

A Description of the Waste Water Works and the Activities Carried Out Therein

The wastewater in Fermoy is collected in a partially combined foul and separated foul sewage drainage network. The wastewater drains from the town on both sides of the Blackwater River. The wastewater on the north side of the river drains to a pumping station at Rathealy Road, which is then pumped across Fermoy Bridge to the main sewer. The wastewater arising on the south side of the river drains directly to the WWTW.

The Fermoy WWTP is designed for a Population Equivalent (PE) of 20,000PE and BOD loading of 1,200Kg/day. The maximum hydraulic capacity of the Fermoy WWTP is 673m³/h which is 2.3 Dry Weather Flow (2.3DWF). In order to cope with flows above 2.3DWF storm storage has been provided at the WWTW. The volume of storm storage at the WWTW is approximately 1,126m³. In the event that the storm water holding tanks are filled and the storm continues, the storm water tanks are operated as a pre-clarification tank without sludge removal. The overflow from the storm water storage tank is connected to the final effluent outlet pipe.

The treatment plant treats all flows that arrive at the works to secondary standards in accordance with the Urban Waste Water Directive 1994 as shown in the following table:

Parameter	Effluent Limit
BOD	25 mg/l
COD	125 mg/l
Suspended Solids	35 mg/l
Phosphate	2 mg/l
Ammonia	3 mg/l
Total Nitrogen	25 mg/l
Sludge	18% or greater

Table 1 – Effluent Limits discharge

The existing WWTW were upgraded with an additional stream. The flow is split after the wastewater passes through the new inlet works. 40% of the flow is diverted to the existing wastewater treatment stream. The remaining 60% is directed to a new treatment system. The existing stream has an aeration phase, a secondary settlement phase and return activated sludge phase. The new stream has an anaerobic, anoxic and aeration phase, a secondary settlement phase and return activated sludge phase.

Sludge is wasted separately from each stream to a common storage sludge blend tank, common Picket Fence Thickener and common dewatering plant.

A summary of the treatment process is presented below:

Inlet works	2Duty/1Standby pumps, 2 No. mechanical screens with aerated grit and grease removal system, flow measurement and grit classifier.	
	EXISTING STREAM	NEW STREAM
Biological Treatment	2 No. oxidation ditches with 4 No. surface aerators.	- 1 No. Anaerobic tank with 3 No. mixers. - 1 No. Anoxic tank - 1 No. aeration tank with fine bubble disc aeration
Phosphorus Removal	Ferric Sulphate dosing	
Secondary Settling	3 No. 13m diameter final settlement tanks with half bridge sludge scraper. Sludge settled within the settlement tanks is withdrawn by gravity from each central sludge hopper to the return sludge pump sump. Surplus Activated Sludge (SAS) is pumped by 2 No. pumps (Duty/Standby) from the pump sump to the sludge blend/holding tank. Return Activated Sludge (RAS) is pumped 2 No. pumps (Duty/Standby) from the pump sump and is mixed with the incoming influent.	1 No. 24m diameter final settlement tanks with half bridge sludge scraper.

Sludge Treatment	<ul style="list-style-type: none"> - 1 No. sludge acceptance tank, 45m³, 1 No. mixer and sludge pump sump equipment with 2 No. Pumps. - 1 No. Sludge Blend/Holding tank, 192m³, 1 No. mixer and sludge pump sump equipment with 2 No. Pumps. - 1 No. Picket Fence Thickener for thickening from 0.5% to 2% Dry Solids, 97m³. - 2 No. Sludge Belt Presses with 2 No. sludge transfer pumps, 1 No. poly make-up unit with 3 No. dosing pumps.
Effluent Discharge	1 No. 450mm gravity outfall pipe to Blackwater River.

Ancillary equipment at the WWTP also includes the following:

- Odour Treatment Unit with 2 No extractor fans.
- Standby Generator and SCADA system covering all the plant including sludge treatment process.
- Buildings - Inlet and sludge building, electricity transformer building, laboratory and control room building with fire alarm and security alarm systems.

The Fermoy WWTP is currently operated by a Cork County Council. Tender documents for a 20 year Operation and Maintenance Contract are being prepared. The plant is manned during the working week 8.00am - 5.30pm (Monday - Friday) by a plant manager and 2 No. operators. During out of hours the SCADA system will send alarms to a mobile phone of the person on standby.

The Sources of Emissions from the Waste Water Works

The pollution load for the Fermoy agglomeration arises from the following areas:

- The local Population
- The local Industries

The pollution load from these sources varies greatly with daily, weekly and seasonal producers of effluent. The sewage from all industries is collected via the public sewer and treated in conjunction with domestic waste at the waste water treatment plant.

The domestic population of Fermoy has grown over the last three censuses owing to its development as a town within the Cork Metropolitan area. The most recent Census figures show that Fermoy Town and environs now has a population in excess of 5,800. (Census, 2006). Other sources of influent that contribute to the sewage scheme would be:

- Commercial premises
- Schools
- Tourism

The nature and quantities of foreseeable emissions from the waste water works into the receiving aqueous environment as well as identification of significant effects of the emissions on the environment.

The final effluent is discharged into the Blackwater River. At design capacity the WWTW will discharge 7,140m³/d to the river.

Environmental Impacts

An Environmental Impact Statement was carried out for the Expansion and Upgrading of Fermoy Sewage Treatment Works in August 2000 by T.J. O'Connor & Associates. This report stated:

“Due to the high dilution capabilities of the river, it shall not suffer any noticeable decrease in Dissolved Oxygen downstream of the outfall. The increase in population and industry in the Fermoy area will place additional demands on the wastewater treatment facilities in the area and if not provided for could be expected to result in a deterioration of the water quality in the Blackwater River downstream of the town. However, the proposed upgrading and expansion of the works at the Wastewater Treatment plant are designed to protect the water body downstream of the outfall sufficiently to restore its quality rating around Q4. Without the proposed works, the town developments would cause a much greater BOD loading to the river, so that the effects of the treatment works expansion is positive.”

It is necessary to consider that the effluent quality will meet the requirements stated in the Urban Waste Water Directive 1994.

The Proposed Technology and Other Techniques for Preventing or, Where This Is Not Possible, Reducing Emissions from the Waste Water Works

Technologies

In the WWTW at Fermoy a sufficient number of standby pumps, fans, etc. is provided in order to ensure continuation of the wastewater and sludge treatment and to comply with all environmental standards in case of equipment failures or breakdowns. Standby equipment is installed, ready for take over, or available in stock on site.

Standby diesel generators or generator sockets in control panels are provided to enable the plant to operate during mains electric power failure thereby preventing untreated emissions from entering the receiving aqueous environment.

Techniques

A Performance Management System (PMS) is in place at the Fermoy Wastewater Treatment Plant. This Performance Management System was developed by the Water Services National Training Group (WSNTG). The PMS provides a uniform approach to dealing with all relevant performance management issues, including Independent Compliance Audits, Management of Change, Dispute Resolution, Public Relations, Emergency Procedures and Reporting Procedures.

Cork County Council performs the Operation of the WWTP in accordance with the Performance Management System and maintains the design performance capability of the existing treatment plant.

Further measures planned to comply with the general principle of the basic obligations of the operator, i.e., that no significant pollution is caused

Prevention of pollution

Any alteration upgrading of the existing infrastructure undertaken by Cork County Council shall not increase the potential to cause pollution in the environment. In particular any alterations to the wastewater treatment plant will be designed to enable any operator of the facility to prevent pollution of the environment by the following potential contaminants:

- Surface water run-off
- Spillages
- Solid Waste

Toxic Substances

Cork County Council shall ensure that any modification or alterations to the plant do not increase the impact by any toxic substances. All chemicals and dangerous substances must be stored safely at all times and all appropriate safety measures must be taken to ensure against leakage and spillage in accordance with the relevant Health and Safety Legislation.

Measures planned to monitor emissions into the environment

Cork County Council, as current operator has developed using the PMS as a template, procedures and processes for sampling and analysis of the incoming raw sewage, outgoing effluent, sludge and other by-products such as screenings, so that analytical results are reliable, repeatable, consistent and accurate. Sampling procedures are in accordance with EU and Irish Regulations, and in particular in accordance with the Environmental Protection Agency's (EPA) monitoring and operating requirements. All laboratory analyses are performed in accordance with the latest edition of the Standard Methods for the Examination of Water and Wastewater, published by the American Public Health Association, and the Water Pollution Control Federation or other methods of comparable accuracy.

Regular independent laboratory analysis is also undertaken to externally monitor the operator's performance. Flow proportional or time based 24 hour samples are collected at the same well defined point at the inlet and outlet of the treatment works in order to monitor compliance with the requirements. A refrigerated sampler minimizes degradation between collection and analysis. Certain heavy metal analyses are also required on an annual basis as identified in 'Code of Good Practice for Use of Biosolids in agriculture'.

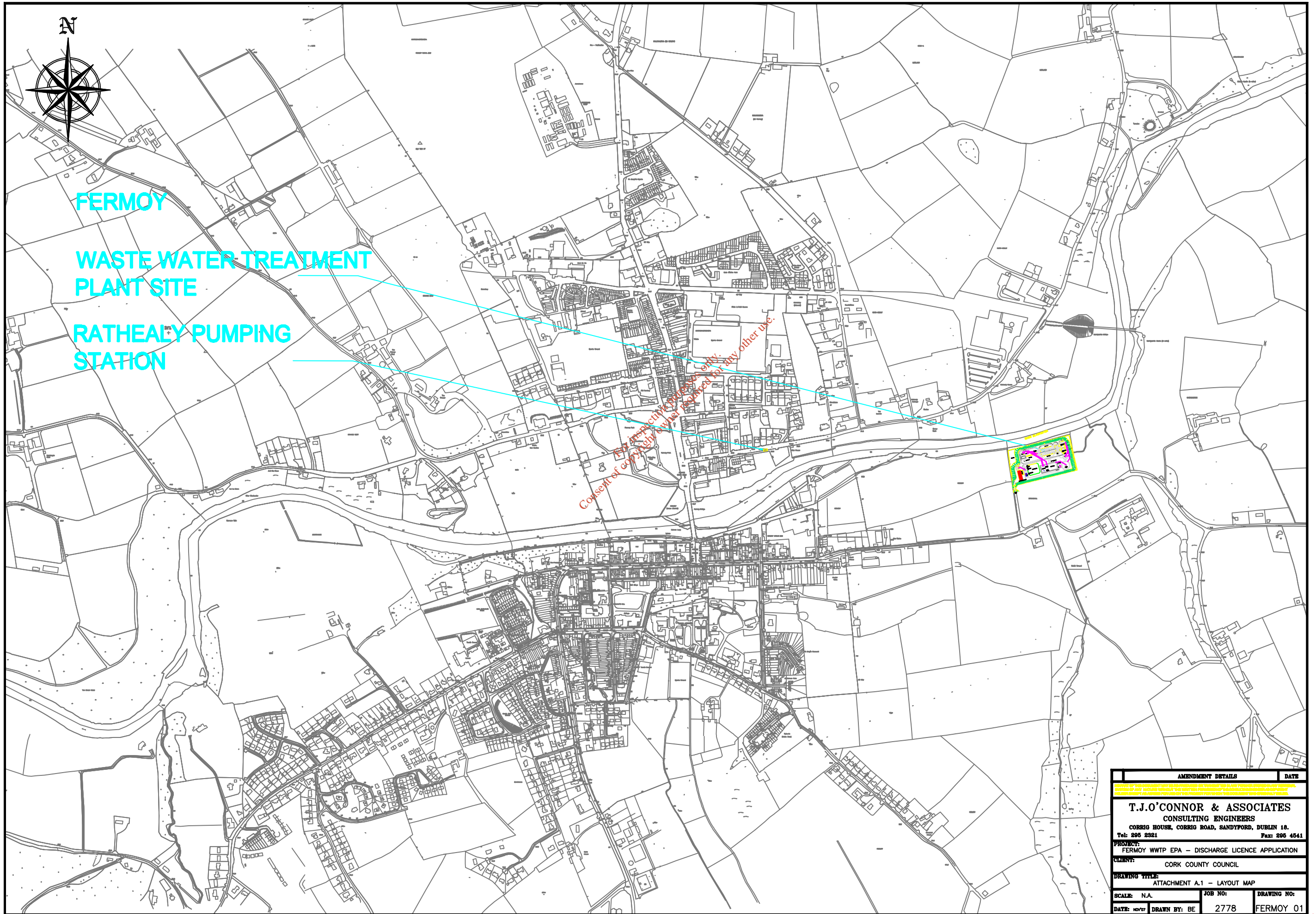
The operator is responsible for developing and implementing procedures to remedy defects in his laboratory procedures where the independent checking shows variations of more than $\pm 10\%$.

The sampling of the statutory samples is in accordance with the following procedures: -

- All samples are representative of the appropriate stream.
- Daily grab samples are taken at approximately the same times each day.
- Samples are fixed, stored and handled as per standard methods. Analysis of the samples (both operator's and Employer's) are undertaken within 24 hours and reported to the Employer's Representative within 48 hours. Exceptions are BOD, metals and pathogens, which are reported within 7 days.

The monitoring and recording of the status of all parameters appropriate to proper control and operation of the plant is carried out.

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FERMOY

**WASTE WATER TREATMENT
PLANT SITE**

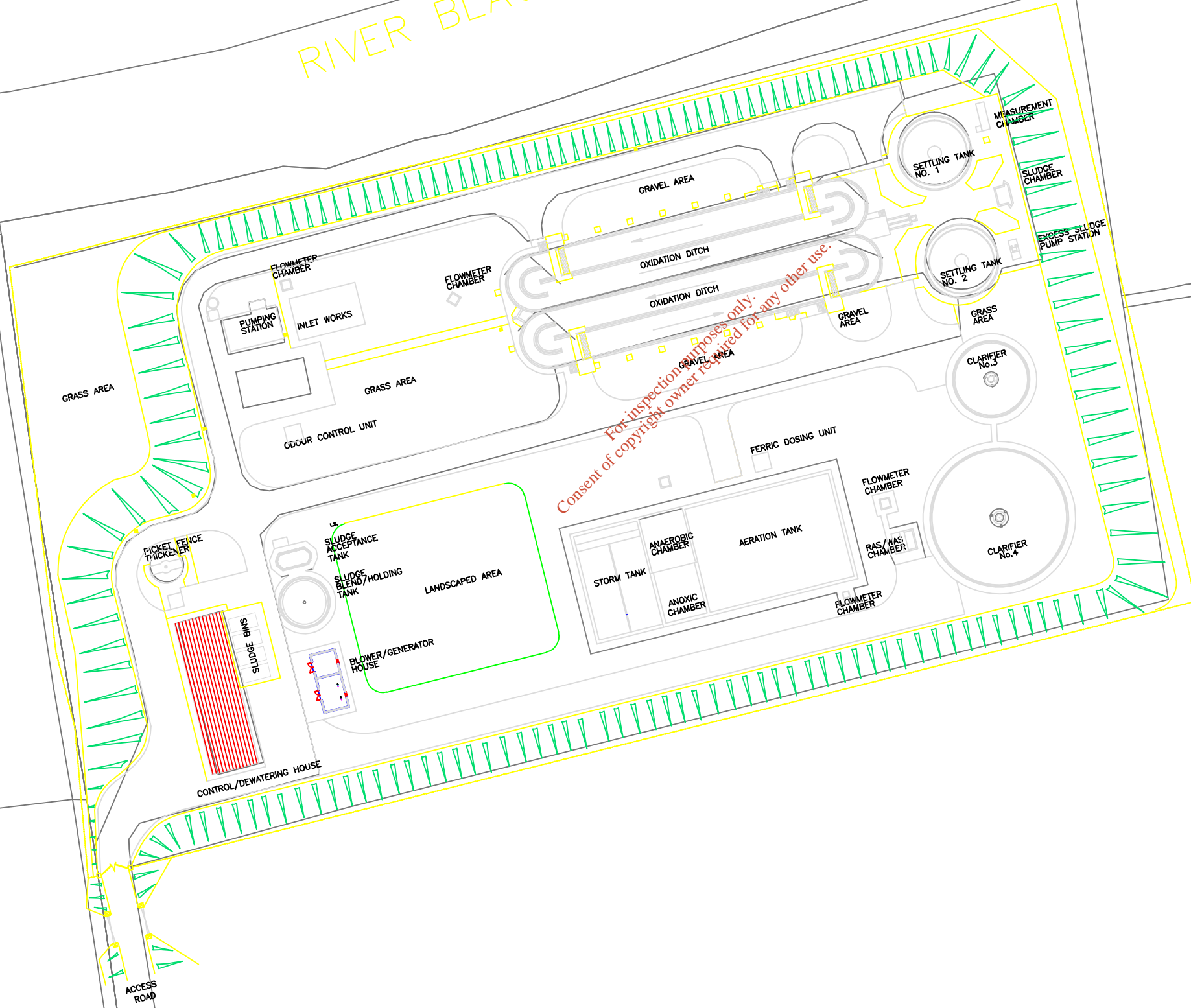
**RATHEALY PUMPING
STATION**

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AMENDMENT DETAILS		DATE
<p>T.J.O'CONNOR & ASSOCIATES CONSULTING ENGINEERS CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18. Tel: 295 2321 Fax: 295 4541</p>		
<p>PROJECT: FERMOY WWTP EPA - DISCHARGE LICENCE APPLICATION</p>		
<p>CLIENT: CORK COUNTY COUNCIL</p>		
<p>DRAWING TITLE: ATTACHMENT A.1 - LAYOUT MAP</p>		
SCALE: N.A.	JOB NO:	DRAWING NO:
DATE: NOV'13	DRAWN BY: BE	2778
		FERMOY_01



RIVER BLACKWATER



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PROJECT: FERMOY WWTP EPA - DISCHARGE LICENCE APPLICATION		
CLIENT: CORK COUNTY COUNCIL		
DRAWING TITLE: ATTACHMENT A.1 - GENERAL LAYOUT SITE		
SCALE: N.A.	JOB NO:	DRAWING NO:
DATE: 10/07	DRAWN BY: BE	2778 FERMOY_Q2