We sincerely thank Referee #2 for the careful reading of the manuscript, the positive assessment of its scientific contribution, and the constructive suggestions provided (https://doi.org/10.5194/egusphere-2025-3994-RC2). The reviewer's comments are highly appreciated and will help improve the readability, technical accuracy, and overall quality of the paper.

Below, we address the specific comments raised by the referee, with our responses provided in blue.

R2.1-This paper applies a comprehensive set of techniques to monitor the performance of a pilot-scale sustainable water-treatment system, characterised by low energy demand and reduced chemical consumption compared with conventional alternatives. It provides a clear, detailed, and concise description of the methodology and pilot-plant setup, along with a thorough analysis of the results, effectively leveraging the information obtained from each monitored variable. Moreover, I consider that the study represents a clearly written step forward in understanding how the choice of infiltration media and the recharge strategy—pulsed versus continuous—affect system behaviour, water content, and biofilm development within the unsaturated zone. The work also offers a solid and well-framed discussion of the results, integrating recent and relevant literature to contextualise the findings and highlight their contribution to current knowledge.

R2.1- We sincerely thank the referee for this very positive and encouraging assessment of our work. We greatly appreciate the recognition of the comprehensive monitoring approach, the clarity of the methodological description, and the relevance of the discussion in advancing the understanding of SAT system behavior. These comments are highly motivating and confirm the relevance of the study within the context of sustainable MAR and SAT research.

Please find below minor comments to improve the reading and understanding of your manuscript:

R2.2-Line 202: Please consider changing "Supporting Information" to "Supplementary Material"

R2.2- Thank you for this suggestion. We have renamed "Supporting Information" as "Supplementary Material" throughout the manuscript (Line 202 and 117)

R2.3-Line 228: Please remove ".." at the end of the line.

R2.3- Yes, it has been removed.

R2.4-Line 241: I would recommend reorganising the figures in the Supplementary Material so that their numbering follows the order in which they are quoted in the manuscript. Currently, Figures SI.10 and SI.11 appear before SI.8 and SI.9 in the text.

R2.4- Thank you for pointing this out. We have reorganized the Supplementary Material so that the figures appear in the order in which they are cited in the manuscript.

R2.5-Line 298: Please double-check "ER". It seems this should be "ERT".

R2.5- Indeed, thank you for noticing this. The typo has been corrected to "ERT".

R2.6-Line 364: Change “Figure 5(“ by “Figure 5 (“

R2.6- Changed, thanks!

R2.7-Line 378: Please consider adding the method for determining the permeability value of 10 m/day. I consider it would be beneficial for the readers to have this information.

R2.7- We have obtained this approximation using the travel time of the EC peaks produced by the sea water entrance into the sewer system during some storms with specific wind orientation. These picks are easily identified and measured in the recharge basin surface and in the O piezometer located in the USZ base, acting as a tracer test.

Supplementary material:

R2.8- Consider moving the explanation of Figure SI. 3 before its first mention in the text.

R2.8- Thank you for the suggestion but the figures in the Supplementary Material follow a numerical order from Figures S1 to S7, consistent in both documents. For Figures S8 to S11, the order of Sections S2.4 and S2.5 sections in the Supplementary Material has been rearranged to follow the order in which they are cited in the main text.

R2.9- Double checked the use of “v” in “Aquacheck prove. The Aquacheck probe

R2.9- Yes, Thanks!