1. Line 45-46, It is better to say explicitly that this FOX is for Phase-I Upgrade, and it takes fibres from both LAr and TREX.

Adopted.

2. Table 1, TREX range for Ieta 6-15 doesn't make sense, It is probably a copy and paste error?

Fixed.

3. Line 102-106 and Line 442, the description of eFEX MTP connectors don't agree with eFEX interface (see attachment). On eFEX, there are 10 EM ribbons. The 4 EM ribbons on each side are grouped into a MTP48 connector. The middle 2 EM ribbons are grouped into a MTP48 connector. In the FOX spec, it seems that two EM ribbons on both ends are grouped into a MTP connector, and the middle 8 EM ribbons are grouped into 2 MTP conenctors.

Your interpretation of what we propose is correct. We thought from previous discussions that it would be possible to adapt this aspect of the mapping, and we feel that this is the most optimal mapping that can be provided. Would you be able to modify things on your side to take this proposed output ordering?

4. Line 78-79, here it says one TREX covers 0.875 in phi, but Figure7 shows each TREX covers 1.57 in phi.

I was working in pi instead of 2pi accidentally. This has been fixed.

5. Line 147. Just to confirm that eFEX does not provide reception for FCAL fibres. Not sure Where those fibre will be sitting on the MTP connectors for eFEX.

Indeed we will send them to eFEX as it was thought that these may be used in a future upgrade, but we did not expect them to be used for this upgrade. The order is provided for eFEX in figure 25.

6. Line 165-178 and Table 6. It is better to give a brief introduction of the connection planes (First and Second), and the fuctions of each stage.

Added to the end of that paragraph: Note that in most of the boxes, internal intermediate planes named ``first" and ``second" are needed for subsequent stages of mapping, which were designed to result in an optimal mapping with common ribbon types where possible.

7. Figure 8-11, it is hard for me to imagine the real items of the diagram "KEY". Some pictures for those connectors and wire would help visulization.

We added a diagram for one example shuffle box, naming the “shuffle box”, “wire”, and “connector”

DAN: TO DO.

8. Figure 12. Does the arrow of the lines mean signal direction? If yes, then it is not consistent with Figure 6, where there are many bi-directional connection.

Figure 12 has been updated.

9. Figure 14. For the MTP adaptor, there are two type: Key-up to Key-up, Key-up to Key-down. This needs to be specified explicitly everywhere such a MTP adaptor is used to avoid confusion.

We use Key-Up to Key-Down, and have added this at the end of the “Shuffle mapping module characteristics” section, and the caption of figure 14.

10. Figure 17. For detail B, I wonder whey the vertical ptich between MTP adaptor holes are shrinked compared to the middle part of the panel. It seems the metal at corners is very thin. Is that strong enough?

These are prototype drawings, but yes the thickness is thought to be strong enough (measurements are in inches).

11. Line 436-440 and Figure 25. This figure needs more explanation. I don't understand it. The Ref [5] link is broken. I think it is better to put this ref doc in the CERN EDMS other than google drive. I'd like to check the fibre-by-fibre mapping when Ref [5] is available.

Added EDMS link:
https://edms.cern.ch/document/1865818/1

12. Line 473-476. You need to specify MTP Elite connector to reach below 0.35dB attenuation. Normal MTP connector attenuation could be as high as 0.65dB.

Specified that MTP Elite connector is being referred to, and also added sentence to end of section: For a normal MTP connector, attenuation could be as high as 0.65 dB (compared to 0.3 dB for the MTP elite connector).

13. Line 482. The last half of the sentence is broken.

Could you be more specific please?

14. I couldn't find a channel definition of the MTP connectors. For example, a 48-way MTP connector for EM output to eFEX, how are the channel numbered at the end face of the connector? Together with the MTP adaptor key configuration, it could cause lots of confusion later.

The connector types are defined in Table 4, which we’ve now added a back reference to in section 4. The fibre order on each connector is given in Figure 25 for the eFEX. The new EDMS document will soon also contain all of the specific addresses which each fibre maps to.