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Anglesea House,
Anglesea Street,
Clonmel,
Co. Tipperary
Tel: 052 6128966
Fax: 052 6180690

VOLUME A1.2 – WASTEWATER TREATMENT PLANT SPECIFICATION

TIPPERARY COUNTY COUNCIL

**Wastewater Treatment Plant & Process Water Storage Works
at Lisheen Mine,
Lisheen, Co. Tipperary**

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1.0 GENERAL REQUIREMENTS

1.1 General

- 1.1.1 This Specification specifically relates to the Wastewater Treatment Plant (the system / installation) for the Lisheen Mine WWTP Project and must be read in conjunction with the rest of the General Specifications, Drawings and Conditions of Contract, Preliminaries, Quality and general requirements, and other relevant sections of the Engineers Specifications.

1.2 Scope

- 1.2.1 This section of the Specification details the general technical requirements for materials and workmanship for the Wastewater Treatment Plant design and installation.

1.3 System Requirements

- 1.3.1 The WWTP system is to be supplied by a reputable supplier with whom the option for aftercare servicing is available.
- 1.3.2 The provided WWTP is expected to consist of the following
- Sequencing batch reactor treatment system
 - 160mm Inlet for gravity flow
 - Primary chamber
 - Buffer chamber, with submersible feed and float switches
 - Reactor tank, air delivery system, sludge return pump and float switches
 - Control kiosk
 - 5m ventilation stack
 - D400 access chamber covers
 - 30 PE capacity
 - 50mm outlet rising main to the proposed percolation area
 - The WWTP system discharge must be suitable for onward discharge to the proposed tertiary treatment system

1.4 Materials

- 1.4.1 All materials to be incorporated into the Works shall:
1. Be new and undamaged
 2. Be suitable for the services and conditions normally expected to apply when the Works are taken into use.
 3. Be suitable for the conditions normally expected to apply during the installation of the Works.
 4. Comply with any relevant British Standard.
 5. Be suitable for the testing and commissioning procedures and conditions specified.

6. Not contain animal or vegetable products which may initiate or support mould or bacterial growth or support vermin.
7. Not contain any asbestos or asbestos-based products.
8. Not evolve dangerous fumes when subjected to excessive heat.
9. Not constitute a fire hazard under the conditions normally expected to apply when the Works are taken into use.

1.4.2 Unless indicated otherwise in sections of this Specification subsequent to this Section or the Schedule of Works or the contract drawings, all items of equipment of the same type or kind used in similar conditions in the Works shall be of the same manufacture and range.

1.5 Working in Occupied Buildings or Sites

1.5.1 When all or part of the Contract Works are to be carried out in an occupied building or site the Contractor shall:

1. Carry out his work in such a manner as not to endanger the occupiers or visitors.
2. Carry out his work in such a manner as not to interfere with the normal working or operation of the building or site. Where difficulty is foreseen in meeting this requirement then the Contractor shall refer to the Engineer before putting that section of work in hand.
3. Arrange his programme of work so as not to interfere with the normal working or operation of the building or site.
4. Not interfere with any existing services nor make any connections to existing services without giving all due notices and without complying with any agreed or specified procedures.

2.0 THE INSTALLATION

2.1 Description of the Installation

2.1.1 This Specification details the requirements for a WWTP to be provided to the rear of the Watergate Theatre as part of the Lisheen project. Generally as shown in the drawing below in **Figure 2.1**.

2.1.2 This includes, but is not limited to, the following:

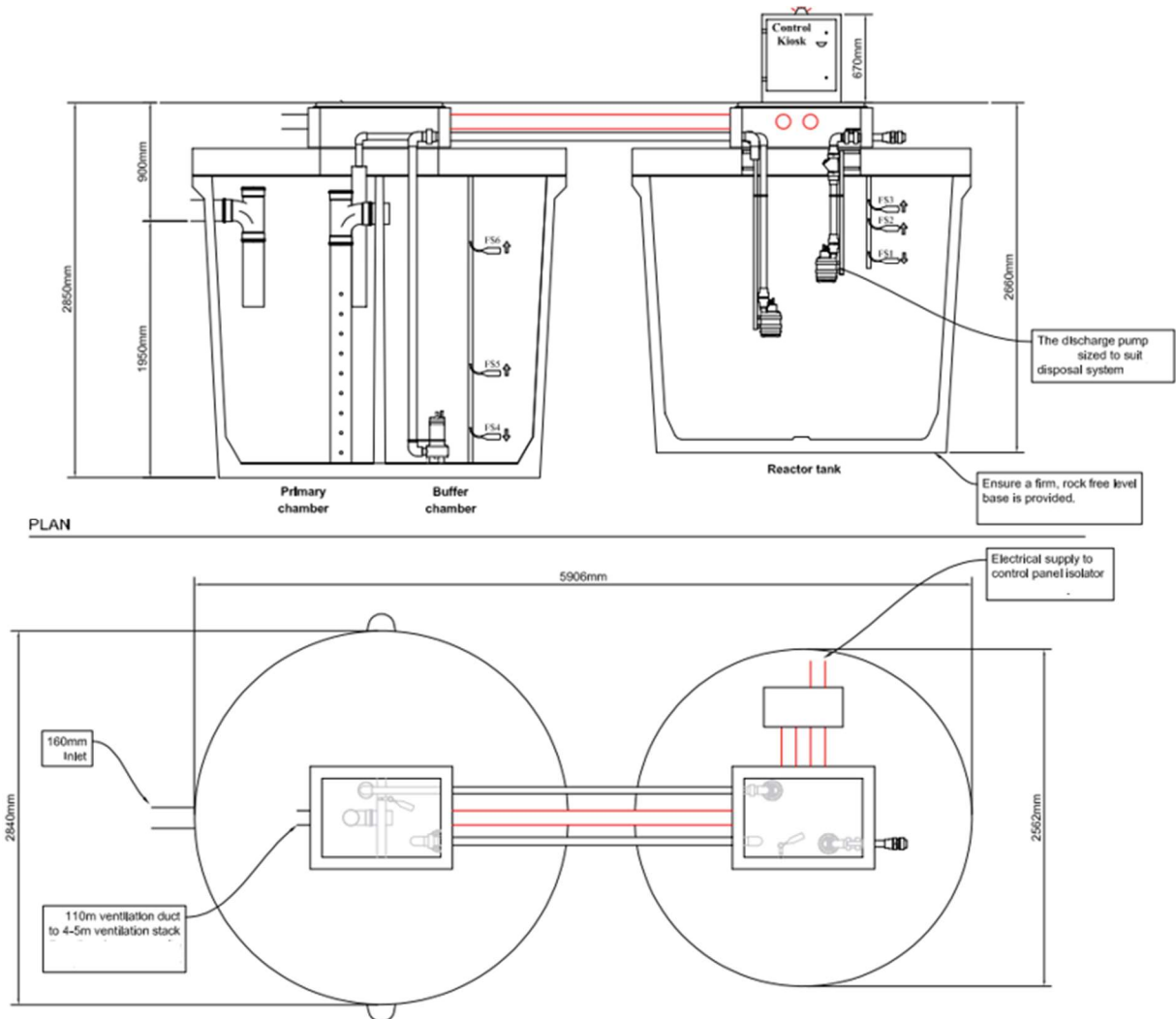


FIGURE 2.1 – WWTP – GENERAL ARRANGEMENT

2.1.3 The Contractor shall include for all excavation, backfill, ducting to ESB standards, electrical wiring, jointing and connections, gravity and rising main pipework

2.2 Access Chamber Covers

2.2.1 The access chamber covers shall be D400 class and must have a 150mm ST4 Concrete surround.

2.3 Kiosk

- 2.3.1 The electrical kiosk shall be GRP or similar and installed on a 150mm thick ST4 concrete slab of suitable size.

2.4 Population Equivalent

- 2.4.1 The WWTP is to be a 30 Population Equivalent Capacity.

2.5 Rising Main and Pump

- 2.5.1 The discharge rising main shall 50mm internal diameter and the discharge pump shall be adequately sized to discharge to the proposed percolation area.

2.6 Quality of Equipment and Materials

- 2.6.1 All equipment and materials shall be new.
- 2.6.2 All materials, plant and equipment, and the installation thereof, shall comply with the Irish Standards and Codes of Practice, Institutional Regulations, Statutory Requirements, National and Local By-laws where applicable.
- 2.6.3 Workmanship shall be of the best quality and shall be produced by skilled and responsible craftsmen fully experienced in their respective trades.
- 2.6.4 All equipment shall be installed only to manufacturer's recommendations.

2.7 CE Marking

- 2.7.1 The entire installation as supplied and installed shall conform to the appropriate EU Directives including the machinery Directive and shall carry the applicable CE Marking.

2.8 Guarantees and Warranties

- 2.8.1 The manufacturers guarantees and warranties shall be valid for a period of 10 years from the date of commissioning of the system.

2.9 Passing or Approvals

- 2.9.1 The Passing or Approval of any aspect of 'the Works' by the Architect/Engineer does not relieve the Contractor and his supplier of their responsibility under this contract to provide the specified equipment in compliance with safety standards and regulations.
- 2.9.2 Any works or materials deemed unsatisfactory and/or not in compliance with the intent of the Specification and documents shall be removed and replaced with satisfactory work and materials at the Contractor's cost.
- 2.9.3 The Contractor shall issue details of all specified equipment and plant for approval prior to placing order.
- 2.9.4 All equipment and plant shall be approved on site by the engineer prior to installation.

2.10 Maintenance of Installation

- 2.10.1 The entire installation shall be such that all components of the Installations are accessible and easily maintainable.
- 2.10.2 Factory trained service networks shall support all equipment used in the installation.
- 2.10.3 All spare parts shall be available factory ex-stock for a period of 5 years from purchase date.

2.11 Design Drawings

- 2.11.1 The contractor and his supplier are to provide a full set of design drawings to the Architect / Engineer along with all relevant Specifications before the system is put into fabrication.
- 2.11.2 The drawings shall be of a scale of not less than 1:50.
- 2.11.3 The drawings shall include symbols, plans, sections, elevations and isometric interpretations to provide a comprehensive interpretation of the proposed installation.
- 2.11.4 All drawings shall be prepared on Autocad.

3.0 TESTING, COMMISSIONING AND TRAINING

2.1 Testing

- 3.1.1 The contractor and his supplier shall be responsible for putting the entire system / installation to full operation as part of the works, including testing and demonstration.
- 3.1.2 Ensure all instruments used during testing and commissioning have a current calibration certificate and are suitable for the test used.
- 3.1.3 Provide copies of all manufacturer's test certificates, where equipment has been tested off site.
- 3.1.4 The Contractor to provide a Method Statement fully detailing proposed testing.

3.2 Testing and Setting to Work

- 3.2.1 On completion of works or parts of the works the Contractor and his supplier shall test the various elements of the installation in accordance with standard test procedures set out in the IS, BS and European Standards and Codes of Practices.
- 3.2.2 The contractors supplier shall be responsible for testing, the Contractor shall be responsible for ensuring that all tests are properly carried out and test/commissioning certificates to be included in the O & M Manuals.
- 3.2.3 The Contractor shall serve at least seven days notice on the Engineer before carrying out the test to allow the Engineer or his representative to witness the test if he so wishes.
- 3.2.4 Nevertheless the Contractor shall forward to the Engineer fully completed and signed Test Certificates for the installation.

3.3 Testing Records

- 3.3.1 Keep a systematic record of all tests, detailing dates, sections tested and results including any necessary actions and remedial measures.

3.4 Commissioning

- 3.4.1 Commissioning to be undertaken by the specialist supplier commissioning contractor, who is to be a member of the Commissioning Specialist Association. All operatives to be skilled in their relevant trades. This contractor to advise on all aspects of commissioning.
- 3.4.2 Commission plant and equipment in accordance with manufacturer's recommendation for setting to work.
- 3.4.3 Ensure all instruments used during commissioning have calibration certificates which are within 3 months of the current date, and are suitable for the system parameters being commissioned.
- 3.4.4 Prove all main items of equipment and systems with on site load tests. Provide all necessary test equipment to the satisfaction of the Engineer.

3.5 Training of Staff

- 3.5.1 The Contractor shall allow a minimum period of two days for persons qualified in the subject and conversant with the installation to instruct the Employer's staff in operating, maintaining and servicing the entire installation.
- 3.5.2 The instruction of Employers staff will be required at the site.
- 3.5.3 The Contractor shall issue before the training takes place a schedule of times allocated for each element of training, and following completion of each training session shall prepare a report indicating the items covered for issue to the Employer via the Engineer, to enable the Employer to confirm or otherwise that training has been adequate.
- 3.5.4 Where inadequate training is deemed to have been given, the Contractor shall provide further training at no additional cost to the Contract Sum.

4.0 OPERATING AND MAINTENANCE INSTRUCTIONS, RECORD DRAWINGS AND DOCUMENTATION

3.1 Record Documents

- 4.1.1 Four weeks prior to Practical Completion, the Contractor shall provide to the Engineer, four sets of the bound O&M documents together with record drawings, records of testing and training.

4.2 Record Drawings

- 4.2.1 The Contractor shall submit a fully completed set of drawings upon which must be clearly shown all details, sizes, types, exact locations of services and equipment, duties and descriptions of all plant, materials, equipment and other elements as installed, provided and executed under the Contract Works to the Engineer for comments at least two weeks prior to Practical Completion.
- 4.2.2 The drawings shall be of a scale of not less than 1:50.
- 4.2.3 The drawings shall include symbols, plans, sections, elevations and isometric interpretations to provide a comprehensive record of the installation.
- 4.2.4 All drawings shall be prepared on Autocad.

4.3 Operating and Maintenance Instructions

- 4.3.1 The Contractor shall submit Operating and Maintenance Instructions containing all information to enable the Employer to operate and maintain the installation. They shall contain full details of all elements of the Works including the following:
1. Schedules of emergency measures and fault finding techniques.
 2. Schedules of equipment providing details of location, function, manufacturers' reference numbers, manufacturers name, address and telephone number.
 3. Manufacturers' instruction leaflets and literature, including lists of replacement parts.
 4. Requisite sets of Record Drawings.
 5. Schedule of control sequences together with wiring diagrams, and internal wiring of equipment.
 6. The documents shall be bound in stiff-backed ring binders and shall be A4 size, finished in black welded PVC with "pull open" two ring fittings at 80mm centres and a capacity to suit the intended contents.
 7. All contents shall be mounted in clear PVC pockets sealed on three sides, open at the top and punched at 80mm centres.

4.4 Failure to Provide Information

- 4.4.1 In the event of the Contractor failing to provide the Record Documentation Drawings and Operating and Maintenance Instructions in the stipulated time, the Engineer shall have the power to recommend that the Contract Works are incomplete due to insufficient information being available to enable the Employer to fully operate and maintain the plant, and furthermore the Engineer shall

have the power to instruct the work to be carried out by others and deduct the resultant costs from the Contractors Final Account. This shall also include all costs incurred by the Engineer.