

Activity ID	Description	Duration	WEEK																											
			-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
LV Electrical Switch Room																														
TP11-01	LLV2 Switch room available for commencement	0		◆																										
TP11-02	LLV2 Switch room plinths	1w		■																										
TP11-03	LLV2 Switch room floor sealing	1w			■																									
TP11-04	LLV2 Basement supply ductwork	1w				■																								
TP11-05	LLV2 Basement extract ductwork	1w					■																							
TP11-06	LLV2 Switch room bracketry	2w					■	■																						
TP11-07	LLV2 Switch room metal doors	3d							■																					
TP11-08	LLV2 MV ladder rack	1w								■																				
TP11-09	LLV2 MV ladder rack to level B1	1w									■																			
TP11-10	LLV2 Switch room LV containment	3w								■	■	■																		
TP11-11	LLV2 Switch room lighting & power 1st fix	3w									■	■	■																	
TP11-12	Deliver & assemble LLV2 transformers (TX's)	1w										■																		
TP11-13	Deliver & assemble LLV2 switchpanels	3w										■	■	■																
TP11-14	LLV2 Bracketry & ladder rack to landord's risers	2w											■	■																
TP11-15	LLV2 Dead-test LLV2 switchpanels	1w													■															
TP11-16	LLV2 Switch room electrical busbars	3w													■	■	■													
TP11-17	LLV2 Switch room distribution boards / Terms	2w														■	■													
TP11-18	LLV2 Electrical busbars to chiller plantroom	2w															■	■												
TP11-19	Terminate & test LLV2 MV cable (from MV1)	2d																			■									
TP11-20	LLV2 BMS interface connections	2w																			■	■								
TP11-21	Terminate & test LLV2 MV cable (from MV2)	2d																				■								
TP11-22	LLV2 Switch room make-up busbar sections	2w																				■	■							
TP11-23	LLV2 Switch room lighting & power final fix	2w																				■	■							
TP11-24	LLV2 Earth bars & cabling	5w																				■	■	■	■	■				
TP11-25	Level B1 LV containment complete	0																					◆							
TP11-26	LLV2 LV cable installation & terminations	6w																					■	■	■	■	■	■		
TP11-27	LLV2 MV supply available from MV1 switch room	0																						◆						
TP11-28	LLV2 MV Emer'ncy tripping control panel & wiring	2w																						■	■					
TP11-29	Levels B2 / B3 LV containment complete	0																							◆					
TP11-30	LLV2 Warning notices & rubber matting	1w																							■					
TP11-31	LLV2 Switch room power-on / live testing	2w																								■	■			
TP11-32	LLV2 Switch room LV supply available	0																												◆

Template Programme TP11 - LV Electrical Switch Room

Activity ID	Activity Description	Predecessors / Comments
TP11-01	LLV2 Switch room available for commencement	Identification of the commencement date. In the case of switch rooms this activity can refer to the construction of the room only. This is because activities TP11-02 & 03 need to be specifically detailed and not part of the general availability for commencement.
TP11-02	LLV2 Switch room plinths	Could be deferred until after the installation of the high level services.
TP11-03	LLV2 Switch room floor sealing	Essential operation prior to the delivery of the LV switchpanel in order to prevent dust ingress. May need re-coating following the completion of the switch room installation.
TP11-04	LLV2 Basement supply ductwork	It is good practice to install the works of un-related trades prior to the delivery of the LV switchpanel. Particularly where the work is above the LV switchpanel location, this will limit dust and also potential damage to the LV switchpanel.
TP11-05	LLV2 Basement extract ductwork	As item TP11-04
TP11-06	LLV2 Switch room bracketry	Support arrangements for all containment within the switch room.
TP11-07	LLV2 Switch room metal doors	Long lead-in item. Temporary wooden doors may be required because the room should always be lockable. Permanent metal doors have to be fitted prior to the energisation of the 11KV MV supply.
TP11-08	LLV2 MV ladder rack	This refers to the MV ladder rack that is installed within the LV switch room.
TP11-09	LLV2 MV ladder rack to level B1	This activity refers to the MV bracketry and ladder rack that is installed externally to the landlord's LV switch room on basement level B3. And as such its installation should be recorded throughout the "areas" it traverses from the electrical risers.
TP11-10	LLV2 Switch room LV containment	Refers to the LV containment i.e. ladder rack, cable tray & trunking that is installed within the LV switch room.
TP11-11	LLV2 Switch room lighting & power 1st fix	Could be identified as part of the general on-floor activities, but indicated as a specific reference in this template programme.
TP11-12	Deliver & assemble LLV2 transformers (TX's)	Long lead-in item. Should be delivered into a clean and dry environment with all preceding trades work complete. Contains a heavy transformer section and a separate housing, assembled in situ by the manufacturer or the electrical contractor.
TP11-13	Deliver & assemble LLV2 switchpanels	Long lead-in item. Generally the LV switchpanels are delivered around the same time as the transformers, possibly from the same manufacturer. The LV switchpanels are delivered in sections and assembled in situ by the manufacturer or the electrical contractor. The LV switchpanels are physically and electrically connected to the transformers. It is important to be aware that the transformers and switchpanels are separate pieces of kit and could therefore have separate manufacture agendas.
TP11-14	LLV2 Bracketry & ladder rack to landlord's risers	Refers to the LV ladder rack that is installed to the landlord's electrical risers across basement level B1. This is identified separately in order to indicate when the containment link to the risers will be available for cabling. For instance, it may be necessary to complete this containment early for co-ordination or early power-on requirements. This ladder rack should be separately identified throughout all of the "areas" it traverses.
TP11-15	LLV2 Dead-test LLV2 switchpanels	The LV switchpanels have electrical connections joining the sections together, which will have to be tested following their assembly.

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Activity ID	Activity Description	Predecessors / Comments
TP11-16	LLV2 Switch room electrical busbars	In addition to the outgoing LV busbars that feed the plant and risers, there will also be busbars that inter-link the LV switchpanels. To a certain extent part of these busbars could be installed prior to the LV switchpanel delivery. Busbars are manufactured in standard lengths of one metre increments. Anything that differs from this is referred to as a make-up piece and as such will take longer to manufacture once its required size has been site measured. This site measuring process will take a minimum period of two weeks to accomplish. There will always be a requirement for at least two make-up pieces on every busbar run. Make-up pieces are generally required where busbars connect to risers or plant items / control panels, or alternatively where the route contains several bends or invert levels.
TP11-17	LLV2 Switch room distribution boards / Terms	Ideally all of the outgoing sub-circuit wiring should be installed before termination. This will be one of the first items to be energised following the LV power availability date.
TP11-18	LLV2 Electrical busbars to chiller plant room	This activity is identified in this template programme as an external installation route of busbar to the chiller plant room. Normally the installation of these busbars would be identified throughout the individual "areas" that make up the busbar route to the chiller plant room.
TP11-19	Terminate & test LLV2 MV cable (from MV1)	Cable termination and testing to the LLV2 Section 1 transformer (TX) by a specialist. The actual MV cable installation from the MV1 switch room is identified in the MV Electrical Switch Room template programme TP10 (activity TP10-15).
TP11-20	LLV2 BMS interface connections	Has to follow the LV switchpanel assembly. Could be installed later on, but must be prior to energisation.
TP11-21	Terminate & test LLV2 MV cable (from MV2)	As item TP11-19 but fed from MV2 switch room.
TP11-22	LLV2 Switch room make-up busbar sections	This will be a necessary activity in every LV switch room where busbars are present.
TP11-23	LLV2 Switch room lighting & power final fix	This activity could be later. But because the switch room distribution board will be one of the first items to be energised it will be beneficial to get the permanent lights working as soon as possible.
TP11-24	LLV2 Earth bars & cabling	Essential for the protection and safe operation of the switchpanel and personnel - must be complete and tested prior to energisation. A number of these cables will be installed along with the actual installation of the LV cables.
TP11-25	Level B1 LV containment complete	This milestone indicates the completion of the LV containment on level B1.
TP11-26	LLV2 LV cable installation & terminations	This activity refers to all of the LV cables installed from the LLV2 switchpanel to the various plant item control panels, LV distribution panels, changeover panels and distribution boards, regardless of their location and the "areas" through which they pass. The only external (other than the LLV2 switch room) predecessors of this activity are the containment completion milestones and activities relevant to the cable routes. There should only be one LV cable installation activity for the entire switchpanel concerned, unless there is a specific reason for more. The actual terminations of the cables into the switchpanel could be identified as a separate activity. No LV cable should be installed until its entire containment route is complete.

Template Programme TP11 - LV Electrical Switch Room

Activity ID	Activity Description	Predecessors / Comments
TP11-27	LLV2 MV supply available from MV1 switch room	This milestone indicates the availability of the incoming MV1 switch room supply to its LLV2 switch room transformer.
TP11-28	LLV2 MV Emergency tripping control panel & wiring	The emergency trip buttons will be located adjacent to the switch room doors. It would be manually operated in the event of an incident i.e. fire being detected within the switch room. Operation of the trip causes disconnection of the LLV2 MV supply within the MV switch room.
TP11-29	Levels B2 / B3 LV containment complete	Even though this activity is indicated as being later than the commencement of the cable installation, it will not prevent the commencement of the cable installation to "areas" where the containment has been completed earlier.
TP11-30	LLV2 Warning notices & rubber matting	Safety requirements and warning notices for low voltage and electric shock need to be displayed along with a LV schematic drawing.
TP11-31	LLV2 Switch room power-on / live testing	Live operational testing of the LLV2 transformer and switchpanel following the energisation of the incoming MV supply from the MV1 switch room.
TP11-32	LLV2 Switch room LV supply available	Follows the successful live operational testing and means that the LV supply is now available to be distributed around the building to the various distribution boards risers and plant items - following their own installation completion and successful testing.

General Notes:

- 1 To be read in conjunction with the Basement Levels B2 and B3 Plant Room Layouts
- 2 To be read in conjunction with Figure 1.5
- 3 Electrical switch rooms can also include cooling as part of their environmental control
- 4 There is more than one LV switch room and these activities would need to be replicated for LLV2 & LLV3
- 5 TX is an abbreviation of transformer
- 6 MV is an abbreviation of medium voltage
- 7 LV is an abbreviation of low voltage