From: Noeleen Keavey
Sent: 09 August 2006 14:48
To: Ann Bosley
Subject: FW: RK1721 FW: Youghal - Review of AVR report

Attachments: Fig_8_2_Desig_Areas.jpg; Yl_Bay_Mon_Locs.pdf; six_inch.pdf; letter YTC.pdf; project summary.pdf; WWTP Techinical Spec.pdf
Ann

Could you look after this ?

Thanks

Noeleen

From: Ciara Maxwell [mailto:c.maxwell@epa.ie]
Sent: 09 August 2006 14:46
To: Noeleen Keavey
Subject: FW: RK1721 FW: Youghal - Review of AVR report

Hi Noeleen,

Can you please put this e-mail on AVR's file as unsolicited (or additional) information. It is information that was submitted to the Sanitary Authority upon request, in realtion to the proposde discharge to sewer and the Section52 discahrge consent. The Disachrge Consent was later granted by the SA received by the Agency 13/07/2006.

Thanks, Ciara

From: Sinead Hickey [mailto:sinead.hickey@sws.ie]
Sent: 09 August 2006 13:25
To: Ciara Maxwell
Subject: FW: RK1721 FW: Youghal - Review of AVR report

Sinead Hickey
Project Manager

SWS Energy Services
Member of SWS Group
Tel: +353 23 29164

Fax:+353 23 43640
www.swsenergy.ie

From: Sinead Hickey [mailto:sinead.hickey@sws.ie]
Sent: 11 July 2006 15:42
To: 'Valerie Hannon'
Subject: RE: RK1721 FW: Youghal - Review of AVR report

Hi Valerie,

My responses below to queries raised by Atkins–I think this covers everything but please let me know if you need anything else,

1. The modeling carried out was specific to the water quality parameters expected from the condensate. In this regard there was no requirement to model for Total and Faecal Coliforms or virus as there will not be any from the condensate. The VOMM drying system produces a pathogen free sterile product which is a proven technology in the field of industrial pharmaceutical and municipal sludge. With respect to foul effluent from the admin building, this is being treated separately using a small scale light commercial wastewater (Bord Na Mona or equivalent) treatment system which a design capacity for 99.9% reduction in coliforms. The site foul treatment system will treat on site foul effluent for up to 8 persons with an average c.2 person daily load. As we discussed on the telephone if you specify discharge limits for same I will ensure they are included in the contract scope of works (Bord Na Mona small scale commercial units are designed to meet all required discharge parameters)

2. Attached is a map which shows the site discharge point to the outfall pipe at Foxhole, Youhal relative to the AVR plant. The discharge point is into the estuary and is out at the end of what remains of the old bridge. You can see the EPA monitoring points U/S and D/S of the discharge point. Youghal Town Council have no objection in principle to allowing the discharge to the outfall pipe at Youghal subject to meeting discharge requirements set by CCC and the EPA (letter attached). Therefore the modeling was undertaken with respect to the chemical and biological parameters to ensure that the discharge and extent of mixing zone is compatible with the receiving water. Because this outfall will be discontinued in the medium term when the Yougal Waste Water Treatment System comes into operation (in about 5 years time from speaking with the Sanitary Division of CCC) the discharge had to meet, at a minimum the requirements of the Urban Water Water Directive and also meet other relevant discharge parameters as outlined in the additional information submitted to the EPA based on discussion with the licencing officer. The condensate has therefore to be treated on site and then in c 5 years the treated discharge will be sent to Yougal Waste Water Treatment System when constructed as the EPA do not really want a number of discharge points into the bay.

Also attached is a map showing the site relative to designated areas and a summary of the designations. I also got in touch at the time with Shane O' Boyle from EPA and also Liz Slides of NPWS and Chris Embro who were both involved with the Biomar study who confirmed that at the nearest monitoring site that no species of interest were recorded. Chris Embro was also involved in the survey undertaken at the

discharge pipe into the estuary at the time and that no species of ecological interest were recorded which is useful to know and confirmed the EPA's comment that the bay is eutrophic. The modeling and water quality analysis carried out for this proposal also confirmed this.

3 the first set of modeling was carried out on "worst case scenario" results from condensate samples analysed under laboratory conditions. From speaking with VOMM and waste water treatment companies and looking at the analysis results it was realized that the samples do not accurately simulate real life results of treated condensate and condensate from the process were therefore analysed under real life conditions by submission of raw sludge samples to VOMM. The results were then provided to the Waste Water treatment provider with a suite of emission standards to be adhered to and the discharge was remodeled to determine what impact the discharge would have on receiving waters. Therefore the first set of modeling is not relevant and it is the second set of modeled results which should be referenced. Details of the discharge point are attached and nature of the condensate is as included in the analysis. Attached is the design of the proposed on site waste water treatment plant (Final design will be agreed subject to ok from CCC re emission limits) Attached also is a summary of the proposal

4. From my review of the proposed discharge parameters it appears that emissions will be compliant with all required emission limits and will not negatively impact on the receiving waters.

I think this covers everything but please let me know if you need anything else

Best regards

Sinead

Sinead Hickey
Project Manager

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Tel: +353 23 29164
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www.swsenergy.ie

From: Valerie Hannon [mailto:Valerie.Hannon@CorkCoCo.ie]
Sent: 10 July 2006 16:49
To: sinead.hickey@sws.ie
Subject: FW: RK1721 FW: Youghal - Review of AVR report

Valerie Hannon

Executive Scientist
Wastewater Lab
021-4532707

From: Noel OKeeffe
Sent: Mon 10/07/2006 15:54
To: Valerie Hannon
Subject: FW: RK1721 FW: Youghal - Review of AVR report

see attached comments
Noel

-----Original Message-----

From: Murray, Kevin J [mailto:kevin.murray@atkinsglobal.com]

Sent: 10 July 2006 14:08

To: Noel OKeeffe

Cc: Cieciura, Paul A

Subject: RK1721 FW: Youghal - Review of AVR report

Noel

Paul Cieciura has had a look at the AVR report and made comments below. Neither of us are certain if we have fully addressed the issues that concerned you. If not, please get back to us and we will look at it again.

Regards

Kevin Murray

Director
Ireland (Water)
Atkins

Villa Franca, Douglas Road, Cork, Ireland.
Tel: +353 21 4290300
Fax: +353 21 4293527
Mobile: +353 86 8148510
E-mail: kevin.murray@atkinsglobal.com
<www.atkinsglobal.ie>
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-----Original Message-----

From: Cieciura, Paul A

Sent: Monday, July 10, 2006 1:06 PM

To: Murray, Kevin J

Subject: Youghl - review of AVR report

Hi Kevin - I have looked at the report from AVR in the context of our PR and comment as follows:

1. The AVR report models VOC's, Ammoniacal and Kjeldahl Nitrogen, Phosphates and Temperature. Our modelling concentrated on Faecal Coliforms.

2. The AVR report seems to be centred on Foxhole where the existing landfill site is and covers an area almost entirely upstream of our proposed outfall location. The extent of the models appears to overlap only slightly.

3. The AVR report is an addendum report to an earlier study which is not summarised so the details of the proposal including the location and nature of the discharges is not apparent from this report.

4. The report concludes that Nitrogen concentrations are 10x and 3x lower than the permitted maximums and that Phosphate levels 500x lower.

The report is therefore difficult to comment on as it sets out only a small part of the overall assessment. However, it deals with other parameters not included in our PR and at a location upstream of our proposed outfall. The report concludes that there is unlikely to be any impact on the water quality resulting from the proposed discharge but the full report should be included in the documents provided for review of the detailed design of the WWTW to determine if it is necessary to provide nutrient removal.

If you think this deals with Noels query then you can respond to him accordingly or let me know if you think there is anything missing from this.

Regards

Paul Cieciura

Project Manager
Atkins Water

Atkins, Villa Franca, Douglas Road, Cork, Ireland.

(Tel: +353 21 4290300 Ê Fax: +353 21 4293527

* E-mail: paul.cieciura@atkinsglobal.com

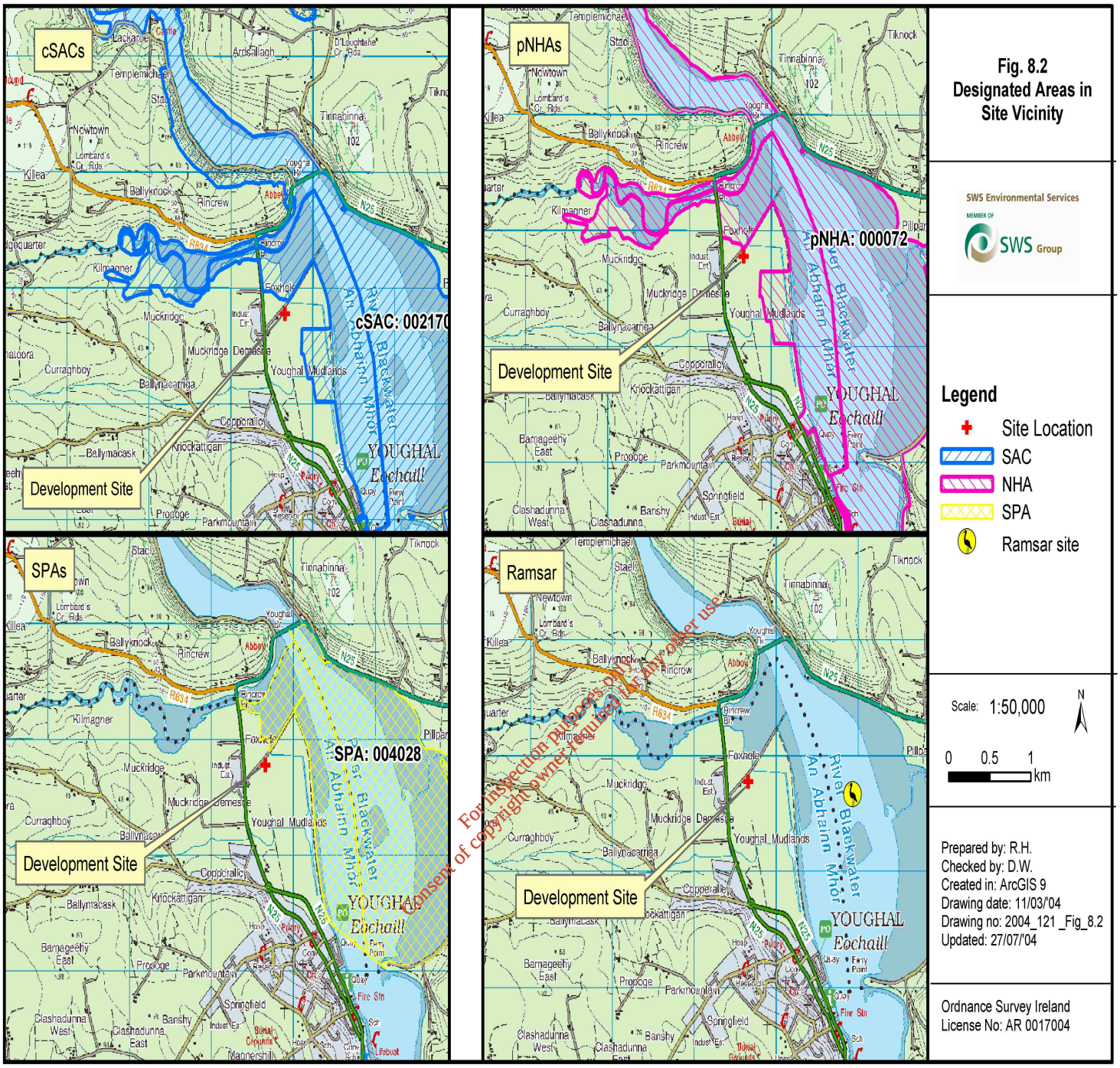


Fig. 8.2
Designated Areas in Site Vicinity

SWS Environmental Services
MEMBER OF SWS Group

Prepared by: R.H.
Checked by: D.W.
Created in: ArcGIS 9
Drawing date: 11/03/'04
Drawing no: 2004_121 _Fig_8.2
Updated: 27/07/'04

Ordnance Survey Ireland
License No: AR 0017004

Fig. 8.X
Youghal Bay Monitoring
EPA Water Quality

SWS Environmental Services
MEMBER OF
SWS Group

Scale: 1:50,000

0 1 2 km.

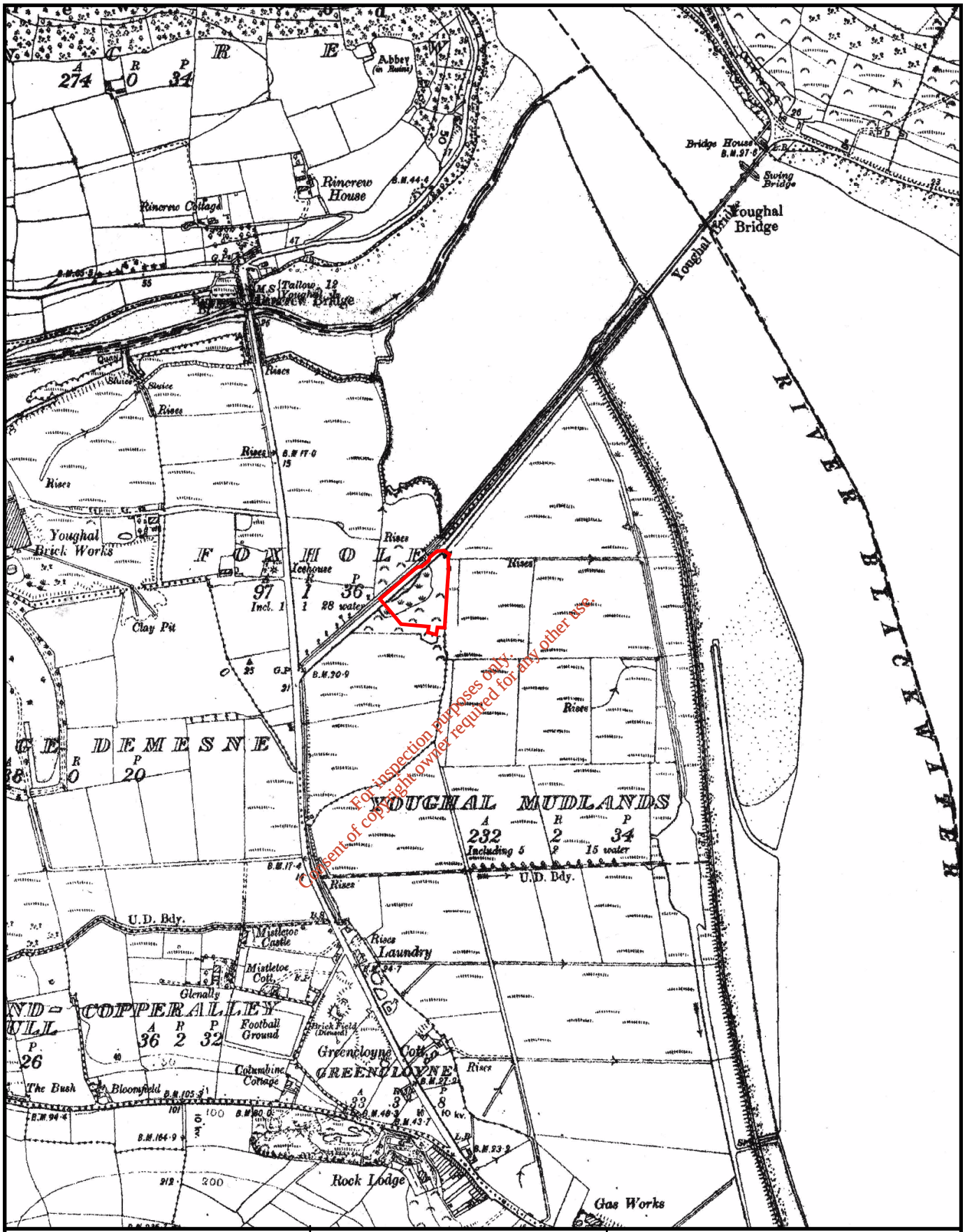
N

Legend:

- Site Boundary
- Youghal Bypass
- EPA Youghal Bay Monitoring

Prepared by: R.H.
Checked by: C.O'C.
Created in: ArcGIS 8.3
Drawing date: 05/05/'04
Drawing No: 2004_121_Fig 8.X

Ordnance Survey Ireland
License No: AR 0017004



Six Inch Scale

SWS Environmental Services
MEMBER OF SWS Group

Scale: 1:10,718

0 250 500 m

N

Legend:

Site Boundary

Prepared by: R.H.
Checked by: C.O'C.
Created in: ArcGIS 8.3
Drawing date: 29/03/'04
Drawing No: 2004_121_Fig XX

Ordnance Survey Ireland
License No: AR 0017004

Youghal Town Council

Aoife Foley,
Business Development Manager,
SWS Group,
Shinagh House,
Bandon,
CO. CORK.

Comhairle an Bhaile Eochaille

Mall House,
Youghal,
Co. Cork.

Tel: (024) 92926
Fax: (024) 92690
E-mail: ytdc@eircom.net

13th September 2004.

RE: Outfall Discharge Pipe at Foxhole, Youghal.
Letter Dated 24th August 2004.

A Chara,

I wish to acknowledge receipt of your above mentioned letter which I have forwarded to our Engineer for a report on same. He has reported back to me now that he has no objection in principle to the granting of permission to SWS Group to discharge to the outfall pipe at Foxhole, subject to the effluent parameters being agreed with both the Environmental Protection Agency and Youghal Town Council. It should also be noted that the outfall at Foxhole will be discontinued in the medium term with the effluent being pumped into a proposed waste water treatment plant in Youghal Mudlards.

This will clearly have financial implications in the granting of waste water discharge licence which at this stage is not possible to quantify. I trust this clarifies the situation for you and should you require any further information please contact me.

Yours Sincerely,

LIAM RYAN,
TOWN CLERK.

Project Summary

AVR – Environmental Solutions Ltd. propose to develop a Waste Recovery/Transfer and Sludge Drying Facility in the townland of Foxhole, Youghal, Co. Cork. The site of the proposed development is located off the R634 (former N25 Cork to Waterford Road) adjacent to the existing Youghal Landfill and Civic Amenity Centre.

The selection of technology was based on Best Technology Available (BAT) including design to prevent impacts and nuisances during installation, commissioning and operations phases. The preferred chosen technology is thermal treatment using an indirect fully enclosed method of drying. The benefits of thermal treatment include:

- Proven in the field of industrial, pharmaceutical and municipal sludge drying nationally (sewage sludge) and internationally (all sludge types),
- High sludge volume reduction,
- Pathogen-free, sterile product,
- An end product with a market use,
- In-line with regional sludge management policy.

Site and Scheme Description

The proposed development on 3.54 acres consists of inter-alia;

- a waste recovery and transfer building;
- administration building and carpark;
- transformer/plant building and standby generator;
- boiler and woodchip storage building;
- sludge reception building;
- sludge drying building;
- waste water treatment plant including balancing tank;
- fire water storage tank;
- storm water retention tank;
- 1 no. weighbridge;
- 1 no. wheelwash;
- oil storage and bund walls;
- waste quarantine area;
- dried sludge discharge area;
- mobile dewatering plant;
- mobile fire fighting plant;
- hard standings;

- all boundary fencing and walls;
- all associated site works;
- and ancillaries.

It is proposed to manage 70,000 tonnes/annum of commercial/enterprise and industrial waste, 30,000 tonnes/annum of non-hazardous biological sludge from waste water treatment plants, 10,000 tonnes/annum of leachate and 500 tonnes/annum of washings.

Waste Recovery/Transfer Activities

The following plant and equipment will be used at the Waste Recovery and Transfer building:

- Materials Handling Grab,
- Dosing Intake Conveyor,
- Transfer Belt during phase 1 up to approximately 15,000 tonnes per annum,
- Trommel Drum Screen or similar during phase 2 when throughput tonnages increase beyond approximately 15,000 – tonnes per annum,
- Picking Station, Sorting Belt and Overband Magnet, fully air-conditioned with high lux fluorescent lighting,
- Infloor Conveyor to Compactor,
- Baler,
- Shredder,
- Woodchipper,
- Forklift or loading shovel.

It is proposed to operate the transfer station from 07:30hours to 21:00hours Monday to Saturday inclusive for fifty weeks per year

It is proposed to operate the sludge drying facility on a continuous basis 24hours per day, seven days per week, and fifty weeks per year.

It is proposed to accept waste from 07:30hours to 21:00hours Monday to Saturday inclusive for fifty weeks per year.

Sludge Drying Activities

Wet sludge (with a minimum Dry Solids (DS) content of 10%) on arrival at the facility will be weighed and randomly sampled for analysis. The wet sludge is then tipped into sludge reception bins (covered with hydraulic lids and gratings) in the fully enclosed Sludge Reception building. The sludge is then pumped to a dosing/mixing bin that controls the flow of sludge into the dryer.

The dryer is heated using a totally indirect method of heating; various energy sources are available to operate the dryer including biomass (woodchip) and light diesel oil. The dryer will be insulated, except at the ends, to minimize heat loss, thus reducing energy usage and provide for very safe working conditions.

The drying process creates steam; which is carried via the off-gas duct to the scrubber/separator or similar type plant, where it is condensed. Any fine particulate matter is returned to the dryer and the condensed effluent is sent to the hooded waste water treatment plant where it will be treated to according EPA effluent discharge limits. Purge stream off-gas, volatile organics evaporating from the hooded waste water plant and odours from the sludge reception bin will be treated by a standalone odour abatement technology.

The dried sludge is received onto a discharge conveyor and transferred to a product cooling conveyor, and indirectly cooled. The product with a moisture content of less that 10% is then screened to separate the fines, which are returned by the fines conveyer to the front of the dryer. The end-product is a sterilised granulate.

This facility will run on a 24 hour basis 7 days a week including holidays. It will be shut down for maintenance.

Process Waters

The only process water on-site shall be the final effluent from the waste water treatment plant. This effluent shall be monitored so that it is within the emission limit values set by the EPA. Monitoring shall be carried out at a frequency, to be specified by the EPA. The impact of the plant output on the river flow rate is negligible and therefore does not require mitigation.

Proposal

to

SWS Ltd

for a

Treatment Plant
for
Condensate
arising
from
Sludge Drying Operations

by

BRIGHTWATER ENGINEERING
process engineering with total contract capability

Brightwater House, Business Centre East
Avenue One, Letchworth
Hertfordshire, SG6 2HB
England

Tel No. 0044 1462 485005 Fax No, 0044 1462 485003

Part of the BORD NA MÓNA Group of Companies
BORD NA MÓNA ENVIRONMENTAL LIMITED

3 Outline Process Description

Our supply will commence at the inlet to the pumping station receiving condensate liquors from the dryer plant (by others).

Inlet Mixing/Pumping Station

To provide process protection a 3mm 2 dimension stainless steel basket shall be used to screen the influent as it enters the pump sump.
Influent to the plant shall be measured for pH and temperature in the sump. pH shall be managed by addition of 10% sodium hydroxide (NaOH) to be dosed using a single metering pump drawing directly from canisters or IBC containers (by others) stored in dry, heated building (building by others) located adjacent to the treatment plant. The purpose of the sodium hydroxide dosing will be to achieve a pH >6.8. A bund stand is provided to provide safe storage for the sodium hydroxide container.

A source of ammonia (e.g. urea) shall be dosed proportionately to the feed flow using a single metering pump drawing directly from canisters or IBC containers (by others) stored in dry, heated building (building by others) located adjacent to the treatment plant. Dosing will be to the mixing sump at a rate set during commissioning. A Nitrogen source is required as proposed levels are below the levels required for healthy treatment and sustained bacterial growth. Dosing will only occur while the feed pump is running.

The single condensate treatment plant feed pump, submersible type, shall operate on sump levels, with low level protection. The mixer, propeller type, will operate continuously.

A bypass pipeline is provided to enable the anoxic zone, or both anoxic and FBDA (fine bubble diffused aeration) to be bypassed in the future. Manual valves on this line shall be normally closed. The valve on the feed to the anoxic zone shall be normally open.

Anoxic Zone

Flows from the inlet pumping station shall be pumped to the anoxic zone. Return activated sludge shall return to the head of the anoxic zone. Both flows will be discharged below water level to reduce air entrainment.. To promote anoxic conditions non load bearing baffles shall be used for plug flow. A submersible mixer shall provide mixing within the first leg of the anoxic zone. Exit from the anoxic zone shall be through a cut out below water level to the fine bubble diffused aeration plant.

Fine Bubble Diffused Aeration Plant.(FBDA)

Flows from the Anoxic zone shall gravitate to the FBDA. Aeration is provided by fine bubble diffusers. The tank shall be configured by the use of baffles to provide plug flow conditions. This optimises treatment performance.

MBR

Flows from the FBDA shall gravitate to the MBR tank. There will be up to 4 membrane modules installed in the unit. A single recirculation pump shall be installed at the maximum distance from the inlet to return sludge to the head of the anoxic zone. This pump shall operate continuously.

Air for both FBDA and the MBR shall be provided by duty standby blowers. Total air requirement is 727 m3/hr. The split between the two systems will be controlled by orifice plates in the air lines.

Permeate from the MBR will be collected in a permeate sump.

Permeate Sump.

The permeate sump pump will operate only in prolonged periods of no flow. This will be linked to the operation of the inlet pump. If the inlet pump does not operate for 30 minutes, the permeate pump shall operate until the inlet pump operates again.
Flows from the permeate sump shall gravitate to discharge. Flows pumped from the permeate sump shall be returned to the head of the MBR.

Access

Access is required to all operational tanks and valves.

Odour control

This control philosophy does not envisage odour control of the aerobic treatment plant being necessary. However, the chemical analysis data sheets provided do indicate that acetone may be driven off during aeration, and may cause a nuisance odour. Should this be the case the off gasses from the treatment plant will need to be connected into the odour control system. This has not been allowed for in the pricing for the plant at this stage.

Instrumentation

1. pH probe - inlet
2. Temperature probe inlet

Civil Works
We have not allowed for any civil works in connection with the plant..

4 Main Process Items

DETAIL	No OFF
INLET MIXING and PUMPING	
	1
Basket type screen in Inlet to pumping/mixing tank	
Inlet mixer - propeller type	1
Pumping / Mixing station with single submersible feed pump duty 2l/s	1
Non-return valve	1
Isolating butterfly valve 50mm	1
Local pipework from Pumping/mixing station to anoxic tank in steel/ABS	1
	1
Lot bypass pipework around anoxic zone and FBDA	
Anoxic zone isolating butterfly valve	1
FBDA isolating gate valve	1
MBR isolating gate valve	1
Caustic Soda Dosing	
IBC level sensor assembly	1
Caustic Soda dosing pump	1
Single IBC bund stand	1
Dosing pump pipework to dosing point	1
Insulation for dosing pump pipework	1
Urea Dosing	
IBC level sensor assembly	1
Urea dosing pump	1
Single IBC bund stand	1
Dosing pump pipework to dosing point	1
Insulation for dosing pump pipework	1
Anoxic Zone	
Mixer - propeller type slow speed	1
Anoxic / FBDA Tank	
Combined Anoxic and FBDA tank in steel	1
Set of internal baffles for anoxic/FBDA tank	1
Fine bubble diffusers	35
Tank floor-gear	1
Connecting pipework to MBR tank	1

DETAIL	No OFF
BLOWERS	
Fixed Speed Blowers & acoustic enclosures.	2
Pressure switch	2
Temperature switch	1
Air main air supply pipework to FBDA and MBR tanks pipework & valves 100 mm 25 m plus 4 90deg elbows, 4 butterfly valves	1
MBR Tank	
4 module MBR system including • Tank in steel • 4 x 50 module plate packs each containing 100m2 (nominal) membrane area • Permeate pipework with quick release couplings • Air release pipework with quick release couplings • Permeate recycle pipework within tank • Module air isolator • Air non-return • Level probes • Level sensor • Flow meter	1
Sludge Return Pump - open impellor type	1
Sludge return pipework back to anoxic zone	1
FINAL Permeate Pumping	
Set Permeate recycle pipework	1
Pumping station with single submersible pump for permeate recirculation in low flow conditions	1
Local pipework	1
Non-return valve	1
Isolating butterfly valve	1
INSTRUMENTS	
Set Instruments as required	1
VALVES	
Lot Valves as required (as outlined above)	1
POWER & CONTROL CABLING	
Power and Control Cabling as required	1
CONTROL PANEL	
Control Panel to IP55 Form 2 housing all contactors, overloads controls etc. to be located in existing enclosure. (exact design standards to be confirmed in discussions post	1

DETAIL	No OFF
this offer)	
PLC to control function and alarm systems within the plant	1
Please note telemetry is not allowed for at this stage but can be included if required. We also assume the control panel will be located within your existing building and no kiosk will be required.	