

# Standards Alert

## Technical Specification – Electrical – Version 14 is now available.

This specification outlines the minimum requirements for the design, supply, installation, construction and testing of electrical equipment across Sydney Water. This update improves asset safety, sustainability and resilience, while supporting cost and time efficient project delivery.

### Why has the standard been updated?

Since the last update in 2023, there has been significant feedback on the document through the deviation process, stakeholder feedback, supplier interaction and benchmarking with other utility/industry peers. This update incorporates the feedback to align the specification with current Australian standards, industrial best practices, available and affordable products on the market, and changes from other Sydney Water technical specifications.

The updates focus on:

- Enhancing clarity and ease of use.
- Resolving known issues and removing conflicting requirements.
- Improving system reliability and operational resilience.
- Supporting more cost-effective and consistent project delivery.
- Updating functionalities to reflect current industry practice and lessons learned.

### What has changed from the previous version?

Key changes from the previous version include:

#### Power system reticulation:

- Clearer and more consistent requirements for how electrical power is supplied and distributed across all Sydney Water sites.
- Introduced a new power supply reliability assessment to identify critical loads and confirm supply resilience.
- Strengthened interlock schemes and power supply changeover requirements.

- Introduced new standardised power system modelling requirements.
- Revised power factor correction requirements.

#### LV Switchroom:

- Clearer guidance on expected design to align with Building Design Specification requirements
- Improved HVAC requirements.
- Refined switchroom layout requirements.
- Updated the definitions for permanent switchroom building and infinite access floor.

#### LV Switchboard:

- Refined outdoor switchboard requirements, including maximum allowable size and expectations for managing weather exposure.
- Strengthened surge protection requirements, including protection and remote monitoring.
- Introduced a dedicated 24V DC for protection and control components of LV switchboards.

#### Electrical Installation:

- Aligned pit and conduits installation requirement with existing industry practice.
- Updated pit drainage requirements and introduced alternative drainage options for pits.
- Revised conduit bending requirements and optimised spare capacity expectation.
- Introduced minimum requirements for emergency lighting.
- Strengthened weather and environmental protection requirements
- Updated cable ladder and tray requirements.

#### Testing and Documentation:

- Clarified requirements for design validation and factory acceptance testing.

## What are the key benefits and impacts to users?

Key impacts compared to the previous revision include:

### Cost and Time:

The update reduces cost and speeds the delivery in several areas, while in some area adding cost where delivery efficiency and reliability gains are required.

For example:

- Structured, step by step power system reliability assessment reduces review time and helps avoid late design change.
- Standardised modelling scenarios ensures more consistent outcomes and reduce repetitive inquiries.
- Detailed pits and conduits requirements around drainage, bends and installation details reduces interpretation issues, errors and rework costs.
- While the implementation of a 24 V DC distribution system necessitates additional equipment, design, and maintenance resources for critical and high-risk LV switchboards, it significantly enhances overall system reliability and mitigates outage-related failures throughout the asset lifecycle. The cost impact is marginal; for example, implementing this system on a \$500,000 large LV switchboard replacement represents an approximate 1% increase in the replacement cost.

### Usability and Alignment:

The update is easier to read and navigate. It is more aligned with other related Sydney Water standards, and reflects the lessons learned from deviations and feedback.

For example:

- Clearly detailed trench profile, and pit and conduit requirements make design more consistent and easier to build and review.
- Introduced allowance for conduit bending rules where installing a pit is impractical which was implemented based on the feedback received to help fast track delivery.

### Safety and Reliability:

Clearer expectations ensure projects are designed and delivered with fewer safety risks and higher operational resilience and maintainability.

For example:

- Interlock scheme for critical loads reduce the risk of unsafe operation or loss of power supply during supply changeover events.

- Improved sealing and fire-rating requirements for switchrooms reduce risk of water ingress and fire spread over time.
- The dedicated 24 V DC system with dual supplies and battery backup keeps protection and control available during disturbances and improves the resilience of LV switchboards.

### Sustainability:

The update supports the right-sized, longer-lasting installations that use fewer materials, and deliver a lighter footprint over the asset life.

For example:

- A clearer maximum demand calculation method and standardised modelling avoid oversizing of transformers, switchboards and cables. This leads to reducing material use and lower carbon footprint.
- Updated HVAC assessment process to ensure air-condition units and forced ventilation are only used, when necessary, this would help to reduce electricity usage and contribute to Sydney Water NetZero goal.

## When do I apply the new standard?

This specification applies to all projects that commence design development after the publication date of this specification. There is no requirement to apply them retrospectively.

For projects where the design commenced prior to the publication of this specification, project managers, may opt to apply this specification in full or in part to help promote better compliance, safety and delivery efficiency.

Existing assets are not required to conform to this standard.

## Where can I find the new standard?

The standard is available on:

- [iConnect](#) (for our staff)
- [SWDelivery Portal](#) (for our delivery partners)
- [Sydney Water website](#) (for public users)

## How can I provide feedback?

If you have any feedback on this specification, please contact us at [standards@sydneywater.com.au](mailto:standards@sydneywater.com.au).