



THE PED SYSTEM

THE FLEXIBLE SOLUTION FOR
EFFICIENT DOMESTIC WASTEWATER
TREATMENT AND DISPERSAL

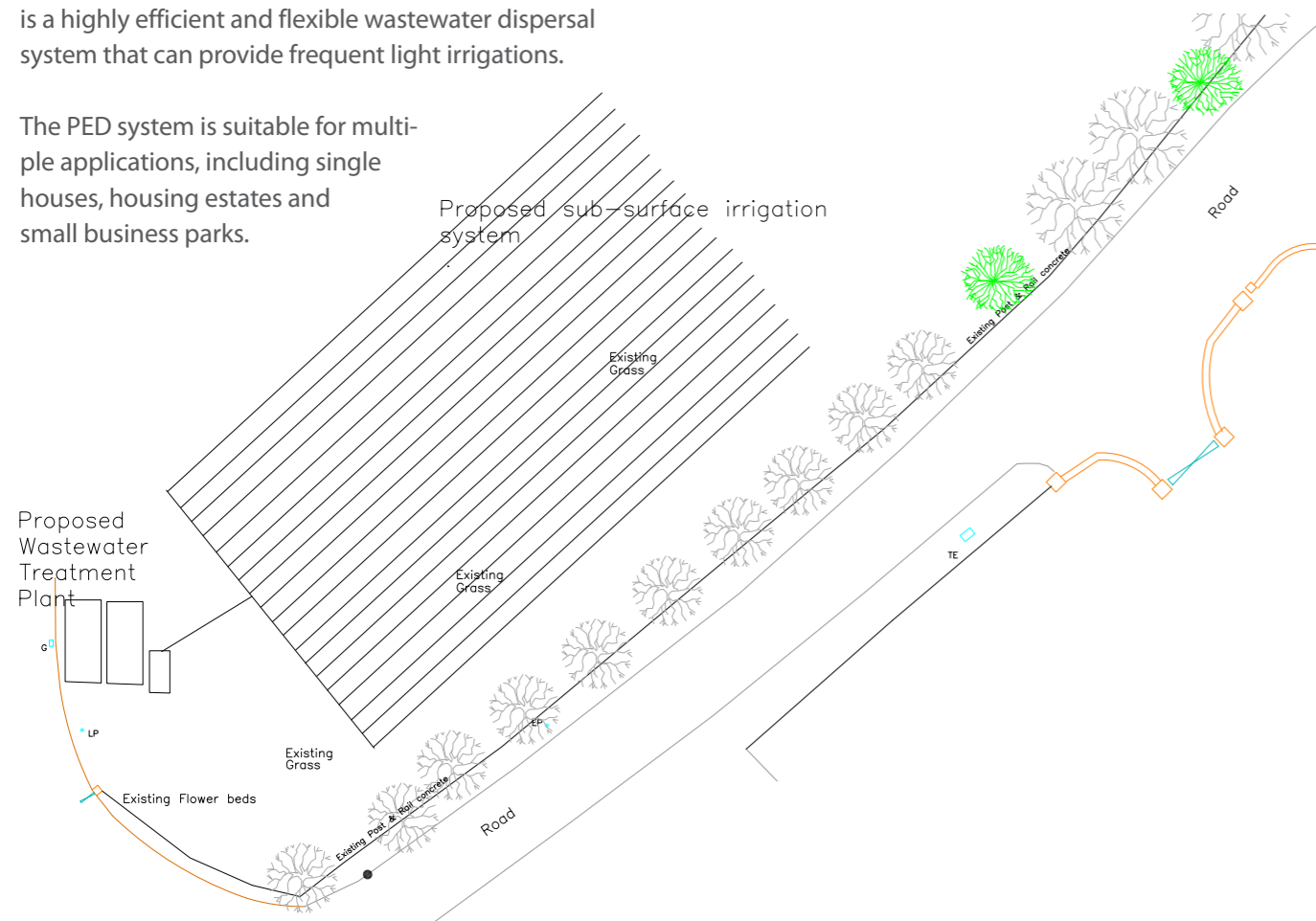
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THE FLEXIBLE SOLUTION FOR EFFICIENT DOMESTIC WASTEWATER TREATMENT AND DISPERSAL

A PROPERLY MAINTAINED WASTEWATER TREATMENT SYSTEM (WTS) CAN TREAT WASTEWATER TO A SAFE STANDARD FROM AN ENVIRONMENTAL AND PUBLIC HEALTH VIEWPOINT. HOWEVER, THESE SYSTEMS CAN POSE A SIGNIFICANT PUBLIC AND ENVIRONMENTAL HEALTH RISK IF THEY ARE NOT DESIGNED, INSTALLED, NOR MAINTAINED APPROPRIATELY.

The PED (Precision Effluent Dispersal) system is a low-pressure, high efficiency irrigation system that uses buried drip tubes to disperse treated effluent. Sub-surface drip irrigation technologies have been a part of irrigated agriculture since the 1960s; with the technology advancing rapidly in the last three decades. Using the latest technologies, the PED system is a highly efficient and flexible wastewater dispersal system that can provide frequent light irrigations.

The PED system is suitable for multiple applications, including single houses, housing estates and small business parks.



WHY CHOOSE THE PED SYSTEM AS YOUR WASTEWATER TREATMENT SOLUTION?

The PED system uses sub-surface drip irrigation, where domestic wastewater is dispersed from flow emitters evenly spaced along a flexible low density polyethylene dripline. The dripline is buried between 200-500mm below the ground and effluent is distributed slowly and uniformly over a large surface area.

Since the water is applied below the soil surface, the effect of surface irrigation characteristics, such as crusting, saturated conditions of ponding water, and potential surface run off (including soil erosion), are eliminated. With an appropriately sized and well-maintained PED system, water application is highly uniform and efficient. Wetting occurs around the tube and water typically moves out in all directions.

The PED system is fully licenced by the EPA in Ireland. We have installed the largest system of its kind in Europe.

FURTHER ADVANTAGES OF THIS SYSTEM INCLUDE:

- A high degree of control over water application with the potential for high uniformity of application
- Reduced evaporation
- The amount of water can be fine-tuned, avoiding water loss caused by run off or evaporation
- Frequent irrigation allows for optimum soil moisture content in the root zone
- Impressive performance in windy and arid locations
- If pre-treated wastewater is used for irrigation, the risk of direct contact with crops and labourers is reduced



“The PED system is an innovative and sustainable system that really puts the customer ahead of the game.”





PED SYSTEM

DESIGN AND CONSTRUCTION OF THE SUB-SURFACE EFFLUENT DISPERSAL SYSTEM

- The installed pump must be adequately sized to service the total irrigation area. Most irrigation products will require at least a 10m head pressure to ensure the emitters will open. Head pressure directly relates to the power of the pump in the septic tank. Therefore, a 10m head will pump wastewater 10m high.
- A filter must be installed on the pump discharge line to protect pipework from any solids found in the wastewater which could potentially clog emitters. The filter will be 120 microns in size and must be installed in a box or above ground before the sub-surface irrigation area begins.
- All distribution pipes (from the outlet of the septic tank system to the sub-surface irrigation field) must be buried to a minimum depth of 200mm from the natural ground surface. All irrigation pipes must be buried to a minimum depth of 120mm from the surface of the soil.
- The PED system must be installed to ensure the wastewater is applied and dispersed uniformly over the entire area. The dripline must be installed in a grid format with one end intersecting a header manifold, and the other intersecting a footer manifold. (See figure 1 and 2 on page 6)
- All drip line must be spaced a minimum of 0.4 metres apart and installed along the contours of the land.
- We will advise you on the most appropriate emitter flow rates which should be designed taking into consideration irrigation area design, soil permeability and water uptake of the receiving plants. Typically, emitters are usually spaced at 400mm apart to ensure uniform pressure throughout the system.
- Where more than one same sized irrigation field/area is constructed, a suitable automatic rotation system should be installed (e.g. control valve).
- Vacuum breakers/air release valves with suitable protection will be provided to prevent ingress of soil into the irrigation lines under the effects of negative pipework pressure. Vacuum breakers/air release valves must be installed at the highest point in all sub-surface irrigation fields.
- Scour (flushing) valves in surface boxes will be provided to allow for periodic cleaning of the system. Where flush water cannot be returned into the septic tank all flush water from each separate sub-surface irrigation field must be drained back to the treatment system.
- The sub-surface irrigation area must be adequately planted out with lawn or suitable water tolerant plants. The lawn or plants must be maintained over the life of the system.

FIG. 1 PED SYSTEM SUB-SURFACE IRRIGATION LAYOUT

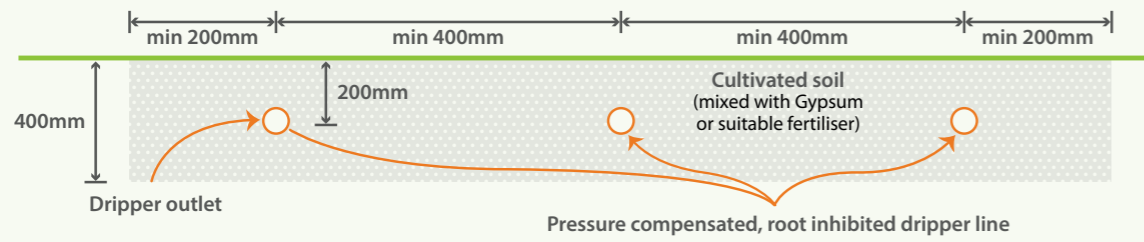
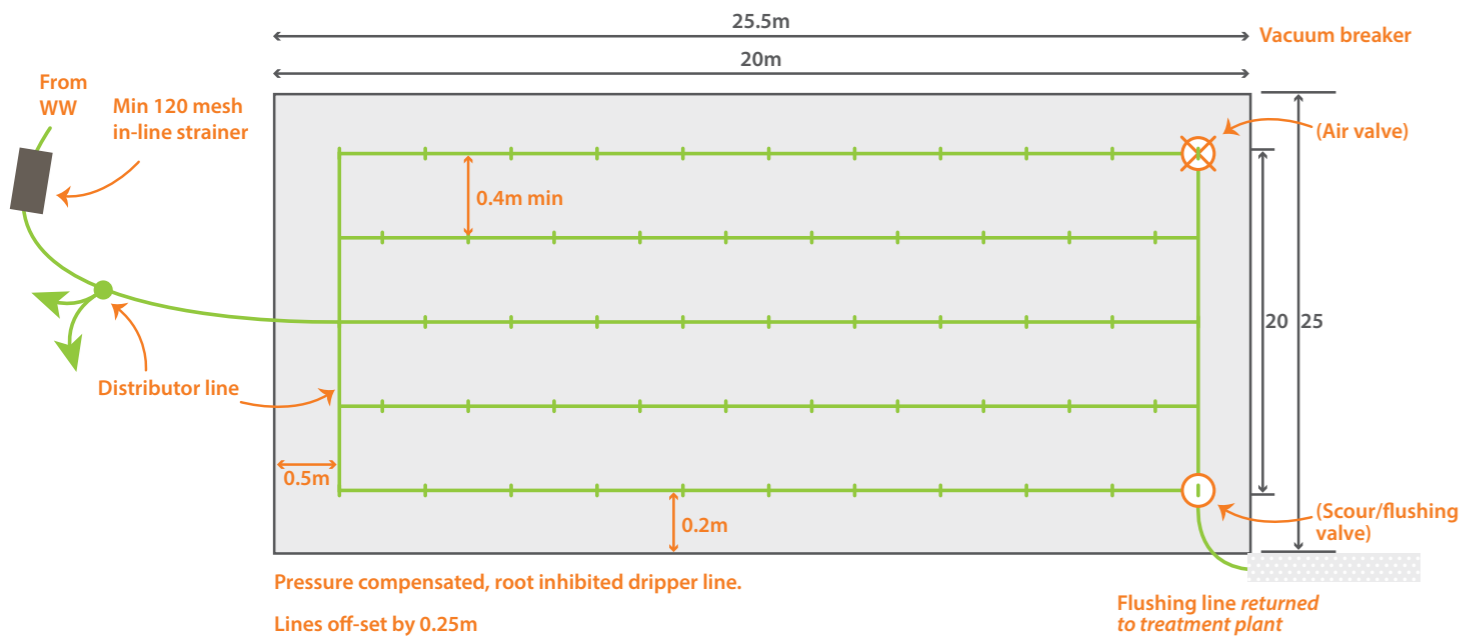


FIG. 2 PED SYSTEM LAYOUT



DETERMINING IRRIGATION AREA SIZING

To assist in the design of the sub-surface irrigation area, the following table recommends minimum wastewater dispersal field sizing. In the absence of additional information and recommendations provided in the form of a Land Capability Assessment and specific soil analysis, the figures in the tables are the minimum area required based on permeability rates for the poorest quality soils in the area to ensure a conservative approach.

Number of bedrooms	Minimum dispersal area required (m ²)
6 PE system	1000
8 PE system	1200
10 PE system	1400
12 PE system	1600

NOTE: These are minimum dispersal area requirements in the absence of soil analysis information, the dispersal area may be required to be larger depending on the water usage of a dwelling or other structure.



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Marijke Ernest
Sustainability Coordinator



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