# Technical Specification - Electrical Version 13 CPDMS0022 Amendment No.1 2023

## Summary

This Amendment applies to the following elements:

- Section E4.1.1,
- Section E9.2.1,
- Section E9.2.9,
- Section E9.17,
- Section E15.1,
- Section E18.1.

## Amendment details

Sydney Water Technical Specification Electrical version 13 is amended as follow. The amendments are to be inserted in the locations as instructed.

| Element | Instruction/ New text |
|---|---|
| **E4.1.1** | *Add* following sentence to the end of the eighth paragraph:<br><br>For new low voltage installations, each conduit run must have 50% additional conduits of each size installed for future use. Each pit must be sized to for the listed conduits, and an additional 10% capacity. *The top layer of conduits is to be reserved for future use, with all spare conduits in the pit must be clear of obstruction for ease of future cable installation.* |
| **E9.2.1** | *Add* following sentence to the end of the second paragraph:<br><br>The SCA must be constructed and tested in accordance with the requirements of AS/NZS 61439.1. Form 3B or Form 4 assembly must be used if the nominal supply current to the switchboard is 800 A or more per phase, The SCA must be constructed to withstand prospective fault level. Form 3B or Form 4 switchboard assembly maybe required at lower nominal current levels when specifically requested by SWC. *For switchboard compliance, the external conductor referred in form of internal separation requirements from Annex AA of AS/NZS 61439.2 only applies to low voltage power cable conductors.* |

| Element | Instruction/ New text |
|---|---|

**E9.2.9**

1. *Delete* first paragraph and *replace* with the following:

   New SCA's must be provided with 15 % spare modules (based on the number of modules used by the project) for future use. These modules must be fully functional units equipped with take-offs, circuit breakers, fuses and equipment slide rails if they are required by the project, otherwise the spare modules can be left unequipped. The spare cells must be specified as follows:

   i. 1x spare of the largest rated outgoing circuit.
   ii. 1x spare of the second largest rated outgoing circuit.
   iii. Remainder of spares to reach the 15% minimum spare requirement to comprise of cell sizes that constitute the most common rated load.
   iv. The placement of the spares must be evenly split across the bus sections.

   The bottom module of each tier must not be used or counted as spares if the control switches, meters and indication lights will be lower than 350 mm from the floor. If for any reason a module needs to be mounted lower than 350 mm from the floor, it needs to be a plug-in type that can be completely removed for maintenance.

2. *Delete* sixth paragraph and *replace* with the following:

   Cable zones must be provided to route power and control cables to the respective functional units. Cable zones width between enclosure sheet metal must be minimum 400 mm.

   Cable zones shared by multiple functional units must be sufficiently sized for all cables and wires including spare functional cells. This must also consider the ability to replace or install cables in the future. The shared cable zone must not be installed with operable or maintainable equipment except for earth and neutral bars and associated terminations. Access to cable zone for work must require respective bus bars and cables to be isolated prior.

   For functional units with exclusive cable zone such as incomer, active harmonic filter feeder, etc, maintainable equipment (CTs, arc flash sensors, etc) can be installed in the cable zone. Access to these cable zones for work must require respective incomer and bus bars to be isolated prior.

   Access to the cable zone for work must not expose the busbar droppers and horizontal busbars. The connection from bus bar dropper to the functional units and the connection from the functional units to the low voltage power cables must be fully shrouded.

3. *Add* following sentence to the end of the seventh paragraph:

   All gland plates must be 5 mm thick aluminium with cable glands. Where single core cables are proposed, supporting clamps and cleats must be non-magnetic. *The front section of the gland plate must be allocated for future installation of the spare functional units for ease of future access. The layout of the gland plate including cable glands must be made available for review during the detail design.*

| Element | Instruction/ New text |
|---|---|

**E9.17**

*Delete* section E9.17 and *replace* with the following:

## E9.17 Control equipment in functional units

Control and communication equipment, only for the purpose of termination and functioning of the equipment installed in functional units, are permitted to be installed in the functional units of switchboard. Instrumentation and Controls Standard TOG_TS01 must be followed for design and installation of control and communication equipment.

Design drawings and wiring diagrams must clearly show the functional unit and the control and communication equipment installed within; these drawings must be made available for SW to review prior the construction of the switchboard.

**E15.1**

1. *Delete* third paragraph and *replace* with the following:

   All cables must be easily accessible for replacement. All cables and/or conduits, supports, brackets, saddles, and clips must be spaced to ensure that the runs remain straight.

2. *Delete* 8th paragraph and *replace* with the following:

   In the plant rooms without cable trenches, cable trays and surface run conduits must be used for all cable routes whereby the main cable routes must be wall mounted “overhead” and at least 2400mm above the finished floor level.

3. *Delete* 11th paragraph and *replace* with the following:

   Care must be exercised when laying cables in ducts, cable ways, trenches, and ladder trays. They must be neatly layered and run parallel. Wherever possible cables must be run in North-South or East-West straight runs. Bunching and crossovers must be limited to cables entering and leaving the medium. Trefoil arrangement can be used for running single-core power cables to individual equipment.

4. *Delete* 29th paragraph and *replace* with the following:

   Cables on ladder trays must be installed in single layer and must be fixed, at a minimum of 600 mm intervals for horizontal trays and 300 mm intervals for vertical trays, according to section 16.13.

**E18.1**

*Add* following to Item No.1:

1. Cable sizing *(including cable selection, derating factor and voltage drop)*

# Document Ownership

| Role | Title |
|---|---|
| **Group** | Asset Lifecycle – Engineering and Technical Support |
| **Owner** | Specialist Engineering Manager |
| **Author** | Technical Director – Electrical Engineering |
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# Amendment and Approval Dates

| Prepared by | Date | Approved by | Date |
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