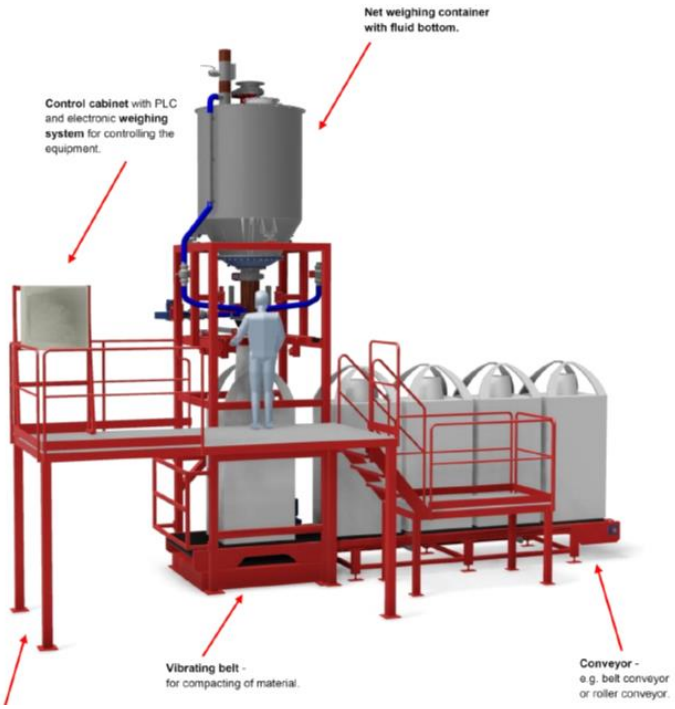
DETAILED OF CHANGES TO W0192-03

**October 2016**

## RILTA ENVIRONMENTAL LTD.

# Detailed Report on Requested Changes to W0192-03




**Submitted to:**
Environmental Protection Agency
on behalf of
RILTA Environmental Limited
Block 402, Grants Drive
Greenogue Business Park
Rathcoole
Co. Dublin

Report **Number** 1667271.R01.B0

**Distribution:**

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**APPENDICES**

# 1.0 INTRODUCTION

RILTA Environmental Limited (the 'Licensee') operates a waste facility under Waste Licence No. W0192-03 for the handling of hazardous and non-hazardous waste at Block 402, Greenogue Industrial Estate in Co. Dublin (the 'Facility').

It is the Licensee's intention to install a bagging plant for the bulking-up and transfer of ash waste residue from the Dublin Waste to Energy (WtE) plant in Poolbeg, Dublin 4.

In accordance with EPA Guidance for Licensees on requests for alterations to the installation/facility, to determine if the proposed change can be accommodated by Technical Amendment, this report includes the following:

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.

To address 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 only**, pending transfer from Licensed Facility W0192-03, will consist of both flue gas residue and boiler ash (herein referred to as *'waste residue'*), produced by the Dublin WtE plant located in Poolbeg, Dublin 4.

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); 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 |
| 6 | Proposed Dust Emission Management |

# 4.0 DETAILS OF WASTE RESIDUE

The Dublin WtE 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 only at the Rilta facility (W0192-03).

**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 Facility (W0192-03). The waste residues will be transported from the Dublin WtE Site to the Facility W0192-03 in sealed tankers by licensed / permitted waste contractors under the control of the Licensee, for bagging and onward transfer to Rilta's other facility in Greenogue Business Park (Licence Ref. W0185-01) for storage.

## 4.1 List of Waste (LoW) Codes

The following LoW Codes are to be accepted at the Rilta Facility (W0192-03):

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

It is noted that these codes have been previously approved by the EPA in correspondence dated 28 July 2010, which states:

> *'I am to advise you that the proposal submitted is to the satisfaction of the Agency for all wastes listed in 'Proposed EWC codes for storage only at RILTA Environmental', except 180102, 180103*, 180104, 180202* and 180203'.*

# 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 the waste residues; silos and associated bagging plant.

Sealed tanker trucks will enter the facility through the main gate access off Grants Drive, and will proceed to the weighbridge and report to reception / security. Trucks will then pull alongside the 'new bagging area' (Figure 1). The tanker 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 hazardous waste transfer building. This designated bagging area will include a compressor, transfer fittings and hoses, and two bagging units (main and backup / redundancy).


*Figure 1: Waste transfer building entrance for bagging and transfer of ash waste residues (external view)*

## 5.2 Hazardous Waste Transfer Building

The location of the three waste residue storage silos in the Waste Transfer Building is currently obstructed by a workshop. This will be relocated prior to commencement of installation works. A general clearance of this area of the waste transfer building will also be undertaken to remove any items obstructing the installation of the silos. Figure 2 shows the proposed location of the silos.


*Figure 2: Proposed location for three storage silos and bagging plant*

## 5.3 Services

Additional service installations will be required for the silos and bagging plant 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 waste transfer building 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.

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.

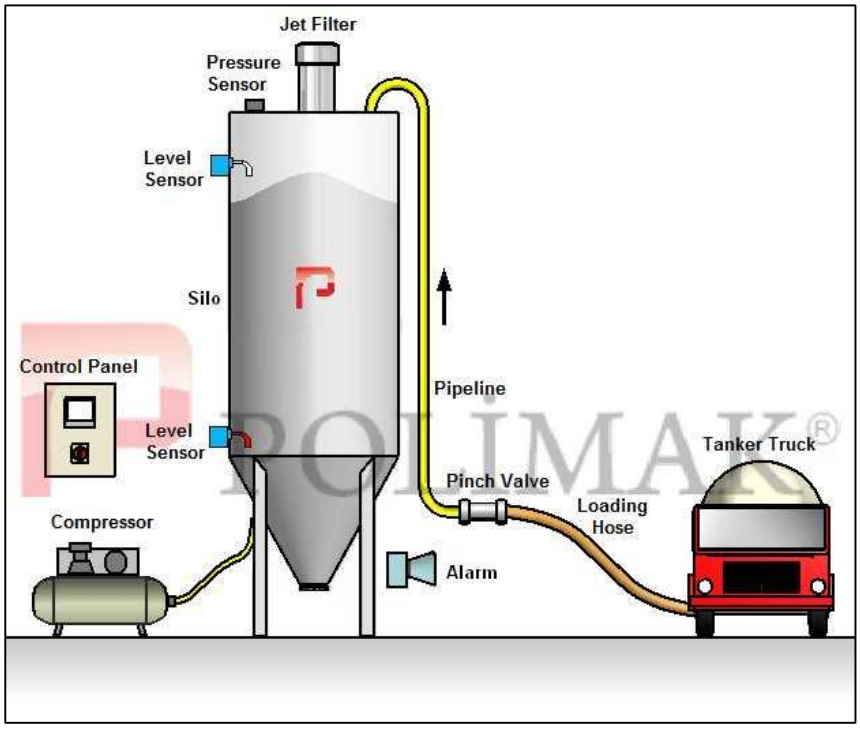


*Figure 3: Schematic of the proposed waste residue delivery system*

## 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 3.9.1 of Licence W0192-03, 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 Filled FIBCs

Filled bulk bags will then be loaded onto a rigid trailer, and transported for storage to another RILTA facility, also located in Greenogue Business Park, Licence No. W0185-01. A separate technical amendment request for W0185-01 will also be submitted for this change to the Licence.

# 6.0 MEASURES TO PREVENT FUGITIVE EMISSIONS

In keeping with the original waste licence application in 2002 and subsequent licence review 2007, all bagging activities 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 6.21.2 (W0192-03), namely:

> *'The licensee shall 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 6). 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 6: 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 7). 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 7: 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 8 below.

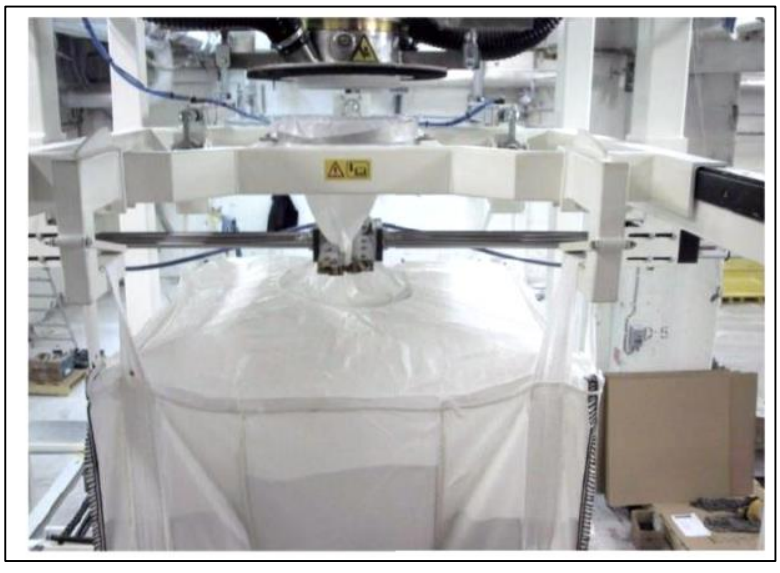

*Figure 8: Automatic bag welder with welding in progress*

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 at RILTA Facility W0185-01, or other bags/pallets when loading.

## 6.5 Fast shutting doors

To meet the requirements of Condition 6.21.2 of Licence W0192-03, 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 relevant locations.

## 6.6 Dust curtain

In accordance with the existing Condition 6.21.2.1 of Licence W0192-03, 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 04**, 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 9 below provides an example of such an industrial vacuum which will be available in the event of a bag connection failure.


*Figure 9: 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 6.21.2 of Licence No. W0192-03.

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 3.9.1 of Licence No. W192-03.

## 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 will be kept closed in accordance with Condition 8.9 of W0192-03. Good housekeeping in the vicinity of the waste transfer station will also keep dust levels to a minimum. All deliveries of waste residue will be by dedicated enclosed bulk vehicles, owned or under the control of the Licensee. In addition, all bags once filled are sealed using a bag welding mechanism (See Section 6.3 above).

Figure 10 below provides details of such a bulk transport vehicle used for delivery of the ash residue.

*Figure 10: 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 W0192-03, the Facility will continue to carry out monitoring at four locations (D1, D2, D3 and D4) three times per year, in accordance with *Schedules B.5 Dust Emissions and C.5 Dust Monitoring.*

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 waste transfer building which is previously licensed for the bulking of hazardous materials for onward transfer.

## 7.4 Surface and waste water

The Facility will not handle any liquid materials in the off-loading and bagging activities, which will be undertaken indoors in accordance with Condition 8.9 of W0192-03. The site is covered by hardstanding, and all surface drainage on site reports to an interceptor and then to an attenuation tank. Following this it is discharged to the Griffeen River located to the north of the facility.

Wastewater is only discharged to the sewer following confirmation that the discharge has met the requirements of *Schedule B.3 Emissions to Sewer and C.3.1 Control of Emissions to Sewer.*

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 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 2007 Waste Licence Application had envisaged plant with noise emissions in excess of 89 dB(A). The proposed bagging plant will not exceed 80 dB(A).

In addition, traffic movements (and resulting noise emissions) associated with the proposed changes are estimated to be 22% less than the original traffic movements submitted for grant of the waste licence (i.e. 38,000 tonnes of soils/ash residues throughput *vs.* 48,500 tonnes of soils assessed in 2007 EIS).

In any event, as part of the existing license, the facility will continue to carry out monitoring in accordance with *Schedule B.4 Noise Emission and C.4. Noise Monitoring* 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 waste residue at the Rilta facility (W0192-03), the material will be stored at Rilta Facility W0185-01, subject to Technical Amendment), and then 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 11).

*Figure 11: 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 12 below depicts the island once rehabilitated in c. 2040.

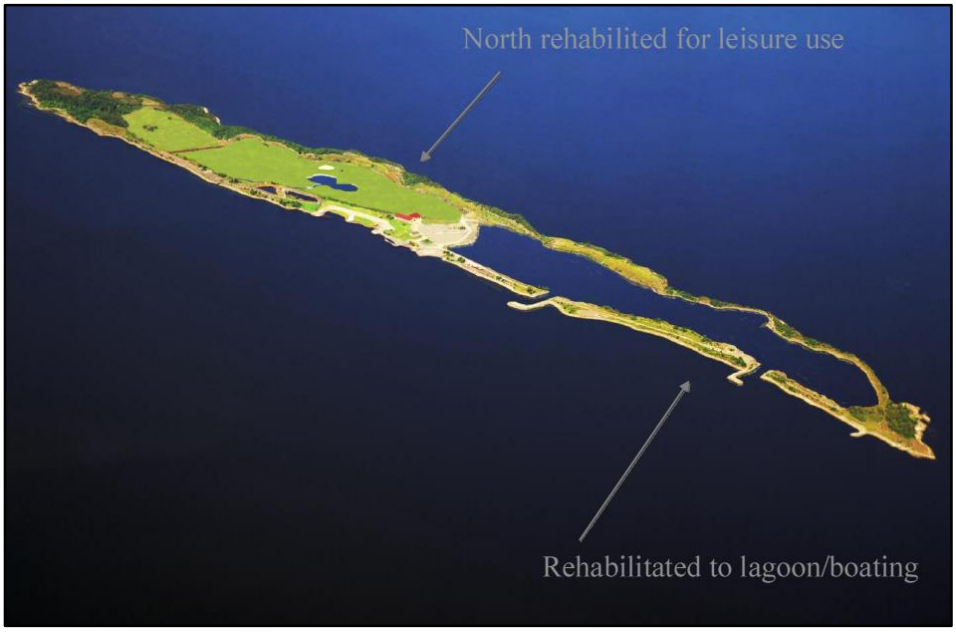


*Figure 12: Rehabilitated Langoya Island in 2040*

## 9.0 REFERENCES

1) Waste Licence Register Number W0192-03

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

3) BAT, 2006 Emissions from storage

# Report Signature Page

**GOLDER ASSOCIATES IRELAND LIMITED**

Brian Keenan
Senior Engineer

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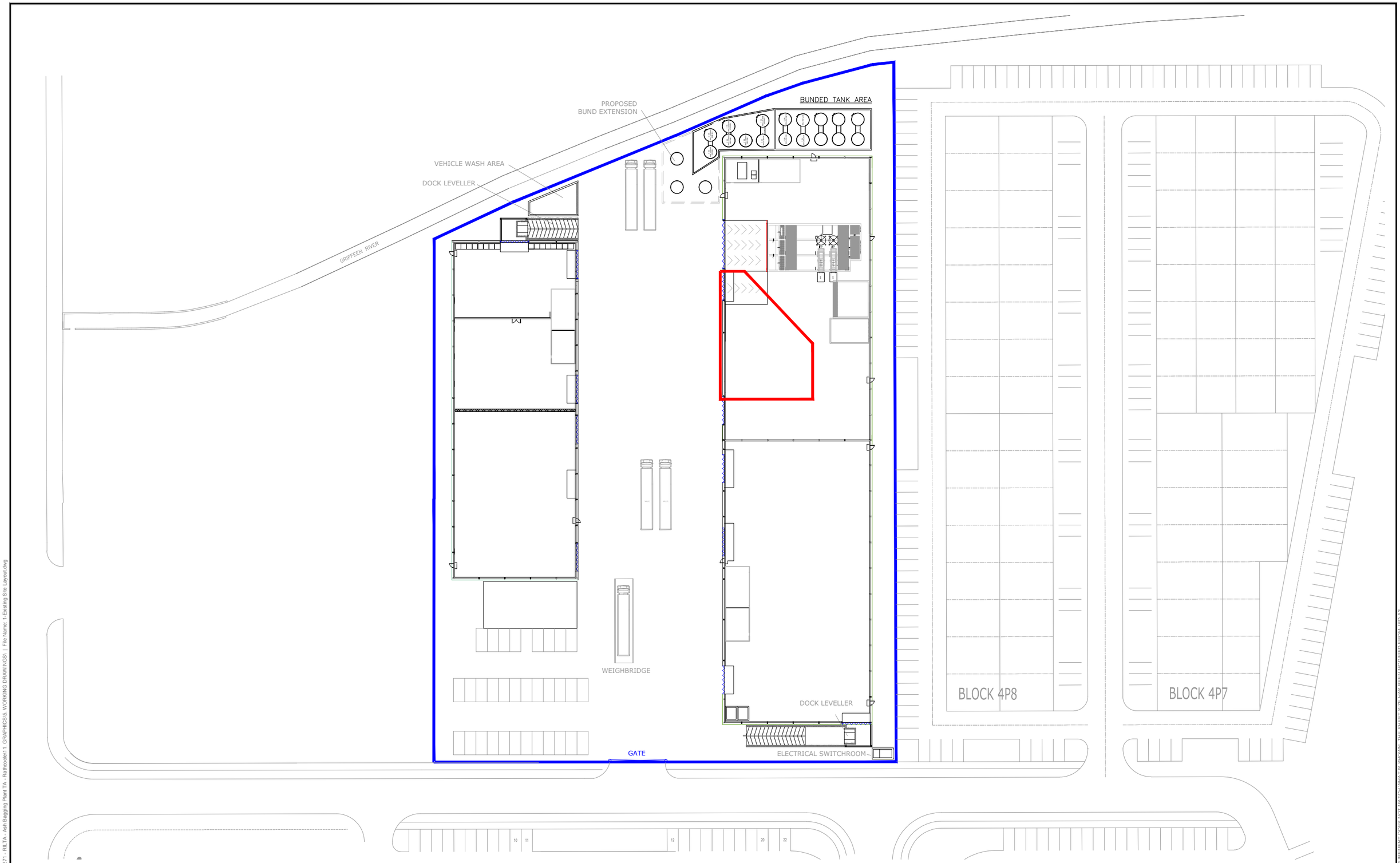
BK/BB/bk/es

28 October 2016

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




**LEGEND**

- SITE BOUNDARY
- NEW BAGGING AREA BOUNDARY

0 12.5 25
METRES

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 402, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

| | |
|---|---|
| YYYY-MM-DD | 2016-10-26 |
| DESIGNED | Provided by Rilta |
| PREPARED | BMK |
| REVIEWED | RK |
| APPROVED | BK |

PROJECT
RILTA BLOCK 402 - BAGGING PLANT

TITLE
**EXISTING SITE LAYOUT**

| PROJECT NO. | SCALE | REV. | DRAWING |
|---|---|---|---|
| 1667271 | As shown | A | 1 |

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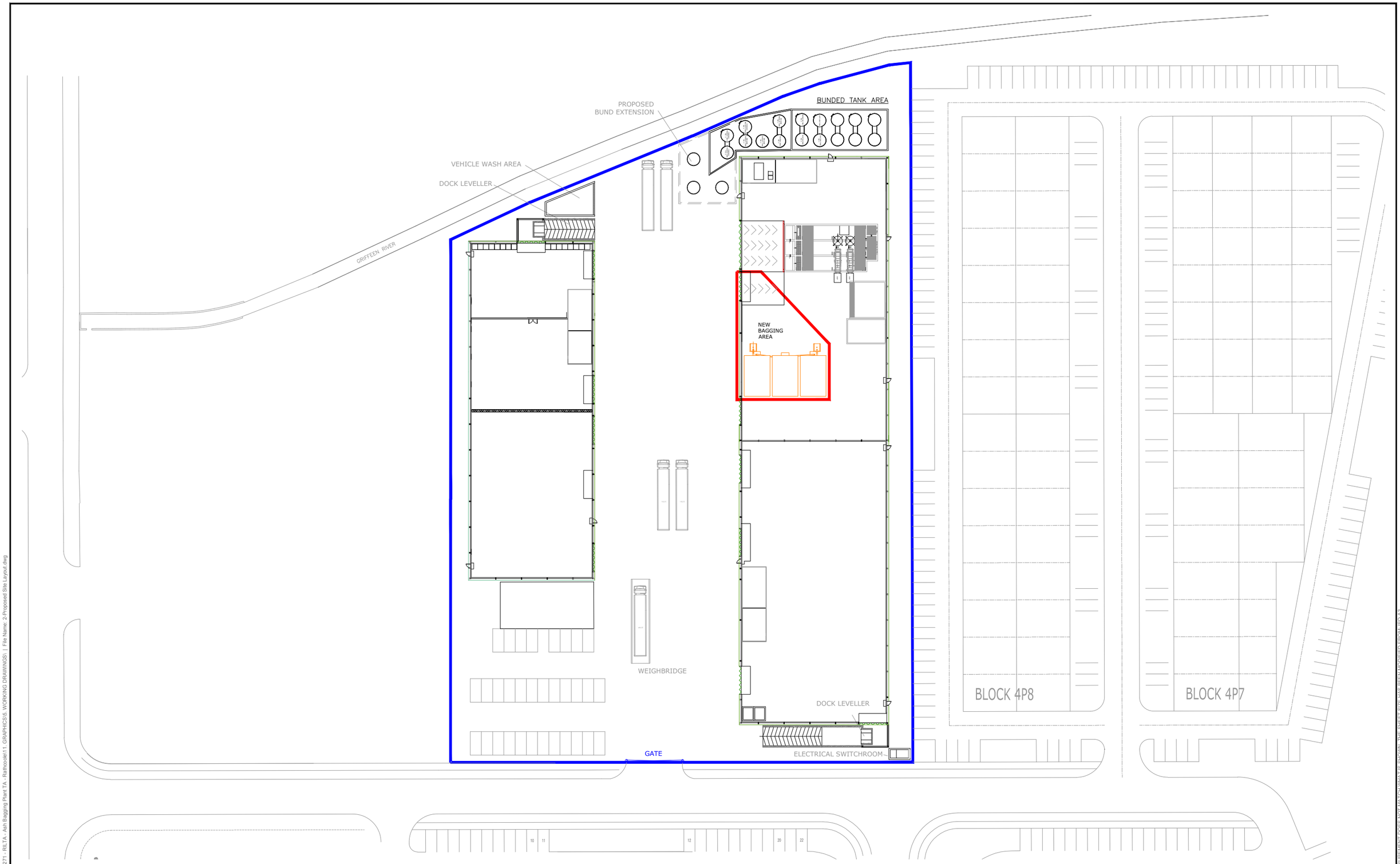


**LEGEND**

- SITE BOUNDARY
- NEW BAGGING AREA BOUNDARY

0 12.5 25
METRES

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 402, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

| | |
|---|---|
| YYYY-MM-DD | 2016-10-26 |
| DESIGNED | Provided by Rilta |
| PREPARED | BMK |
| REVIEWED | RK |
| APPROVED | BK |

PROJECT
RILTA BLOCK 402 - BAGGING PLANT

TITLE
**PROPOSED SITE LAYOUT**

| PROJECT NO. | SCALE | REV. | DRAWING |
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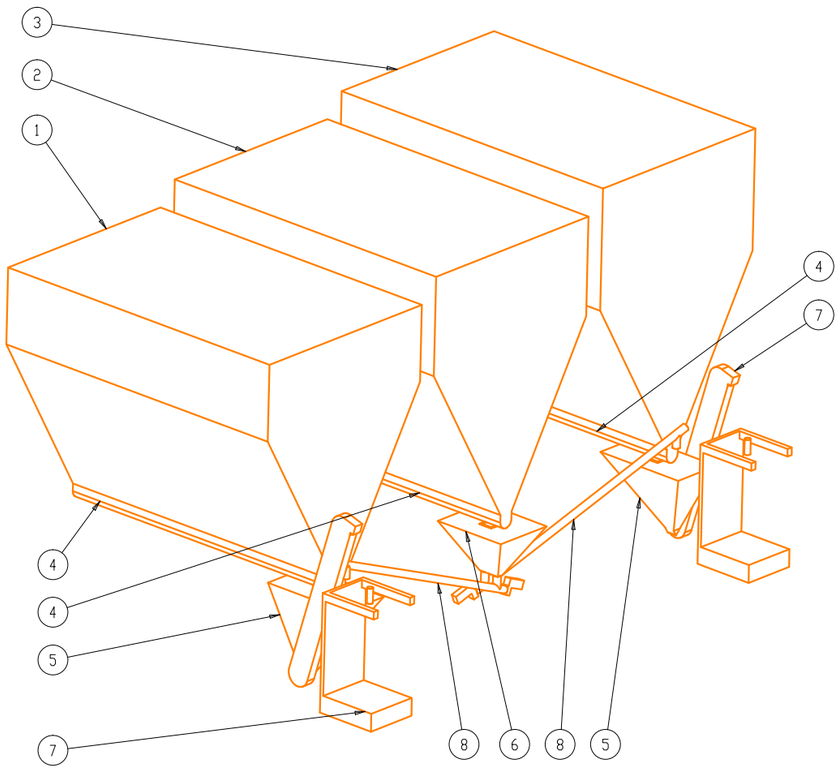
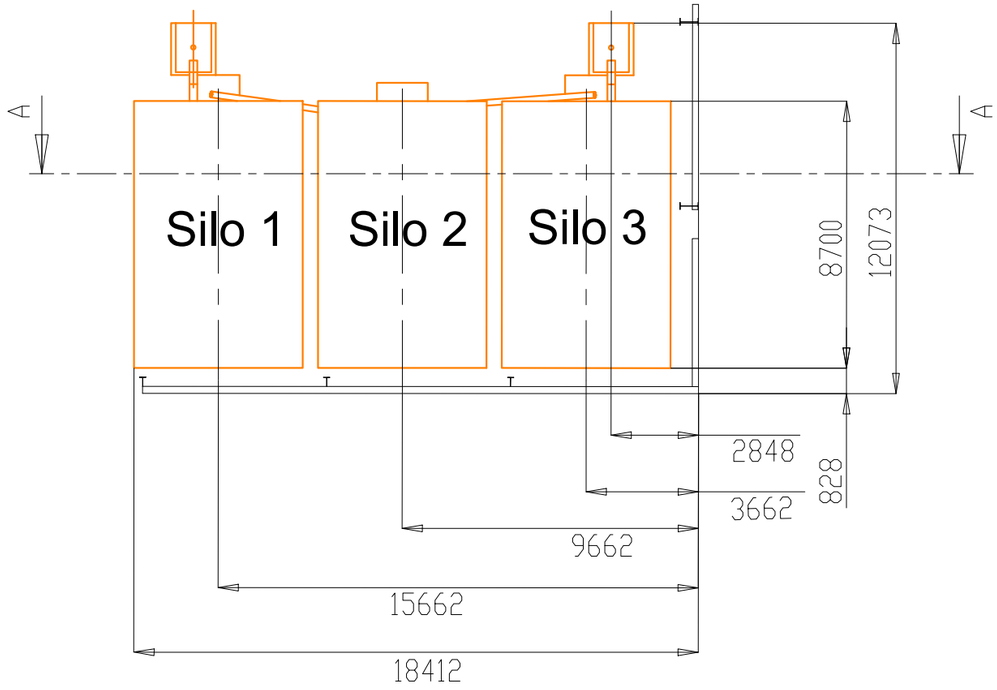
NOTE:

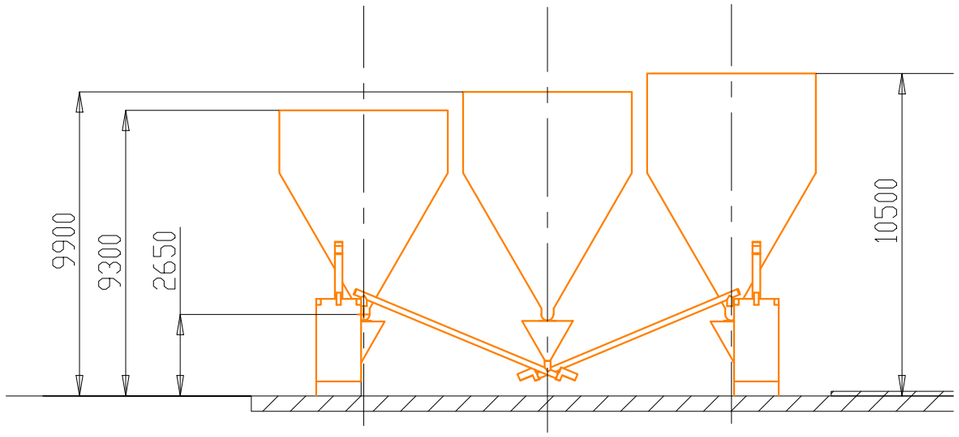
1. CAPACITY OF SILOS IS AS FOLLOWS:
   TOTAL VOLUME OF SILO = 722m3
   USABLE VOLUME OF SILO = 525m3
   DENSITY OF ASH = 0.5 T/m3
   CAPACITY OF SILO = 262T




ISOMETRIC VIEW OF PROPOSED BAGGING PLANT
(Not to scale)




PLAN VIEW OF PROPOSED BAGGING PLANT
(Scale: 1/200 - All dimensions shown in mm's)




SECTION A:A OF PROPOSED BAGGING PLANT
(Scale: 1/200 - All dimensions shown in mm's)

| 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 |

0 5 10
1:200 METRES

CLIENT
RILTA ENVIRONMENTAL LTD.
BLOCK 402, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT
Golder Associates

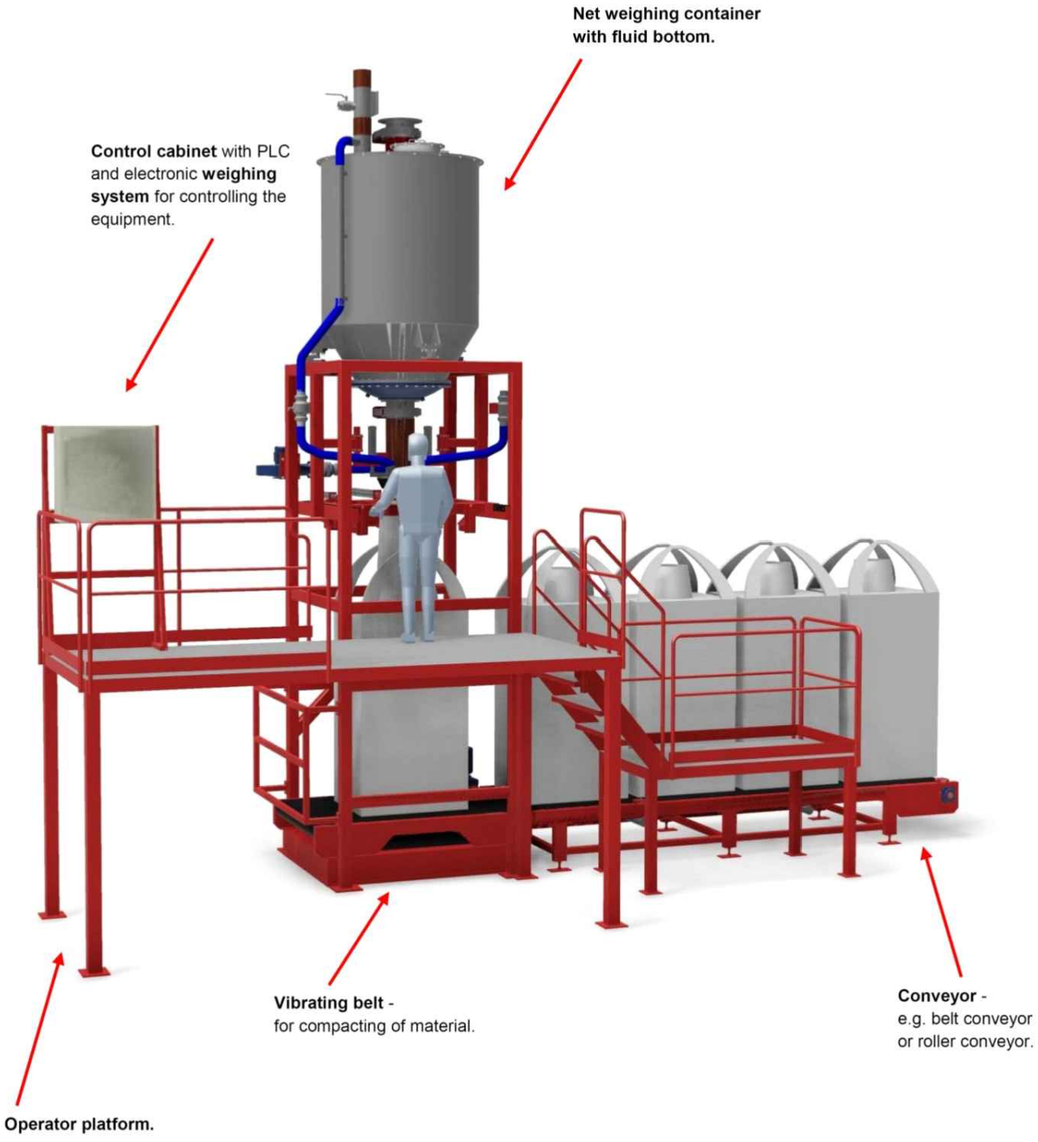
| | |
|---|---|
| YYYY-MM-DD | 2016-10-26 |
| DESIGNED | Buttimer Engineering |
| PREPARED | BMK |
| REVIEWED | RK |
| APPROVED | BK |

PROJECT
RILTA BLOCK 402 - BAGGING PLANT

TITLE
**PROPOSED BAGGING PLANT**

| PROJECT NO. | SCALE | REV. | DRAWING |
|---|---|---|---|
| 1667271 | As shown | A | 3 |

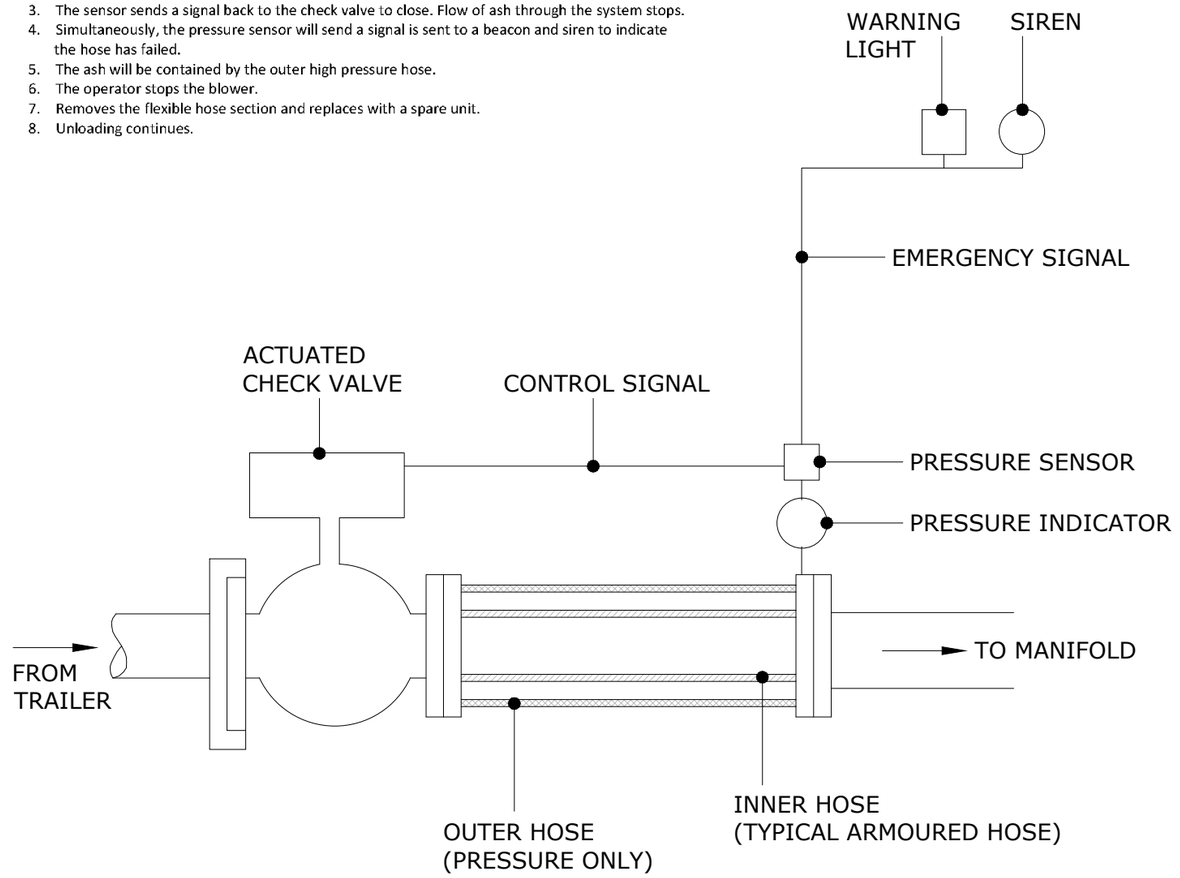
## JR I ADVANCED




**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 402, GRANTS AVENUE
GREENOGUE BUSINESS PARK, RATHCOOLE, CO. DUBLIN

CONSULTANT

Golder Associates

| | |
|---|---|
| YYYY-MM-DD | 2016-10-26 |
| DESIGNED | Buttimer Engineering |
| PREPARED | BMK |
| REVIEWED | RK |
| APPROVED | BK |

PROJECT
RILTA BLOCK 402 - BAGGING PLANT

TITLE
**PROPOSED DUST EMISSION MANAGEMENT**

| PROJECT NO. | SCALE | REV. | DRAWING |
|---|---|---|---|
| 1667271 | Not to scale | A | 4 |

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