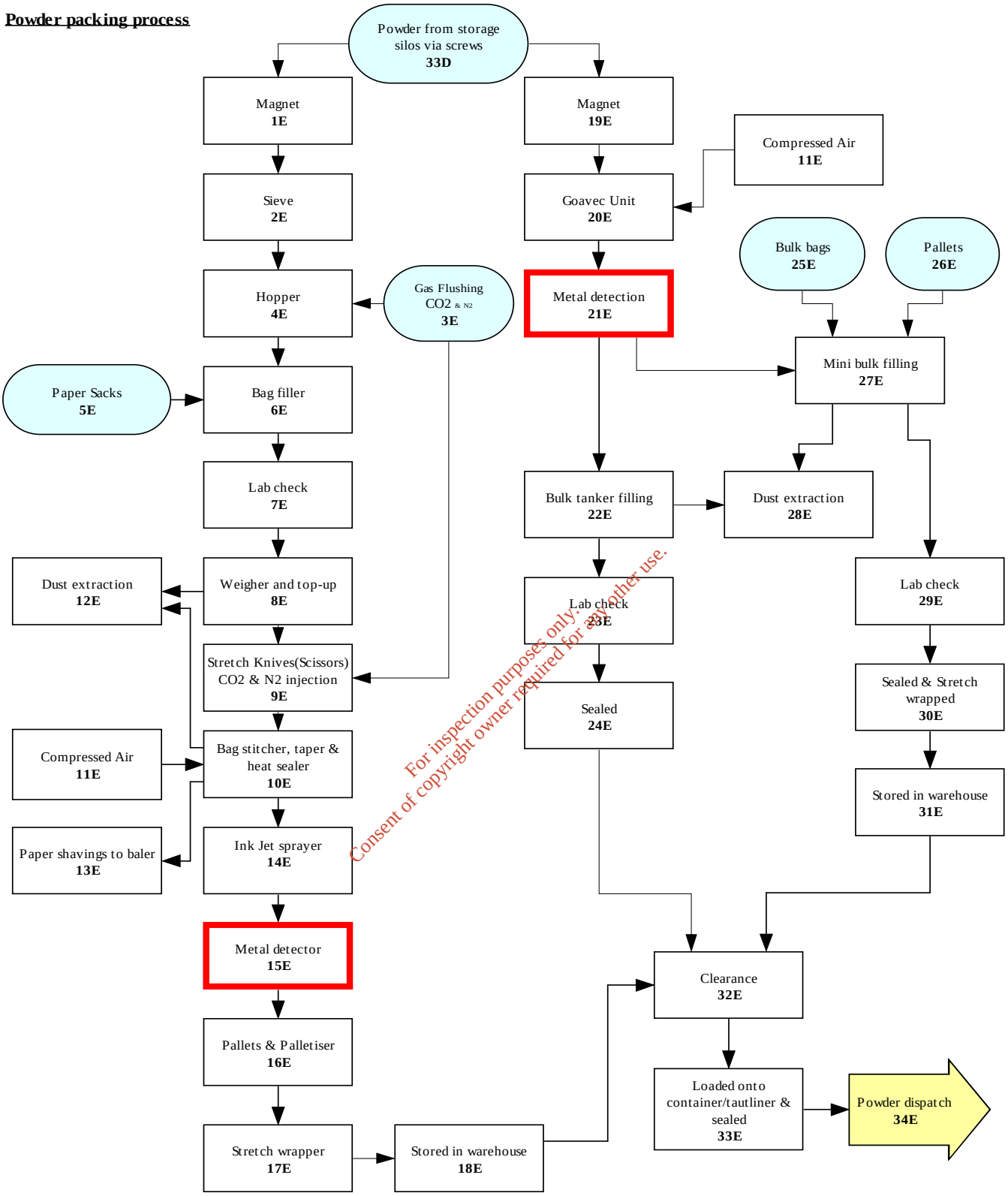


Butter Process 250g





Powder packing process



CCP Reference for process flow step numbers:

Step No.	CCP No.	Control measure
Creamery Process		
1A	CCP 1	Antibiotic MRL
2A	CCP 1	Antibiotic MRL
3A	CCP 2	Filter – Final control for milk for dispatch
10A	CCP 3	Pasteurisation
19A	CCP 3	Pasteurisation
24A	CCP 3	Pasteurisation
25A	CCP 3	Pasteurisation
26A	CCP 2	Filter - Final control for cream for dispatch
Butter Process 25Kg		
1B	CCP 2	Filter
10B	CCP 2	Filter
12B	CCP 2	Filter
21B	CCP 2	Filter
30B	CCP 4	Metal detection
Butter Process 250g		
1C	CCP 2	Filter
10C	CCP 2	Filter
22C	CCP 4	Metal detection
Drying Process		
2D	CCP 1	Antibiotic MRL
6D	CCP 3	Heat treatment
10D	CCP 3	Heat treatment
25D	CCP 5	Sieves 1 & 2
Powder Packing Process		
15E	CCP 4	Metal detection
21E	CCP 4	Metal detection

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Figures

EXISTING BUILDINGS SHOWN SHADED

PROPOSED BUILDINGS SHOWN HATCHED

NEW DRYER DEVELOPMENT BOUNDARY SHOWN RED

LANDS OWNED BY APPLICANT SHOWN BLUE

N

NEW MILK TANKS

CONDENSATE POLISHING TANK

Bailieborough Creamery

NEW DRYER BUILDING

NEW BAGGING AREA

NEW C.I.P. AREA

Lear Bridge

Sherock

Bailieborough

R178

10KV

UND

CS

0.28 1.07 2.23 0.61 0.26 1.58 2.34 0.23 2.05 6.80 0.31 1.27 0.29 1.49 0.46 0.65 1.60 0.44 1.86 0.47 2.44 0.75 0.92 136.1 1.65 1.97 0.81 0.41 0.69 0.25 0.28 0.95 0.24 0.26 0.43 0.22 0.49 0.44 0.72 1.21

297846

267303

Scale:- 1:2,500

Scála:- 1:2,500

0 50 100 150 200 Metres

0 150 300 450 600 Feet

SITE LOCATION MAP

ITM CENTRE PT. COORDS.

667654,798166

DESCRIPTION

MAP SHEETS

Digital Map
1822 1823

1:2500
1883-B 1884-A

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Plot Ref. No.
Plot Date 18-

Client: Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.			Drawing: OVERALL SITE PLAN & SITE LOCATION MAP			
Job: APPLICATION FOR LICENCE REVIEW TO EPA						
Job Number	Drawing Number	Status	Sht. Size	Scale	Date	Drawn
E0677	FIG 1	FINAL	A3	1:200	NOV'09	SP

BY	DRAWING No. & REFERENCE	DATE
SURVEY	DHS – Drg. No. BAILIE FINISHED DRAWING	04.07.08
CLIENT	LAKELANDS – EMMISIONS 2008	23.06.08

EXACT LOCATION TO OFFICE BLOCK AREAS TO BE CONFIRMED ON SITE

EXISTING PALLETISED FINISHED PRODUCT STORE
FFL.137.11m

EXISTING 4 TONNE BAG FILLER CAN BE RELOCATED

OFFICE

OFFICE

REDUNDANT LOADING CELL

PANEL ACCESS ROOM

CONTROL ROOM

HYGIENE LOBBY
FFL.137.23m

EXISTING DRYER DISCHARGE AREA
FFL.137.23m

DAIRY
FFL.137.11m

PLATFORM LVL 150.35M

SILO FARM (OUTSIDE)

PUMP BUND (OUTSIDE)

SILO BUND (OUTSIDE)

CONCRETE RAMP

OIL BUND (OUTSIDE)

Fire Escape Stairs

COMPRESSOR ROOM (OUTSIDE)

CONCRETE

Drain

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Client: Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.			Drawing: EXISTING GROUND FLOOR LAYOUT			
Job: APPLICATION FOR LICENCE REVIEW TO EPA						
Job Number	Drawing Number	Status	Sht. Size	Scale	Date	Drawn
E0677	Figure 2	FINAL	A3	1:200	NOV'09	SP

BY	DRAWING No. & REFERENCE	DATE
SURVEY	DHS – Drg. No. BAILIE FINISHED DRAWING	04.07.08
CLIENT	LAKELANDS – EMMISIONS 2008	23.06.08

LEGEND:

- EXISTING WALL
- BLOCKWORK CONSTRUCTION
- FOOD QUALITY ROCKWOOL CORE PANEL
- CONCRETE
- EXISTING WALL TO BE DEMOLISHED
- OUTLINE OF NEW BUILDING

SWITCH ROOM 2
SSL 137.110
EVAPORATOR
SWITCH ROOM 1
SSL 137.110
FFL. 137.260
NEW DRYER DISCHARGE AREA
SSL 137.110
NEW BAGGING AREA
SSL 137.110
HOIST TRANSFER ZONE
STAIRCORE 2
STAIRCORE 3
FORKLIFT TRANSFER ZONE
MALE CHANGING ROOM
FEMALE CHANGING ROOM
VISITORS CORRIDOR
CLEANERS ROOM (LVL.0)
LOBBY
LOBBY
LOBBY
STAIRCORE 1
DAIRY 2
℄ OF CALANDRIA 1
℄ OF BAG FILTER
℄ OF DRYER
1619
536
1315
1616
8504
6371
2045
654
426
18000
6000 TYP.
135.65
135.91
137.11
136.93
EXISTING DAIRY
PANEL ACCESS ROOM
CONTROL ROOM
TRANSFER ZONE
EX–FFL.137.23
TRANSFER ZONE
DAIRY
EX–FFL.137.11
EXISTING DRYER DISCHARGE AREA
EX–FFL.137.23
EXISTING BAGGING ROOM
SILO FARM (OUTSIDE)
PUMP BUND (OUTSIDE)
SILO BUND (OUTSIDE)
OIL BUND (OUTSIDE)
COMPRESSOR ROOM (OUTSIDE)
A
B
C
D
F
G
H
6
5
4
3
2
1
0

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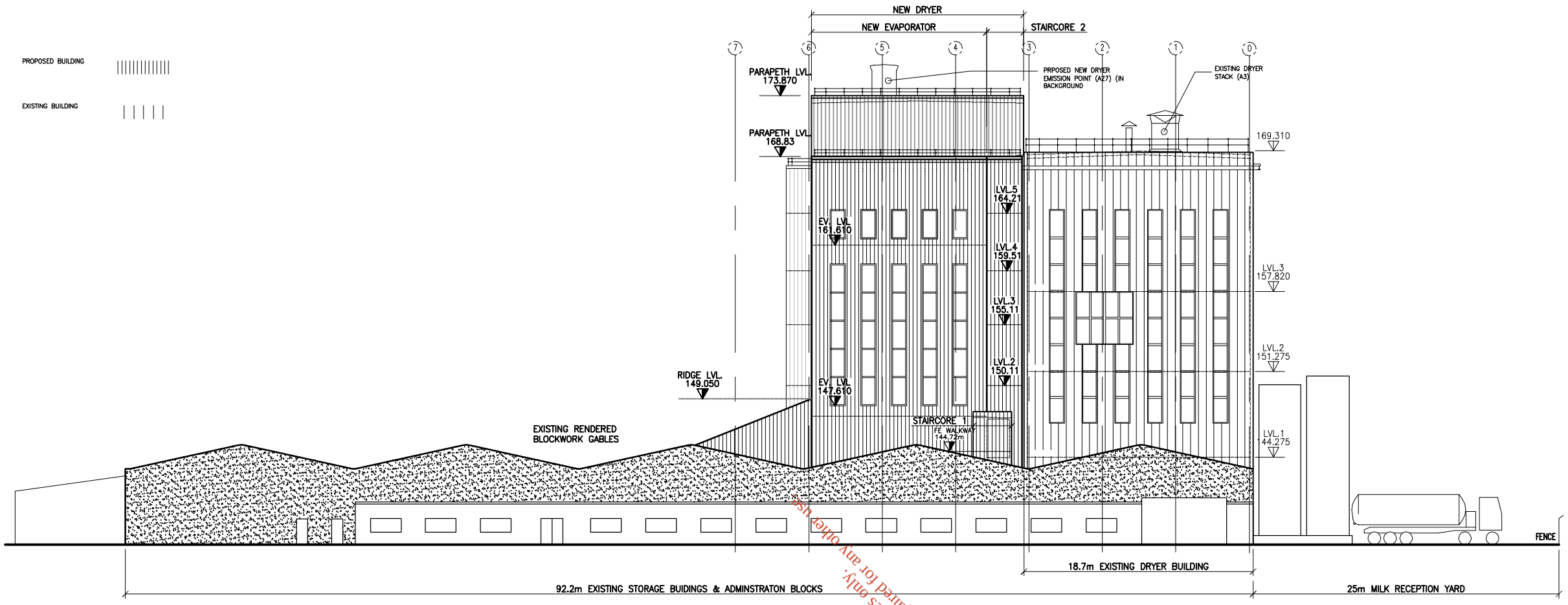
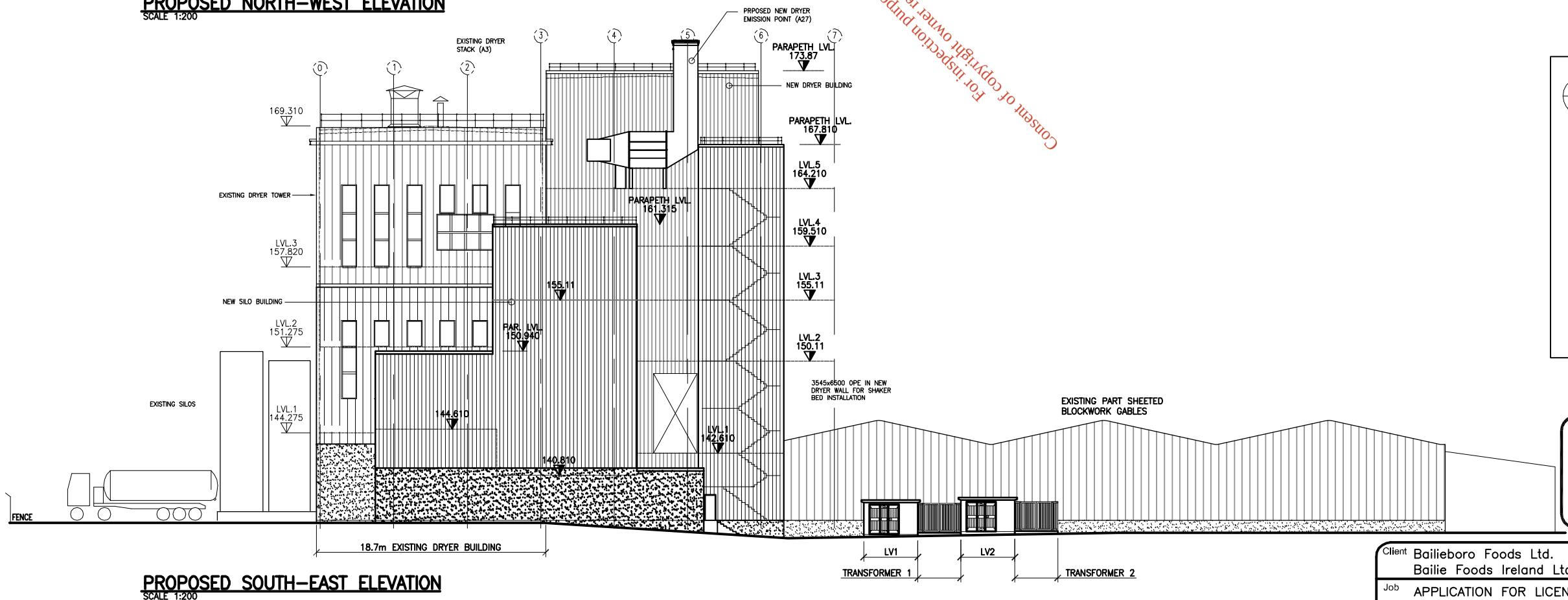
Client	Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.
Job	APPLICATION FOR LICENCE REVIEW TO EPA
Drawing	PROPOSED GROUND FLOOR LAYOUT

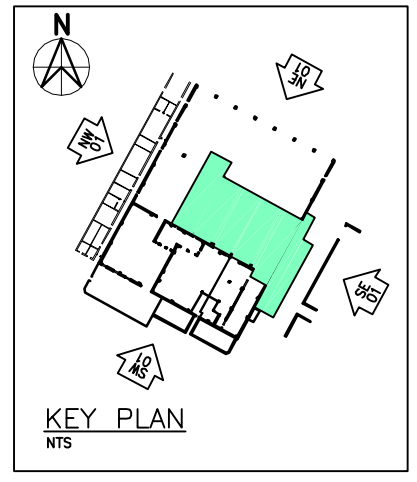
Job Number	Drawing Number	Status	Sht. Size	Scale	Date	Drawn
E0677	Figure 2a	FINAL	A3	1:200	NOV'09	SP



PROPOSED NORTH-WEST ELEVATION
SCALE 1:200



PROPOSED SOUTH-EAST ELEVATION
SCALE 1:200



KEY PLAN
NTS

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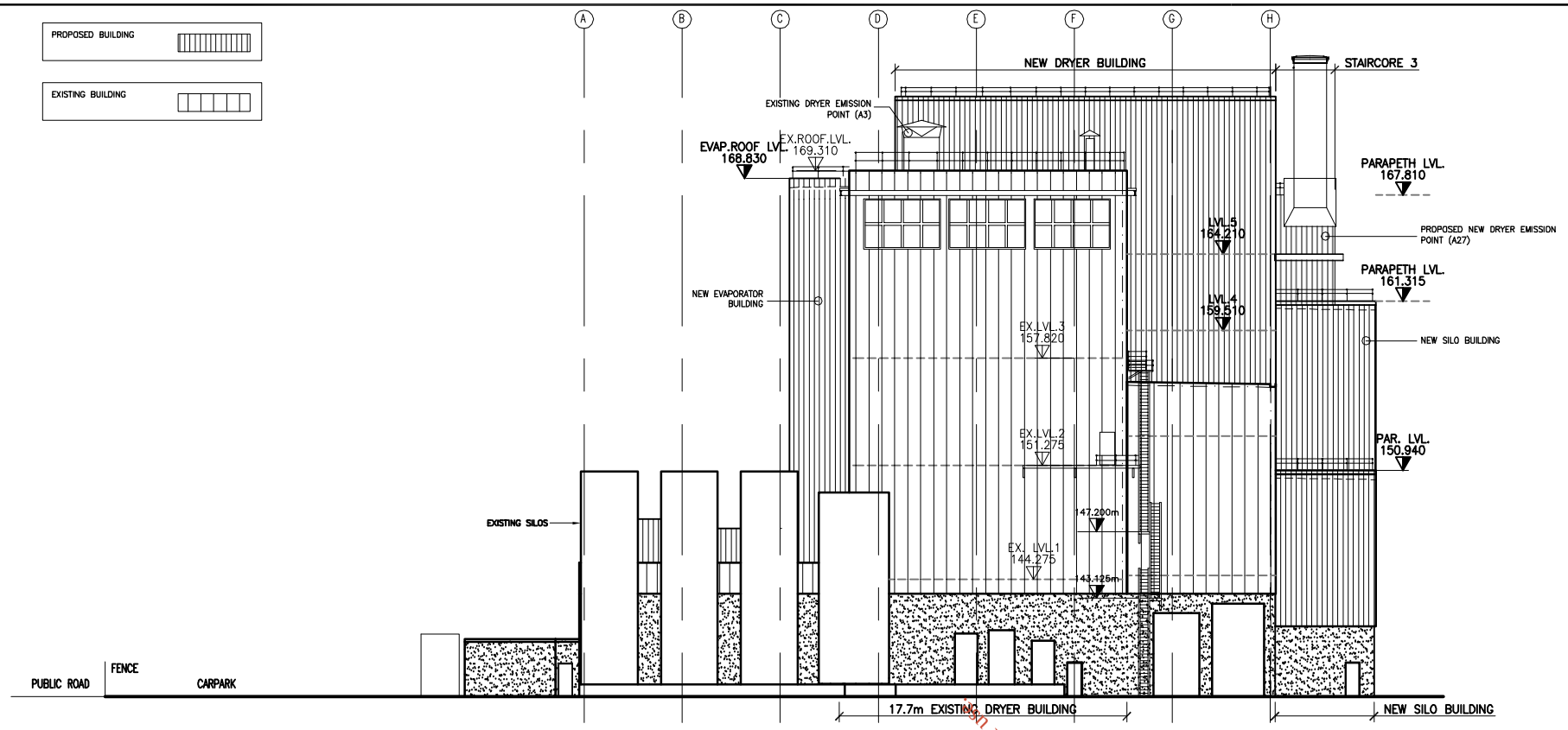
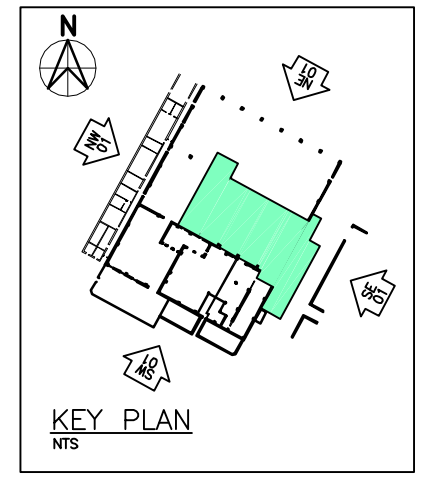
Client	Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.
Job	APPLICATION FOR LICENCE REVIEW TO EPA
Drawing	PROPOSED ELEVATIONS SHEET 1 OF 2

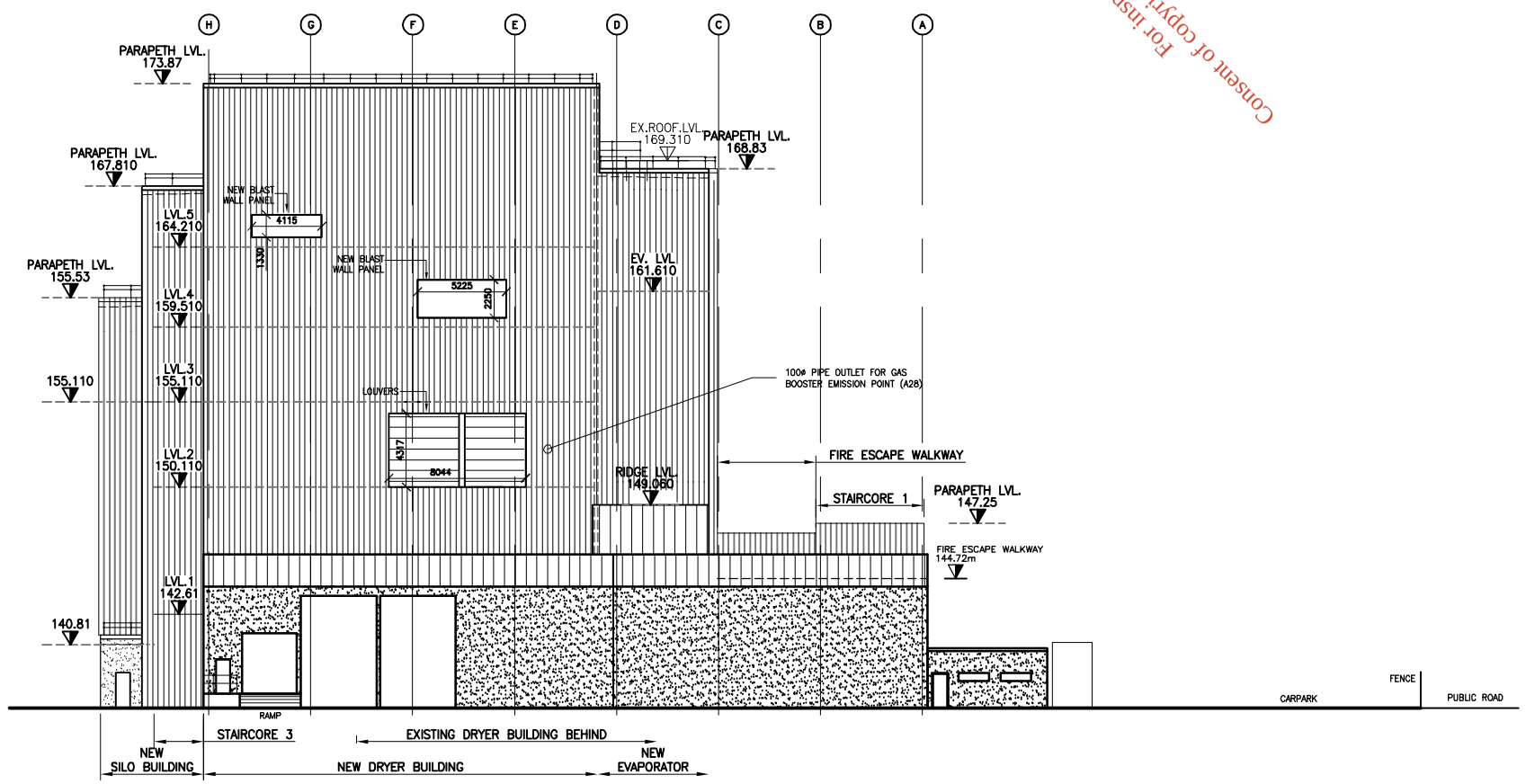
Job Number	Drawing Number	Status	Sht. Size	Scale	Date	Drawn
E0677	Figure 3	FINAL	A3	1:200	NOV'09	SP



PROPOSED SOUTH-WEST ELEVATION (SW-01)

SCALE 1:200





PROPOSED NORTH-EAST ELEVATION (NE-01)

SCALE 1:200

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Client	Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.
Job	APPLICATION FOR LICENCE REVIEW TO EPA
Drawing	PROPOSED ELEVATIONS SHEET 2 OF 2

Job Number	Drawing Number	Status	Sht. Size	Scale	Date	Drawn
E0677	Figure 4	FINAL	A3	1:200	NOV'09	SP

NEW DRYER MASTER ROOF LAYOUT

SCALE 1:100

N

EXISTING STORE ROOF

STAIRCORE 1 ROOF BELOW

WALKWAY ROOF

145.33

MONOPITCH ROOF BELOW LVL. 149.060

NEW MOTOR ROOM ROOF SEE TYPE SC-280

6000 TYP.

18000

11387

7600

10309

6475

8525

100

1619

426

8504

6371

2045

654

536

1315

1616

℄ OF CALANDRIA 1

℄ OF DRYER

℄ OF BAG FILTER

RWP

FALL 1:10

FALL 1:80

RIDGE LINE

RIDGE LEVEL 173.42

RL. 168.380

PARAPET LEVEL 168.83

PARAPET LEVEL 173.420

PARAPET LEVEL 167.810

CONCRETE WALLS BELOW

AUTOMATED OPENING VENT(AOU)

RL. 140.94

NEW DRYER EMISSON POINT MODELED AT 175.68m

FOR SILO BUILDING ROOF STRUCTURE SEE ALSO DWG. SO-287

RL. 160.865

PARAPET LEVEL 161.315

RL. 150.490

PARAPET LEVEL 150.94

3000 TYP.

3000

1500

152 UC 30 STUB COLUMNS @ 3000m CENTRES MAX BY PERIMETER OF THE ROOF. 152 UC 30 STEEL BEAM TO FORM TOP OF PARAPET)

ROOF CONSTRUCTION:
PVC ROOFING MEMBRANE ON
100mm INSULATION ON
32mm METAL PROFILE DECKING ON
TEGRAL ZETA II 22518 PULINS @ 1500 CENTRES MAX ON
STEEL TRUSSES (TOP BOOM LAID AT 1:60 FALL)
32mm DECKING DRESSED UP SIDES

ROOF CONSTRUCTION:
PVC ROOFING MEMBRANE ON
100mm INSULATION ON
32mm METAL PROFILE DECKING ON
TEGRAL ZETA II 22518 PULINS @ 1200 CENTRES MAX ON
RC CONCRETE WALLS ON
32mm DECKING DRESSED UP SIDES

EXISITING ROOF BELOW (LEVEL T.B.C.)
EX.ROOF=169.27

EXISITING ROOF BELOW (LEVEL T.B.C.)
EX.ROOF=156.485

EXSTIN DRYER EMISSION POINT (A3) STACK COORDINATES 267765E, 298037N

0 1 2 3 4 5 6 7 8

A B C D E F G H

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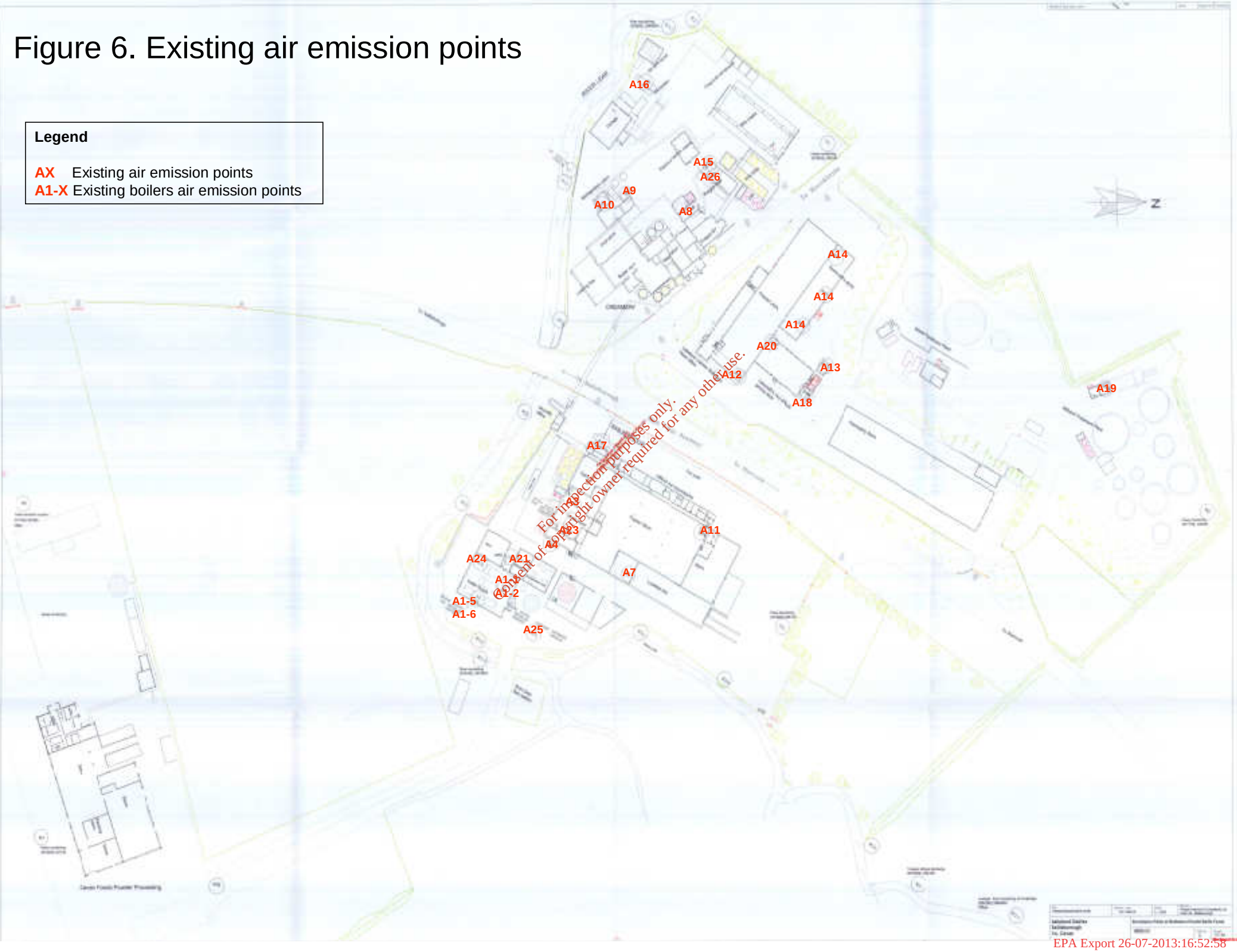
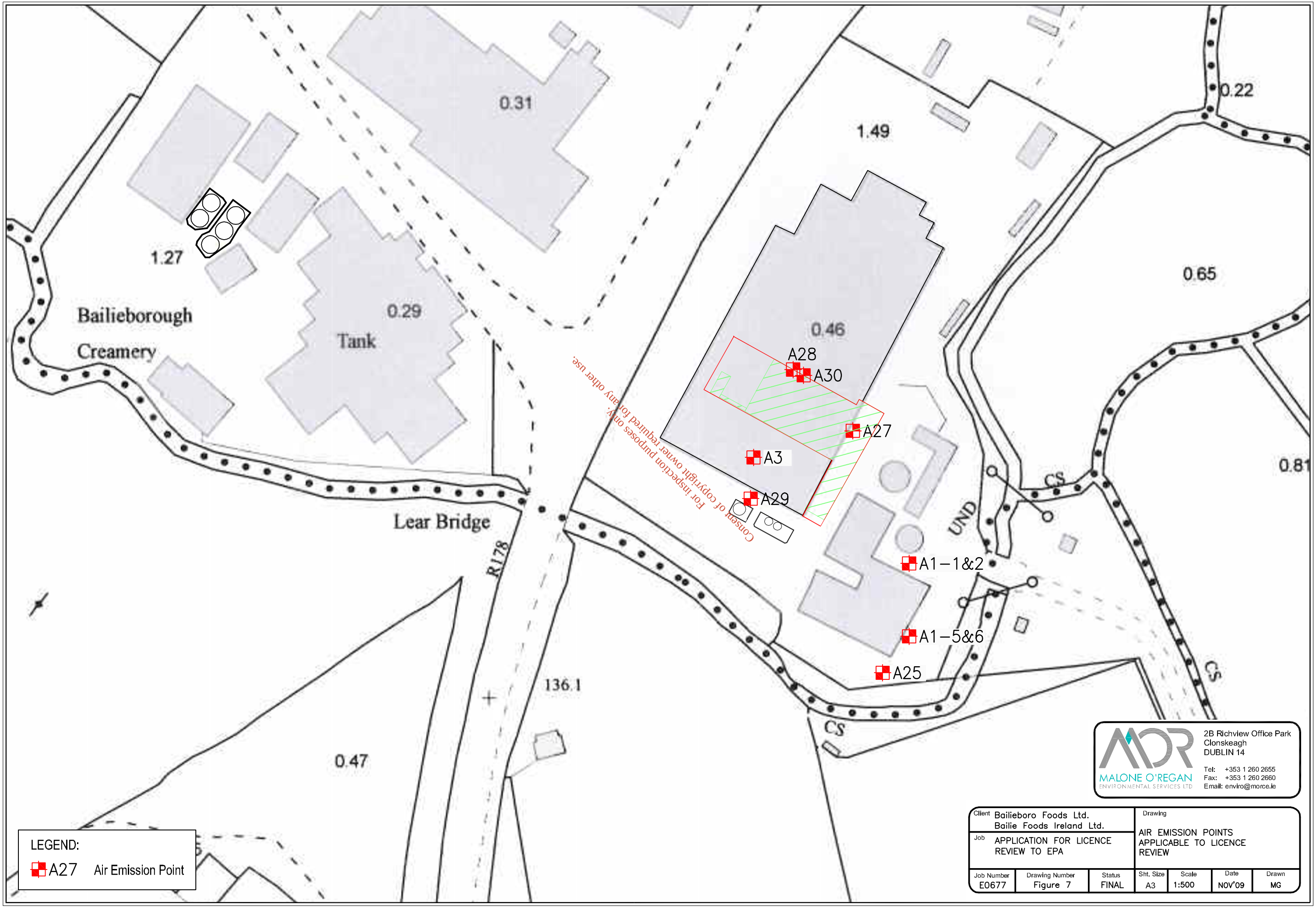
Client: Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.					Drawing: PROPOSED ROOF LAYOUT	
Job: APPLICATION FOR LICENCE REVIEW TO EPA						
Job Number	Drawing Number	Status	Sht. Size	Scale	Date	Drawn
E0677	Figure 5	FINAL	A3	1:200	NOV'09	SP

Figure 6. Existing air emission points





LEGEND:

A27 Air Emission Point

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Client: Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.			Drawing: AIR EMISSION POINTS APPLICABLE TO LICENCE REVIEW			
Job: APPLICATION FOR LICENCE REVIEW TO EPA						
Job Number	Drawing Number	Status	Sht. Size	Scale	Date	Drawn
E0677	Figure 7	FINAL	A3	1:500	NOV'09	MG

DON'T FORGET SAFETY

A. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS.

B. ALL DIMENSIONS IN mm UNLESS NOTED.

C. DO NOT SCALE DIMENSIONS.

D. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. DISCREPANCIES SHALL BE REPORTED TO THIS OFFICE IN WRITING.

BY	DRAWING No. & REFERENCE	DATE
SURVEY	DHS – Drg. No. BAILE FINISHED DRAWING	04.07.08
CLIENT	LAKELANDS – EMMISIONS 2008	23.06.08

REV	DESCRIPTION	DATE	DRWN BY	CHKD BY

MALONE O'REGAN CONSULTING ENGINEERS

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St. Catherine's House, Catherine Street WATERFORD
Tel: +353 51 876 855
Fax: +353 51 876 828
Email: info@waterford.morce.ie

CLIENT NAME: Baillieboro Foods Ltd. Bailie Foods Ireland Ltd.			DRAWING NAME: BOILERS AND CHP PLANT LOCATION				
JOB NAME: APPLICATION FOR LICENCE REVIEW							
JOB NUMBER	DRAWING NUMBER	REVISION	SHEET SIZE	SCALE	DATE	DRAWN BY	ENGINEER
E0677	FIG.8	0	A1	1:250	NOV'09	AV	FM

DON'T SCALE DIMENSIONS

DON'T FORGET SAFETY

A. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS, ARCHITECTS AND SPECIALISTS DRAWINGS.

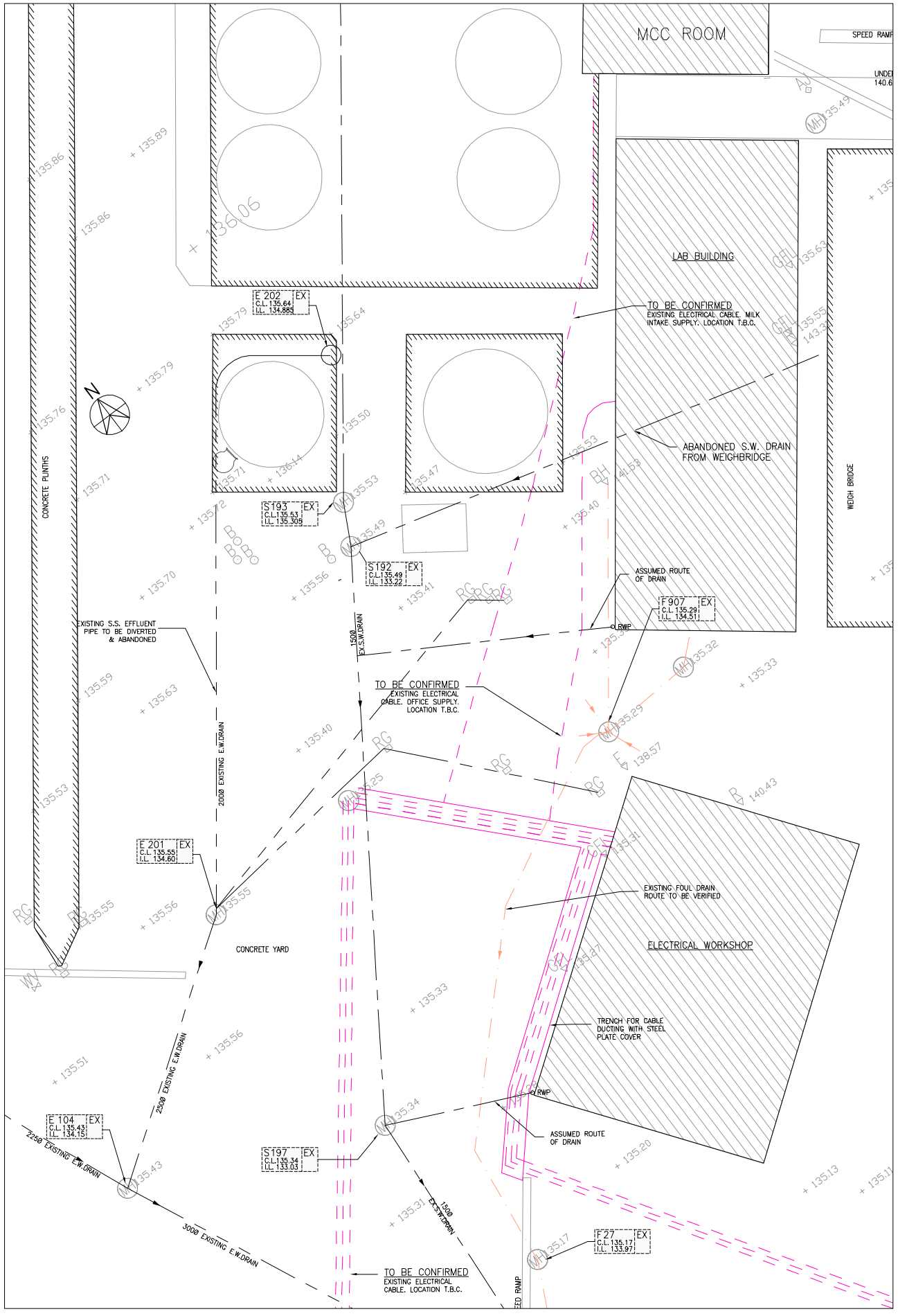
B. ALL DIMENSIONS IN mm UNLESS NOTED.

C. DO NOT SCALE DIMENSIONS.

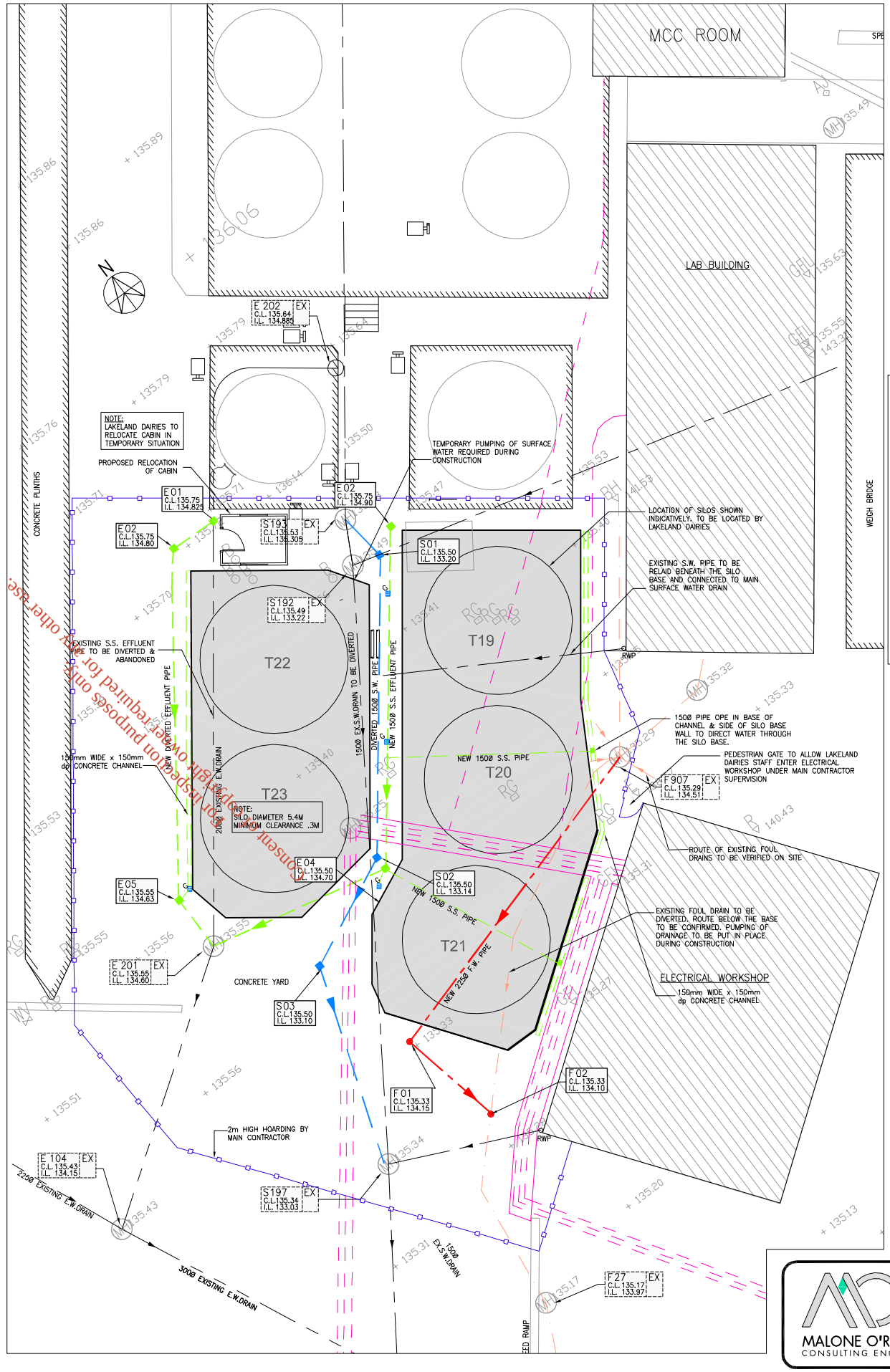
D. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. DISCREPANCIES SHALL BE REPORTED TO THIS OFFICE IN WRITING.

NOTE:

1. ALL NEW EFFLUENT DRAINS TO BE 225Ø VITRIFIED CLAY DRAINS @ 1:80 FALL.
2. ALL NEW FOUL WATER DRAINS TO BE 225Ø uPVC DRAINS @ 1:40 FALL
3. ALL NEW SURFACE WATER DRAINS TO BE 225Ø uPVC DRAINS @ 1:100 FALL
4. EXISTING R.W.P. TO BE DIVERTED AND NEW R.W.P.'S ADDED
5. 225Ø VITRIFIED CLAY PIPE FOR CONDENSATE FROM EVAPOURATOR. INCLUDE FOR 2No. LARGE STAINLESS STEEL GULLIES 1mX1mX1mDP
6. ALL NEW INTERNAL GULLIES TO BE RICHMOND TRADING RER. KV215/210 OR SIMILAR AND APPROVED. FLOOR TO BE DISHED FOR 1m TO GULLIES.



EXISTING DRAINAGE LAYOUT
MILK INTAKE AREA
SCALE 1:100



PROPOSED DRAINAGE LAYOUT
MILK INTAKE AREA
SCALE 1:100

LEGEND:

- EXISTING PIPEWORK CONTAINING EFFLUENT WASTE.
- PROPOSED PIPEWORK CONTAINING EFFLUENT WASTE.
- EXISTING PIPEWORK CONTAINING STORM WATER.
- PROPOSED PIPEWORK CONTAINING STORM WATER.
- EXISTING PIPEWORK CONTAINING SEWAGE WASTE.
- PROPOSED PIPEWORK CONTAINING SEWAGE WASTE.
- EXISTING ELECTRICAL CABLES
- F06 EX C.L. 136.80 I.L. 136.29 — EXISTING FOWL WATER MANHOLE
- F 0000 C.L.00.000 I.L. 00.000 — NEW FOWL WATER MANHOLE
- S07 EX C.L.136.84 I.L. 136.00 — EXISTING SURFACE WATER MANHOLE
- S 0000 C.L.00.000 I.L. 00.000 — NEW SERFACE WATER MANHOLE
- E 22 EX C.L. 136.63 I.L. 135.23 — EXISTING EFFLUENT WASTE MANHOLE
- E 0000 C.L.00.000 I.L. 00.000 — NEW EFFLUENT WASTE MANHOLE
- DRAINAGE MANHOLE
- FW AJ — ARMSTRONG JUNCTION
- DRAINAGE MANHOLE
- SW AJ — ARMSTRONG JUNCTION
- G — ROAD GULLY
- RWP — RAIN WATER PIPE

REV	DESCRIPTION	DATE	DRAWN BY	CHKD BY
1	NEW DRAINAGE ADDED, EXISTING ALTERED	31.07.09	MG	BC
0	CONSTRUCTION ISSUE	25.02.09	VB	ND

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CLIENT NAME	Bailieboro Foods Ltd. Bailie Foods Ireland Ltd.
JOB NAME	APPLICATION FOR LICENCE REVIEW TO EPA
DRAWING NAME	PROPOSED ADDITIONAL TANK LOCATIONS

JOB NUMBER	DRAWING NUMBER	REVISION	SHEET SIZE	SCALE	DATE	DRAWN BY	ENGINEER
E0677	FIG 9	1	A1	1:250	NOV'09	MG	ND

DON'T SCALE DIMENSIONS