

Landgate Requirements for Converting other Survey Marks to Geodetic Survey Marks

GSU-05



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Landgate Requirements for Converting other Marks to Geodetic Survey Marks

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1. Purpose

This document outlines the procedures for upgrading Permanent Survey Marks (PSMs), Permanent Control Marks (PCM) and Road Reference Marks (RRMs) to Geodetic Survey Marks – Standard Survey Marks (SSMs), Bench Marks (BM) or Temporary Control Marks (TCMs).

Under the Licensed Surveyors (Guidance of Surveyors) Regulations 1961 r. 22A. Cadastral subdivisions or boundaries must be connected to the geodetic datum or the State Geodetic Network infrastructure. PSMs and PCMs are established to support re-establishment of land boundaries within the subdivisions as well as to provide connections to the Geodetic Survey Network. Similarly, RRM are established by Main Roads Western Australia (MRWA) along highways and major roads to support construction and maintenance of roads in Western Australia.

While the installation requirements of PSMs, PCMs and RRM differ from geodetic standards (refer to **GSU-01 – Landgate Requirements for Placement of Geodetic Survey Marks**), they can be upgraded to Standard Survey Marks (SSM) to optimise available resources.

2. Definitions and abbreviations

Abbreviation	Definition
BM	Bench Mark
DP	Deposited Plans
Geodetic Survey Mark	SSM or BM or RM
GESMAR	Geodetic Survey Mark Register
MRWA	Main Roads Western Australia
PCM	Permanent Control Mark
PSM	Permanent Survey Mark
RM	Reference Mark
RRM	Road Reference Mark
SCDB	Spatial Cadastral Data Base
SSM	Standard Survey Mark
TCM	Temporary Control Mark
WP	Witness Plate

3. General requirements

Permanent Survey Marks (PSMs) and Road Reference Marks (RRMs) may be upgraded or converted to Geodetic Survey Marks such as Standard Survey Marks (SSMs) or Bench Marks (BMs) in order to improve and consolidate the geodetic network. It also helps minimise unnecessary duplication and resources, if they can be easily upgraded or converted to a Geodetic Survey Mark.

RRM conversions are generally identified from geodetic-grade survey works contributed by third-party individuals or organisations, including Main Road Western Australia (MRWA).

PSMs and RRM may be converted to a SSM or a BM, if –

- a) the **PSM** is a *brass plaque set in concrete* and at least **1.5 metres** off the edge of road
- b) the **RRM** is a *brass plaque set in concrete* in **built-up areas** or a *star iron picket (SIP) set in concrete* in **remote locations**. The RRM must be:
 - i. at least **1.5 metres** off the edge of a rural subsidiary road or a local distributor road.
 - ii. at least **3.0 metres** off the edge of a highway or a major road other than a local distributor road.
- c) the PSM or the RRM is located in a **safe** location.
- d) the PSM or the RRM does not pose safety concerns to the public.
- e) there is **no existing** SSM and/or BM in the **vicinity** (for example, within 5 km).

Additional Notes –

- a) A clear sky view is essential for SSMs.
- b) It should not be close to any potential or planned earth works to prevent future damage and/or disturbance to the mark.

4. Physical upgrade requirements

The PSM or RRM to be converted may require additional maintenance or refurbishment works in line with **GSU-01 – Landgate Requirements for Placement of Geodetic Survey Marks** and **GSU-04 – Landgate Requirements for Inspection, Validation & Maintenance of Geodetic Survey Marks**. This also applies to the PSMs or RRM that are converted to SSMs or BMs through geodetic-grade survey works contributed by third-party individuals or organisations. The following minimum are required:

- Reference Marks (RMs) as per **Section 5** of **GSU-01 – Landgate Requirements for Placement of Geodetic Survey Marks**. Existing RMs may be used as supplements.
- A hatch cover where the mark may be at risk or pose a risk to public safety.
- A witness plate (WP) where necessary. *Existing WPs should be retained, if found in good condition.*

- Stamp the mark, if not already stamped.

Additional Notes –

- Information about PSMs can be obtained from lodged Deposited Plans (DPs) or lodged fieldbooks (see Landgate's [Mapviewer Plus](#)).
- Information about RRM's can be found on the [Survey Portal](#) of Main Road Western Australia (MRWA).

For Internal Use Only –

Converting PSMs and/or RRM's to SSMs/BMs from survey works contributed by individuals or third-party organisations (donated data)

- a) Assess the need for conversion and identify the potential PSMs/RRMs based on Section 3 – General requirements.
- b) Allocate a mark name and use this mark name throughout the life cycle of the mark (processing, storing, and sharing).
- c) Use the original name as an alternative name in the system.
 - For example, for a PSM – **EFB 96613/9805**. This can be found on the DP.
 - For example, for a RRM – **M 43-63**. It is identified as M043 63 on the MRWA Survey Portal.
- d) Add the DP or the fieldbook containing the PSM as a Non-GS Fieldbook in GESMAR as **Cadastral Connection** – e.g., DP 46795.
- e) Add the Stamp Name to GESMAR, if applicable.
- f) Assign the **Established Date** and the Established **by Authority** as provided on the DP or the RRM Summary. If not provided, use the date of survey as the established date.
- g) For PSMs, after processing the survey and loading to GESMAR, compare the horizontal (and vertical) coordinates of the new SSMs with the Spatial Cadastral Data Base (SCDB) and report if there are any large discrepancies.
- h) Send an email to Smartplandataintegrity@landgate.wa.gov.au with a list of SSM(s) with their associated PSM name(s) and DPs. As the DPs will need to be updated to reflect the new SSM name(s).
- i) Cadastral marks such as PSMs or PCMs not upgraded to SSM should not be converted to Geodetic Survey Marks (e.g., RMs). It can be shown in the Station Summary.
- j) Any new cadastral marks connected to a SSM must be lodged within a Cadastral Fieldbook so that the cadastral connection is captured and processed. This is carried out by a Licensed Surveyor or under the supervision of a Licensed Surveyor under the Licensed Surveyors (Guidance of Surveyors) Regulations 1961 r. 22A.