



## **CODE OF PRACTICE**

# **WASTEWATER TREATMENT AND DISPOSAL SYSTEMS SERVING SINGLE HOUSES**

**(p.e. ≤ 10)**

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In order to examine the position in relation to on-site systems (in Ireland and internationally) and to produce draft guidelines for their future use, a research project in relation to on-site systems was part-financed by the European Union through the European Regional Development Fund as part of the Environmental Monitoring, R&D sub-programme of the Operational Programme for Environmental Services, 1994–1999. The sub-programme was administered on behalf of the Department of the Environment and Local Government by the Environmental Protection Agency, which has the statutory function of co-ordinating and promoting environmental research. The study *Small Scale Wastewater Treatment Systems* was co-ordinated by the Department of Civil Engineering, NUIG, from 1995 to 1997.

In late 2000, as part of the Environmental Research, Technological Development and Innovation (ERTDI) programme 2000–2006, the EPA approved a further research project to be undertaken by the Department of Civil, Structural and Environmental Engineering at TCD. The Irish Government under the National Development Plan 2000–2006 financed the ERTDI programme. This later project was entitled *Establishment of the Hydraulic Performance and Efficiencies of Different Subsoils and the Effectiveness of Stratified Sand Filters* (2000-MS-15-M1). This project was later extended to examine the efficiencies of subsoils for on-site wastewater treatment and disposal with respect to endocrine disrupting chemicals. A further research project by TCD on *The Effective Distribution of On-Site Wastewater Effluent into Percolation Areas via Distribution Boxes and Treatment by Reed Beds Compared to Attenuation of Pollutants in Sandy Subsoils* (2005-MS-15) has recently been completed.

The NUIG and TCD researchers are internationally recognised for their work on wastewater treatment systems and have published in peer-reviewed international journals and presented their findings at international conferences. The findings of the research were used to inform the requirements of the CoP.

The Agency also wishes to acknowledge the contribution of the various sections of the Department of the Environment, Heritage and Local Government (DoEHLG), National Standards Authority of Ireland (NSAI), Irish Agrément Board (IAB), An Bord Pleanála, Domestic Effluent Trade Association (DETA), Geological Survey of Ireland (GSI), the County and City Managers Association, Local Authority personnel, River Basin District Project co-ordinators, Fisheries Boards, Irish On-Site Wastewater Association (IOWA) as well as the tutors and participants of the FÁS Site Characterisation courses and comments by practitioners in the field and the numerous individual contributors during the consultation period 20th July to 10th September 2007.

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## Abbreviations

Agency	Environmental Protection Agency
BAF	Biological aerated filters
BOD <sub>5</sub>	Biochemical oxygen demand (5 day)
BS	British Standard
C	Capacity
°C	Degrees Celsius
CEN	Comité Européen de Normalisation (European Committee for Standardisation)
CEN/TR	Technical report prepared by CEN
CEN/TS	Technical specification prepared by CEN
COD	Chemical oxygen demand
CoP	Code of Practice
C <sub>u</sub>	Uniformity co-efficient
DoEHLG	Department of the Environment, Heritage and Local Government
DO	Dissolved oxygen
DWF	Dry weather flow
EN	European Standard (note, <i>prEN</i> indicates draft standard)
EPA	Environmental Protection Agency
FETAC	Further Education and Training Awards Council
FOG	Fats, oils and grease
FWS	Free-water surface
g	Gram
GSI	Geological Survey of Ireland
GWPR	Groundwater protection response
GWPS	Groundwater protection scheme
h	Hour
K	Hydraulic conductivity
kg	Kilogram
I.S.	Irish Standard
ISO	International Organisation for Standardisation
l	Litre
lcd	Litres <i>per capita per day</i>
m	Metre
m <sup>3</sup>	Cubic metres
mg	Milligram
mm	Millimetre
MPN	Most probable number
m/s	Metres per second
NHA	National Heritage Area
NSAI	National Standards Authority of Ireland
NUI	National University of Ireland
p.e.	Population equivalent
PFP	Preferential flow path
PSD	Particle size distribution

PT	Population total (Population equivalent)
RBC	Rotating biological contactors
s	Second
SAC	Special Area of Conservation
SBR	Sequencing batch reactor
SFS	Subsurface flow system
S.I.	Statutory Instrument
SPA	Special Protection Area
SS	Suspended solids
T/P	The T-value (expressed as min/25 mm) is the time taken for the water level to drop a specified distance in a percolation test hole. For shallow subsoils the test hole requirements are different and hence the test results are called P-values. For further advice see Annex C.
TSS	Total suspended solids
TWL	Top water level
WT	Water table



# Preface

The Agency is authorised under Section 76 of the Environmental Protection Agency (EPA) Act, 1992 (as amended), to prepare and publish codes of practice for the purpose of providing guidance with respect to compliance with any enactment or otherwise, for the purposes of environmental protection. This Code of Practice (CoP) replaces previous guidance issued by the Agency in 2000 and incorporates requirements of the new European standards from the 12566 series, EPA research findings and feedback on previous EPA guidance and research reports. The document is published as a CoP under Section 76 of the Environmental Protection Agency Act, 1992 (as amended), and shall be received in evidence without further proof.

This CoP will replace the guidance document Standard Recommendation I.S. SR 6:1991 issued by the National Standards Authority of Ireland when the Department of the Environment, Heritage and Local Government incorporates the CoP in the Building Regulations.

When on-site systems fail to operate satisfactorily they threaten public health and water quality. When domestic wastewater is not absorbed by the soil it can form stagnant pools on the ground surface. In such failures, humans can come in contact with the wastewater and be exposed to pathogens; also foul odours can be generated. In addition, inadequately treated wastewater through poor siting, design and/or construction may lead to contamination of our groundwaters and surface waters, which in many areas are also used as drinking water supplies. It is essential that this effluent is properly treated and disposed of.

The key messages of the CoP are:

- The importance of proper site assessment, taking account of not only local conditions specific to the proposed site but also of wider experience in the area, patterns of

development, provisions of the development plan and other policies, etc.

- The need for design of on-site wastewater disposal systems specific to the local conditions
- The need for follow-through by the builder/homeowner/supervisory authority – i.e. installation/commissioning/maintenance as per design and attendant recommendations/conditions – otherwise breaches of various legislative codes are occurring.

The purpose of this CoP is to provide guidance on the provision of wastewater treatment and disposal systems for new single houses with a population equivalent (p.e.) of less than or equal to 10 and contains the following:

- An assessment methodology to determine site suitability for on-site wastewater treatment systems and to identify minimum environmental protection requirements
- A methodology to select suitable wastewater treatment systems for sites in un-sewered rural areas
- Information on the design and installation of septic tank systems, filter systems and packaged treatment systems
- Information on tertiary treatment systems, and
- Maintenance requirements.

This CoP has been prepared having regard to current standards and guidelines and will assist planning authorities, builders, system manufacturers, system designers, system installers and system operators to deal with the complexities of on-site systems for single houses.

Site suitability assessors should carry out all assessments in accordance with the guidance provided in this CoP. The site suitability

assessment methodology set out in this document should be used by planning authorities to satisfy the requirements of Article 22 (c) of the Planning and Development Regulations, 2006. There is also an obligation on the proposed house builder/owner to ensure that any planning application submitted should include an assessment of the site and recommendations in accordance with the guidance provided in this CoP. In addition, it is essential that the wastewater treatment system installed on site complies with the conditions of planning and that the system is properly installed and maintained in accordance with the guidance in Sections 11 and 12.

The CoP is divided into two parts: Part One sets out requirements for on-site wastewater

systems used to treat and dispose of domestic wastewater from single houses. Guidance on good practice is included in Part Two and informs the implementation of the requirements of Part One.

The figures and diagrams in this CoP are for illustration purposes to assist the users of this code. They should not be considered as substitutes for detailed design drawings.

The code will be subject to ongoing review. The Agency welcomes any suggestions, that users of the CoP wish to make. These should be returned to the Office of Environmental Enforcement at the Environmental Protection Agency Regional Inspectorate, McCumiskey House, Richview, Clonskeagh Rd, Dublin 14.



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