

# Update of the HL-LHC machine lay-out IR1 IR5 and upcoming issues

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Work by all WPs, particularly from  
WP2, WP3, WP6, WP 10, WP12, WP3

# Summary

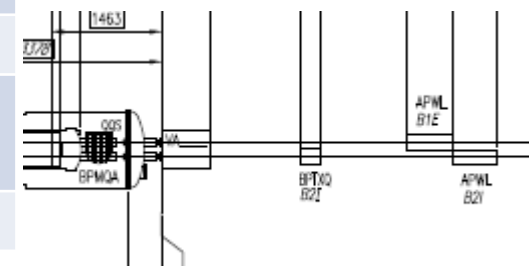
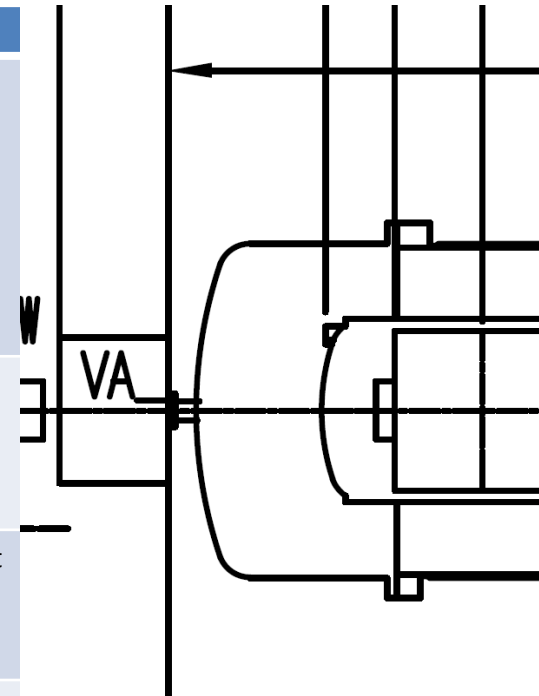
- Status of foreseen modifications
- New work to be done for next release
- Approval process





# List of items when we started the work

<i>Topic</i>	<i>status</i>
<p>MCBY MCBC: discrepancies in magnetic length and applicable drawings/ source of information</p>	<p>Values used by optics have been introduced in the database lay-out after the measurement of the series production. Agreed to revert to the design value. The last are on the drawings. ACTION: Conf. management to change database then optics will change file</p>
<p>Shuffling among points to reduce work load for Q4 and Q6 modifications (new Q5 and Q6) and Q4 assembly (corrector position vs quadrupole)</p>	<p>Proposal as in the lay-out, no changes. Seem feasible (1<sup>st</sup> check of correction scheme and needs to change MQY polarity done). Further discussion ongoing</p>
<p>Q1 longitudinal configuration with enough length for warm to cold transition/bellow/capillaries exit</p>	<p>The Distance between the warm flange of the Q1 cryostat and the reference plane of the Q1 CM is now compliant with technical requirements. Issue the Q1 to TAS area see below</p>
<p>BPM: revision of space allocation and type position by position</p>	<p>Done, all names updated, introduced graphical representation of the BPM mechanical lengths. Issue: BPM mechanical length see below</p>
<p>Q1-D1 interconnects revision of longitudinal space allocation taking into account capillaries BPM and bellow design</p>	<p>Study triggered see below open issues</p>
<p>DFM: selection of most probable installation slot</p>	<p>Done</p>
<p>magnet mechanical length for D2 and Q4: discrepancies between Conceptual spec and lay-out</p>	<p>CS to be changed according to plans, but iteration necessary when design of object more advanced</p>
<p>Pick up for crabs</p>	<p>Introduced</p>

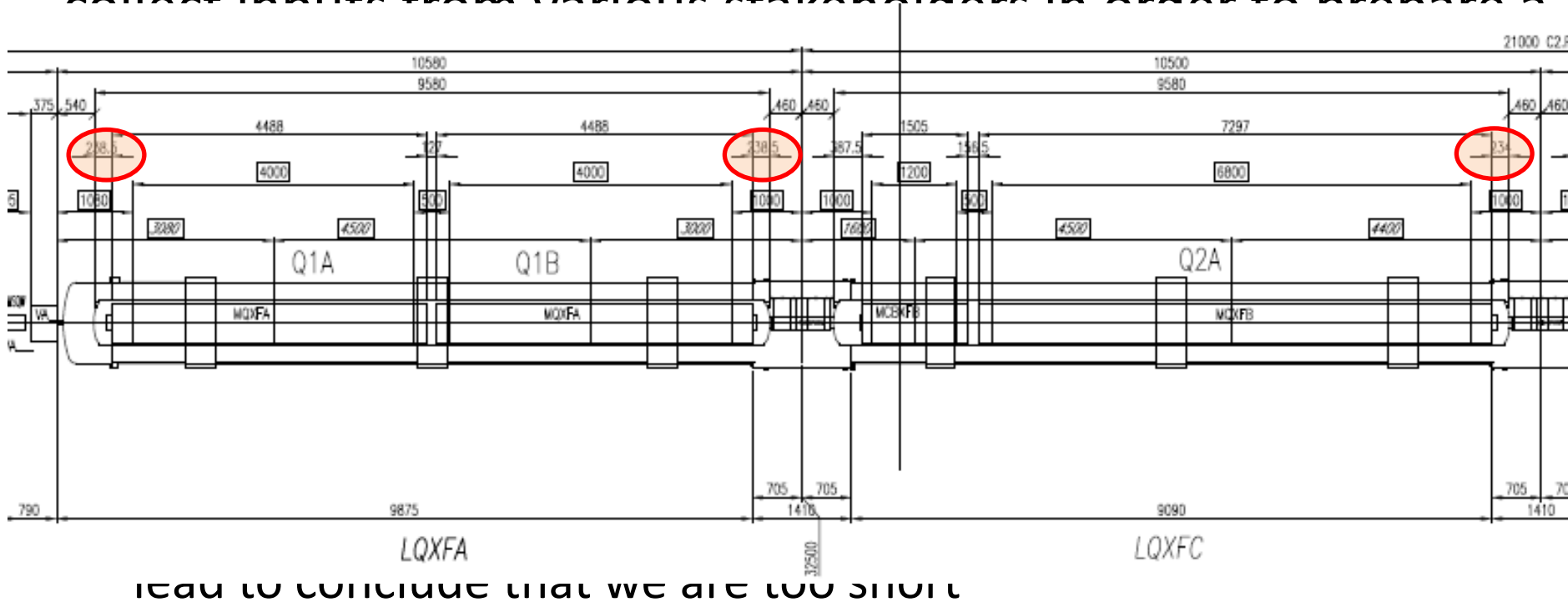


# Uncompleted and new issues

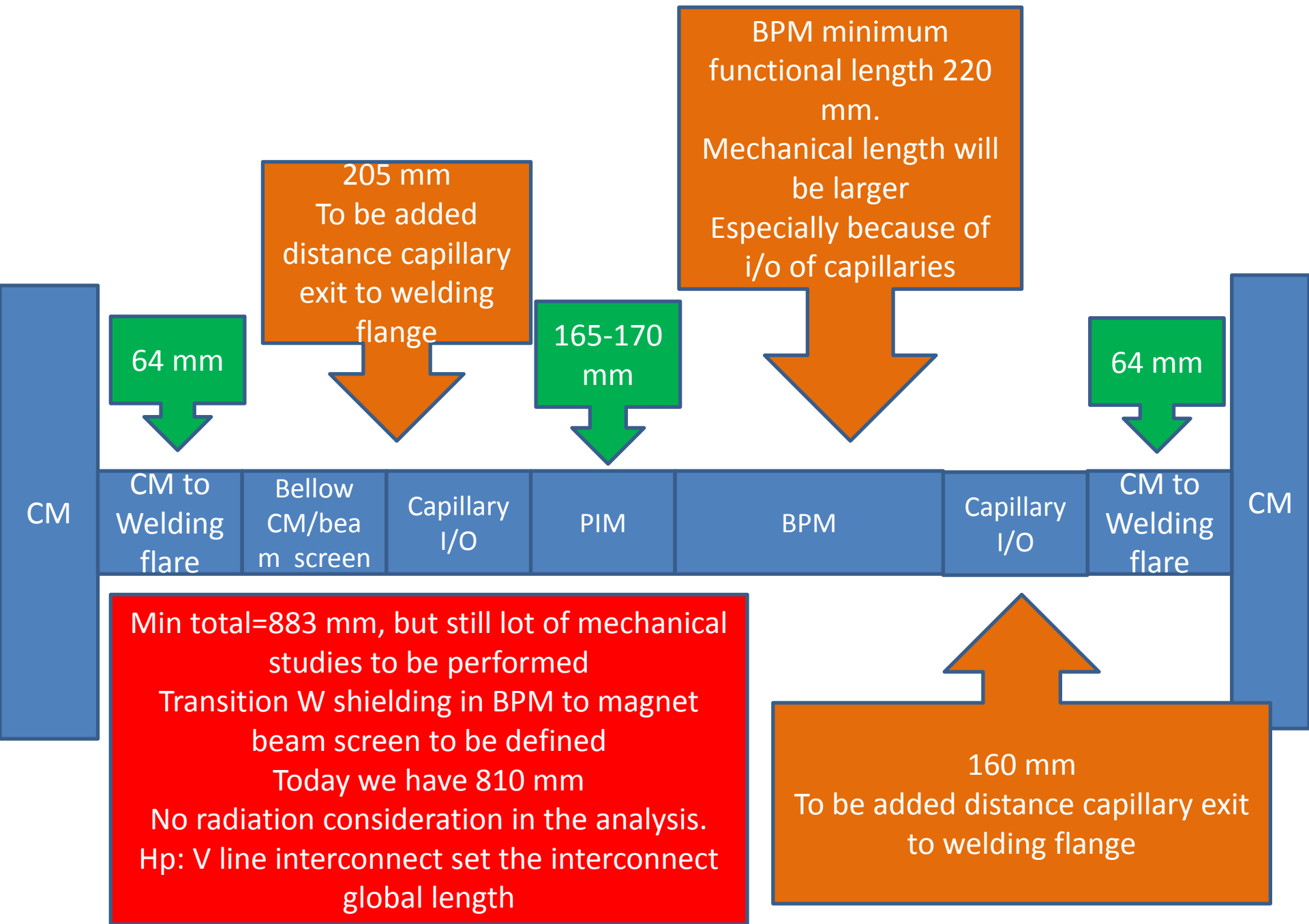
- Q1 to TAS distance is today even shorter than the LHC one. Necessary detailed mechanical study. Task agreed to be carried out by the WP12, but starting now
- Preliminary discussion on Q5 IR6 done, and also 1<sup>st</sup> lay-out draft by H. Prin. When clearer make official drawings
- TCLMA need between TAXN and Q4. New computations lead to think that it can be eliminated but whole analysis process not completed
- Point 4
  - Cleaning of the reservation space completed but not yet approved: configuration management is preparing official document to be submitted to LMC and HL-PLC for approval
  - Re-population to be started, according to available resource in integration team

# Main issue

- Several concurrent issues for the lay-out Q1 to D1. Proposal: collect inputs from various stakeholders in order to prepare a



- Possible need to allocate more space to the correctors in D2, Q4. Under discussion





# Approval process

The modified lay-out will be put in approval in the incoming days together with the HL-LHC excel file of the optics 1.1