GUIDELINE

DEVELOPER CONTRIBUTED WATER & WASTEWATER ELECTRICAL ASSETS

Toowoomba Regional Council

TOOWOOMBA REGION

Introduction

This guideline outlines the process for the delivery of Electrical and Control System (ECS) works for Water and Wastewater Assets by developers. This arrangement allows proponents to construct Electrical and Control System assets for Councils Water and Wastewater branch to meet Councils standards. At a high level, the requirements for ECS assets for Water and Wastewater are defined by:

- The Toowoomba Regional Council Planning Scheme
- General Electrical Specifications
- Site Type Specifications
- Standard Remote Terminal Unit (RTU) code
- Standard SCADA Templates
- Pre-approved Control System integrators

This guideline will help applicants:

- Prepare ECS designs to meet Councils requirements
- Reduce costs from unnecessary rework
- Ensure only approved vendors conduct works on Councils Industrial Control System.

Design Process

Concept Design

Council has standardised design requirements for electrical and control system infrastructure shown in the table below:

DOCUMENT ID	DOCUMENT NAME
ELE-SPEC-001	Electrical Specification - General Electrical Installation
ELE-SPEC-002	Electrical Specification - LV Switchboards and Enclosures
ELE-SPEC-003	Electrical Specification - Solar Installations
ELE-SPEC-004	Electrical Specification - Communications Stations
ELE-SPEC-005	Electrical Specification - Sewage Pump Stations
ELE-SPEC-006	Electrical Specification - Reservoirs
ELE-SPEC-007	Electrical Specification - Bores
ELE-SPEC-008-A	Electrical Specification - Transfer Water Pump Stations
ELE-SPEC-008-B	Electrical Specification - Booster Water Pump Stations
ELE-SPEC-009	Electrical Specification - Instrumentation Sites
ELE-SPEC-010	Electrical Specification - Generators
ELE-SPEC-011	Electrical Specification - Automatic Transfer Switch
ELE-SPEC-012	Electrical Specification - LV Motors
ELE-SPEC-013	Electrical Specification - Power Systems Analysis and Arc Flash Studies
ELE-SPEC-014	Standard Electrical Drawings - Communications Stations
ELE-SPEC-015-A	Type 1 SPS Standard Electrical Drawings
ELE-SPEC-015-B	Type 2 SPS Standard Electrical Drawings
ELE-SPEC-016	Standard Electrical Drawings - Reservoirs
ELE-SPEC-017	Standard Electrical Drawings - Bores
ELE-SPEC-018	Standard Electrical Drawings - Water Pump Stations
ELE-SPEC-019	Standard Electrical Drawings - Instrumentation Sites
ELE-SPEC-025	Standard P&ID - Sewage Pump Stations
ELE-SPEC-026	Standard P&ID - Reservoirs
ELE-SPEC-027	Standard P&ID - Bores
ELE-SPEC-028	Standard P&ID - Water Pump Stations
ELE-SPEC-101	TECHNICAL SPECIFICATION - CONTROL SYSTEM
ELE-SPEC-102	SCADA and PLC Tagname Standards

ELE-SPEC-103	SCADA GUI Standard
ELE-SPEC-104	Site_Equipment_Instrument Numbering Legend
ELE-SPEC-111	Control Specification - Standard Objects and Practices (DNP3 Field Sites)
ELE-SPEC-114	Control Specification - Communications Stations
ELE-SPEC-115	Control Specification - Sewage Pump Stations
ELE-SPEC-116	Control Specification - Reservoir
ELE-SPEC-117	Control Specification - Bores
ELE-SPEC-118	Control Specification - Water Pump Stations
ELE-SPEC-119	Control Specification - Instrumentation Sites
ELE-SPEC-120	GeoSCADA System Specification
ELE-SPEC-121	Common Template Specification
ELE-SPEC-122	DNP3 Template Specification
ELE-SPEC-122A	DNP3 Template Specification Apdx A - Device Template Definitions
ELE-SPEC-122B	DNP3 Template Specification Apdx B - Standard Site Template Instance and Point Configuration
ELE-SPEC-123	Control Specification - Control System Architecture
ELE-SPEC-124	SCADA Site Level Asset Naming Specification
COM-001	Commissioning
COM-002	Contractor Documentation Requirements
STR-003	Building Specification

Council attempts to standardise its infrastructure assets to reduce spares holdings and streamline maintenance practices. To ensure that any works align with Councils requirements, proponents should request the latest revision of Councils standard design documentation prior to commencing works by emailing development@tr.qld.gov.au. These drawings and specifications will be the equivalent of an 80% design submission and will assist proponents at the early stages of design. The documentation provided by Council will include:

- 80% electrical design drawings
- General Electrical Specifications
- Site type Electrical Specifications
- Documentation and Commissioning Specifications
- Requirements for Power Systems Analysis and ArcFlash
- Locations of repeaters for radio path profile

Private Works Quotation

Onboarding of any new standard electrical and control system infrastructure into Councils environment does not typically require a private works quotation. In the event that the works are non-trunk or significantly deviate from Councils standard designs and require engineering input, a Private Works Quotation may be required. Where this is required, the proponent shall submit a

request to Council for a Private Works Quotation (PWQ) for engineering time associated with the infrastructure works.

Site Specific Design

Once the proponent has received the concept design information and specifications from Council, they are required to customise these to suit their individual application. This will require an RPEQ Electrical Engineer to progress the drawings from 80% to 100% design stage in accordance with Councils specifications.

This package will be submitted with the Civil and Mechanical drawings at 100% at the Operational Works stage. Proponents may elect to submit earlier Mechanical and Civil design submissions at 50% and 80% for preliminary feedback to ensure the design aligns with Council requirements.

In addition, it is expected that the proponent shall:

- Undertake a radio path profile analysis and submit to Council
- Submit deliverables from 50% and 80% design stages as outlined in ELE-SPEC-001. The *Lightning Risk Assessment* and *Changeover Plan* are excluded from this list.

Design Review

Upon receipt of the complete 100% design package, Council will review the submitted drawings and provide any feedback and clarifications as part of the formal Operational Works process. The proponent shall then resolve all outstanding comments and issue drawings for construction.

SCADA & Control System Integration

For control system programming and SCADA work Council has a panel of pre-qualified suppliers. These suppliers have a long-standing relationship with Council and have been deemed competent to carry out works in Councils Water & Wastewater network and meet Councils cybersecurity requirements. Proponents can request a list of current suppliers to engage directly for any control system works.

These suppliers will have access to Councils standard control system objects and templates and will be familiar with delivery of this infrastructure to Council. These suppliers will also be familiar with Councils Change Management process and will ensure the interface between Councils SCADA system is appropriately managed. Proponents may engage any member of the panel and negotiate commercial terms with the panel members that suit their business model.

The control system integrator shall attend the FAT and SAT and provide copies of all required configurations, code and other relevant information to Council as part of the handover package. The control system integrator shall be responsible for delivering a functional description for the site.

In addition, Council has a panel of pre-qualified suppliers for electrical works in Water & Wastewater infrastructure who are familiar with Councils requirements and have existing knowledge of Councils processes and systems. It is not mandatory for proponents to use these suppliers however their details can be provided upon request.

Factory Acceptance Testing (FAT)

Prior to dispatching the electrical switchboard to site, the proponent shall arrange an iFAT (if required) and a Factory Acceptance Test of the Switchboard and control system which will be attended by:

- Electrical contractor
- Control System Integrator

- Council officer from Water and Waste Services

The proponent shall supply Council with Inspection and Test Plans for the FAT 10 business days prior to commencement. The FAT & iFAT documents shall be in accordance with Councils specifications. After FAT testing has been completed, the proponent shall log any defects raised by Council and these shall be resolved to Councils satisfaction prior to SAT testing.

Site Acceptance Testing (SAT)

The proponent shall arrange a Site Acceptance Test (SAT) that shall include:

- Installation and configuration of communication equipment (i.e Radio) by Council officers from Water and Waste Services
- SCADA integration
- Site testing of all equipment and set points

The SAT test shall be attended by:

- Electrical contractor
- Control System Integrator
- Council officer from Water and Waste Services

The proponent shall supply the Council with Inspection and Test Plans for the SAT 10 business days prior to commencement. Upon completion of the SAT, the proponent shall log any defects raised by Council and these shall be resolved to Councils satisfaction prior to the site passing to “on-maintenance”.

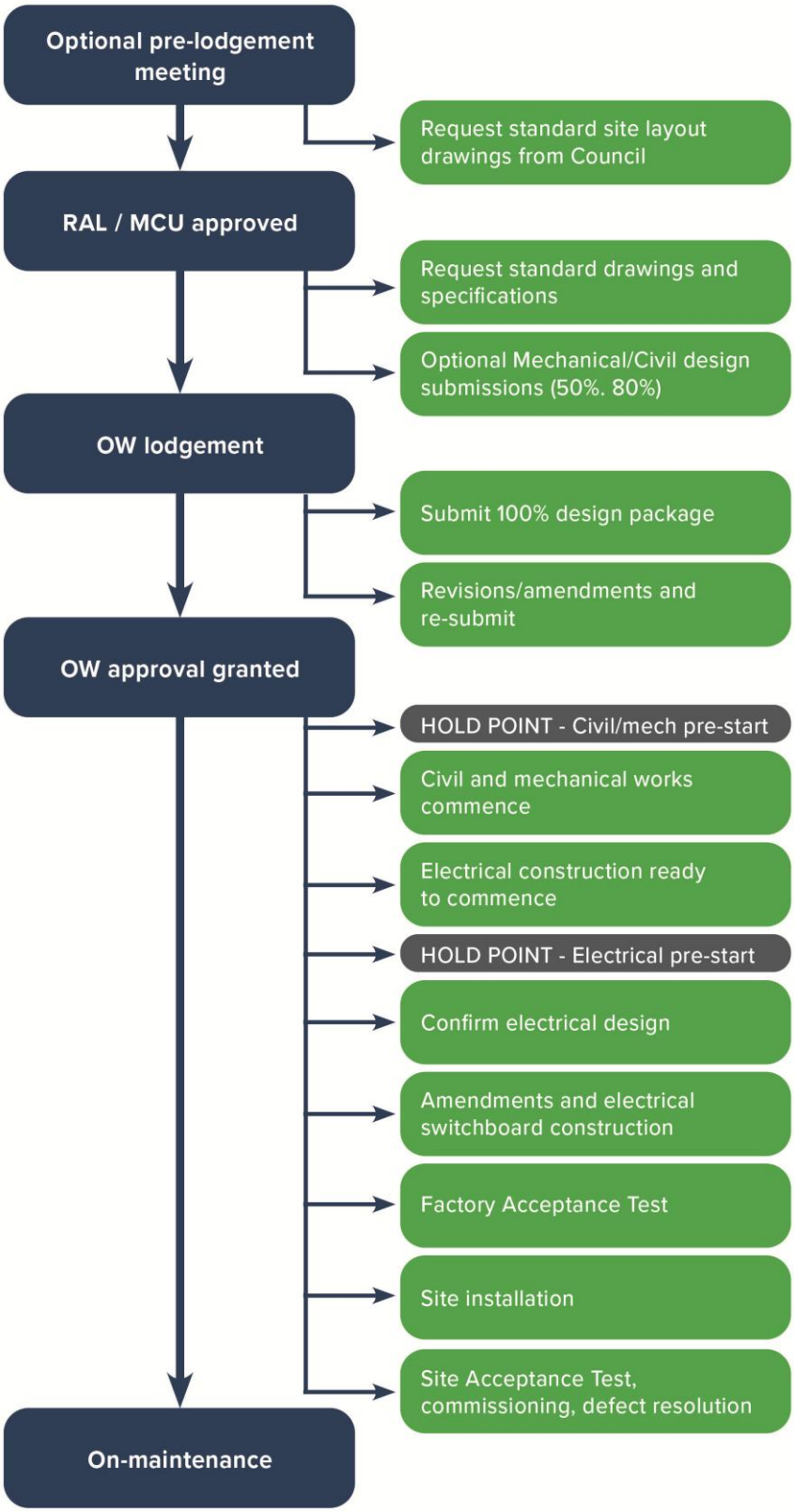
Handover and Documentation (prior to On Maintenance)

Upon completion of the SAT, within 4 weeks the proponent shall supply Council with the following as a minimum:

- Documentation as specified in COM-002.
- As-constructed issues of all drawings in both pdf and native CAD formats and signed off by an RPEQ Engineer.
- PLC/RTU code and configuration
- HMI code and configuration
- Any passwords or logins required for the infrastructure
- Updated functional description
- Signed copies of inspection and test plans

APPENDIX A

CONDITIONAL ON-MAINTENANCE FLOW CHART



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