

Interactive comment on “A Novel Approach to Assessing Nuisance Risk from Seismicity Induced by UK Shale Gas Development, with Implications for Future Policy Design” by Gemma Cremen and Maximilian J. Werner

Anonymous Referee #2

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In this paper the authors propose a new modelling approach which links the volume of fluid injected during operations to the risk of nuisance ground shaking instead of the typical reactive-type magnitude and ground motion-based systems. The paper is well organised and well written and needs only few minor revisions before its publication in this journal. My additional comments to those already provided by the Anonymous Referee #1 are given below:

1) Section 3: I suggest to provide further information about induced seismicity in the shale gas site in Lancashire, including some references.

2) It would be interesting to include in the proposed risk modelling (or discuss at least the inclusion in a future work) the local seismic response and the soil-building resonance effects (e.g., see Gueguen et al., 2002, doi:10.1785/0120000306; Petrovic et al., 2016, doi: 10.1785/0120150326; Gallipoli et al., 2020, doi: 10.1016/j.enggeo.2020.105645), because they may significantly affect the derived ground motion values of your model.

3) Please order multiple citations according to the time of publication. As an example, at page 5, line 121, you should substitute (Ader et al., 2019; Walters et al., 2015) with (Walters et al., 2015; Ader et al., 2019); make the same operation at page 1 (line 15 and line 18), page 6 (line 128), and so on.

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