

Appendix 7-A EU Directives/ National legislation and Regulations/ Guidelines/ Technical Standards

European Directives

- Environmental Impact Assessment. Directive (2011/92/EU) on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU;
- Water Framework Directive (2000/60/EC);
- Groundwater Directive (2006/118/EC);
- Flooding Directive (2007/60/EC); and
- The management of waste from extractive industries (2006/21/EC).

Irish Government Acts, National Legislation and Regulations

- S.I. No. 296/2018 – European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

National legislation on the protection of the water environment. Since 2000 water management in EU member states has primarily been directed by the Water Framework Directive (2000/60/EC) and the associate ‘daughter’ Groundwater Directive (2006/118/EC). Irish legislation implementing these, and other relevant directives currently includes:

- S.I. No. 9 of 2010 European Communities Environmental Objectives (Groundwater) Regulations 2010 and amendments (S.I. no. 389 of 2011, S.I. no. 149 of 2012, S.I. no. 366 of 2016 and S.I. no. 287 of 2022).
- S.I. No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations 2009 and amendments (S.I. no. 32 of 2012, S.I. no. 386 of 2015, S.I. no. 77 of 2019, S.I. no. 659 of 2021, S.I. no. 288 of 2022 and S.I. no. 410 of 2023);
- S.I. No. 684 of 2007 Waste Water Discharge (Authorisation) Regulations;
- S.I. No. 231 of 2010 Waste Water Discharge (Authorisation) (Amendment) Regulations;
- S.I. No. 214/2020 European Union (Waste Water Discharge) Regulations 2020;
- S.I. No. 99/2023 European Union (Drinking Water) Regulations 2023;
- S.I. No. 122/2010 - European Communities (Assessment and Management of Flood Risks) Regulations 2010
- S.I. No. 495/2015 – European Communities (Assessment and Management of Flood Risks) (Amendment) Regulations 2015;
- European Union (Planning and Development) (Environmental Impact Assessment) (No. 2) Regulations 2018 (S.I. No. 404 of 2018);
- Local Government (Water Pollution) Acts 1977 to 2007;
- European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 293 of 1988);
- European Communities (Quality of Shellfish Waters) Regulations, 2006 (S.I. No. 268 of 2006);

Guidelines

- CIS (2007). Common Implementation Strategy (CIS) for the Water Framework Directive (2000/60/EC) Guidance on preventing or limiting direct and indirect inputs in the context of the Groundwater Directive 2006/118/EC. Guidance Document No. 17.
- CIS (2010). Common Implementation Strategy (CIS) for the Water Framework Directive (2000/60/EC). Guidance on risk assessment and the use of conceptual models for groundwater. Guidance document No. 26.
- DEHLG (2004). National Urban Waste Water Study. National Report.
- DEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities.
- DELG/EPA/GSI (1999). Groundwater Protection Schemes. Document prepared jointly by the Geological Survey of Ireland (GSI), the Environmental Protection Agency, and the Department of Environment, Heritage and Local Government.
- EPA (2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.
- EPA (2010b). Methodology for Establishing Groundwater Threshold Values and the Assessment of Chemical and Quantitative Status of Groundwater, Including and Assessment of Pollution Trends and Trend Reversal.
- EPA (2011). Guidance on the Authorisation of Discharges to Groundwater. Version 1, December 2011.
- EPA (2003). Towards Setting Guideline Values for the Protection of groundwater in Ireland. Interim Report.
- EPA (2006). Ireland Water Framework Directive Monitoring Programme.
- Fitzsimons, V., Daly, D. and Deakin, J. (2003). Draft GSI guidelines for assessment and mapping of groundwater vulnerability to contamination. Groundwater Chapter, Geological Survey of Ireland.
- GSI (2006). Criteria used in aquifer classification. 1Available from <http://www.gsi.ie/Programmes/Groundwater/Aquifer+Classification.htm>
- IGI (2007). Guidelines on Water Well Construction. Available from <http://www.igi.ie/assets/files/Water%20Well%20Guidelines/Guidelines.pdf>
- Kilroy, G., Dunne, F., Ryan, J., O'Connor, A., Daly, D., Craig, M., Coxon, C., Johnston, P. and Moe, H. (2008). A Framework for the Assessment of Groundwater – Dependent Terrestrial Ecosystems under the Water Framework Directive. Environmental Research Centre Report Series No. 12.
- Institute of Geologists of Ireland, 2007. Recommended collection, presentation and interpretation of geological and hydrogeological information for quarry developments.

Technical Standards

- British Standards (1999). Code of Practice for Site Investigations BS5930. As amended.
- British Standards (2009). Water quality. Sampling. Guidance on sampling of groundwaters. BS ISO 5667-11:2009, BS 6068-6.11:2009. As amended.
- CIRIA (2007). The SuDS Manual. (C697). CIRIA publication, February 2007.

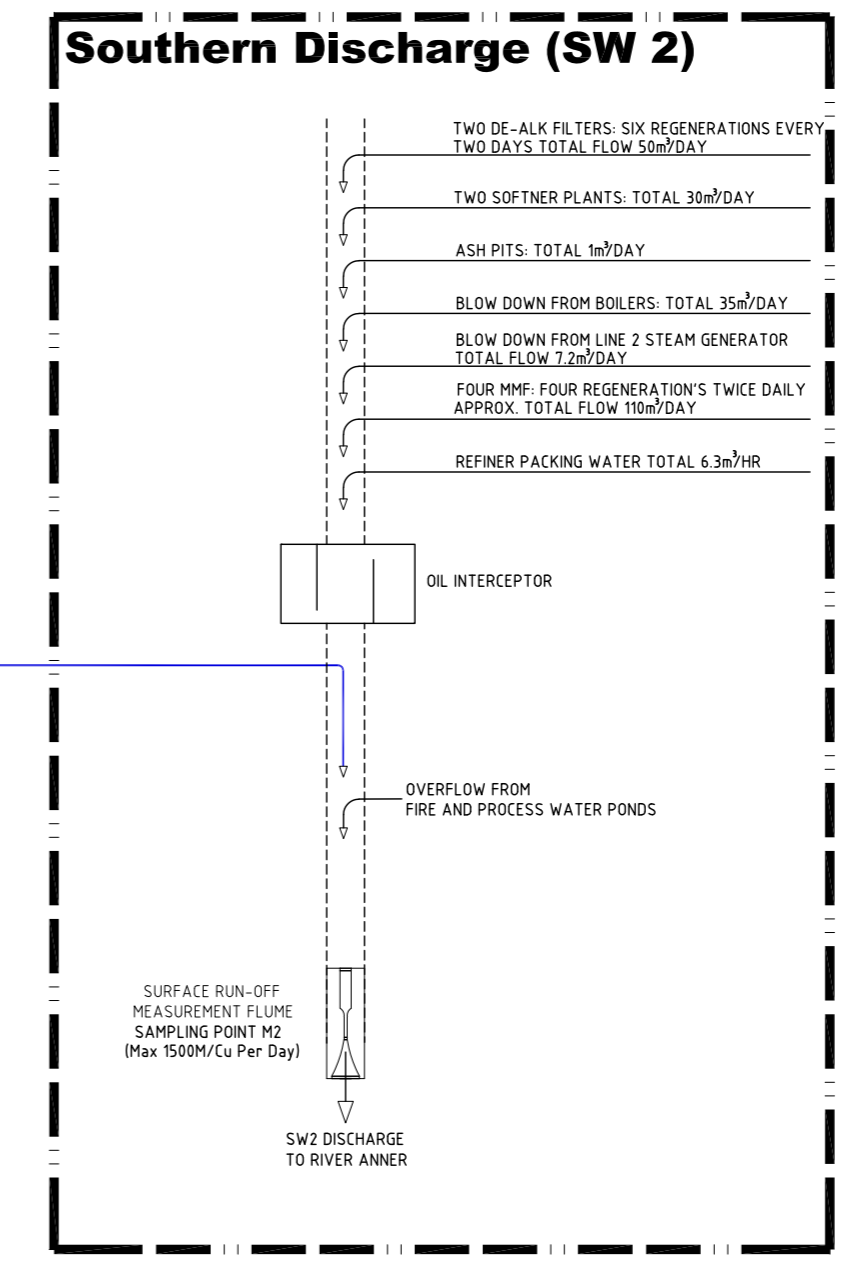
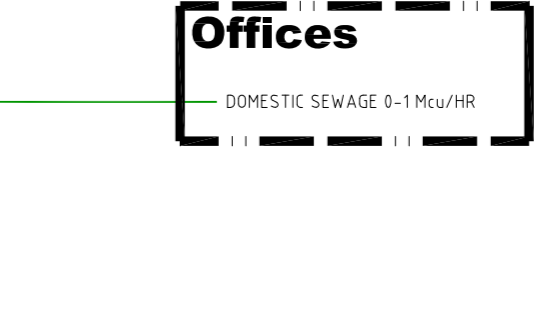
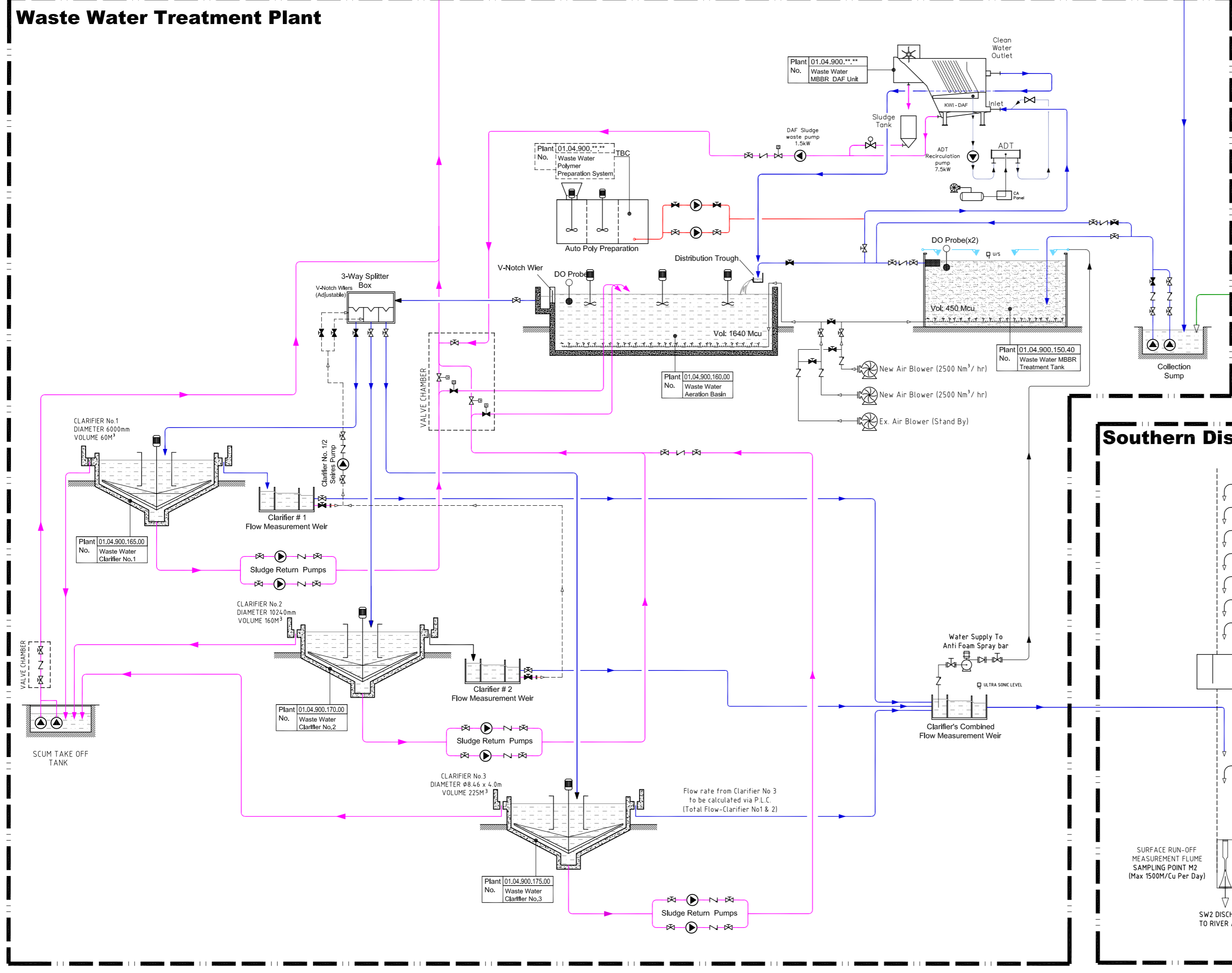
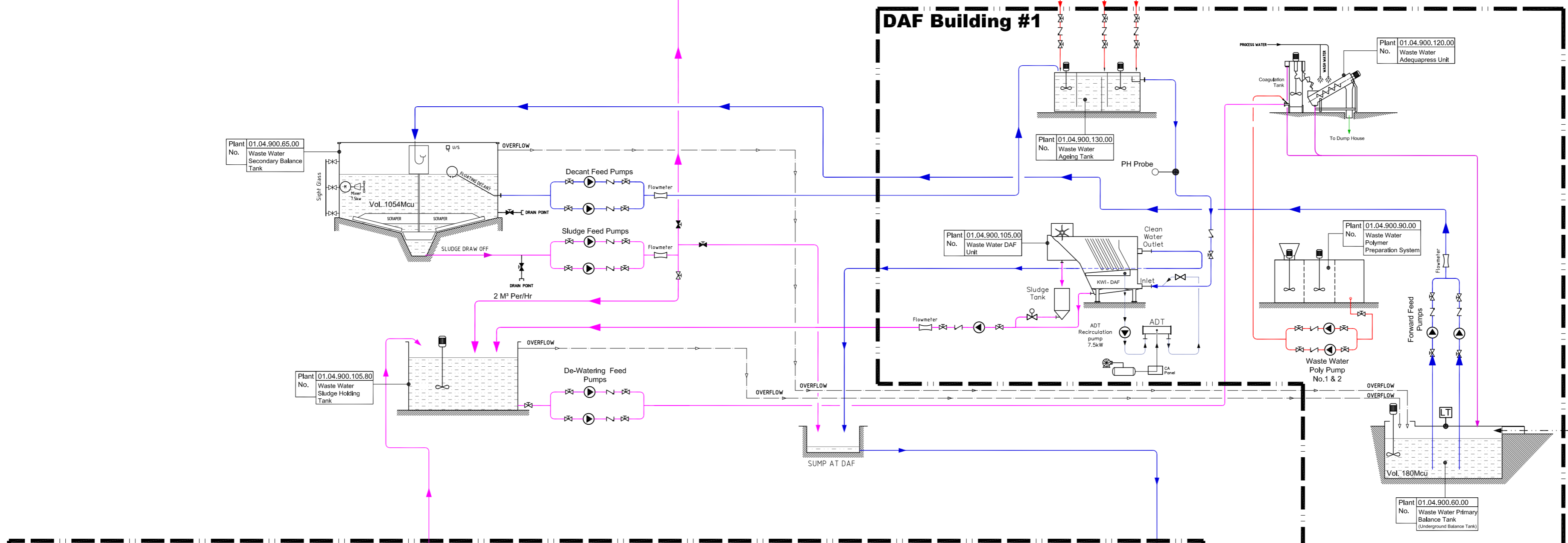
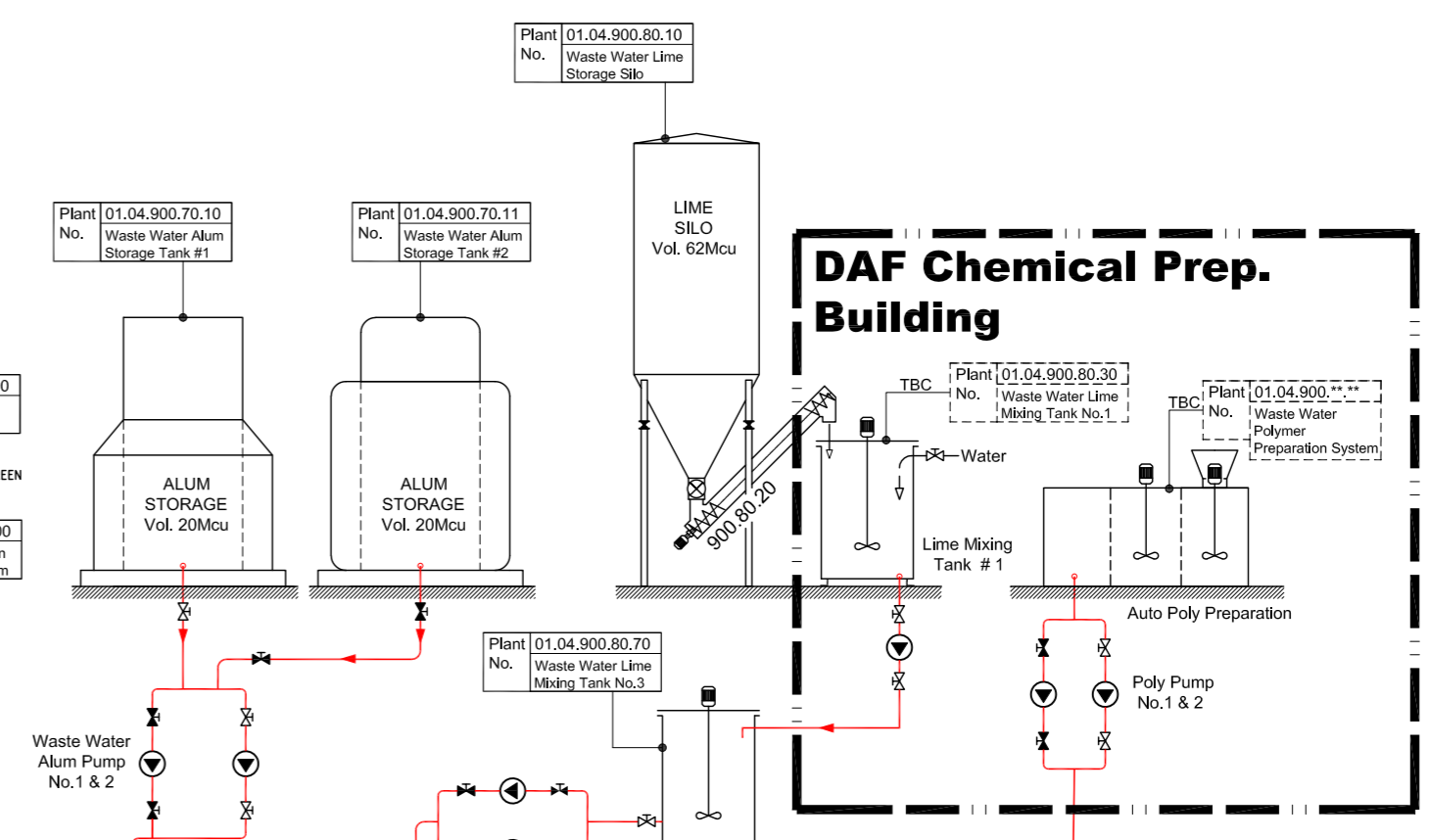
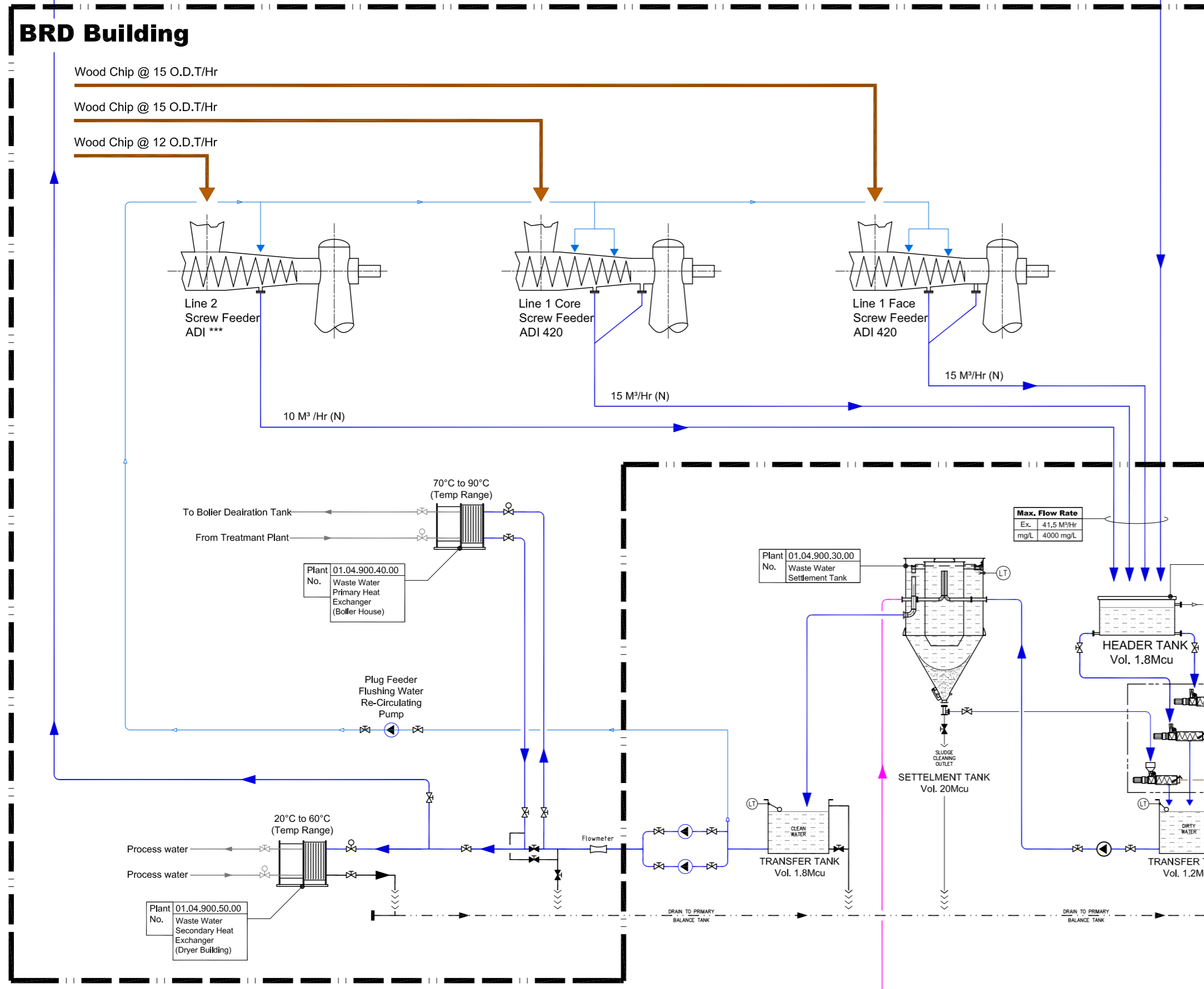
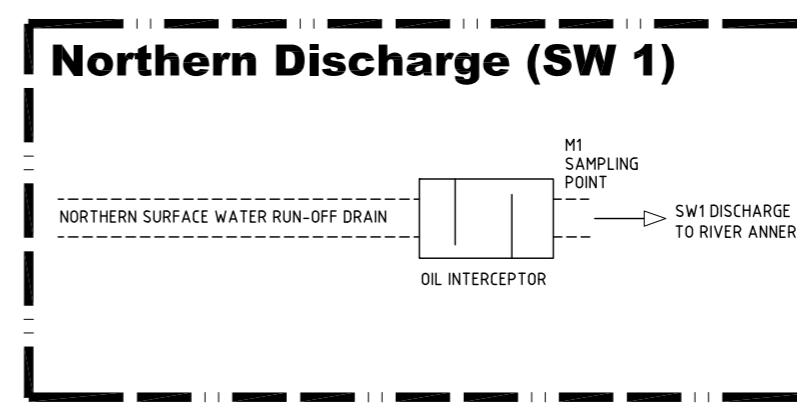
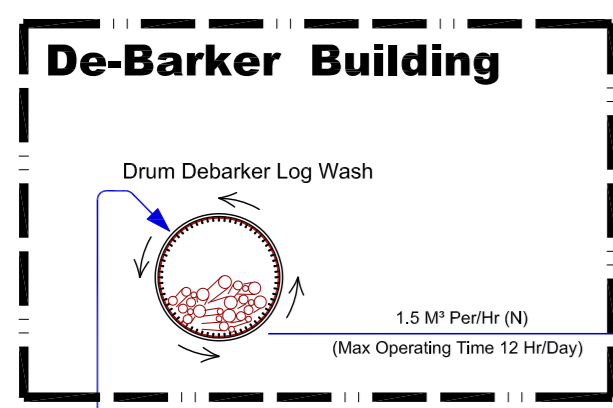
Plans

- Tipperary County Development Plan 2022- 2028;
- Third-Cycle River Basin Management Plan for Ireland 2022-2027 (Draft); and
- Draft Clonmel and Environs Local Area Plan (2024-2030) - Appendix 6: Strategic Flood Risk Assessment.

Appendix 7-B Site Wastewater Treatment Process

1. This drawing is not to be scaled.
2. Figured dimensions only are to be taken from this drawing.
3. All setting out dimensions are to be checked and confirmed on site prior to commencement of work.
4. Any discrepancies encountered to be brought to the attention Medite Europe Ltd without delay.

- NOTES -



STAGE	REV	REVISION NOTE	DATE	INL
Info	i1	Plant Number Tags Added	July 22	
Info	i	Update and Re-Draw - Issued For Information	July 22	
Project Title:	Medite Facility - Plant PFD's and P&ID's			
Machine Name:	Waste Water Treatment			
Machine No:	01 - 04 - 900 - 000 - 00			
Site:	Plant	Process	Machine	Sub-Machine
PU Number:	900	Description:	W.W.T.P	
Scale:	1/250, 1/100, 1/50 or AS NOTED	Date:	20th April 2016	Approval By: P.Breen /
Drawing Number:	01 - 04 - 900 - WWTP - 001			Rev: 11

General Maintenance
W/O Number: _____

Appendix 7-C Site Risk Management Report - Firewater Report and Potential Spillages



RISK MANAGEMENT REPORT

Ref. Condition 9.2 of IPC Licence No P0027-02

FIREWATER AND POTENTIAL SPILLAGES

1. INTRODUCTION

Medite Europe Ltd is a medium sized manufacturing facility located in Clonmel, Co. Tipperary. It manufactures a composite wood based product Medium Density Fibreboard (MDF) from native softwood timber and employs approx. 160 people. The plant operates a continuous production process on a 24/7 basis using a continuous rotating 12 hour shift system. Auxiliary & support operating processes operate either on a 2 shift cycle system or on day work pattern.

The operations within the plant broadly come under the following headings:-

- Materials intake and preparation
- Production L1 process
- Production L2 process
- Warehouse and Shipping
- Maintenance and Auxiliary Services
- Office Support

2. Site Location Characteristics

The Medite site comprises approximately 23 hectares developed area of a total site area of 65 hectares. The original land surface sloped from the north west to the south east across the site from approximately 45m O.D. at the north-western corner to approximately 22m O.D. at the front of the site on the Fethard road. The original topography was modified to form a level work area within the site which has resulted in steep embankments along the north-western flank of the site.

The River Anner flows from North to South approximately 100m east from the front of the site, before joining the River Suir approximately 1000m downstream.

3. MANAGEMENT SYSTEMS

- **Environment**

Medite Europe Ltd operates to IPPC Licence No. P0027-02. An Environmental Management System (EMS), required under Condition 2.1 of the operating IPPC Licence, facilitates the management of the environmental impacts of Medite's activities. The company's Environmental Management System is externally certified to the ISO14001 Environmental Standard by SGS Ireland Limited.

- **Process/ Quality**

Medite's process operates to I.S. EN ISO 9001:2000 Quality Management System certified by the National Standards Authority of Ireland. Product Certification for different countries also specifies ISO9001 registration as part of the certification requirements.



- **Safety**

Details of Safety Management procedures are outlined in the Company's Safety Statement.

- **Training**

Training procedures / schedules are described in:

ISO 9001 Quality Manual
Annual Training Plan
Environmental Management System
Safety Statement

4.0 PLANNED PREVENTATIVE MAINTENANCE (PPM)

Principally, PPM at Medite comprises:

Maintenance programmes are established and on-going at the facility for the following equipment systems:

- process equipment
- environmental process equipment
- continuous monitors
- laboratory equipment
- sampling equipment

At present there is:

- routine round the clock maintenance programme for plant equipment
- routine 8-hour planned maintenance shutdown
- annual maintenance shutdown for one/two week per production line

5.0 SECURITY

Medite process is a 24-hour operation. Therefore, outside office hours, there is always an operations crew (**Emergency Response Team**) on-site, headed by the supervisor (**Emergency Response Team Leader**) for that particular shift.

The entry gate is manned by a weighbridge operator from 06:00 to 22:00, Monday to Thursday and from 06:00 to 20:00 on Friday.

During night hours, the entry gate is closed and operated from press control room with 24-hour camera surveillance and intercom communication.

Medite's boundary is secured by fence and there are regular patrols of general site production area by production personnel. Observation is further enhanced by the presence of cameras outside and in process areas, used for continuous monitoring.



6.0 SITE WATER DRAINAGE SYSTEM

Storm water from developed area of the site is collected by two open channel drainage systems.

- **Northern Discharge SW1**

This emission point reference no. SW1 is known as the 'northern discharge', as surface water from the northern part of the site is directed to a dedicated settlement pond and then discharged to the River Anner. This drains internal roads in the northern half of the site, the logyard, the area around the debarker/chipper building and most of the warehouse building roof.

- **Southern Discharge SW2**

Medite are licensed to discharge a combined stream of process effluent and southern run-off to the River Anner.

This surface run-off drains internal roads in the southern part of the site, the car park, the fuel storage area, the chip storage area, paved areas to the west of the production building and the roofs of the boiler / refiner house, production building, the blender building and part of the warehouse building.

This surface water discharges to a system of three interceptor settlement lagoons, one of which is retained empty as an Emergency Holding Lagoon.

- **Emergency Lagoon Dimensions:**

Each of the three lagoons which have a sloping floor measures as follows:

21.98m x 9.71m x 2.33m depth deep end
1.65m depth shallow end

The volume of **each** settlement lagoon is 425m³.

Required Retention Capacity

The largest bulk storage tank on-site is 100m³.

Retention capacity required is as follows:

Largest storage tank:	110m ³
Very high rainfall:	<u>162m³</u> (3 hours)
Total	272m³ (Lagoon = 425m³)

The capacity of the emergency lagoon is many times larger than the delivery tankers coming onto site. In the event of some unlikely catastrophic failure of a bulk storage tank and surrounding bund, the capacity of the emergency lagoon(425m³) is almost four times greater than the largest storage tank (110m³). Rainfall can also be accommodated in the emergency lagoon.



7.0 DANGEROUS SUBSTANCES – STORAGE AND USE

The only material on-site which is classified with any of the risk phrases R50, R51, R52, and R53 is

Texaco Marked Gas Oil (R52/53) storage capacity of 24.75 m³

- **Bulk Harmful Substances**

Mineral thermal oils- this oil is an integral component of the closed-circuit press heating system.

Natural gas- used to heat the thermal oil for Line 1.

Hydrochloric acid- used in the treatment of boiler feed water.

LPG- used as a fuel for boilers, energy plants and forklift trucks.

- **Smaller quantities stored in IBCs and Drums**

Process dyes.

Water / Effluent Treatment Chemicals (supplier formulations)

Other materials comprise oils, and resins / additives used in manufacture of the product.

8.0 TRANSPORT ON-SITE

- **Bulk Materials**

Hauliers contracted by suppliers make deliveries to site. Where hazardous chemicals are involved, the drivers have been trained by the suppliers in safe handling and emergency procedures, reference site unloading procedures.

- **IBCs and Drum Containers**

Hauliers contracted by suppliers deliver these to site. Delivery normally comprises IBCs or drums secured on pallets. Medite's forklifts are used to offload the IBCs or drums and transport them on pallets from storage area to point of use. **All IBCs or drums not for immediate use are stored in the bunded chemical store.**



9.0 SPILLAGE CONTAINMENT

- **Bunding**

Bulk liquid storage is banded – refer to Drawing EN000-IPPC-010 for tank capacities. Exceptions are LPG and Natural Gas due to potential for gaseous rather than liquid release.

- **Interceptor Lagoons**

The main site area where all bulk liquids are stored and where the drum storage is located drains to a settling system comprising three lagoons. One of these lagoons is retained empty as a holding tank in the event of an emergency, such as a rupture of road tanker, process line or individual drums / IBCs.

The two lagoons, which are in operation, are used alternately so that in the event of a sudden unnoticed spillage, the lagoon in use will intercept the spillage. **While one lagoon is in use, the other lagoon is discharging. This aids settlement as well as providing an interceptor system for sudden spillage. However as soon as a spillage is discovered, the flow can be directed to the emergency lagoon.**

The volume of each settlement lagoon is 425m³.

- **Required Retention Capacity**

The largest bulk storage tank on-site is 100m³.

Retention capacity required is as follows:

Largest storage tank: 110m³.

Very high rainfall: 162m³ (3 hours)

Total 272m³ (Lagoon = 425m³)

The capacity of the emergency lagoon is many times larger than the delivery tankers coming on site. In the event of some unlikely catastrophic failure of a bulk storage tank and surrounding bund, the capacity of the emergency lagoon is almost four times greater than the largest storage tank.

- **Diversion of Contaminated Surface Water**

The first containment point of all liquids is the tank bund.

In the unlikely event of a spillage going to surface run-off, there is a quick and ready system for diversion of flow to the emergency lagoon. This comprises manual placement of sliding baffles to block off the route to normal discharge and to divert to the emergency lagoon.

As soon as an emergency / spillage are detected, the production supervisor (**emergency response team leader**) directs a team member to slide baffle in place.



- **Disposal of Emergency Spillages**

In the event of a spillage of a material, Medite would determine the total amount spilled and the concentration in the bund or emergency lagoon. Based on off-site analysis and advice from the material supplier the company would decide with approval from the EPA what should be done with the material – e.g.

- used on-site for its original intended purpose
- returned to the supplier
- Off-site disposal or recovery by a permitted contractor

- **Composition of Used Firewater**

If a fire occurs on process fibre and end product, wood solids may be at a concentration, which would require removal. There is some risk of contamination with oil, i.e. due to a press fire, but the method of fire containment at these points minimises water usage and therefore the risk of loss of oil to surface water is low. However, any oil lost would be trapped at oil interceptor and booms placed in surface water treatment.

There is also a slight risk of raw material additive storage tanks being involved in a fire, i.e. the occurrence of a fire in this area with the potential to damage storage tanks. As already outlined, the first point of containment is the tank bund. The risk therefore of discharge with the firewater is minimal.

In an instance of a fire, the used firewater currently would pass through a system, comprising run-down screen and solids compactor before lagoon entry point. Because the significant contamination of the used firewater would be wood solids, this system for solids removal is appropriate for treatment of used firewater.

In the event of any fire it is policy for **the emergency response team leader** to divert firewater to the emergency holding lagoon, however minimal the risk of contamination.

The disposal of this retained firewater would be as above (disposal of emergency spillages), and where appropriate with the prior approval of **the EPA**.



10.0 FIRE FIGHTING AND GENERAL FIRE PROCEDURES

- **POLICY STATEMENT**

It is the policy of the Company to provide and maintain sufficient fire protection & prevention equipment, and methods to protect the safety of its employees and Company operations. Notwithstanding such provision and maintenance of equipment the Company recognises that due to the nature of the process, it is not always possible to prevent fires occurring. However, the Company will always insist that where fire is concerned, the safe-guarding of life takes precedence over all other matters. The Company will provide sufficient and adequate ERT training to the core ERT team members.

- **FIRE ZONES**

The Company is divided into six FIRE ZONES as shown below:-

FIRE ZONE NO	AREA
1	The Debarker area
2	The Boilers, the Refiners & the Dryers Area
3	L1 Fibre handling, blending & fibre bins, L1 press and Aux. Rooms
4	Workshops, Old L1 forming & Press, Laboratories and Offices
5	The Warehouse, include Finishing Sanding & Shipping areas.
6	L2 Dryer, Energy Plant, L2 Production Line
Continuous Alarm	Main Office Building

- **THE FIRE ALARM SIGNAL / CODE**

When the Fire Alarm is activated for any area the distinctive alarm signal or code emitted is readily recognisable.

The alarm emits 5 short distinctive 'Bleeps', then a short pause, followed by either one, two, three, four, five or six further distinctive bleeps, depending on whether the activation is in Zone 1, 2, 3, 4, 5 or 6, i.e. For a fire alarm activation in Zone 2, five bleeps will sound followed by two bleeps.

Note: **A continuous alarm will sound in the Offices when the fire alarm is activated in this location.**

- **EVACUATION ALARM**

In the event of evacuation the fire alarm system emits a continuous signal throughout the zone to be evacuated or may be used in all zones simultaneously if total evacuation of the site is necessary. **The evacuation alarm can only be activated from the panel in the meeting room (old press control room L1).**

- **FIRE ALARM TEST**

The Fire Alarm system is tested each Monday morning at 10.00 am except on Public Holidays which fall on a Monday. On each Monday morning one zone is tested plus the evacuation alarm for that zone.

- **FIRE ALARM SYSTEMS**

Medite has several forms of fire prevention and protection, as described in the Safety Statement: Spark detection and suppression / water deluge and shut down systems are provided to each system conveying fibre, sander dust and board off-cuts. Sprinkler systems are provided to all buildings, with exception of Boiler House.



Fire hydrants and first aid fire hoses are located strategically throughout the plant. The fire safety system is in compliance with statutory requirements and the specifications lay down by Medite's risk assurance company. The plant undergoes annual insurance audits. Medite conducts regular documented inspections on fire safety equipment and alarms. Procedures are outlined in Safety Statement and Fire Procedures Manual.

- **EMERGENCY RESPONSE TEAM MEMBERS**

EMERGENCY RESPONSE TEAM CHIEF (PRODUCTION MANAGER)

The emergency response team chief (ERT chief) has the following duties and responsibilities:

- Ensure that the ERTs' have adequate and necessary equipment
- Ensure that the ERTs' are suitably staffed and trained on an on-going basis.
- Decide, in liaison with the ERT leader the strategy during a fire or other emergency.
- Decide, in liaison with the ERT leader / Fire Brigade Chief Officer, if evacuation is necessary and if so, set off the evacuation alarm.
- Liaise with the Fire Brigade Chief Officer at the scene of fire.
- Advise Fire Brigade Chief Officer of potential risks.

EMERGENCY RESPONSE TEAM LEADER (PRODUCTION SUPERVISOR)

The Emergency response team leader (ERT leader) has the following duties and responsibilities:-

- Ensure that his ERT has adequate and necessary equipment.
- Ensure that his ERT is suitably staffed and is satisfactorily trained on an on-going basis.
- Act as ERT chief in the absence of the Production Manager
- Decide on fire fighting or search & rescue strategy during the incident
- Direct the Press Operator or other nominated persons to call the Emergency Services, if deemed necessary. Advise him to follow the procedure posted at his desk.
- Insure that the person who has been assigned to call the Emergency services confirms back to you "that the required services have been notified"
- Organise to have an employee go to the weigh bridge area to await the arrival of the emergency service and direct them to the fire incident.
- Assign an employee to act as Fire Pump Operator, normally the shift fitter
- Assign personnel to divert fire water and spillages into the emergency lagoon
- Ensure the safety of personnel.
- Secure the property against damage where possible.
- Decide in liaison with the ERT chief if evacuation is necessary and if so, set off the evacuation alarm by following the activation procedure.
- Notify the Environmental Protection Agency by following the notification procedure for environmental incidents.
- Complete Fire / **Environmental Incident Report Form.**



EMERGENCY RESPONSE TEAMS (ERT) MEMBERS

The ERT members are made up mainly of production shift personnel, refer to table:

1	Press area OP L1
2	Press area OP L2
3	Refiner area OP
4	Boiler/Utility area OP
5	Sander/Saw OP
6	Packaging OP L1
7	Packaging OP L1
8	Forklift driver L1
9	Shift Electrician
10	Shift Fitter

When the fire alarm is activated, the ERT must:-

- Report to the Press Control L1 and establish contact with the ERT leader
- Act on the instructions of the ERT leader, and at all times have due regard for your own safety and the safety of others
- Carry out fire fighting/emergency rescue as per training
- After the event, check all equipment used and report any defective parts to the ERT Leader
- Return all other fire fighting equipment back to its correct place after the fire

FIRE PUMP / SPRINKLER CONTROL VALVE OPERATOR – NORMALLY SHIFT FITTER

- The assigned person must :-
- First go to the activated sprinkler control valve location and check that the valve is fully open.
- Then proceed to the fire pump house and check that the fire pump is running when required. He must remain here for the duration of the fire incident unless otherwise directed by the ERT leader.

GENERAL FIRE/EMERGENCY PROCEDURES

The following general fire/emergency procedures apply to all employees of the Company.

It is the responsibility of every Department Director and every Manager and Supervisor to ensure that all of his staff is adequately trained in this Procedure.

General Fire/Emergency procedures include:-

- Action to be taken on discovering a fire or other emergency incident
- Action to be taken on hearing the alarm
- Knowing the Alarm zone code and your work area.
- Action to be taken in the event of evacuation alarm
- Knowing the Assembly Point



ACTION ON DISCOVERING A FIRE OR OTHER EMERGENCY INCIDENT

- Raise the Alarm by breaking the nearest RED Break Glass Box which is positioned inside and adjacent to all EXIT doors from plant buildings
- Shout for assistance or warn other employees nearby
- Fight the fire or assist in an emergency incident only if safe to do so
- Do not endanger your own safety or that of others

ACTION ON HEARING THE ALARM - If not an ERT member

- Remain at your place of work if safe to do so.
- Prepare to shut-down equipment
- Leave the building on hearing the EVACUATION ALARM or on being told to do so by a manager, supervisor or ERT member
- Go to the Assembly Point

EVACUATION

- Go immediately to the Assembly Area by the safest route
- Do not Stop to collect personal belongings
- Last person leaving a room / hallway, should close the door behind them
- Do not re-enter the building until directed to do so
- Do not leave Assembly until directed to do so



11.0 EMERGENCIES

- **Liquid Petroleum Gas (L.P.G)**

L.P.G, which is used for a fuel to both boilers, is stored on site in 55m³ tank located at the side of the chemical store. L.P.G, which is used for Forklift fuelling, is stored on site in 15m³ tank located to the East of the warehouse.

The tanks, which are the property of Calor-Kosangas Ltd. are fitted with all of the required Safety valves, control valve and gauges and are constructed, inspected, maintained and filled in accordance with L.P.G Codes of Practice.

The potential for emergency situations arising through the use of L.P.G is:

- Leakage from the storage tanks or at the Forklift re-fuelling station.
- Fire arising from leak
- Explosion, arising from fire tracing back to the source of a leak from the tanks.

In the event of leak or fire the **Emergency Response Team Leader** on duty should be notified immediately, by telephone or by use of the Fire Alarm System. The Leader will decide on what action is necessary:

- Shutting off the leak at source and seeking mechanical advice or assistance.
- Seeking Calor-Kosangas expert advice. **01-2694800**
- Summoning the Local Fire Brigade.
- Tackling the fire, if evident.
- Keeping the Tank(s) cooled with water.
- Turning off/removing sources of ignition in the vicinity and/or down wind.
- Deciding in liaison with management of evacuation of the area, if deemed necessary.
- Diverting firewater to the Emergency Lagoon if necessary.
- Complete **Fire / Environmental Incident Report Form** and copy to the relevant personnel.
- The **EPA** will be notified according to the Notification Procedures for an Environmental Incident.

General Employees

In the event of an emergency arising at the L.P.G tanks or refuelling station, employees other than the Emergency Response Team should:

- Follow all direction given by the Emergency Response Team Leader



- Stay well clear of the incident and remain indoors
- Be prepared to shut down equipment or evacuate as deemed necessary by the Emergency Response Team Leader.

- **Natural Gas**

The Natural Gas is transported on-site by means of high-pressure transmission pipelines and low-pressure distribution pipe networks. Qualified skilled staff under professional supervision carries out all works on these systems.

The main constituent of Natural Gas is Methane (chemical formula CH₄).

The Natural Gas is used in Line One process to heat the thermal oil.

Fire Fighting Measures and Accidental Release Measures

In the event of a fire or accidental release, the Emergency Team Leader on duty should be notified immediately, by telephone or use of Fire Alarm System. The Leader will decide on what course of action is necessary:

- If possible the flow of gas is stopped by isolation of source; extinguishing gas flames without isolation may cause an explosion. The gas burning freely in air will not produce hazardous products of combustion.
- A leaking gas flame should not be extinguished unless absolutely necessary.
- Expert advice should be sought from Bord Gais. **Tel. 021-4534000, Emergency No.1850 205050.**
- The Local Fire Brigade should be summoned.
- Other fires in the area of the leak should be extinguished by suitable means and the area cooled using water fog.
- In confined spaces self-contained breathing apparatus should be used.
- Decide in liaison with management of evacuation of the area, if deemed necessary.
- Divert firewater to Emergency Lagoon, if necessary.
- Complete **Fire / Environmental Incident Report Form** and copy to the relevant personnel.
- The EPA will be notified according to the Notification Procedure for an Environmental Incident.



Accidental Release (additional measures)

- If possible isolate the supply of gas and ventilate the area.
- Eliminate all sources of ignition.
- Evacuate people from the area.
- Wear self-contained breathing apparatus when entering the area, unless atmosphere has been tested and declared safe.

- **EMERGENCY INCIDENTS INCLUDING FIRE**

Medite Europe Ltd will provide and maintain sufficient fire protection & prevention equipment, and methods to protect the safety of its employees and Company operations. Safe-guarding life must take precedence over all other matters when dealing with a fire incident. Emergency response teams will be drawn from the production crews and trained to deal with emergency incidents including fire, rescue and chemical spills. The fire alarm system is tested each Monday morning at 10:00 am except on Public Holidays which fall on a Monday.

In the event of a fire or uncontrolled release of bulk storage material held on site, the risks associated with the physical & chemical properties of the material during an emergency incident are greatly magnified by the volume. The following materials held in bulk storage:-

- **TOTAL BULK STORAGE CAPACITY**

PRODUCT	MAX CAPACITY	LOCATION
LPG	55M3	Effluent DAF building
LPG	15m3	Shipping In entrance door
UF resin	316,000 L	Adjacent to refiner and fibre handling buildings
MUF resin	264,000L	Adjacent to refiner and fibre handling buildings
Paraffin wax	126,000 L	Inside the refiner and fibre handling buildings L1
MDI	45,000 L	Dryer building L1
Thermal oil	42,000 L	Energy plant L2 & Thermal oil heater L1
Diesel oil	24,750 L	Chip yard
HCL	15,000 L	West side of boiler house



- **Objectives In The Event Of Fire or Spillage**

In the event of a fire or a spillage, the primary objectives are extinguishment and containment. Emergency Response Teams are trained to deal with flammable liquid incidents and /or spillages:

- Containment using fog / foam systems
- Avoiding contact with ignition sources
- Diverting spillage to Emergency Holding Lagoon
- Use of spill kits, pig tails
- Cleaning up using sand or earth.
- All other procedures relating to ensuring the safety of all personnel in the area
- Complete **Fire / Environmental Incident Report Form** and copy to the relevant personnel.
- Notifying the **EPA** as per Notification Procedures for an Environmental Incident.
- Disposal or use of materials after prior approval of EPA and following the safety procedures outlined in the **Material Safety Data Sheets (MSDS) located on the Health and Safety shared folder and desktop on each screen in all control rooms.**



- **Likely location of fire**

For the purposes of this report, the plant is categorised into three areas:

Tank storage
Processing area
Warehouse/finishing area.

Tank storage

The additive raw materials used in the process are not classified as flammable.

The bulk tanks storing the materials are well banded.

The composition of the raw materials and the location of their storage do not constitute any significant fire risk.

Most other materials are stored separately from the main processing area. Exceptions to this are hydraulic oil for Line 1 press and thermal oil for Line 2 press. This location is necessary as the tank facility forms an integral part of the oil handling systems for each press. The significance of these oils will be addressed under fire containment in the processing area.

Processing area

The processing area is the area most at risk from fire - compared to the other two defined areas.

Prior to drying, the wood is high in moisture and therefore risk of fire is low.

From drying through to pressing, the wood fibre has low moisture content. Due to the low moisture and high surface area, it is recognised that there can be a significant risk of fire unless suitable equipment and adequate controls are in place. In Medite, such equipment and controls reduce the risk of fire or, in the event of a fire, readily confine and extinguish the fire within the conveying system. These conveying systems are fitted with spark detection and suppression systems.

For Line 1 press hydraulic oil and Line 2 press thermal oil, rather than the normal fire fighting measures using water, primarily foam and fog would be used to extinguish a fire on either press or oil system. The use of these mechanisms would therefore minimise losses of these oils to surface run-off.

Warehouse / finishing area:

Product is stored during stages of finishing, i.e. sanding and cutting/packaging and prior to shipping.

While the moisture content of the product is low (5-7%), the physical nature of the product does not present the same risk of fire as that of the fibre handling/ processing area. However, as per insurance requirements, there is an approved sprinkler system for the total warehouse.

In the sanding and sawing operation, dust is generated which is contained within the dust extraction systems. These conveying systems are fitted with spark detection and suppression systems similar to those for fibre handling.



12. CALCULATIONS:

- **Lagoon Dimensions:**

Each of the three lagoons which have a sloping floor measures as follows:

21.98m x 9.71m x 2.33m depth deep end
1.65m depth shallow end

The volume of **each** settlement lagoon is 425m³.

Required Retention Capacity

The largest bulk storage tank on-site is 100m³.

Retention capacity required is as follows:

Largest storage tank:	110m ³
Very high rainfall:	<u>162 m³</u> (3 hours)
Total	272m³ (Lagoon = 425m³)

The capacity of the emergency lagoon is many times larger than the delivery tankers coming onto site. In the event of some unlikely catastrophic failure of a bulk storage tank and surrounding bund, the capacity of the emergency lagoon(425m³) is almost four times greater than the largest storage tank (110m³). Rainfall can also be accommodated in the emergency lagoon.

- **Water capacity for firefighting.**

Medite has two water reservoirs on -site, each of 500,000 gallons capacity. This reservoir provides process water but principally is a reserve for fire fighting.

Fire Pump withdrawal rate = 6.82m³ per minute maximum (1500 gals/minute).

From experience of previous fires at Medite, it is judged that water has been used in fires at a rate of approximately 2.25m³/minute to 4.5m³/minute for a period ranging from a few minutes to one hour.

Examples of Firewater usage:

Five minutes duration at 2.25m³/min
Five minutes duration at 4.5m³/min
Half hour duration at 2.25m³/min
Half hour duration at 4.5m³/min
One hour duration at 2.25m³/min
One hour duration at 4.5m³/min

<u>Firewater</u>	
=	11m ³
=	23m ³
=	68m ³
=	135m ³
=	135m ³
=	270m³.



- **METEROLOGICAL DATA**

The Medite Europe Limited facility is located near the south east coast of Ireland and therefore lies within a zone of pronounced oceanic climate influenced by the prevailing south-south-westerly winds. The main characteristics of the climate are an increase of precipitation and a decrease of temperature variance as compared to the European Continent or even more inland locations in Ireland.

Meteorological data (30 year averages) for the Clonmel area which is located close to the south east coast is:

1981 – 2010 Mean Annual Rainfall (mm) = 1400mm. Hourly totals exceeding 25mm are rare but for this exercise **25mm** is used.

- **IMPERVIOUS AREAS**

The impervious area on site is calculated. The total area which drains into the surface system is approximately 64,750m²:

- Buildings: 36,422m²
- Roads and concrete areas: 28,328m²

Impermeability factor used for these areas is 0.80

Therefore the impervious areas on site accumulate to 51,800 m².

The maximum quantity of surface water arising on site is calculated as follows:

$$\begin{aligned} \text{Average Daily Surface Runoff} &= \text{Average daily total (mm)} \times \text{Impervious site area} \\ &= 25 \text{ mm} \times 51,800\text{m}^2 \\ &= 1,295\text{m}^3 / \text{day} \end{aligned}$$

For the purposes of this assessment, it was felt that maximum hourly rainfall is relevant rather than maximum daily rainfall as any emergency event would only be expected to last about an hour before being brought under control. But to be absolutely sure a maximum 3 hour rainfall period is used, after this period has elapsed the other 2 surface water lagoons can be used (each 425m³ capacity)

21.98m x 9.71m x 2.33m depth deep end
1.65m depth shallow end

The volume of **each** settlement lagoon is 425m³.

Taking Clonmel's 20 year, 24 hour, rainfall event of 25mm

Rainwater Contribution

Description	Qty	Unit
Impermeable Area	51,800	M2
Depth of Rainfall	25	mm
Volume of Rain water 24hr period	1295	mm
Volume of Rain water 1hr period	54	M3
Volume of Rain water 3hr period	162	M3



Total Required Retention Volume

Utilising the calculations above the Total Required Retention Volume is calculated as follows:

Total Required Retention Volume

Description	Qty	Unit
Initial Volume Estimate	270	M3
Rainwater Contribution	162	M3
Required Retention Volume	432	M3

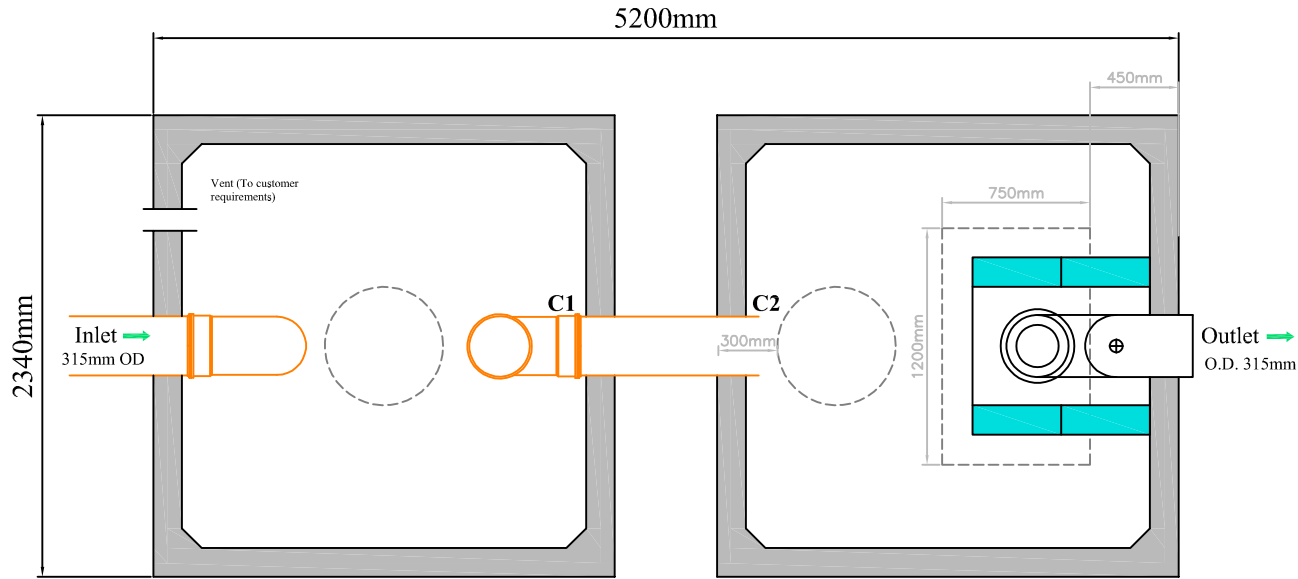
The capacity of the emergency lagoon is 425 m3.

13. Conclusion

This assessment indicates that adequate attenuation can be achieved in the event of a fire or spillage on site.

Appendix 7-D Hydrocarbon Separator Details

Full Retention Class 1 EN 858 FR-NS-50-CC Ortner Volume 16,000 lit

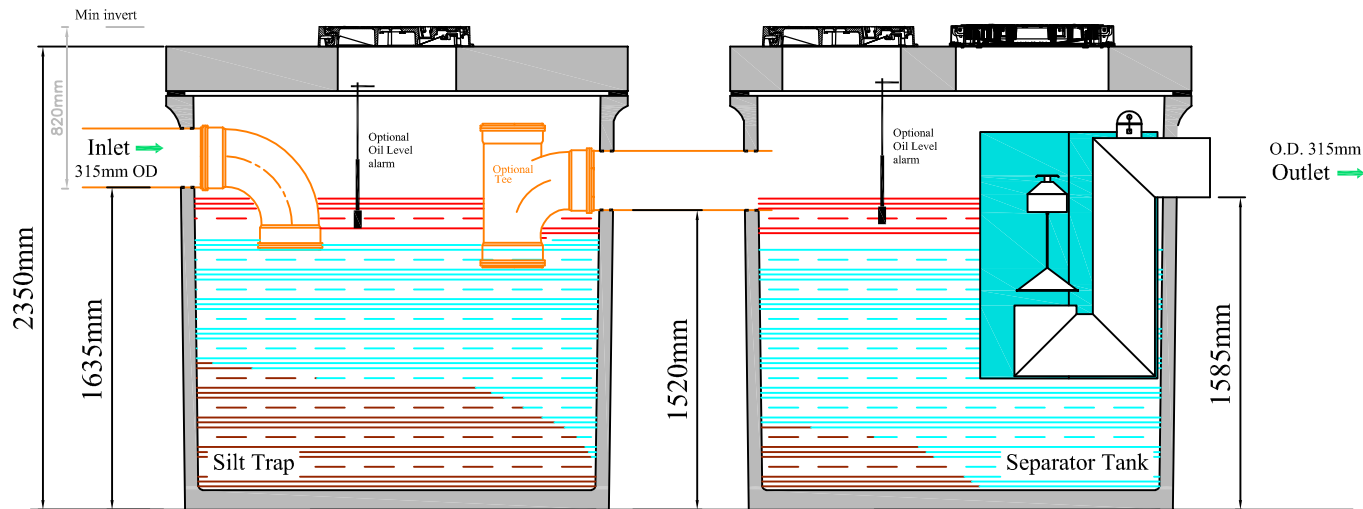


All the tanks must be placed on a perfectly level and firm suitable base. Typical layout, variations as required per customer.

An anti-syphon vent is required for long run outflows

Optional explosion proof D400 manhole covers & concrete risers are available.

Optional D400 manhole covers & concrete risers are available.



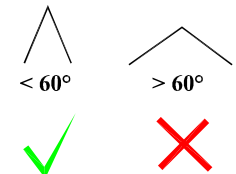
Notes:

This drawing is ©. All rights reserved.
Note: Observe all safety regulations in regard to excavation and lifting requirements. Never leave opening uncovered or unattended at any time.
Note: Specify any specific requirements prior to ordering. All civil works by customer.
Note: Do not scale from this drawing. Only for illustration purposes.

Tank Type: 2CFull Retention Interceptor
Tank Size: 4900mm x 2340mm
Height: 2350mm
Volume: 16000 liters
Weight: 4500kg (Each, Ex. Lid)
(Tank Dim: ± 20mm. Weight: ± 30Kg.)

**50 l/s nominal flow @
 65mm/hr rain intensity
 2,777m sq. coverage
 5,000 lit. silt capacity
 2,000 oil capacity
 4,000 lit. emergency
 oil retention.**

**Lifting limitations:
 Max Chain Angle < 60°**



EN 12566 - 1
 EN 206 - 1



Clara Road, Tullamore, Co. Offaly, Ireland
 Tel: 057 9326000 info@molloyprecast.com
 Fax: 057 9326060 www.molloyprecast.com

Title: FR-NS-50-CC
Full Retention Interceptor
Date: July 2018
Drg. No.: FR-NS-50-2C-04
Drawn By: KR



Appendix 7-E Site Discharge and Surface Water Quality Results

Parameter	Unit	13/05/2022	25/05/2022	02/06/2022	24/06/2022	08/07/2022
		2009 & 2019 Inland SW EQS	SW3 - Anner River Upstream	SW3 - Anner River Upstream	SW3 - Anner River Upstream	SW3 - Anner River Upstream
Suspended solids	mg/l		<5	<5	<5	<5
Phosphorus (P)	mg/l	<0.025	0.034	0.013	0.013	0.02
COD total (O2)	mg/l		5	101	<5	<5
pH		6-9				
BOD 5 day total with ATU (O2)	mg/l	<1.5	3	<1	1	<2
Ammonia (NH3-N)	mg/l	<0.065	<0.02	<0.02	<0.02	<0.02
Ammonia (NH4)	mg/l	<0.065	<0.03	<0.03	<0.03	<0.03
Orthophosphate (P)	mg/l		<0.02	<0.02	<0.02	<0.02
Nitrite (NO2N)	mg/l		<0.01	<0.01	<0.01	<0.01
Nitrate (NO3N)	mg/l		2.6	2.4	2.5	2.6
Dissolved Metals/ Major Cations						
Arsenic	mg/l	0.025	<0.005	<0.005	<0.005	<0.005
Cadmium	mg/l	0.0015	<0.0004	<0.0004	<0.0004	<0.0004
Calcium	mg/l		78.1	94.8	76.8	84.2
Chromium	mg/l	0.032	<0.001	<0.001	<0.001	<0.001
Copper	mg/l	0.03	<0.001	<0.001	<0.001	<0.001
Iron	mg/l		0.0042	0.0037	0.002	0.0043
Lead	mg/l	0.014	<0.005	<0.005	<0.005	<0.005
Magnesium	mg/l		14.8	14.3	15	16.3
Mercury	µg/l	0.07	<0.01	<0.01	<0.01	<0.01
Nickel	mg/l	0.034	<0.002	<0.002	<0.002	<0.002
Phosphorus	mg/l	<0.025	<0.05	<0.05	<0.05	<0.10
Potassium	mg/l		1.66	1.65	1.52	1.59
Sodium	mg/l			9.8	9.16	8.95
Zinc	mg/l	0.1	0.003	<0.002	<0.002	<0.002

22/07/2022
SW3 - Anner River Upstream
<5
<0.05
<5
2
<0.02
<0.03
<0.02
<0.01
2.6
<0.005
<0.0004
89.6
<0.001
0.001
0.0052
<0.005
15.6
<0.01
<0.002
<0.05
1.64
9.25
<0.002

Parameter	Unit	2009 & 2019 Inland SW EQS	13/05/2022	25/05/2022	02/06/2022	24/06/2022	08/07/2022	22/07/2022
			SW4 - Anner River Downstream	SW4 - Anner River Downstream	SW4 - Anner River Downstream	SW4 - Anner River Downstream	SW4 - Anner River Downstream	SW4 - Anner River Downstream
Suspended solids	mg/l		<5	<5	<5	<5	7	<5
Phosphorus (P)	mg/l	<0.025	0.017	0.014	0.042	0.024	0.057	
COD total (O2)	mg/l		<5	16	<5	<5	<5	6
BOD 5 day total with ATU (O2)	mg/l	<1.5	3	<1	2	2	<1	3
Ammonia (NH3-N)	mg/l	<0.065	<0.02	0.02	0.46	0.02	0.02	<0.02
Ammonia (NH4)	mg/l	<0.065	<0.03	0.03	0.59	<0.03	0.03	<0.03
Orthophosphate (P)	mg/l		<0.02	<0.02	0.19	<0.02	<0.02	<0.02
Nitrite (NO2N)	mg/l		<0.01	<0.01	0.12	0.01	0.01	<0.01
Nitrate (NO3N)	mg/l		2.6	2.4	2.5	2.7	2.2	2.5
Dissolved Metals/ Major Cations								
Arsenic	mg/l	0.025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cadmium	mg/l	0.0015	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Calcium	mg/l		80.7	78.5	85.9	89.6	95.9	93.9
Chromium	mg/l	0.032	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	mg/l	0.03	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	mg/l		0.0038	0.002	0.0026	0.0057	0.007	0.0071
Lead	mg/l	0.014	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Magnesium	mg/l		15	13.8	14.5	16.3	15.5	16
Mercury	µg/l	0.07	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nickel	mg/l	0.034	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Phosphorus	mg/l	<0.025	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Potassium	mg/l		1.7	1.59	3.6	1.6	1.84	1.6
Sodium	mg/l			8.65	12.4	8.83	10	9.48
Zinc	mg/l	0.1	<0.002	<0.002	<0.002	<0.002	0.0065	0.014

Appendix 7-F Groundwater Body Initial Characterisation

Clonmel GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water bodies	Associated terrestrial ecosystems	Area (km ²)
16 – Suir S. Tipperary Co Co Kilkenny Co Co Waterford Co Co	Suir, Multeen, Fidaghta, Ara, Arglo, Clashawley, Outeragh Stream, Ballintemple Stream, Anner, Moyle, Thonoge, Tar, Burncourt, Shanbally, Duag, Glengalla, Glenboy, Lingaun, Blackwater (Kilmacow), Glasha (Waterford), Clodiagh (Portlaw)	Tibberaghny Marshes, Fiddown Island, Lower River Suir (Coolfinn, Portlaw), Lough Cullin, Kilsheelin Lake, River Suir Below Carrick-on-Suir, Marlfield Lake, Cahir Park Woodland, Mitchelstown Caves, Lizzy Smyth’s Bog Rockwell College Lake	973
Topography	This groundwater body represents an area of low elevation surrounded on nearly all sides by higher mountains. To the east there is the peak of Slievenamon, to the southeast there are the Comeragh Mountains and to the southwest there are the Knockmealdown Mountains. In the east lie the Galty Mountains and Slievenamuck. To the northeast of Cashel lies Kill Hill and to the far northeast the southern extremities of the Slievefelim Mountains. The groundwater body itself is contained within the low-lying broad valley of the River Suir.		
Geology and Aquifers	Aquifer type(s)	Rk: Regionally Important Karstified Aquifer Some areas of aquitard have been included to avoid unjustifiable subdivision of groundwater bodies.	
	Main aquifer lithologies	KS - Kilsheelan Fm – Limestone, occasionally cherty. RR - Rathronan Fm - Pale-grey massive fine grained pure limestone SU – Suir Limestone Fm - Pale cross-bedded oolitic limestone WA – Waulsortian Limestones – Massive unbedded limestone BM – Ballyadams Fm - Fossiliferous pure limestone CL - Clogrenan Fm - Cherty muddy coarse grained limestone	
	Key structures.	The limestones in the southern area are extensively faulted and folded. Daly (2001) draws an analogy between the Dinantian limestones of the Carrick-on-Suir succession and the South Cork limestones. According to Wright (1979) such synclines may be treated for the most part as being one aquifer as the lithology appears to be of a lesser importance than the faulting.	
	Key properties	Transmissivity values for the Carrick-on-Suir Syncline limestones are given as 100-2000m ² /d. To the north it is more representative to consider a range of 1-500 m ² /d, assigned to the Ballyadams Limestone.	
	Thickness	Optimum well yields from the Dinantian limestones will be obtained from boreholes drilled into one of the major fault zones and penetrating at least 50-100 m of the aquifer.	
Overlying Strata	Lithologies	The overlying subsoil over the Carrick-on-Suir syncline is mostly limestone-derived till. To the north of this there is a greater proportion of Limestone Gravel deposits, typically as ‘islands’ in a ‘sea’ of till which contains some gravel.	
	Thickness	The subsoil thickness is low to the north (0-3m) but increases in thickness to the south to depths of over 10m.	
	% area aquifer near surface	There appears to be a large number of outcrops over all areas of the groundwater body.	
	Vulnerability	The area is mostly EXTREME to HIGH vulnerability. There are areas of LOW vulnerability in the southern syncline.	
Recharge	Main recharge mechanisms	Most recharge to the aquifers in the north takes place through the Quaternary deposits of limestone gravel as described above. The Ballyadams Formation also receives recharge from runoff from the Namurian hills through the swallow holes at its margins, as well as direct recharge through the subsoil. The synclinal limestones to the south will undoubtedly receive indirect recharge from the north and south from the Lower Palaeozoic mountains.	
	Est. recharge rates	[Recharge estimates will be added at a later date]	
Discharge	Springs and large known abstractions (m ³ /d)	Synone (280), Springmount (1820), Fawnagowan (3023), Mullenbawn (2290), Ballyporeen, Poulatar, Poulalee, Ardfinnan.	
	Main discharge mechanisms	Most of the groundwater moves relatively rapidly along short flow paths and discharges into the streams which cross the aquifers.	
	Hydrochemical Signature	Limestone dissolution is the principal hydrochemical process in the strata of this area. The bedrock strata of this aquifer are Calcareous . The waters are hard and have a high electrical conductivity.	
Groundwater Flow Paths	Most of the groundwater moves relatively rapidly along short flow paths and discharges into the streams which cross the aquifers. Hydraulic gradients in the Waulsortian Limestone are typically low (0.003 – 0.007). Flow in the karstified systems tends to be conduit flow along the fault zones. There are considerable variations in the hydrogeological conditions in this aquifer unit, owing to the wide range in elevation of the outcrop areas and its karstic nature.		

Groundwater and surface water interactions	The Ballyadams Formation is very susceptible to karstification, which is accentuated along structural features such as fold axes and faults and can result in very high permeability and throughput in relatively narrow zones. Some of the rivers have relatively high specific base flows.
Conceptual model	<p>This groundwater body is defined by the extent of the limestone aquifers in the Suir catchment.</p> <p>There are two distinct hydrogeological settings within this one groundwater body. To the south we find the limestones of the Carrick-on-Suir Syncline folded and faulted. The permeability of this aquifer and the way in which water flows through it are defined by the structural features as opposed to the lithology.</p> <p>To the north there is less structural deformation but the aquifer lithology of pure limestones allows for the development of secondary permeability features of a karstic nature.</p> <p>Conditions in the main limestone aquifers are predominantly unconfined, as the water table is generally less than 10m from the surface. The annual water table fluctuation is probably less than 5m in the better aquifers. There are considerable variations in the hydrogeological conditions in this aquifer unit to the north, owing to the wide range in elevation of the outcrop areas and its karstic nature. For example, in the upper part of the Ballyadams in the unsaturated zone there is a high degree of karstification, which will enhance the permeability of the formation. The middle part of the Ballyadams contains thin clay layers (wayboards), and outcrops on sloping ground, which limits the area exposed at surface. This will restrict groundwater circulation, and therefore the vertical development of permeability, to fairly small areas. Secondary permeability within the limestones has developed horizontally due to the presence of the clay wayboards. The extent of this horizontal development varies from 10-30m. The lower part of the formation is quite thick and a wide section of the aquifer is open to the surface and available for recharge. Solution processes are unhindered, and large groundwater circulation systems can develop, resulting in high permeability zones being formed.</p>
Attachments	
Instrumentation	<p>Stream gauge: 16053, 16006, 16104, 16047, 16116, 16106, 16049, 16120, 16032, 16048, 16121, 16034, 16022, 16050, 16021, 16010, 16027, 16012, 16109, 16016, 16031, 16009, 16114, 16023,</p> <p>Borehole Hydrograph: none</p> <p>EPA Representative Monitoring boreholes: Springmount Hse. (spring) (#45- S006394), Cordangan (21) & Tipperary WS (26) (R904341), Laffansbridge (borehole) (#30- S191466), Coolmore Stud (Guiry's) (bore) (#25- S229400), Coolmore Stud (Heneghan) (bore) (#84- S203383), Prospect Heneghans (Private) (#33- S203383), Coolmore Delahunty (Bore) (#37 - S218376), Prospect Stud (#32- S170355), Mullenbawn (Fethard RWSS)(spring) (#50- S244344), Kiltinin Castle (Spring)(#29- S231319), Kedrah (#06- S068278), Poulatar (spring) (#44 - S080140), Poulalee (spring)(#43- S080140), Crohan (spring) (#38- S108130), Kilsheelan A (#41- S290260),</p>
Information Sources	Daly, D., Keegan, M., & Wright, G., (2001) Co. Tipperary (South Riding) Groundwater Protection Scheme. Wright, G.R. (1979) Groundwater in the South Munster Synclines. In <i>Hydrogeology in Ireland</i> , Irish National Committee of I.H.P
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

Appendix 7-G Rating of Existing Environment Significance/ Sensitivity (based on IGI, 2013 guidelines)

WATER: HYDROLOGY & HYDROGEOLOGY 7

Importance	Criteria	Typical Example
High	Attribute has a high quality or value on an international scale	Groundwater/ Surface Water supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple wellfields. Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – e.g. NHA status. Regionally important potable water source supplying >2,500 homes Inner source protection area for regionally important water source. Drinking water supply from river. Amenity use of waterbody
	Attribute has a high quality or value on a local scale	Regionally Important Aquifer. Groundwater provides large proportion of baseflow to local rivers. Locally important potable water source supplying >1000 homes. Outer source protection area for regionally important water source. Inner source protection area for locally important water source.
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes. Outer source protection area for locally important water source. No specific recreational use of waterbody
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer. Potable water source supplying <50 homes. No water supply from surface water, no abstraction designation for watercourse No amenity value of waterbody
Negligible	Attribute has negligible quality or value on a local site scale	No groundwater supply from a bedrock aquifer in the vicinity of site. Surface water not used for any specific purpose.

Appendix 7-H Descriptions of Effects, after Table 3.4 (EPA, 2022)

WATER: HYDROLOGY & HYDROGEOLOGY 7

Impact Characteristic	Term	Description
Quality of Effects	Positive Effects	A change which improves the quality of the environment
	Neutral Effects	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
	Negative / Adverse Effects	A change which reduces the quality of the environment
Describing the Significance of Effects	Imperceptible	An effect capable of measurement but without significant consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound Effects	An effect which obliterates sensitive characteristics
Describing the Extent and Context of Effects	Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Probability of Effects	Likely Effects	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
	Unlikely Effects	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Duration	Momentary Effects	Effects lasting from seconds to minutes

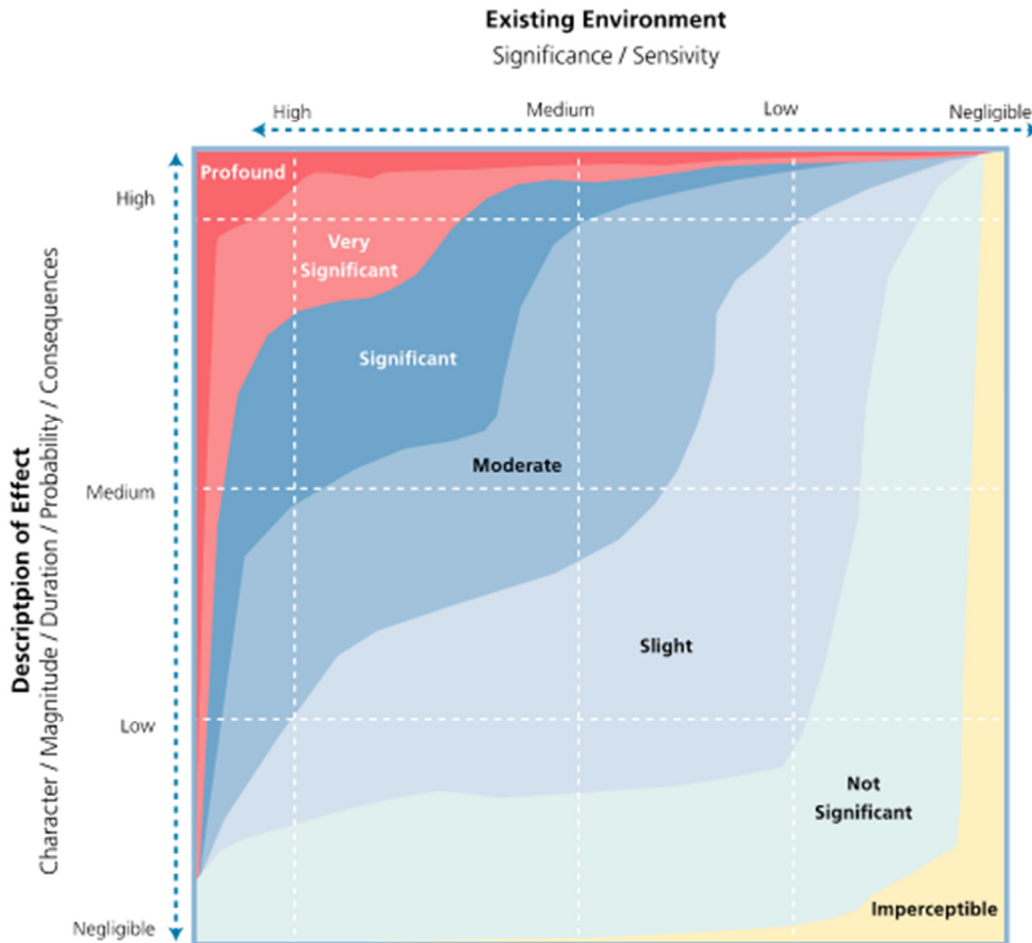
WATER: HYDROLOGY & HYDROGEOLOGY 7

Impact Characteristic	Term	Description
and Frequency of Effects	Brief Effects	Effects lasting less than a day
	Temporary Effects	Effects lasting less than a year
	Short-term Effects	Effects lasting one to seven years
	Medium-term Effects	Effects lasting seven to fifteen years
	Long-term Effects	Effects lasting fifteen to sixty years
	Permanent Effects	Effects lasting over sixty years
	Reversible Effects	Effects that can be undone, for example through remediation or restoration
	Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually.
Describing the Types of Effects	Indirect / Secondary Effects	Likely, significant effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative Effects	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	Do-Nothing Effects	The environment as it would be in the future should the subject project not be carried out.
	Worst Case Effects	The effects arising from a project in the case where mitigation measures substantially fail.
	Indeterminable Effects	When the full consequences of a change in the environment cannot be described.
	Irreversible Effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
	Residual Effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
	Synergistic Effects	Where the resultant effect is of greater significance than the sum of its constituents, (e.g. combination of Sox and Nox to produce smog).

Appendix 7-I Classification of the Significance of Impacts, after Figure 3.4 (EPA, 2022)

Determining Significance

Figure 3.4 shows how comparing the character of the predicted effect to the sensitivity of the receiving environment can determine the significance of the effect.



There are seven generalised degrees of effect significance that are commonly used in EIA. Imperceptible, Not Significant, Slight, Moderate, Significant, Very Significant and Profound. Generalised definitions of each of these are provided in Table 3.4. When more specific definitions exist within a specialised factor or topic, e.g. biodiversity, these should be used in preference to these generalised definitions. (ref. Advice Notes⁶⁸.)

Figure 3.4 Chart Showing Typical Classifications of the Significance of Effects⁶⁹