



## Explanatory Letter

### Code of Practice for Domestic Waste Water Treatment Systems (Population Equivalent $\leq 10$ )

Headquarters, PO Box 3000  
Johnstown Castle Estate  
County Wexford, Ireland  
Y35 W821

Ceanncheathrú, Bosca Poist 3000  
Eastát Chaisleán Bhaile Sheáin  
Contae Loch Garman, Éire  
Y35 W821

T: +353 539160600  
F: +353 539160699  
E: [info@epa.ie](mailto:info@epa.ie)  
W: [www.epa.ie](http://www.epa.ie)

LoCall: 1890 33 55 99

24<sup>th</sup> March 2021

The Environmental Protection Agency (EPA), by virtue of Section 76 of the Environmental Protection Agency Act, 1992 (as amended), following consultation with the Minister for the Environment, Climate and Communications and Minister for Housing, Local Government and Heritage, and a public consultation process from 11<sup>th</sup> December 2018 to 26<sup>th</sup> March 2019, has issued a Code of Practice entitled *Code of Practice for Domestic Waste Water Treatment Systems (Population Equivalent  $\leq 10$ )*.

The Code of Practice establishes an overall framework of best practice in relation to the development of domestic waste water treatment systems, in unsewered areas, for protection of our environment and specifically water quality and human health. The 2021 Code of Practice replaces the 2009 Code of Practice entitled *Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. 10)* from when it comes into effect on **7<sup>th</sup> June 2021**. Compliance with the Code of Practice is required under the Building and Planning Control systems.

#### Reason for a new Code of Practice

This new Code of Practice was developed to incorporate the results of:

- EPA Research Report 161 *Assessment of disposal options for treated wastewater from single houses in low-permeability soils.*
- EPA Research Report 253 *Desludging Rates and Mechanisms for Domestic Wastewater Treatment System Sludges in Ireland.*

The opportunity was also taken to make updates based on experience since the original Code of Practice was published in 2009. This was informed by an expert Steering Committee and public consultation process. The main changes are explained in the Appendix to this letter.

#### Review process

The EPA were assisted by Dr. Robbie Meehan and Professor Laurence Gill who are experts on domestic waste water treatment systems and site assessment.

The preparation of the new Code of Practice was overseen by a Steering Committee, chaired by the EPA, with representatives from: Department of Housing, Local Government and Heritage; City and County Management Association; Trinity College Dublin; Irish Onsite Wastewater Association and Irish Water Treatment Association.

The new Code of Practice was issued for public consultation from 11 December 2018 to 26 March 2019. The EPA received 37 submissions containing approximately 500 individual comments. These were all considered and the Code of Practice adapted where appropriate. A separate document is being issued setting out how the comments were addressed.

### **Transition between the 2009 Code of Practice and 2021 Code of Practice**

The 2021 *Code of Practice for Domestic Waste Water Treatment Systems (Population Equivalent  $\leq 10$ )* applies to site assessments and subsequent installations carried out on or after **7<sup>th</sup> June 2021**.

The 2009 *Code of Practice Wastewater Treatment and Disposal Systems Serving Single Houses (p.e.  $\leq 10$ )* may continue to be used for site assessments and subsequent installations commenced before **7<sup>th</sup> June 2021** or where planning permission has been applied for before that date.

### **Availability**

The 2021 Code of Practice is available free of charge on the EPA website at: <http://www.epa.ie/water/wastewater/guidance/cop/>.

Hardcopies can be obtained by contacting the EPA Publications Office, PO Box 3000, Johnstown Castle Estate, Wexford, 053-9160600, [publications@epa.ie](mailto:publications@epa.ie).

### **Further information**

The EPA will arrange presentations on the Code of Practice during the transition period before it comes into effect. These will be web-based events. Please email [D.Inspections@epa.ie](mailto:D.Inspections@epa.ie) if you wish to be notified of these events.

Yours sincerely,



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Dr Tom Ryan,  
Director,  
Office of Environmental Enforcement,  
Environmental Protection Agency.

## Appendix: Changes between the 2009 Code of Practice and 2021 Code of Practice

The 2021 Code of Practice was developed to incorporate the results of:

- EPA Research Report 161 *Assessment of disposal options for treated wastewater from single houses in low-permeability soils.*
- EPA Research Report 253 *Desludging Rates and Mechanisms for Domestic Wastewater Treatment System Sludges in Ireland.*

The opportunity was also taken to make updates based on experience since the original Code of Practice was published in 2009. This was informed by an expert Steering Committee and public consultation process.

The most significant changes are:

- **Additional options in low permeability soils:** The maximum allowable percolation value for domestic waste water treatment systems discharging effluent to ground was 75 (at the point of infiltration) under the 2009 Code. Low permeability soils not meeting this limit were unsuitable. The 2021 Code provides two new options for low permeability soils:
  - **Drip dispersal:** These are pressurised systems that release effluent through a network of pipes just beneath the surface. They can be used in low permeability soils up to a percolation value of 120. They are specialised systems that require expert design and installation and increased maintenance.
  - **Low-pressure pipe distribution:** These are pressurised systems that release waste water through pipes laid in shallow trenches beneath the surface. They can be used in low permeability soils up to a percolation value of 90.
- **Willow bed evapotranspiration systems:** These can be used for secondary treatment of effluent. They are large, sealed basins planted with willow. Monitoring of full-scale systems found that full evapotranspiration was not achieved so discharge of final effluent to ground will require an offset tertiary soil polishing filter.
- **De-sludging calculator:** The 2009 Code recommended septic tanks should be de-sludged (i.e. pumped out by an authorised contractor) annually. The 2021 Code provides a table for working out the de-sludging frequency based on the number of people in the house and the size of the tank, e.g. every four years for a three-person house with a 3.5 m<sup>3</sup> septic tank.

There have been numerous changes to address other technical matters, bring references to legislation and standards up to date and improve layout and readability. It is not possible to list all those changes. However, the following table highlights as many as possible by chapter and is intended as a guide for professionals in particular. The 2021 Code should be referred to in full for complete details.

Section	Change
Title	The document title refers to 'Domestic Waste Water Treatment Systems' as this term was brought in and legally defined in the Water Services Act when it was amended in 2012.
Chapter 1	Section 1.3 consolidates references to circumstances where variances to the Code may be permissible. There have been some amendments to the text in particular to expand on consideration of new and innovative products and technologies.
Chapter 2	<p>This covers the policy and legal background.</p> <p>Section 2.5 covers the amendment of the Water Services Act and associated Regulations in 2012-13 which brought in requirements for how homeowners operate domestic waste water treatment systems and the associated system for registration, inspection and enforcement. These are elaborated on in Chapter 12.</p> <p>[In the 2009 Code, Chapter 2 is the references section. The references section is towards the back of the 2021 Code.]</p>
Chapter 3	<p>This covers waste water characteristics and loading.</p> <p>Section 1.3 covers antimicrobial resistance.</p> <p>Section 3.3 sets out how the design waste water load should be established based on the maximum population that can inhabit the premises (PE) based in turn on the number of bedrooms.</p> <p>Section 3.4 covers minimising waste water including requirements for grey water recovery systems.</p> <p>[In the 2009 Code, Chapter 3 is the definitions section. Definitions are provided in the Glossary towards the back of the 2021 Code.]</p>
Chapter 4	<p>This refers to the latest standards under S.R. 66 and the EN12566 series. The text has been shortened. The standards should be referred to for full details of requirements.</p> <p>[Chapter 4 in the 2009 Code covered waste water characteristics, this is covered in Chapter 3 of the 2021 Code.]</p>
Chapter 5	<p>This covers site characterisation methodology.</p> <p>The percolation test terminology has changed from T-test and P-test to subsurface and surface test to reflect that it is only the position of the test that differs, the methodology is the same. This is a terminology change only, it does not affect how the tests are completed.</p>

	<p>The text has been changed to refer to the low-pressure pipe distribution and drip dispersal systems introduced under the 2021 Code.</p> <p>[The percolation test methodology has also been amended to allow it to extent to a percolation value of 120 as is permissible using drip dispersal. This is reflected in the Appendix D where the percolation test is set out in more detail.]</p> <p>[Chapter 5 in the 2009 Code covered standards and treatment system performance, this is covered in Chapter 4 of the 2021 Code.]</p>
Chapter 6	<p>This is a new chapter which covers determining site suitability and selecting the appropriate domestic waste water treatment system. It is the most significant layout change in the 2021 Code and was completed to consolidate all the site characterisation criteria (slope, separation distances, unsaturated soil depth, percolation test results) in one chapter.</p> <p>Section 6.3 consolidates the minimum separation distances. A separation distance of 25m is specified for free water surface constructed wetlands to neighbouring dwelling houses.</p> <p>Section 6.4 consolidates the minimum unsaturated soil and/or subsoil depth requirements. These are the same as the 2009 Code except provision is made for lesser depths for drip dispersal systems in low permeability soils and infiltration areas following tertiary systems where certain levels of <i>E.coli</i> treatment is achieved. Infiltration areas for other tertiary systems require the same depths of unsaturated soil/subsoil as polishing filters following secondary systems.</p> <p>Section 6.5 covers the interpretation of percolation test results. Provision has been made for low-pressure pipe distribution and drip dispersal systems. These requirements are the same as the 2009 Code otherwise although the text has been edited to improve readability.</p> <p>Section 6.6 provides guidance on choosing a domestic waste water treatment system in the event the site is suitable.</p> <p>Section 6.4 provides that site improvement works may potentially be suitable if 0.5m of unsaturated soil and/or subsoil is unavailable. The site must be proven as able to assimilate the waste water loadings from the relevant dwelling in such cases.</p> <p>Section 6.4 and 6.5 (refer also Figure 1.1) provide that site improvement works may be possible in certain limited circumstances. Site improvements are covered further in Section 6.7. Pre-</p>

	<p>consultation with the Local Authority is recommended to determine acceptability.</p> <p>[Chapter 6 in the 2009 Code covered site characterisation, this is covered in Chapters 5 and 6 of the 2021 Code]</p>
Chapter 7	<p>Section 7.1: S.R. 66 requires that the septic tank nominal and usable capacities are declared. The declared <i>usable capacity</i> of the septic tank being installed on site must be no less than the calculated <i>design capacity</i>. The text has been amended and table which referred to nominal capacity has been removed to clarify.</p> <p>Section 7.2.3, Table 7.3: specifies 12–32 mm washed gravel or broken stone aggregate.</p> <p>Section 7.2.4 and Figure 7.4: The text and figure clarify that the top of the trench gravel should not extend above ground level. Other criteria such depth to bedrock/watertable, maximum slope and percolation test range are covered in Chapter 6 so are not repeated in that section.</p>
Chapter 8	<p>The title has been changed to reflect the content and difference between this and Chapter 9. This has no technical effect.</p> <p>Section 8.1.1: Soil filter systems are referred to as intermittent soil filters to distinguish them from tertiary soil polishing filters (Section 10.1).</p> <p>Section 8.1.1, Table 8.1: Consolidates relevant soil depth requirements; specifies 12–32 mm washed gravel or broken stone for the protection layer; the minimum diameter for infiltration laterals for pumped systems is 25mm; the spacings between orifices range from 0.3 to 1m; specification is provided for infiltration laterals for gravity distribution; specifies 12-32mm for washed gravel for the distribution layer; specifies 12-32mm for washed durable gravel or stone if there is an underdrain collection layer; zoning into at least two zones is recommended.</p> <p>Section 8.1.2: Sand filter systems are referred to as intermittent sand filters to distinguish them from tertiary sand polishing filters (Section 10.2.1).</p> <p>Section 8.1.2, Table 8.2: Specifies minimum sand thickness for stratified and monograde sand filters; specifies hydraulic loading for the sand filter with underlying of off-set polishing filter loading to be based on the relevant part of Section 10; specifies 12–32 mm washed gravel or broken stone for the protection layer; the minimum diameter for infiltration laterals is reduced to 25mm; the spacings between orifices range from 0.3 to 1m; specifies 12-32mm for washed gravel</p>

	<p>or broken stone for the distribution layer; specifies 12-32mm for washed gravel or stone if there is an underdrain collection layer.</p> <p>Section 8.1.2, Figure 8.4: Infiltration lateral is shown at 25mm diameter.</p> <p>[Section 8.4 of the 2009 Code covered mounded intermittent filter systems. Section 6.4 of the 2021 Code provides for raised infiltration/treatment areas in certain circumstances and these are covered in 8.1.1, 8.1.2 and 11.5]</p> <p>Section 8.1.3: The areas required for vertical flow reed beds have been amended to 4 m<sup>2</sup> per population equivalent.</p> <p>Section 8.1.7: Access to free water surface constructed wetlands is required to be controlled by fencing to the given specification. They are required to be located as far from dwellings as possible (see also table 6.2).</p> <p>Section 8.2.1 refers to Section 10 for details of discharge options from peat media filters.</p> <p>Section 8.2.2 covers coconut husk media filters.</p> <p>Section 8.3 covers willow bed evapotranspiration systems.</p>
Chapter 9	<p>The title has been changed to reflect the content and difference between this and Chapter 8. This has no technical effect.</p> <p>[Section 9.6 of the 2009 Code covered media filter systems. These are covered in Section 8.2 of the 2021 Code]</p>
Chapter 10	<p>The title has been changed. This has no technical effect.</p> <p>The chapter has been divided into:</p> <ul style="list-style-type: none"> <li>• tertiary soil polishing filters (10.1) for treatment and disposal of secondary effluent to ground;</li> <li>• tertiary treatment systems (10.2) where there is an additional treatment module (after the secondary treatment system) which then discharges to an infiltration area.</li> </ul> <p>Section 10.1 introduces low-pressure pipe distribution and drip dispersal systems.</p> <p>Section 10.1 requires that the minimum depth between the base of the distribution gravel and the bedrock and the water table for infiltration areas following tertiary systems is as specified in Table 6.3.</p>

	<p>Table 10.1 specifies the infiltration/treatment area and trench length for the four soil polishing filter options and infiltration areas following tertiary systems. This involves a number of changes:</p> <ul style="list-style-type: none"> <li>- The table is on a PE basis rather than 5 PE in the 2009 Code.</li> <li>- Area or trench length is specified. Loading is not provided but can be calculated.</li> <li>- The trench length required for option 3 in the 41-50 PV range has been amended.</li> <li>- Low-pressure pipe distribution and drip dispersal systems are covered with two new percolation bands as necessary.</li> <li>- Tertiary infiltration areas are covered. These were not specified in the 2009 Code. Guidance was provided in 2012. The specification in the 2021 Code are half of a soil polishing filter (option 1 and 2).</li> </ul> <p>Section 10.2.2: The areas required for vertical flow reed beds have been amended to 2 m<sup>2</sup> per population equivalent.</p> <p>[Section 10.3 of the 2009 Code covered packaged tertiary treatment systems. These are covered in Section 10.2 of the 2021 Code]</p>
Chapter 11	<p>There have been some changes to the layout and references to legislation and standards have been brought up to date.</p> <p>Section 11.3: The maximum number of outlet pipes from any distribution device is six.</p> <p>Section 11.5 covers low-pressure pipe distribution and drip dispersal systems.</p>
Chapter 12	<p>Section 12.1. sets out the legal requirements that came into effect under the Water Services Act and Regulations in 2012/13. Section 12.2 provides supporting guidance.</p> <p>Section 12.2.2 provides new guidance on determining septic tank desludging frequency based on tank size and number of house occupants.</p> <p>Section 12.2.3 refers to the requirement on the owner to keep evidence/receipt of desludging for five years.</p>
Appendices	<p>There have been several changes to the appendices:</p> <ul style="list-style-type: none"> <li>- Appendix A in the 2021 Code is the Site Characterisation Form which was in Annex C of the 2009 Code.</li> <li>- Appendix B of the 2021 Code covers Plants Indicative of Drainage which was in Annex C of the 2009 Code.</li> <li>- Appendix C of the 2021 Code is the Subsoil Classification Flow Chart which was in Annex C of the 2009 Code.</li> </ul>

	<ul style="list-style-type: none"> <li>- Appendix D in the 2021 Code is the percolation test procedure (updated to provide for testing up to a percolation value of 120 to accommodate drip dispersal in particular) which was in Annex C of the 2009 Code.</li> <li>- Appendix E of the 2021 Code is the Groundwater Protection Responses document. This is for information as the key requirements have been integrated into the main document in particular Sections 6.3 and 6.4 of the 2021 Code. This was Annex B of the 2009 Code.</li> <li>- Annex A of the 2009 Code covered policy background. This is covered in Chapter 2 of the 2021 Code.</li> <li>- Annex D of the 2009 Code refers to discharges to waters under licence. This is referred to in Section 6.5 of the 2021 Code. The requirements are site specific and subject to the requirements of the Local Authority under the licence application and determination process. Standard guidance is available from Local Authorities.</li> <li>- Annex E of the 2009 Code gives an overview of the main categories of waste water treatment systems. Some elements of this have been incorporated into the main body of the 2021 Code.</li> <li>- Annex F Site Improvement Works of the 2009 Code is covered in Section 6.7 of the 2021 Code.</li> <li>- Annex G Operation and Maintenance of the 2009 Code is covered by Chapter 12 of the 2021 Code.</li> </ul>
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**END**