

## **SECTION C – INFRASTRUCTURE & OPERATION**

---

### **Attachment C1: Operational Information Requirements**

- **Outline Description of the Treatment Processes at Crossakeel WWTP & Agglomeration**
- **Drawing No. 5270-2748**
- **Drawing No. 5270-2749**

*For inspection purposes only.  
Consent of copyright owner required for any other use.*



## OUTLINE DESCRIPTION OF THE TREATMENT PROCESS FOR CROSSAKEEL WASTE WATER TREATMENT PLANT AND AGGLOMERATION

### **1.0 EXISTING PLANT**

Crossakeel Waste Water Treatment Plant (WWTP) is located to the west of the village of Crossakeel. The plant was constructed in 1978, treating municipal waste water from the village, with a design capacity in the order of 500 P.E.

The existing drainage network serving Crossakeel consists of 150 and 225mm diameter gravity sewers. The network discharges by gravity to the treatment plant.

The treatment process is based on the extended aeration (activated sludge) process.

Treated effluent from the works is discharged to a tributary of Athboy River, via a 150mm diameter gravity pipeline, some 680m north west of the WWTP.

The existing treatment works currently consists of the following units:-

- Compact Aeration Unit (CAU) containing compact concentric tank with extended aeration outer zone and conical inner clarifier zone
- Suspended submersible pump for sludge return and wasting
- Sludge holding tank
- Gravity outfall to the stream
- Office / control Building

#### ***Inlet to Works***

The existing waste water collection and disposal system discharges directly by gravity (in a 225mm diameter sewer) to the aeration portion of the Compact Aeration Unit.

Continuous influent monitoring is not conducted at the plant at present. Consequently, there is no flow recording of the volume of waste water inflowing to the treatment process.

#### ***Secondary Treatment***

Biological treatment and settlement occurs in a CAU, incorporating a central clarifier unit surrounded by an oxidation ditch. Incoming waste water feeds by gravity directly to the aeration portion (oxidation ditch) of the concentric tank. The CAU has an approximate combined capacity of 100m<sup>3</sup> (aeration capacity: 74m<sup>3</sup>, clarifier capacity: 26m<sup>3</sup>) with dimensions as follows:

Inner Diameter :	3.8m
Outer Diameter :	8.8m
Liquid Depth of aeration unit :	1.5m

Liquid Depth of Clarifier : varies from 1.2m to 5.0m

Aeration is supplied to the oxidation ditch via one aerating device:

- A cage rotator type surface aerator (c. 1.5 kW rotor)

The system is designed so that dissolved oxygen does not drop below 0.5mg/l O<sub>2</sub>.

Mixed liquor then flows from the oxidation ditch to the central section of the clarifier via an overflow weir. Settled sludge falls to a base of the clarifiers, while clarified liquid overflows the top of the clarifier's inner wall, via a peripheral weir. Final effluent, on exiting the clarifier (via the peripheral weir), flows forward by gravity to the treated effluent outfall manhole and then discharges to receiving waters. A submerged Return Activated Sludge (RAS) / Waste Activated Sludge (WAS) pump, located at the base of the clarifier feeds secondary sludge back to the aeration tank / sludge holding tank.

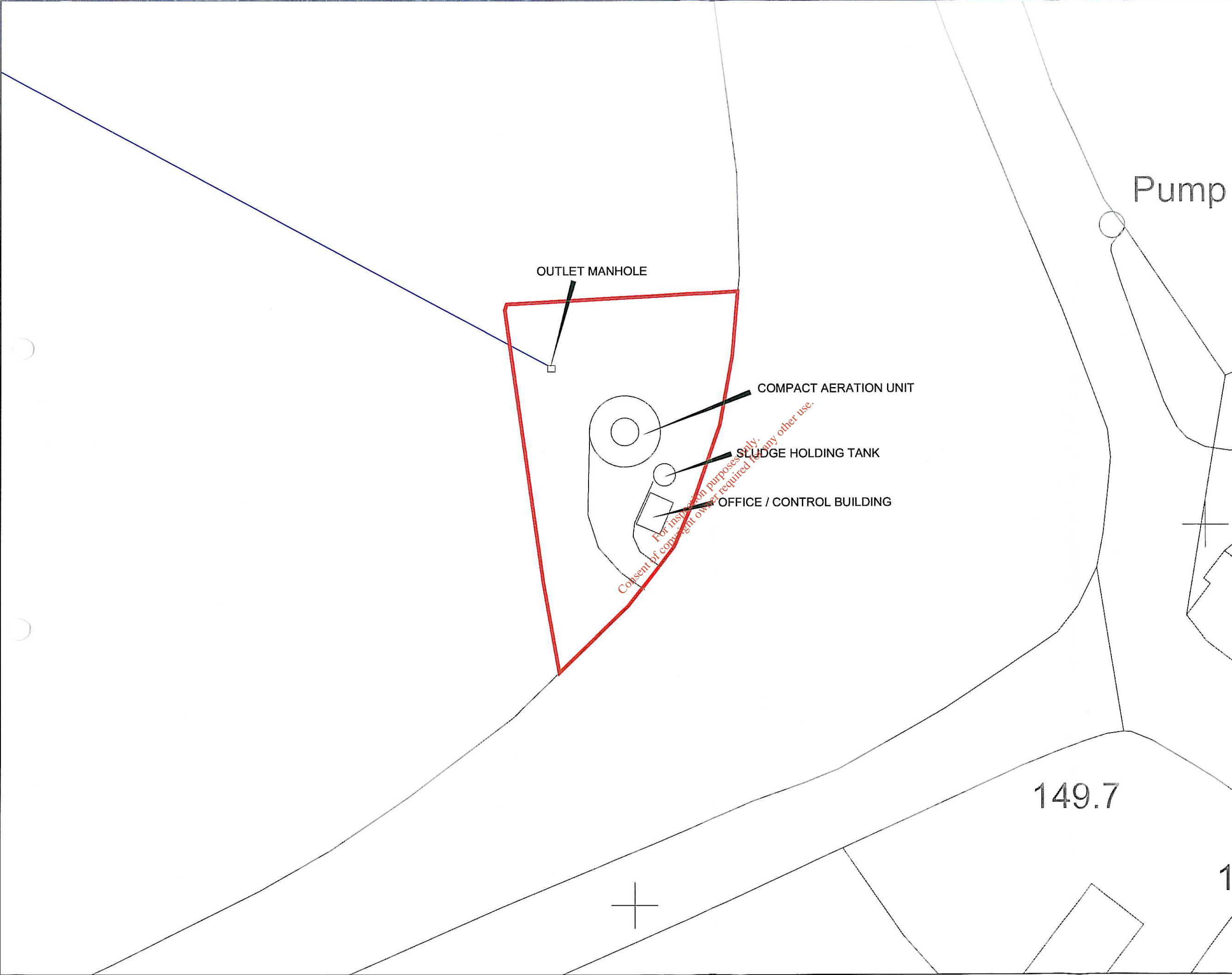
### ***Treated Effluent Outfall***


Treated effluent flows by gravity in a 150mm diameter pipeline to a tributary of the Athboy River, located north-west of the treatment plant site. Discharge of treated effluent is through a simple open-ended pipeline, terminating to the stream, at the water level.

### ***Sludge Handling***

Settled sludge is drawn from the clarifier base by means of a suspended submersible RAS / WAS pump. Waste sludge is pumped to the sludge holding tank at a rate, which is determined by the MLSS concentration. The sludge holding tank has a capacity of approximately 18m<sup>3</sup>.

Sludge is allowed to settle in this tank and the resulting supernatant is siphoned off and discharged back into the oxidation ditch. This tank is emptied periodically by tanker with the thickened sludge being transported to Navan Waste Water Treatment Plant for dewatering.





WWTP SITE  
BOUNDARY

PRIMARY  
DISCHARGE

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
A	17.06.09	ISSUE TO MEATHCO CD.	R.K.	M.H.

Client:

MEATH COUNTY COUNCIL

Project:

CROSSAKEEL WASTE WATER  
DISCHARGE LICENCE  
APPLICATION

Title:


EXISTING PLANT PROCESS  
SITE PLAN

( SECTION / ATTACHMENT C.1 )

Scale @ A3: 1 : 500

Prepared by:	Checked:	Date:
R.K.	M.H.	MAY 09

Project Director: M.F.G.



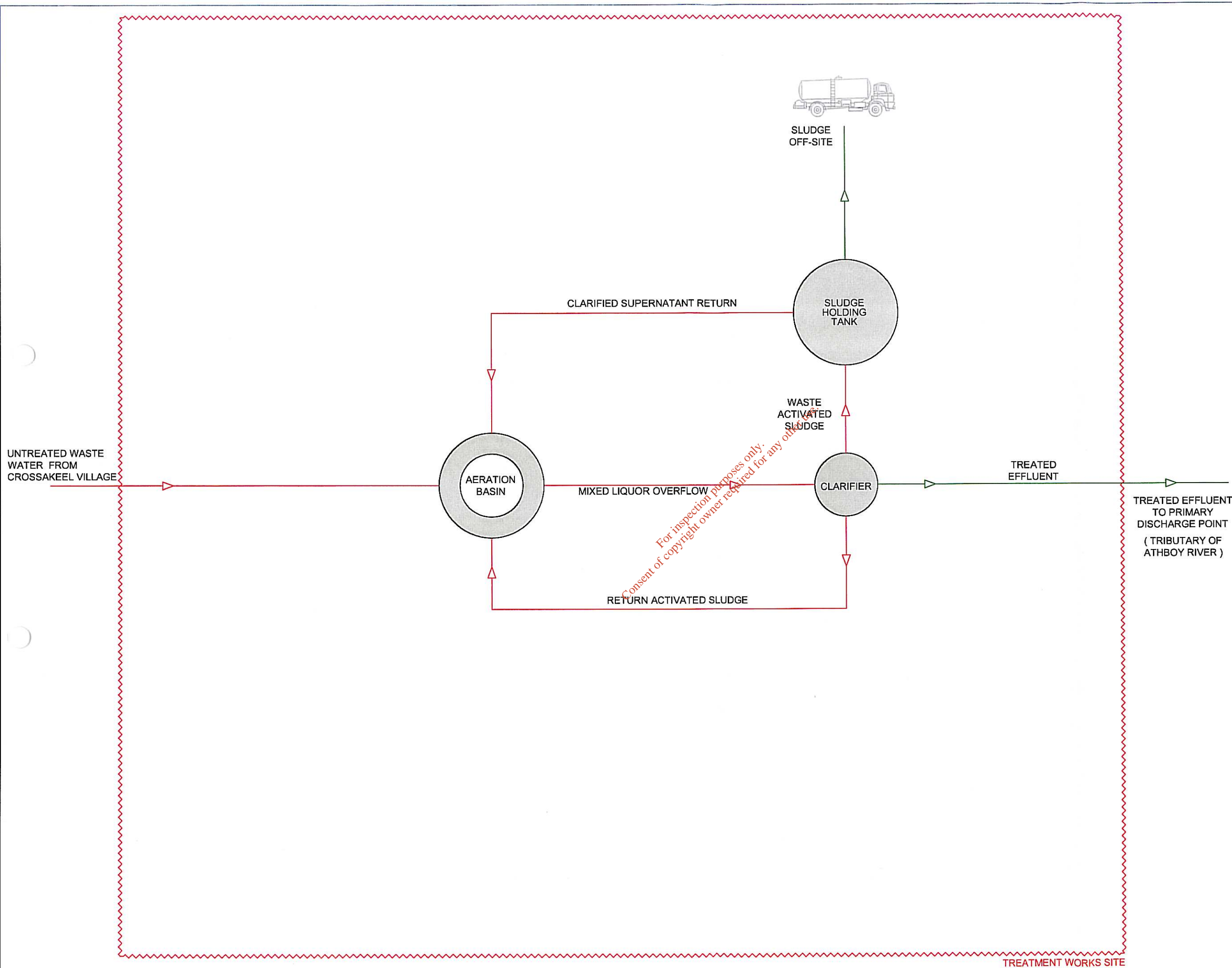
TOBIN  
Patrick J. Tobin & Co. Ltd.

TOBIN Consulting Engineers,  
Market Square, Castlebar,  
Co. Mayo, Ireland.  
tel: +353-(0)94-9021401  
fax: +353-(0)94-9021534  
e-mail: castlebar@tobin.ie  
www.tobin.ie

Drawing No.: 5270-2748

Revision: A





EGF101

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING

2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE

3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES

4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd.
A	17.08.09	ISSUE TO MEATH CO. CO	R.K.	M.H.

Client:  
MEATH COUNTY COUNCIL

Project:  
CROSSAKEEL WASTE WATER DISCHARGE LICENCE APPLICATION

Title:  
EXISTING PLANT/PROCESS FLOW DIAGRAM

( SECTION / ATTACHMENT C.1 )

Scale @ A3: NTS

Prepared by:	Checked:	Date:
R.K.	M.H.	MAY 09

Project Director: M.F.G.

**TOBIN**  
Patrick J. Tobin & Co. Ltd

TOBIN Consulting Engineers,  
Market Square, Castlebar,  
Co. Mayo, Ireland.  
tel: +353-(0)94-9021401  
fax: +353-(0)94-9021534  
e-mail: castlebar@tobin.ie  
www.tobin.ie

Drawing No.:	5270-2749	Revision:	A
--------------	-----------	-----------	---



## **SECTION C – INFRASTRUCTURE & OPERATION**

---

### **Attachment C2: Outfall Construction & Design**

- **Outline Description of Outfall Design and Construction**
- **Drawing No. 5270-2752**
- **Drawing No. 5270-2753**

For inspection purposes only.  
Consent of copyright owner required for any other use.

## OUTLINE DESCRIPTION OF OUTFALL DESIGN AND CONSTRUCTION

### 1.0 PRIMARY DISCHARGE POINT

**Location:** SW1 – Crossakeel WWTP, Crossakeel T.D., Kells, County Meath  
263902E, 274483N

**Receiving Water:** Discharge to tributary of the Athboy River

**Originates:** Final treated effluent from Crossakeel WWTP

**Invert Level:** 108.55 m.O.D. (approx.)

**Pipe Size:** 150mm diameter gravity pipeline from WWTP

**Design Criteria:** Continuous flow of treated effluent from WWTP

**Construction Detail:** Simple open-ended outfall pipe discharging to stream channel

For inspection purposes only.  
Consent of copyright owner required for any other use.

## **2.0 SECONDARY DISCHARGE POINTS**

There are no secondary discharge points on the Crossakeel Sewerage Scheme. The entire network is gravity fed, therefore there are no pumping stations present on the existing network. In addition, there are no emergency or occasional discharges points from any other structure on the network or in the existing waste water treatment plant.

A site visit was undertaken by TOBIN Consulting Engineers in April 2009 during which the existing sewerage scheme was examined, however no secondary discharges were identified.

For inspection purposes only.  
Consent of copyright owner required for any other use.




### **3.0 STORM WATER OVERFLOW DISCHARGE POINTS**

There are currently no storm water overflow points on the Crossakeel Sewerage Scheme. Facilities do not exist for storm water diversion past the waste water treatment process as the sewerage network is not a combined system. Furthermore, infiltration is not a significant issue on this network.

A site visit was undertaken by TOBIN Consulting Engineers in April 2009 during which the existing sewerage scheme was examined, however no storm water discharges were identified.

For inspection purposes only.  
Consent of copyright owner required for any other use.





WWTP SITE  
BOUNDARY

PRIMARY  
DISCHARGE

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd
A	17.08.09	ISSUE TO MEATH CO. CO.	R.K.	M.H.

Client:

MEATH COUNTY COUNCIL

Project:

CROSSAKEEL WASTE WATER  
DISCHARGE LICENCE  
APPLICATION


Title:

PRIMARY DISCHARGE POINT  
LAYOUT/LOCATION PLAN  
( SECTION / ATTACHMENT C.2 )

Scale @ A3: 1 : 10,000

Prepared by:	Checked:	Date:
R.K.	M.H.	MAY 09

Project Director: M.F.G.



**TOBIN**  
Patrick J. Tobin & Co. Ltd.

TOBIN Consulting Engineers,  
Market Square, Castlebar,  
Co. Mayo, Ireland.  
tel: +353-(0)94-9021401  
fax: +353-(0)94-9021534  
e-mail: castlebar@tobin.ie  
www.tobin.ie

Drawing No.: 5270-2752

Revision: A





LEGEND

WWTP SITE BOUNDARY

PRIMARY DISCHARGE

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING

2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE

3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES

4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd
A	17.08.09	ISSUE TO MEATH CO. CO.	R.K.	M.H.

Client:

MEATH COUNTY COUNCIL

Project:

CROSSAKEEL WASTE WATER DISCHARGE LICENCE APPLICATION

Title:

PRIMARY DISCHARGE POINT (SW1) CONSTRUCTION & DESIGN  
( SECTION / ATTACHMENT C.2 )

Scale @ A3: 1 : 5000

Prepared by: R.K.      Checked: M.H.      Date: MAY 09

Project Director: M.F.G.

**TOBIN**  
Patrick J. Tobin & Co. Ltd.  
TOBIN Consulting Engineers,  
Market Square, Castlebar,  
Co. Mayo, Ireland.  
tel: +353-(0)94-9021401  
fax: +353-(0)94-9021534  
e-mail: castlebar@tobin.ie  
www.tobin.ie

Drawing No.: 5270-2753      Revision: A



SIMPLE OPEN-ENDED 150mmØ OUTFALL PIPE