Attachment 1 Monitoring Results Effluent Emissions 2014 and 2015

Parameter	14/02/2014	28/03/2014	06/06/2014	04/07/2014	15/08/2014	11/11/2014	02/02/2015	08/05/2015	06/08/2015	09/10/2015	04/12/2015
TSS (mg/l)	<1	<1	<1	15.6	6.4	<1	50	89	<22.5	52	<10
pH (pH Units)	7	7	7.47	7.77	7.49	6.9	4.87	6.16	7.07	7.2	7.32
Ammonia as NH3-N (mg/l)	0.31	0.03	1.41	0.28	<0.01	<0.01	0.04	105			
COD (mg/l)	<1	<1	3.5	14	6	17	<1	19	15	12	<1
BOD (mg/l)	1.5	2	1.5	4.24	4.5	3.2	1.4		2.5	3.0	2.0
Total Nitrogen (mg/l)		<1					3.2				8.0
Sulphate (mg/l)		7					9.4				7.5
VOCs (mg/l)		<0.01					<0.005 except below				<0.001 except below
Chloroform (mg/l)							0.008				0.0138
Dibromochloromethane (mg/l)											0.0028
Bromodichloromethane (mg/l)											0.0075
SVOCs (mg/l)		<0.01					<0.05				<0.001 except below
Phenol (mg/l)											0.0025
Total Coliforms (MPN/100ml)		<1									
E/Coli (MPN/100ml)		<1					<1				
Cyanide (mg/l)							0.006				
Phosphate (mg/l)							<0.1				
Lead (mg/l)							<0.06				<0.006
Zinc (mg/l)							0.0894				0.049
Copper (mg/l)							0.0328				0.0096
Cadmium (mg/l)							<0.0006				<0.0006
Arsenic (mg/l)							<0.001				<0.001
Chromium (mg/l)							<0.002				<0.002
Nickel (mg/l)							0.0039				<0.003
Mercury (mg/l)							<0.0001				<0.0001

Attachment 1 Monitoring Results Effluent Emissions 2016

Parameter	24/03/2016	22/09/2016	14/12/2016
TSS (mg/l)	<10	<12.5	<10
pH (pH Units)	7.33	7.32	7.60
Conductivity (uS/cm)			220
Ammonia as NH3-N (mg/l)			
COD (mg/l)	<10	<15	<15
BOD (mg/l)	<2	<2	
Total Nitrogen (mg/l)		4	4.7
Sulphate (mg/l)		<10	<10
VOCs (mg/l)	<0.01	<0.01	<0.01
Chloroform (mg/l)		0.0147	0.00022
Dibromochloromethane (mg/l)		0.006	0.00024
Bromodichloromethane (mg/l)		0.012	0.00011
SVOCs (mg/l)	<0.01	<0.01	<0.01
Phenol (mg/l)		0.0121	0.0143
Total Coliforms (MPN/100ml)	<1	<1	<1
E/Coli (MPN/100ml)	<1	<1	<1
Cyanide (mg/l)			0.012
Phosphate (mg/l)			<0.075
Lead (mg/l)			
Zinc (mg/l)			
Copper (mg/l)			
Cadmium (mg/l)			
Arsenic (mg/l)			
Chromium (mg/l)			
Nickel (mg/l)			
Mercury (mg/l)			<0.0001

Attachment 2 Monitoring Results for Stormwater Discharges at SW1 for 2014, 2015 and 2016

Parameter	Q1 2014	Q2 2014	Q3 2015	Q4 2015	Q1 2016	Q4 2016
TSS (mg/l)	<1	5	<22.5	<10	<10	<5
pH (Units)	7	7.55	5.25	7.34	7.51	6.53
Conductivity (uS/cm)	200.4	334		197		<50
BOD (mg/l)			<2		<2	
COD (mg/l)			6		<15	
Sulphate (mg/l)					11.4	
Total Nitrogen (mg/l)					4.7	

GEA Westfalia Separator Ireland Limited, Coolroe, Ballincollig, Co Cork, Ireland

Attention: Mr. Nicholas Downey
Ormond Organics

GEA Equipment

Phone +353 21 485 0222
Fax +353 21 485 0230
Michael.oconnell@gea.com

22.02.2017

Dear Nicholas

Re: P3926 – Quotation for 1 x UCF466 Decanter Centrifuge

With reference to our meeting yesterday please see below our agreed final quotation for a UCF466 decanter. This decanter centrifuge for waste water treatment sludge applications is suitable for up to 35 m3/hr at up to 8% ds with a solids loading of 4000kg/h up to 900 kg/hr. Expected cake solids are 18-25%.

Performance will depend on the type of sludge

We have included a control panel for control of the complete dewatering system including sludge pump, poly pump, and screw conveyor with an optional extra cost for an inverter for controlling a cake pump.

We hope this quotation meets with your approval and look forward to receiving your order next week. If you have any queries please do not hesitate to contact us.

Yours sincerely

Michael O'Connell
Sales Engineer

1. Technical Specification

1.1.

• UCF 466-00-35

The decanter UCF 466-00-35 is equipped with a patented differential drive system. Automatic regulation of the differential speed allows optimum clarification with maximum dry substance values and throughput capacities and high operating safety.

Technical specification:

bowl diameter:	460 mm
bowl length:	2010 mm
l/d ratio:	4:1
bowl speed:	3.850 rpm
g-force (z):	3.332
weight:	approx. 2.920 kg

drive motor (bowl drive by frequency converter):

operating voltage:	380 - 420 V
rating:	37 kW
speed:	3.000 rpm (400 V / 50 Hz)

secondary motor (scroll drive by frequency converter):

operating voltage:	380 - 420 V
frequency:	17 - 87 cycles
rating:	11 kW (400 V / 50 Hz) 15 kW (400 V / 87 Hz)
speed:	400-2800 rpm

Materials:
rotating product-contacting parts: 1.4462, 1.4571, 1.4306, 1.4301
stationary product-contacting parts: 1.4301
all other parts: painted steel (paint: green RAL 6011 structure)

Abrasion protection:
- scroll wear protection: hard-facing, tungsten carbide on Nickel base
- wear protection in bowl discharge ports:
  tempered cast iron bushes replaceable at site
- wear protection in solids collection chamber:
- wear liner replaceable at site

- wear protection in scroll distributor:
- wear liners replaceable at site

Included in the above machine price are:
- foundation frame and 1 set of rubber dampers for vibration insulation
- noise reduction parts

•Vibration sensor

Monitoring of vibration velocity to VDI 2056
and ISO 10816 from 10...1000 Hz
The vibration severity measurement is a very efficient monitoring method for detecting such common machine faults as imbalance, loose parts etc
The measurement returns the RMS value of vibration velocity in mm/s

• Set of tools

Set of special tools for UCF 466-00-35
The set of tools contains all tools necessary for regular maintenance.

1.2. Accessories

•Liquid Chute, horizontal Flange

material: Stainless steel 1.4301/AISI 304
with sampling cock and de-aeration connection
discharge side, horizontal flange connection

•Solid Chute, vertical Flange (option horizontal flange)

material: Stainless steel 1.4301/AISI 304
discharge bottom, vertical

1.3. Control System

Control panel for control of complete dewatering system

Technical solutions in detail

Decanter Control unit DCU 8:
The DCU 8 consists of a Siemens Operator panel Touch version with a 5.7” graphic display and a compact PLC unit Siemens S7-314C-2DP.
The combination of OP177B and S7-314C-2DP controls the decanter.

The current operation mode as well as all process parameters are displayed on the panel.
Start and stop of the decanter is done with fixed keys on the panel.
Limit values are displayed on the panel and can be adjusted in a password protected mode.
Failure messages are displayed as a text message on the panel.

All failure messages are stored in the failure buffer.

Data exchange:
WS control cabinet to the client:
• Common alarm
• Decanter ready for operation
• Feed on

Client to WS control cabinet
• Decanter/ feed start external (not used with the interface option)
• Solids path o.k.

The data exchange is done via hardwired signals as standard.
As an option with additional price, the on board Profibus DP interface can be programmed.

Scope of supply:

Control System for UCF 466-00-35 Standard

Planning and production of the complete functional unit, comprising the decanter and a complete control system from GEA Westfalia Separator, offers all the benefits of our quality standard for all customers worldwide.

Our competence - your benefit
- Our control systems allow the centrifuge to work at a the optimal operating point, with best product yield and lowest possible energy consumption.
- Two possibilities to control the decanter (speed and torque based) makes continuous reaction on changing product conditions possible.
- Control systems from GEA Westfalia Separator control all parameters of the decanter, to allow automatic operation without operator staff all time.

System designed as Compact panel painted steel RAL7035 - max. ambient temperature < 35°C
- Cabinet cooling with common fan
- Degree of protection main control cabinet IP 54
- Control cabinet size approx. (WxHxD) 800x2100x500mm
Scope of control
- Decanter with main and secondary drive, both VFD driven, main drive 30KW, secondary drive 10,8 (60Hz)KW
- Speed, vibration measuring with standard sensors and bearing temperature measuring at the centrifuge
- Motor starter 5,5KW VFD Sludge pump
- Motor starter 1,5KW VFD Polymer pump
- Motor starter 2.2KW DOL Conveyor
- 3x valve 24V DC without feedback signals
- Basic hardware signal exchange. Start/ stop, common alarm, ready, in production

Technical issues
- Main power supply 380 - 420V / 50Hz
- Control voltage 230V AC / 24V DC
- Cable entry from bottom
- Core identification - without

PLC (GEA IO basic version)

- The control cabinet will be equipped with a PLC type Siemens S7-1200 and an operator panel Siemens HMI TP700
- PLC equipped with assitance system
- no bus communication to a main PLS system

VFDs
- the control cabinet will be equipped with VFDs type Danfoss FC300

1.4. Commissioning

The machine will be commissioned by a service engineer after the mechanical and electrical installation are completed.

2. Commercial Terms

2.1. Price

Price for machine and equipment as specified above including commissioning	**112,000.00 €**

2.2. Optional item

Additional price for including inverter and control for 11kw cake pump.	**2,000.00 €**

COMMERCIAL CONDITIONS

Prices:
The above prices are net for delivery to Ireland site including seaworthy packaging (offloading by others).
Prices are shown net applicable VAT or other duties.

Validity of Offer:
This offer is valid for 1 month

Delivery Time:
Normal delivery time is 14-16 weeks

Installation , Commissioning & Training:
4 days included

Warranty:
1 year from date of delivery

Payment:
30 % with order
60 % on notification of readiness to ship but before shipment
10% on commissioning but no later than 3 months after delivery

Lifting Equipment:
Permanent lifting equipment must be installed over all Westfalia Separator centrifuges to facilitate ongoing maintenance. We will advise lifting weights and access/working space required around the machine for safe operation and maintenance.

Exclusions:
We are not responsible for the following;
mechanical or electrical components not specifically mentioned

- any other services such as water, power, etc. unless mentioned

Retention of Title:
GEA Westfalia Separator reserves its proprietary rights with regard to the delivery item until all payments foreseen in the contract have been made.

General:

This quotation is subject to our Standard Conditions of Sale & Installation except where otherwise agreed in writing. The aggregate liability for damages including penalties of the Seller to the Buyer shall in no case exceed 10% of the contract price. The liability for indirect or consequential damages like loss of profit, loss of production or other financial or economic losses of any kind is excluded. This offer is without engagement and is subject to a formal written Confirmation of Order.

Michael O'Connell
Sales Engineer
GEA Westfalia Separator Ireland Limited

Figure 1 - Schematic of WWTP

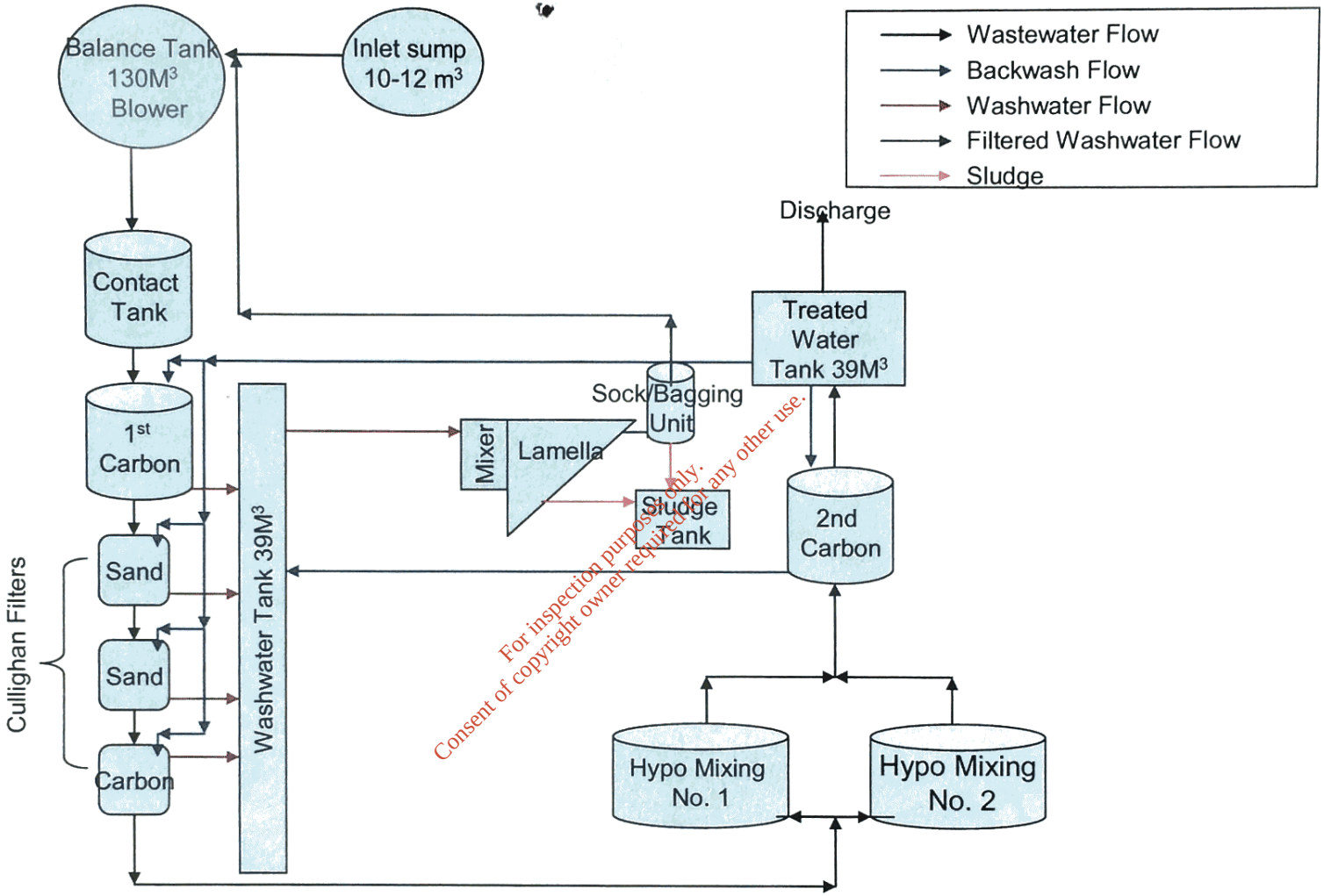


TABLE E.1(ii) MAIN EMISSIONS TO ATMOSPHERE (1 Page for each emission point)

Emission Point Ref. Nº:	A2
Source of Emission:	Biofilter
Location:	WWTP Area
Grid Ref. (12 digit, 6E,6N):	209708E, 079819N
Vent Details Diameter: Height above Ground(m):	 0.22 m 2.75 m
Date of commencement:	2007

Characteristics of Emission:

(i) Volume to be emitted:			
Average/day	Nm^3/d	Maximum/day	36,000 Nm^3/d
Maximum rate/hour	2,000 Nm^3/h	Min efflux velocity	$m.sec^{-1}$
(ii) Other factors			
Temperature	ºC(max)	ºC(min)	ºC(avg)
For Combustion Sources: Volume terms expressed as : ☐ wet. ☐ dry. _____ $\%O_2$			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

Emission Point Ref. Nº:	A3
Source of Emission:	Odour Control Unit
Location:	Materials Recovery Building & AD Plant
Grid Ref. (12 digit, 6E,6N):	209652E, 079780N
Vent Details Diameter: Height above Ground(m):	 0.80 m 15 m
Date of commencement:	

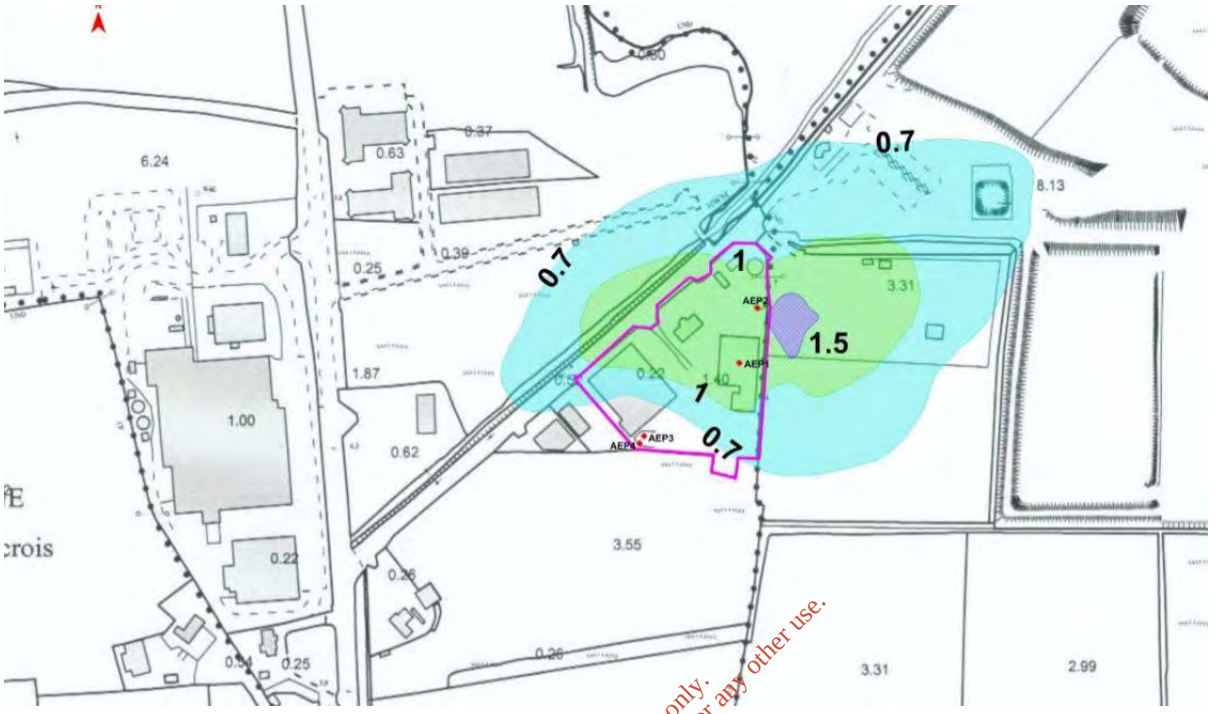
Characteristics of Emission:

(i) Volume to be emitted:			
Average/day	Nm^3/d	Maximum/day	719,520 Nm^3/d
Maximum rate/hour	29,890 Nm^3/h	Min efflux velocity	$m.sec^{-1}$
(ii) Other factors			
Temperature	ºC(max)	ºC(min)	ºC(avg)
For Combustion Sources: Volume terms expressed as : ☐ wet. ☐ dry. _____ $\%O_2$			

(iii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included):*

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr

Attachment 7 Worst Case Odour Contours



2008			
Parameter	Inlet (ppm)	Outlet	% Removal
Hydrogen Sulphide	6.2	0.37	94
Ammonia	116	Not Detected	>99
Mercaptans	1	Not Detected	>99
2010			
Parameter	Inlet (ppm)	Outlet	% Removal
Hydrogen Sulphide	0.31	0.039	87.4%
Ammonia	60	8	86.67
Mercaptans	0.6	Not Detected	>99

TABLE H.3(i): Generation of waste at the installation and its management

Waste Description	EWC Code (use asterisk to indicate whether hazardous waste or not)	Category per Animal By-products Regulation 1069/2009	Source of waste	Quantity generated (tonnes per month)	Location of recovery of disposal (on-site, off-site, exported)	Method of recovery or disposal (e.g. recycling, energy recovery, other incineration, landfill)
Treated Sludges	19 08 12		Sludge drying		Exported	Energy recovery
Digestate	19 06 04		Anaerobic digestion		Off-site	Land application
Fibre	19 06 99		Dewatering of digestate		Off-site	Land application
Fibre	19 06 99		Dewatering of digestate		Off-site	Composting
Liquor	19 06 99		Dewatering of digestate		Off-site treatment in Irish Water WWTP	Waste water treatment
Materials unsuitable for processing	20 03 99		Incoming brown bin waste		Off-site,	Landfill
Boiler Dust	10 01 01		On-site Boiler		Off-site	Landfill

Treatment Process	D/R Class	Capacity	Maximum Throughput	LoW	Outputs	Waste Classification/LoW	Destination
Anaerobic Digestion	R3	2,208 m^3	40,000 tonnes/ year	19 08-05 19 08-12	Digestate Fibre Biogas	19 06 99 19 06 99 No LoW for Biogas	Landspread / Treated in on-site WWTP On-Site Sludge Dryer Combusted on-site CHP
Sludge Drying	R12		1000 tonnes/ year	19 08 05	Dried Sludge	19 08 05	Used as a fuel in energy recovery plants in Germany
Sludge Treatment (Lime Stabilisation)	R12				19 02 06		
Landfill Leachate Treatment	No Recovery /Disposal Class for Leachate Treatment		5000 tonnes/year	19 07 03	On-Site WWTP Effluent	19 08 99	Discharge to Irish Water Sewer
Digestate Treatment	No Recovery /Disposal Class for Digestate Treatment		32,000 tonnes/year	19 06 099	Centrifuge Liquor	19 08 99	Discharge to Irish Water Sewer
Waste Wood Shredding	R12		19 12 07		Shredded Wood	19 12 07	Use in on-site boiler
Waste Wood Combustion	R1		19 1-07		Boiler Dust	10 01 01	Landfill
Municipal Waste Processing	R1/R4/R5/D5		20,000	20 03 01	Recyclables/ Recoverables and Non-Recyclables	19 12 01, 19 12 02, 19 12 03, 19 12 04, 19 12 05, 19 12 07 19 12 08, 19 12 09, 19 12 10, 19 12 12	Off-site Licensed Waste Management Facilities
Waste Storage	R13/D13/D15				Recyclables/ Recoverables and Non-Recyclables	19 12 01, 19 12 02, 19 12 03, 19 12 04, 19 12 05, 19 12 07 19 12 08, 19 12 09, 19 12 10, 19 12 12	Waste to Energy/Landfill

As the drying of the whey permeate and yeast will be not be a waste activity, it is not listed in the Table