

# Physical and chemical assessment

Version: February 2018

## *In situ* water quality sampling using a Secchi disc

### 1 Purpose and scope

This document describes the method for the correct use of the Secchi disc for the measurement of transparency in surface water bodies.

### 2 Associated documents

*Physical and chemical assessment:*

- *Background information on water quality measurements using in situ water quality instruments*
- *Water quality sampling using in situ water quality instruments*

*Sampling design and preparation:*

- *Permits and approvals*
- *Record keeping including the taking of field photographs and videos*

### 3 Health and safety

Before following the methods contained in this document, a detailed risk management process (identification, assessment, control and review of the hazards and risks) must be undertaken. All work carried out must comply with the Queensland Work Health and Safety legislative obligations.

### 4 Permits and approvals

Permits and approvals may be required to conduct activities involving animals, plants and/or in protected areas (for example National Park/Regional Park, State Forest or State Marine Park). See *Permits and approvals* document for more information on requirements.

### 5 Skills, training and experience

No skills, training or experience is required to conduct the procedure within this section.

### 6 Equipment

See Appendix 1 for example equipment checklist.

### 7 Procedure

**Note:**

- A Secchi disc is not appropriate for use in shallow waters where the disc can still be seen when resting on the bottom of the water body.
- If prescription glasses or contact lenses are normally worn, these should be worn when undertaking Secchi depth measurements. Tinted lenses or sunglasses should not be worn, as they could affect the depth at which the disc is no longer visible and re-appears.

- Weather conditions can affect the visibility of the disc through the water (i.e. cloud cover and wind).
  1. Check Secchi disc (Figure 1) for damage and untangle any knots in the rope.
  2. Lower the Secchi disc into the water on the sunny side of the vessel (Figure 2) until the black/white interface is no longer visible.
  3. Record this depth as D1 (measurement should be made at a precision of half the distance between marks on rope).
  4. From this point raise the disc until the black/white interface of the Secchi disc reappears.
  5. Record this depth as D2.
  6. Calculate Secchi depth using the following formula:

$$\text{Secchi depth} = \frac{D1 + D2}{2}$$

7. Record the following details:
  - site details (e.g. site code, site name, waterway, GPS co-ordinates)
  - date and time of measurement
  - distance between observers eyes and water level
  - D1, D2 and the calculated Secchi depth
  - any factor that may have affected the visibility of the disc (e.g. wind disturbing the surface of the water).
8. Readings should be taken between two hours after sunrise and two hours before sunset.



**Figure 1: Secchi disc attached to 3kg weight and tether**



**Figure 2: Secchi disc being lowered into the water**

## **8 References and additional reading**

Australian Standards 1993 (R2017), Waters—Part 7: *The construction and use of the Secchi disc*, AS 3550.7-1993 Homebush, NSW.

# Appendix 1

**Table 1: Equipment checklist**

<b>Equipment</b>	✓
Data sheets, notebook or field computer	
GPS, phone, camera, Go Pro or body cam	
300mm disc painted with quadrants alternating in flat black and flat white in waterproof paints	
3kg weight, suspended below the centre of the disc with an eye bolt	
Tether of non-stretch nylon rope (surveyors Kinlon poly-chain) with waterproof measurement graduations, attached to eye bolt on the Secchi disc	