

# DIN EN 13508-1:2013-01 (E)

## Investigation and assessment of drain and sewer systems outside buildings - Part 1: General requirements

---

| Contents   | Page |
|--|------|
| Foreword .....   | 4    |
| Introduction .....   | 5    |
| 1 Scope .....  | 7    |
| 2 Normative references .....   | 7    |
| 3 Terms and definitions .....  | 7    |
| 4 General .....  | 7    |
| 5 Investigation .....  | 9    |
| 5.1 Introduction .....   | 9    |
| 5.2 Purpose of investigation .....                                       | 9    |
| 5.3 Determine the scope of the investigation .....                       | 10   |
| 5.4 Review existing information .....                                    | 11   |
| 5.5 Update inventory as required .....                                   | 13   |
| 5.6 Hydraulic investigation .....  | 14   |
| 5.6.1 Introduction .....   | 14   |
| 5.6.2 Flow and water level measurement .....                             | 14   |
| 5.6.3 Rainfall measurement .....   | 14   |
| 5.6.4 Hydraulic calculations .....                                       | 14   |
| 5.6.5 Other techniques .....   | 15   |
| 5.7 Environmental investigation .....                                    | 16   |
| 5.7.1 Introduction .....   | 16   |
| 5.7.2 Review of inputs quality .....                                     | 16   |
| 5.7.3 Wastewater quality measurement .....                               | 16   |
| 5.7.4 Wastewater quality simulation modelling .....                      | 17   |
| 5.7.5 Surface receiving water impact surveys .....                       | 17   |
| 5.7.6 Surface receiving water modelling .....                            | 17   |
| 5.7.7 Leaktightness testing .....  | 17   |
| 5.7.8 Groundwater quality investigations .....                           | 17   |
| 5.7.9 Odour and noise surveys .....                                      | 18   |
| 5.8 Structural investigation .....                                       | 18   |
| 5.8.1 Introduction .....   | 18   |
| 5.8.2 Prepare inspection programme .....                                 | 18   |
| 5.8.3 Visual inspection .....  | 19   |
| 5.8.4 Other techniques .....   | 20   |
| 5.9 Operational investigation .....                                      | 21   |
| 5.9.1 Introduction .....   | 21   |
| 5.9.2 Review operational activities .....                                | 22   |
| 5.9.3 Review events .....  | 22   |
| 5.9.4 Other investigations .....   | 22   |
| 6 Assessment .....   | 22   |
| 6.1 Introduction .....   | 22   |
| 6.2 Performance deficiencies .....                                       | 24   |
| 6.2.1 Introduction .....   | 24   |
| 6.2.2 Drains and sewers, gullies, manholes and inspection chambers ..... | 24   |
| 6.2.3 Combined sewer overflows and detention tanks .....                 | 25   |

|  |  |           |
|--|--|-----------|
| <b>6.2.4</b>   | <b>Pumping stations, rising mains and vacuum mains .....</b> | <b>25</b> |
| <b>6.2.5</b>   | <b>Insufficient hydraulic capacity .....</b>                 | <b>26</b> |
| <b>6.3</b>   | <b>Consequences of performance deficiencies .....</b>        | <b>26</b> |
| <b>6.3.1</b>   | <b>General .....</b>   | <b>26</b> |
| <b>6.3.2</b>   | <b>Subsidence .....</b>                                      | <b>26</b> |
| <b>6.3.3</b>   | <b>Flooding .....</b>  | <b>26</b> |
| <b>6.3.4</b>   | <b>Pollution of groundwater and soil .....</b>               | <b>26</b> |
| <b>6.3.5</b>   | <b>Pollution of surface waters .....</b>                     | <b>27</b> |
| <b>6.3.6</b>   | <b>Decreased treatment efficiency .....</b>                  | <b>27</b> |
| <b>6.3.7</b>   | <b>Other consequences .....</b>                              | <b>27</b> |
| <b>6.4</b>   | <b>Causes of performance deficiencies .....</b>              | <b>27</b> |
| <b>6.5</b>   | <b>Reporting .....</b>                                       | <b>27</b> |
| <b>Annex A (informative) Sources of additional information .....</b> |  | <b>28</b> |
| <b>A.1</b>   | <b>Austria .....</b>   | <b>28</b> |
| <b>A.2</b>   | <b>Denmark .....</b>   | <b>28</b> |
| <b>A.3</b>   | <b>Finland .....</b>   | <b>28</b> |
| <b>A.4</b>   | <b>France .....</b>  | <b>29</b> |
| <b>A.5</b>   | <b>Germany .....</b>   | <b>29</b> |
| <b>A.6</b>   | <b>Netherlands .....</b>                                     | <b>30</b> |
| <b>A.7</b>   | <b>Norway .....</b>  | <b>32</b> |
| <b>A.8</b>   | <b>Sweden .....</b>  | <b>32</b> |
| <b>A.9</b>   | <b>United Kingdom .....</b>                                  | <b>32</b> |
| <b>Bibliography .....</b>  |  | <b>33</b> |