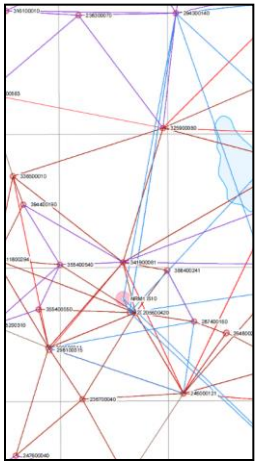
ICSM
INTERGOVERNMENTAL COMMITTEE ON SURVEYING & MAPPING

An Update on the Development of Standards and Practices for Control Surveys (SP1)

Permanent Committee on Geodesy (PCG)







Overview

- Brief history of SP1
- Version 2 review process
- Purpose and scope of SP1 – version 2
- Structure and content
- Implications for tenders and contracts
- Further development
- Questions

Brief History of SP1

- **SP1 “Horizontal & vertical control surveys” originally published in 1966**
- **Reviewed 1976, 1981**
- **Extensively revised in 1986**
- **Amendments 1990, 1994, 1996, 1997, 1999, 2000, 2002, 2004, 2007**
- **Current review (2009–2013):**
  - Major structural change
  - Revision of standards and guidelines in light of technological advancements
  - Shift from CLASS and ORDER to uncertainty
  - Less prescription for survey practice guidelines

Version 2 Review Process

- **Landgate (WA) review**
- **ICSM PCG review**
- **Selected stakeholder feedback**
  - Private surveying organisations
  - Government surveying departments
  - Academia
- **First public draft released for feedback (April – July 2012)**
- **Further PCG review based on feedback**
- **Current status:**
  - Standard endorsed by ICSM November 2012
  - Guidelines presently under review

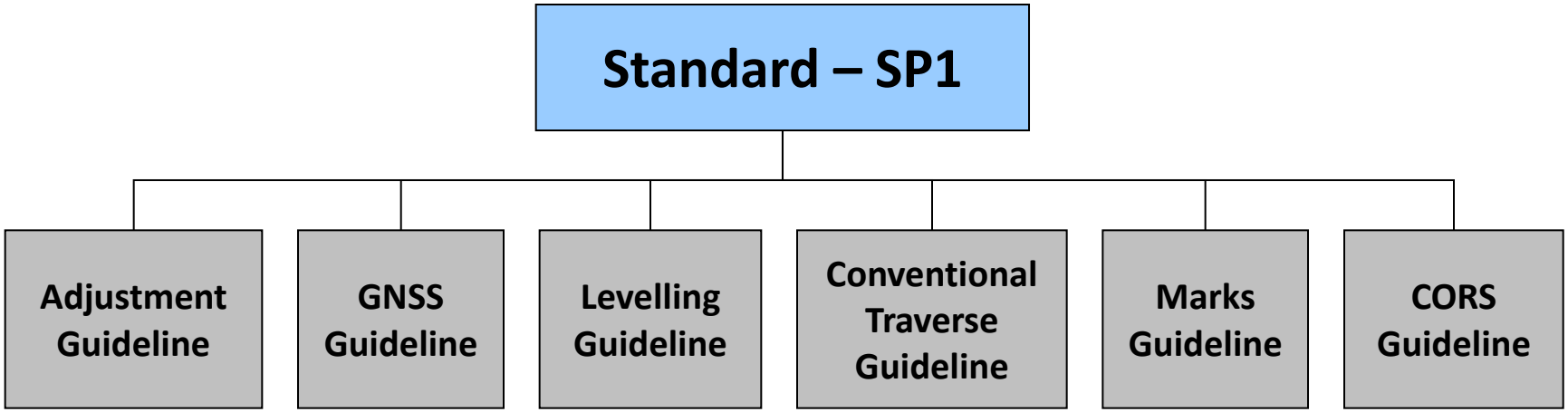
Purpose and Scope of SP1 version 2

- **Specify minimum requirements**
  - For the determination of 1D, 2D or 3D position and uncertainty of Australia's survey control marks
- **Promote the adoption of uniform procedures**
  - To achieve the highest level of rigour and integrity in the establishment and maintenance of Australia's survey control mark network
- **Scope – surveys that define, improve, extend or connect to the network**
  - Datum control surveys
  - General purpose control surveys

Structure and Content

- **One over-arching standard**
- **Six guidelines**
  - Control survey by GNSS
  - Control survey by conventional traverse surveys
  - Control survey by differential levelling
  - Continuously Operating Reference Stations (CORS)
  - Installation and documentation of survey control marks
  - Adjustment and testing

Structure and Content

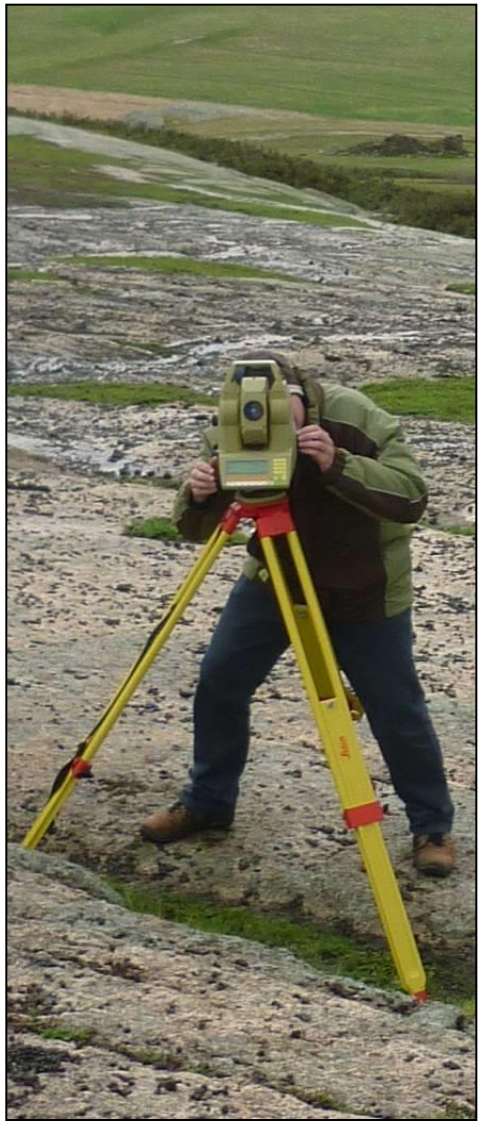


The Standard

- **Terms and definitions**
- **Scope**
  - Datum control surveys
  - General purpose control surveys
- **Connection to datum**
- **Conducting control surveys (refer to guidelines)**
- **Quantifying survey quality**
  - Survey Uncertainty (SU)
  - Positional Uncertainty (PU)
  - Relative Uncertainty (RU)
- **Evaluating and expressing uncertainty**

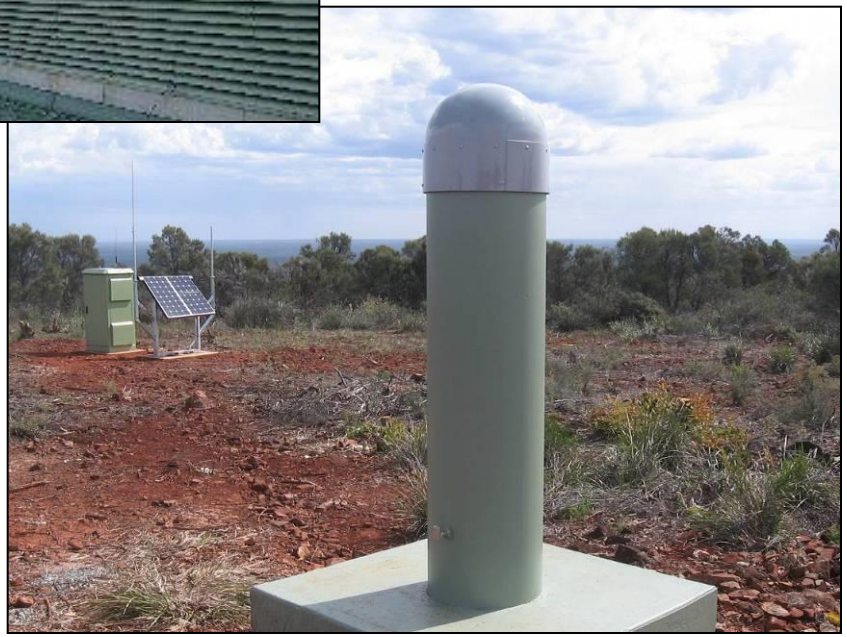
Control Survey Guidelines

- **Control surveys by:**
  - GNSS
  - Conventional traverse
  - Differential levelling
- **Equipment**
- **Observation procedures**
- **Processing procedures (GNSS)**
- **Examples**



CORS Guideline

- Tier hierarchy
- Network design
- Site establishment
- Equipment
- Coordination
- Operation

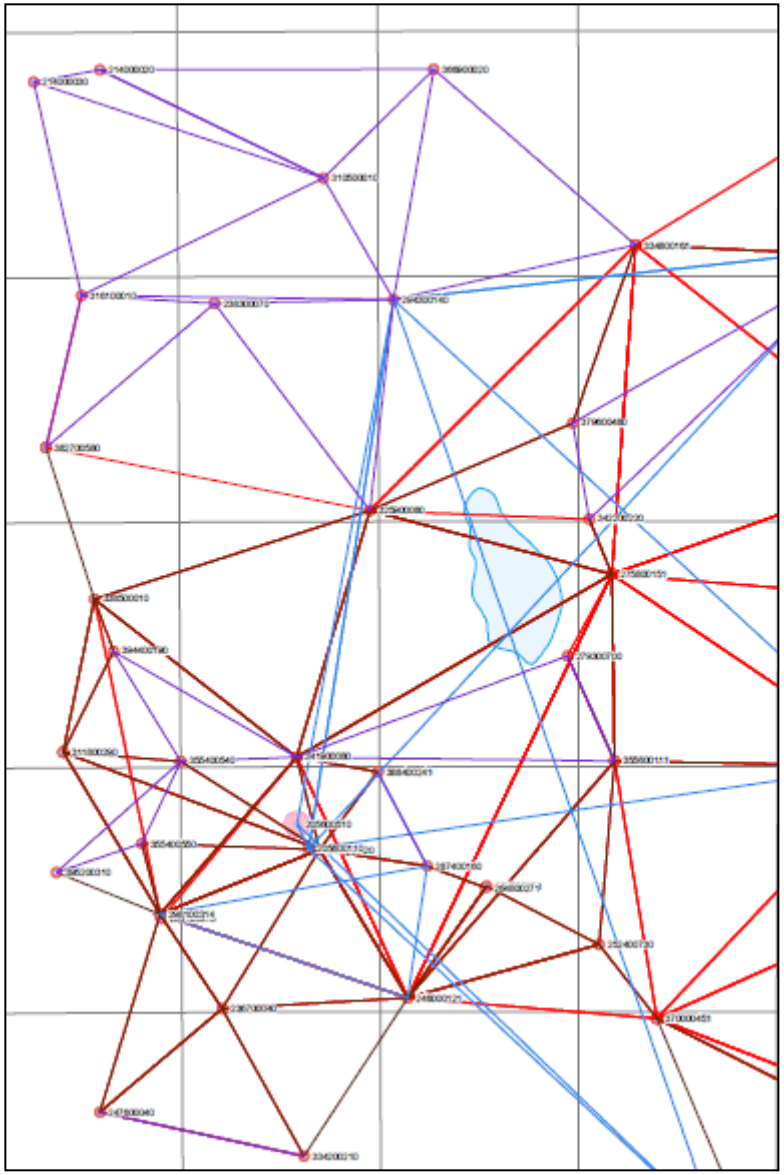


Survey Mark Guidelines

- **Mark characteristics**
  - Material, construction, penetration
  - Visibility, access, location, stability, etc.
- **Mark information**
  - Mark details
  - Sketch plans
  - Uncertainty
  - Measurement technique

Adjustment Guideline

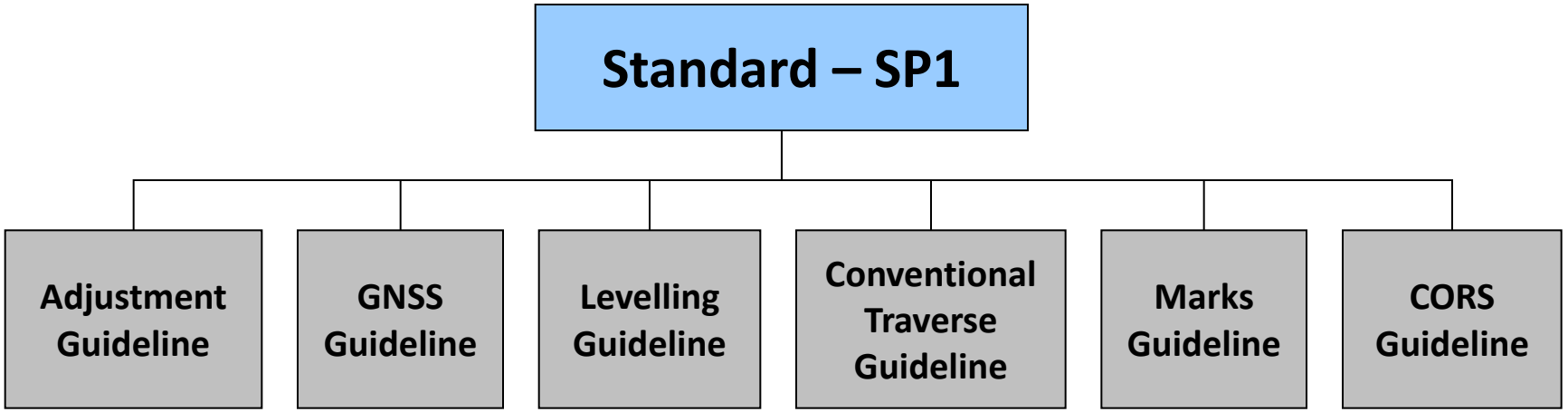
- **Scope**
- **Connection to datum**
- **Adjustment of survey control**
  - Purpose
  - Recommended procedure
- **Testing uncertainty**
  - Local test
  - Global test
- **Example test procedure**



Implications for Users

- **SP1 is intended to promote adoption of uniform procedures for both datum and general purpose control surveys**
- **Compliance with standard**
  - Mandatory for government / private organisations undertaking datum control surveys
  - Not mandatory for organisations undertaking general purpose control surveys
- **Compliance with guidelines**
  - Not mandatory unless referred to by legislation, government policy, directions, contract specifications, etc.

Further Development



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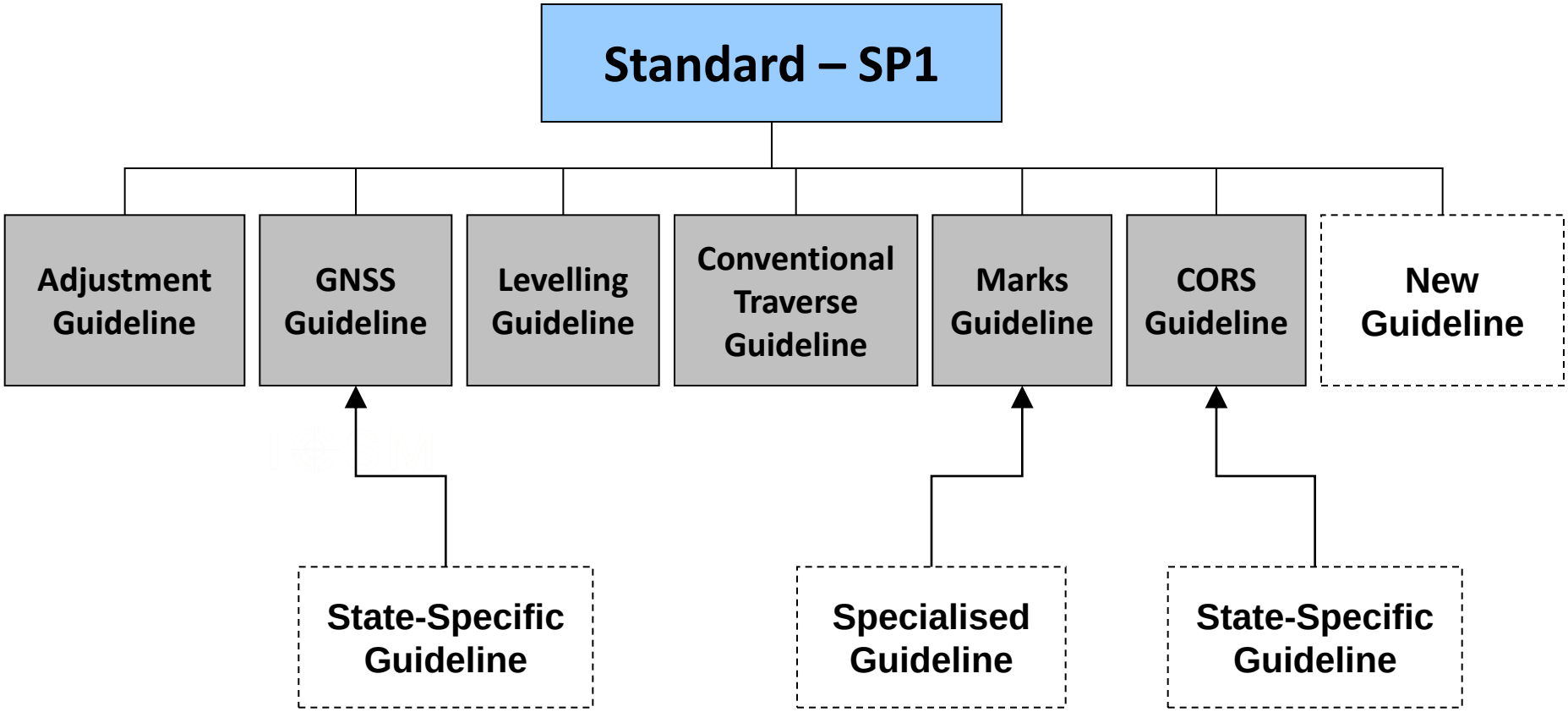

Latest version and Feedback

- **For the latest version, see:**

  http://www.icsm.gov.au/geodesy/sp1.html

- **Please submit feedback to:**

  icsm@ga.gov.au