Interactive comment on "Assessing the tsunami mitigation effectiveness of a planned Banda Aceh Outer Ring Road (BORR), Indonesia" by Syamsidik et al.

Anonymous Referee #2

First of all, we thank to Referee #2 comments on our paper posted for discussion on December 5, 2018. We regard the comments with high appreciation and attempt to include them in our revised manuscript. The following sections are our responses to the comments.

COMMENT 1:
For the earthquake scenarios, two magnitudes Mw 8.5 and Mw 9.15 are chosen. More justification is required to explain how the fault parameters (e.g. focal depth, dip and slip angle and slip value) are decided. For example, providing some evidences for the fault geometry.

RESPONSE 1:
Koshimura et al. (2009) proposed fault parameters for the 2004 Indian Ocean tsunami case. The fault was divided into 6 segments where accumulative energy is similar to total energy generated by the fault. The following table shows the details of the fault proposed by Koshimura et al. (2009).

Segment	H (km)	L (km)	W (km)	Strike (^{o})	Dip (^{o})	Slip (^{o})	Dislocation (m)
1	10	200	150	323	15	90	14
2	10	125	150	335	15	90	12.6
3	10	180	150	340	15	90	15.1
4	10	145	150	340	15	90	7.0
5	10	125	150	345	15	90	7.0
6	10	380	150	7	15	90	7.0

Detail of the location of the segments can be seen in the following figure.

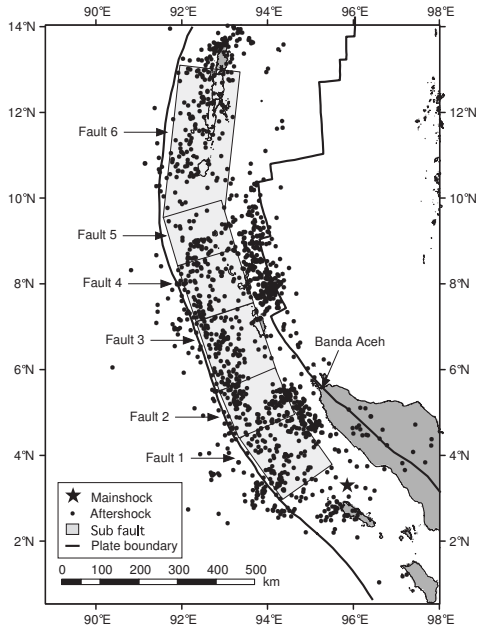

Figure 1. Location of the six segments of the faults proposed by Koshimura et al. (2009).

The result of this multi-fault has been validated at the onshore area of Banda Aceh using measured flow-depths and flow-heigths. More complete explanation of this can be seen in Koshimura et al. (2009). We decide not to include the table and the figure to allow readers to read a more complete and rigour studies done by Koshimura et al. as briefly explained here.

For 8.5 Mw, we follow suggestions made by Horspool et al. (2014).
We based our simulations on the parameters with strike of 329^{o}, dip 8.0 ^{o}, slip 110^{o}, and depth of 10 km. The 8.5 Mw simulation use single fault scenario where the location of the fault has been moved along the fault lines to obtain maximum impacts on Banda Aceh coast. We agree with the referee to add the explanation of the 8.5 Mw simulation fault scenario in or revised manuscript. Please see section 3.3 Earthquake scenarios in revised manuscript.

COMMENT 2:
Figure 10 and Figure 11, caption, correct to ". . .with BORR (right)"

RESPONSE 2:
Thank you for the detail correction. We will revise the caption on Figure 10 and Figure 11 ..... "without BORR (right)" with "with BORR (right)"

COMMENT 3:
Table 1. In COMCOT, the Manning roughness coefficients will not function when the SWE type is "Linear", so the second last column should be set to "None" when the SWE type is "linear"

RESPONSE 3:
Thank you, we will replace Manning Roughness Coefficients "0.02" to "None" as suggested. The revised table can be seen as follows (Table 1).

Layer	Latitude	Longitude	Number of Grid	Ratio	Grid size (m)	Time Step (sec.)	Manning Roughness Coefficients	SWE type
1	0.1	88.1	1772	1	1856	0.2	None	Linear
	14.93	102.8						
2	3	91	1920	2	928	0.1	None	Linear
	10	100						
3	4.08	92.05	3899	3	309.33	0.03	None	Linear
	8.98	97.98						
4	5.2708	94.51	3137	3	103.11	0.011	None	Linear
	6.695	95.99						
5	5.5	95.14	1426	3	34.37	0.004	None	Linear
	5.69	95.39						
6	5.515	95.235	2362	3	11.5	0.001	Varied Coefficients (see **Table 3**)	Nonlinear