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Interactive comment on "A case study of rainfall-derived infiltration and inflow on a separate sanitary sewer system" *by* Nelson J. G. Carriço et al.

Anonymous Referee #3

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The paper aims at describing the application of a two-step methodology -comprising the use of performance indicators and sewer modelling- to the analysis of rainfall-derived infiltration and inflow (RDII) into small a wastewater sewer network in Lisbon, Portugal.

The topic of the paper is interesting and indeed corresponds to a recurrent problem in sewer system operation. Furthermore, the adopted case study is also potentially very interesting. However, the paper has multiple shortcomings, with the main ones being that (1) the main aim of the study is not satisfactorily fulfilled (i.e. RDI is not effectively analysed); (2) I see no relevant contribution to knowledge in this paper. Further shortcomings/details are summarised below. For these reasons, I would recommend that

the paper is not considered further for publication in a scientific journal.

Detailed comments:

Chapter 1: The introduction is very generic and does not indicate how the work presented in the paper fits within current research and why it constitutes a valuable contribution to this area.

Chapter 2: The literature review is also rather generic and often irrelevant (e.g. no need to explain what sewer modelling software). A detailed review is missing of the core processes, recent developments and on-going research in the area of sewer infiltration modelling and detection (e.g. infiltration models should be at the centre of the paper and only the (selected) rational method is vaguely mentioned, no reference is made to recent studies which aim at explicitly modelling infiltration into sewers). As a result, the selected methodologies are poorly justified.

Chapter 3:

- The description of the sewer system and available monitoring data is very poor. A map would help illustrate it. Temporal resolution of rainfall data must be specified (the authors simply mention 'smaller than 1 h' – bear in mind that for sewer modelling 15 min may already be too coarse, so 'smaller (finer) than 1 h' is not necessarily sufficient – it is only in the 'additional remarks' section where they mention the temporal resolution of rainfall inputs).

- No proper justification is given as to why ground water infiltration is not a concern and is therefore disregarded in this study.

- Most of the sewer design criteria listed in Tables 2 and 3 are irrelevant for the present study and their relevance is not discussed in the paper. It really looks as if this paper were just an excerpt of a technical report.

- Line 190: what do SC1 and SC5 mean?

- Section 3.3. does not discuss RDII at any point. It discusses other modelling elements which are mostly irrelevant for the present study, but ultimately the sewer model is not truly used for analysing RDII.

- Analysis of the relevance of performance indicators in relation to infiltration is rather limited. Many of the indicators and the way in which they are described are largely irrelevant for the purpose of the paper.

- The final conclusion in Chapter 3 is that the majority of the sewer system (except of the northern section) displays acceptable performance, but no clear reference is made to infiltration.

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