|  |
| --- |
| Submitting GNSS data for the Victorian Survey Control Network |
| Guidelines for static and rapid-static GNSS surveys to enhance the Victorian Survey Control Network | |

Surveyor-General Victoria (SGV) encourages surveyors to capture and submit Global Navigation Satellite Systems (GNSS) data to include in the Victorian Survey Control Network (SCN). This facility improves access to accurate and reliable SCN marks which support surveying activities in Victoria.

## Introduction

Victoria’s survey control infrastructure provides the realisation of the Geocentric Datum of Australia (GDA94 and GDA2020) and the Australian Height Datum (AHD71). This infrastructure includes a state-wide network of permanent marks (PMs) and GNSS Continuously Operating Reference Stations (CORS). The Victorian SCN adjustment provides accurate and reliable coordinates and uncertainties for PMs, aligned to the national datum through the CORS network.

This factsheet guides surveyors on capturing and submitting GNSS data to meet SGV’s requirements for integrating static (one hour or more) and rapid-static (five to ten minutes) GNSS survey data into the Victorian SCN adjustment.

## GNSS observation

High quality GNSS data is essential to keep the SCN accurate and reliable. When performing GNSS surveys using static and rapid-static positioning techniques, the following GNSS observation guidelines are recommended:

* observation duration (choose one):
  + **one hour** or more continuous GNSS observation with five second logging rate.
  + **two** (independent)continuous GNSS observation sessions of at least **five minutes (metro Melbourne) or ten minutes (regional Victoria)** each with one second logging rate, at least **one hour apart.**
* good sky view, preferably clear with minimum signal obstruction and multipath sources.
* ensure GNSS antenna is stationary throughout the entire survey using a tripod for one-hour sessions and a tripod or bi-pod for short (five to ten minute) sessions.
* measure the antenna height from the PM to the antenna reference point – the antenna reference point can be the base of the antenna or a marking on the side of the antenna, which makes it important that either the vertical or slope antenna height measurement type and the specific antenna reference point are all noted.

These recommendations align with the Intergovernmental Committee on Surveying and Mapping (ICSM) Standard for the Australian Survey Control Network Special Publication 1 (SP1) Guideline for Control Surveys by GNSS.

## Submitting GNSS data

GNSS data must be accompanied by a completed GNSS booking sheet, including:

* PM name and nine figure number
* GNSS antenna model and type
* measured antenna height and height measurement method
* start and end times of the GNSS observations.

The observed GNSS data can be submitted in raw data format or RINEX format. The data should be compressed to reduce the file size and submitted via the Survey Marks Enquiry Service (SMES) or emailed to [smes.support@delwp.vic.gov.au](mailto:smes.support@delwp.vic.gov.au).

GNSS booking sheets are available from the DELWP website [Survey Marks Enquiry Service (land.vic.gov.au)](https://www.land.vic.gov.au/surveying/services/survey-marks-enquiry-service).

## Processing and validation

After GNSS data is submitted, preliminary checks will ensure that all essential information has been captured. To integrate the GNSS measurements in the SCN, the submitted GNSS data will be processed with the surrounding GNSS CORS. When the GNSS data is processed, the baselines are added to the SCN dataset and verified using a rigorous least squares adjustment process. This ensures that the GNSS data conforms to a standard level of quality and produces rigorous SCN mark coordinates and uncertainty estimates that can be added to SMES.

## Survey Marks Enquiry Service

Information about all survey marks in Victoria is available at no cost through the SMES interactive online application at [Survey Marks Enquiry Service (land.vic.gov.au)](https://www.land.vic.gov.au/surveying/services/survey-marks-enquiry-service).

For a PM to be updated with SCN adjusted coordinates and uncertainty it must feature in SMES. For any new or existing PMs, registered SMES users can log into SMES and submit survey mark information and sketch plans, as well as any GNSS data and booking sheets.

## Your assistance is appreciated

SGV appreciates any GNSS data submitted for processing and integration into the Victorian SCN adjustment. This collaborative approach by surveyors and SGV will enhance the Victorian SCN and establish SCN marks where they are most needed.

|  |  |
| --- | --- |
| © The State of Victoria Department of Environment, Land, Water and Planning 2021  LogoThis work is licensed under a Creative Commons Attribution 4.0 International licence. You are free to re-use the work under that licence, on the condition that you credit the State of Victoria as author. The licence does not apply to any images, photographs or branding, including the Victorian Coat of Arms, the Victorian Government logo and the Department of Environment, Land, Water and Planning (DELWP) logo. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/  Disclaimer  This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication. | Accessibility  If you would like to receive this publication in an alternative format, please telephone the DELWP Customer Service Centre on 136186, email [customer.service@delwp.vic.gov.au](mailto:customer.service@delwp.vic.gov.au), or via the National Relay Service on 133 677 [www.relayservice.com.au](http://www.relayservice.com.au). This document is also available on the internet at [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au). |

## Contact us

For any guidance with the capture or submission of GNSS data to SGV for inclusion in the Victorian SCN, please contact SMES Support:

Phone: 03 9194 0770

Email: smes.support@delwp.vic.gov.au