

PORTS AUSTRALIA
PRINCIPLES FOR GATHERING AND PROCESSING HYDROGRAPHIC INFORMATION
IN AUSTRALIAN PORTS
(Version 1.4 – 6 November 2008)

PREFACE

These Principles have been prepared by the Hydrographic Surveyors Working Group of Ports Australia. They are intended for use in Ports and supplement the International Hydrographic Organization (IHO) Special Publication S-44 (Standards for Hydrographic Surveys) available from the IHO website (http://www.iho.shom.fr/publicat/free/files/S-44_5E.pdf). These Principles have been designed as performance standards and as such do not describe the detailed process that shall be followed to ensure the required standard of information is obtained and subsequently maintained.

SCOPE

These Principles are primarily intended for (but not limited to) use in Australian ports where shipping regularly or on occasions operates with restrictions on Under Keel Clearance (UKC). They are targeted at the provision of hydrographic data that is used as input in a port's UKC formula.

The 'Principles for Gathering and Processing Hydrographic Information in Australian Ports' contain consistent and common criteria for the conduct of surveys in Australian ports. They have been designed to ensure that all relevant port authorities select the survey class, frequency and personnel required to ensure that the port's 'declared depth' provides confidence for port operations, and can be utilised in the port's UKC formula. The Principles do not set out how or what technologies should be used to achieve the required standard.

Appendix 1 of these Principles sets out the requirements for a survey to be Class A or Class B and particularly these which must be addressed in the 'Method Statement', as described in clause 3 of the Principles. The Method Statement is a critical part in ensuring that the selected class of survey can be achieved. It addresses the factors that must be considered when planning, carrying out, appraising and presenting the survey. Although there are many "givens" in carrying out any survey the technologies and frequency of survey will be unique to each port.

The professional expertise of the hydrographic surveyor to select the level and type of technology that is necessary to undertake a survey is critical to abiding by the Principles. These Principles do not attempt to provide a step by step manual on how to carry out a particular survey.

FOREWORD

There has been increasing pressure on port operating authorities in both the commercial and safety areas to be able to justify, or in some cases defend, the inputs in their UKC formula. IHO Publication S-44 provides the minimum standards for hydrographic surveys; it also requires that surveyors strive to attribute all new data with a statistical estimate of its probable error. However S-44 does not address data currency, nor contain guidelines on evaluating whether the survey results are actually 'fit for their intended purpose'. There will inevitably be a degree of uncertainty in port survey data. This uncertainty varies, depending upon numerous factors including survey equipment, environmental

conditions, etc. A fundamental aim of these Principles is to ensure the resultant depth uncertainty can be recommended by the port surveyor for use in the port's UKC model.

In addition to the uncertainty of the soundings most ports that operate with a minimum UKC have developed dredged channels that can suffer from siltation that may result in a reduced depth available for shipping. As such the need for regular surveys is addressed in these Principles.

A critical part of ensuring that the required standard has been achieved is the documentation of procedures and processes that the supplier has used in producing the soundings. This documentation will usually be unique to each port and the surveying tasks within that port. **Appendix 1** sets out in broad terms the requirements that must be addressed in carrying out the survey, from planning through to data retention and presentation.

The detailed technical aspects of the tasks undertaken during the survey are included in the Method Statement. These will vary from port to port and with the technology that is available. With improvements in technology there will be a need to review and, where necessary, change the Method Statements. Where a port has a need to address a particular issue this should be documented and adopted as a procedure.

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References: 1. IHO Publication S-44 (Standards for Hydrographic Surveys) – 5th Edition, Feb. 2008
2. IHO Publication M-13 (Manual on Hydrography)

1. PERSONNEL

The hydrographic survey and other associated tasks shall be carried out by, or directly supervised, by a suitably qualified and experienced hydrographic surveyor. The resulting information shall be certified by this person and shall state the class to which the information can be assigned. The surveyor should be able to demonstrate a proven ability to undertake his/her task via either formal certification or evidence from previous clients of satisfactory performance in similar projects.

2. FREQUENCY OF SURVEYS

The authority that declares the depth available for navigation shall develop with the supplier an agreed survey frequency for the supply of information and required quality and class of that information, notwithstanding peculiar/ad-hoc requirements highlighted in Section 4.1.1.

3. SURVEY METHODOLOGY

It is mandatory that each port develop and document a ‘Method Statement’ that can clearly demonstrate that the standard is adhered to for each type of survey. The Method Statement shall as a minimum address all of the elements of Appendix 1, ‘Requirements To Achieve Class A Or Class B Survey’.

The following provide useful information on standards, ‘method statement’, etc.:

1. ‘Standards for Hydrographic Surveys within Queensland Waters’
(http://www.msq.qld.gov.au/resources/file/eb1aae02837fa95/Pdf_standards_hydro_surveys.pdf)
2. ‘Standards for Hydrographic Surveys (HYSPEC) v3’
(<http://www.linz.govt.nz/docs/hydro/stds-and-specs/hyspec-v3-24-apr2001.pdf>)

4. CLASS OF SURVEYS

Preamble

There are 2 classes of survey, ‘A’ and ‘B’. The resultant depth "accuracy" for both classes is the same; the difference between the classes is the requirement for a Class A survey to use a survey method that ensures complete bottom coverage so that the minimum depth within the channel toe lines has been detected. Class B is designed for check surveys where a Class A survey has been previously carried out. Either survey will allow a review of the depth available for navigation by the appropriate authority. The definition of survey classes (A and B) should not be confused with ‘Zone of Confidence (ZOC)’ classifications, which refer to the quality of data used in the chart/ENC.

4.1 CLASS A

4.1.1 Application

Class A surveys are required for, but not limited to:

- Investigations of an area for a proposed new channel, anchorage, berths, swing basin, etc, the outcome of which will be the declaration of a navigable depth.
- Increasing the declared depth in a channel following maintenance or development dredging.
- Investigating a grounding or reported shoaling in an area.

4.1.2 Requirements

For survey information to satisfy this class the following shall be met:

- The method or methods used to undertake the hydrographic survey within the waterway shall ensure that the minimum depth in the navigable waterway has been determined.
- The resultant reduced depths shall have a total vertical uncertainty equal to or better than the survey uncertainty component included in the port's UKC formula.

In all other respects the data emanating from a Class A survey is to meet the requirements for Special Order surveys in accordance with IHO Publication S-44.

4.2 CLASS B

4.2.1 Application

Class B surveys are designed for, but not limited to, check or depth maintenance surveys. The information should be of sufficient quantity and quality that allows the relevant authority to reduce the declared depth if necessary. It is a requirement of a Class B survey that a Class A survey has previously been carried out in the surveyed area.

Class B surveys are required for, but not limited to, initial investigations of any events that may have caused abnormal changes in the seabed. These are to be followed by Class A surveys in areas where deemed necessary.

4.2.2 Requirements

For survey information to satisfy this class the following shall be met:

- Depth data shall be collected from a minimum of 20 percent of the seabed in the navigable waterway. Spacing of sounding lines shall meet this requirement and may be of closer spacing in areas where siltation is known to occur. However the area coverage shall be negotiated between the authority that declares the depth available for navigation and the supplier.
- The resultant reduced depths shall have a vertical uncertainty equal to or better than the survey uncertainty component of the port's UKC model.

In all other respects the data emanating from a Class B survey is to meet appropriate requirements for Order 1a surveys in IHO Publication S-44.