

# SITE SYSTEM

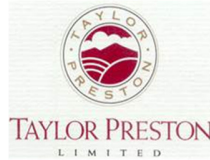
**SYSTEM:** **ODOUR MANAGEMENT PLAN**

**SITE NAME:** **TAYLOR PRESTON LTD**

**SITE NUMBER:** **ME86**

<b>Written By:</b>	<b>Reginald Tiumalu/ Ardi Roberts</b> (Rendering Foreman)
<b>Approved By:</b>	<b>John Taylor</b> (Plant Manager)

Revision No.	Change	Author	Date



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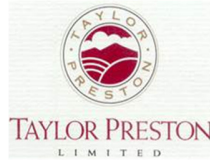
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## ODOUR MANAGEMENT PLAN

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### 1.0 SCOPE

*“There shall be no discharges to air that are noxious, dangerous, offensive or objectionable at or beyond the legal boundary of the site property from which the consent holder operates, as determined by and enforcement officer of Wellington Regional Council.*

*For the purposes of this condition the boundary of the property from which the consent holder operations is the outer perimeter of the land bearing the legal description is defined as **Lot 1 DP 65030 and Lot 4 DP 72996.**”*

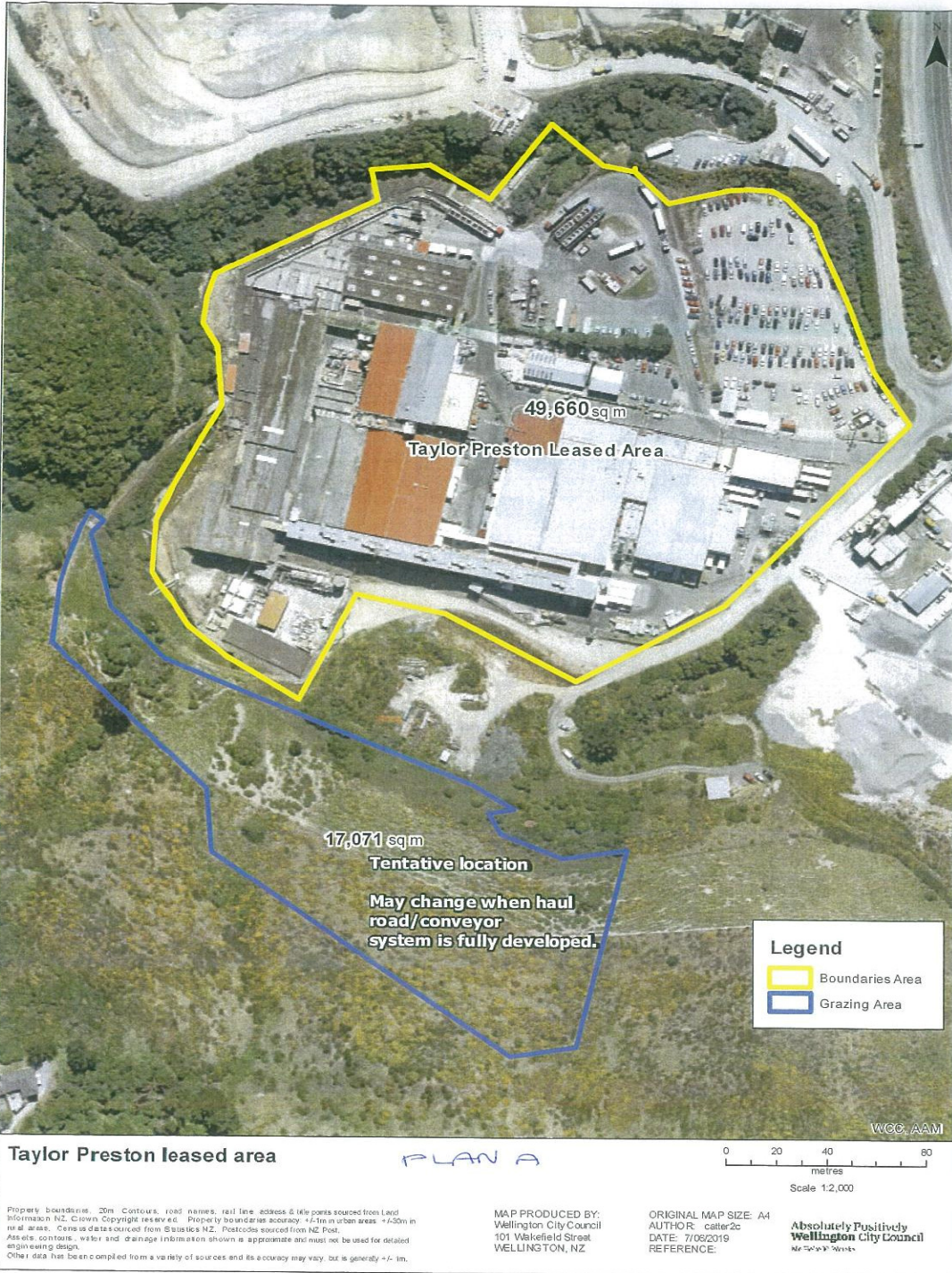
This Site System Document describes the ‘Odour Management Plan’ relating to operations within Taylor Preston’s RMP boundary. *“All relevant managers, supervisors and staff are adequately trained in all relevant parts of the OMP, ROMCP and BOMP.*

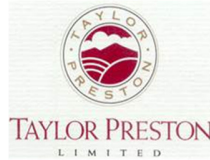
*The site shall be operated in accordance with the procedures in the approved OMP and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.”*



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1.1 Site Boundary Map (Lot 1 DP 65030 and Lot 4 DP 72996) -



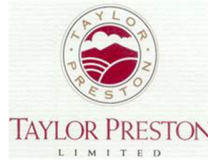


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## **2.0 OUTCOMES**

To ensure activities authorised by the 'Air Discharge Permit' are restricted to the discharge of contaminants to air, including odour, from the site. The discharges to air covered by the 'Air Discharge Permit' are associated with the following processes:

- the holding of livestock in yards;
- the holding of livestock on hill during breakdowns;
- truck washing;
- animal slaughter;
- by-product rendering;
- primary wastewater treatment plant;
- other emission producing activities such as ventilation;
- production of steam and boiled water.



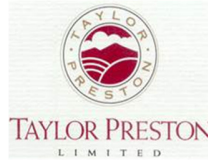
### 3.0 RESPONSIBILITIES AND AUTHORITIES

TITLES RESPONSIBLE	ACTIVITY
Plant Manager.	<p>Overall responsibility for ensuring compliance to Resource Consent conditions and for ensuring the 'Odour Management Plan' is being adhered to.</p> <p><b>Contact phone number (including after hours): 021 451 406</b></p>
Stockyard Foreman.	<p><b>Livestock Holding Facilities / Truck Washing Systems:-</b> Responsible for ensuring daily stockyards washing activities are implemented.</p> <p>Responsible for monitoring truck washing activities.</p> <p>Responsible for monitoring and recording daily / weekly / monthly consent requirements in PC Records through QUICS.</p>
Rendering Foreman.	<p><b>Slaughter Waste Systems:-</b> Responsible for ensuring the efficient running of the animal slaughter waste systems.</p> <p><b>Rendering Operations:-</b> Responsible for the efficient and safe running of rendering day-to-day. Responsible for ensuring the efficient running of the Biofilter and associated ventilation systems. Responsible for monitoring and recording daily / weekly / monthly consent requirements in PC Records through QUICS. Responsible for implementing corrective actions should operational critical limits be exceeded. Responsible for managing rendering product during breakdowns.</p> <p><b>Primary Waste Water Treatment Operations:-</b> Responsible for ensuring the efficient running of the primary Waste Water Treatment Plant. Responsible for ensuring the efficient running of the belt press. Responsible for the loading out and trucking off-site of all sludge.</p>





	<p><b>Trucking off-site:-</b> Responsible for managing trucking of ovine renderables off-site.</p> <p><b>Contact phone number (including after hours): 027 288 0034</b></p>
<p>Plant Engineer.</p>	<p><b>Gas Fired Boiler Systems:-</b> Responsible for ensuring the efficient running of the boilers through daily recording and monitoring d/w/m. Quarterly and annual services with measurement points observed and recorded.</p> <p>Responsible for ensuring that Maintenance PM system checks are issued daily/ weekly/ monthly etc. Responsible for ensuring PM check follow-ups are carried out.</p>
<p>Operational Staff.</p>	<p>Responsible for monitoring operations / systems performance and ensuring timely communication with the respective Foreman and Supervisors should critical limits be exceeded.</p>
<p>Compliance Team.</p>	<p>Responsible for internal audits of Rendering operations.</p> <p>Responsible for signing off/uploading of all Rendering procedural documents to TPL Intranet and Vault.</p>



### 3.1 Taylor Preston Emergency Contact Details -

#### *On-Site Emergency Contact Details -*

<b>John Taylor (Plant Manager) –</b>	<b>021 451 406</b>
<b>Peter Allen (Operations Manager) –</b>	<b>027 281 2609</b>
<b>Reginald Tiimalu (Rendering Foreman) –</b>	<b>027 288 0034</b>
<b>Bryan Hinton (Stockyards Foreman) –</b>	<b>021 723 670</b>
<b>Simon Schilder (Plant Engineer) –</b>	<b>029 770 6397</b>
<b>Simon De Giorgis (Plant Engineer) –</b>	<b>027 716 2132</b>
<b>Alisa Taylor (Compliance Manger) –</b>	<b>029 772 0114</b>
<b>To make a report (TPL Security Hut) –</b>	<b>027 445 3262 04 471 5772</b>

#### *Off-Site Emergency Contact Details -*

<b>James Blair (Silverstream Tip) –</b>	<b>021 594 721</b>
<b>Bill Bamber (KAM Transport General Manager) –</b>	<b>021 339 877</b>
<b>Paul Thurston (KAM Transport Operations Manager) –</b>	<b>021 472 618</b>
<b>Simon Williams (Waste Management) –</b>	<b>027 554 5016</b>
<b>Paul Drake (Taranaki By Products) –</b>	<b>027 446 4930</b>



#### 4.0 SUPPORT AND RELATED SYSTEMS

REFERENCE NUMBER	DOCUMENTATION TITLE
SPM110	Washing Cattle
SPM301	Cleaning Inedible Processing Areas Stockyards
RP103	Rendering Start Up Procedure
RP104	Rendering Shut Down
RP113	Belt Press
RP116	DAF Operations
RP204	Odour Control
RP301	Cleaning and Sanitation
RP402	Disposal of Condemned and Inedible Material
RTD07	Odour Control TEST



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## 5.0 **FACILITIES AND EQUIPMENT**

### **Stockyards:-**

Washdown Hoses.  
Waste Drains.  
In-Situ Ammonia Level Recording Device.  
Truck Wash Facility.

### **Slaughter Floor:-**

Slaughter Waste systems:-  
- Screw Conveyors.  
- Pre-breakers.  
- Contra Shears.  
- Hydrolyser.  
- Holding Bins.

### **Rendering Plant:-**

Extraction Ducting.  
Vacuum Gauges.  
Temperature Gauges.  
Pressure Gauges.  
Heat Exchangers.  
Waste heat Evaporator.  
Extraction Fans.  
Bio Filters.  
SCADA System.

### **Primary Wastewater Treatment Plant:-**

Pump.  
Contra Shear.  
Sludge Tanks.



## 6.0 Air Extraction Operation System

*“The consent holder shall ensure that at all times when the rendering plant is operating, foul air shall be extracted from key odour sources (process equipment and small building enclosures) via the Point Source Extraction System (PSES). The PSES shall include as a minimum, but not restricted to, the following items and their associated extraction points:*

*Pre-cooker render vessel and discharge conveyor entry, drainer conveyor, twin screw press, tallow separator, decanter liquid discharge, separator sludge tank, separator feed tank, drier feed conveyor, decanter feed tank, stickliquor and concentrated stickliquor tanks, disc steam drier (excluded via WHE), waste heat evaporator (WHE), vacuum pump, belt press and press cake conveyor, contrashear enclosure, dissolved air flotation tanks (DAF); and truck load-out facility including the hoppers.*

- All odorous sources connected to the PSES shall be listed in the sites Odour Management Plan (OMP) (per condition 10). This list shall be updated following the recommendations of any PSES Process Design Review (per condition 27).*
- All equipment items that are connected to the PSES shall be enclosed, or hard plumbed, as much as practicable (referred to further as “enclosed equipment items”) in order to minimise the air extraction flow rate necessary to achieve effective containment of odour emissions.*
- Air extraction rates shall be sufficient to ensure that negative pressure (i.e. a vacuum) is maintained at all times (while operating) within all enclosed equipment items that are connected to the PSES.*

*The consent holder shall prevent the release of fugitive odour discharges, by ensuring that all ductwork, control valves, hoods, enclosures, seals and air extraction rates from each part of the process listed in condition 3 are constructed, operated and maintained to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.*

*Foul air extracted by the PSES shall be directed to the site Biofilter for treatment prior to discharge to air and no part or process listed in condition 3 shall be operated without the Biofilter fully operational and functioning correctly in accordance with conditions 6, 7 and 8 of this consent.”*

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**SOURCES OF ODOROUS AIR BORNE COMPOUNDS:**

The biofilter is responsible for treating odorous air borne compounds from several different sources.

These include;

- **6.1 RENDERING PLANT EXTRACTION (STICKLIQUOR/ STICKWATER AND CONCENTRATED LIQUOR TANKS) -**

The rendering department Point Source Extraction System, (PSES), extracts odorous fumes and vapours, (concentrated sources), from individual sources within the rendering process and evaporator plant. The concentrated sources are extracted, via a single duct, with the assistance of a fan which then forces them toward the Biofilter for treatment. The odorous air from the evaporator plant's vacuum pump and stickwater tank, along with any non-condensable gases from the condensers, are also fed into the duct. The duct from rendering is then routed toward the biofilter, collecting other sources of odorous air in transit. A more detailed explanation of the PSES is outlined later in this procedure.



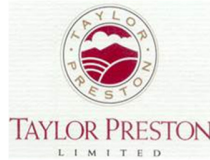
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- 6.2 EFFLUENT SLUDGE BELT PRESS/ EDIBLE TALLOW PLANT EXTRACTION –**  
 The duct that transfers odorous air borne compounds toward the biofilter is directed toward the effluent sludge belt press enclosure. Above the enclosure, the edible tallow plant extraction duct joins the main rendering duct, along with the belt press enclosure duct. A recent improvement is the installation of a comprehensive belt press enclosure.



- 6.3 EFFLUENT SLUDGE/ RAW MATERIAL LOAD OUT EXTRACTION -**  
 Following the transition above the belt press, the main transfer duct to the biofilter travels toward the stockyards. Above the effluent sludge conveyor, there are two extraction hoses fitted into the main duct that allow odorous air emitted during the sludge load out process to be captured and treated. Both extraction hoses are fitted with butterfly valves, which are to be opened only when the sludge load out conveyor is in use. One of the extraction hoses is designed to be lowered into the truck or trailer whilst being loaded. Another extraction hose is fitted to the effluent sludge bulk storage bin.  
 NOTE: In the event of a rendering breakdown, which requires raw material to be transported off site, the effluent sludge load out conveyor is required to load out raw material into trucks, trailers and/or skips. The load out and portable extraction ducts must be used.





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- **6.4 DEWATERING SCREEN ENCLOSURE EXTRACTION (CONTRASHEAR ENCLOSURE) –**

The biofilter duct travels from the rendering department, above the belt press and sludge load out conveyor, through the ovine stockyards toward the biofilter humidifier. The next duct that joins the central duct is from the dewatering screen enclosure. The enclosure is fitted with self-closing doors so as not to compromise extraction.



- **6.5 DAF TANK EXTRACTION –**

Following the de-watering screen enclosure the central duct is joined by extraction ducts from both of the DAF tanks. Both DAF tanks are enclosed, and fitted with removable inspection hatches that remain closed during normal operation, again to ensure that extraction is not compromised. Preventative maintenance plans ensure that the DAF's are emptied and cleaned on a regular basis, to prevent the buildup of potentially odorous substances on the floor of both DAF's.





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- **6.6 BIOFILTER HUMIDIFIER –**

The central duct now enters the humidifier to ensure that the odorous air is saturated with moisture before transfer to the biofilter. Regular preventative maintenance plans are performed to ensure the reliability of the circulating pump, spray nozzles and to prevent any potentially odorous substances accumulating on the floor of the humidifier. A recent improvement was made by installing level probes to control the water level inside the humidifier as opposed to a problematic ballcock.



- **6.7 BIOFILTER –**

The odorous air from all sources mentioned in this procedure is now forced into the myriad of PVC pipes, which are embedded in gravel, situated on the floor of the biofilter, via a common duct.



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**RENDERING PLANT POINT SOURCE EXTRACTION SYSTEM:**

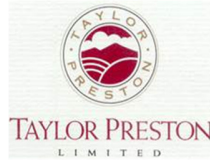
The largest contribution of odorous air that is received by the biofilter, is from the rendering plant and associated processes. It is therefore extremely important that rendering plant operators are aware of the PSES, and particularly aware of what actions to take when the PSES is compromised. The concentrated sources central collection duct runs through the rendering department, collecting 9 point sources from 8 individual ducts, before exiting the front wall toward the evaporator plant. Each individual point source is fitted with a damper, which allows for the extraction of each point source to be adjusted to suit. Particularly odorous extraction points, such as the pre-cooker, will have more extraction than other less odorous sources.

- **6.8 PSES (#1) – PRE-COOKER –**

As the name suggests, the pre-cooker is where the raw materials are ‘cooked’ at approximately 95 degrees Celsius for 20 minutes. The pre-cooker has the potential to generate odour, particularly if the temperature control is poor, and the temperature is allowed to fluctuate. For this reason a lot of time has been spent fine tuning the pre-cooker’s temperature control to eliminate overheating and ‘cyclic’ PID control.

The Pre-Cooker’s extraction valve is locked in the fully open position.





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- **6.9 PSES#2 – DRAINER CONVEYOR –**

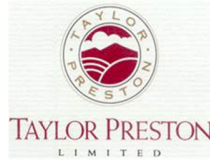
The drainer conveyor allows inedible fat and water (liquid phase), that has separated from the raw materials solid content during the 'pre-cooking' process, to drain freely into a catchment tank for transfer to the decanter feed tank. An extraction duct from the top of the conveyor feeds directly into the Concentrated Sources duct.



- **6.10 PSES#3 – TWIN SCREW PRESS –**

The twin screw press is responsible for 'squeezing' out as much of the remaining residual fat from the raw material as possible. Any odour is extracted, via a duct fitted in the top cover of the press, into the Concentrated Sources duct.

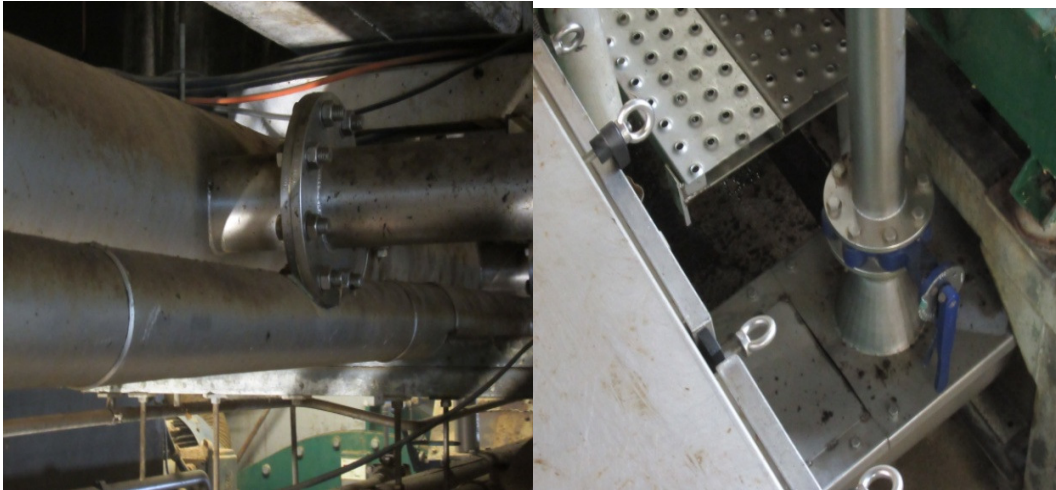




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- **6.11 PSES#4 – PRESS CAKE CONVEYOR –**

The press cake conveyor conveys solids from the twin screw press, 'fines decanter' and 'blood/sludge decanter' toward the drier in-feed screw for drying and size reduction. An extraction duct is fitted to one of the sealed covers on top of the press cake conveyor for transfer to the concentrated sources duct.



- **6.12 PSES#5 – DECANter FEED TANK –**

The liquid phase is collected in the decanter feed tank, before being pumped to a centrifuge, which removes any solid content, (fines), from the liquid phase before separation. An extraction duct is fitted to the top of the tank.



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- **6.13 PSES#6 – DECANter LIQUID DISCHARGE AND SEPARATOR SLUDGE TANK**

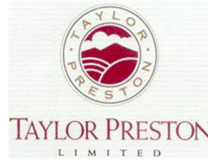
Decanter underflow (liquid discharge) is the liquid phase minus any solid content which is pumped to the separator feed tank pre-separation. The separator sludge tank captures solids generated by the separation process, which are then pumped to the pre-cooker every 4 minutes. The decanter underflow and separator sludge tank extraction ducts share a common duct which ‘splits’ into two separate ducts.



- **6.14 PSES#7 – DRIER INFEED CONVEYOR –**

The ‘wet’ meat and bone meal that exits the twin screw press, ‘fines’ from the decanter are conveyed to the drier for sterilisation and moisture reduction. An extraction duct is fitted to one of the sealed covers near the top of the conveyor.





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- **6.15 PSES#8 – SEPARATOR FEED TANK –**

The separator feed tank is where all the liquid phase is collected, pH adjusted, and pumped to the separator. The separator 'splits' the liquid phase into inedible tallow, sludge and stick-water. The inedible tallow is pumped to bulk storage tanks, the sludge, as previously mentioned is pumped to the pre-cooker and the stick-water is transferred to the stick-water tank at the evaporator plant. As with the decanter feed tank, an extraction duct is fitted to the top of the tank.



- **6.16 PSES#9 – VACUUM PUMP –**

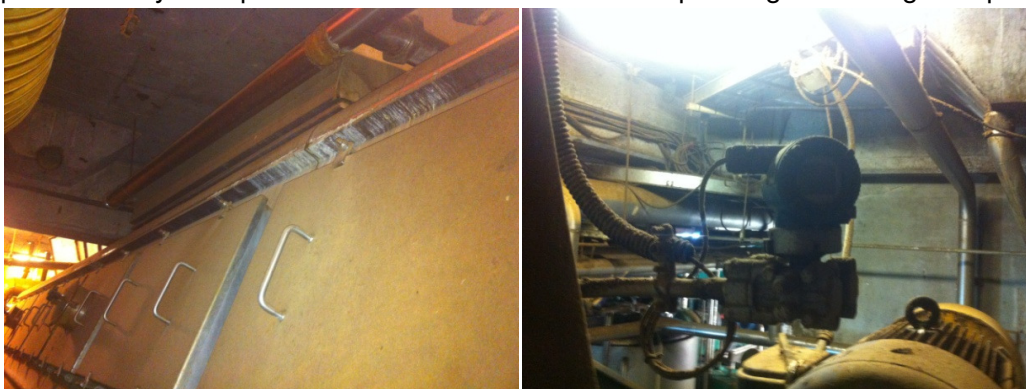
As the concentrated sources duct exits the rendering plant, prior to the waste heat evaporation process, the vacuum pump is ducted into it via a 2" pipe.



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- **6.17 STEAM FIRED DISC DRIER –**

The 'exhaust' from the drying process is drawn toward the waste heat evaporator from the drier 'dome' under vacuum, where the energy it possesses is utilised to 'thicken' the stick-water from approximately 2% solid content to approximately 20% solid content. The thickened stick-water, (concentrate), is then pumped into the press cake conveyor, where it blends with pre-drier meat and bone meal and fines before entering the drier. Any non-condensable gases are directed toward the concentrated sources fan for treatment at the biofilter. The extraction vacuum pressure is measured with a dedicated manometer and displayed on the rendering PLC trends. A daily 'manual' test is also performed by the operator to ensure that the drier is operating under negative pressure.



- **6.18 WASTE HEAT EVAPORATOR –**

The waste heat evaporator utilises energy from the drying process to Evaporate moisture from stick water. The process is conducted in a vacuum which enables the excess moisture to be 'flashed off' at lower temperatures, increasing the solid content from approximately 2% to 20%. The 'thickened' stick water, or concentrate, is then fed into a holding tank before being pumped to the drier feed conveyor. The potential for odour is high if the stick water quality is marginal. Vapour produced by the evaporation process is ducted to the Biofilter.

- **6.19 POINT SOURCE EXTRACTION SYSTEM (PSES) FAILURES –**

The PSES within the rendering Plant is controlled and monitored by the rendering plant PLC. If a failure of any part of the process occurs, the PLC will automatically shut down certain areas of the plant via interlocks. For instance, if the concentrated sources fan fails, the PLC will shut down the evaporator plant which is interlocked with the disc drier. Any processes that convey material into the disc drier are also automatically shut down. The interlocks will remain in place until the source of the issue is identified and rectified. The only part of the process that requires operator intervention is the biofilter fan which involves physically checking it is operating every morning when turned on (through sound, pressure checks, and manual reading and recordings on the DAF operators daily check sheet).

## 6.20 PROCEDURE FOR STARTING, OPERATING AND SHUTTING DOWN BELT PRESS -

Under NO circumstances should the belt press operate whilst the biofilter fan is non-operational. If a failure of the biofilter fan occurs during the operation of the belt press shutdown immediately and notify your foreman.

### STARTING THE BELT PRESS

1/ Ensure that the bio-filter fan has been started, you can tell via pressure checks after the biofilter fan (are recorded by the DAF operator on the daily check sheet). If not, in the DAF plant control room, push the green button on the 'soft start' indicated in the picture.



2/ Behind the humidifier ensure that the cold water delivery valve is open, and that both isolators are on. Press the green button on the control panel.





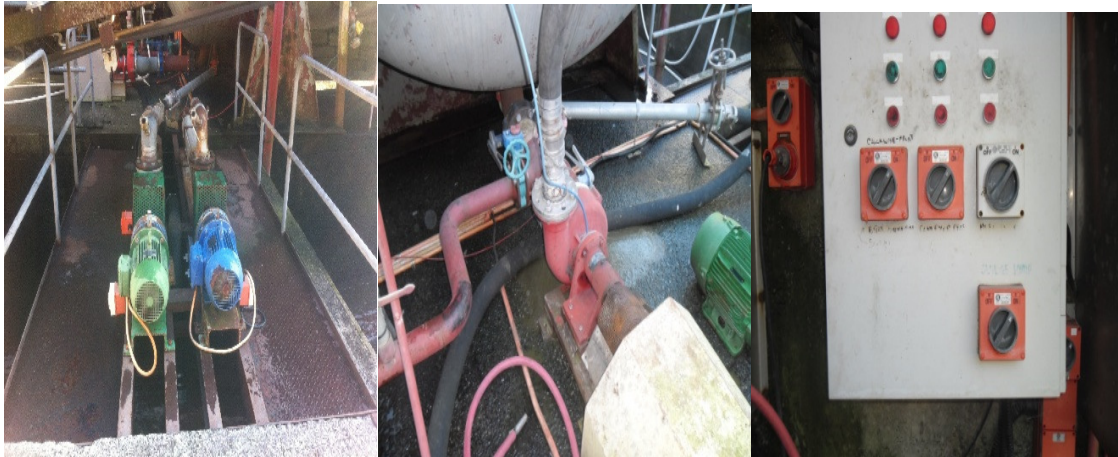


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NOTE: A new enclosure has been installed to house the belt press and ensure that any objectionable odours are contained and directed toward the biofilter. The enclosure is fitted with two doors that must be kept closed, not only when the belt press is operational, but at any time that the biofilter is running. An open door at the belt press enclosure compromises the biofilter extraction capabilities and the effectiveness of extraction from other areas.



3/ Duty sludge pump and circulation pump – Ensure that the duty sludge pump has hoses attached and that the in feed valve is open. Turn on the bulk sludge tank circulating pump.



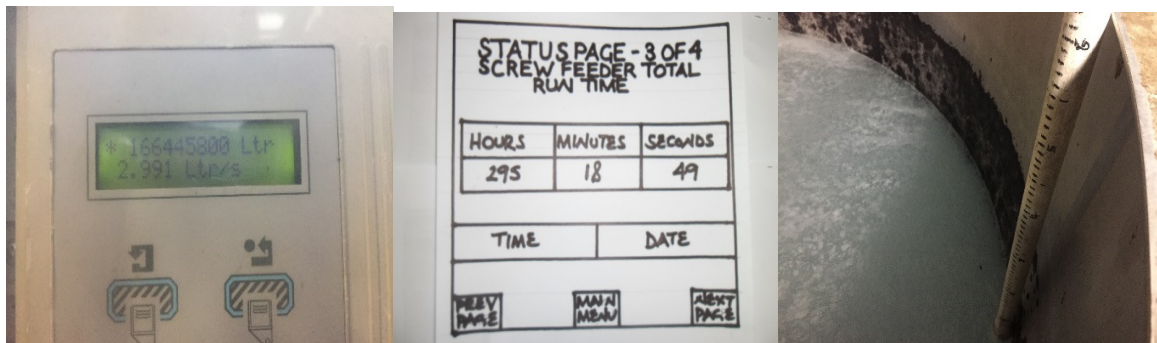


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4/ Starting the belt press – At the control panel turn on the main isolator. Press the green 'sludge start' button and turn the speed controller clockwise to its maximum position.



5/ Data collection – to determine how efficiently the belt press is performing, and how much raw sludge has been processed, data will need to be collected and entered onto the DAF log sheet. The sludge flow meter total should be recorded along with the polymer make up unit screw feeder total run time. A measurement of the amount of made up polymer in the make-up unit storage tank also need to be recorded.



6/ Open the valve which allows polymer to enter the raw sludge.



**TAYLOR PRESTON – ME86**

7/ Wait until raw sludge is flowing over the weir onto the belt press. Once the weir is overflowing with raw sludge turn the sludge pump speed controller anti-clockwise until the speed indicator reads 15%.



8/ Turn on the polymer dosing unit isolator. Set the polymer pump speed controller at 35-40%.



9/ The raw sludge will begin to form solid 'lumps' as the polymer thickens, (floculates), the solid material. Adjust the speed of the sludge pump and polymer pump until optimum flocculation is achieved, this is when there is a clear distinction between solids and liquid. Avoid adding too much polymer or the belts may become 'blinded' with excessive polymer and reduce de-watering performance. Alternatively, too little polymer will not allow sufficient flocculation to occur and also reduce performance. Ideally there should only be water squeezing out from the sides of the belts, any sludge squeezed out will return to the DAF's and can create performance issues. The sludge 'blanket' will now form and begin to peel off the belt press scrapers into the bulk sludge bin feed conveyors and into the bulk sludge bin for storage before load out.

10/ The belt press now needs to be monitored occasionally and small adjustments to sludge and polymer flow rates may be needed. Any issues with regard to belt movements, belt damage or any other mechanical anomalies should be directed to the rendering foreman and/or engineers. Do NOT attempt to rectify issues by removing air lines or by-passing control limits.



## TAYLOR PRESTON – ME86

### SHUTTING DOWN THE BELT PRESS:

1/ When the bulk raw sludge hopper, (Hugo), reading is 0% there will still remain raw sludge to be pumped to the belt press, this is due to the angle that 'Hugo' is mounted on. Continue running the belt press until sludge delivery is compromised. An indication that the sludge flow has become compromised is excessive 'bubbling' in the belt press infeed tank.

2/ At the DAF plant join the flush water hose to the coupling on the sludge pump. Open the valve and turn on the flush water supply. Shut the valve that allows sludge to enter the sludge pump from 'Hugo'. Turn off the recirculating pump for 'Hugo'.

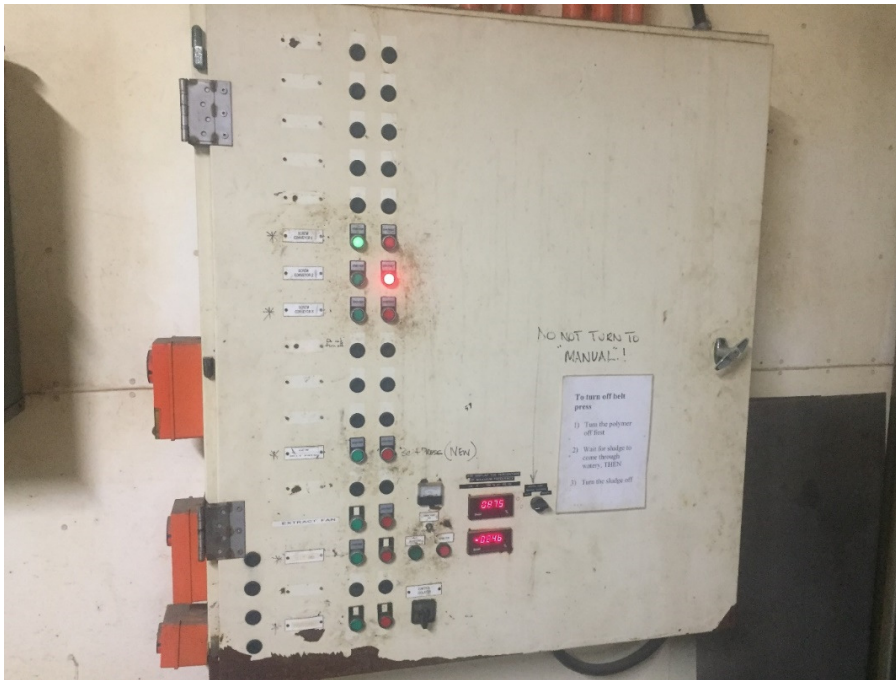


**TAYLOR PRESTON – ME86**

3/ At the belt press monitor the inflow until the flush water is noticed. Then turn off the polymer pump, shut the polymer feed valve on the sludge line and record the flow at the sludge line flow meter. Record the polymer make up unit screw feeder reading and measure the holding tank level. Leave the flush water running for 20-30 minutes.



4/ After flushing for 20-30 minutes turn off the sludge pump, (at the belt press), by pushing the red button then turn the dial to '0'. Turn of the pressed sludge conveyors.



5/ At the DAF plant turn off the flush water feed valve.

6/ At the belt press, hot hose the press screens, rollers, etc. then hose the floor and environs. Turn off the belt press and spray water pump. Switch off the control panel isolator.

## 6.21 PROCEDURE FOR MONITORING AND MAINTAINING THE CHLORINE DIOXIDE PERIMETER SPRAY SYSTEMS LOCATED AT THE DAF PLANT AND BELT PRESS BACKGROUND -

Taylor Preston Ltd. has two systems that deliver an odour neutralising solution to the atmosphere at specific sites around the plant and to a large area of the perimeter of the plant, 24 hours a day and 7 days a week. The potential 'hot spots' (rendering, DAF and blood tank) for fugitive odours to be present where identified, from past experience, and the location of the spray nozzles was decided upon with this in mind. This procedure outlines the monitoring, maintenance and location of the systems that are installed at the wastewater plant (DAF) and belt press above the rendering plant.

### DAF PLANT SYSTEM MONITORING AND ADDITION OF CHEMICALS:

The odour neutralising system located at the DAF plant relies upon the DAF operator to manually dispense chemicals from bulk containers and blend with potable water in a 200 litre mixing drum. The mixture is then dosed into a potable water line before a pressure pump delivers the liquid to the spray nozzles. The chemicals used are 'Zydox', (Stabilised Chlorine Dioxide at 4% concentration), and 'Zydosan', (contains surfactants and odour 'masking' compounds). To aid with maintenance, and ensure that the lines and nozzles are free of residual buildup, a chemical called 'Envirofresh' is dosed through the system weekly.



### CHEMICAL CONCENTRATION:

To deliver the recommended 500 parts per million, (ppm), of 'Zydox', 10 litres should be added to the empty makeup drum along with 5 litres of 'Zydosan, (250ppm), and 185 litres of potable water. As the drum is rarely emptied, a chart is supplied to the DAF operators to help determine the addition rates of chemicals to a part or near full make up drum. The contents of the 'make up drum' are then dosed into a mains pressure potable cold water line, using an LMI dosing pump, at a pre-determined rate to achieve the recommended concentrations.





## TAYLOR PRESTON – ME86

### SYSTEMS MAINTENANCE:

A weekly flush of the systems delivery pump, delivery lines and spray nozzles, is performed by the DAF plant operator. A chemical named 'Envirofresh' is administered by removing the dosing pump 'pick up' tube and placing it into a neat solution of 'Envirofresh'. (200 litre drum). After 30 minutes the 'pick up' tube is returned to the 'make up' drum. 'Envirofresh' contains detergents that break down any residual build-up within the system and spray nozzles.

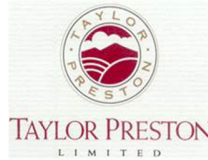
### THEORY:

The theory behind spraying the aforementioned chemicals into the atmosphere to combat odour, is that Chlorine Dioxide alters the molecular structure of an odour particle, and by doing so transforms the odour into a benign state. The 'Zydosan' contains surfactants, which improves the Chlorine Dioxides ability to attach itself to an odour molecule, and a mild perfume to 'mask' any residual odour molecules. At Taylor Preston we use a stabilised form of Chlorine Dioxide that is both safer to handle, and atomise into the atmosphere. The use of 'activated' Chlorine Dioxide, although proven to be more effective, can have serious consequences for staff or neighbours that are in the vicinity of the atomised spray. It is therefore considered potentially too hazardous to distribute without extensive trialing and monitoring.

### BELT PRESS SYSTEM MONITORING AND ADDITION OF CHEMICALS:

The odour neutralising system located at the belt press above the rendering plant, has been automated to ensure the correct concentration of the required chemicals are delivered to the sprays. Stabilised Chlorine Dioxide, 'Zydox', and surfactant, 'Zydosan', are injected into a potable water line at concentrations of 500ppm and 250ppm respectively. Digital dosing pumps have been calibrated and outputs set to ensure the correct concentration of chemicals in the odour neutralising sprays is delivered to atmosphere. All that is required of the rendering operators and foreman is the monitoring and exchanging of the 200 litre drums that contain the bulk chemical.





**TAYLOR PRESTON – ME86**

**SYSTEMS MAINTENANCE:**

**BELT PRESS ODOUR NEUTRALISER DELIVERY PUMP, DELIVERY LINES AND SPRAY NOZZLE MAINTENANCE:**

A third digital dosing pump is installed alongside the ‘Zydox’ and ‘Zydosan’ dosing pumps to accommodate the administering of a spray maintenance chemical, ‘Envirofresh’. The chemical ‘Envirofresh’ contains detergents to clean residual build-up from the internal surfaces of the delivery pump, delivery lines and spray nozzles. To ensure spray nozzle performance, the ‘Envirofresh’ digital dosing pump should be turned ‘on’, and the ‘Zydox’ and ‘Zydosan’ digital dosing pumps turned ‘off’ once a week for approximately 30 minutes. The ‘Envirofresh’ pump has been calibrated to deliver the correct concentration of chemical through the belt press system.



**SPARES:**

Both systems have componentry that are compatible with one another. A fully serviced delivery pump is available in the event of a failure of either system. A spare LMI dosing pump is available for the DAF system, and a spare ‘Grundfos’ digital dosing pump is available in the event of a dosing pump issue with the belt press system.







## TAYLOR PRESTON – ME86

### 6.22 AMMONIA SUMMARY -

Taylor Preston Ltd.'s top engine room has 2.75 tons or 4,469 litre volume of ammonia in the system. This ammonia plant has two (2) c gas detectors installed which shuts down the ammonia plant and operations when a leak is sensed by the two sensors in the engine room. The freezer system uses R22 with the LP (freezing system) using 2.4 tonne and the HP (chilled system) using 1 tonne. Along with this, 313, 13 kg bottles (4.2 tonne) are stored in a locked, secured and vented container at the DAF site. Daily checks are completed of the sites (3 to 4 times a day) including, but not limited to, Graceland's Engine Room and Main Engine Room for compressor performance. Other checks also include, but are not limited to, top engine room compressor PM checks (annual), top engine room NH3 water flow checks (annual), top engine room oil pressure cut-out safety checks (annual), top engine room refrigeration compressor checks (12 weekly), top engine room NH3 LP pressure cut out test checks (annual), top engine room NH3 high pressure safety test checks (annual), top engine room NH3 refrigeration pipework and fittings test check (annual) and top engine room emergency stop test checks including ammonia and glycol as a secondary refrigerant (annual). On top of this, all pressure vessels are checked once a year by a marine surveyor.

#### AMMONIA ALARM SYSTEM EXPLAINED:



#### **Ammonia (Ammonia Anhydrous NH<sub>3</sub>)**

Ammonia Gas is the refrigerant used to cool the Chillers. Ammonia has a sharp, distinct, penetrating odour detectable at very low concentrations. At moderate levels of concentration, ammonia can irritate the eyes and respiratory tract; at high concentrations, it can cause ulceration to the eyes and severe irritation to the respiratory tract.

#### **Ammonia Alarm System (White Call Points)**

There are 7 White Ammonia Alarm Call Points situated throughout the main complex in Reception (\*1) upstairs and downstairs Chillers (\*2), in the main engine room (\*2) and in the Stockyards (\*2). The Ammonia alarm system makes a distinctively different sound (does not have the verbal "fire" instruction) this alerts employees that there is an Ammonia leak. The Ammonia Alarm System can be reset by turning off the alarm initially activated.

The Ammonia Alarm system is not monitored by external monitoring services, nor is it connected to the NZ Fire Service and is totally separated from the main Evacuation Alarm system on site.

#### **When to sound the alarm**

**Minor Leak:** Minor leaks do not require the Ammonia Alarm to be sounded, they do require immediate attention and repair. Minor leaks are considered to be those localised within the vicinity



## TAYLOR PRESTON – ME86

of the Engine Room/Chiller Areas and can be dealt with in a routine manner, if in a Chiller close all doors and notify Foreman or Engineers immediately.

**Health Effect:**

Eye, nose and throat irritation.

**Major Leak:** Major leaks are those that present a danger to personnel. Activate Ammonia Alarm system by turning on Ammonia Alarm System and follow the Evacuation Procedure.

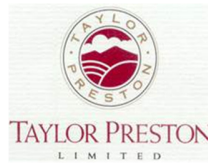
**Health Effect:**

Immediate and severe irritation of the respiratory system and eyes.

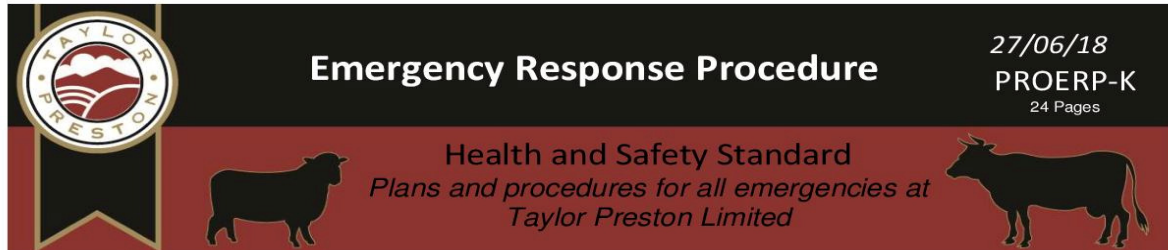
The evacuation procedure is different for different areas.

- If your area has the leak and /or can smell ammonia, then evacuate from the nearest exit and head upwind from the plant. I.e. walk towards the wind, so it blows in your face. This should mean any ammonia stays downwind from you.

If there is no ammonia smell in your area and your area did not activate the alarm, stay where you are, close all windows and doors and await further instruction



## 6.23 UNCONTROLLED REFRIGERANT RELEASE TO AIR (EXTRACTED FROM THE WIDER TAYLOR PRESTON “EMERGENCY RESPONSE PROCEDURE”) -



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### EMERGENCY CONTACT NUMBERS

**IN THE CASE OF AN EMERGENCY dial 1–111 or 111 from a Mobile** and then ask for Fire / Ambulance / Police

**PHYSICAL ADDRESS:** Taylor Preston Limited, 131 Centennial Highway (part of SH1), Kiwi Point, Ngauranga Gorge, Wellington (just past Tyer’s Road on the left as you drive from Wellington to Johnsonville)

**PLANT MANAGER:**

**John Taylor:** ext. 710, speed dial 5999 or mobile 021 451 406

**HUMAN RESOURCES MANAGER:**

**Carolyn Thomson:** ext. 705, speed dial 5972 or mobile 021 272 0966

**OPERATIONS MANAGER:**

**Peter Allen:** ext. 734, speed dial 5893 or mobile 027 281 2609

**HEALTH & SAFETY ADVISOR:**

**Darren Vercoe:** ext. 766, speed dial 5984 or mobile 029 773 1569

**OCCUPATIONAL HEALTH CENTRE:**

**Onsite Medical Emergency - Dial 666 from any Taylor Preston landline**, if no answer Dial 1 -111(landline) or 111 by mobile immediately.

**Nurse:** ext. 760 or 737

**ENGINEERING MANAGER:**

**Dan Hanna:** ext. 722, Speed dial 5922 or mobile 029 770 6398

**RENDERING MANAGER: (CHEMICAL SPILLS)**

**Mark Fussell:** ext. 751, speed dial 5993 or mobile 021 0221 5395

**SITE SECURITY:**

**Security Hut:** ext. 755

### TPL NEIGHBOURS:

**DOWNERS GROUP CONTACT:**

**Yvonne:** 04 815 8395

**ALLIED CONCRETE CONTACT:**

**Jamel Dixon:** 027 442 8365



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The banner features the Taylor Preston logo on the left, two black silhouettes of cows on either side of the central text, and a date and document ID in the top right corner.

**Check.** Through the following emergency response procedures for Taylor Preston

Ltd

Allied Concrete Office: 04 4725573

**KIWI POINT QUARRY CONTACT:**

Jason Glenworth: 021 929 532

Andy Campbell: 027 501 4834

Sharon: 04 815 9430 ext. 01

**OTHER:**

Wellington Hospital: 04 385 5999

Hutt Hospital: 04 566 6999,

Johnsonville Medical Centre: 04 920 8850

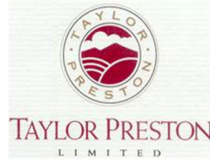
National Poison Centre: 0800 764 764

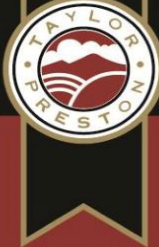
Wellington Regional Council (Environmental Protection Team): 0800 496 734

**WORKSAFE NZ:** 0800 030 040

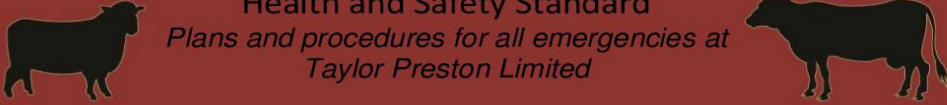
Worksafe New Zealand **must** be notified in the event of any Notifiable Events, and the incident scene **must** be made safe and then preserved until formally released back to Taylor Preston by Worksafe.

To report a Notifiable Event to Worksafe, contact the HR Manager or H&S Advisor, who will contact Worksafe on behalf of Taylor Preston?



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### 0.1 PROCEDURE

The company has in place plans and procedures for all emergencies that may arise on the Taylor Preston Ltd Site.

This will:

- **Enable** an effective emergency response
- **Provide** necessary emergency assistance
- **Minimise** harm to people and damage to property

### Evacuation Procedure



Taylor Preston Limited has a specific Evacuation Procedure (PROEVAC), isolated in The Vaults Reference Library and available for all employees to view.

### Description

Taylor Preston Ltd has a New Zealand Fire Service approved emergency evacuation plan. An emergency practice drills are required to be carried out by law every 6 months.

### Location Plans

Location plans have been drawn up showing the sites;

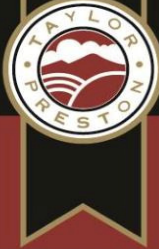
- Assembly areas
- Chemical stores and bulk storage tanks
- Escape routes and emergency exits
- Emergency response equipment

Copies of these plans are at security and the master copies with the Health and Safety Advisor

### 0.2 DEVELOPMENT AND DOCUMENTATION OF EMERGENCY PROCEDURES

Emergency procedures have been developed which include:

- A monitored fire alarm system
- An ammonia alarm system
- A monitored Lock in alarm system
- A NZ Fire Service approved emergency evacuation plan
- Notices displaying emergency safety procedures
- Identification of wardens by vests & hard hats



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- Clear signpost escape route out of the workplace
- A tally board system for the evacuation of all people on site
- Area assembly points for evacuation's
- Location plans for chemicals on site fire call points and emergency signage

### 0.3 POSSIBLE EMERGENCIES

#### Man-made



- Fire
- Ammonia or Freon (R22) gas leak
- Employee locked in a freezer or chiller
- Chemical spill
- Power failure
- Threatening situations
- Animal escape

#### Natural

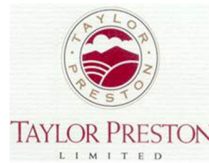


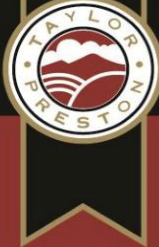
- Earthquake
- Flood

### 0.4 RESPONSIBILITIES

#### Health and Safety Advisor

- The Health & Safety Advisor is responsible for at least bi annual review of these procedures.
- **Notice of Changes:** All employees are notified of changes to emergency procedures, via their Foremen, H&S Committee and Vault Reference Library.








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Department Foremen/ Health and Safety Reps are responsible for ensuring all their **staff, contractors and visitors** are familiar with the sites emergency procedures.

**Which includes showing new staff locations of:**

- Evacuation assembly area
- Emergency exits closes to their workstations
- Emergency equipment
- Safe locations in the event of an earthquake and areas to avoid
- Emergency stops for machinery
- Fire wardens and first aiders

This must be covered in inductions and annually revised at tool box meetings.

**Rendering Supervisor**

- Must check the integrity of all hazardous chemical tanks, fittings and associated pipework after a critical event e.g. earthquake, flood and fire.
- Ensure main gas line is shut down in the event of an earthquake or fire.

**Electrical Supervisor**

- Must check the integrity of the refrigeration systems including ammonia tank and natural gas lines, fittings and associated pipework after a critical event e.g. earthquake, flood and fire.

**Workers, Contractors and Visitors**

- Must follow and adhere to all instructions given to them by the Fire wardens/ Supervisors
- Assist in evacuations if safe to do so
- Must remain onsite until the all clear is given


**Floor Wardens**



EMERGENCY WARDEN

**Chief Warden's Duties**

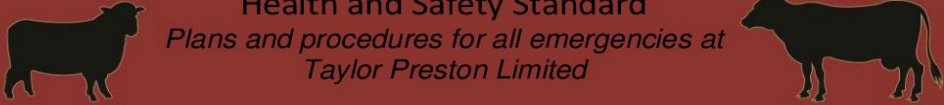
- Put on the hard hat and hi viz vest, from the security hut
- Wait reports from Area Wardens
- Note locations of personnel remaining in the premises



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- Report to the NZFS/ EMERGENCY service on their arrival
- Direct the Area Wardens as necessary or as directed by the NZFS/ EMERGENCY services
- Give all clear once agreed to do so
- Complete evacuation review with feedback from all Area wardens



### Area Warden's Duties

- Put on hard hat and hi viz vest
- Ensure that the area evacuation is carried out in an orderly fashion
- Ensure access for emergency personnel is clear and that all potentially hazardous equipment is turned off
- To ensure smoke stop doors are closed behind you
- To check personnel to ensure that your department is clear
- To report to the Chief Warden and place tally tag on main tally board at Site Medical Centre
- If you are involved in fighting the fire, ensure that the appropriate information is relayed to the Chief Warden
- Complete Evacuation Report for your area and return to Chief Warden before leaving site

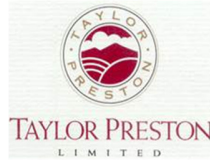
**Currently there is no Rescue Squad onsite – ring 1-111 (If using company phones) or ring 111 (If using a mobile phone) and request the Fire Service attend.**

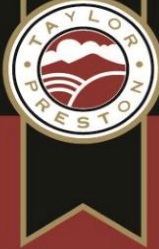
### Medical Staff



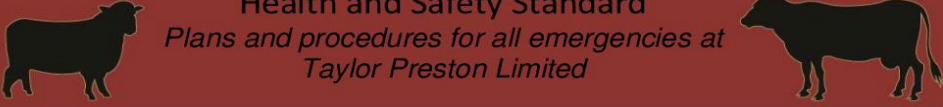
- Are responsible for assisting any staff that requires medical assistance. They are also responsible for coordinating the ongoing assistance of the injured during a fire / drill or other emergency.
- There are two AED defibrillator devices onsite: Located in Reception and the Medical Centre.





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**First Aiders**



**Are trained in first aid are to:**

- Assist the injured in their vicinity
- Check the floor and assist the injured if required, and assist the wardens with other injured staff and evacuation

**Crisis Management Team**

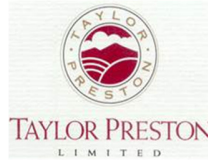
- Crisis Management Team (CMT) is responsible for providing leadership, advice and support to the site, assessing business implications and planning the response, co-ordinating specialist support, and handling high level communications.


**Receptionist Duties**

- Switch phone over to security
- Evacuate to guard hut and assist (Health and Safety Rep from boning rooms night shift)

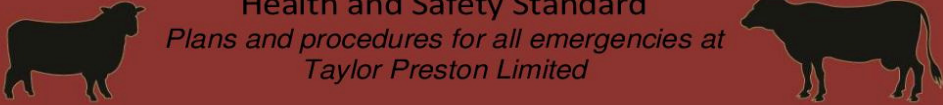
**Securities Duties**

- Notify by phone or text message: Plant manager, HR manager and H&S advisor
- Put on your hi viz vest
- Prepare the 'Emergency Procedures Folder' in case it is wanted by the Fire service
- Open the gate
- Keep the road clear of all traffic for Emergency services access
- **Note: no traffic to enter / leave the plant.**



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### 0.5 EMERGENCY RESPONSE

#### Evacuation Plan (Wall Mounted)



EMERGENCY ASSEMBLY POINT

- There are 5 Evacuation Assembly Areas around the plant situated in close proximity to the departments including a total site evacuation assembly area located in the main car park (Assembly Area E as shown on the map.) These assembly points are located on the Site Evacuation Plan, mounted at emergency exits throughout the plant. **(Shown in Appendix A)**

#### Building Evacuation



EVACUATION



EMERGENCY ASSEMBLY POINT

After an evacuation route has been established by the wardens, subsequent evacuation should proceed in four stages:

- Evacuation of those uninjured people who are not required
- Evacuation of walking injured
- Evacuation of most seriously injured
- The search for, rescue, treatment and evacuation of any people trapped within the building
- Remain at your assembly point until the all clear is given by the chief fire warden



## Emergency Response Procedure

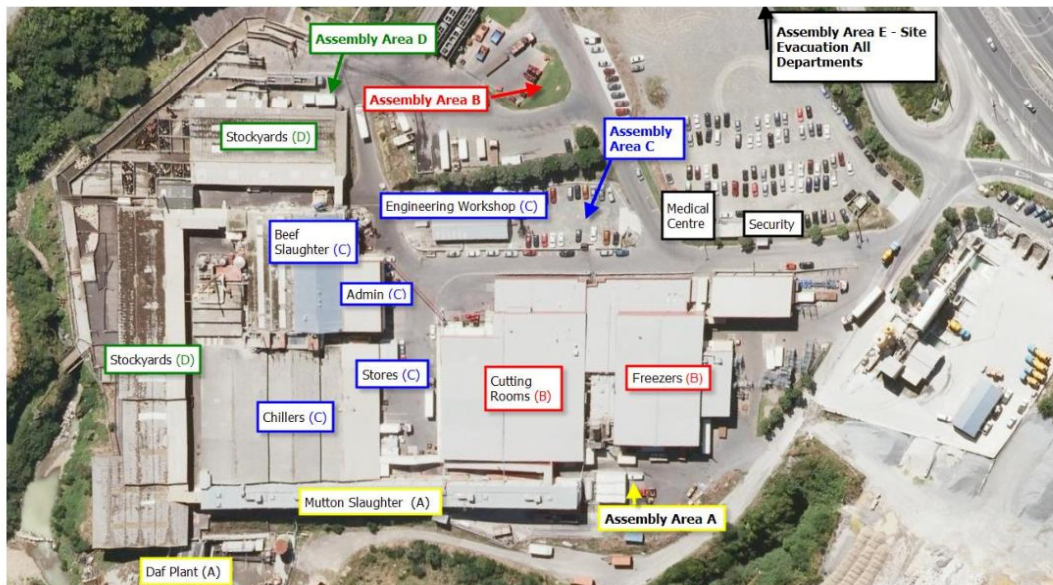
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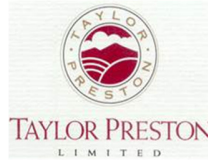
**Check.** Through the following emergency response procedures for Taylor Preston Ltd

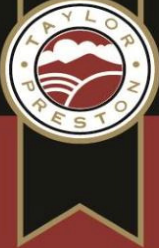
### EMERGENCY EVACUATION ASSEMBLY AREAS

#### APPENDIX A



Fire	Earthquake	Ammonia	Bomb Threat
Operate the fire alarm Dial 1-111 Use firefighting equipment, if safe to do so Turn off equipment as you leave, if safe to do so Leave the building via nearest exit go to the assembly area	Hold onto structures or Get under solid objects Check for signs of structural damage If signs of structural Damage evacuate to assembly area. If no sign of structural damage await instructions.	If smelt in your area, if minor alert supervisors and follow instructions. If major, hit alarms and evacuate. If you hear alarm, if activated In your area, evacuate, If activated in another area, await Instructions. If evacuating, leave via exit and head upwind i.e. walk into the wind.	Listen and record details Do not activate alarms Instruct wardens to evacuate phone 111 Police once evacuated await further instructions from Police.





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### 0.6 EMERGENCY ALARM SYSTEMS

**Alarm systems:** There are currently three alarm systems at TPL.

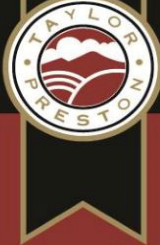
- **Fire Alarm:** This can be heard every Wednesday at 09:00am and 18:00pm it is the first of the 2 alarm tests. If the alarm does not switch off after a short interval (usually 3 blasts) then it is an actual event. This alarm is monitored by the fire services
- **Ammonia Alarm:** there is a voice telling you that it is an Ammonia alarm and to evacuate and look for the wind direction. This is also tested every Wednesday. This alarm is not monitored by the fire services
- **Lock in Alarm:** There is no audible sound with this alarm it is a series of flashing light by the fire control panel at the front entrance of Graceland’s (Boning rooms)

#### Fire Manual Call Points



- There are call points and sounders located at strategic positions around the Taylor Preston Limited Site.
- Call points are connected to the fire alarm sounders and to an alarm monitoring company.
- On discovery of a fire, activate the nearest call point and phone **1-111 (If using company phones)** or ring **111 (If using a mobile phone)** and request the Fire Service attend.
- Follow the fire evacuation procedure and instructions of your Fire Warden.






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Taylor Preston Limited*



 **Check.** Through the following emergency response procedures for Taylor Preston Ltd

### Register of Fire Extinguishers and Hoses



- All fire extinguishers and hose reels on site have been identified on a master register in Vault
- All departments have fire extinguishers and fire hoses supervisors are to ensure all staff knows of their locations
- Fire extinguishers and hoses are audited every 3 months.

### AMMONIA



GAS LEAK

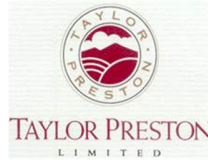
- Ammonia gas is the refrigerant used to cool the Chiller System on the main complex and R22 Freon is the refrigerant used to cool the Freezers. There are 5 tonnes of ammonia gas in the main complex refrigeration system.

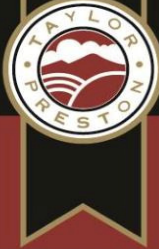
### Ammonia Alarm Warning System (White Call Points)



ALARM CALL POINT

- The Ammonia Alarm system is not monitored by external monitoring services, nor is it connected to the NZFS.
- Dial **1-111 (If using company phones)** or ring **111 (If using a mobile phone)** for outside assistance.





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**Alarm Warning System Reset**

- Ammonia Alarm System can be reset by turning of the alarm initially activated back off. Alarm sound can be deactivated in the main server room.

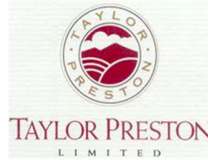
There are 7 White Ammonia Alarm Call Points sited throughout the main complex in Reception (\*1) upstairs and downstairs Chillers (\*2), in the main engine room (\*2) and in the Stockyards (\*2), which are situated adjacent to the ammonia condensers.


The ammonia alarm makes a distinctively different sound (i.e.: fast warble) this alerts the engineers that it is an ammonia leak.



### Ammonia Alarm Response

<b>Area</b>	Taylor Preston Kiwi Point	
<b>Scenario</b>	Gas Leak (Ammonia or R22 Freon)	
<b>Review Created</b>	August 2011	
<b>Plan</b>	<i>Identify severity of likely impact</i>	If you smell gas or a gas detector has been activated, it <b>must</b> be investigated to ensure the area is safe. If there is doubt or any unsafe situation notice, immediately activate the alarm systems or notify security or <b>dial 1-111</b> if appropriate
<b>Minimise Loss</b>	<i>Identify location of gas escape take action to minimize effect</i>	Sound Ammonia Alarm Warning System. Manager to notify areas and proceed to a remote, safe area up wind from leak. Do not allow unqualified people or vehicles into the affected area.  In the event of a minor ammonia leak engineers are trained to shut off the supply. External assistance will be required if the leak is coming directly from an Ammonia Container (i.e. it cannot be stopped by closing the container valve.) <b>Dial 1-111</b> for NZFS.





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<b>Minimize Impact</b>	<i>Minimize impact to people and environment</i>	<p>Do not switch on or off or activate any electrical circuits in the affected area. Sparks from the switching contacts are a potential source of ignition.</p> <p>Do not use a telephone in the affected area. This is a potential source of ignition.</p> <p>If possible, isolate the gas supply to a fire by turning off an upstream isolating valve.</p> <p>If the escape is inside a building, increase ventilation to the affected area by opening doors and windows to outside. This will dilute the gas concentrations and lessen the likelihood of ignition.</p> <p>Only competent persons using safe procedures must carry out tracing the source/s of the gas escape and repairs. When it is safe, reinstatement of the gas supply and restarting the thermal plant must only be done by a registered gasfitter using safe procedures.</p>
<b>Recovery</b>	<i>Key considerations before returning to normal operations.</i>	<p>People must only return to their work place when the authorities or a competent person declares it is safe to do so. Communication with NZFS. Notify Worksafe NZ / EPA. Investigation and corrective actions to prevent re-occurrence.</p>
<b>Inform</b>	<i>The following people;</i>	<p>Site Services, Supervisors, Engineering manager, HR manager H&amp;S Advisor and Plant Manager.</p>

**LOCK IN ALARM**








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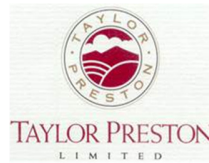




 **Check.** Through the following emergency response procedures for Taylor Preston Ltd



- There are lock in alarms for the chillers and freezers in the “Graceland’s” complex. These are inside the chillers and freezers because if the doors are locked there is no way out and staff could freeze suffer hypothermia or in extreme cases freeze to death.
- If you are locked in the chillers or freezers activate the alarm call point by breaking the glass and flick the switch down.
- The alarm call point activates a siren outside the entrance to BBR and LCR. It is also connected to an alarm monitoring company. The alarm monitoring company will contact security.
- Any person who notices the alarm going, must also contact security immediately and check they know about the activation.
- Security is to look at the alarm panel and get the appropriate foremen, supervisor or staff to check the area for someone being locked in.
- When staff checks the area, they must check of the alarm call point in the area they are checking has been activated, if it has, return it to the correct position and provide assistance to any employee present. If it is not, all other chillers and freezers in the “Graceland’s” complex must be checked fully before a false alarm is noted.
- The Health and Safety Advisor must be advised of all activations.
- Security is to reset the alarm the alarm from inside the sprinkler room once the all clear is given.
- Control panel is tested monthly









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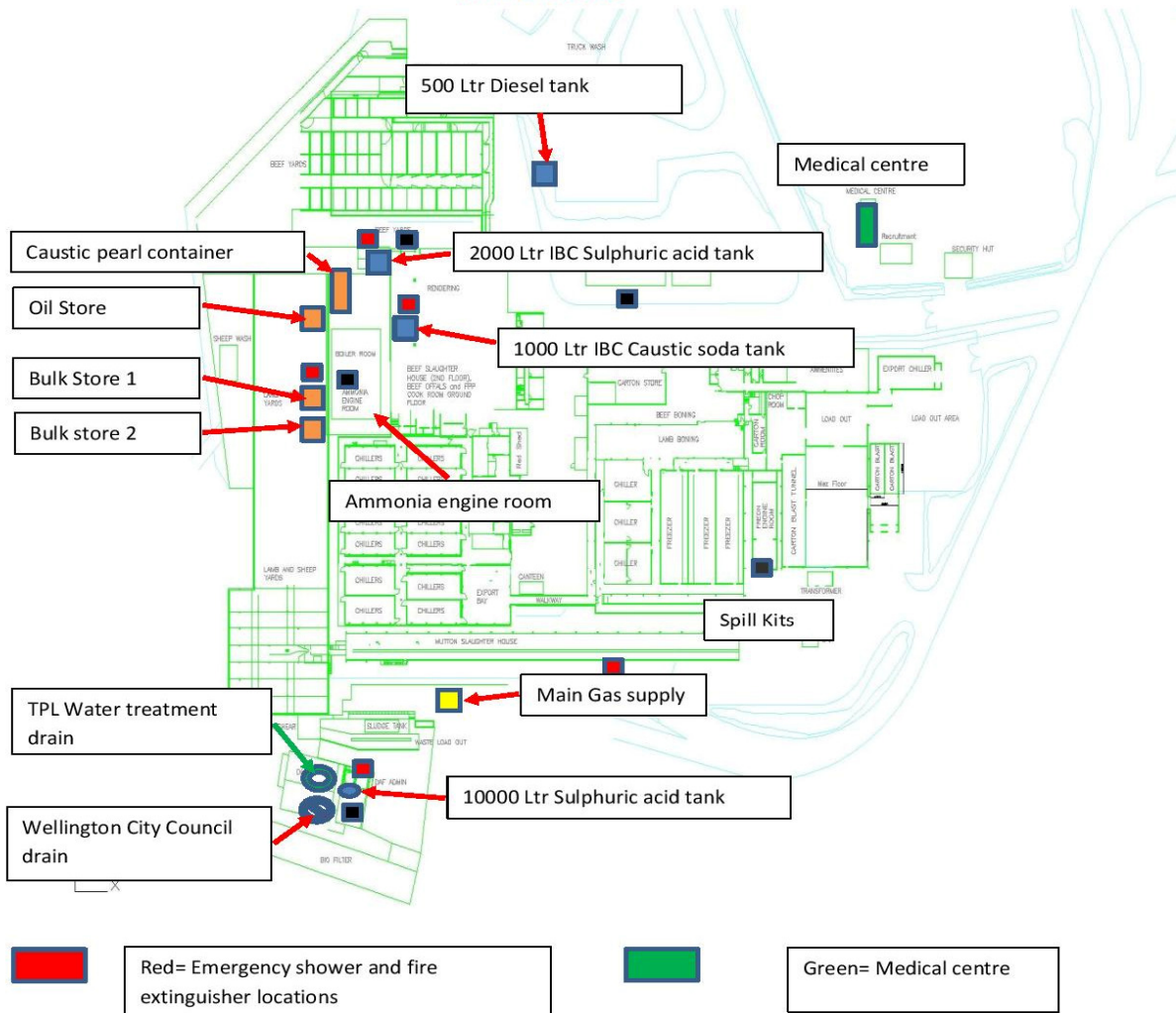
**Health and Safety Standard**  
Plans and procedures for all emergencies at  
Taylor Preston Limited

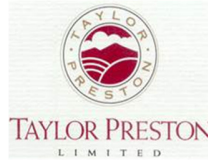



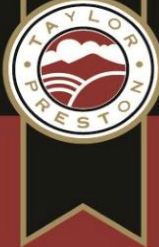
**Check.** Through the following emergency response procedures for Taylor Preston Ltd

### HAZARDOUS SUBSTANCES LOCATIONS

#### APPENDIX B







## Emergency Response Procedure

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**Check.** Through the following emergency response procedures for Taylor Preston Ltd

<div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="width: 20px; height: 20px; background-color: blue; margin-right: 5px;"></div> <div style="border: 1px solid black; padding: 5px; flex-grow: 1;">Blue= IBC tanks, Main Tanks</div> </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background-color: orange; margin-right: 5px;"></div> <div style="border: 1px solid black; padding: 5px; flex-grow: 1;">Orange= Bulk Chemical stores,</div> </div>	<div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="width: 20px; height: 20px; background-color: black; margin-right: 5px;"></div> <div style="border: 1px solid black; padding: 5px; flex-grow: 1;">Black= Spill Kits</div> </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; background-color: yellow; margin-right: 5px;"></div> <div style="border: 1px solid black; padding: 5px; flex-grow: 1;">Yellow= Main Gas supply</div> </div>
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**DANGEROUS GOODS**

**Dangerous Goods**

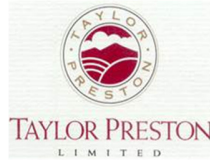
- “Dangerous Goods” are items that are potentially dangerous during transportation, a wide range of solids, liquids and gases that have flammable and explosive properties.
- Toxic (poisonous) and infectious properties such as: radioactive or corrosive properties.
- Dangerous Goods are transported as per the Hazardous Chemical Regulations
- Individual Department Foreman and Leading Hands are HSNO trained and are aware of these requirements so that the risk of injuring people or damaging property and the environment can be eliminated or minimised.

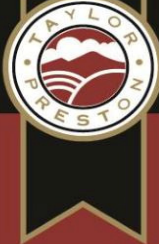
**Procedure for Safe Handling**



**HAZARDOUS GOODS HANDLING**

- Work with Hazardous Substances can only be carried out in approved areas by trained approved chemical handlers using correct PPE and equipment that is stated in the MSDS for that chemical.
- Departmental Managers and Foreman must identify work being carried out in their areas of responsibility involving such substances. MSDSs must be read prior to using these substances. Any questions on flammability, toxicity or acceptable workplace standards, should be directed to Health & Safety Advisor.





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- Foreman and Supervisors are responsible for ensuring that safe working procedures are being followed, workers are fully trained, any required personnel protective equipment and spillage kits are provided and properly maintained, and all worksite systems are functioning correctly.
- Staff handling chemicals must understand any specific procedures and the Taylor Preston Limited Chemical Inventory detailing handling, purchasing, container labelling, pumps, and Material Safety Data Sheet extracts.
- Training must be conducted annually.

### Chemical Handling Personal Protective Equipment



#### Chemical Handling:

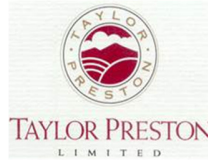
- MSDS and TPL 100 SOP Operator Hygiene Includes requirements for protective clothing, personal equipment and use of amenities explains the PPE type how to use it.
- PPE lockers are located near the hazardous chemical locations along with emergency showers and eye wash stations and fire extinguishers.
- Wash thoroughly after handling.
- DO NOT allow clothing wet with material to stay in contact with skin.
- Avoid all personal contact, including inhalation.
- Use only in a well-ventilated area.
- Avoid release to the environment.

### Flammable or Toxic Substances



#### Storage & Distribution of Flammable Material

- Taylor Preston is committed to providing the safe storage and distribution of flammable materials as per the Hazardous Substance Regulations.
- In situations during the production cycle where Taylor Preston must use a substance that may be hazardous to an employee's health – as classified under the Hazardous Substances and New Organisms Act (HSNO) – A hazard evaluation, assessment and control method are undertaken to provide the best means



## 6.24 Odour Control Training Document (RTD 07) -

### **RENDERING AND DAF PLANT OPERATOR/SUPERVISOR REQUIREMENTS TO CONTROL ODOUR**

- Ref: RP103 – Rendering Plant start up  
RP104 – Rendering Plant shutdown  
RP113 – Belt press Operation  
RP116 – DAF Operations  
RP204 – Odour control  
RP301 – Cleaning and Sanitation  
RP402 – Security and disposal of Condemned/Inedible material

### **BACKGROUND**

---

When Taylor Preston was established in 1991, the 'Clean Air Discharge Permit' pursuant to the 'Resource Management Act 1991, at that time was granted for 25 years, with an expiry date of the 17<sup>th</sup> of July 2016. There have been a large number of changes and improvements since 1991. The implementation of a wastewater, (DAF), plant to treat Trade Waste Discharges, the installation of a larger capacity Rendering Plant, and a 'Bio-Filter' to treat the residue of odorous processes, to name a few.

For the past 12 months or so, the Plant Manager has been in negotiations with the Greater Wellington Regional Council, via mediators, for a new 'Clean Air Discharge Permit' to be granted. On the 17<sup>th</sup> of October 2016, the GWRC gave consent to Taylor Preston to 'Continue to discharge to air from an existing abattoir, animal by-products Rendering plant and associated activities for 25 years'. However, consent was issued with a number of conditions, one of which is an annual review from 2018 onwards. The GRWC may review any, or all of the consent conditions, to serve the following purposes;

- To deal with any adverse effects on the environment which may arise from the exercise of this consent, and which are appropriate to deal with at that time.
- To assess the capability of the odour control technology and equipment to control nuisance odour, and to review its appropriateness and alignment with 'best practical option'.
- To review the adequacy of the operating and maintenance procedures prepared for this consent, and the monitoring requirements so as to incorporate into the discharge consent any modification to the operation and maintenance procedures or monitoring that may be necessary to deal with any adverse effects on the environment arising from the management or operation of the processes undertaken by the consent holder.



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The purpose of this training document is to ensure that the Operators and Supervisors of the Rendering and DAF plants are aware of the relevant procedures that apply directly to the consent conditions, and what is required of them. The answers to the questions in this training document can all be found within the procedures listed at the top of this page.

**Test**

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Whose responsibility is it to inform the Rendering Operator that the bio-filter is non-operational?

.....

2. What should the Rendering Operator do once told of the bio-filter's non-operational status?

.....

3. Why?

.....

4. Briefly explain the purpose of the Point Source Extraction System ,(PSES),in Rendering

.....

.....

.....

5. What should you do if you notice that one of the processes in Rendering is producing an unusual amount of odour?



**TAYLOR PRESTON – ME86**

.....

6. What is the purpose of the perimeter spray dosing system?

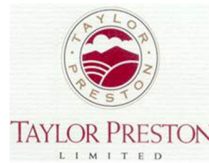
.....

7. What two scenarios necessitate the need to dose raw material with dilute Sulphuric acid?

.....

.....

8.



**6.25 Odour Control Procedural Document (RP 204) -**

**ODOUR CONTROL**

STEP	OPERATION	WORK INSTRUCTIONS
1	Employee responsibilities	<ul style="list-style-type: none"> <li>• In order to comply with the 'Air Discharge Permit' conditions, Taylor Preston must not allow 'objectionable' odour to be detectable beyond the plants perimeter. To ensure that we comply with the aforementioned condition, there are several areas that need special attention. Procedures that must be adhered to include:                     <ul style="list-style-type: none"> <li>• Monitoring, filling and/or exchanging of drums for the two odour neutralizing spray systems.</li> <li>• The bulk blood tank must be cleaned out after every blood load. The level is recorded every 15 minutes and the data sent to the Rendering Foreman's PC. The data is charted daily and displayed in the Rendering control room. At least one bag of 'Sodium Metabisulphite' is to be added to the bulk tank every day. If the raw blood is particularly odorous another bag should be added.</li> <li>• The bulk raw sludge tank, (Hugo), must be emptied at the end of each night shift. The pressed sludge bin must be emptied completely at the end of each week.</li> <li>• Any bins used by Rendering during the course of the day must be thoroughly cleaned and put away upside down. If unable to be emptied immediately they must be covered. If the material they contain cannot be rendered within 4 hours they must be sent to landfill.</li> <li>• During Statutory Holiday periods when there is going to be no production for several days a thorough cleaning of all areas that can harbor fugitive odours is to be undertaken. This includes the raw material bins, sludge bins, 'blow over rooms', pre-breakers and all bins used for the transfer of raw material or material that may generate objectionable odours. The 'Smart Skips' provided by Waste Management used to transfer all waste material to landfills must be water blasted clean by Waste Management before being conveyed back on site. All bins and environs are then subjected to a thorough dosing of odour neutralizers. Drains are treated with; 'Bio-zyme'/Bio protect Industrial drain cleaner.</li> <li>• If excessive odour is noticed beyond what is normally expected whilst processing sludge, blood or raw material, stop the process immediately and notify your Foreman.</li> <li>• Operation outside the parameters stated must only be completed under the specific instructions of the Rendering Foreman or Plant Manager.</li> </ul> </li> </ul>



<p>2.</p>	<p>Rendering</p>	<ol style="list-style-type: none"> <li>1. All potential sources of objectionable odour within the press dewatering plant are fitted with extraction ducts. (Point Source Extraction System-PSES). <ul style="list-style-type: none"> <li>• The individual ducts are connected to a common duct that conveys the odorous compounds to the bio-filter for treatment.</li> <li>• It is imperative that the Rendering staff are aware that the biofilter is operational before commencing processing, and to cease operation as soon as it is apparent that the biofilter is non-operational. The DAF plant operator will alert the Rendering Department if a biofilter related issue arises.</li> </ul> </li> <li>2. The roller doors at the front, side and rear of the Rendering Plant must be kept closed at all times when the plant is operational, except for the ingress and egress of bins containing 'Renderables'. Signage is displayed at all access points to the Rendering Department stating that access is for 'Authorised Personnel only'. This requirement is not only for Health and Safety reasons, but also to avoid the unnecessary opening and closing of access doors.</li> <li>3. The Milling operation is fitted with extraction. <ul style="list-style-type: none"> <li>• The Surge bin, Mill feed conveyor, Mill and meal transfer conveyors, and shaker screen are ducted to an extraction fan situated on top of the meat and bone silo. The fan forces the potentially odorous extracted air through a system of bag filters before entering a carbon filter, and then to atmosphere.</li> </ul> </li> <li>4. In the event of a breakdown raw material may have to be taken off site. <ul style="list-style-type: none"> <li>• To achieve this raw material is transferred from the inside raw material bin by reversing the metal detector belt into the solids return conveyor. Ensuring that the hydraulic hatch on the solids return conveyor housing is shut, raw material can be conveyed to the sludge load out screw conveyor, via an intermediate conveyor and into a means of transport for removal off site. This entire process has the potential to generate objectionable odours. It is therefore very important that skips are kept covered, that raw material is contained and that the automated odour neutraliser system is on. Any spilt raw material must be cleaned up immediately, the area hot hosed and odour neutraliser should be applied manually.</li> <li>• Contact details and relevant procedures for the removal of raw material from site are detailed in the procedure, RP402, 'Disposal of Condemned/Inedible material'.</li> </ul> </li> <li>5. General housekeeping and shutdowns; <ul style="list-style-type: none"> <li>• During the course of each shift every attempt should be made to keep the plant and its environs as clean as possible. Upon the completion of daily production at least twice during</li> </ul> </li> </ol>
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		<p>the week the entire inside of the plant, except the Mill area, should be foamed using the “Turbochlor” foam hose provided. Following this the entire plant and environs should have odour neutraliser manually applied to floors and drains. At the end of each week’s processing the Evaporator and MSB blood room drains should have 2 – 3 litres of “Biozyme” flushed down them. “Biozyme” breaks down fat build up in drains helping prevent odours forming.</p>
3.	Odour neutralizing systems	<p>At TPL we have two automated odour neutralising perimeter spray systems. One is positioned at the DAF plant, the other is positioned above the Rendering Plant. Both systems use a combination of ‘Zydox’, (4% Chlorine Dioxide), and ‘Zydosan’, a surfactant that enhances the effectiveness of ‘Zydox’.</p> <ul style="list-style-type: none"> <li>• A detailed procedure is attached.</li> </ul>
4	DAF plant	<ul style="list-style-type: none"> <li>• The DAF plant operators are responsible for alerting the Rendering operators to any issues regarding the biofilter.</li> <li>• The dayshift DAF plant Operator is required to manually check and record the biofilter manometers each morning on the log sheet. The Foreman will graph and archive the pressure differentials.</li> <li>• Monitor and fill odour neutralizing system as required. (See above).</li> <li>• The DAF plant and environs should be kept clean at all times, and odour neutraliser manually applied to problem areas every day.</li> <li>• The Contra-shear enclosure doors must be kept closed and catchment area and ramp hosed on regular basis.</li> <li>• The belt press is not allowed to operate unless the biofilter is operational.</li> <li>• The DAF plant operator is responsible for ensuring that the access door to the bulk sludge bin and the roller door adjacent to the belt press are closed whenever the press is operational.</li> <li>• The DAF plant operator is also responsible for monitoring the loading of pressed sludge into trucks for transfer off-site. The number of bins loaded, status of sludge bins and the level in the trailer must be recorded on the forward loading board in Rendering at specified times. During loading the truck must be kept covered, the only opening being the aperture for the load out sock. A hose which is fitted to the biofilter duct is also to be placed in the aperture alongside the load out sock. The conveyor which conveys pressed sludge to the truck is also fitted with extraction.</li> <li>• Any “splashing and /or spills must be cleaned up immediately.</li> </ul>



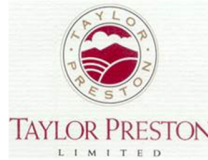
**TAYLOR PRESTON – ME86**

		<ul style="list-style-type: none"> <li>• The sludge load out conveyor is only allowed to be operated between the hours of 11pm and 5am.</li> <li>• All waste bins rotated onto trucks must be kept thoroughly clean, free from buildup and stored upside down. At least once a week they should have odour neutraliser manually applied.</li> </ul>
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5	Bins and skips containing raw waste	<ul style="list-style-type: none"> <li>• All waste bins and skips containing raw waste material are to be kept completely covered at all times to prevent odours escaping and to prevent access to vermin.</li> <li>• All empty bins are to be thoroughly cleaned and stored upside down.</li> <li>• Skips are to be monitored to ensure that they are free of any build up of material that may lead to objectionable odours. When requested by TPL, Wastecare will remove skips from site for thorough cleaning. This is a mandatory requirement during Statutory Holiday shutdowns.</li> <li>• All trucks containing waste raw material must be covered before they are permitted to leave site.</li> </ul>
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**6.26 Rendering Training Matrix -**

RENDERING 'ROMCP', 'BOMP', 'OMP' AND 'SMP' TRAINING MATRIX				
NAME	ROMCP	BOMP	OMP	SMP
REGINALD TIUMALU	Yes	Yes	Yes	Yes
BONNARI TEKARABA	Yes	Yes	Yes	Yes
NUERORI FASAVAU	Yes	Yes	Yes	Yes
ALEX KATENE	Yes	Yes	Yes	Yes
FREDDIE MAOATE				
TOKOMAN TIMOTEO				

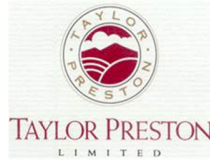


### 6.27 Taylor Preston Site-Wide Training Matrix -

RENDERING 'ROMCP', 'BOMP', 'OMP' AND ODOUR COMPLAINT FORM TRAINING MATRIX				
NAME	ROMCP	BOMP	OMP	OCF
JOHN TAYLOR	YES	YES	YES	YES
PETER ALLEN	YES	YES	YES	YES
REGINALD TIUMALU	YES	YES	YES	YES
BRYAN HINTON			YES	YES
SIMON SCHILDER	YES	YES	YES	
SIMON DE GIORGIS	YES	YES	YES	
ALISA TAYLOR			YES	YES
SECURITY TEAM			YES	YES
GENERAL RENDERING WORKER	YES	YES	YES	
GENERAL STOCKAYRD WORKER			YES	
GENERAL COMPLIANCE WORKER			YES	

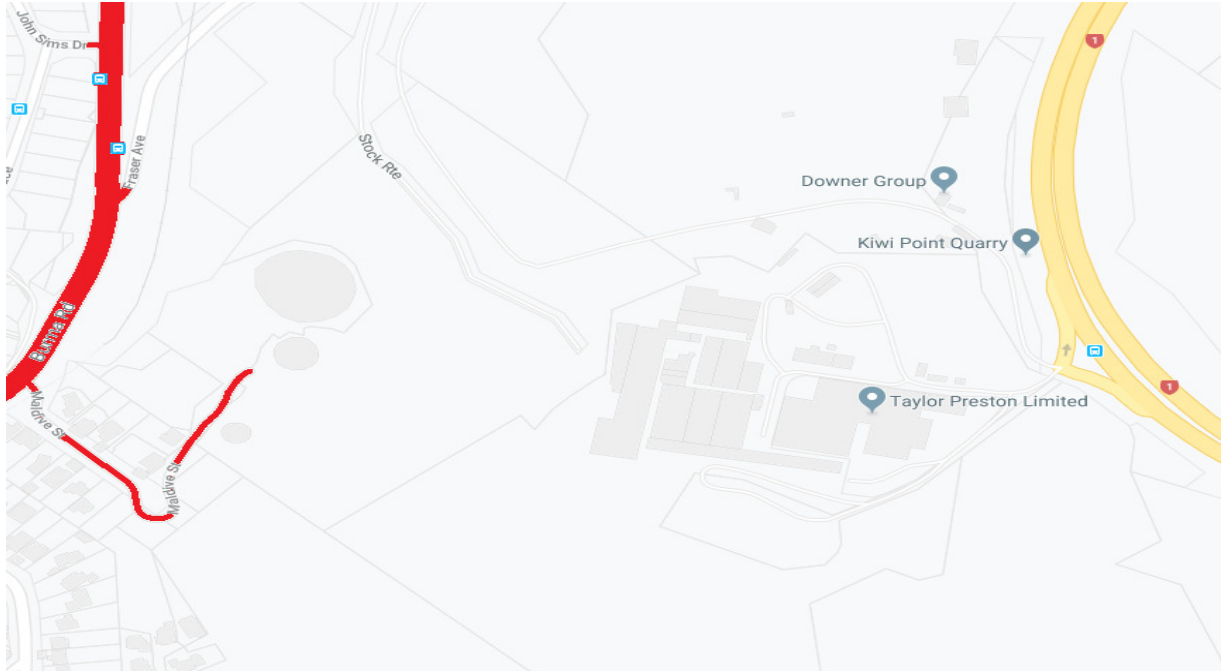
Summary – it is a requirement that all of management, foreman, supervisors and general workers are trained in the respective parts of the ROMCP, BOMP, OMP and recording odour complaints, should they arise.

Odour Monitoring and Recording – odour is monitored by the rendering foreman twice daily and recorded in QUICS pre-op (once in the morning and once in the afternoon). Along with this once a week the rendering foreman is required to drive to Maldive Street behind the Taylor Preston DAF site to check for odour and record in QUICs. Security also notify the rendering foreman should they notice any offensive odor's on their daily site inspections.



TAYLOR PRESTON – ME86

**6.28 Maldive Street Site Map (for weekly check of odour by rendering foreman) -**



**6.29 Rendering Pre-Op Check -**

**QC Run Inspections**

Run No: 0    Inspection Start Time: 6:30    PC Inspector: Reginald Tiumalu

**Area:** Pre-Start checks

**Inspection:** Check Rendering plant and associated areas for fugitive odours

Result: A    Last Modified: Reginald Tiumalu    23/10/2019 10:04 am

Comment:

**SHOW ALL AREAS** Area:  Signed: 23/10/2019 10:05 am

Inspection	Result	Comment
<b>Pre-Start checks</b>		
Ensure Biofilter is operational before starting plant	A	
Check Rendering plant and associated areas for fugitive odours	A	
Ensure all hatches and doors on the drier are closed and secure	A	Last Modified by: Reginald Tiumalu at 23/10/2019 10:04 am
MSB silo level checked and recorded	A	
Tallow tank levels checked and recorded	A	
All magnets checked and cleaned	A	
Engineers completed greasing	A	
Inside raw material bin level checked and recorded	A	
All conveyor and hopper lids, hatches etc closed and secure	A	
Surge bin level checked	A	



## 7.0 Rendering Operation, Maintenance and Contingency Plan (ROMCP)

The following constitutes the ROMCP for the odour control system for Taylor Preston Limited, it does not detail the written tasks to carry out the maintenance plan but is its framework.

Maintenance tasks are written on a computerized maintenance management system, are allocated frequencies, and special equipment noted. These are attached for completeness. The system is managed by the engineering maintenance planner who ensures that all maintenance is carried out within a week of being generated.

Defects are logged through engineering staff once the maintenance task is completed and a further works action generated for trades action.

Critical defects are worked on immediately, non-critical defects are deferred until labour or resources become available.

*“The ROMCP shall be reviewed by the consent holder **annually within one month of the anniversary of the granting of this consent.** It shall be updated to reflect any changes in the operation or management of the rendering operation that may have affected the discharge(s) of odour. The consent holder shall ensure that a copy of the updated ROMCP is submitted to, and is to the satisfaction of, the Manager, Environmental Regulation, Wellington City Council, within **one month** of any update.”*

### 7.1 Hydrolyser -

#### ODOUR CONTROL PHILOSOPHY:

The hydrolyser is fitted with an extraction fan interlocked with controls to ensure operation whilst the hydrolyser is operational. This odour is extracted and vented to the biofilter for treatment.

#### CRITICAL CONTROL COMPONENTS:

1. Extraction fan (functionality, vibration, motor condition).
2. Ducting (joint seals, integrity, support condition).
3. Lid of hydrolyser (joint seals, integrity, fit for purpose).
4. Biofilter (operational).

#### GENERAL DESIRED RESULT:

Extraction of caustic fumes vented from area to the biofilter for treatment.

#### CHECKS AND FREQUENCIES:

1. Shift operator checks on fume egress.
2. 8 weekly engineering checks generated through the PM system logged and recorded.
3. All faults noted and remedied through the works order system.



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### 7.2 Raw Material Receiving Bin -

#### ODOUR CONTROL PHILOSOPHY:

Exposed internally. Residence time kept to a minimum to ensure by product quality and reduce risk of raw material becoming odorous. All ovine raw material is acid dosed, green-dyed and trucked off site for rendering.

#### CRITICAL CONTROL COMPONENTS:

1. Receiving bin (integrity).
2. Raw material in feed screw and sometimes bins (integrity, support condition).

#### GENERAL DESIRED RESULT:

No raw material or objectionable odour present outside confines of receiving bin.

#### CHECKS AND FREQUENCIES:

1. Shift operator checks on bin and screws.
2. 13 weekly engineering checks generated through the PM system logged and recorded.
3. All faults noted and remedied through the works order system.

### 7.3 Pre-Cooker -

#### ODOUR CONTROL PHILOSOPHY:

Raw material is heated inside the pre-cooker. This is a closed vat with sealed access hatches agitated by an internally steam heated rotating Archimedes screw. The potential for odour generation is high given that temperatures can become high in the event of equipment malfunction. The odour generated is ducted to the biofilter. The main focus of the maintenance plan should therefore be on heating control and duct/seal integrity.

#### CRITICAL CONTROL COMPONENTS:

1. Hatches (integrity, seal condition).
2. Ducting (integrity, seals, mechanical condition).
3. Damper (fit for purpose, position - locked).
4. Steam control (rotating assembly condition, actuator and transmitter).
5. Temperature display (probe calibration).
6. Shaft seals for rotating assembly (fit for purpose).

#### GENERAL DESIRED RESULT:

No vapour escaping from hatches or in feed orifice. Restricted band of temperature control.

#### CHECKS AND FREQUENCIES:

1. Shift Operator checks on pre-cooker integrity, temperature control. Training records to ensure that there is an understanding of temperature/vapour generation.
2. Daily caustic clean, (CIP), of pre-cookers internal surfaces, rotating assembly and transmitter pocket.
3. Six monthly calibration of temperature probe.



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4. 6 weekly engineering checks generated by the PM system logged and recorded. All faults noted and remedied through the works order system.
5. 12 weekly check of biofilter ducting and systems.
6. Annual test of rotating assembly soundness.

### **7.4 Pre-Cooker Drainer Conveyor -**

#### **ODOUR CONTROL PHILOSOPHY:**

All the heated raw material that exits the pre-cooker is conveyed to the twin screw press by the drainer conveyor. The conveyor is fitted with a dewatering screen that allows about 50% of the melted fat to drain into a collection vessel. There is significant vapour at this point and it must be contained as it would generate odour particularly if the raw material quality is marginal. Odour generated by this process is ducted to the biofilter.

#### **CRITICAL CONTROL COMPONENTS:**

1. Conveyor covers (integrity, fit for purpose).
2. Ducting (integrity, mechanical condition).
3. Damper (fit for purpose, position).

#### **GENERAL DESIRED RESULT:**

No vapour leakage from conveyor.

#### **CHECKS AND FREQUENCIES:**

1. Shift operator checks on vapour egress.
2. Daily caustic clean of dewatering screen (CIP).
3. 12 weekly engineering checks generated by the PM system logged and recorded. All faults noted and remedied through the works order system.
4. 12 weekly check of biofilter ducting and systems.

### **7.5 Twin Screw Press -**

#### **ODOUR CONTROL PHILOSOPHY:**

Most of the remaining fat in the pre-drier raw material is squeezed out by the counter rotating screw conveyors inside the press. There is significant vapour at this point and it must be contained as it would generate odour particularly if the raw material quality is marginal. Odour generated by this process is ducted to the biofilter.

#### **CRITICAL CONTROL COMPONENTS:**

1. Twin screw press housing, drain trough (integrity, mechanical condition).
2. Twin screw press access hatches (integrity, seal condition, securing latches).
3. Ducting (integrity, mechanical condition).
4. Damper (fit for purpose, position).
5. Twin screw press liquid pump (integrity, fit for purpose).



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### **GENERAL DESIRED RESULT:**

No vapour leakage from twin screw press housing, covers or ducting.

### **CHECKS AND FREQUENCIES:**

1. Shift Operator checks on vapour egress.
2. Daily cleaning of the de-watering screen, twin screw press trough (hot water and CIP).
3. 6 weekly Engineering checks generated by the PM system logged and recorded.
4. All faults noted and remedied through the works order system.
5. 12 weekly check of biofilter ducting and systems.

## **7.6 Decanter Feed Tank -**

### **ODOUR CONTROL PHILOSOPHY:**

All pre-separation fat, (liquid phase), is stored in the decanter feed tank prior to being fed into a centrifuge to remove fines left over from the twin screw press. There is significant vapour at this point and it must be contained as it would generate odour particularly if the raw material quality is marginal. The liquid phase is heated via raw steam and has the potential to generate excessive vapour in the event of poor temperature control. Odour generated by the process is ducted to the biofilter.

### **CRITICAL CONTROL COMPONENTS:**

1. Decanter feed tank (integrity, fit for purpose, soundness).
2. Tank access hatch (integrity, seal condition).
3. Ducting (integrity, fit for purpose).
4. Damper (condition, fit for purpose).
5. Temperature control (actuator, temperature probe).

### **GENERAL DESIRED RESULT:**

No vapour leakage from the tank, access hatch or ducting.

### **CHECKS AND FREQUENCIES:**

1. Shift operator checks on vapour egress.
2. Daily caustic flush, (CIP).
3. 8 weekly engineering checks generated by the PM system logged and recorded.
4. All faults noted and remedied through the works order system.
5. Six monthly temperature probe calibration.

## **7.7 Fines Decanter -**

### **ODOUR CONTROL PHILOSOPHY:**

Liquid phase is pumped to the decanter to remove fines left over from the twin screw press process. The liquid phase is then collected and pumped to the separator feed tank. There is significant vapour at this point and it must be contained as it would generate odour particularly if the raw material quality is marginal. Odour generated by this process is ducted to the biofilter.





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### CRITICAL CONTROL COMPONENTS:

1. Decanter lid/cover (integrity, fit for purpose).
2. Decanter lid/cover seals (integrity, fit for purpose).
3. Liquid phase collection vessel (Integrity, fit for purpose).
4. Ducting (integrity, fit for purpose).

### GENERAL DESIRED RESULT:

No vapour leakage from decanter lid, collection vessel or ducting.

### CHECKS AND FREQUENCIES:

1. Shift operator checks on vapour egress.
2. Daily caustic flush, (CIP).
3. Daily check of lid seals by engineers during inner bearing greasing.
4. 8 weekly engineering checks generated by the PM system logged and recorded. All faults noted and remedied through the works order system.
5. 12 weekly check of biofilter ducting and systems.
6. Annual centrifuge recondition.

## 7.8 Separator Feed Tank -

### ODOUR CONTROL PHILOSOPHY:

All liquid phase is stored in the separator feed tank prior to being fed into the separator. The pH is lowered to 4.5 (with the use of Sulphuric Acid dosing) to assist with separation. In the event of a breakdown, the separator is turned off via interlock and the Sulphuric Acid dosing is stopped (based on pH levels). pH is observed and recorded on an hourly basis on the Rendering Plant Log Sheet via pH indicator. The separator splits the liquid phase into inedible tallow, stick water and ejects any solids amassed automatically every 4 minutes. The ejected solids are pumped to the pre-cooker, the tallow is pumped to a bulk storage tank whilst the stick water is pumped to a waste heat evaporator for thickening before being added to the drier solids. There is significant vapour at this point and it must be contained as it would generate odour particularly if the raw material quality is marginal. The liquid phase is heated via raw steam injection and has the potential to generate excessive vapour in the event of poor temperature control. Odour generated by this process is ducted to the biofilter.

### CRITICAL CONTROL COMPONENTS:

1. Separator feed tank (integrity, fit for purpose, soundness).
2. Tank access hatch (integrity, seal condition).
3. Ducting (integrity, fit for purpose).
4. Damper (fit for purpose, position).
5. pH control (probe calibration, transmitter, dosing pump control).
6. Temperature control (actuator, temperature probe).
7. Stick water egress couplings (seal condition).
8. Stick water transfer pipe line (integrity, fit for purpose).
9. Eject solids egress couplings.



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### **GENERAL DESIRED RESULT:**

No vapour leakage from the tank, access hatch or ducting.

### **CHECKS AND FREQUENCIES:**

1. Shift operator checks on vapour egress.
2. Daily caustic flush, (CIP).
3. Daily check of stick water and eject solids couplings.
4. Weekly buffering of pH probe (calibration).
5. 8 weekly engineering checks generated by the PM system logged and recorded. All faults noted and remedied through the works order system.
6. 12 weekly check of biofilter ducting and systems.
7. Six monthly calibration of temperature probe.

## **7.9 Blood/ Sludge Decanter -**

### **ODOUR CONTROL PHILOSOPHY:**

A mixture of blood and sludge is coagulated via raw steam injection and pumped to a decanter for solids/liquid separation. The solids enter a conveyor destined for drier, the liquid is gravity fed into an open drain. The potential for odour is high particularly if the blood or sludge quality is compromised due to ageing or if the coagulation temperature is poorly controlled. The blood and sludge tanks are therefore emptied at least once every 24 hour period and the temperature probe is regularly calibrated. Vapour egress from the decanter underflow is vented to the interior of the plant via an open drain. Vapour egress from the decanted solids is vented into the drier feed conveyor which is ducted to the biofilter.

### **CRITICAL CONTROL COMPONENTS:**

1. Decanter lid/cover (integrity, fit for purpose).
2. Decanter lid/cover seals (integrity, fit for purpose).
3. Underflow drain (integrity, fit for purpose).
4. Decanted solids discharge (integrity, fit for purpose).
5. Coagulator (integrity, fit for purpose).
6. Temperature control (actuator, temperature probe).

### **GENERAL DESIRED RESULT:**

No vapour leakage from solids discharge. Minimal vapour from underflow.

### **CHECKS AND FREQUENCIES:**

1. Shift operator checks on decanted solids vapour egress.
2. Daily caustic flush (CIP).
3. Daily check of lid seals by engineers during inner bearing greasing.
4. 8 weekly engineering checks generated by the PM system logged and recorded. All faults noted and remedied through the works order system.
5. Annual centrifuge recondition.



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### 7.10 Drier Feed Conveyors (x2) -

#### ODOUR CONTROL PHILOSOPHY:

The drier feed conveyors convey raw materials to the drier. These include twin screw press solids discharge, decanted fines, decanted blood, decanted effluent sludge and thickened stick water. The potential for odour is high particularly if the raw material, blood, sludge or stick water quality is marginal. Both conveyors are independently ducted to the biofilter.

#### CRITICAL CONTROL COMPONENTS:

1. Conveyor covers (integrity, fit for purpose).
2. Conveyor housings (integrity, fit for purpose).
3. Ducting (integrity, fit for purpose).

#### GENERAL DESIRED RESULT:

No vapour egress from either of the conveyors.

#### CHECKS AND FREQUENCIES:

1. Shift operator checks for vapour egress.
2. 12 weekly engineering checks generated by the PM system logged and recorded. All faults noted and remedied through the works order system.
3. 12 weekly check of biofilter ducting and systems.

### 7.11 Disc Drier -

#### ODOUR CONTROL PHILOSOPHY:

The disc drier is a steam jacketed vessel which houses an internally steam heated rotating Archimedes screw. The resident meat and bone meal is reduced in moisture content from approximately 55% to approximately 3%. The 'flashed off' moisture is captured in an enclosed hood or dome and ducted to the waste heat evaporator. Any vapour produced by the process is ducted to the biofilter. The potential for odour is high particularly if the temperature is allowed to escalate. Therefore the steam supply pressure is regulated using a pressure reducing valve.

#### CRITICAL CONTROL COMPONENTS:

1. Disc drier housing (integrity, fit for purpose).
2. Disc drier access hatches (integrity, condition, seal condition).
3. Vapour dome (integrity, fit for purpose).
4. Vapour ducting to waste heat evaporator (integrity, fit for purpose).
5. Steam supply PRV (actuator, gauges).
6. Temperature probe (condition, calibration).
7. Time frame (interlocked with product conveyor).

#### GENERAL DESIRED RESULT:

No vapour egress from the disc drier, hatches dome or ducting. No odour, puffing generated from overheating of product.



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### CHECKS AND FREQUENCIES:

1. Shift operator checks of vapour egress/ puffing.
2. Monthly hatch removal and cleaning of internal components.
3. 6 weekly engineering checks generated by the PM system logged and recorded (covered later).
4. All faults noted and remedied through the works order system.
5. Six monthly temperature probe calibration.
6. 12 weekly check of biofilter ducting and systems.
7. Annual test of rotating assembly soundness.

### 7.12 Waste Heat Evaporator -

#### ODOUR CONTROL PHILOSOPHY:

The waste heat evaporator utilises energy from the drying process to evaporate moisture from stick water. The process is conducted in a vacuum which enables the excess moisture to be 'flushed off' at lower temperatures, increasing the solid content from approximately 2% to 20%. The 'thickened' stick water, or concentrate, is then fed into a holding tank before being pumped to the drier feed conveyor. The potential for odour is high if the stick water quality is marginal. Vapour produced by the evaporation process is ducted to the biofilter. If the stickwater tank should overflow, the stickwater is binned out and put into skips located around the site for shipment to the tip.

#### CRITICAL CONTROL COMPONENTS:

1. Evaporator body (integrity, fit for purpose).
2. Access hatches (integrity, fit for purpose, seal condition).
3. Ducting (integrity, fit for purpose).
4. Concentrate circulation pump (integrity, mechanical condition).
5. Concentrate circulation pump pipe work (integrity, fit for purpose, seal condition).
6. Concentrate to drier feed conveyor pump (integrity, mechanical condition).
7. Concentrate to drier feed conveyor pipe work (integrity, fit for purpose, seal condition).
8. Concentrate holding tank (integrity, fit for purpose, access hatch seal condition).

#### CHECKS AND FREQUENCIES:

1. Shift operator check for vapour egress.
2. Extraction ducting water blasted fortnightly.
3. Evaporator (caustic flush, CIP, every 3 weeks).
4. 6 weekly Engineering checks generated by the PM system logged and recorded (covered later). Any faults noted and remedied through the works order system.
5. 12 weekly check of biofilter ducting and systems.
6. Aquablast water blasting of ducting from the drier to the evaporator (monthly), water blasting of stick water tank (fortnightly).



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### 7.13 Mill -

#### ODOUR CONTROL PHILOSOPHY:

The milling process reduces the particle size of the dried meat and bone meal (MBM) so that it will pass through a 3mm sieve shaker screen. The process incorporates a discharge conveyor from the drier, a conveyor which elevates the dried MBM into a surge bin and a conveyor from the surge bin to the mill. Once the MBM has passed through the hammer mill it is conveyed to a shaker screen with a 3mm mesh. Any particles that will not pass through the mesh are returned to the surge bin and the process is repeated. MBM particles that pass through the mesh are conveyed, via 3 conveyors, to a bulk silo for storage. The potential for odour is high when the drier exit temperature is high and/or when the mill hammers have a diminished efficiency due to wear. All conveyors, the mill and surge bin are ducted to the silo which is fitted with a bag filter to remove dust. The exhaust from the bag filter is fed into a carbon filter at ground level.

#### CRITICAL CONTROL COMPONENTS:

1. Drier temperature control (PRV control, operator training).
2. Surge bin (fit for purpose).
3. Mill hammers (fit for purpose).
4. Shaker screen (cleanliness, fit for purpose).
5. Conveyor transitions (cleanliness, fit for purpose).
6. Extraction ducting (cleanliness, fit for purpose).
7. Silo bag filter (cleanliness of filters and housing, fit for purpose).
8. Carbon filter (pellet – fit for purpose).
9. MBM silo (fit for purpose).

#### GENERAL DESIRED RESULT:

No excessive dust particles emanating from milling processes.

#### CHECKS AND FREQUENCIES:

1. Daily operator check of PRV controls.
2. Surge bin (daily check for meal retention).
3. Mill hammer replacement (every 6 weeks, rotation reversal every 4 weeks).
4. Shaker screen clean (weekly disassembly, clean and sanitation).
5. Transition cleanliness (every 3 weeks, opened, cleaned and sanitised).
6. Silo bag filter (replaced every 3 months).
7. Silo bags (fit for purpose, condition).
8. MBM silo (daily check for MBM retention).
9. 12 weekly engineering checks generated by the PM system logged and recorded.
10. All faults noted and remedied through the works order system.

### 7.14 Effluent Stream Gross Solids Removal -

#### ODOUR CONTROL PHILOSOPHY:



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All gross solids that enter the effluent stream from the factory are removed using dewatering screens (contra-shears). The solids that exit the dewatering screens are further pressed in a screw press before being conveyed to a trailer for removal off site to a composting operation. These processes are contained within an enclosure. The liquid stream from the dewatering screens is gravity fed into the DAF plant. The potential for odour is high particularly if any of the processes on site become compromised. The odour from the dewatering screen and screw press is ducted to the biofilter. Any liquid removed from the screw press or overflow from the dewatering screens is pumped to a sump and re-screened.

### CRITICAL CONTROL COMPONENTS:

1. Dewatering screen and screw press enclosure (integrity, fit for purpose).
2. Ducting (integrity, fit for purpose).
3. Access doors (integrity, fit for purpose).
4. Pump (mechanical condition).

### GENERAL DESIRED RESULT:

No vapour egress from dewatering screen enclosure.

### CHECKS AND FREQUENCIES:

1. Shift operator checks for vapour egress.
2. 6 weekly engineering checks generated by the PM system logged and recorded.
3. All faults noted and remedied through the works order system.
4. 12 weekly check of biofilter ducting and systems.

## 7.15 DAF Plants -

### ODOUR CONTROL PHILOSOPHY:

The DAF plant is responsible for removing BOD (biochemical oxygen demand) and SS (suspended solids), from the effluent stream that exits the gross solid dewatering screens. It does this by altering the pH, adding a flocculent and creating a sludge blanket which is floated using dissolved air and removed for pressing at the belt press or coagulated and rendered in the rendering plant. The potential for odour is high particularly if any of the processes on site become compromised. Vapour that may be emitted from the DAF process is extracted to the biofilter.

### CRITICAL CONTROL COMPONENTS:

1. DAF plant enclosures (integrity, fit for purpose).
2. Ducting / branch ducting interface (seal, integrity, fit for purpose).
3. Inspection/access hatches (integrity, fit for purpose).
4. Damper (integrity, seal, fit for purpose).

### GENERAL DESIRED RESULT:

No vapour egress from DAF enclosures.

### CHECKS AND FREQUENCIES:

1. Shift operator checks for vapour egress to ensure that enclosure integrity is achieved.



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2. Six weekly clean and inspection of DAF's to prevent solids accumulation.
3. 6 weekly engineering checks generated by the PM system.
4. All faults noted and remedied through the works order system.
5. 12 weekly check of biofilter ducting and systems.
6. Annual audit by appointed engineering management staff to ensure that compliance has been maintained.

### 7.16 Effluent Sludge Belt Press -

#### ODOUR CONTROL PHILOSOPHY:

Raw sludge at about 8% solid content is pumped to the belt press to remove some of the water content thus increasing the solid content to about 25%. The effluent sludge belt press can generate significant odour particularly if the sludge has aged and /or if hot water is being used at the belt press. The belt press enclosure is fitted with a self-closing door, this allows access for maintenance and minimises free extraction space. Vapour is extracted from the belt press hooded enclosure and ducted to the biofilter.

#### CRITICAL CONTROL COMPONENTS:

1. Effluent sludge belt press enclosure (integrity, fit for purpose).
2. Ducting/Hood interface (seal condition, fit for purpose, integrity).
3. Ducting (fit for purpose, seals condition, integrity, support condition).
4. Extraction fan (functionality, vibration, motor condition).
5. Damper (integrity, seal, fit for purpose).
6. 12 weekly check of biofilter ducting and systems logged in engineering PM system.

#### GENERAL DESIRED RESULT:

No vapour egress from enclosure or ducting.

#### CHECKS AND FREQUENCIES:

1. Shift operator checks of enclosure and ducting integrity.
2. 6 weekly checks generated by the engineering PM system. All faults noted and remedied through the works order system.
3. 12 weekly check of biofilter ducting and systems logged in engineering PM system.

### 7.17 Pressed Effluent Sludge Storage Bin and Conveyor -

#### ODOUR CONTROL PHILOSOPHY:

Pressed sludge from the belt press is conveyed to the pressed sludge storage bin. The potential for odour is high particularly if the pressed sludge is allowed to age or if the pressed sludge was processed from aged raw sludge. Due to the nature of pressed sludge a knife gate is situated at the outlet of the discharge conveyer to prevent leaching. The discharge conveyer is covered and has extraction to the biofilter fitted for use during load outs. The operator is to ensure that extraction from the load out conveyer is used during load outs by manually opening a valve fitted at the duct to main duct interface. There is also a portable duct that is to be manually



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placed inside the truck or trailer compartment during loading, again a valve at the duct to main duct interface is to be manually opened during loading. The effluent sludge storage bin is enclosed and odour is extracted to the biofilter.

### **CRITICAL CONTROL COMPONENTS:**

1. Effluent sludge bin and covers (integrity, fit for purpose).
2. Effluent sludge bin conveyor (mechanical condition, bearing seal condition).
3. Knife gate (integrity, fit for purpose).
4. Discharge conveyor housing and covers (integrity, bearing seal condition, fit for purpose).
5. Ducting (integrity, fit for purpose).
6. Ducting to main duct interfaces (integrity, seal, fit for purpose).
7. Ducting control valves (integrity, seals condition, fit for purpose).
8. Operator control (training).

### **GENERAL DESIRED RESULT:**

No odour or spillage during storage or load outs.

### **CHECKS AND FREQUENCIES:**

1. Shift operator checks for pressed sludge egress.
2. Shift check of levels and co-ordination of transport.
3. 6 weekly checks generated by the engineering PM system. All faults noted and remedied through the works order system.
4. 12 weekly checks of biofilter ducting and systems.

## **7.18 Binning Of Renderables Site-Wide -**

### **ODOUR CONTROL PHILOSOPHY:**

Any bins that are filled with renderables are green dyed (excluding petfood) and lidded to ensure the chance of odour escaping is minimised. These bins containing renderables are also put into the raw material bin and rendered as soon as possible. After these bins are emptied they are hot hosed immediately after and re-lidded.

### **CRITICAL CONTROL COMPONENTS:**

1. Bins and lids (fit for purpose, integrity).
2. Water (hot).
3. Green dye (noticeable, coverage).

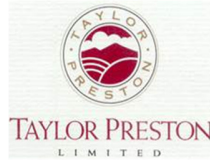
### **GENERAL DESIRED RESULT:**

No undesirable/ offensive odour escaping bin between loading and unloading process.

### **CHECKS AND FREQUENCIES:**

1. Operational staff required to check renderables are green dyed and lidded as they are received from forklift operators. Hot hosing is also checked by rendering operators.





### 7.19 Ovine Trucking -

#### ODOUR CONTROL PHILOSOPHY:

All raw ovine materials that are transferred into bins from the mutton slaughter board are green dyed and lidded to ensure the chance of odour escaping is minimised (ovine offal is also dosed with Sulphuric Acid when dropping into bins). These bins containing ovine renderables are then loaded into trucks using a bin tipper. After these bins are emptied they are hot hosed immediately after and re-lidded. Trucks containing renderables are covered with a tarpaulin to minimise the odour and trucked off site immediately after fully loaded. *“No putrescible materials shall be stored or left in any manner on site which cause them to putrefy.”*

#### CRITICAL CONTROL COMPONENTS:

1. Bins and lids (fit for purpose, integrity).
2. Water (hot).
3. Bin tippers (fit for purpose, integrity).
4. Tarpaulin cover (fit for purpose, integrity).
5. Green dye (noticeable, coverage).

#### GENERAL DESIRED RESULT:

No odour or spillage during storage or load outs.

#### CHECKS AND FREQUENCIES:

1. Monitored by shift supervisors randomly.
2. Shift check of levels and co-ordination of transport which are recorded on logsheets
3. Monthly check done by rendering foreman for all R & M which are recorded in QUICS.

### 7.20 Truck Wash Area -

#### ODOUR CONTROL PHILOSOPHY:

The washdown of all stock trucks including removal of livestock droppings and rubbish that could block drains into a wheelbarrow (completed by yards worker on Mondays). Washdown of the area to ensure odour is minimal. Aquablast (contractors) to jet drains weekly (Sunday). In an event of an odour complaint area is to be re-cleaned as a control measure to reduce odour.

#### CRITICAL CONTROL COMPONENTS:

1. Hose (fit for purpose).
2. Water (hot).

#### GENERAL DESIRED RESULT:

Minimise any undesired odour on site.

#### CHECKS AND FREQUENCIES:

1. Daily check by supervisor and documented on QUICS.
2. Weekly clean by Aqua blast.



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### 7.21 Petfood -

#### ODOUR CONTROL PHILOSOPHY:

All bins used for pet food materials are hot hosed before use. All pet food material from boning rooms are conveyed to a pre-breaker where it is de-natured then screwed into bins which are lidded to ensure the chance of odour is minimised before transferring into trucks as a whole bin. Ovine/ bovine materials are separated by a colour coding system we have in place where we use 3 different coloured seals to identify what kind of material is stored inside, bins are also numbered.

#### CRITICAL CONTROL COMPONENTS:

1. Bins and lids (fit for purpose, integrity).
2. Trucks (fit for purpose, integrity).
3. Operator control (training).

#### GENERAL DESIRED RESULT:

No odour or spillage during storage or load outs.

#### CHECKS AND FREQUENCIES

1. Monitored by shift supervisors randomly.
2. Monthly check completed by rendering foreman for all R & M which are recorded in QUICS.
3. Shift check of levels and co-ordination of transport and recorded.

### 7.22 Edible Area Washdown -

#### ODOUR CONTROL PHILOSOPHY:

A list of steps are followed to ensure the cleaning standards are met and odour is minimised during the washdown of edible areas. Stated in SOP: TPL 311 Cleaning of Edible Processing Areas:

1. Prepare room – getting rid of all large amounts of materials and rubbish that cannot go down drains.
2. Rinse down of all edible and non-edible surfaces.
3. Dispense foam (Foam Clean 200 LA) through the hosed infrastructure. Adjust foam unit air pressure and water rates to give desired foam level. For scrubbing hard to get food surfaces or in areas where the initial foam has run off, the foam may be dispensed from the hoses with the level for the air turned off. Allow to sit for 10 minutes. Do not allow foam solution to dry.
4. Manually scrub surfaces with appropriate cleaning tool to loosen invisible contamination such as proteins.
5. Rinse thoroughly with warm water.
6. Dry down of all areas.

#### CRITICAL CONTROL COMPONENTS:



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1. Staff (training).
2. Water (hot).
3. Cleaning equipment; hoses, scrubbers etc. (fit for purpose, integrity).
4. Foam chemical (in stock and MSD).
5. Supervision (training).

### **GENERAL DESIRED RESULT:**

To ensure all edible departments are cleaned to company / NZ standard and comply with Food Safety Authorities. To also contain or minimise any odours.

### **CHECKS AND FREQUENCIES:**

1. Cleaning supervisor random inspections.
2. Daily pre-op inspection, recorded in QUICS.
3. Weekly check the checker inspections – recorded in QUICS.
4. Weekly swabbing of edible surfaces. Recorded by our technical team.
5. Internal audit checks.
6. Monthly R & M check done by foreman and recorded in QUICS.

## **7.23 Stockyards Washdown -**

### **ODOUR CONTROL PHILOSOPHY:**

Hose all faecal matter into drains, rotating through all pens in use ensuring all pens are cleaned at least once per operational shift and all raceways are also hosed. Prior to hosing commencing ensure that animals are not present in the area to be hosed. Also completed after livestock have all been put through to slaughter boards – hose down of all holding facilities and all support areas. Collect any hay left over in pens from the previous day's feeding at the start of each operational shift - transport hay to one of the waste bins located on site. Full stockyard washdown to be completed should any odour complaints become apparent.

### **CRITICAL CONTROL COMPONENTS:**

1. Hoses (fit for purpose).
2. Wheelbarrows (fit for purpose).

### **GENERAL DESIRED RESULT:**

Minimise any undesirable/ offensive odour escaping.

### **CHECKS AND FREQUENCIES:**

Record findings from monitoring of hosing carried out in the PC records located in QUICS.

## **7.24 Smellies/ Deodorizers -**

### **ODOUR CONTROL PHILOSOPHY:**

Taylor Preston has two odour neutralizing systems that use a combination of water, chlorine dioxide, (Zydox) and Dual 100, (Tutti-Frutti and Super Spice). A 200L mixing drum is used to



## TAYLOR PRESTON – ME86

combine 185L of water with 10L of Zydox and 5L of Dual 100. It is the responsibility of the DAF and rendering operators to ensure that the system never runs empty and is made up as close to the correct ratios as is possible. From this point the diluted chemicals are then vacuum pumped out of mixing drums and put through our dispersing lines where chlorine dioxide is released into the air through little spray nozzles that are spaced out around the site. The fogging system is used to minimise any escape of odours from site.

### CRITICAL CONTROL COMPONENTS:

1. Chemicals (MSD and in stock).
2. Pumps (fit for purpose, integrity).
3. Plastic dispersing line/ deodorizers (fit for purpose, integrity).
4. Operator control (training).

### GENERAL DESIRED RESULT:

Minimise odour escaping around site.

### CHECKS AND FREQUENCIES:

1. Supervisor checks randomly per shift.
2. Monthly risk and maintenance check by foreman which are recorded in QUICS2.
3. Shift operator checks which are documented on DAF check sheets.
4. Weekly flushing of lines/nozzles.

## 7.25 Long Weekend Shut-Downs -

### ODOUR CONTROL PHILOSOPHY:

On the last day of the week prior to a long weekend occurrence is a list of cleaning tasks that are completed to minimise odours around the site.

1. Bin out the last of the materials from pre-breakers, (MSB and boning room), to give enough time for rendering shutdown.
2. Ensure pre-breaker rooms and pre-breakers are cleaned.
3. Rubbish skips off site for cleaning and returned clean for dosing with smellies.
4. Paranui Organic's to remove all sludge and empty trailer at DAF.
5. 'Hugo' emptied along with bulk sludge bin cleaned inside and out.
6. Thorough clean of inside of rendering plant, machinery, conveyors, walls, floors and environs. Foam and dose with smellies.
7. Thorough clean of back, side and front of rendering plant. Liberally dose with smellies.
8. Clean all bins, dose with smellies and store upside down.
9. Dose drains with drain cleaners down rendering and blood room drains.
10. Thoroughly clean contra-shear pit and apply smellies.
11. Ensure that blood room and screens are clean and dosed with smellies.
12. Ensure that all blood is loaded out.
13. Run the drier amperage as low as possible. Ensure that the surge bin is empty, and if possible, empty MBM silo.



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14. Rendering, DAF plant and biofilter completely shut down.

### **CRITICAL CONTROL COMPONENTS:**

1. Supervision (training)
2. Operator control (training)
3. Communication is key for all the above.

### **GENERAL DESIRED RESULT:**

Minimise amount of odour around site over the long weekend shut-down.

### **CHECKS AND FREQUENCIES:**

1. Shift supervisor and foreman to ensure these tasks are completed.
2. Shift check of levels and co-ordination of transport.

## **7.26 Rejection criteria for receipt of raw product -**

### **ODOUR CONTROL PHILOSOPHY:**

The receiving of raw material and timely processing of this raw material needs to be monitored closely. All raw material received by rendering needs to be processed within a 4 (four) hour time frame of when it is received by rendering. Some raw product has the potential to be detrimental to the rendering process due to rancidity or material that has been stipulated by an end user not to be present in MBM and/or tallow.

### **CRITICAL CONTROL COMPONENTS:**

- Supervision (training).
- Operator control (training).
- Inspection of raw material (freshness, smell, time frame).

### **GENERAL DESIRED RESULT:**

Minimise the amount of odour around site directly related to the raw material being received by rendering.

### **CHECKS AND FREQUENCIES:**

1. Daily checks on all bins integrity recorded on log sheets.
2. Daily metal detection check.
3. Hourly checks of heat temperatures which are recorded on log sheet.
4. QC checks per run which are recorded on log sheet and QUICS.
5. Start up and shutdown dosing of sanitation powder (Fysal) in mill room which is documented.

## **7.27 Binning-Out in an Event of a Breakdown -**

### **ODOUR CONTROL PHILOSOPHY:**

In any event of a breakdown due to machinery/ storage tanks being full etc. Plant Manager (John Taylor) is firstly informed of severity, from this point a binning out system is put in place.



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The trucking company is informed to supply trucks for renderables to be trucked off site. All renderables from main raw bin are then screwed up to the metal detection belt which is running in reverse and a bin positioned in place to receive all renderables which are green dyed and lidded once full. From here, bins are transferred to the truck – using rotator forklifts to rotate bins inside empty compartments of the truck and trailer (bins are then hot hosed and re-lidded). Once completed, trucks are covered with a tarpaulin to minimise any odors escaping and an E-cert is raised/ provided once truck is full by competent personnel for truck drivers to leave site. All partly rendered materials are binned out through screws that have hatches attached, once opened all materials drop from screw into bins which are then moved to the front of rendering for extraction to landfill owned skips on site.

### **CRITICAL CONTROL COMPONENTS:**

- Supervision (training).
- Operator control (training).
- Communication is key for all the above.
- Plant Manager (needs to be made aware of any issues plant wide).
- Forklift (fit for purpose, integrity).
- Bins (fit for purpose, integrity).
- Screw conveyor (fit for purpose, integrity).
- Metal detection belt (fit for purpose, integrity).
- PLC control for operating all machinery (integrity, fit for purpose).

### **GENERAL DESIRED RESULT:**

Minimise the amount of odour around site during the breakdown.

### **CHECKS AND FREQUENCIES:**

6. Daily checks on all machinery efficiency which are documented on rendering log sheet.
7. Daily forklift check sheet which are scanned into a folder by reception.
8. Monthly R & M checks by foreman which are recorded in QUICS.
9. Daily checks on all bins integrity recorded on log sheets.

## **7.28 Disposal of Unacceptable RM/ Unwanted RM to On-site Skips -**

### **ODOUR CONTROL PHILOSOPHY:**

All unwanted / unacceptable raw materials are put in wheelbarrows/ crackling bins which are emptied at the front of rendering where they are rotated in to bins by trained forklift drivers. Bins are transferred from this point to the landfill owned skips on plant where bins are rotated into skips and then covered by tarpaulin to minimise the amount of odour escaping. Trained personnel will liaise with the trucking company when skips are ready for removal. If odors are deemed very offensive then skips are to be arranged to be emptied ASAP.

### **CRITICAL CONTROL COMPONENTS:**

1. Wheelbarrows (fit for purpose, integrity).
2. Bins (fit for purpose, integrity).
3. Forklift – rotator. (fit for purpose, integrity).



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4. Landfill skips (fit for purpose, integrity).

### GENERAL DESIRED RESULT

1. Housekeeping.
2. Minimise the amount of odours around site.

### CHECKS AND FREQUENCIES

1. Daily forklift check sheet which are scanned into a folder by reception.
2. Monthly R & M checks by foreman which are recorded in QUICS.
3. Daily checks on integrity of all bins.
4. Shift check of levels and co-ordination of transport.

## 7.29 Overflow of Blood Tank -

### ODOUR CONTROL PHILOSOPHY:

Blood from slaughter floors are put down the blood chutes which are then put through blood screens where the solids content of blood is removed before getting pumped to the main storage tank. There is an in-situ level indicator in the blood tank so blood overflows should not occur. In the event of blood overflow from storage tank being too full etc. we are to make the Plant Manager aware and liaise with DAF operator/ trucking company about situation and for loadout ASAP. A binning system is to be put in place where operator opens outlet valve from the tank that is connected to inlet side of hose where the outlet point will be placed inside bin to fill and re-lidded to minimise any blood odours. Hose down of affected area and smellies dosed if odour is deemed offensive. The Plant Manager is to make the council aware of the situation and that BOD results in the DAF performance are expected to be higher due to this.

### CRITICAL CONTROL COMPONENTS:

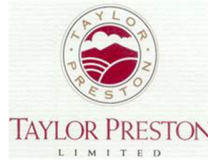
1. Bins (fit for purpose, integrity).
2. Hose (fit for purpose, integrity).
3. Tank (fit for purpose, integrity).
4. Level indicator (fit for purpose, calibrated).

### GENERAL DESIRED RESULT:

5. Housekeeping.
6. Minimise any amount of odours around site.

### CHECKS AND FREQUENCIES:

1. Daily check of tank on PLC by operators.
2. Shift check of levels and co-ordination of transport, documented by foreman in daily log book.
3. Monthly R & M checks by foreman which are recorded in QUICS.



**7.30 Disposal of Condemned/ In-Edible Material (RP 402) -**

**KEY TASKS - Done by the designated Rendering Labourer (unless specified otherwise)**

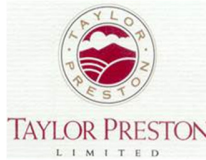
The following table sets out the instructions for the removal of condemned/ inedible material from the Renderings.

STEP	OPERATION	WORK INSTRUCTIONS
1	General Rubbish	<ul style="list-style-type: none"> <li>Place all rubbish including bovine tails, metallicly contaminated raw material and any other general rubbish into a waste bin for transfer to a skip.</li> </ul>
2	General	<ul style="list-style-type: none"> <li>Material directly off the beef slaughter board goes into the Rendering pre-breaker. When an issue arises with the Ovine raw material load out, bins of ovine material can be conveyed to the Rendering plant via forklift and tipped into the rendering raw material bin using the bin tipper. This also applies to residual or rejected raw material from the boning rooms which in most cases will be a bin left over from production or bones that have excessive levels of fat content. The residue, (crackle), from the processing of white fat is rotated into a bin and then tipped into the raw material bin to be rendered.</li> <li>Rejected cartons of Edible product will occasionally need to be rendered. In most cases the product is frozen and will need to 'defrost' in the 'Rendering Rejected Cartons Cage', located under the ovine yards. MPI possess the key which enables access to the cage. When cartons need to 'defrost' a representative from MPI will need to be contacted to unlock the cage. Once the rejected product can be rendered, MPI will need to be contacted again to unlock the cage.</li> </ul>
3	Rendering Breakdown Contingency Plan. (Raw Material and Raw Blood).	<ul style="list-style-type: none"> <li>In the case of a Rendering Plant break down that necessitates the removal of raw material from site, the following will apply;</li> <li>NOTE: Contact details of those that need to be informed, and/or companies that may be required to assist, are listed in an 'Appendix' at the rear of this procedure.</li> <li>Contact Reg Tiimalu (Rendering Foreman), or failing that, John Taylor, (Plant Manager). Reg or John will make arrangements for the removal of raw material from site.</li> <li>Depending on the severity of the break down, and subsequent volume of raw material to be removed, several options are available. If the nature of the breakdown is such that no Rendering will be possible for a sustained period, then the best option is to transport the raw material to another Rendering facility .In</li> </ul>

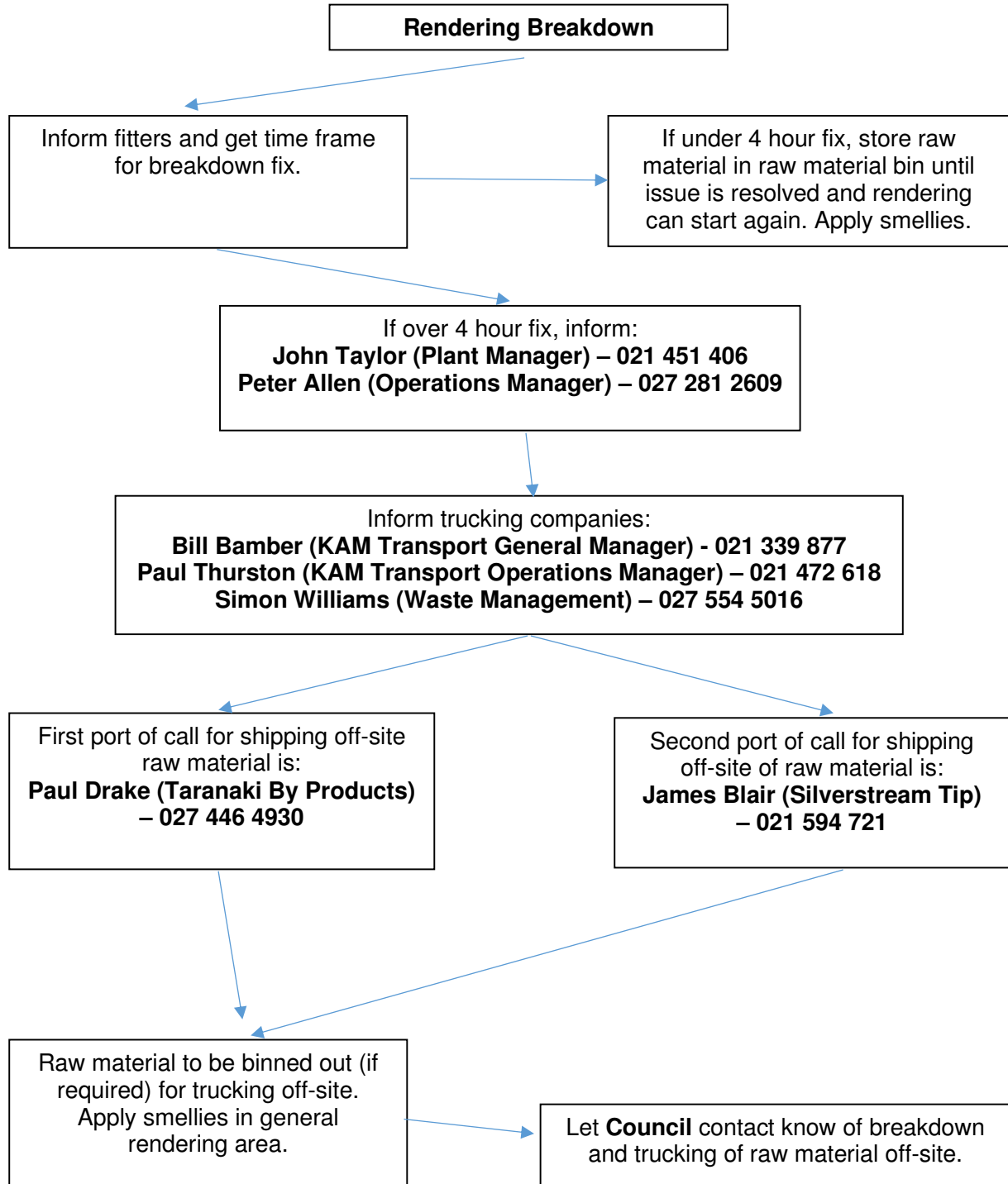


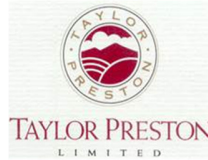


STEP	OPERATION	WORK INSTRUCTIONS
		<p>instances where the breakdown is anticipated to be relatively short, the best option would be to dispose of the raw material at a landfill.</p> <ul style="list-style-type: none"> <li>• In the case of a Rendering Plant break down that necessitates the removal of raw blood from site, contact should again be made with the above mentioned.</li> <li>• Due to the nature of blood the only realistic option is to transport off site to another Rendering facility. Again, there are several options that can be utilised. It is best to err on the side of caution in respect to blood removal, as an overflow can have serious consequences, and must be avoided.</li> <li>• In the event that the breakdown option is to transport the raw material to a landfill, and that the breakdown occurs outside normal landfill operating hours, provision has been made for the Hutt City Council landfill located at Silverstream to remain open for as long as is required.</li> <li>• If the raw material destined for landfill, or another Rendering facility, has been 'pre-broken' but cannot be deemed 'visibly inedible', a solution of green 'meat marking' dye must be poured over the top of the material. This is to ensure that all of the raw material is considered 'denatured'.</li> <li>• If the Rendering breakdown coincides with a pre-breaker breakdown, and some or all of the raw material is considered 'Condemned', then stringent guidelines must be followed in accordance with 'Condemned material Control'. Liberal use of green 'meat marking' dye to cover all of the raw material is essential.</li> <li>• An independent odour neutraliser spray system is 'interlocked' with the raw material discharge conveyor that delivers raw material to the skips and/or trucks. The spray contains a proven odour neutraliser at a concentration of 50:1. The sprays are positioned above the rear roller door of the Rendering Plant and along the building next to the load out conveyor.</li> </ul>
4	Documentation	<ul style="list-style-type: none"> <li>• The Rendering Foreman or Plant Manager will inform security that inedible raw material is leaving site.</li> <li>• The Security guard will document the number of loads of raw material leaving site, ensuring that the documentation details the source of the load.</li> </ul>

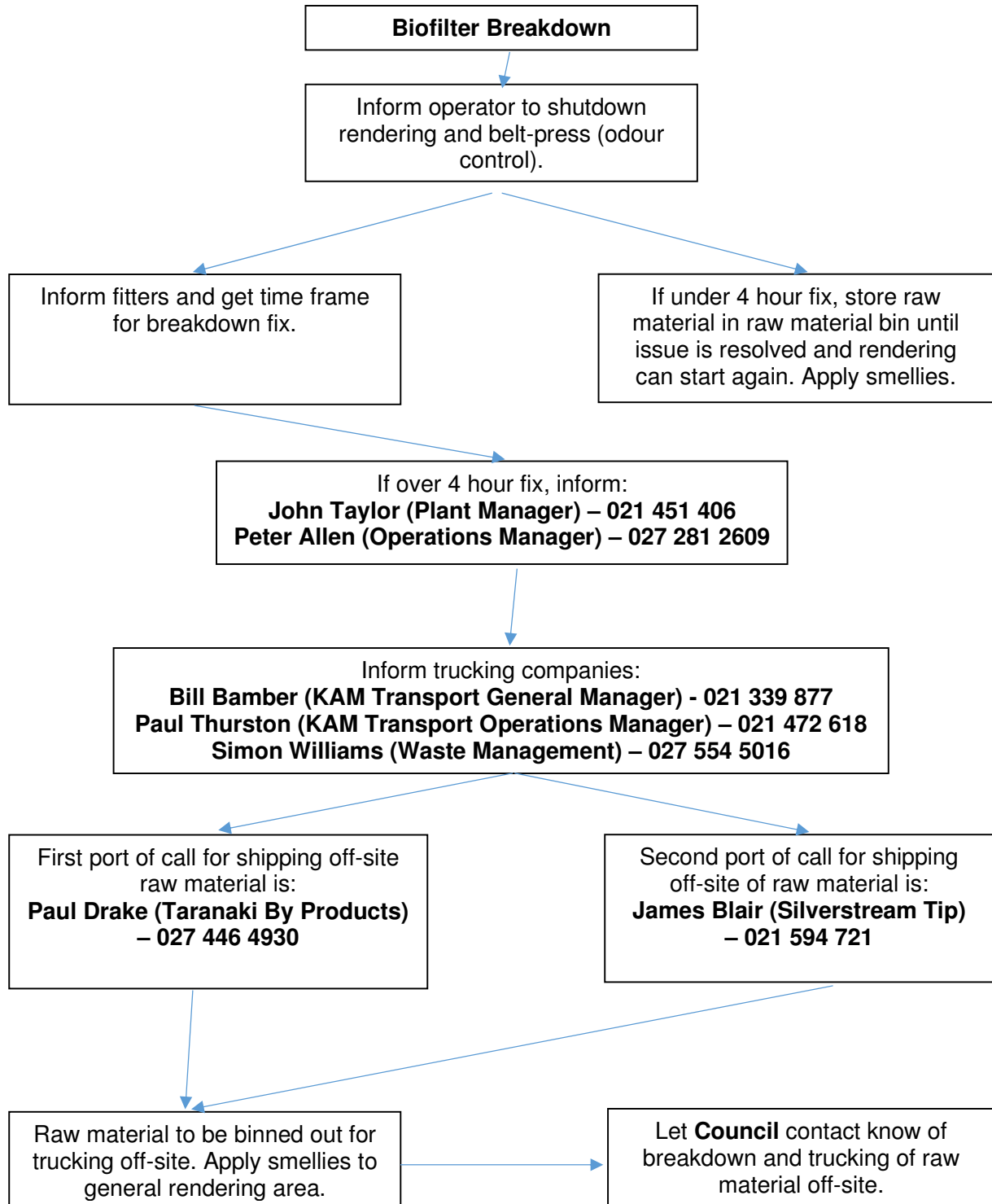


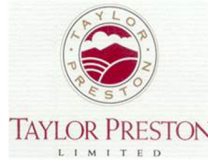
### 7.31 ROMCP Contingency Plan (Rendering Breakdown) -





### 7.32 ROMCP Contingency Plan (Biofilter breakdown) -





**7.33 Cold and Warm Start-Up Procedure (RP103):**

**A KEY TASKS – Cold Start Procedure (RP103)**

**NOTE: a)** It is imperative that the Bio-Filter is operational before the Rendering Plant can be started. If a failure of the Bio-Filter process occurs during Rendering Plant processing, the DAF plant Operator will inform the Rendering Operator to shut down immediately. The Evaporator Plant is interlocked with the disc drier ensuring that it must be started before the Rendering Plant can begin processing. The Evaporator Plant will therefore be the first section of the plant to be started, and the last section of the Rendering Plant to be stopped following a shut down.

STEP	OPERATION	WORK INSTRUCTIONS														
1	Evaporator Plant	<p>a) Close drain on stickwater tank.                      b) Close drain valve on evaporator.                      c) Open discharge valve on stickwater tank and turn on hot water valve ensuring that the discharge bypass valve is shut.                      d) In control room at the control interface click on the evaporator icon at the bottom of the screen. Click the on button in the box labelled “ Evaporator area On/Off control”. This will start the entire evaporator plant.                      e) Once the evaporator level has reached 65% and the level in the stickwater tank is between 15 – 20% turn off the hot water valve.                      f) For any problems encountered refer to the evaporator plant manual and/or consult your Supervisor, Foreman or Engineer.</p> <p><b>EVAPORATOR PLANT OPERATING TEMPERATURE RANGE</b></p> <table border="1" data-bbox="464 1193 1386 1424"> <thead> <tr> <th data-bbox="464 1193 1000 1227">EVAPORATION PROCESS TITLE</th> <th data-bbox="1000 1193 1386 1227">TEMPERATURE RANGE</th> </tr> </thead> <tbody> <tr> <td data-bbox="464 1227 1000 1261">1/ Disc drier vapour</td> <td data-bbox="1000 1227 1386 1261">95-105 degrees</td> </tr> <tr> <td data-bbox="464 1261 1000 1294">2/ Evaporator contents</td> <td data-bbox="1000 1261 1386 1294">65-85 degrees</td> </tr> <tr> <td data-bbox="464 1294 1000 1328">3/ Evaporator condensate</td> <td data-bbox="1000 1294 1386 1328">65-85 degrees</td> </tr> <tr> <td data-bbox="464 1328 1000 1361">4/ Vacuum Condensor</td> <td data-bbox="1000 1328 1386 1361">60-65 degrees</td> </tr> <tr> <td data-bbox="464 1361 1000 1395">5/ Condensor</td> <td data-bbox="1000 1361 1386 1395">60-70 degrees</td> </tr> <tr> <td data-bbox="464 1395 1000 1424">6/ Vacuum Condensor inlet water</td> <td data-bbox="1000 1395 1386 1424">10-20 degrees</td> </tr> </tbody> </table> <p>NOTE: The Concentrated Sources fan is part of the Evaporator Plant and is responsible for extracting odorous processing vapours and fumes from the Rendering Plant for treatment by the Bio-Filter. This section of the process is known as the Point Source Extraction System, (PSES).</p>	EVAPORATION PROCESS TITLE	TEMPERATURE RANGE	1/ Disc drier vapour	95-105 degrees	2/ Evaporator contents	65-85 degrees	3/ Evaporator condensate	65-85 degrees	4/ Vacuum Condensor	60-65 degrees	5/ Condensor	60-70 degrees	6/ Vacuum Condensor inlet water	10-20 degrees
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6/ Vacuum Condensor inlet water	10-20 degrees															
2	Disc Drier	<p>NOTE: Prior to start up of the Rendering plant, drier temperature trends should be viewed since the previous drier shut down time. The temperature trend should always be downwards over time. In the event that the temperature trends downwards at a slower rate than normally expected or increases then do not start the plant and immediately inform the Rendering Foreman. Failing that contact the Operations or Plant Manager.</p> <p>a) Open steam valve at the pressure reducing station. (Open slowly so as to alleviate steam hammer).                      b) At the control interface click on the meal icon at the bottom of the screen.                      c) Click on the PRV icon and set the pressure at 1.2 bar. Ensure that the PRV is in ‘auto’.</p>														

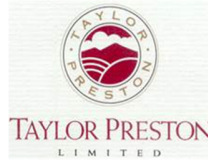


TAYLOR PRESTON – ME86

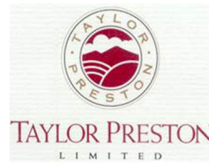
STEP	OPERATION	WORK INSTRUCTIONS				
		<p>d) Click on the ‘disc drier oil cooler pump’ icon, then click ‘auto’ and ‘on’. Click on the ‘disc drier’ icon, click ‘auto’ and ‘on’. The drier will now start automatically once 1.0 bar of steam pressure is achieved. As the load increases on the drier increase the set point of the steam pressure accordingly to achieve an end point temperature slightly above the discharge set point of 110 degrees. (The time/temperature parameter for meat and bone meal is 115 degrees for 60 minutes). Always leave the PRV in ‘auto’ unless absolutely necessary. Use of the ‘manual’ mode will deliver up to 6 bar of steam pressure which is to be avoided.</p> <p>e) For any problems encountered refer to the disc drier manual and/or consult your Supervisor, Foreman or Engineer.</p> <p>NOTE; The discharge temperature of meat and bone meal from the disc drier discharge conveyor is determined by Overseas Market Access Requirements, (OMAR). At Taylor Preston a decision was made to supply meat and bone meal to the Indonesian Market only. This is due to Indonesia’s OMAR which states that a drier discharge temperature of &lt;110 degrees is compliant with the necessary time/temperature parameters that the disc drier is validated against.</p> <p style="text-align: center;">STEAM FIRED DISC DRIER OPERATING TEMPERATURES</p> <table border="1" data-bbox="459 981 1385 1048"> <thead> <tr> <th data-bbox="459 981 922 1014">DISC DRIER PROCESS TITLE</th> <th data-bbox="922 981 1385 1014">TEMPERATURE RANGE</th> </tr> </thead> <tbody> <tr> <td data-bbox="459 1014 922 1048">Disc Drier discharge conveyor</td> <td data-bbox="922 1014 1385 1048">110-130 degrees</td> </tr> </tbody> </table>	DISC DRIER PROCESS TITLE	TEMPERATURE RANGE	Disc Drier discharge conveyor	110-130 degrees
DISC DRIER PROCESS TITLE	TEMPERATURE RANGE					
Disc Drier discharge conveyor	110-130 degrees					
3	Milling, Meal Transfer and Storage	<p>NOTE: <i>If unmilled meat and bone meal has been stored in the surge bin adhere to the following procedure now. If the surge bin is empty the following procedure can be adhered to <b>once</b> meat and bone meal has begun to discharge from disc drier. The surge bin is checked manually.</i></p> <p>a) Click on “Meal ventilation dust collector” icon, then click auto and on.</p> <p>b) Click on the “Meal conveyor No 2” icon, then click “auto” and on.</p> <p>c) Click on the “Meal conveyor No 1” icon, then click “auto” and on.</p> <p>d) Click on the “Mill discharge conveyor” icon, then click “auto” and on.</p> <p>e) Click on the “Meal Mill” icon, then click “auto” and on.</p> <p>f) Click on the “Mill feed conveyor” icon, then click “auto” and on.</p> <p>g) Click on the “Meal surge bin discharge conveyor” icon, then click “auto” and on.</p> <p>h) Click on the “Surge bin feed conveyor” icon, then click auto and on.</p> <p>i) Click on the “Drier discharge conveyor” icon then click auto and on.</p> <p>NOTE: <i>The “Drier discharge conveyor” is automatically started once the discharge temperature has exceeded or is equal to 110 °C.</i></p> <p>j) For any problems encountered during this procedure consult your Supervisor, Foreman or Engineer.</p> <p>NOTE: The Milling process is fitted with extraction ducts which are independent of the Rendering Plant PSES. Odorous fumes from the Mill, Surge bin, associated conveyors and shaker screen are extracted to a bag filter situated on top of the Meat and Bone meal silo. Any residual odour is then treated by a carbon filter at ground level before being vented to atmosphere. If for any reason the system is compromised, stop the Milling process and contact you Supervisor and/or Foreman.</p>				
4	Separator	<p>At the control interface click on the process icon at the bottom of the screen.</p> <p>a) Click on the “Separator” icon, then click “auto” and on.</p> <p>b) Click on the “Separator feed valve” icon, then click “auto” and on.</p> <p>c) Click on the “Separator hot water valve” icon, then click “auto” and on.</p> <p>d) Click on the “Separator pressure pump” icon, then click “auto” and on.</p>				



STEP	OPERATION	WORK INSTRUCTIONS						
		<p>e) Click on the “Separator de-sludge valve” icon, then click “auto” and on.            f) Click on the “Sludge pump” icon, then click “auto” and on.            g) Click on the “Tallow transfer pump” icon, then click “auto” and on.            h) Click on the “Stickwater bypass valve” icon, then click “auto” and on.            i) Click on the “Separator feed tank agitator” icon, then click “auto” and on.            j) Click on the “Separator feed tank steam valve” icon, then click “auto” and on            k) Click on the “acid pump” icon, then click “auto” and on. Turn on the duty acid pump isolator and ensure that the applicable valves are in the correct position at the dosing pump, and the Separator feed tank acid dosing check valve.            l) The Separator will take 9 minutes to start. The status icon will change from “Run star” to “Run delta” and the “Separator feed valve” icon will change to open.            m) At this point ensure that the stickwater valves are open to drain, open the Separators hot water isolating valve, partially open the manual hot water valve and depress the manual flush valve.            n) Return to the machine every 5 minutes or so during start up and depress the manual flush button.            o) For any problems encountered during this procedure consult your Supervisor, Foreman or Engineer.</p> <p style="text-align: center;">SEPARATOR OPERATING TEMPERATURE AND Ph</p> <table border="1" data-bbox="464 1048 1385 1144"> <thead> <tr> <th data-bbox="464 1048 924 1077">SEPARATOR PROCESS TITLE</th> <th data-bbox="927 1048 1385 1077">TEMPERATURE/pH RANGE</th> </tr> </thead> <tbody> <tr> <td data-bbox="464 1081 924 1111">Separator feed tank temperature</td> <td data-bbox="927 1081 1385 1111">90-95 degrees</td> </tr> <tr> <td data-bbox="464 1115 924 1144">Separator feed tank pH</td> <td data-bbox="927 1115 1385 1144">4.3-4.8</td> </tr> </tbody> </table>	SEPARATOR PROCESS TITLE	TEMPERATURE/pH RANGE	Separator feed tank temperature	90-95 degrees	Separator feed tank pH	4.3-4.8
SEPARATOR PROCESS TITLE	TEMPERATURE/pH RANGE							
Separator feed tank temperature	90-95 degrees							
Separator feed tank pH	4.3-4.8							
5	Raw Material – Particle size reduction and Pre-Cooking	<p>NOTE: <i>Allow raw material to accumulate in the raw material bin until there is enough to ensure a continuous supply and optimum performance.</i></p> <p>a) At the control interface click on the raw material icon at the bottom of the screen.            b) Click on the “Raw material bin conveyor” icon, then click “auto” and on.            NOTE: <i>the “auto” function of the raw material bin conveyor allows for the conveyor to start and stop at pre-determined intervals. This helps alleviate problems associated with raw material degradation. The “manual” function allows for the conveyor to be run forward or, if the need arises, in reverse.</i></p> <p>c) Click on the “Pre-cooker oil cooler” icon, then click “auto” and on.            d) Click on the “Pre-cooker” icon, then click “auto” and on.            e) Click on the “Pre-cooker steam valve” icon, then click “auto” and on.            f) Click on the “Pre-cooker feed conveyor” icon, then click “auto” and on.            g) Click on the “Discharge conveyor” icon, then click “auto” and on.            h) Click on the “Fine crusher” icon, then click “auto” and on.            i) Click on the “Metal detector belt conveyor” icon, then click “auto” and on.            j) Click on the “Raw material discharge conveyor” icon, then click “auto” and on.            NOTE: <i>Set the speed of the conveyor by right clicking the mouse on the percentage output icon and adjusting on the pop-up keypad. Set the percentage output at 100% initially until raw material is observed dropping onto the metal detector belt conveyor, then slow the percentage output to 75%.</i></p> <p>k. Turn on the pre-cooker steam valve.            l. Ensure that the pre-cooker knife gate and the drainer conveyor drain valve are shut.</p>						

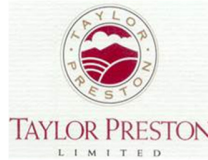


STEP	OPERATION	WORK INSTRUCTIONS				
		<p>m. If any problems are encountered with this procedure consult your Supervisor, Foreman or Engineer. For problems specific to the pre-cooker refer to the pre-cooker manual.</p> <p>NOTE: The Pre-Cooker discharge conveyor is interlocked with the Pre-cooker temperature probe so that if the discharge temperature drops below 90 degrees the discharge and Pre-Cooker feed conveyors are stopped. This is to ensure that we comply with the time/temperature parameter of 90 degrees for 10 minutes.</p> <p style="text-align: center;"><b>PRE-COOKER OPERATING TEMPERATURES</b></p> <table border="1" data-bbox="462 698 1385 772"> <thead> <tr> <th data-bbox="462 698 943 734">PRE-COOKER PROCESS TITLE</th> <th data-bbox="943 698 1385 734">TEMPERATURE RANGE</th> </tr> </thead> <tbody> <tr> <td data-bbox="462 734 943 772">Pre-cooker discharge weir</td> <td data-bbox="943 734 1385 772">90-95 degrees</td> </tr> </tbody> </table>	PRE-COOKER PROCESS TITLE	TEMPERATURE RANGE	Pre-cooker discharge weir	90-95 degrees
PRE-COOKER PROCESS TITLE	TEMPERATURE RANGE					
Pre-cooker discharge weir	90-95 degrees					
6	Press-Dewatering	<p>At the control interface click on the raw material icon at the bottom of the screen.</p> <ol style="list-style-type: none"> <li>Open the hot water valve on the drainer conveyor ¼ of a turn.</li> <li>At the control interface click on the “Drainer conveyor pump” icon, then click “auto” and on. Remove the rear cover of the double screw press so the hot water from the drainer conveyor pump can be observed accumulating in the press trough.</li> <li>Click on the “Press liquid pump” icon, click “auto” and on.</li> <li>Ensure that the decanter feed tank drain valve is open. Hot water can be observed draining from the tank via the press liquid pump.</li> <li>Click on the “Drainer conveyor” icon, then click “auto” and on.</li> <li>As pre-cooked solids exit the pre-cooker they will fall into the discharge conveyor. When the liquid entering the press trough begins to yellow, turn off the hot water valve on the drainer conveyor and close the drain valve on the decanter feed tank.</li> <li>Click on the meal icon at the bottom of the screen, click on the “Drier feed conveyor” icon, then click “auto” and on.</li> <li>Click on the raw material icon at the bottom of the screen, click on the “Presscake conveyor” icon, then click “auto” and on.</li> <li>Once the pre-cooked solids evident in the press chute are about halfway up the sight glass, click on the “Double screw press” icon, then click “auto” and on. After about 10 minutes pressed solids will exit the press and begin to feed the drier. It is important to monitor the load on the drier and adjust the main steam valve to suit.</li> <li>The press trough needs to be monitored to prevent press fines from blocking the trough and preventing liquid from exiting. Use the manual pusher for this as it is important not to add excessive amounts of water to this part of the process.</li> <li>For any problems encountered during this procedure refer consult your Supervisor, Foreman or Engineer. For problem specific to the double screw press refer to the manual.</li> </ol>				
7	Liquid Phase	<p>At the control interface click on the process icon at the bottom of screen.</p> <ol style="list-style-type: none"> <li>Click on the “Decanter feed tank steam valve” icon, then click “auto” and on.</li> <li>Click on “Decanter feed tank agitator” icon, then click “auto” and on.</li> <li>Click on the “Decanter drive” icon, then click “auto” and on.</li> <li>Click on the “Decanter back drive” icon, then click “auto” and on.</li> <li>The decanter will take 3 min to start and will be evident once the decanter main drive status icon changes from Run star to Run delta.</li> <li>Close the discharge valve on the decanter feed tank and partially open the hot water supply valve.</li> </ol>				



STEP	OPERATION	WORK INSTRUCTIONS						
		<p>g) Click on the “Decanter feed pump” icon, then click “auto” and on. Set the pump output speed to 50%.</p> <p>h) When the level in the decanter feed tank reaches 40% open the discharge valve and close the hot water supply valve.</p> <p>i) Close the decanter drain valve</p> <p>j) Click on the “Decanter liquid pump” icon, then click “auto” and on.</p> <p>k) Ensure that the Separator feed tank drain valve is shut.</p> <p>l) Close the Separator feed tank discharge valve and partially open the hot water supply valve.</p> <p>m) Click on the “Separator feed pump” icon, then click “auto” and on</p> <p>n) Set the pump output at 50%. Close the manual hot water valve.</p> <p>o) When the level in the Separator feed tank reaches 40%, open the discharge valve, turn off the hot water supply valve.</p> <p>p) Open the stickwater valve to the Evaporator and close the stickwater to drain valve.</p> <p>q) At the control interface, click on the Evaporator icon at the bottom of the screen.</p> <p>r) Click on the “Concentrate discharge pump” icon, then click “auto” and on.</p> <p>NOTE: The concentrate solid content must be checked hourly and recorded on the log sheet using a ‘refractometer’. The solid content should not be allowed to exceed 20%, this can be achieved by utilising the ‘Concentrate discharge pump’ output speed, and/or by adding hot water to the concentrate. Excessive fat content in the concentrate will increase fat levels in the meat and bone meal and create Milling and shaker screen issues. It may also lead to non-compliant product specification.</p> <p style="text-align: center;">LIQUID PHASE OPERATING TEMPERATURES</p> <table border="1" data-bbox="464 1205 1385 1305"> <thead> <tr> <th data-bbox="464 1205 963 1238">LIQUID PHASE PROCESS TITLE</th> <th data-bbox="963 1205 1385 1238">TEMPERATURE RANGE</th> </tr> </thead> <tbody> <tr> <td data-bbox="464 1238 963 1272">Decanter feed tank</td> <td data-bbox="963 1238 1385 1272">&lt;90 degrees</td> </tr> <tr> <td data-bbox="464 1272 963 1305">Separator feed tank</td> <td data-bbox="963 1272 1385 1305">&lt;90 degrees</td> </tr> </tbody> </table>	LIQUID PHASE PROCESS TITLE	TEMPERATURE RANGE	Decanter feed tank	<90 degrees	Separator feed tank	<90 degrees
LIQUID PHASE PROCESS TITLE	TEMPERATURE RANGE							
Decanter feed tank	<90 degrees							
Separator feed tank	<90 degrees							
<ul style="list-style-type: none"> <li>• The plant is now fully operational and the operator’s primary concerns are to ensure that all odour extraction processes are functional and that sterilisation parameters are met.</li> <li>• Close monitoring of feed rates is required to achieve ‘equilibrium’ and ensure smooth and consistent operation. Excessive alteration to feed rates should be avoided as this will create a ‘ripple effect’ which leads to an ‘unsettled’ plant.</li> </ul>								





## B KEY TASKS – Warm Start Procedure

**NOTE:** a) It is imperative that the Bio-Filter is operational before the Rendering Plant can be started. If a failure of the Bio-Filter process occurs during Rendering Plant processing, the DAF plant Operator will inform the Rendering Operator to shut down immediately. The Evaporator Plant is interlocked with the disc drier ensuring that it must be started before the Rendering Plant can begin processing. The Evaporator Plant will therefore be the first section of the plant to be started, and the last section of the Rendering Plant to be stopped following a shut down.

b) In the event that the Rendering Plant cannot be started within 4 hours of receiving the raw material, the raw material must be subjected to a stabilisation process. A dedicated Sulphuric acid dosing system can be utilised, which enables the raw material to be sprayed with a dilute form of Sulphuric acid. The stabilisation process reduces the rate at which the raw material degrades, minimising odour and rancidity.

There are many different scenarios that necessitate the need for a warm start. The majority of warm starts are performed after a minor period of downtime. The procedure below is for restarting the plant after it has been shut down as quickly as possible.

STEP	OPERATION	WORK INSTRUCTIONS
1	Evaporator Plant	<ul style="list-style-type: none"> <li>• The evaporator can be left largely unattended during minor stops.</li> <li>• If the delay is extended or after processing blood, some hot water may have been applied at the stickwater tank.</li> <li>• This depends on the load on the drier at the time and evaporation rates.</li> <li>• If some hot water has been applied, leave it on until the stickwater is again flowing into the stickwater tank from the Separator. This will occur at the completion of the warm start.</li> <li>• If the delay has been further extended the Evaporator may have been turned off. In this instance refer to the cold start procedure.</li> </ul>
2.	Disc Drier	<ul style="list-style-type: none"> <li>• For short delays or after processing blood the drier can also be left largely unattended.</li> <li>• For extended delays the drier steam would have been isolated and the drier may have been turned off. In this instance refer to the cold start procedure.</li> </ul>
3.	Raw Material – Particle size reduction and pre-cooking	<ol style="list-style-type: none"> <li>a) At the control interface click on the raw material icon at the bottom of the screen.</li> <li>b) Click on the “Pre-cooker” icon, then click “auto” and on.</li> <li>c) Click on the “Pre-cooker feed conveyor” click “auto” and on. The “Discharge conveyor” will start automatically due to interlocks applied at the interface.</li> <li>d) Click on the “Fine crusher” icon, then click “auto” and on.</li> <li>e) The “Metal detector belt conveyor” and “Raw material discharge conveyor” will now automatically start due to interlocks applied when the pre-cooker feed conveyor is stopped.</li> </ol>
4.	Press Dewatering	<ol style="list-style-type: none"> <li>a. Click on the “Drainer conveyor” icon then click “auto” and on.</li> <li>b) Partially turn on the drainer conveyor hot water supply valve.</li> <li>c) Click on the “Drainer conveyor pump” icon, then click “auto” and on.</li> <li>d) When hot water is evident entering the press trough click on the “Press liquid pump” icon, then click “auto” and on.</li> <li>e) When the material has begun to exit the pre-cooker weir, the drainer conveyor liquid entering the press trough will start to yellow. At this point turn off the drainer conveyor hot water supply valve.</li> </ol>



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<b>STEP</b>	<b>OPERATION</b>	<b>WORK INSTRUCTIONS</b>
		f) When the pre-cooked solids are evident about halfway up the press chute sight glass; Click on the “Double screw press” icon, then click “auto” and on.
5.	Liquid Phase	The following procedure applies when both the decanter and Separator tanks have been left half full. a) Open the decanter feed tank discharge valve and close the hot water supply valve. b) Open the Separator feed tank discharge valve and close the hot water supply valve. c) Open stickwater to Evaporator valve and close stickwater to drain valve.



### 7.34 General Cleaning Procedure (RP301):

## **GENERAL CLEANING (RP301) – Rendering Operator and Labourer**

The following table sets out the cleaning work instructions for the Rendering department

STEP	OPERATION	WORK INSTRUCTIONS
<b>CLEANING PROCEDURES</b>		
1	At the completion of Rendering	<ul style="list-style-type: none"> <li>• Hot hose the raw material bin, raw bin discharge conveyor, metal detector belt conveyor, fine crusher, discharge conveyor and pre-cooker feed conveyor. Sweep and shovel scraps into a wheelbarrow and transfer to bin for disposal.</li> <li>• Hot hose the pre-cooker, drainer conveyor and double screw press. Sweep and shovel scraps into a wheelbarrow and transfer to bin for disposal.</li> <li>• Hot hose walls and environs, exterior of machinery and walls.</li> <li>• Once the shutdown is completed, dose the interior and exterior of the plant with odour neutralizer.</li> <li>• If shutting down before a weekend or extended break, dose 'Bio-Zyme' or 'B+E Booster' down all the drains in and around Rendering.</li> </ul>
2	Cleaning the Mill	<ul style="list-style-type: none"> <li>• Sweep and shovel waste meat and bone meal into a wheelbarrow for transfer to the rework conveyor for re-sterilisation.</li> <li>• Any trolleys of wool/MBM should be transferred to the landing at the front of Rendering for rotation into a bin, which is then rotated onto Paranui Organics truck and/or trailer.</li> <li>• <b>IMPORTANT:</b> The Mill is a dry area and cannot be hosed during production hours. Keep as clean as possible using brooms and shovels.</li> </ul>



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## CLEANING IN PLACE (CIP) - Done by the designated Rendering Operator

There are four areas associated with the press dewatering plant that require regular CIP with a solution of sodium hydroxide, (caustic). These areas are the pre-cooker, the liquid phase system, the blood coagulator and the Evaporator.

STEP	OPERATION	WORK INSTRUCTIONS
1.	Pre-Cooker	<p>The pre-cooker is the only part of the process in which a CIP can be carried out whilst processing blood. Once the pre-cooker has been turned off as part of the shutdown;</p> <ol style="list-style-type: none"> <li>Close the pre-cookers knife gate drain valve and the drainer conveyor drain valve.</li> <li>Add 10kgs, (2 x scoops), of caustic soda mini-pearls to the empty pre-cooker and turn on the hot water valve affixed to the top of the pre-cooker. Once the solution water level has reached the shaft of the rotating assembly turn off the hot water valve.</li> <li>At the control interface click on raw materials logo at bottom of screen.</li> <li>Click on the “Pre-cooker” icon, then click “auto” and on.</li> <li>The pre-cooker can be left in this manner for the duration of the blood processing or for at least an hour. When ready to re-commence processing raw material;</li> <li>Click on the “Pre-cooker” icon, then click “auto” and off.</li> <li>Open the drain valve on the drainer conveyor and the knife gate on the pre-cooker.</li> <li>Once all the caustic solution has drained, close the pre-cooker knife gate and turn on the hot water valve.</li> <li>After about 5 minutes turn off the hot water valve, open the knife gate and allow the flush water to drain.</li> <li>Once the flush water has drained, close the knife gate.</li> </ol> <p><b>Pre-cooker now clean and ready to recommence processing raw material.</b></p>
2.	Liquid Phase	<p>The liquid phase includes the decanter feed tank, the decanter, the separator feed tank, the Separator and associated pipework. The CIP must be carried out at least once every 24 hour period.</p> <ol style="list-style-type: none"> <li>When all processing of raw material has finished and the shutdown is complete a CIP can be carried out on the liquid phase. Leave the Separator and the decanter operational.</li> <li>Close the drain valve on the decanter feed tank ensuring that the tank is empty.</li> <li>Using the scoop provided, add 8 kgs of Caustic soda mini-pearls to the decanter feed tank.</li> <li>Open the decanter feed tank discharge valve and open the hot water supply valve.</li> <li>Fill the decanter feed tank to 65%. This equates to a caustic solution concentration of 0.4%.</li> <li>Close the hot water supply valve. At the control interface click on the process logo at the bottom of the screen. Click on the “Decanter feed pump” icon, then click “auto” and on.</li> <li>Close the decanter drain valve. Click on the “Decanter liquid pump” icon, then click “auto” and on. Ensure that the separator feed tank drain valve is closed</li> </ol>



		<ul style="list-style-type: none"> <li>h) When the level in the separator feed tank reaches 30%, ensure that the tank discharge valve is open.</li> <li>i) Close the stickwater to Evaporator valve and the stickwater to drain valve. Open the stickwater to decanter feed tank valve.</li> <li>j) Click on the “Separator feed pump” icon, then click “auto” and on.</li> <li>k) Click on the “Acid pump” icon, then click “manual” and off.</li> <li>l) The caustic solution will now circulate through the liquid phase stripping lines and tanks of any residual build up.</li> <li>m) When the time arrives to cease the CIP, click on the “Acid pump” icon, then click “auto” and on. The acid will now dose and lower the pH to a level where DAF plant performance is not adversely affected when the tanks are emptied.</li> <li>n) When the pH is about 7, open the decanter feed tank hot water supply valve and close the tank discharge valve. Open the decanter feed tank drain valve.</li> <li>o) Open the separator feed tank hot water supply valve and close the tank discharge valve. Open the separator feed tank drain valve.</li> <li>p) After 5 minutes click on the “Decanter feed pump” icon, then click “auto” and off. Click on the “Decanter liquid pump” icon, then click “auto” and off. Close the decanter feed tank hot water supply valve and open the decanter drain valve.</li> <li>q) Click on the “Separator feed pump” icon, then click “auto” and off. Close the tank hot water supply valve.</li> <li>r) Open the stickwater to drain valve and close the stickwater to decanter feed tank valve.</li> </ul> <p><b>Liquid phase is now cleaned and ready to re-commence processing.</b></p>
3.	Evaporator Plant	<p>The Evaporator is to be flushed with a caustic solution every Monday morning before processing commences.</p> <ul style="list-style-type: none"> <li>a) Close the Evaporator and stickwater tank drain valves.</li> <li>b) Carefully insert 60kgs of caustic soda mini-pearls into the stickwater tank.</li> <li>c) Open the stickwater tank discharge valve and the stickwater tank hot water supply valve.</li> <li>d) Fill the stickwater tank to 60%. This equates to 3,000 litres of 2% caustic solution.</li> <li>e) At the control interface click on the Evaporator logo at the bottom of the screen.</li> <li>f) Click on the “On” button in the box labelled “Evaporator area on/off control”</li> <li>g) The caustic solution will now be drawn into the Evaporator and circulate through the tubes.</li> <li>h) The caustic solution should be allowed to circulate for at least 2 hours preferably longer. When ready to start the processing of raw material;</li> <li>i) Click on the “Off” button in the box labelled “Evaporator area on/off control”.</li> <li>j) Open the Evaporator and stickwater tank drain valves.</li> <li>k) Once the Evaporator and stickwater tank are empty follow the plant cold start procedure to ready the Evaporator for processing.</li> </ul>



## 8.0 Biofilter Operation Management Plan (BOMP)

*“The BOMP shall be reviewed by the consent holder **annually within one month of the anniversary** of the granting of this consent. It shall be updated to reflect any changes in the operation or management of the rendering operation that may have affected the discharge(s) of odour. The consent holder shall ensure that a copy of the updated BOMP is submitted to, and is to the satisfaction of, the Manager, Environmental Regulation, Wellington Regional Council, within **one month** of any update.*

*The Biofilter shall be operated in accordance with the procedures in the approved BOMP and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.*

The biofilter is an essential part of ensuring that odorous compounds, emitted during certain processes operated at Taylor Preston Ltd., are treated to ensure that they are undetectable beyond the plant boundary. The processes mentioned in this procedure cannot operate if the biofilter is not operating. It is the responsibility of the wastewater, (DAF), and plant operator to start and stop the biofilter fan as required, and alert all applicable staff in the event of a biofilter process failure.



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### 8.1 Procedure for starting the DAF plant and Biofilter:

#### HEALTH AND SAFETY –

If at any stage of this procedure, you or your co-workers Health and/or Safety may be compromised, or you notice a hazard or potential hazard that cannot be eliminated, stop immediately and contact your Supervisor and/or Foreman.

#### BIOFILTER –

The biofilter is responsible for treating malodorous compounds emitted from the rendering and DAF processes, it is therefore the first item of machinery to be started. If for any reason the biofilter is inoperative, notify the rendering staff immediately that they must stop the rendering process, and the edible tallow operator must stop rendering white fat.

#### START UP –

- 1/ Press the green button on the biofilter fans 'Soft Start' VSD located in the DAF plant control room. Speed should be set at 45.5 Hertz.
- 2/ Physically check that the fan is rotating and running smoothly.
- 3/ Close the Humidifiers drain valve, and open the cold water supply valve.





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4/ Turn on the biofilter humidifiers level probe control isolator, the spray pumps isolator and the level probe cold water supply valve. NOTE: Ensure that the isolator for the submersible pump, situated in the sump between the biofilter fan and the biofilter in feed duct, is on. This pump should be operational at all times.



The biofilter is now operational and all processes reliant upon its operation can now function.

#### IMPORTANT!

DAF (DISSOLVED AIR FLOTATION) PLANT OPERATION PROTOCOL – The entire abattoir, and all processes within, are dependent upon the DAF plants operation and performance. When the DAF's performance is compromised, for short periods of time, there is no need to stop the abattoir's processes. If, however, the DAF plant performance is compromised for an extended period of time, inform your rendering foreman.





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**8.2 Procedure for starting both DAF plants simultaneously recording data:**

To help determine dose rates and efficiencies, certain data must be recorded as the plant is started. They are the flow meter readings, the polymer make up unit timer reading and the polymer make up unit dosing tank level.

**FLOW METERS –**

Record the total flow readings from each flow meter and record on the log sheet.



**POLYMER MAKE UP UNIT READINGS –**

At the polymer make-up unit open the door to the control panel and turn on the main power switch. Once the yellow fault indication turns off, turn the 'Duty Selection' switch to 'Auto' and the 'Status screen', (page 1), will appear. Touch the 'Next page' screen tab until 'Status screen, (Page 3), is displayed, 'Screw feeder total run time'. Record the 'Hours, minutes and seconds', on the log sheet, along with the measurement of the distance between the made up polymer and the top of the tank.



**PHYSICAL CHECKS BEFORE START UP:**

**ISOLATORS –**

Before starting the plant at the PC interface, ensure that the following isolators are in the 'On' position.

**SKIMMERS –**

Ensure that each DAF's skimmer isolators are in the 'on' position.



**CROSS COLLECTORS –**

Ensure that each DAF's cross collector isolators are in the 'on' position.



'GUARDED ACCESS'

'UNGUARDED'

'GUARD IN PLACE'



## TAYLOR PRESTON – ME86

### AERATION, (CORNELL), PUMPS –

The 3 Cornell pumps supply dissolved air to the DAF's. Typically, each DAF is supplied by one pump, with the remaining pump acting as a standby. The pumps are supplied with water from the DAF's, and saturate it with air drawn from atmosphere, before delivering it to the aeration bars fitted in each DAF.



Before starting the cornell pumps ensure the following:

1/ Select the two pumps that will be 'on' duty and ensure that the applicable labelled isolators are in the 'on' position. (3 – 2 – 1).



2/ Check that the valves, which supply water from the DAF's to the pumps, are in the correct position for each duty pump.

3/ Check that the applicable valves on the delivery line from the pumps to the DAF's are in the correct position.



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4/ Open the air intake valves to the duty pumps.



5/ Enter the control room, select the applicable cornell pumps 'soft start', and press the green start button. (3 – 2 – 1).



6/ Allow a settling period check the recycle pressures at the PC interface. A recycle pressure of 400-450KPa is required for optimum performance. Adjustment can be made by opening or closing the valves on the delivery lines at the rear of the DAF's. Open to decrease pressure, and close to increase pressure. Use the pressure transducer display readings, on the delivery lines alongside the DAF's, to set the pressures.



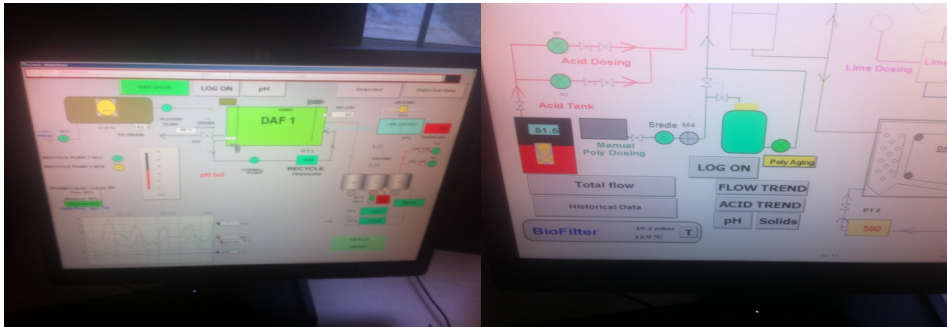


## TAYLOR PRESTON – ME86

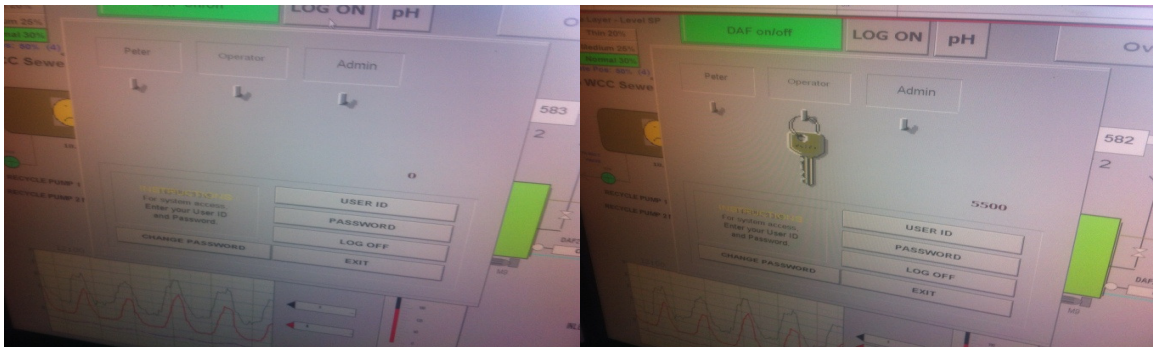
### STARTING THE DAF PLANT -

To continue starting the DAF plant firstly, you must 'log on' to the Personal Computer, (PC).

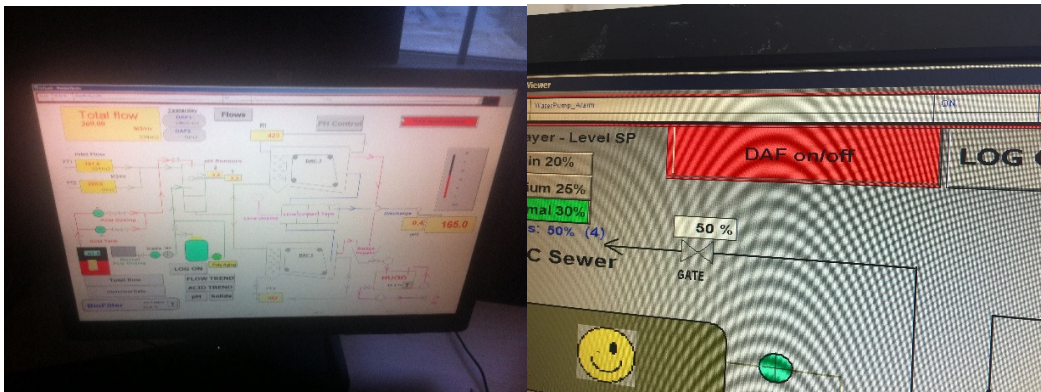
1/ 'Click' on the 'Overview' tab located at the top of the DAF PC screen, then 'click' on the 'Log On' icon.



2/ 'Click' on the 'User ID' tab and enter 'Operator'. 'Click' on the 'Password' tab and enter 'Chevy'. A set of keys will appear on the 'Operator hook' when logged on. 'Click' exit to remove the log on box icon.



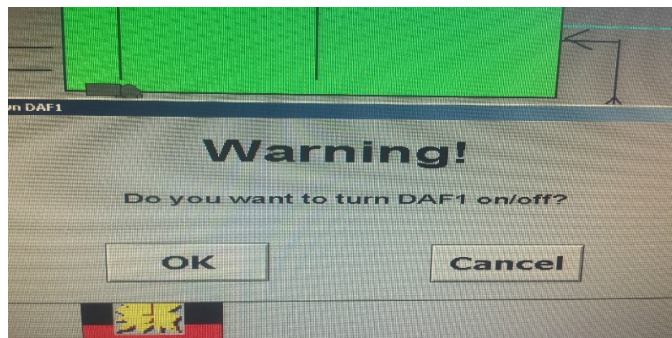
3/ On the 'Overview' screen, hover the 'mouse arrow' over 'DAF 1' and 'click'. Now 'click' on the 'DAF on/off' tab at the top of the screen.





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A 'pop up' box will ask 'Do you want to turn DAF1 on/off?' Click 'OK'. This tab will turn on the DAF 1's skimmers and cross collectors.



Now hover the 'mouse arrow' over DAF 1 on the screen and 'click'. The screen will now display DAF 2. 'Click' on the 'DAF on/off' tab and confirm yes when asked 'Do you want to turn DAF2 on/off?' This tab will turn on DAF 2's skimmers and cross collectors.

### ACID DOSING PUMPS –

**WARNING** – 98% Sulphuric Acid is an extremely hazardous substance and all efforts should be made to avoid coming into direct contact. If by accident acid comes into contact with any body part and/or item of clothing flush immediately with copious amounts of cold water. PPE – Although starting the acid dosing pumps requires no direct contact with Sulphuric Acid, for safety reasons wear eye and hand protection.

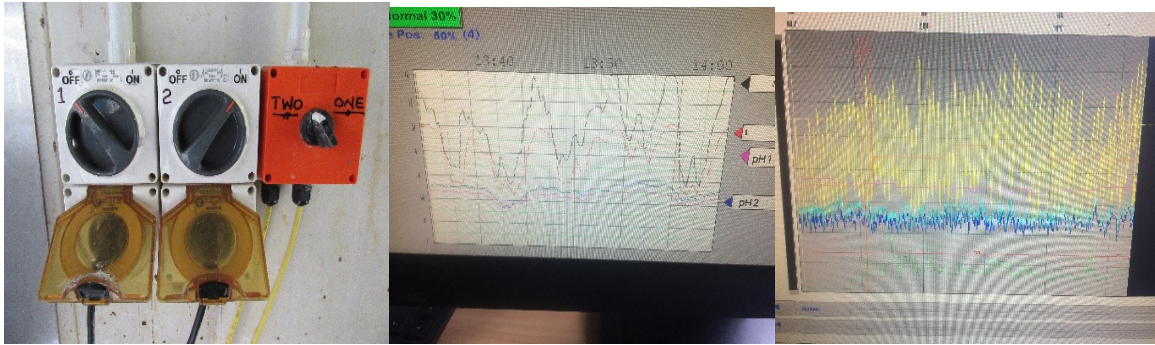
**CAUTION** – If you notice any leaks, visible air bubbles in the suction and/or delivery lines, or anything that you consider 'out of the ordinary', err on the side of caution and contact your rendering foreman immediately. 98% Sulphuric Acid is unforgiving and will burn you instantly. Contact with the eye will almost certainly result in blindness of that eye. It is therefore extremely important that any potential issues are identified and addressed early, no matter how trivial or nonsensical it may appear.

1/ Select the dosing pump that will be the 'duty' pump for the day, ideally alternate duty each morning, and turn on the applicable isolator. Ensure that the infeed and outfeed valves, fitted to the suction line from the bulk tank and the DAF delivery lines, are open. Ensure that the corresponding valves for the non-duty pump are closed.



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2/ Switch the PLC logic control switch to the applicable pump number. The PLC will now dose acid dependent upon the set point and incoming flow levels. Check that acid is being delivered to the DAF's by checking the chart on the PC screen and/or the 'Historical data' screen.



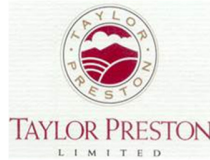
**POLYMER DOSING PUMPS –**

1/ Firstly, select the pump that will be the 'duty' pump for the day. Once selected open the applicable valves from the make-up unit to the pump. Polymer pump No 2 on duty in pictures. Ensure that the isolation valve from the make-up unit is open, and that the valve on the delivery line is open.



2/ In the control room turn on the 'Polymer dosing' switch. Check that the pump shaft is turning on the applicable pump, turn on the flow meter isolator and check that polymer flow is displayed on the flow meter.





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3/ The first tank is for acid addition, the second is for polymer addition and the third allows activation time for the polymer. Visually check that polymer is being delivered to the polymer addition tank.



4/ Turn on the acid and polymer dosing tanks agitators. The acid addition tank agitator is turned on and off using the isolator and the polymer dosing tank agitator is controlled by a switch in the control room.



5/ Ensure that the 'Floc-Gro' tank water jets are flowing and turn on the pneumatic 'coaxer'. These help prevent sludge build-up in the 'Floc-Gro' tank and encourages flocculation.





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6/ The weirs on each DAF should be set according to the incoming flow. For high flows lower each weir to control the level in the DAF's. For lower flows raise the weirs so that the top 5-10mm of each skimmer is visible. Although the incoming flow is subject to huge variances, due to the fact that there is no flow control pre-DAF, it is very important to ensure that the weirs are adjusted to suit kill levels. If the DAF levels are allowed to drop below the skimmers there is an increased risk of sludge build-up and potentially breaking a skimmer. Alternatively, if the level is allowed to rise above the skimmers, an excessive amount of water will be collected with the sludge. This can create issues at the belt press and increased running costs will result. To adjust the weir height, use the applicable actuator switch.



It is important to understand the correlation between weir height and skimmer level.

**7/ RAW SLUDGE COLLECTION HOPPER –**

The raw sludge is floated, skimmed and cross collected into a hopper between the DAF's. The hopper is equipped with high and low level probes, and the cross collectors are fitted with speed controllers. Due to the fat content of raw sludge, the hopper has a hot water supply to allow operators to flush the hopper, pumps and lines between the hopper and 'Hugo' and remove any fat build up.





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### 8/ RAW SLUDGE TRANSFER PUMPS –

The raw sludge transfer pumps are automatically activated by level probes within the hopper. High level starts the duty pump to transfer raw sludge to the bulk holding tank, ('Hugo'). The low level probe stops the duty pump. Select the duty pump, ensure that the applicable valves are open from the raw sludge hopper to the pump, then open the air supply valve for the duty pump.



### 9/ BULK RAW SLUDGE CONTAINMENT –

The raw sludge removed from each DAF has a solid content of approximately 8-10%. To contain the large volumes of raw sludge produced daily a 78m<sup>3</sup> air receiver was modified and installed. History has taught us that it is wise to empty 'Hugo' at least once every 24 hours to avoid gravity dewatering of the raw sludge contained within. In more recent times it has become a requirement of Taylor Preston Ltd. 'Air Discharge Permit' that 'Hugo' is emptied once every 24 hours. This is to avoid creating objectionable odour during the belt press thickening process and subsequent pressed sludge load outs. Raw sludge enters 'Hugo', from the sludge transfer pumps, via a 3" infeed line.



### 10/ SLUDGE THICKENING –

A filter belt press is used to thicken the sludge, by dewatering, and reduce its volume by approximately 60%, from 8-10% solid to 25% solid. A separate training document and procedure apply to operating the belt press.

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**THEORY:**

The biofilter is a bed of suitable bark, (medium), that measures 10 metres by 35 metres by 2.2 metres, and contains approximately 700 cubic metres of medium. A biofilter of this size has the capacity to treat 20,000 cubic metres of odorous air borne compounds, (odorous air), per hour and treats odour from the rendering plant, edible tallow plant, effluent sludge belt press, effluent sludge storage bin, effluent sludge load outs, de-watering screen enclosure and from both DAF tanks. The 'odorous air' is drawn by a fan, situated next to the biofilter, through a humidifier, and are then forced into a series of PVC pipes with apertures along their length via a central duct, not dissimilar to an irrigation system. This design is to ensure that the full surface area of the biofilter is utilised. The odorous air will then travel upwards through the medium, where colonies of bacterium 'feed' on the odorous compounds within the air. As the once, 'odorous air', escapes the top of the biofilter bed, no odour should be detectable. To enable the biofilter to perform to its potential, several conditions and preventative maintenance plans must be followed.



**BIOFILTER 'SOFT/START' VSD**



**BIOFILTER FAN**



**BIOFILTER FAN AND HUMIDIFIER**



**BIOFILTER INFEED DUCT FROM FAN**

**TAYLOR PRESTON – ME86**



**OPERATING CONDITIONS TO ENSURE OPTIMUM PERFORMANCE TEMPERATURE -**

The temperature of the 'odorous air' forced into the biofilter must not exceed 40 degrees Celsius and shall be 35 degrees Celsius or lower for at least 95% of the time. The biofilters in-feed temperature and pressure are recorded and 'trended' on the DAF PC SCADA. The loading of the biofilter is also measured in the final air duct inlet and must never exceed a maximum limit of 37 m<sup>3</sup>/ hour. A print out is collected by the rendering foreman of the previous 24 hours infeed temperature and pressure on a daily basis. The print out is stored with the DAF plants log sheet, along with other performance data, for the same 24 hour period.



**MOISTURE –**

The moisture content of the biofilters medium is critical to overall performance and must be at least 120% of the dry weight of medium. A monthly preventative maintenance plan closely monitors the moisture level, and determines when extra moisture needs to be added. When an increase in moisture is required, sprinklers are used to deliver potable water to the surface of the medium. The sprinklers are regularly used during periods of hot dry weather.



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### DIFFERENTIAL PRESSURE –

To ensure that the odorous air can flow through the biofilter relatively unhindered, the pressure differential must be monitored. As gravity and time cause compaction of the bark bed, the pressure differential will increase. As the pressure differential increases, maintenance is planned to rotate and aerate the medium. Two manometers are fitted to the side of the biofilter and measure the pressure differential between the PVC dissipation ducts on the floor of the biofilter, and atmosphere. The difference in each of the pressure differentials also gives an indication of the pressure differential across the bark bed. The manometers are checked daily by the DAF plant operator, the pressure differentials recorded on the DAF plant log sheet, and entered into a graph by the rendering foreman.



### HUMIDITY –

The humidity of the 'odorous air' must be as close to 100% as possible. Inside the humidifier the 'odorous air' is drawn through a water curtain to ensure saturation. The humidity is measured using a hand held hygrometer, during preventative maintenance, via a port directly following the humidifier. The humidifier also has a cooling effect on the 'odorous' air.





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### **pH –**

The pH level is critical to the population and performance of bacterial colonies with the biofilter medium. Due to the acidic nature of both the rendering and DAF plant processes, the addition of Hydrated Lime is often required to raise the pH to acceptable levels. When to administer the lime is determined by monthly preventative maintenance pH tests. The DAF plant operator adds lime to the surface of the biofilter manually, attempting to cover the entire surface evenly.

### **CAPACITY –**

The ducting extraction sources are externally audited annually to ensure that the biofilters rated capacity is not exceeded, and that the biofilters performance is not therefore compromised.

### **CHEMICALS –**

No chemicals are to be administered into the ducting as they will have a negative impact on the numbers of bacterial colonies existing in the biofilter medium.

### **MEDIUM (MEDIA) -**

The bark medium (media) is 'turned' as the pressure differential across the bed increases, which, dependent upon plant throughput, normally occurs annually. Aged medium (media) is removed, and fresh medium (media) added, as and when recommended by the annual external audit.

### **VEGETATION –**

The surface of the biofilter must be kept free of weeds and grasses. The DAF operator is responsible for 'weeding' the surface on a regular basis.



## TAYLOR PRESTON – ME86

### 8.3 Biofilter Humidifier -

#### ODOUR CONTROL PHILOSOPHY:

The humidifier ensures that the air entering the biofilter is moist which prevents the biofilter from drying out and keeps the biofilter in good operating condition.

#### CRITICAL CONTROL COMPONENTS:

1. Humidification chamber (integrity, fit for purpose).
2. Humidification atomisers (fit for purpose).
3. Atomiser supply pump (mechanical condition, integrity).
4. Ducting (integrity, fit for purpose).

#### GENERAL DESIRED RESULT:

Humidification reliability.

#### CHECKS AND FREQUENCIES:

1. Daily operator checks of system integrity.
2. 6 weekly engineering checks generated by the PM system. Faults noted and remedied through the works order system.
3. 3 monthly check of humidity and temperature generated by the PM system. Faults noted and remedied through the works order system.

### 8.4 Biofilter -

#### ODOUR CONTROL PHILOSOPHY/CRITICAL CONTROL COMPONENTS:

To ensure maximum performance from the biofilter several parameters must be monitored and controlled. If any of these parameters are not met the potential for excessive odour is high. The key monitoring and maintenance requirements are described below.

#### RELATIVE HUMIDITY OF INFLUENT GAS:

The biofilter influent gas should be moisture saturated to avoid or minimise moisture loss from the biofilter. The relative humidity of the influent gas is measured every 3 months as determined by the engineering PM system. The relative humidity is also checked as part of the annual survey of the biofilter.

#### MEDIUM MOISTURE CONTENT:

The saturated influent gas should provide the Biofilter media with sufficient moisture under most operating conditions. The media is not to be saturated. However, during dry periods, evaporation from the surface of the biofilter may cause odour removal to be compromised. In this event a water irrigation system applying even amounts across the surface of the biofilter is to be used.

#### MEDIUM pH:

As pH of the biofilter medium can affect the resident microbial population and thereby effect the biofilter performance, 3 monthly checks of the bark pH is required. These checks are generated



## **TAYLOR PRESTON – ME86**

by the engineering PM system. If the pH is found to be low lime is to be added to the surface of the biofilter in an even manner.

### **INFLUENT GAS TEMPERATURE AND BED TEMPERATURE:**

Temperature effects not only the microbial activity but also the solubility of odorous compounds in water. The biofilter gas should not exceed 40 degrees Celsius. Temperatures read from in line gauges are to be recorded on the operator log sheet daily. Biofilter bed temperatures are to be measured every 3 months.

### **PRESSURE DROP ACROSS THE BIOFILTER BED:**

The static pressure head in the base of the biofilter should be less than 150mm water gauge. This is to be monitored daily and recorded on the log sheet by operation staff. If the pressure drop across the biofilter becomes greater than 150mm water gauge the medium will need to be turned.

### **ASSESSMENT OF PERFORMANCE:**

At least weekly a visual assessment and 'sniffing' test of the biofilter should be made and recorded. The following are to be subjectively assessed;

- Any emission of water vapour rising through the biofilter.
- The strength of the odour at the biofilter surface.
- Any cracks or fissures appearing in the medium.

The rendering foreman will be assigned for this to ensure continuity.

### **GENERAL DESIRED RESULT:**

No vapour or odour emitting from the biofilter bed or associated ducting.

### **CHECKS AND FREQUENCIES:**

1. Daily operator checks of influent gas temperature and biofilter bed pressure differential.
2. 6 weekly checks generated by the engineering PM system. All faults noted and remedied through the works order system.
3. 3 monthly checks generated by the engineering PM system. All faults noted and remedied through the works order system.
4. Annual survey of biofilter performance parameters, ducting and influent gas flow volumes.

## **8.5 Biofilter Fans (x2) -**

### **ODOUR CONTROL PHILOSOPHY:**

There are 2 fans used for air movement to the biofilter.

1. Concentrated sources fan from rendering - centrifugal fan which runs in conjunction with the rendering plant.
2. Pre biofilter, post humidifier fan – centrifugal type fan. Runs whenever the DAF and rendering plants are operational.





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The fans are required to be kept in good operational condition to ensure reliability and forced air movement. The potential for odour is high if either fan is not operating.

### **CRITICAL CONTROL COMPONENTS:**

1. Electrical components are fit for purpose.
2. Mechanical condition of fan frames and panel work.
3. Drive components, Impellers.
4. Electric motors.
5. Bearings.
6. Connectivity.

### **GENERAL DESIRED RESULT:**

No undue noise, vibration or emissions from the fans.

### **CHECKS AND FREQUENCIES:**

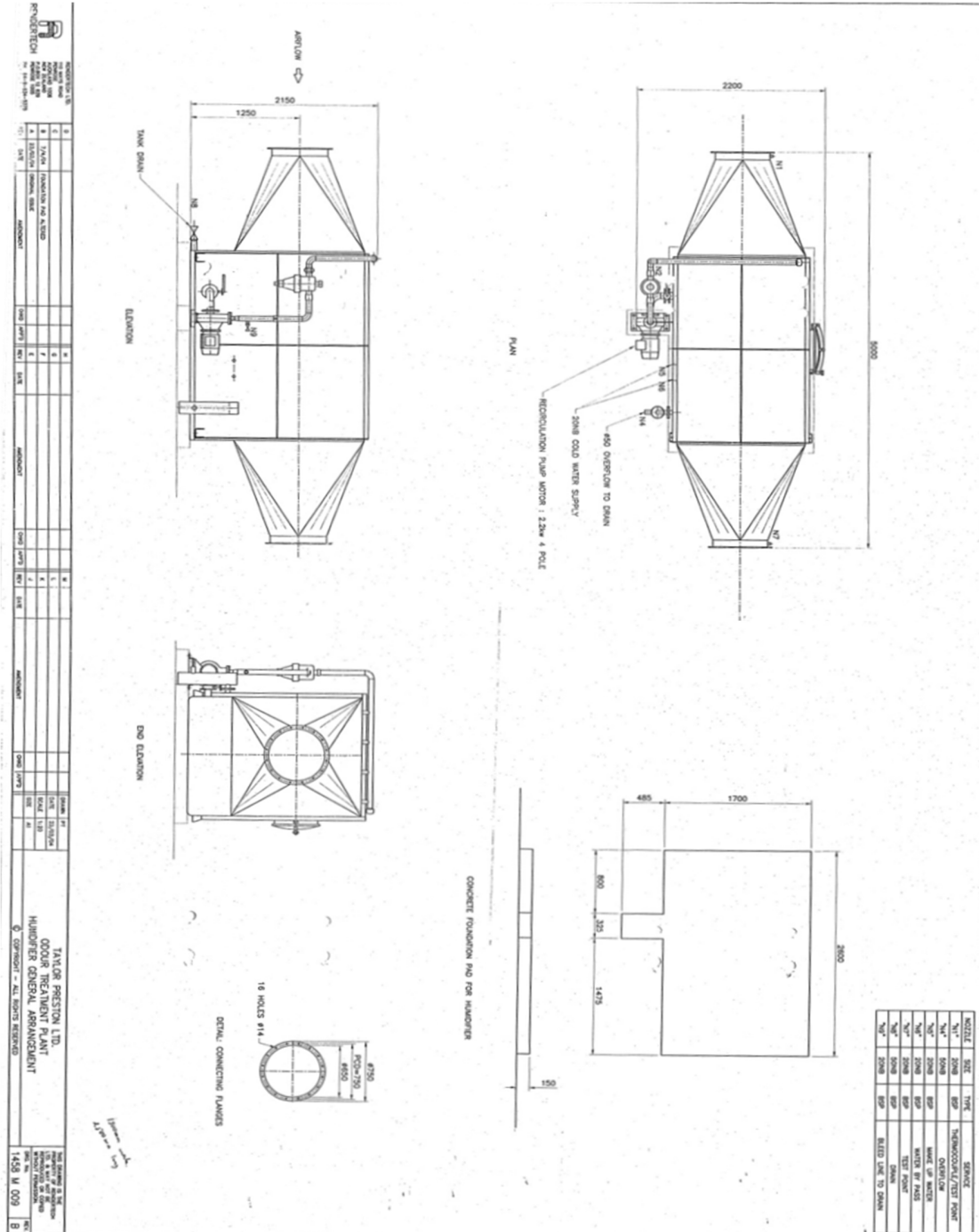
1. Shift operator checks that both fans are operational and that there are no undue noises, vibrations or emissions from the fans.
2. Monthly checks generated by the engineering PM system. All faults noted and remedied through the works order system.
3. 3 monthly electrical checks to ensure the electrical integrity of starters, wiring, motor condition and isolators.
4. In all cases mechanical and electrical specific sign off is required to ensure that the fans are turned back on. Trades staff are to sign this as an indication that work is completed and that the fans are operational.

**NOTE:** All checks to be performed when the rendering and DAF plants are non-operational.

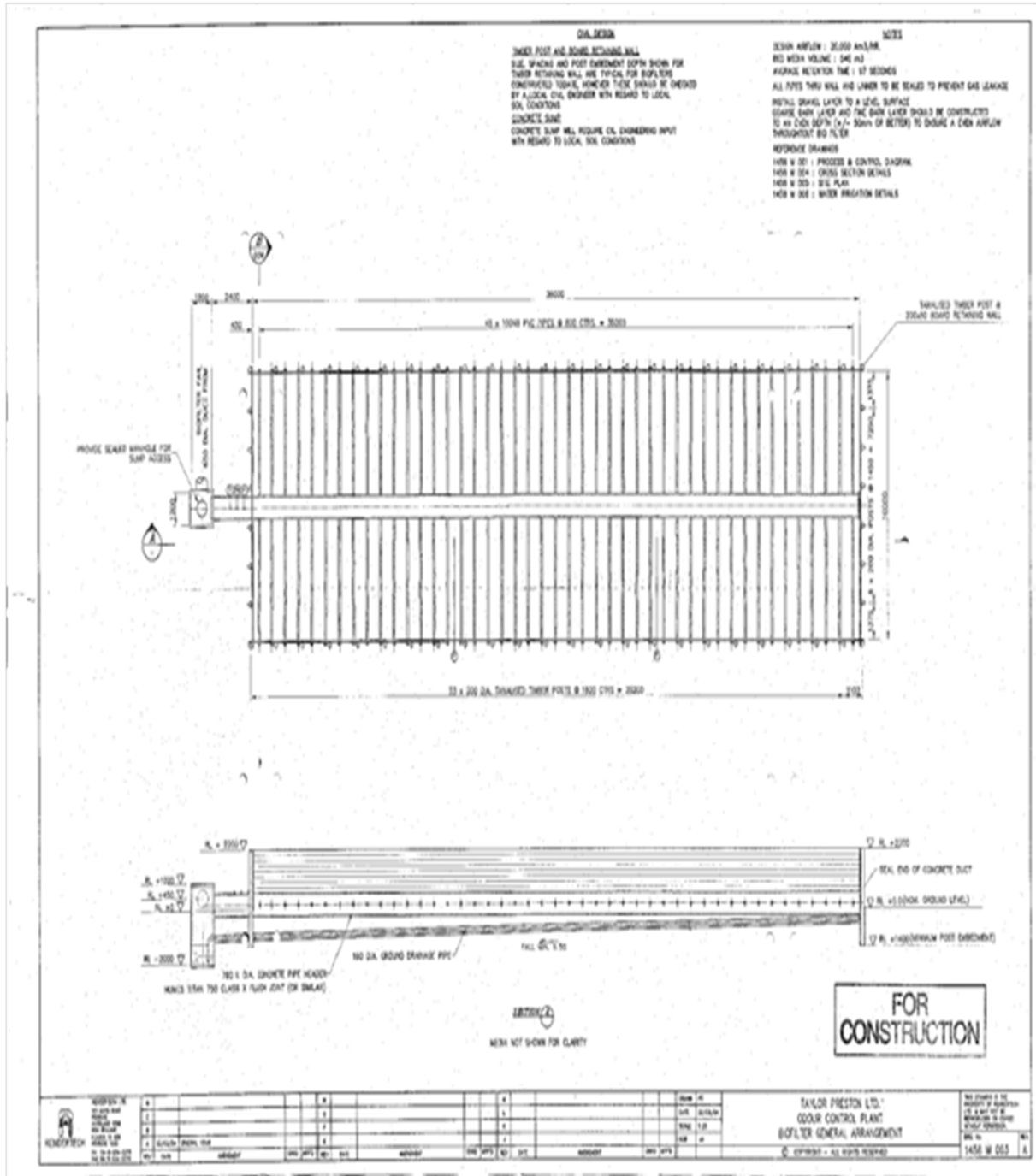


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8.6 Biofilter Humidification Chamber Drawing -



8.7 Biofilter Technical Drawing -





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## 9.0 Boiler Operation

Taylor Preston Ltd.'s boiler operation comprises of the combustion of natural gas by steam boilers site-wide with a net heat output of 10 MW producing carbon monoxide, oxides of nitrogen and trace levels of particulate matter. The steam boiler alone is 5.5 Megawatt producing 9 tons of steam per hour. *“Copies of the annual assessment reports shall be provided to an enforcement officer of the Wellington Regional Council, on request. The annual servicing of the boilers and burners details in condition 19 shall include testing of combustion inefficiency. The results of this testing shall be recorded and be made available to any Wellington Regional Council enforcement officer on request.”*



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## 10.0 Complaints Process

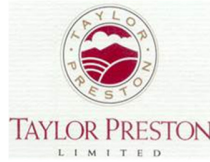
### 10.1 Public Interface (Condition 23)

*“The purpose of this condition is to ensure that there is clarity and certainty for the surround community on the public complaints procedure, the community liaison group and the implantation of the consent.”*

On the Taylor Preston website homepage (<https://taylorpreston.co.nz/>) a ‘Neighbours’ section can be found on the top information bar. By clicking on this public are directed to a ‘Neighbours’ general information hub. In this hub the public are able to;

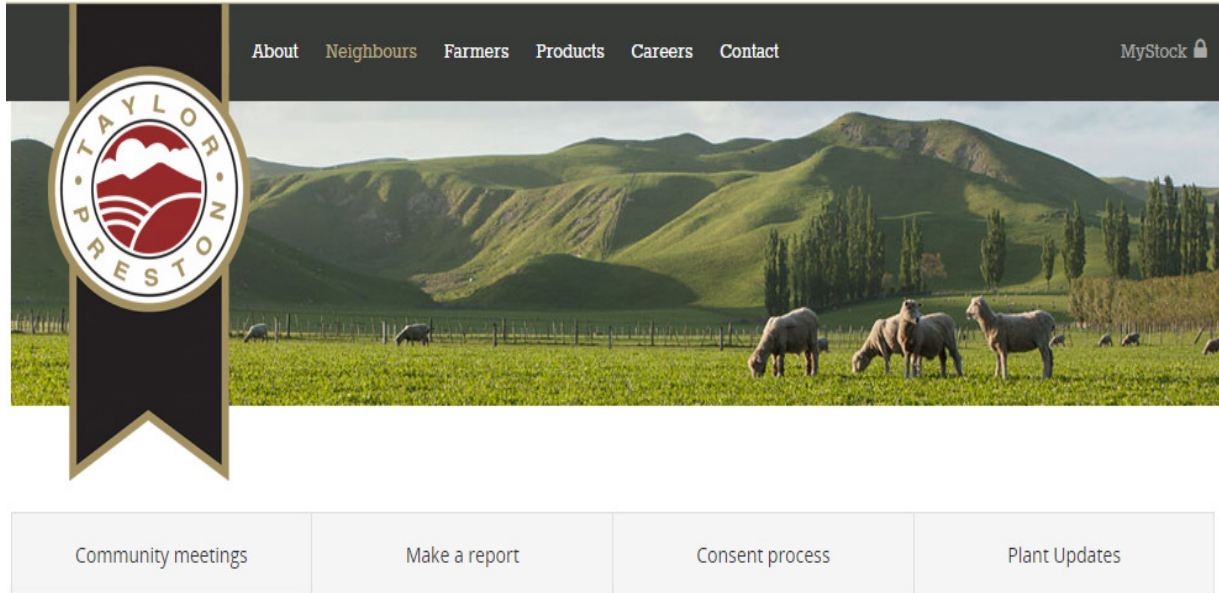
- View any community meeting minutes along with siting any upcoming meetings (as set out in condition 26).
- ‘Make a report’ which includes two direct phone numbers to Taylor Preston; and
- View the question criteria required to be answered for us to investigate the issue (as set out in conditions 24 and 25).
- View Taylor Preston’s Wellington Regional Council Resource Consent information.
- View the Odour Management Plan.

*“This webpage shall be updated and maintained thereafter. On establishment of the webpage, the consent holder shall publicise its availability to at least all those parties who were directly notified of this application.”*



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## 10.2 Taylor Preston ‘Neighbours’ Section -



### Community meetings

#### Previous meetings

- Meeting was held on 3th April 2019 at the Johnsonville Community Centre.  
[Download meeting minutes](#)
- Meeting was held on 5th September 2018 at the Johnsonville Community Centre.  
[Download meeting minutes](#)
- Meeting was held on 1st March 2018 at the Johnsonville Community Centre.



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### 10.3 Public Complaints (Condition 24) -

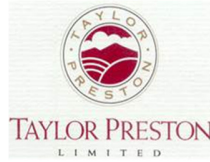
Routine odour checks are completed by security guards and the Rendering Foreman day-to-day. In the event of any complaints received by Taylor Preston (either by phone or email), *“the consent holder must respond to, investigate and report on all public complaints received, in accordance with the approved OMP (as per condition 10).”* A full washdown is also to be completed in response to odour complaints received. The report shall contain the following details:


- *“Name and address of complainant (if provided) or general location.*
- *Identification of the nature of the odour that caused the complaint, including its character or disposition of the odour, and intensity and duration of the odour.*
- *Date and time of the complaint and of the alleged event.*
- *What activities were happening on site at the time of the complaint.*
- *Weather conditions at the time of the complaint;*
- *The results of the internal investigation into the likely cause of the complaint; and*
- *Any mitigation measures adopted to address the complaint and prevent recurrence.*

*The consent holder shall forward the report to the Manager, Environmental Regulation, Wellington Regional Council **within five working days of receiving the complaint.**”*

### 10.4 Taylor Preston Odour Complaint Form (next page) -

This is filled out by security (training supplied by operational staff), investigated by two Taylor Preston Ltd. operational staff, supplied to Wellington Regional Council (**reported in 24 hours followed by a full report within five working days of the notification**) and then added to the incident register by Taylor Preston Ltd. for later referall in accordance with Condition 21. Measures to prevent recurrence are also detailed after the initial odour complaint process to GWRC :



 <b>TAYLOR PRESTON LIMITED</b>		<h2 style="margin: 0;">Odour Complaint Form</h2>			
Fill In All Required Fields* One Form Per Incoming Complaint to Be Completed In Full					
Date*	Time*	First Name*	Last Name*	Company / Address*	Contact Number*
				Cell Number:	
Area Of Complaint and Caller Comments?*					
Type Of Odour If Known? *					
What Are The Weather Conditions? *					
Is There Temperature High Or Low? *					
Is The Wind High Or Low & What Direction? *					
Are Stock levels high, Low On None On Site? *					
What Stocktrucks are Unloading? *					
What Contractor Trucks Are On Site? *					
What Contractor Services Are On site? *					
Times Noted	Contacted In Order	What Was Said ?*			
	Rendering ex 751				
	Reginald ex 5993				
	Stockyards ex 712				
	Hamish / Daniel ex 762				
	Bryan Hinton ex 5975				
	John Taylor ex 5999				
Txt John T Then Call If You Cannot Get Hold Of Others First					
				After Action Result?*	
What Did The Guard Find On Inspection ?					
C/S		Guards Name *			
Guard Signed: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 20px;"></span>			Plant Manager Signed: <span style="border: 1px solid black; display: inline-block; width: 150px; height: 20px;"></span>		
<small>Email <a href="mailto:John.Taylor@taylorpreston.com">John Taylor</a> a Copy</small>					





## TAYLOR PRESTON – ME86

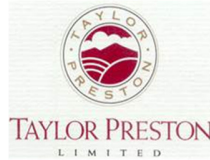
### 10.5 Community Liaison Group -

*“The purpose of the CLG is to provide a line of communication between the consent holder and the community for the duration of the consent. It is not a decision making group.*

*By **09 February 2017**, the consent holder shall establish a **Community Liaison Group (CLG)** at its own cost comprising of representatives of Greater Wellington Regional Council (GWRC), community representatives, Ngati Toa Rangatira, the Port Nicholson Block Settlement Trust and any other key stakeholders as deemed appropriate between the consent holder and the GWRC. As a minimum the CLG shall be made up of those individuals/ community groups who wish to participate.*

*The consent holder shall ensure that members of the CLG and key stakeholders are advised of the intended dates of the CLG’s meetings and supplied with copies of any reports or recommendations arising from the CLG’s activities. The dates and locations of the CLG meetings shall be made available on the consent holder’s public webpage, as required under condition 23.”*

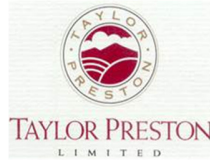
Taylor Preston hosts a CLG **at least twice a year** to update residents on plant activities and any instances that might affect them – these are advertised to locals by Taylor Preston through mail drops and by being listed in the Taylor Preston “Neighbours” section of the website. John Taylor (Plant Manager) hosts these meetings with all minutes recorded by a dedicated Taylor Preston note-taker. Any complaints since the prior meeting are addressed and discussed by John Taylor with input/ feedback from the locals. At the conclusion of the meeting all minutes are uploaded to the Taylor Preston website under the “Neighbours > Community meetings” section.



## 11.0 Review Condition

*“The Wellington Regional Council may review any or all conditions of this consent by giving notice of its intention to do so pursuant to section 128 of the Resource Management Act 1991, at any time within three months of the second (2018) anniversary of the date of granting this discharge and **annually thereafter** for any of the following purposes:*

- a) To deal with any adverse effects on the environment which may arise from the exercise of this consent, and which are appropriate to deal with at that time.*
- b) To assess the capability of the odour control technology and equipment to control nuisance odours, and to review its appropriateness and alignment with ‘best practicable option’.*
- c) To review the adequacy of the operating and maintenance procedures prepared for this consent, and the monitoring requirements so as to incorporate into the discharge consent any modification to the operation and maintenance procedures or monitoring that may be necessary to deal with any adverse effects on the environment arising from the management or operation of the processes undertaken by the consent holder.”*



11.1 Air Discharge Permit Outline, and what pages elements are covered –



**Consent No. WGN160137 [33809]**

**Category: Air Discharge Permit**

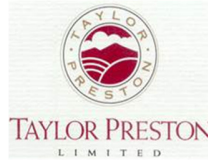
Pursuant to sections 104B, 105 and 108, and subject to all the relevant provisions of the Resource Management Act 1991 and any regulations made thereunder, a consent in respect of a natural resource is hereby granted to:

<b>Name</b>	Taylor Preston Limited	
<b>Address</b>	Private Bag 13 908, Johnsonville, Wellington	
<b>Duration of consent</b>	Commences: 9 November 2016	Expires: 9 November 2041
<b>Purpose for which right is granted</b>	To discharge contaminants to air from an existing abattoir, animal by-products rendering plant and associated activities.	
<b>Location</b>	131 Centennial Highway, Kiwi Point, Ngauranga Gorge At or about the following approximate map references, these being the north, east, south and west extremities respectively of the property boundary: NZTM 1751127.5433316 NZTM 1751280.5433186 NZTM 1751128.5432762 NZTM 1750815.5433065	
<b>Legal description of land</b>	Lot 1 DP 65030, Lot 4 DP 72996	
<b>Conditions</b>	1-30 as attached	

For and on behalf of  
WELLINGTON REGIONAL COUNCIL

.....  
Team Leader, Environmental Regulation

9 November 2016  
Date: .....



## Summary of your rights and responsibilities

(Not part of the resource consent)

This resource consent gives you the right to use a public resource (e.g. water, air, the coastal marine area) in the manner specified in the consent.

You may exercise the resource consent as you see fit provided that you comply with all the conditions of your resource consent and all other laws of the land.

If you wish to change the way you operate under this resource consent or if you wish to change or cancel any consent conditions, please contact the Greater Wellington Regional Council (GWRC) prior to making the changes. You may need a formal change to your resource consent conditions.

You may transfer your coastal, discharge, or water permit to any other person. If you sell your operation please contact GWRC and we will arrange the transfer for you (at no cost) once you've completed a 'Transfer of Permit' form including the signatures of the old and new owners.

If your resource consent application contained inaccurate or misleading information, GWRC may cancel or alter the resource consent.

Your resource consent does not:

- provide any warranty of any structure or process;
- provide any guarantee that the resource will be available at all times;
- provide any right of access through or over public or private land;
- negate the need for any approvals necessary under other legislation.

You as the holder(s) of this resource consent and your agents (including contractors and employees), are jointly and severally liable for compliance with the conditions of this consent. It is important that anyone operating on your behalf fully understands and complies with the conditions of the resource consent.

You are required to pay any relevant charges that are associated with the processing and monitoring of your consent under section 36 of the Resource Management Act 1991. Charges may be reviewed every year. If you would like a copy of our current Resource Management Charging Policy please ask us.

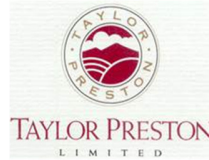
You have the right to object to the decision on your consent and/or any additional charges (over and above fixed charges) under section 357A and 357B of the Resource Management Act 1991. Such an objection should be made in writing, setting out the reasons, and be received by us within 15 working days of any decision on your consent and/or additional charges being notified to you.

You are required to allow GWRC Enforcement Officers access to your site and operation at any reasonable time so that we can inspect your operation and confirm that it is complying with your resource consent.

Your resource consent will lapse if you do not give effect to it within five years of the date it was granted (unless otherwise specified in the resource consent conditions). If you wish to apply for an extension of this lapse date please contact GWRC before the lapse date.

If you stop using your resource consent for a continuous five-year period, GWRC may cancel your resource consent. We will advise you in advance if we propose to cancel your consent. You have the right to object to your consent being cancelled.

This consent is issued without prejudice to any claim that is lodged with the Waitangi Tribunal in relation to the customary ownership of natural resources, whether it be a claim that is awaiting hearing or awaiting settlement by the Crown.



# Conditions to Resource Consent WGN160137 [33809]

## General condition

1. The discharge to air from the abattoir and animal by-products rendering activities shall be operated in general accordance within the consent application:

*"Taylor Preston Limited, Kiwi Point, Air Discharge Assessment of Effects, IZ021700-3, Final, 1 December 2015"* prepared by Jacobs New Zealand, and further information as specified below:

- Greenhouse Gas R22 information (letter received by email 17 December 2016)
- Response to peer reviewer's queries and comments (letter received by email 14 March 2016)
- Updated livestock numbers and operating hours (email received 13 April 2016); and
- Applicant's Draft conditions and explanation how these are designed to meet the recommendations of the peer reviewer (email received 7 June 2016).

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

*Note 2: Where there may be contradiction or inconsistencies between the application and further information provided by the applicant, the most recent information applies. In addition, where there may be inconsistencies between information provided by the applicant and conditions of the consent, the conditions apply.*

## Offensive or objectionable odour condition

2. There shall be no discharges to air that are noxious, dangerous, offensive or objectionable at or beyond the legal boundary of the site property from which the consent holder operates, as determined by an enforcement officer of the Wellington Regional Council.

For the purposes of this condition the boundary of the property from which the consent holder operates is the outer perimeter of the land bearing the legal description is defined as Lot 1 DP 65030 and Lot 4 DP 72996.

*Note: In determining whether or not an odour event or long term exposure pattern is deemed objectionable or offensive, the enforcement officer of the Wellington Regional Council shall give consideration to the associated FIDOL factors (frequency, intensity, duration, offensiveness and location).*

## Air extraction system operation

3. The consent holder shall ensure that at all times when the rendering plant is operating, foul air shall be extracted from key odour sources (process equipment and small building enclosures) via the **Point Source Extraction System (PSES)**. The PSES shall include as a minimum, but not be restricted to, the following items and their associated extraction points:

- a) Pre-cooker, render vessel and discharge conveyor entry
- b) Drainer conveyor
- c) Twin screw press
- d) Tallow separator

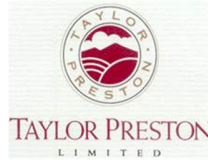
Page 18-19

Page 19

Page 19

Page 22

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e)	Decanter liquid discharge	Page 21
f)	Separator sludge tank	Page 21
g)	Separator feed tank	Page 22
h)	Drier feed conveyor	Page 21
i)	Decanter feed tank	Page 20
j)	Stickliquor and concentrated liquor tanks	Page 14
k)	Disc steam drier (extracted via WHE)	Page 23
l)	Waste Heat Evaporator (WHE)	Page 23
m)	Vacuum pump	Page 22
n)	Belt press and press cake conveyor	Page 15, 20
o)	Contrashear enclosure	Page 16
p)	Dissolved air floatation tanks (DAF); and	Page 16
q)	Truck Load-out facility including the hoppers	Page 15

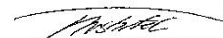
The consent holder shall ensure that, in regard to the PSES:

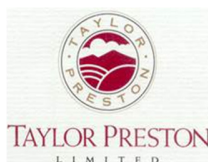
- All odorous sources connected to the PSES shall be listed in the site's Odour Management Plan (OMP) (per condition 10). This list shall be updated following the recommendations of any PSES Process Design Review (per condition 27).
- All equipment items that are connected to the PSES shall be enclosed, or hard plumbed, as much as practicable (referred to further as "enclosed equipment items") in order to minimise the air extraction flow rate necessary to achieve **effective containment of odour emissions**.
- Air extraction rates shall be sufficient to ensure that negative pressure (i.e. a vacuum) is maintained at all times (while operating) within all enclosed equipment items that are connected to the PSES.

*Note 1: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991. This includes the removal of any PSES extraction points from the list a)-q) above as per any recommendation from the PSES process design review (per condition 27).*

*Note 2: "Effective containment of odour emissions" is not being achieved when recognisable rendering odours can be observed off-site or when inside the rendering plant process emissions are clearly found to be escaping process equipment that is connected to the PSES.*

4. The consent holder shall prevent the release of fugitive odour discharges, by ensuring that all ductwork, control valves, hoods, enclosures, seals and air extraction rates from each part of process listed in condition 3 are constructed, operated and maintained to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.
5. Foul air extracted by the PSES shall be directed to the site biofilter for treatment prior to discharge to air and no part or process listed in condition 3 shall be operated without the biofilter fully operational and functioning correctly in accordance with conditions 6, 7 and 8 of this consent.

  
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**Biofilter operation – general**

Page 108-110, 142

- 6. The inlet temperature of the foul air at the final air duct immediately ahead of the biofilter shall not exceed 40°C, and shall be 35°C or lower for at least 95% of the time.
- 7. The loading of the biofilter as measured in the final air duct inlet shall not exceed a maximum limit of 37m<sup>3</sup><sub>air</sub>/hr/m<sup>3</sup><sub>media</sub>.
- 8. The biofilter shall be maintained in efficient working order to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

**Site operation – general**

- 9. No putrescible materials shall be stored or left in any manner on site which causes them to putrefy.

**Site Management Plans**

The purpose of the site management plans are to detail the specific information, procedures and practices relating to the relevant overall process on the site, to specify how the conditions of the consent will be met, primarily condition 2. Specific site management plans are required for overall site **Odour Management (Odour Management Plan OMP)**, **Rendering operation, maintenance and contingency plan (ROMCP)** and **Biofilter operation and maintenance plan (BOMP)**. It is anticipated that the ROMCP and BOMP will form dedicated portions within the overall OMP for the site and that these plans should be complementary rather than repetitive.

**Odour Management Plan (OMP)**

- 10. By **09 February 2017**, the consent holder shall submit an updated **Odour Management Plan (OMP)** for approval to the Manager, Environmental Regulation, Wellington Regional Council, which contains specific information relevant to the prevention and mitigation of odour from the site, plant operations and processes, which are not specifically addressed in the ROMCP and BOMP required by conditions 12 and 14 respectively.

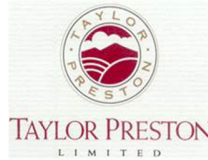
The OMP shall be reviewed by the consent holder **annually within one month of the anniversary** of the granting of this consent. It shall be updated to reflect any changes. The consent holder shall ensure that a copy of the updated OMP is submitted to, and is to the satisfaction of, the Manager, Environmental Regulation, Wellington Regional Council, **within one month** of any update.

The OMP shall include, but not be limited to:

Practices, procedures and responsibilities detailing:

- a) Procedures to ensure all relevant managers, supervisors and staff are adequately trained in all relevant parts of the OMP, ROMCP and BOMP. Page 52-59
- b) A list of staff with responsibilities for the operation of the rendering plant and air extraction system, including daytime and after hours contact phone numbers. Page 8, 9, 10, 52-59
- c) Assignment of responsibility for implementing and updating the OMP, ROMCP and BOMP.
- d) Clear concise written instructions to be available and easy to understand signage shall be placed as appropriate, in a language understood to all staff, for the following procedures:
  - 1. Acceptance/rejection criteria for raw product delivered to the rendering plant for processing; Page 77
  - 2. Equipment, building and yard maintenance and cleaning routines and measures that have an influence on odour discharges; and Page 30-32, 52-59, 61-79, 137-138
  - 3. Contingency actions in the event of processing problems or equipment failures, alarms

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Page 77-83

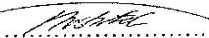
and for the disposal of rejected raw material or partially processed material.

- e) General on-site and off-site odour checks (routine and in response to odour notifications); Page 59-60, 119-120
  - f) Management, operation and control of Truckwash activities; Page 73
  - g) Management, operation and control of Stockyard activities and washdown procedures, timing and frequency; including procedures to initiate additional washdowns in response to odour complaints Page 75-76
  - h) Raw product control including practices and procedures for the acceptance and rejection of product for processing and methods of stabilisation used if product cannot be rendered within 4 (four) hours of receipt of raw product. Page 77-82
  - i) Practices and procedures for the load out of any raw material. Page 77-79
  - j) The storage, processing and/or disposal of any raw product or partially processed product in the event of reduction in or loss of processing capacity (e.g. equipment failure). Page 74, 77-81
  - k) The disposal of unacceptable raw product. Page 78-81
  - l) Practice and procedures for the processing of blood including any specific odour control practices to be employed. Page 79
  - m) Overflow of the blood tank. Page 79
  - n) Management and removal of bins containing partially processed products; Page 78-79
  - o) Acid-dosing and monitoring procedures employed when there are plant process interruptions that delay the rendering of partially-processed materials; Page 65
  - p) Refrigerant release, including a quantification of the release of refrigerants from the site and procedure to follow if there is an uncontrolled release of refrigerant to air. Page 33-51
  - q) Management, operation and control of the odour mitigation (spray) system; Page 30-32
  - r) Receiving, investigating and responding to odour notifications, including actions taken and reporting (forwarding information) to GWRC as required by condition 24; Page 119-120
  - s) Receiving, investigating and responding to any incidents which may result in adverse effects beyond the site boundary, including reporting (forwarding information) to GWRC as required by condition 21
  - t) Measurement, recording and reporting of the monitoring and associated procedures necessary for compilation of the annual monitoring report required by condition 18; and
  - u) Specify guideline values for vacuums that the PSES creates within the headspace of rendering plant equipment and within small building enclosures connected to the PSES.
11. The site shall be operated in accordance with the procedures in the approved OMP and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

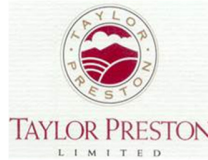
**Rendering operation, maintenance and contingency plan (ROMCP)**

- 12. By 09 February 2017, the consent holder shall submit an updated **Rendering Operation, Maintenance and Contingency Plan (ROMCP)** for approval to the Manager, Environmental Regulation, Wellington Regional Council, which contains specific information relevant to the rendering plant operation and associated processes listed in condition 3.

The ROMCP shall be reviewed by the consent holder **annually within one month of the anniversary of the granting of this consent**. It shall be updated to reflect any changes in the operation or management of the

  
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rendering operation that may have affected the discharge(s) of odour. The consent holder shall ensure that a copy of the updated ROMCP is submitted to, and is to the satisfaction of, the Manager, Environmental Regulation, Wellington Regional Council, within one month of any update.

The ROMCP shall include, but not be limited to:

Operational details for:

- a) General rendering process including:
  - 1. Cold and warm start up procedures for all processing equipment prior to processing; Page 84-90
  - 2. Operating temperature range of all processing equipment when processing; Page 84-88
  - 3. Practices and procedures to ensure the WHE is effectively operated in conjunction with the disc drier; Page 84
  - 4. Practices and procedures to ensure the biofilter fan is operated in conjunction with the disc drier; Page 84-85
  - 5. Practices and procedures to ensure that the drier doors/hatches are closed and fastened when the drier is operating; Page 60, 67
  - 6. Practices to record any puffing of the drier doors and a system to record any puffing and proposed action to take to remediate the cause; and Page 60, 67, 85
  - 7. The checking of any fugitive odour discharges around the rendering plant and associated processes on a daily basis. Page 60,147

A preventative maintenance plan for:

- b) Disc steam drier including specific details of the maintenance programme. This should include an inspection frequency and details of any annual cleaning procedure. Page 67-68, 137-138
- c) Waste heat evaporator and evaporative condenser including specific details of the maintenance programme. This should include an inspection frequency and details of any annual cleaning procedure. Page 68, 137-138
- d) Other associated rendering plant systems and processes listed in condition 3. Page 137-138
- e) All ductwork, hoods, enclosures and seals. Page 61-72
- f) A method for recording all maintenance undertaken to each component of the rendering plant equipment. Page 137-138

Contingencies for:

- g) Actions to undertake if alarms sound from the following operations:
  - 1. Overflows from the Stickliquor tank; Page 68, 80
  - 2. Failure of the WHE vacuum pump; and Page 82
  - 3. Failure of the WHE recirculation pump. Page 82
- h) The breakdown of any section of the animal rendering plant including the extraction system, the disc steam dryer, the Waste Heat Evaporator, the Evaporative condenser, and biofilter (e.g. biofilter fan failure). Page 82-83

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- 13. The consent holder shall manage the rendering plant process and air extraction system in accordance with the approved ROMCP required under condition 12, and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

**Biofilter operation and maintenance plan**

- 14. By 09 February 2017, the consent holder shall submit an updated **Biofilter Operation and Maintenance Plan (BOMP)** for approval to the Manager, Environmental Regulation, Wellington Regional Council.

The BOMP shall be reviewed by the consent holder **annually within one month of the anniversary** of the granting of this consent. It shall be updated to reflect any changes in the operation or management of the rendering operation that may have affected the discharge(s) of odour. The consent holder shall ensure that a copy of the updated BOMP is submitted to, and is to the satisfaction of, the Manager, Environmental Regulation, Wellington Regional Council, within **one month** of any update.

The contents of the BOMP shall include, but not be limited to:

- a) Methods and procedures to log pressure differential in the final duct ahead of the biofilter; Page 108,149
- b) Methods to ensure the biofilter media is maintained at its design bed level; Page 110, 142-143
- c) Methods by which the moisture content of the biofilter media can be maintained between 40 and 60 percent of by weight (wet basis); Page 108, 142
- d) Sampling methodology for media size distribution, including how many samples will be taken, at what location and at what depth within the bed media; Page 143
- e) A monitoring programme and methods/standards used to measure bed moisture content and pH in the upper two-thirds layer of the biofilter media; Page 143
- f) Methods for ensuring the monitoring and recording of parameters in conditions 6 and 7; Page 108, 111
- g) Methods for undertaking assessment of the biofilter media in accordance with condition 16, including standard methods to use to assess media size and composition; Page 143
- h) Methods for maintaining an even distribution of gas flow through the biofilter bed. Page 109, 147

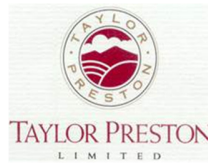
- 15. The biofilter shall be operated in accordance with the procedures in the approved BOMP and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

**Monitoring**

- 16. The consent holder shall measure and record the following parameters at the intervals specified:

- a) Continuous online display of pressure in the final air duct, that is across the biofilter (this data is to be automatically logged); Page 108
- b) Daily recording of temperature using a dial thermometer in final air duct ahead of biofilter (displayed continuously and manually recorded at least once a shift when the rendering plant is operating); Page 108, 142
- c) Weekly recording of pressure across the biofilter bed active media; Page 108-109, 148
- d) Monthly media moisture content in the upper two-thirds layer; Page 108, 143
- e) Two-monthly recording of pH; Page 110-111, 143
- f) Two-monthly general visual observation and assessment of biofilter condition, including assessment of weed growth, compaction and short circuiting; and Page 110, 143

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- g) Annual sampling for media size distribution and monitoring of microbial activity including bottom one-third and upper two-thirds layers.

Page 111-112, 143

Monitoring results shall be recorded and be made available to any Wellington Regional Council enforcement officer on request.

**Annual biofilter assessment and report**

Page 142

- 17. The consent holder shall undertake a comprehensive assessment of the quality of the biofilter media on an annual basis (or more frequently if appropriate), based on the measurements required in condition 16 of this consent. The assessment shall be undertaken by an appropriately qualified and experienced person, and shall involve an evaluation of the media size distribution and composition, the total air flow from the PSES and the temperature and humidity of the inlet duct.

The results of this assessment, including a summary of the findings, details of any action(s) to be taken to improve the efficiency of the biofilter, and a timetable for those actions to be undertaken; must be submitted to the Manager, Environmental Regulation, Wellington Regional Council by 31 March annually and may be incorporated into the report prepared under condition 18.

**Annual air extraction assessment and report**

Page 136, 142

- 18. The consent holder shall, on an annual basis, measure and record the vacuum (pressure) at all enclosed equipment items that are extracted by the PSES.
  - a) Pressure shall be measured in the head space of the equipment items that are targeted by the PSES. The measurements shall be undertaken by an appropriately qualified and experienced person following industry best practice for measurements of this type. The person and the measurement method shall be to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.
  - b) The consent holder shall prepare a report on the findings and critically analyse the results (including a comparison with historical data) and if required, make recommendations as to the adequacy of the extraction rates, whether pressures are sufficiently negative and whether additional sealing/enclosing of any rendering plant process area is needed to ensure adequate extraction. This report must be submitted to GWRC by 31 March annually and may be incorporated into the report prepared under condition 17.

**Boiler operation**

Page 116, 144 - 146

- 19. All boilers and burners used on site shall be fuelled with natural gas, and shall be serviced on at least an annual basis and maintained to ensure that there are no discharges from the stacks that may cause a breach of condition 2 of this consent.

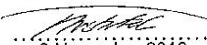
Copies of the annual assessment reports shall be provided to an enforcement officer of the Wellington Regional Council, on request.

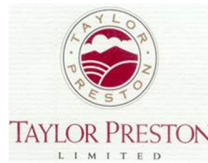
- 20. The annual servicing of the boilers and burners detailed in condition 19 shall include testing of combustion efficiency. The results of this testing shall be recorded and be made available to any Wellington Regional Council enforcement officer on request.

**Incident notification**

Page 119-120

- 21. In the event of any incident that has or could have resulted in a condition or conditions of this consent being contravened the consent holder shall:
  - a) Notify the Manager, Environmental Regulation, Wellington Regional Council within 24 hours of the consent holder becoming aware of the incident, or the next working day; and
  - b) Forward an incident report to the Manager, Environmental Regulation, Wellington Regional Council

  
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within five working days of the notification. The report shall describe reasons for the incident, measures taken to mitigate the incident and measures to prevent recurrence.

Notifications and reports can be emailed to [Notifications@gw.govt.nz](mailto:Notifications@gw.govt.nz). The consent number (WGN160137) must be included in the subject line and the name and contact details provided for the responsible manager on site.

*Note: The Wellington Regional Council may also investigate any incidents to determine if a breach of this consent or the Resource Management Act 1991 has occurred and may also undertake enforcement action depending on the circumstances.*

22. The consent holder shall keep an incident register containing details of incident notifications and reports submitted in accordance with Condition 21.

A copy of the incident register shall be made available to any enforcement officer of the Wellington Regional Council on request.

Public interface

Page 117-118

The purpose of this condition is to ensure that there is clarity and certainty for the surrounding community on the public complaints procedure, the community liaison group and the implementation of this consent.

23. Within three months from the date of the grant of this consent, the consent holder shall establish a public webpage on its website which shall contain at least the following information:
- A phone number for notifiers to contact regarding odour, which is direct to the consent holder.
  - An explanation of the public complaint process (as set out in conditions 24 and 25 below).
  - Information on any forthcoming Community Liaison Group meetings (as set out in condition 26).
  - Latest news on implementing the conditions of this consent.
  - The Odour Management Plan.

This webpage shall be updated and maintained thereafter. On establishment of the webpage, the consent holder shall publicise its availability to at least all those parties who were directly notified of this application.

*Note: The consent holder may, in liaison and agreement with the Community Liaison Group, establish a webform or email linking to this webpage allowing for alternative means of notification of complaints.*

Public complaints

Page 119-120

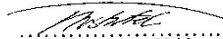
24. The consent holder must respond to, investigate and report on all public complaints received, in accordance with the approved OMP (as per condition 10). The report shall contain the following details:

- Name and address of complainant (if provided) or general location
- Identification of the nature of the odour that caused the complaint, including its character or description of the odour, and intensity and duration of the odour
- Date and time of the complaint and of the alleged event
- What activities were happening on site at the time of the complaint
- Weather conditions at the time of the complaint;
- The results of the internal investigation into the likely cause of the complaint; and
- Any mitigation measures adopted to address the complaint and prevent recurrence

The consent holder shall forward the report to the Manager, Environmental Regulation, Wellington Regional Council within five working days of receiving the complaint.

*Note: Reports can be emailed to [Notifications@gw.govt.nz](mailto:Notifications@gw.govt.nz). The consent number (WGN160137) must be included in the subject line and the name and contact details provided for the responsible manager on site.*

*Note: The Wellington Regional Council may also investigate any incidents or complaints to determine if a breach of this consent or the Resource Management Act 1991 has occurred and may also undertake enforcement action depending on the circumstances.*

  
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25. The consent holder shall keep a register of any complaints that are received, including copies of the reports required by condition 24.

A copy of the complaints register shall be made available to any enforcement officer of the Wellington Regional Council, on request.

### Community Liaison Group

Page 121

The purpose of the CLG is to provide a line of communication between the consent holder and the community for the duration of the consent. It is not a decision making group.

26. By **09 February 2017**, the consent holder shall establish a **Community Liaison Group (CLG)** at its own cost comprising of representatives of Greater Wellington Regional Council (GWRC), community representatives, Ngāti Toa Rangatira, the Port Nicholson Block Settlement Trust and any other key stakeholders as deemed appropriate between the consent holder and the GWRC. As a minimum the CLG shall be made up of those individuals/community groups who wish to participate.

The consent holder shall invite all submitters to a CLG meeting which shall be convened no later than three months after the granting of this consent; and to another meeting to be convened no later than one year after the granting of this consent. Thereafter any CLG meetings shall be held by mutual agreement between the members and the applicant.

The consent holder shall ensure that members of the CLG and key stakeholders are advised of the intended dates of the CLG's meetings and supplied with copies of any reports or recommendations arising from the CLG's activities. The dates and locations of the CLG meetings shall be made available on the consent holder's public webpage, as required under condition 23.

***Note:** The Community Liaison Group is not a decision-making group, but a forum for the dissemination of information from the consent holder and provides the opportunity to comment on community experience of odours at their respective locations, as well as experiences with the complaint logging procedure and feedback on complaints. The Community Liaison Group will set its own procedures and determine the need for and frequency of the meetings after the first year, as significant amendments to the air extraction system are required to be implemented within one year of the granting of this consent and the CLG members need to be advised of the progress with this review and implementation of the recommendations.*

### Air extraction system Process Design Review

Page 135-146

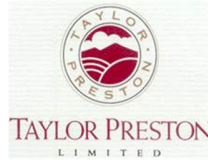
The purpose of this review is to detail the existing sources which the PSES connects to, to consider other odour sources within the rendering and associated processes that are not currently connected to the PSES, and to make recommendations for implementation that will maximise the efficiency of extraction of foul air by the PSES that will meet the offsite environmental requirement of no offensive or objectionable odours beyond the site boundary.

27. By **09 May 2017**, the consent holder shall commission a Process Design Review of the PSES, as listed in condition 3, to ensure that the extraction rates are sufficient to meet the minimum performance requirements specified in condition 3. The review shall be undertaken by an appropriately qualified and experienced person who meets the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council. As part of the review, the consent holder shall:

- Investigate connection duct sizes, locations and design air flows;
- Assess the need to include additional sources, or alternative methods for containing key sources;
- Assess the effectiveness of each extraction point associated with the PSES and confirm any modification required to these as well as any additional sources; and
- Confirm that the biofilter has sufficient capacity to treat all the foul air extracted.

The review shall be completed **within one month** of commissioning by the consent holder.

  
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28. The consent holder shall report on the findings of the review and make recommendations for any changes to the PSES operation in response to the findings of the review; and provide a copy of the report to the Manager, Environmental Regulation, Wellington Regional Council, within **two months** of receipt of the review.
29. The consent holder shall, in consultation with the Manager, Wellington Regional Council, implement the changes in accordance with the review recommendations **by 09 November 2017**, or within another timeframe to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.

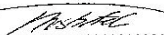
*Note: Any change from the location, design concepts and parameters implemented and/or operation may require a change in consent conditions pursuant to Section 127 of the Resource Management Act 1991.*

Review condition

Page 122

30. The Wellington Regional Council may review any or all conditions of this consent by giving notice of its intention to do so pursuant to section 128 of the Resource Management Act 1991, at any time within three months of the second (2018) anniversary of the date of granting this discharge and **annually thereafter** for any of the following purposes:
  - a) To deal with any adverse effects on the environment which may arise from the exercise of this consent, and which are appropriate to deal with at that time.
  - b) To assess the capability of the odour control technology and equipment to control nuisance odours, and to review its appropriateness and alignment with 'best practicable option'.
  - c) To review the adequacy of the operating and maintenance procedures prepared for this consent, and the monitoring requirements so as to incorporate into the discharge consent any modification to the operation and maintenance procedures or monitoring that may be necessary to deal with any adverse effects on the environment arising from the management or operation of the processes undertaken by the consent holder.

Note: Additional resource consents from your local council may be required to undertake this proposal. We advise you to contact the Wellington City Council prior to commencing works.

  
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**11.2 PM System Check (OMP Annual Review) –**

Assets at TPI: 79001 BIO FILTER FAN & AREA

Work Orders for 79001 P38937 - Odour Management Plan--Annual review

Index Details More... Sign Off Not Done Authorise

Details Notes Other Costs Labour

No./Type P38937 P Priority Status N Format Permit Authorised by

Raised 20/10/19 : Dept RENDERING 08

Start Date 20/10/19 : Foreman REND FMAN

Completion Date : Location DAF PLANT, CONTRASHEAR AREA Posn

Site Code TPL Req By Person Department Phone

Asset No 79001 BIO FILTER FAN & AREA

Task ODOUR MANAG Odour Management Plan--Annual review

PLANNED: Primary Person Team Trade Est Time (hrs) No Men

Spares Kit PLANNED: Additional Person Team Trade Est Time (hrs) No Men

Notes

Odour Management Plan Annual review. in accordance with the issuing of Air Discharge permit on November 9th 2016.  
And Valid till November 9th 2041.

1. Rendering Forman & Plant engineer to discuss, recognize and add any operational/maintenance and contingency changes in PSES, Rendering, Biofilter, Gas boilers and refrigerant operations into the Taylor Preston odour Management Plan.

2. Any changes to Community Engagement (including website, Training and complaints process should be covered.  
Examples could include, re-instating process of Bludge production, switching back to processing Ovine PM on site or updates to Taylor Prestons LTD Neighbours section of website..

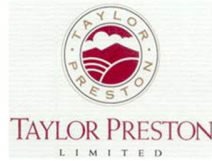












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### 11.7 PM System Checks and Planner (Refrigerants Ammonia) –

The screenshot displays the FrontLine Maintenance Management System interface. The main window shows a maintenance plan for 'Plans for 92001 PUMPS PUMPS CHECK (TPL)'. The interface includes a menu bar (File, Edit, View, Setup, Window, Help) and a toolbar with various icons. Below the menu, there are search and index options, and a 'Generate PM W/O' button. The main area is a Gantt chart showing maintenance tasks for assets 92001 through 92014. The tasks are listed in a table on the left, and the Gantt chart on the right shows the timing of these tasks across a 52-day period. A yellow vertical bar highlights the current date, which is 22/10/2019. The status bar at the bottom shows the current date and time (22/10/2019 13:44) and the user name (SIMON.SCHILDER).

Site	Asset No	Task	Freq	Unit	RT	Hold
TPL	92001	PUMPS	12	W	V	
TPL	92002	NH/3 WATER FLOW	25	W	V	
TPL	92002	PUMPS	12	W	V	
TPL	92004	HOWDEN OIL FILT	52	W	F	
TPL	92004	NH/3 HP SAFETY	52	W	F	
TPL	92004	NH/3 LP-TEST	52	W	F	
TPL	92004	NH/3 WATER FLOW	52	W	F	
TPL	92004	R COMP A	52	W	F	
TPL	92004	R COMP M	12	W	V	
TPL	92004	REF OIL PRES TES	52	W	F	
TPL	92004	REFR DIS TSET	52	W	F	
TPL	92005	NH/3 HP SAFETY	52	W	F	
TPL	92005	NH/3 LP-TEST	52	W	F	
TPL	92005	NH/3 WATER FLOW	52	W	F	
TPL	92005	R COMP A	52	W	F	
TPL	92005	R COMP M	12	W	V	
TPL	92005	REF OIL PRES TES	52	W	F	
TPL	92006	NH/3 HP SAFETY	52	W	F	
TPL	92006	NH/3 LP-TEST	52	W	F	
TPL	92006	NH/3 WATER FLOW	52	W	F	
TPL	92006	R COMP A	52	W	F	
TPL	92006	R COMP M	12	W	V	
TPL	92006	REF OIL PRES TES	52	W	F	
TPL	92006	REFR DIS TSET	52	W	F	
TPL	92008	NH/3 HP SAFETY	52	W	F	
TPL	92008	NH/3 LP-TEST	52	W	F	
TPL	92008	NH/3 WATER FLOW	52	W	F	
TPL	92008	R COMP A	52	W	F	
TPL	92008	R COMP M	12	W	V	
TPL	92008	REF OIL PRES TES	52	W	F	
TPL	92008	REFR DIS TSET	52	W	F	
TPL	92014	COLTOWEW	52	W	F	
TPL	92014	COOLING TOWER	12	W	V	
TPL	92014	STR CLN	1	W	F	



# TAYLOR PRESTON – ME86

## 11.8 PM System Checks and Planner (Refrigerants Compressors) –

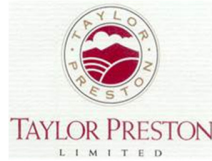
The screenshot displays the FrontLine Maintenance Management System interface. The main window is titled "Plans for 92005 NH/3 HP SAFETY HIGH PRESSURE SAFETY TEST (TPL)". It features a task list on the left and a calendar grid on the right. The task list includes:

Task	Freq	Unit	RT	Hold	D.o.V
NH3 HP SAFETY	52	W	F		
NH3 LP TEST	52	W	F		
NH3 WATER FLOW	52	W	F		
R.COMPA	52	W	F		
R.COMP M	12	W	V		
REF OIL PRES TES	52	W	F		

The calendar grid shows dates from 8 to 52. The tasks are scheduled as follows:

- NH3 HP SAFETY: Scheduled on 28, 29, 30, 31, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52 (marked with 'W').
- NH3 LP TEST: Scheduled on 28, 29, 30, 31, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52 (marked with 'W').
- NH3 WATER FLOW: Scheduled on 28, 29, 30, 31, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52 (marked with 'W').
- R.COMPA: Scheduled on 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52 (marked with 'W').
- R.COMP M: Scheduled on 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52 (marked with 'C').
- REF OIL PRES TES: Scheduled on 28, 29, 30, 31, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52 (marked with 'W').

The system status bar at the bottom shows the user is SIMON.SCHILDER, the date is 22/10/2019, and the time is 13:35.



**TAYLOR PRESTON – ME86**

**11.9 PM System Checks and Planner (Biofilter) –**

FrontLine Maintenance Management System

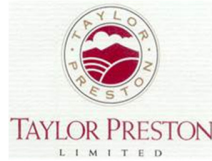
Assets at TPI: 79001 BIO FILTR FAN & AREA

Plans for 79001 ANN AIR EXTRACT Annual air extraction assesment & report (TPL)

Task	Freq	Unit	RT	Hold	D.o.V	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		
ANN AIR EXTRACT	52	W	F																																													
BIO BARK ANN	52	W	F																																													
BIO FAN	6	W	V						C																																							
BIO FIL TNK CLN	12	W	V																																													
BIO OPERATIONAL	12	W	V																																													

NUM 22/10/2019 2019 (43) 13:32 SIMON.SCHILDER

13:32 22/10/2019



**TAYLOR PRESTON – ME86**

**11.10 PM System Checks pH, moisture and media (Biofilter) –**

Maintenance Work Order No: P38688 1 of 2  
25/11/19 10:37:32

Asset 79001 Target date 22/09/19  
 BIO FILTER FAN & AREA Requested  
 DAF AREA Department

Task BIO OPERATIONAL  
 Operational check of Bio filter

Location DAF PLANT, CONTRASHEAR AREA Authorised Work Type P  
 Permit

Tradesman REG Supervisor ARI

Done by: Date: Time taken:  
 Comments:

If additional work is required indicate 'yes' write works order number \_\_\_\_\_

Work Required  
 check of Biofilter & Operating parameters. Checks to be done by DAF staff

- PH of bark Net PH---->7  
 Add 50 ml's of distilled water to 10g of biofilter bark sample in a beaker. ( sample taken at a depth of 300 mm).  
 Stir thoroughly for at lest 60 seconds and allow to settle. After 3 hours standing measure the pH of the liquid using a hand held meter.
- Moisture of bark 95% +radom samples 300mm 6x samples.  
 Oven drying overnight @ 105 D. No lower than 100% of dry weight
- Inlet gas humidity 95%+ \_\_\_\_\_
- Fan operating & quite \_\_\_\_\_
- Pressure drop across biofilter <less 150 guage \_\_\_\_\_
- All manometers correctly installed & working. \_\_\_\_\_
- Inlet temp of filter no more than 35 deg \_\_\_\_\_
- All water sprays working correctly. \_\_\_\_\_

Parts used	Stock no	Quantity	Description

Maintenance Work Order No: P37303 1 of 1  
25/11/19 10:28:00

Asset 79001 Target date 13/01/19  
 BIO FILTER FAN & AREA Requested  
 DAF AREA Department

Task BIO BARK ANN  
 Bio filter annual assesment of media

Location DAF PLANT, CONTRASHEAR AREA Authorised Work Type P  
 Permit

Tradesman DAN Supervisor

Done by: Date: Time taken:  
 Comments:

If additional work is required indicate 'yes' write works order number \_\_\_\_\_

Work Required  
 TPL to undertake a comprehensive assessment of quality of the biofilter media annually. The assessment shall involve an evaluation of the media size distribution and composition.

- Turning restructuring and dampening of the bed material. \_\_\_\_\_
- The addition of suplementary bed material. \_\_\_\_\_
- Partial bed replacement or total bed replacement \_\_\_\_\_
- Venting of gases not occuring around the base. \_\_\_\_\_

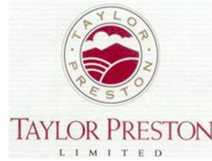
All remedial work to be recorded. \_\_\_\_\_

Pm to be actioned by the Enginnering manager along with report on Duct flows to be submitted to the Reg council by the 3rd/ March of that year. \_\_\_\_\_

Dans has noted more bark will be needed 2020







TAYLOR PRESTON – ME86

11.12 PM System Checks and Planner (Steam boiler) –

FrontLine Maintenance Management System

Assets at TPI: 43005 STEAM BOILER 5.5 MW

Plans for 43005 STEAM 1/4 QUARTLY STEAM CHECKS (TPL)

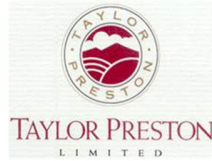
Task	Freq	Unit	RT	Hold	D.o.V	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52									
STEAM 1/4	13	W	V																																																	
STEAM ADUIT	8	W	V																																																	
STEAM BOILER	52	W	F																																																	
STEAM LAB ADUIT	4	W	V																																																	

10% Condensate return (WBCO)  
 Output redering 4520 @ 6b—6300 kg/hr peak  
 Gas consumption 26341mjoules 675 m3/hr  
 G 70bumer 21kw

NUM 22/10/2019 2019 (43) 13:33 SIMON.SCHILDER

13:33  
22/10/2019





TAYLOR PRESTON – ME86

11.14 Rendering PC Inspection Sheet –

**TAYLOR PRESTON LIMITED (ME86)**  
REND PC INSPECTION - Rendering QC Inspection Checksheet

Page 2 of 2  
**QUICS**

Dryer Amperage (<160)					105 amps
Sol-curb (beginning and end - shock dose)	N/A				
Metabisulphite administered	A				
Mealbox samples taken and recorded	A				
Verify MBM moisture value below 10%	N/A				
MBM particle size (several times per day)	A				
<b>Pre-Start checks</b>					
Ensure Biofilter is operational before starting plant	A				
Check Rendering plant and associated areas for fugitive odours	A				
Ensure all hatches and doors on the drier are closed and secure	A				
MSB silo level checked and recorded	A				
Tallow tank levels checked and recorded	A				
All magnets checked and cleaned	A				
Engineers completed greasing	A				
Inside raw material bin level checked and recorded	A				
All conveyor and hopper lids, hatches etc closed and secure	A				
Surge bin level checked	A				
Tallow					
Tallow FFA (several times per day)	A				

Supervisor Sign: \_\_\_\_\_

**TAYLOR PRESTON LIMITED (ME86)**  
REND PC INSPECTION - Rendering QC Inspection Checksheet

Page 1 of 2  
**QUICS**

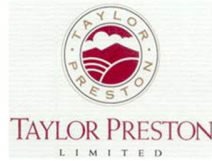
Date: 19/11/19 Form: RF002 Rev 15 9/05/19 Issued: 25 Nov 2002

Per Shift Inspection Time: Inspector: A.K.

Note: On Hard Copy Use Run 1 Column for Per Shift Inspections, these are filled out in Run 0 in the System

Run Inspection Times: 9:30 AM, 2:33 PM

PS Inspection	Run Inspection Times				Comment
	Run 1	Run 2	Run 3	Run 4	
<b>Blood</b>					
<input type="checkbox"/> Dryer Exit Temp (>115°C)	N/A	N/A			
<input type="checkbox"/> Coagulation Temp (>90°C)	N/A	N/A			
<b>Condemned Material</b>					
<input type="checkbox"/> Condemned Green Dye Available	A	A			
<input type="checkbox"/> Verify MSB Rendering external hatches (7) locks secure	A	A			
<input type="checkbox"/> Verify MSB Rendering internal hatches (3) locks secure	A	A			
<input type="checkbox"/> Verify BSB Rendering hatches (1) locks secure	A	A			
<input type="checkbox"/> Verify integrity of MSB condemned chutes (double nutted, etc)	A	A			
<input type="checkbox"/> Verify integrity of BSB condemned chutes (double nutted, etc)	A	A			
<b>General</b>					
<input type="checkbox"/> Chutes - no leaks	A	A			
<input type="checkbox"/> Data Logger - working OK	A	A			
<input type="checkbox"/> Mill Doors - all doors closed at all times	A	A			
<input type="checkbox"/> Meat Meal outload tidy, waste disposed of	A	A			
<input type="checkbox"/> Amenities - clean & tidy	A	A			
<input type="checkbox"/> VA Non-compliance Notification	N/A	N/A			
<input type="checkbox"/> Breakdowns resulting in downtime and/or product requiring disposal/disposition	A	A			
<input type="checkbox"/> Doors to Rendering plant left closed during processing hours	N/A	N/A			
<input type="checkbox"/> Verify no chemicals in control room	A	A			
<input type="checkbox"/> Smellies full tank, pump on	A	A			
<input type="checkbox"/> Verify condition of forklift	A	A			
<input type="checkbox"/> Actions taken to correct non-compliant operator techniques	A	A			
<b>GMP ALL</b>					
<input type="checkbox"/> Pre-Cooker Temperature	N/A	A			92°C
<input type="checkbox"/> Decanter Feed Tank Temperature	N/A	A			96°C
<input type="checkbox"/> Separator Feed Tank Temperature	N/A	A			95°C
<input type="checkbox"/> pH (4.8)	N/A	A			2.2 pH
<input type="checkbox"/> Verify shaker screen feed conveyor interlock functioning correctly	A	A			
<input type="checkbox"/> Meal					
<input type="checkbox"/> Dryer Exit Temp (>115°C)	N/A	A			115°C
<input type="checkbox"/> Evaporator Pressure	N/A	A			-66%



TAYLOR PRESTON – ME86

11.15 Rendering Daily Log Sheet –

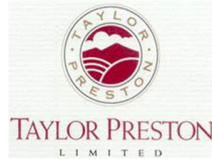
RENDERING DAILY LOG SHEET																				DATE											
RAW MATERIAL				PROCESS						DRIER / MILL										EVAPORATOR											
TIME	M105%	Pre-cooker temp	Press amps	Press shute %	207 level	208%	211 level	212% pH	M-3.02A	13.02/2	M-3.03%	4.02%	4.04A	1-7.02/4	1-7.02/6	1-7.02/8	1-7.02/10	1-7.07/1	1-7.05/2	1-8.02/2	M-7.03A	1-7.02/1	1-7.01/1	M-7.04%	Conn solids	1-7.02/12	Hydrolyser?	FFA%			
6am																															
7am																															
8am																															
9am																															
10am																															
11am																															
12pm	1	96	19	42	30	65	71	65	2.5	91	118	15	100	56	107	74	69	69	-71	64	52	37	95	15	55		17mm		1.39%		
1pm	1	96	19	42	43	50	74	65	4.2	99	121	20	100	57	87	72	70	71	-69	68	62	37	96	15	55		-13mm				
2pm	20	94	18	42	36	50	74	65	-	104	116	20	100	57	98	80	77	75	-62	72	63	37	100	15	55		-9mm		1.21%		
3pm	50	93	17	42	34	50	54	59	3.9	96	119	20	100	57	98	63	57	58	-81	53	43	37	78	15	55		-15mm				
4pm	50	96	17	25	14	50	60	58	3.4	94	119	25	100	58	95	72	69	69	-70	66	59	37	74	15	52		-10mm				
5pm		SHOT DOWN AT			5:27 pm																										
6am																															

BLOOD/SLUDGE PROCESSING				IN THE EVENT OF POSITIVE DOME PRESSURE				DOWNTIME					
TIME	Coagulator	Drier temp	TIME	Coagulator	Drier temp	TIME	Coagulator	TIME	Coagulator	Drier temp	TIME	Coagulator	Drier temp
				ENTER MANUAL TEST TIME, RESULT AND ANY CORRECTIVE ACTIONS TAKEN (IF REQUIRED)				RECORD ALL STOPPAGES					
				Bleeding refractometer testing: Times: *Test twice a day, morning and afternoon* It should be between 12 and 15.				METAL DETECTION COUNTER					
								TODAY					
								TEST					
								YESTERDAY					
								7 ✓					

POST OPERATION CHECKS		DONE	COMMENTS / NOTES	BLUDGE PROCESSING	DAYSHIFT	NIGHTSHIFT	STERILISATION REQUIREMENTS	
1 ACID PUMP OUTSIDE				START TIME			DRIER DISCHARGE TEMPERATURE SET POINT	110
2 ACID VALVE				FINISH TIME			MBM CONTAINER NUMBER (DAY)	
3 H2O IN REP FEED TANK				SLUDGE FLOW			MBM CONTAINER NUMBER (NIGHT)	
4 BLOW TALLOW LINE				BLOOD FLOW			VISUAL CHECK OF ACID SYSTEM	
5 FLUSH CONC LINE				CIP COMPLETED			INFORM FOREMAN/SUPERVISOR OF ANY DEFECTS FOUND	
6 CAUSTIC DECANTER				CHANGING OF MILL SCREENS				
7 CAUSTIC COAGULATOR				Time changed			Operator	
8 CAUSTIC PAIL-COOKER				Operator			Operator	
9 SHUTDOWN STREAM				Operator			Operator	
10 SHUTDOWN RO-FILTER				Operator			Operator	
NEW HAZARDS IDENTIFIED /				ENSURE THAT WASHED SCREENS ARE SPRAYED WITH LIQUID DETERGENT		CONFIRMATION OF ACCEPTABLE DRIER TEMPERATURE DO NOT START IF TEMP ABOVE 100 DEGREES / SEC. FOREMAN		
HEAD ISSUES IN RENDERING							OKY	TEMPERATURE



TAYLOR PRESTON – ME86

11.16 DAF Daily Log Sheet

20/11/2019			DAYSHIFT OPERATORS		NIGHTSHIFT OPERATORS		MUTTON BOARD PUMP BLOCKAGES													
CONSUMABLES			NOTE: IF FOR ANY REASON THE BIO-FILTER BECOMES NON-OPERATIONAL NOTIFY THE RENDERING FOREMAN OR SUPERVISOR IMMEDIATELY				TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME	TIME
LIME BAGS	ACID LEVEL	POLYMER BAGS	06:30 CHECKING PAF CONTRASHEAR WERIS OUTFALL POLYMER UNIT LIME UNIT IS ALL OK AND CLEAN AROUND THE DAF				CORNELLS													
19.6			08:30 - Buffer the pH probe.				PUMP 1		PUMP 2		PUMP 3									
DAF FLOW METER READINGS			12:00 - The outfall is clear and solid free. The pH is good and so the flocc. The weir is at high flow.				RUNNING	Y	N	Y	N	N								
TOP (GAM)	129975	131982	- The BP and the MBB pumps are running very well.				PRESSURE	kPa		kPa		46/1109 kPa								
BOTTOM (GAM)	N/A	N/A	15:00 - The BP and the MBB pumps are running well.				DAF TO "HUGO" SLUDGE PUMPS (YARDMASTERS)													
DAF POLYMER MAKE UP (GAM)			- The outfall is clear and small solids escaping from both DAF 1+2. Adjust the weirs a bit. The pH is very good and the flocc also.				BOTH PUMPS FUNCTIONAL													
DAF MAKE UP TANK LEVEL (GAM)			17:20 - checking the DAF, adjust the weirs slightly. The outfall is very clear and solid free. The pH is good and so the flocc. top up the lime unit and the polymer unit. all working well, checking and cleaning the contrashear, cleaning the pit and oxidant the control room.				MONDAY MORNING GAS READING													
BP FLOW READING			18:15 - checked RJP was running ok, adjust the sludge speed from 0.92 to 3.5% and Poly dosing from 36 to 49.6%. checked main sludge holding tank, about almost 3/4 full. checked MBB was running ok.																	
START	192890397	1140	checked Contra Shears and Solid Hopper all good. Slightly spray tank was full. checked both dips all ok. The back over channels of both dips all clear. Make the unit and lime tank all good. Adjust both weirs a bit up cos the flow in both dips very low. pH was good and also good flow.																	
FINISH	172744182	22:00	The outfall looks a bit light. Creamy green and some fine solids coming out on their dips.																	
BELT PRESS MAKE UP UNIT			20:30 - checked the RJP was going ok and main sludge hopper was about getting full. hose the rollers.																	
START	408-21-1		checked MBB bleed tank and bleed pump all going ok. checked both dips all ok. outfall all clear.																	
FINISH	408-27-17		Stop the RJP. Main sludge holding tank was full and Hugo level. Poly low cos nothing much coming through the line. take the reading and hose the RJP. checked the dips all going ok.																	
BELT PRESS TANK LEVEL			22:00 - Parami truck has just come down to get load for the skin and change the trailer. Both dips all ok. Both Contra Shears and Solid Hopper all ok. Add 2 bags to make up Poly hopper. PH was still ok.																	
START	540		Clean MBB bleed tank and bleed both Contra Shears, paramer and solid platform and hose the gut.																	
FINISH	870		23:00 - checked both dips all ok them but down the weirs. outfall looks nice and clear. Solid free.																	
MSBB BLOW OVER / GORMANN RUPP SUMP			23:30 - checked both dips all ok them but down the weirs. outfall looks nice and clear. Solid free.																	
(Check that nothing is entering the sump overflow line)																				
Check @ 6am	Sump clear	Sump overflowing																		
Check @ 12pm	Sump clear	Sump overflowing																		
Check @ 6pm	Sump clear	Sump overflowing																		
Check @ 12am	Sump clear	Sump overflowing																		
DAYSHIFT WEATHER																				
RAINFALL	INTENSITY	CONDITIONS	BIO-FILTER DAILY CHECKS				PRINT GRAPHS FOR PREVIOUS 24 HOURS OPERATION													
N	N/A	FINE	FINAL AIR DUCT TEMPERATURE PRIOR TO BIO-FILTER				15.1 C													
NIGHTSHIFT WEATHER			FINAL AIR DUCT PRESSURE LOGGING IS FUNCTIONAL				15.4 mbar													
RAINFALL	INTENSITY	CONDITIONS	PRESSURE ACROSS BIO-FILTER BED (mmWG)				INFEEED													
N/A	N/A	WARM					OUTFEED													
VISUAL CHECK OF ACID DOSING SYSTEMS			YES				NO													
OPEN VALVE TO CHECK SECONDARY BUNDING FOR TANK OK?			YES				NO													
INFORM FOREMAN/SUPERVISOR OF ANY DEFECTS NOTICED							NEW HAZARDS IDENTIFIED BY OPERATORS AT DAF													
							HOT WATER TO CROSS COLLECTOR CATCHMENT OFF													
							YES													
							NO													
- Clean the mutton bleed screen and hose the area.																				

**TAYLOR PRESTON – ME86**

