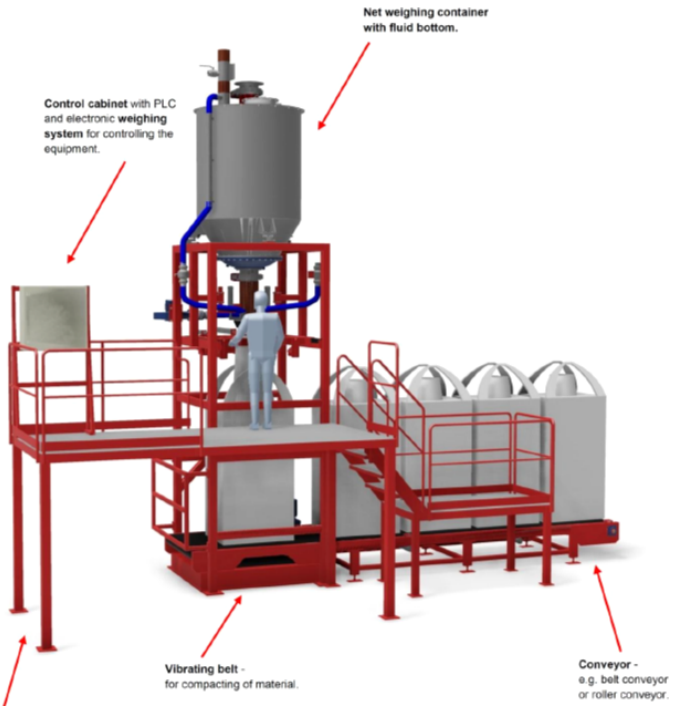
DETAILED OF CHANGES TO W0185-01

October 2016

RILTA ENVIRONMENTAL LTD.

Detailed Report on Requested Changes to W0185-01



Submitted to:
Environmental Protection Agency
on behalf of
RILTA Environmental Limited
Block 14A1, Grants Road
Greenogue Business Park
Rathcoole
Co. Dublin

Report **Number** 1650556.R01.A2

Distribution:

EPA - 1 copy
RILTA - 1 Copy
Golder Associates - 1 copy

Golder Associates

Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

RILTA Environmental Limited (the 'Licensee') operates a Waste Facility under Waste Licence No. W0185-01 for the handling of hazardous and non-hazardous waste at Block 14A1, Greenogue Industrial Estate in Co. Dublin (the 'Facility').

The Licensee submitted a Specified Engineering Report for the handling and transfer of ash waste residue for the Agency's consideration on 28 July 2016. On 8 September 2016, the Agency responded with the following request:

> *To determine if the proposed change can be accommodated by Technical Amendment, you should submit the following information:*
>
> 1. *Details of request change(s);*
> 2. *Reasons for the change(s) requested;*
> 3. *Details of any increase or changes in emissions resulting from the change(s); and*
> 4. *An assessment of the likely impacts of any increase/changes in emissions.*

In order to fulfil the Agency's request, in particular Point 1 above, Golder Associates (Golder) has prepared this report which provides details on the requested changes that the Licensee is seeking by way of Technical Amendment.

The current Facility layout is shown in **Drawing 01** provided in Appendix A.

2.0 INSTALLATION WORKS

The waste material for bagging and racking, pending transfer, will consist of both flue gas residue and boiler ash (herein referred to as *'waste residue'*), produced by the Dublin Waste to Energy (DWtE) Covanta Plant located in Poolbeg, Co. Dublin.

The proposed installation works will comprise of:

- Installation of three storage silos (Total Usable Volume / Tonnage = 525 m^3 / 262 tonnes);
- Installation of a pressure transfer system;
- Installation of two bulk bag loading systems (for main use and one for back-up/redundancy);
- Installation of a pallet racking system for the warehouse; and
- Control measures to prevent fugitive emissions.

3.0 LIST OF DRAWINGS

Table 1: List of Drawings

Drawing Number	Title
1	Existing Site Layout
2	Proposed Site Layout
3	Proposed Bagging Plant
4	Proposed Pallet Racking System
5	Proposed Pallet Racking System – Elevations 1 to 4
6	Proposed Dust Emission Management

4.0 DETAILS OF WASTE RESIDUE

The DWtE Covanta Plant will be operated under Waste Licence No. W0232-01. There will be three solid residues produced during operation of the DWtE Plant:

- Bottom ash (not part of this TA submission);
- Boiler ash (included in this TA submission); and
- Flue gas treatment residues (included in this TA submission)

Table 2 below estimates the approximate quantities of waste residue (boiler ash and flue gas residues) which are expected to be bagged at the Rilta Greenogue facility.

Table 2: Estimated waste residue quantity and type

Waste Residue Type	Approximate tonnes / annum
Boiler Ash	3,000
Flue Gas Treatment Residues	25,000
Total	**28,000**

The Licensee proposes to aid in the recovery of these waste residues at their Greenogue Facility. The waste residues will be transported from the DWtE Site to the Greenogue Facility in sealed tankers by licensed / permitted waste contractors under the control of the Licensee, for bagging, storage and onward transfer.

4.1 List of Waste (LoW) Codes

It is proposed to add the following LoW Codes to Schedule A1 of Waste Licence No. W0185-01:

- List of Waste Code **19 01 07*** - *'solid waste from gas treatment'*
- List of Waste Code **19 01 13*** - *'fly ash containing dangerous substances'*

5.0 DETAILS OF INSTALLATION WORKS

5.1 General Facility Layout

Drawing 02 depicts the proposed layout plan of the installation works and the extent of the Facility area which will receive and store the waste residues; silos, residue transfer area and the pallet racking system.

Sealed tanker trucks will enter the facility through the main gate access off Grants Road, and will proceed to the weighbridge and report to reception / security. Trucks will then enter the warehouse where they will reverse up the ramp through the highlighted Entrance 1 and stop at the demarcated unloading area. Figure 1 below shows the Entrance 1 to the warehouse.

The truck will then transfer the waste residues pneumatically into the storage silos. Details of this transfer activity, and associated measures to reduce potential fugitive emissions are provided in Section 7.0 below.

Waste residues will be delivered in a relatively dry state, at approximately 3% moisture content. The three silos shall be located in the south-west corner of the warehouse. This designated transfer area will include a compressor, transfer fittings and hoses, and two bagging units (main and backup / redundancy).

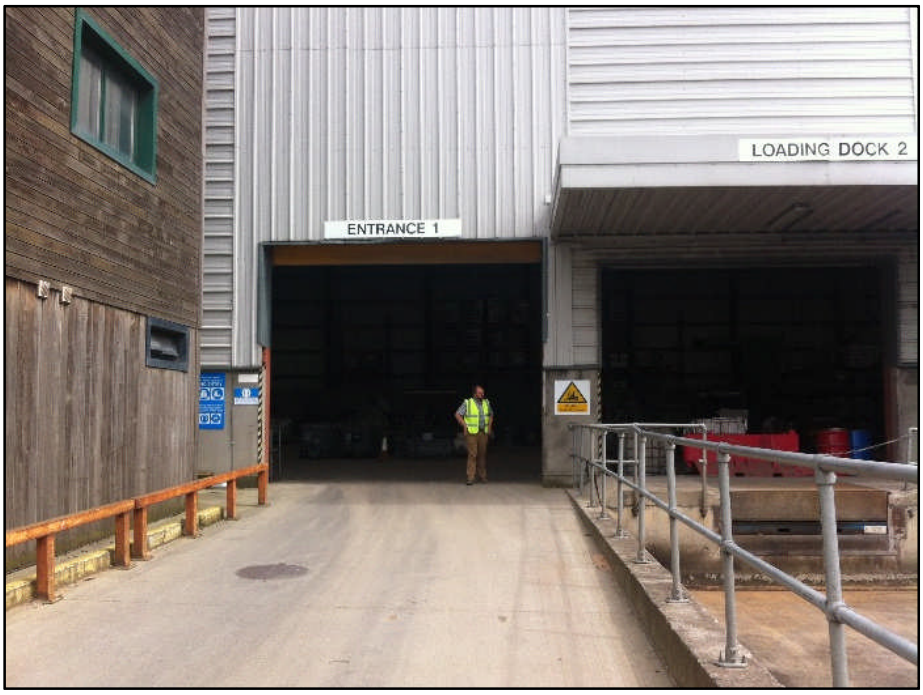


Figure 1: Warehouse/transfer station entrance for designated waste residue transfer area (external view)

5.2 Warehouse

The location of the three waste residue storage silos in the warehouse is currently obstructed by three portable containers, these will be relocated prior to commencement of installation works. A general clearance of the warehouse will also be undertaken to remove any items obstructing the installation of the silos and pallet racking bays. Figure 2 shows the proposed location of the silos and the pallet racking system.

Figure 2: Proposed location for three storage silos

5.3 Services

There are existing services within the footprint of the installation works that will require relocation. Electrical fuse boards and fire water ducting are located in the vicinity of the position of the silos and waste residue transfer area. Services are also located along the south wall of the warehouse in the west corner. Access and seclusion zones will have to be catered for to these services prior to installation.

Additional service installations will be required for the waste residue transfer system which will include the installation of a compressor and ancillary equipment.

5.4 Silos and filling mechanism

A suitable experienced contractor shall be employed to supply and install the silos and filling mechanism. There will be three silos located in the south west corner of the warehouse providing a usable waste residue storage volume of 525 m^3. **Drawing 03** depicts the dimensions and details for the proposed silos. Figure 3 below shows a schematic of the waste residue transfer process.

The waste residues will be transferred pneumatically using an in-situ compressor and associated pipework, which will connect from the bulk tankers to the enclosed silos, all located indoors.

The filling pipe attachment will be located circa 1 m above ground level for easy access by the operator. Filling pipes shall be arranged such that excessive horizontal runs and tight bends of less than 1m radius are avoided. The filling pipe will enter the top of the silo at a tangent. If horizontal runs are necessary, they will be kept as close to ground level as possible where air pressures are highest. A pressure relief valve is necessary should excessive air pressure build up in the silo.

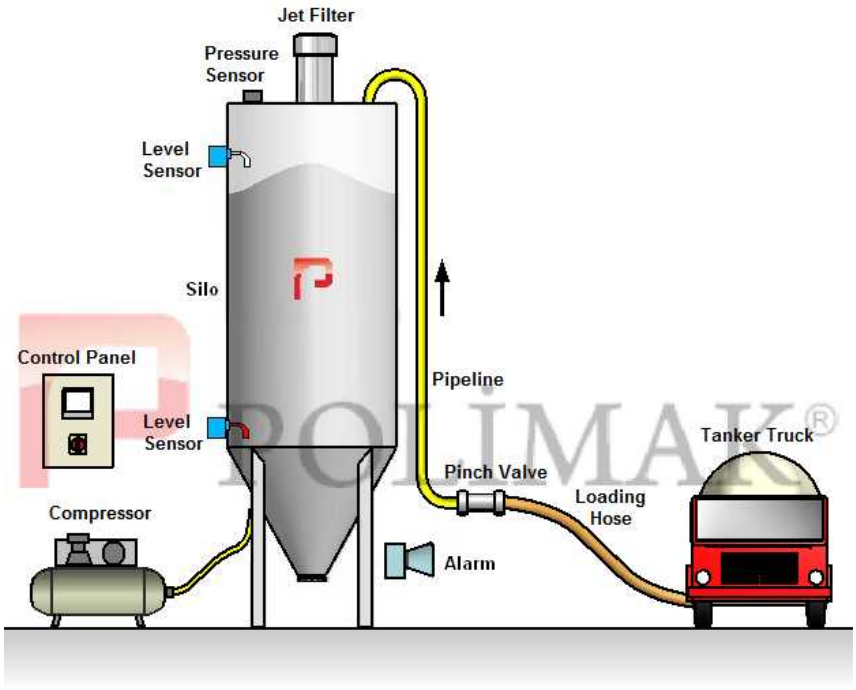


Figure 3: Schematic of the proposed waste residue delivery system

5.5 Bulk bag system

The waste residue will be discharged into flexible intermediate bulk container (**FIBC**) or bulk bags. The compact bulk bag filling system is dust free and designed for use with pallet and fork trucks. The unit is installed indoors with a framework to support the FIBC from its two handle loops during the filling process. The framework incorporates two arms, over which the loops fit, and allows the filled bulk bag to be picked up by fork lift truck, such as that the loops slide off the arms as the bulk bag is removed. The bag inlet spigot is connected to the filler by a clamping cone arrangement to ensure dust-free filling. Details of the bagging system are depicted in Figure 4 and Figure 5 below.

Figure 4: Details of components of bagging system

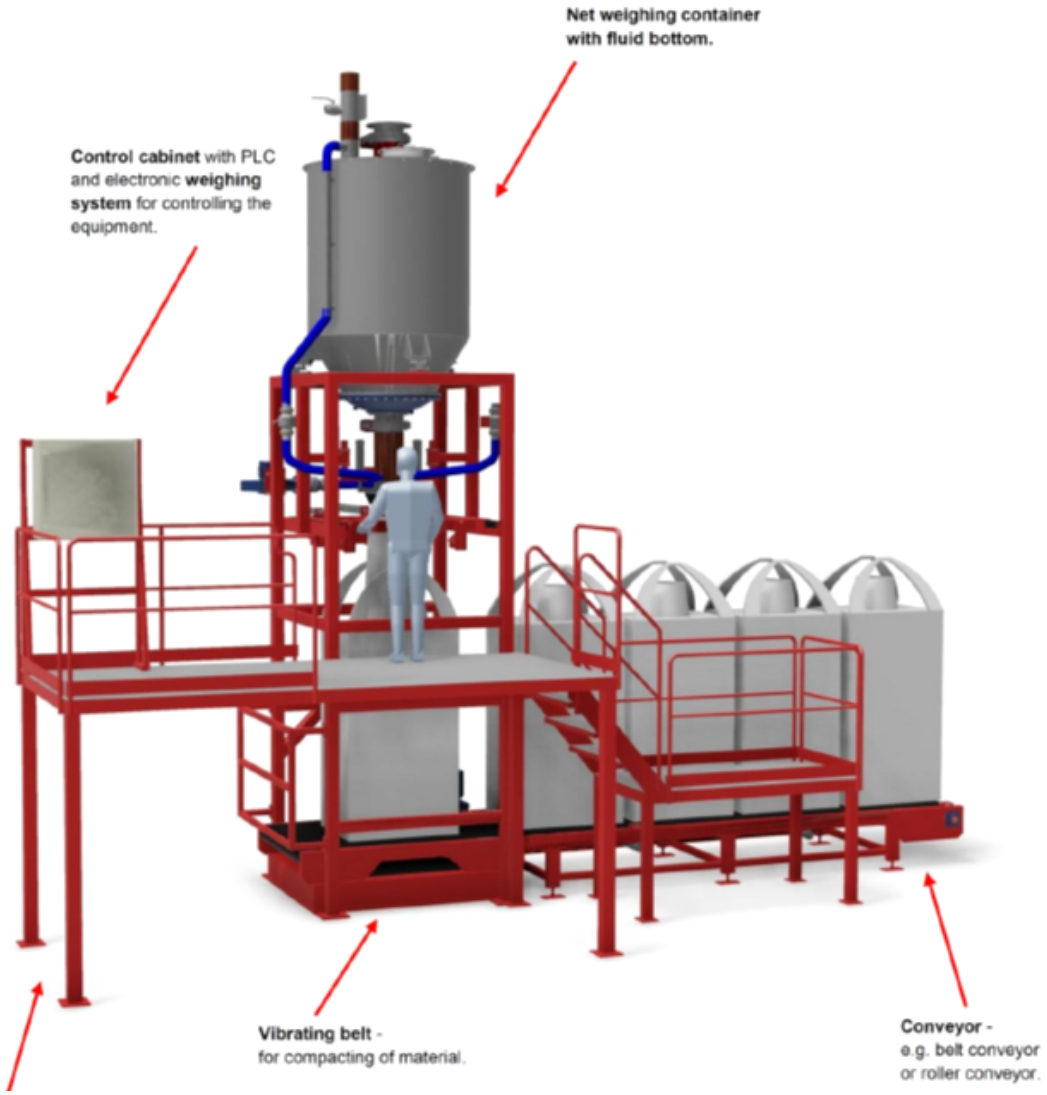


Figure 5: Details of bulk bagging system, conveyor and operator platform

5.6 Back up/in-built redundancy measures

It is proposed to install two bagging stations. One bagging station would be sufficient to manage the total tonnage involved within normal working hours. However, as a backup / in-built redundancy in order to meet Condition 3.10.1 of Licence W0185-01, it is proposed to install two bagging plants so that filling activities can continue in the event of a malfunction in one machine. Details of the two bagging stations are depicted in **Drawing 03**, Appendix A.

5.7 Pallet Racking

Filled bulk bags will then be transported by fork truck and stored on a racking system also contained within the purpose built waste transfer building. **Drawings 04 and 05** show the proposed footprint and elevations for the proposed pallet racking system. The approximate height of the pallet system will be 9 m. Bulk bags will be stored until transported from the facility. Figure 6 below shows a typical FIBC pallet racking system.

Figure 6: Typical FIBC pallet racking system

6.0 MEASURES TO PREVENT FUGITIVE EMISSIONS

In keeping with the original waste licence application in 2002, all loading and bagging will be undertaken indoors to ensure no external fugitive emissions occur at the Facility once bagging activities commence. The process has been designed to effectively operate as a closed process from the point of view of air and water releases. In order to further address the potential for fugitive/diffuse emissions, and meet the requirements of the existing Condition 7.4.2 (W0185-01), namely:

> *'Prior to the date of commencement of the waste activities at the facility, the licensee shall install and provide adequate measures for the control of odours and dust emissions, including fugitive dust emissions, from the facility'…….*

…the following additional measures are proposed to be incorporated into the design of the process to meet this Condition.

6.1 Compressor from bulk tanker

A compressor will be located on-site to connect to the bulk tankers for unloading. This will be equipped with an automatic shut-off mechanism which will be activated when there is a drop in pressure due to hose failure for example (Section 6.7 below).

6.2 Storage Silos

Each storage silo will be fitted with a high level probe which will shut down the compressor when it comes in to contact with any waste residues, which is designed to prevent overfilling.

A cylindrically shaped dust collector (reverse jet air filter) for venting of the pneumatically filled silos will be fitted to each silo to contain any dust fines which may be present during loading (Figure 7). The dust collector contains vertically mounted filter elements. This is a standard fitting for bulk storage silos, which are considered the best available technology (BAT, 2006 Emissions from storage) for the storage of ash residues to minimise dust releases.

Dust separated from the air flow by the special filter elements drops back into the silo after the reverse air jet cleaning system has removed it from the filter elements. Filters are then changed as and when required. There is no emission point from the silo filters.

Figure 7: Details of silo venting filter

6.3 Sealed Bag Filling System

This bagging operation has been selected as it is both hygienic and dust free due to the sealed filling system. A clamping cone is lowered pneumatically to seal the bag inlet, which is pulled up around a ring in the yoke. In addition to a connection for inflating the bag, the clamping cone has dust extraction which passes through a venting filter (Figure 8). The cone features a valve to prevent dust from the material to leak out when it is the upper position. This further demonstrated the closed nature of the process design.

Figure 8: Close-up view of the clamping cone

After filling is complete, the bag is closed automatically through stretching of the inlet spout. Two welding electrodes weld the inlet together. The welding time is adjusted in accordance with the quality of the bag. The unit is controlled with one or two pneumatic cylinders mounted on solid linear guides. Details of the welding arrangement are depicted in Figure 9 below.

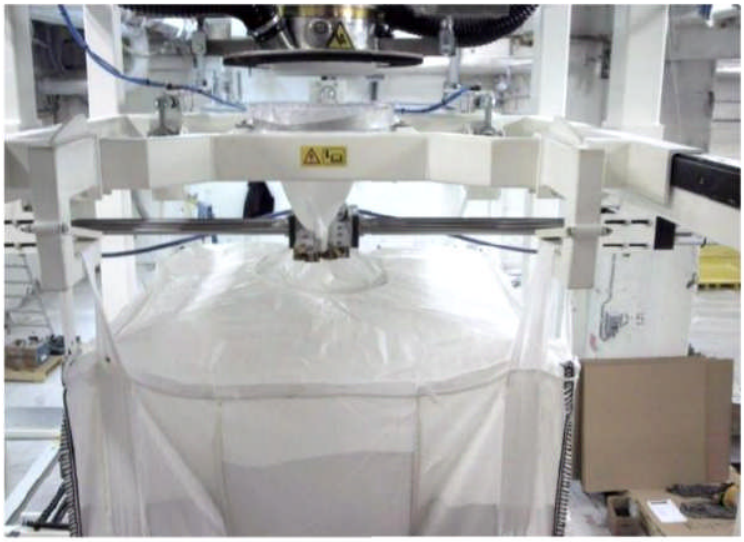


Figure 9: Automatic bag welder with welding in progress

This system is specifically designed to mitigate any potential fugitive emissions of dust during the filling process. By employing a bag inlet and clamping cone further ensures a dust free environment.

6.4 FIBC Bags

The Flexible Intermediate Bulk Containers (FIBCs) will have a two loop system, and will be made of UV stabilised polypropylene which will be 100% recyclable. The fabric proposed will include a coating or laminate on the outside of the FIBC which will be non-permeable to air. This will protect the contents against air humidity and prevent the outflow of very fine materials, in this case ash residue. Furthermore the laminate provides the FIBC with additional protection in the event of unforeseen events such as the striking of the bag with pallet racking, or other bags/pallets when loading.

6.5 Fast shutting doors and loading bay seals

In accordance with Condition 7.4.2.1 of Licence W0185-01, all doors in the waste transfer building will be kept closed where possible. This will be achieved with the installation of fast shutting roller doors at all locations. To further meet the existing requirements of Condition 7.4.2.1, an inflatable loading bay seal (Figure 10) will be installed to ensure that a tight seal will exist between the truck being filled with FIBCs for onward transfer, and the building. This is an additional measure to control the potential for fugitive releases from the transfer building.

Figure 10: Loading bay seal for safe loading

6.6 Dust curtain

In accordance with the existing Condition 7.4.2.1 of Licence W0185-01, dust curtains will be maintained on the entry/exit points from the waste transfer building.

6.7 Contingency/backup arrangements

6.7.1 Hose failure – prevention

A wire armoured hose will be used to connect the bulk tanker to the manifold. To reduce the risk of the hose/ coupling failure, the manifold will be placed in the optimum position. This will mean that the hose will not be kinked and subjected to tight radius, therefore reducing the chance of a stress concentration in the hose and failure.

6.7.2 Hose failure – reaction

In the event of a hose failure, the following system has been designed to address this scenario. A safety system of pipework incorporating an actuated check valve, a pressure sensor and a flexible pipe section will be employed. Details of this hose unloading system is depicted in **Drawing 06**, Appendix A. One end of the system will connect to the bulk tanker, the other to the manifold, and will operate as follows:

1) If the inner hose fails, air pressure will escape into a cavity. This cavity is formed by the inner typical blower pipe and the high pressure outer hose;

2) The air entering the cavity will trigger a pressure sensor;

3) The sensor will then send a signal back to the check valve to close. Flow of waste residue through the system stops;

4) Simultaneously, the pressure sensor will send a signal to a beacon and siren to indicate the hose has failed;

5) The waste residue will be contained by the outer high pressure hose;

6) The operator stops the blower;

7) The operator then removes the flexible hose section and replaces with a spare unit; and

8) Unloading then continues.

6.7.3 Clamping Cone Failure

In the event of a connection failure in the clamping cone, the Licensee will have an industrial vacuum on-Site to clear up any fugitive emissions. This vacuum will have the following features:

- High vacuum pump;
- Ability to vacuum both dry & wet material;
- On board storage of hoses, pipes and tools for all clean-up situations;
- Hydraulically operated tailgate, tailgate lock and tipping; and
- Tool box.

Figure 11 below provides an example of such an industrial vacuum which will be available in the event of a bag connection failure.

Figure 11: Example of an industrial vacuum

7.0 ENVIRONMENTAL CONSIDERATIONS

7.1 Measures to deal with fugitive emissions

Section 6.0 of this Report provides details on the measures to be employed at the Facility to prevent the potential for internal fugitive dust emissions. Such measures are intended to meet the requirements of existing Condition 7.4.2 of Licence No. W0185-01.

In the event of an unforeseen action / failure, further measures are in place for hose failure, clamping cone failures and impact (Section 6.7). Should the bagging process have to be taken off-line, a backup / redundancy bagging machine will be in place to ensure that bagging can continue with no downtime regarding throughput. This is intended to meet existing Condition 3.10.1.

7.2 Odour/Dust

The waste residue is odourless, and as a result there is little potential for increased odour emissions from the proposed bagging activities. It is further noted that operations have been undertaken at the Facility since 2004 and have not led to any complaints relating to odour.

As a failsafe, all doors and bays will be kept closed in accordance with Condition 7.4.2.1 of W0185-01. Good housekeeping in the vicinity of the waste transfer station will also keep dust levels to a minimum. All vehicles

servicing the transfer station will be adequately covered/sealed (loading bay seals) and all deliveries of waste residue will be by dedicated enclosed bulk vehicles, which were detailed in the original waste licence submission. In addition, all bags once filled are sealed using a bag welding mechanism (See Section 6.3 above). For shipment, the bags will be loaded onto curtain-siders, which will be loaded from the bay within loading bay seals.

Figure 12 below provides details of such a bulk transport vehicle used for delivery of the ash residue.

Figure 12: Typical sealed tankers to transport waste residue from Dublin Waste to Energy Plant.

Such measures will mitigate any potential nuisance associated with dust during transport / unloading and reloading for onward transfer.

7.2.1 Dust/Air monitoring

As part of the Licence W0185-01, the Facility will continue to carry out monitoring at four locations (D1, D2, D3 and D4) three times per year, in accordance with *Schedules C.2 Dust deposition limits, D.1.1 Monitoring locations and D.2 Dust Monitoring Frequency and Technique.*

In addition to the above external dust monitoring, it is proposed to carry out the following internal monitoring to provide additional safeguards with regard to the health and safety of our workers:

a) Baseline monitoring prior to the acceptance of ash waste residues, locations to be agreed with the Agency;

b) Personnel air monitoring quarterly once operations commence;

c) Parameters to be monitored are the same as those as set out in the Dublin WtE Facility Licence Ref. W0232-01;

d) Method used shall meet the requirements of the “Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001" and associated 2016 Approved Code of Practice published by the Health Safety Authority. Monitoring shall be carried out by an independent laboratory agreed by the Agency; and

e) Copies of all data gathered will be provided to the Agency within 10 days of receipt.

7.3 Ground Water

There are no direct emissions to groundwater. All activities will be undertaken indoors, in the purpose built waste transfer building which is previously licensed for the bulking and storage of hazardous materials for onward transfer.

7.4 Surface water

The Facility will not handle any liquid materials in the off-loading and bagging activities, which will be undertaken indoors. All surface water runoff from tanker bays, vehicle parking and marshalling areas are currently directed through a Class 1 interceptor before discharging to surface water sewer. There will be no change to this configuration as a result of the requested changes in this document. Rainwater from buildings and offices is also directed to the surface water sewer. Wastewater drains to a 5 m^3 self-contained monitoring tank prior to discharge. Wastewater is only discharged to the sewer following confirmation that the discharge has met the requirements of *Schedule C.3: Emissions Limits for Foul Water Emissions to Sewer, D.1.1 Monitoring locations, and D.4.1 monitoring and frequency technique.*

The waste residue transfer and bagging activity will not result in fugitive emissions to water. The main plant buildings are reinforced concrete with a sealant coating. No water or liquids, other than for plant and machinery maintenance, are used in the process. In any event, spill kits are available at the Facility. In addition, and as highlighted in Section 6.7.3 above, a vacuum tanker will be on-Site should quantities of waste residue be required for clean up in the event of equipment failure / unforeseen spillage.

7.5 Noise

The waste residue storage and bagging system will be situated in an enclosed and purpose build waste transfer building and therefore there will be no significant impact on the local environment. The 2002 Waste Licence Application had envisaged plant with noise emissions in excess of 100dB(A). The proposed bagging plant will not exceed 80dB(A). In addition, traffic movements (and resulting noise emissions) associated with the proposed changes are estimated to be 75% less than the original traffic movements submitted for grant of the waste licence.

In any event, as part of the existing license, the facility will continue to carry out monitoring in accordance with *Schedule C.1 noise emission, D.1.1. Monitoring locations, and D.3 Noise monitoring frequency and technique* to ensure there is no impact on the noise environment as a result of the requested changes.

8.0 SUSTAINABLE REUSE OF WASTE RESIDUE

Following the bagging of the waste residue at the Rilta Greenogue facility, the material will be shipped to a treatment facility in Norway for sustainable re-use. The waste residue will be used to neutralise sulphuric acid at the Langoya facility in Norway. Langoya is a small island dominated by a worked out limestone quarry which is being reinstated as a nature reserve under licence from the Norwegian government (Figure 13).

Figure 13: Proposed location for reuse of waste residue – Langoya Island, Norway

The neutralised residue / acid mixture is being used as part of this reinstatement, and the facility has an approved R treatment code for this purpose. In addition, the facility has the following permits/licences/approvals:

- Operating/emission permit from Norwegian Pollution Control Authority, 4 June 2003, renewed May 2009;
- EMAS registered 1998-2004;
- ISO 14001 certification from Feb 2004; and

Figure 14 below depicts the island once rehabilitated in c. 2040.

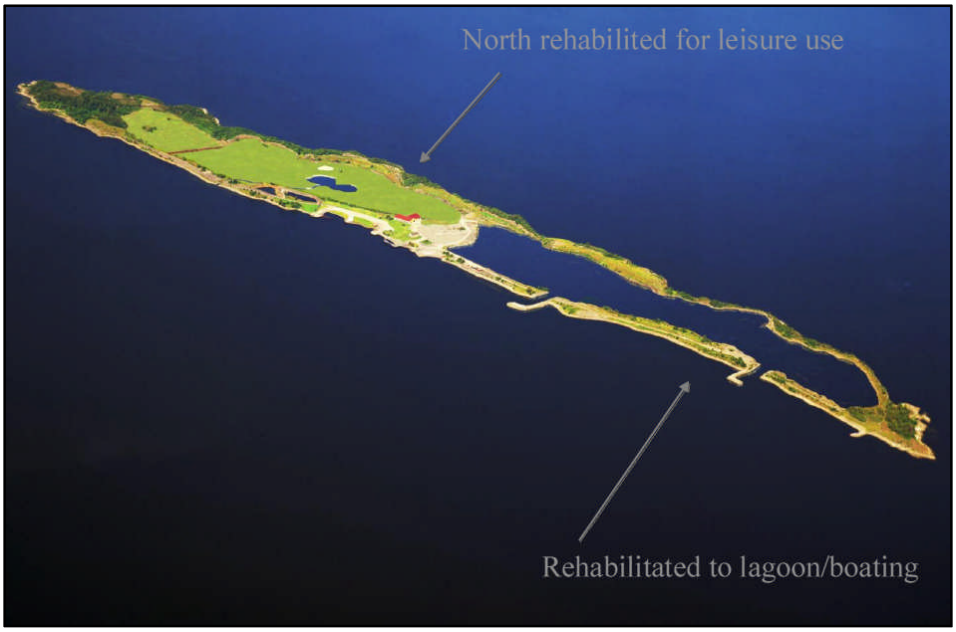


Figure 14: Rehabilitated Langoya Island in 2040

9.0 REFERENCES

1) Waste Licence Register Number W0185-01

2) Section 76A(11) Amendment to Industrial Emissions Licence

Report Signature Page

GOLDER ASSOCIATES IRELAND LIMITED

Brian Keenan
Senior Engineer

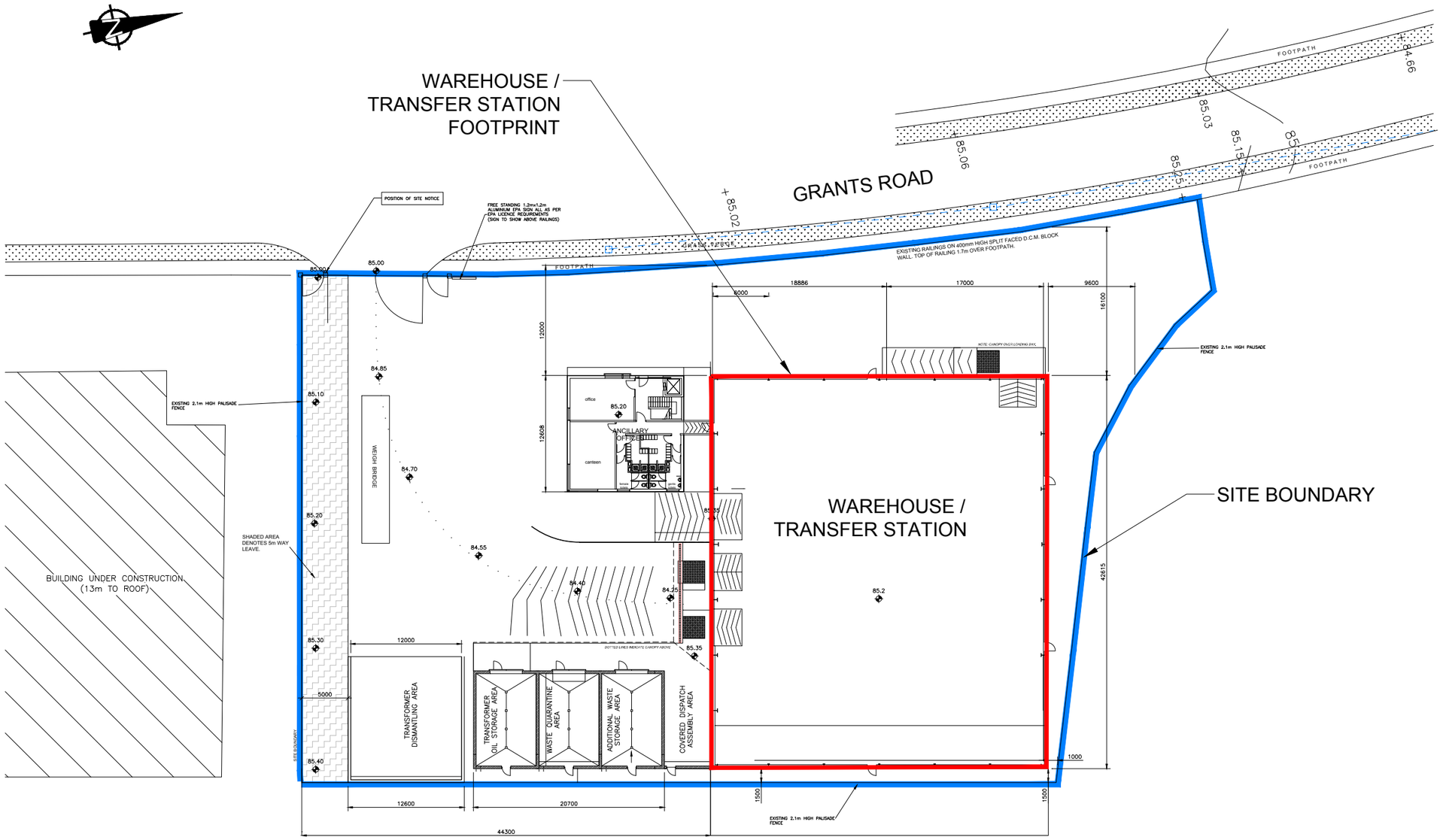
Barry Balding
Associate, Senior Geologist

BK/BB/bk

Registered in Ireland Registration No. 297875
Town Centre House, Dublin Road, Naas, Co. Kildare, Ireland
Directors: S. Copping, A. Harris, D.R.V. Jones (British)
VAT No.: 8297875W

APPENDIX A

Drawings



0 10 20
1:500 METRES

LEGEND

- SITE BOUNDARY
- WAREHOUSE / TRANSFER STATION

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 14A1, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-10-14
DESIGNED	Provided by Rilta
PREPARED	BMK
REVIEWED	CW
APPROVED	CW

PROJECT
RILTA BLOCK 14A1 - BAGGING PLANT

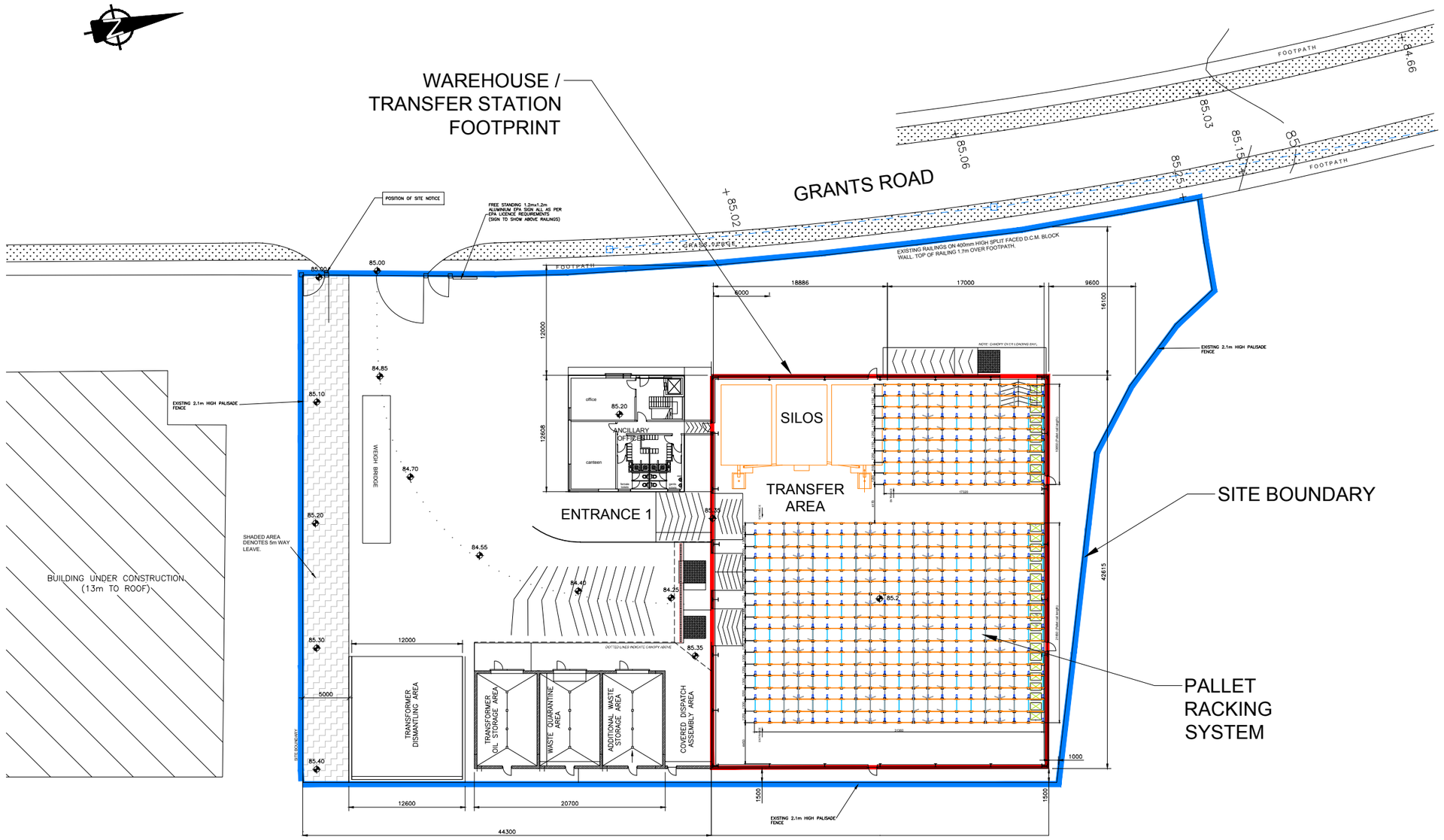
TITLE
EXISTING SITE LAYOUT

PROJECT NO.	SCALE	REV.	DRAWING
1650556	1:500 @ A3	A	1

Path: \\oa1-s-mia01\Company\PROJECTS\2016\1650556 - Ow051 - EHS\11 GRAPHICS\5 WORKING DRAWINGS\Rilta - Block 14A1 - Ash Bagging Plant\ | File Name: Drawings 1 to 6.dwg

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

25 mm
0



LEGEND

- SITE BOUNDARY
- WAREHOUSE / TRANSFER STATION

0 10 20
1:500 METRES

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 14A1, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-10-14
DESIGNED	Provided by Rilta
PREPARED	BMK
REVIEWED	CW
APPROVED	CW

PROJECT
RILTA BLOCK 14A1 - BAGGING PLANT

TITLE
PROPOSED SITE LAYOUT

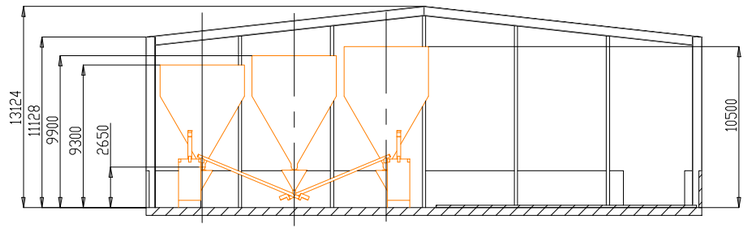
PROJECT NO.	SCALE	REV.	DRAWING
1650556	1:500 @ A3	A	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3
25 mm
0

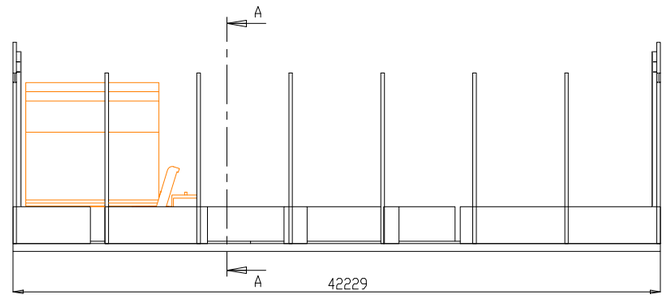
Path: \\nas1-s-main01\Company\PROJECTS\2016\1650556 - Ove51 - EHS\11 GRAPHICS\5 WORKING DRAWINGS\Rilta - Block 14A1 - Ash Bagging Plant\ | File Name: Drawings 1 to 6.dwg

NOTE:

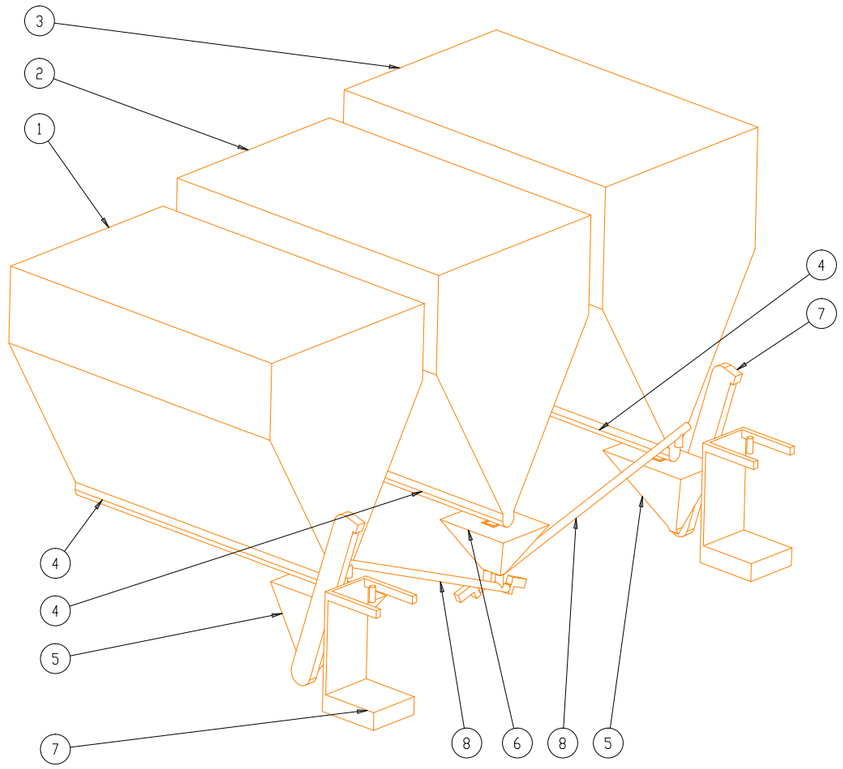
1. CAPACITY OF SILOS IS AS FOLLOWS:
   TOTAL VOLUME OF SILO = 722m3
   USABLE VOLUME OF SILO = 525m3
   DENSITY OF ASH = 0.5 T/m3
   CAPACITY OF SILO = 262T



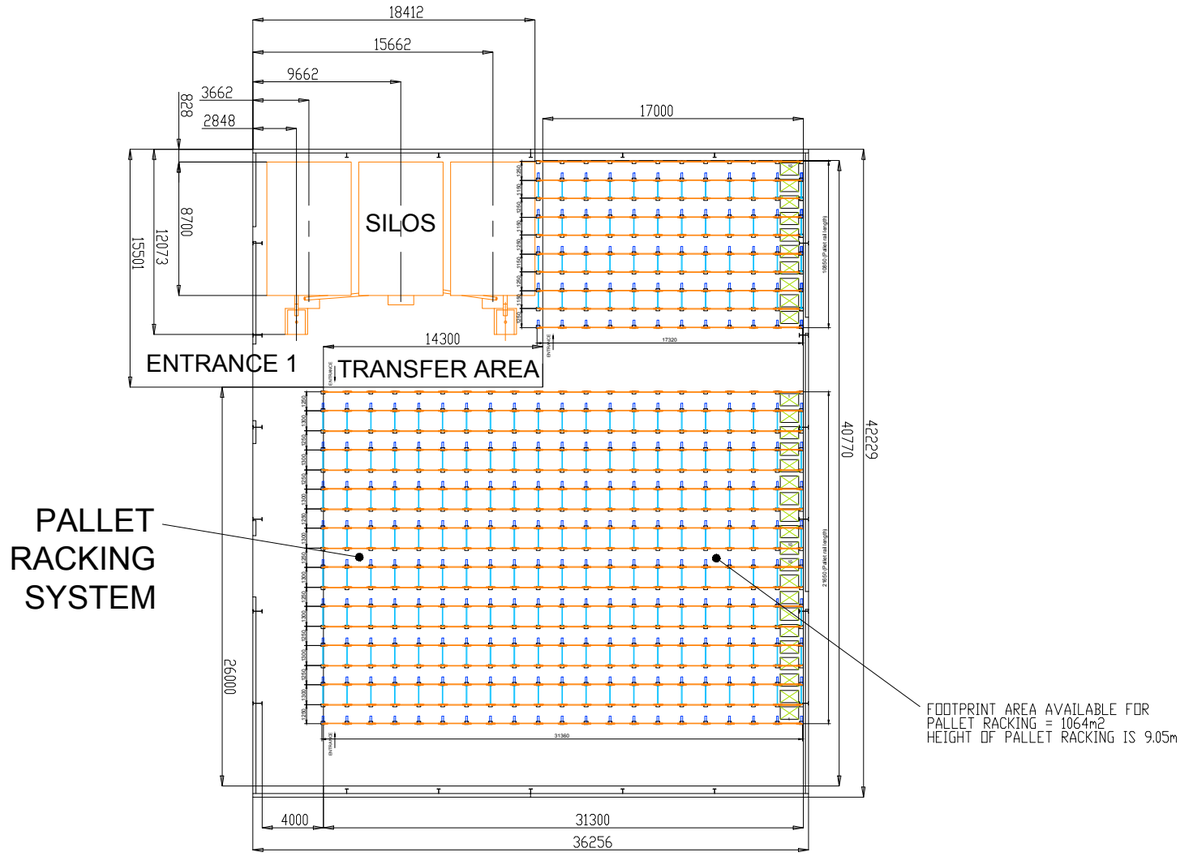
SECTION A-A



ELEVATION VIEWS OF PROPOSED BAGGING PLANT



ISOMETRIC VIEW OF PROPOSED BAGGING PLANT



PLAN VIEW OF PROPOSED BAGGING PLANT AND PALLET RACKING LAYOUT

0 10 20
1:400 METRES

ITEM NO.	DESCRIPTION	QTY.
1	ASH STORAGE SILO 1 VOL=212m3 (C/W LEVELING SCREW)	1
2	ASH STORAGE SILO 2 VOL=241m3 (C/W LEVELING SCREW)	1
3	ASH STORAGE SILO 3 VOL=269m3 (C/W LEVELING SCREW)	1
4	ASH STORAGE SILO OUTFEED SCREW CONVEYOR 8.7m LONG	2
5	BUFFER HOPPER1 VOL=2.75m3	2
6	BUFFER HOPPER2 VOL=1.85m3	1
7	BULK BAG LOADING SYSTEM (BY OTHERS)	2
8	TRANSFER SCREW CONVEYOR 6.5m LONG	2

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 14A1, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

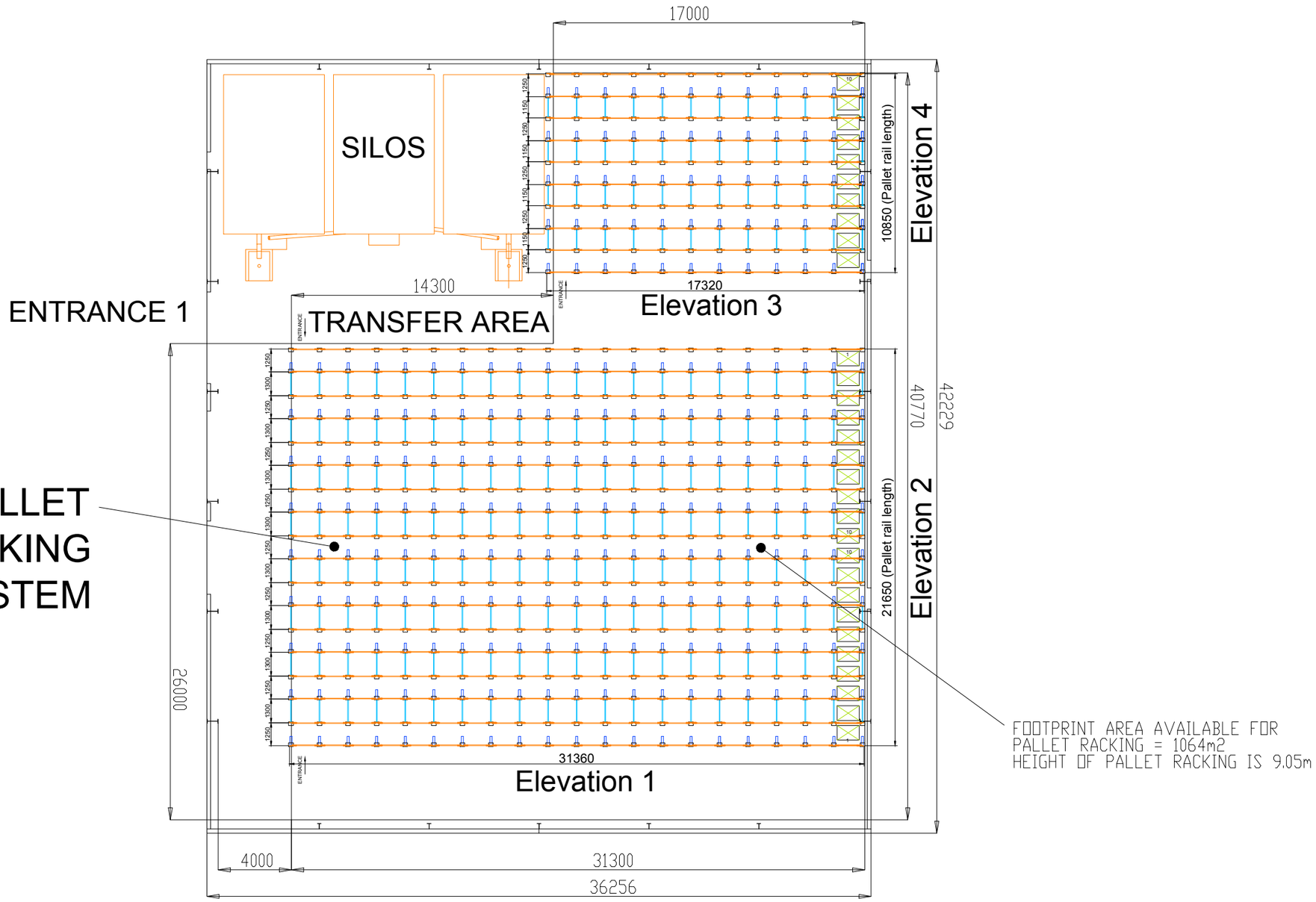
YYYY-MM-DD	2016-10-14
DESIGNED	Buttimer Engineering
PREPARED	BMK
REVIEWED	CW
APPROVED	CW

PROJECT
RILTA BLOCK 14A1 - BAGGING PLANT

TITLE
PROPOSED BAGGING PLANT

PROJECT NO.	SCALE	REV.	DRAWING
1650556	1:400 @ A3	A	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
25 mm
0



PLAN VIEW OF PROPOSED BAGGING PLANT AND PALLET RACKING LAYOUT

0 5 10
1:250 METRES

NOTE

See Drawing 5 for Elevations 1 to 4

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 14A1, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-10-14
DESIGNED	Buttimer Engineering
PREPARED	BMK
REVIEWED	CW
APPROVED	CW

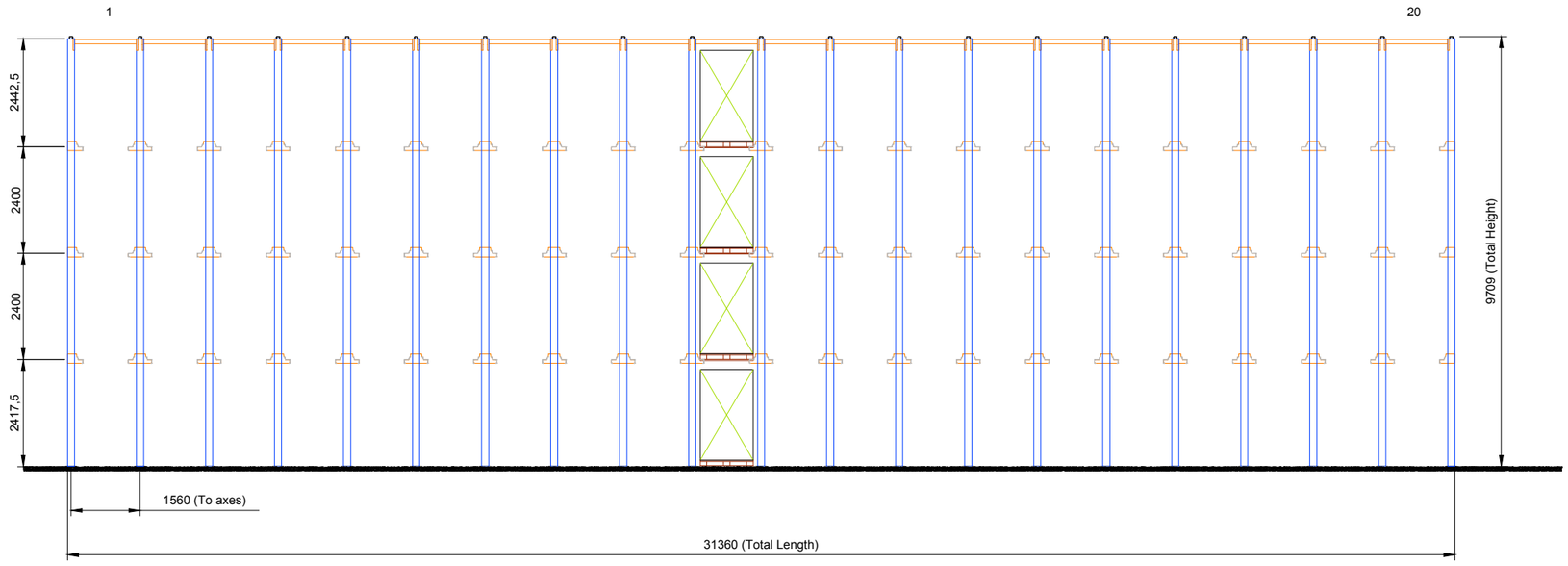
PROJECT
RILTA BLOCK 14A1 - BAGGING PLANT

TITLE
PROPOSED PALLET RACKING SYSTEM

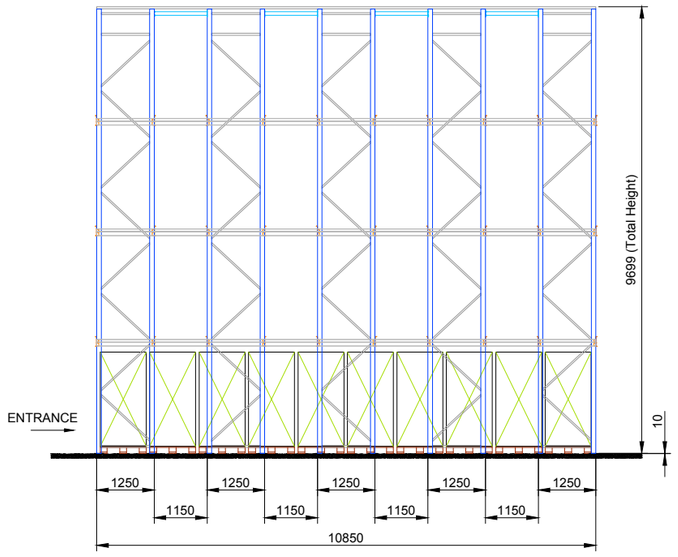
PROJECT NO.	SCALE	REV.	DRAWING
1650556	1:250 @ A3	A	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3
25 mm
0

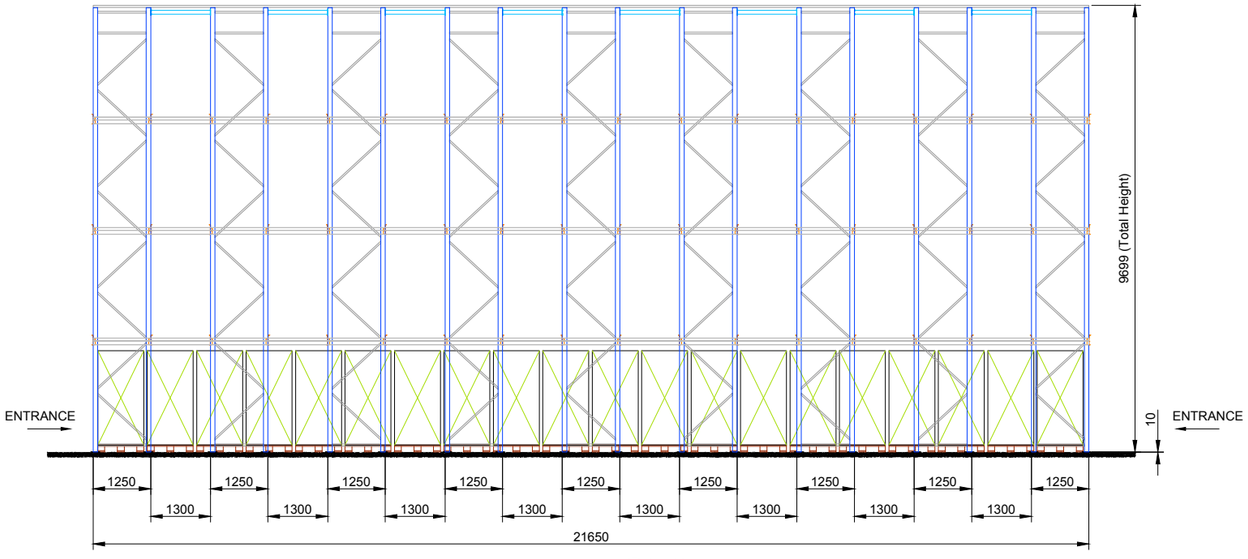
Path: \\va1-s-main01\Company\PROJECTS\2016\1650556 - Ore51 - EHS\11. GRAPHICS\5. WORKING DRAWINGS\Rilta - Block 14A1 - Ash Bagging Plant\ | File Name: Drawings 1 to 6.dwg



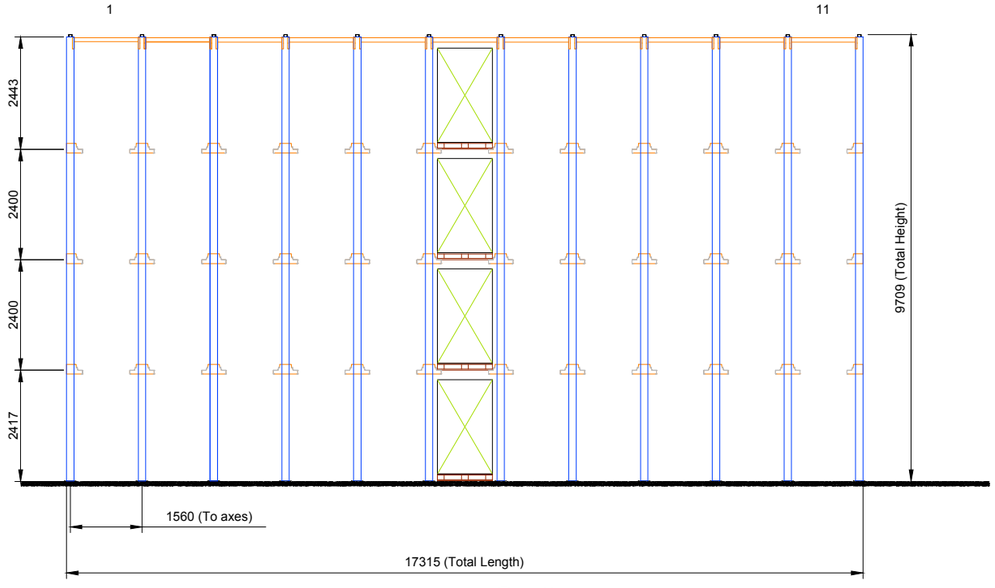
ELEVATION 1



ELEVATION 4



ELEVATION 2



ELEVATION 3

NOTE

See Drawing 4 for Location of Elevations 1 to 4

0 5 10
1:200 METRES

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 14A1, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-10-14
DESIGNED	Buttimer Engineering
PREPARED	BMK
REVIEWED	CW
APPROVED	CW

PROJECT
RILTA BLOCK 14A1 - BAGGING PLANT

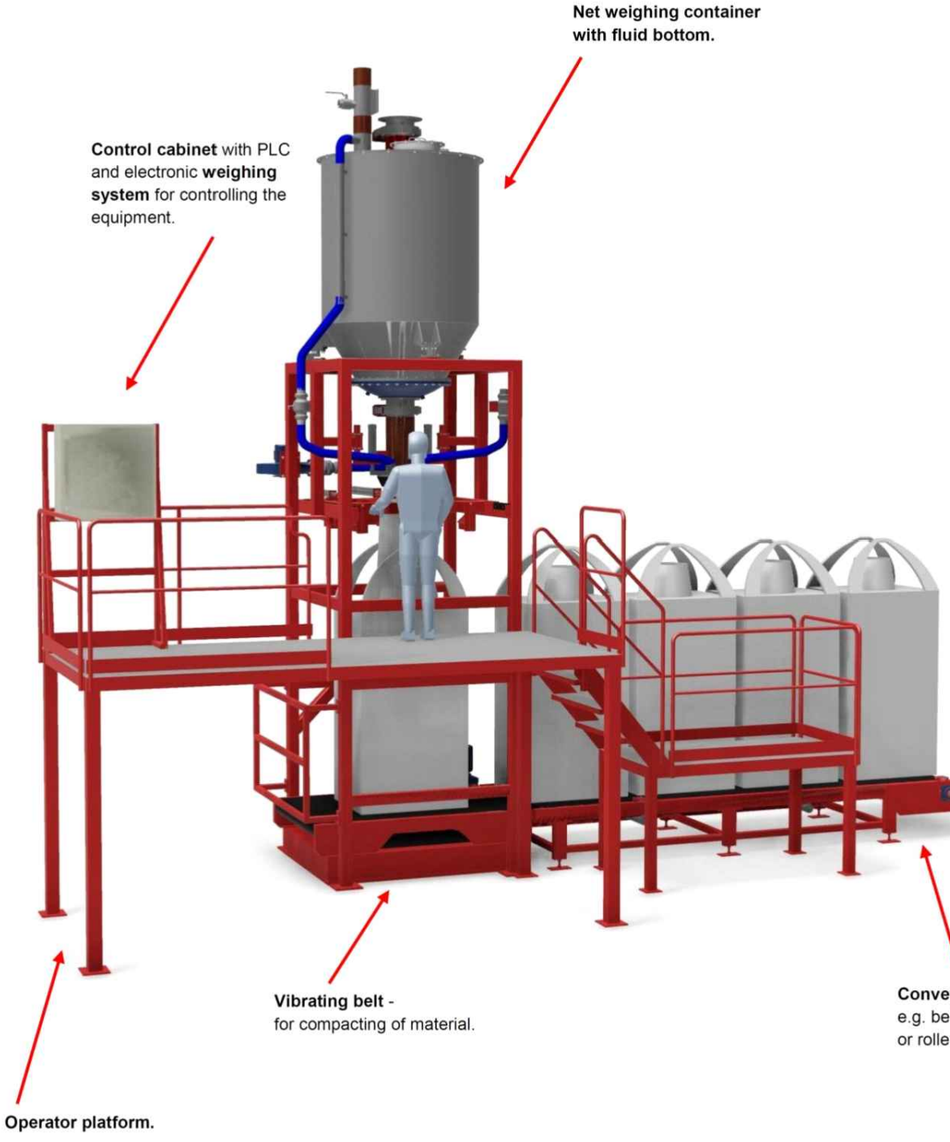
TITLE
PROPOSED PALLET RACKING SYSTEM - Elevations 1 to 4

PROJECT NO.	SCALE	REV.	DRAWING
1650556	1:200 @ A3	A	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
0 25 mm

Path: \\xaa1-s-main01\Company\PROJECTS\2016\1650556 - Ont451 - EHS\11 GRAPHICS\5. WORKING DRAWINGS\Rilta - Block 14A1 - Ash Bagging Plant\ | File Name: Drawings 1 to 6.dwg

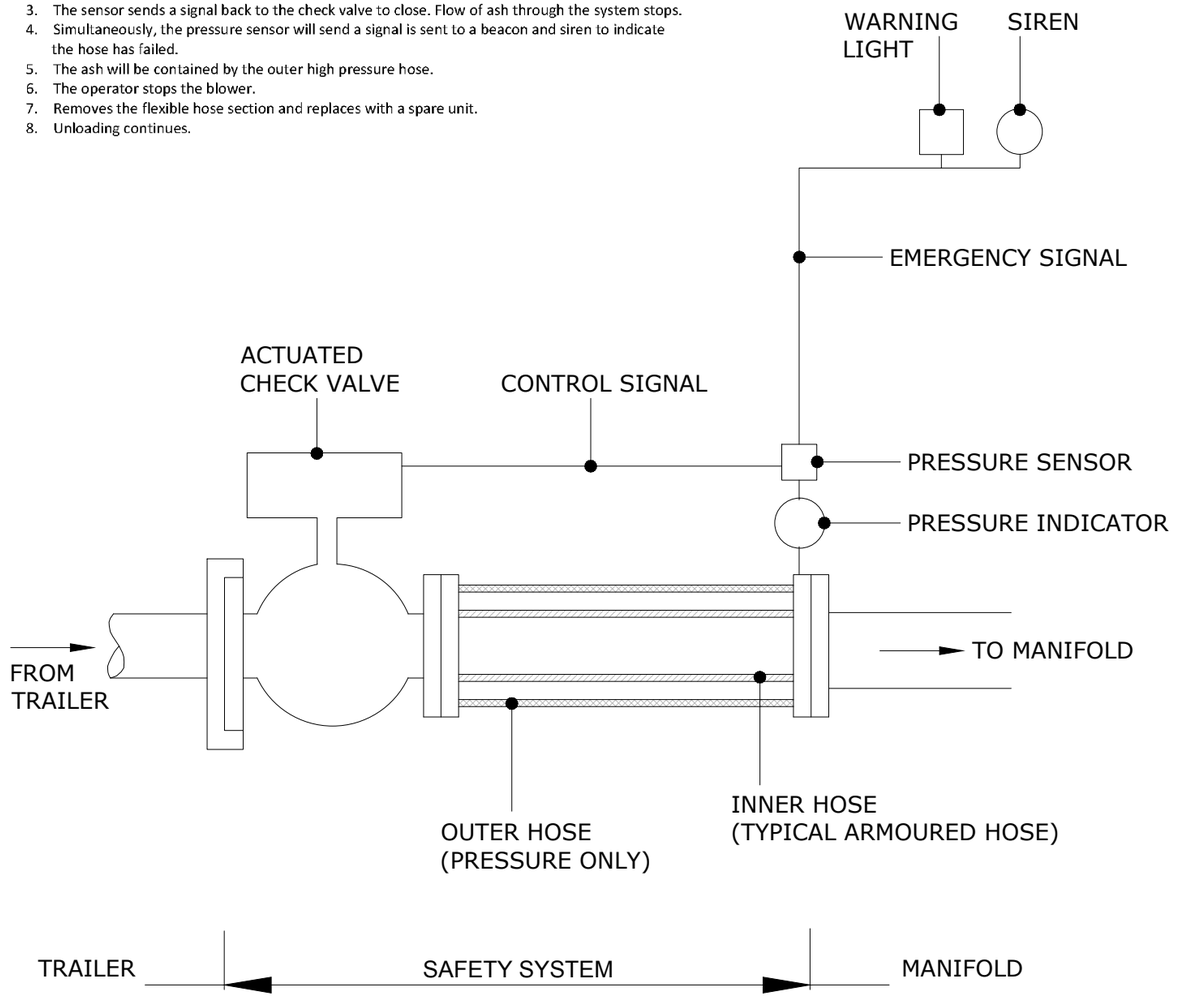
JR I ADVANCED



NOTES

One end of the system connects to the trailer, the other to the manifold

1. If the inner hose fails, air pressure will escape into a cavity. This cavity is formed by the inner typical blower pipe and the high pressure outer hose.
2. The air entering the cavity will trigger a pressure sensor.
3. The sensor sends a signal back to the check valve to close. Flow of ash through the system stops.
4. Simultaneously, the pressure sensor will send a signal is sent to a beacon and siren to indicate the hose has failed.
5. The ash will be contained by the outer high pressure hose.
6. The operator stops the blower.
7. Removes the flexible hose section and replaces with a spare unit.
8. Unloading continues.



ARMOURED HOSE TO MANIFOLD CONNECTION

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 14A1, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

YYYY-MM-DD	2016-10-14
DESIGNED	Buttimer Engineering
PREPARED	BMK
REVIEWED	CW
APPROVED	CW

PROJECT
RILTA BLOCK 14A1 - BAGGING PLANT

TITLE
PROPOSED DUST EMISSION MANAGEMENT

PROJECT NO.	SCALE	REV.	DRAWING
1650556	Not to scale	A	6

As a global, employee-owned organisation with over 50 years of experience, Golder Associates is driven by our purpose to engineer earth's development while preserving earth's integrity. We deliver solutions that help our clients achieve their sustainable development goals by providing a wide range of independent consulting, design and construction services in our specialist areas of earth, environment and energy.

For more information, visit golder.com

Africa	+ 27 11 254 4800
Asia	+ 86 21 6258 5522
Australasia	+ 61 3 8862 3500
Europe	+ 44 1628 851851
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

solutions@golder.com
www.golder.com

Golder Associates Ireland Limited
Town Centre House
Dublin Road
Naas
Co. Kildare
Ireland
T: +353 45 87 4411

Golder Associates