This manuscript presents an innovative model regarding the risk of pluvial local flooding and the possible impacts on a traffic infrastructure, in this case a railroad line. The manuscript mainly presents the model concept and an application to the Rouen – Le Havre railway in NW France.

The contents of the paper is innovative, it is written in a well-structured and mostly clear manner and the research and the results are of high relevance for NHESS. The results of te paper are convincing!

I suggest the publication with a few minor amendments and some additional explanations:

Page 2, line 1-5: I think that the options of using a physically based model are written in a rather pessimistic manner. I think that such a model could be applied with a similar data base and with similar results. However, the big difference would be the required time for setting-up such a model and the required computational time. But it could be run with a rather high temporal resolution instead. Maybe you could elaborate a bit more on those differences.

Page 3, introducing the IRIP model: Can you talk a bit on the temporal resolution. I understood it is a quasi-static model, i.e. no temporal resolution. This should be mentioned. Furthermore, please explain if (and possibly how) variability of rainfall in space is considered and how one may approach/ guess the critical rainfall intensity thresholds. I also think that one should mention the question of an appropriate / meaningful spatial resolution here. You discuss this well in the discussion chapter, but you may refer here already to this discussion, because it is essential for model application.

Page 3, line39: Typo ("reduced" instead "reduces")

Page 4, line 13: how to guess the "rainfall large than a specified intensity"

Page 4, step 2.2.2: Can you explain why the runoff susceptibility map is not important here

Page 5, line 36: I cannot see easily the thalweg structure in figure 4, can you improve this visibility?

Page 6, line 31: Figure 5 needs more explanations.

Page 11, line 38: Can you elaborate a bit more, if (and if yes, how) this model could account for individual rain storm events. This would be rather interesting.

Discussion section: Did you gain any information about possible blockage of culverts / drainage pipes under the railroad track during heavy rainstorms? If yes, it would be very interesting to read about this. I have been informed about such incidences in Germany during after flash floods. Those created a big problem, when the street or railroad dams were impounded, overflown, eroded and partly broken. I think tis risk is under-estimated if not neglected at all.

Discussion (or conclusions): can you add a paragraph summing the limitations of the model?

Table 3: Where can one get these estimates for model parameters from? Are these the default estimates? Can you give some reasonable parameter ranges?

Figure 2: somehow difficult to understand

Figure 4: Please improve / extend this figure a bit:
− Include an inlet, where you show the location of this region within France
− Names of the river are hardly readable.
− Dry thalwegs difficult to guess.
− Rouen and Le Havre urban areas could be shown?