

S-SPE-STD-002

Utility Poles for Lighting and Equipment

Document number: SPE-00478

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Ver No.	Description	Document Owner		Document Approver		
		Position	Approval	Position	Approval	Approval Date
3	Amended Version	Principal Engineering Standards and Assurance	Refer to supporting Info in Rex	General Manager - Engineering Standards & Assurance	Refer to supporting Info in Rex	28/05/2024
This Engineering Standard was endorsed by an RPEQ on behalf of Seqwater.						

Version History

Rev	Date	Description	Author	SME	Owner	Approver
3	28/05/2024	Minor Amendment				
2	20/10/202	Minor Amendment				
1	01/10/2020	Initial Release				

(Refer Controlled Document in REX for Author, SME, Owner and Approver details)

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1. Purpose

This document is part of a suite of Seqwater Engineering Standards which are in alignment with the Seqwater Quality Management System. Their purpose is to provide a consistent approach to the development, modification, and management of Seqwater infrastructure that is fit for purpose, economic over the life of the asset, and meets Seqwaters Work Health and Safety obligations.

This Standard Specification provides the minimum requirements and recommendations for Utility Services Poles for Lighting and Equipment. Utility Service Poles for Overhead Electrical Distribution are excluded from the scope of this Engineering Standard. This document must be used in conjunction with the documents it references to assist in ensuring a fit for purpose asset.

This Engineering Standard is not intended to be relied on solely for design, supply, and installation works; advice from specialist engineers and/or manufacturers may be required on a case-by-case basis.

2. Scope

This Engineering Standard applies to all Seqwater employees, contractors, suppliers and consultants working for or on behalf of Seqwater unless otherwise stated. It applies to all new assets and to all existing assets undergoing refurbishment or modification. It must be used in conjunction with other relevant Seqwater Engineering Standards and project specific documents to define the technical requirements for infrastructure design and construction.

Where single or discrete components of an existing non-compliant system are to be replaced, refurbished or modified, this standard should not automatically be applied to the entire system retrospectively, however consideration should be given, in consultation with relevant stakeholders, to the extent of the application of the standard outside of the components requiring replacement, refurbishment or modification, to ensure safe, economic, and fit for purpose infrastructure.

Seqwater Engineering Standards detail Seqwater's minimum requirements and recommendations to provide infrastructure that will be fit for purpose, and safe to operate and maintain. However, compliance with these requirements and recommendations does not remove, and cannot be relied on as meeting, the designer's overarching responsibility for ensuring infrastructure designed is fit for purpose and safe to construct, operate, maintain, and demolish. The designer must exercise appropriate due diligence to identify and manage hazards so far as is reasonably practicable.

Designers must also ensure compliance with relevant Australian Legislation, Standards, Codes and Guidelines (including those produced by Water Services Association of Australia). Where no Australian Standard exists for a particular application, work must conform to the most current version of an industry accepted international standard.

Deviation from meeting the minimum requirements in this Engineering Standard requires written agreement from Seqwater as per the deviation process detailed in Procedure X-PRO-STD-008 Asset Standards Management and Application. That process includes completion of an X-TMP-STD-022 Asset Standards Deviation Request Form and submission by the Seqwater Project Representative to the Seqwater Engineering Mailbox. Where noted in this Engineering Standard that Seqwater approval, agreement, or acceptance shall/must be sought, such approval,

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agreement or acceptance must be gained through the Seqwater Asset Standard Deviation process, as outlined above.

Responsibility for ensuring compliance with Seqwater Engineering Standards lies with those engaged in the management and execution of design, construction, and modification of Seqwater infrastructure. This includes modifications to the functional design of the infrastructure including technical changes made which would extend an asset outside of its design operating envelope and/or approved operation and maintenance practices.

Any ambiguities or conflicts identified between specific requirements within this Standard and project documents, another Seqwater Engineering Standard, or Australian Legislation, Standards, Codes or Guidelines, must be brought to the attention of the Seqwater Document Owner, via the Engineering Mailbox, for clarification. Where it is proposed to proceed without meeting the requirements of this standard, agreement must be obtained via the Deviation Process, as outlined above.

Seqwater undertakes regular updates of its Engineering Standards. Before utilising this Engineering Standard the complete list of Seqwater Engineering Standards should be reviewed to ensure currency and applicability of standards to be applied to the works. These can be accessed on the Waternet "Engineering and Asset Standards" page.

3. Design Requirements

3.1. General Requirements

Utility services poles for lighting and equipment are to be selected and designed in accordance with relevant Australian, international and/or industry standards by a competent RPEQ in a relevant discipline, or under the direct supervision of an RPEQ in a relevant discipline, who shall take full responsibility for the design and the certification of the design drawings. Pole systems designed and manufactured outside of Queensland shall, as a minimum, be assessed by an RPEQ in a relevant discipline as being safe and fit for purpose for the proposed application, with an Engineering Statement "ES-1 Design" (Statement Type "Design Reviewer") provided by the assessing RPEQ to certify that they are safe and fit for purpose for the proposed application.

Items to be considered in undertaking the design are to include, but are not limited to:

- a. Dead load from the pole's own weight;
- b. Wind loads;
- c. Earthquake loads;
- d. Live loads from the weight of lighting and equipment to be attached;
- e. Maintenance loads;
- f. Relevant design load combinations;
- g. Structural stability and strength;
- h. Design for serviceability and durability for the intended environment (e.g. exposure to weather, erosion, water treatment plant environment/chemicals etc.);
- i. Equipment attachment method, suitability and strength;

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- j. Safety in Design throughout the asset life (including during construction, operation, maintenance and decommissioning, including vehicle impact where appropriate);
- k. Maintenance accessibility;
- l. Other factors as deemed necessary by the responsible RPEQ.

Where a pole is to be located on an existing structure the design and construction shall ensure the integrity of the existing structure. For concrete structures this shall include non-destructive testing (e.g. ground penetrating radar) prior to installation to ensure steel reinforcing or other structural elements are not damaged or compromised during pole installation. Installation on a reservoir shall also ensure the integrity of the reservoirs watertightness is not affected and that effective drainage of stormwater from the structure is not impeded.

All associated electrical assets shall conform to the requirements of Seqwater Engineering Standard E-SPE-STD-001 Electrical Design and Construction.

3.2. Hinged Tilt Poles and Swivel Poles

Hinged poles shall meet all requirements for hinged poles set out in Main Roads Technical Specification MRTS97 "Mounting Structures for Roadside Equipment".

When used for communications equipment the designer must ensure appropriate assessment of Radio Frequency Electromagnetic Energy (RF-EME) is undertaken prior to installation and appropriate RF-EME warning signage must be installed on the base of the pole and at the entrance to the site warning of the associated risk and requiring the equipment to be de-energised prior to the commencement of any maintenance work.

Poles shall be designed in such a way so that it is not possible for the upper hinged/ swivel section, including any fixtures and attachments, to come into contact with the lower fixed section of the pole, or with the ground, nearby structures, walkways, stairways, ladders, platforms or associated handrails. When lowered the tip of the upper section of the pole shall be between 1200mm and 1400mm above the nominated maintenance zone/area floor level.

The maximum tip loading shall be indelibly marked on the name plate at the base of each pole.

The hinged section of tilt poles must incorporate provision of counterweights of appropriate mass to achieve rotational balance of the upper section (including fixtures) and lower section. Individual counterweights shall not have a mass greater than 10 kg.

The design must incorporate a means of safely raising and lowering the hinged/swivel section, and of securing it in place - both when lowered for fixing or maintenance of attachments, and when raised and in use.

Poles must be located such that the swinging arc of the upper section is well clear of any adjacent roadway or access way and associated handrails or other fixtures.

Poles must be supplied with written Operation and Maintenance instructions which include instructions for their safe operation (raising and lowering) as well as requirements for their regular inspection and maintenance.

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4. Definitions & Abbreviations

Table 1 Definitions and Abbreviations

Term	Definitions
Contractor	An entity engaged by Seqwater to undertake work in accordance with an agreed contract with a defined scope of work.
Employees	Means persons employed directly by Seqwater in a permanent, temporary or casual capacity.
ESA	Engineering Standards and Assurance
Leader	Means any Level 1, 2, 3 and 4 Leader with responsibility for managing a functional area of the business, including people management responsibilities within their functional area.
Manufacturer / Supplier / Vendor / Original Equipment Manufacturer (OEM)	The entity that manufactures or supplies equipment to meet the specifications of the Contractor.
Owner / Principal / Seqwater	The entity that engages the Contractor to undertake the work and takes custody of the outcome. The Owner may delegate responsibilities to other entities to act on its behalf (e.g. a consultant).
REX	Seqwater Electronic Document and Records Management System.
RPEQ	Registered Professional Engineer of Queensland
Seqwater Approval / Agreement / Acceptance	Written sign-off gained via the deviation process, as detailed in X-PRO-STD-008 Asset Standards Management and Application Procedure.
Seqwater Engineering Standard	Includes Standard Procedures, Standard Specifications and associated supporting documents such as Standard Drawings, Guidelines, Lists, Datasheets, Manuals, Registers, and Templates.
shall / must	Indicates a mandatory requirement
should	Indicates a recommendation
Utility	A service provided for a practical use – includes for lighting, power, signaling, communications, cctv, etc.. For this Standard it excludes overhead electrical power distribution.
Worker(s)	Includes all permanent, temporary, and casual employees of Seqwater, and: • vocational and work experience placements • volunteers • suppliers, contractors, and consultants temporarily engaged to do work for or on behalf of Seqwater.

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5. References and Related Materials

The documents listed in Table 2 below, and the requirements therein, are relevant to this Engineering Standard. In their latest editions, these documents form a part of this document. Note that this is not an exhaustive list of documents relevant to the works.

Seqwater undertakes regular updates of its Engineering Standards. Before utilising this document, the complete list of Seqwater Engineering Standards should be reviewed to ensure currency and applicability for the proposed works. These are available via the Waternet Engineering and Asset Standards page.

Table 2 References and Related Material

Description	Location
PRO-01617 X-PRO-STD-009 Engineering Design, Construction, Operation and Maintenance	REX & Waternet
PRO-01872 X-PRO-STD-002 Engineering Drawing Number Procedure	REX & Waternet
PRO-01873 X-PRO-STD-001 Asset Standards Documentation Classification and Naming Structure	REX & Waternet
PRO-01874 X-PRO-STD-004 Development and Review of Asset Standards	REX & Waternet
PRO-02140 X-PRO-STD-013 Engineering Technical Hazard Study	REX & Waternet
PRO-02187 X-PRO-STD-007 Drawing and Spatial Data Standards	REX & Waternet
PRO-02190 X-PRO-STD-006 Equipment Numbering and Naming Convention	REX & Waternet
PRO-02205 X-PRO-STD-008 Asset Standards Management and Application	REX & Waternet
PRO-02234 X-PRO-STD-015 Management of Change – Technical	REX & Waternet
TEM-00216 X-TMP-STD-005 Engineering Statement Template – ES1 – Design	REX & Waternet
TEM-00224 X-TMP-STD-022 Asset Standards Deviations Request Template	REX & Waternet
SPE-00352 E-SPE-STD-001 Electrical Design and Construction	REX & Waternet
AS 1170 Structural Design Actions	Intertek Inform & Waternet
MRTS97 Main Roads Technical Specification MRTS97 – Mounting Structures for Roadside Equipment (Department of Transport and Main Roads, Queensland)	Department of Transport and Main Roads

6. Changes from previous version

This Engineering Standard will be regularly reviewed in accordance with the requirements of the Seqwater Controlled Document Management Procedure. Reviews will include consideration of suggestions for alteration or improvement made in accordance with Seqwater Procedure X-PRO-STD-004 Development and Review of Asset Standards. Changes made from the previous version are summarised in Table 3 below.

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Table 3 Changes from previous version

Section Number	Change
All	Reformatted to meet current Controlled Document requirements.
2. Scope	Boilerplate wording in Section 2 updated to meet current requirements.
3.1 General	RPEQ requirements for poles designed and manufacture outside of Queensland added. Reference to withdrawn Australia Standards removed.
Table 2	Reference to withdrawn Australia Standards removed.

7. Further information

For further information please contact the owner of this document as listed in the footer below.

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