Design Requirements for Platform Stopping Markers for Rail Cars

Engineering Instruction

Rail Commissioner

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Document Control

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Action	Name and Position	Signature	Date
Prepared By:	Name: Keith Charlton Title: Manager Rail Technical & Operational Assurance		18/4/16
Reviewed By:	Name: Peter Greaves Title: Team Leader Fleet & Depot		19/4/16
	Name: Tim Champion Title: Project Manager ATP		18/4/16
Approved By:	Name: Phil Agnew Title: Manager Rail Infrastructure Management		19/4/16
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1. Introduction

There are 89 rail stations on the Adelaide Metropolitan Passenger Rail Network (AMPRN) that provide facilities for travelling passengers to access train services. An increasing number of people with disabilities are now using public transport and facilities such as boarding patches, mini-ramps/camel humps are being located on platforms to provide safer access.

Platform stopping markers are provided at each station platform to indicate to the railcar driver a stopping position for the train. This assists passengers with disabilities or those utilising mobility aids to embark or disembark the railcar safely.

The location of the platform stopping marker can influence the location of station facilities and infrastructure including signals, shelters, fences, curved platforms and mirrors. This document provides design criteria and guidelines for the optimum location of the markers taking into account the differing station conditions.

2. Purpose

This guideline provides the design requirements for determining the location of platform stopping markers at stations on the AMPRN.

3. Scope

This guideline is applicable to all platform stopping markers on the AMPRN.

4. Related Documents

DOCUMENT NAME	DOCUMENT NUMBER
Station Technical Standard – Platforms Part 129003 (KNet # 5413264)	AR-PW-PM-SPE-00129003
Station Technical Standard – Signage & Pavement Marking Part 129010 (KNet # 5414486)	AR-PW-PM-SPE-00129010
Signal Sighting Standard (KNet # 5730359)	PTS-MS-10-SG-STD-00000033

5. References

- *Disability Discrimination Act 1992 and subordinate instruments.*

6. Acronyms

ACRONYM	FULL NAME
AMPRN	Adelaide Metropolitan Passenger Rail Network
DPTI	Department of Planning, Transport and Infrastructure
TGSI	Tactile Ground Surface Indicator
ATP	Automatic Train Protection

7. Definitions

TERM	DEFINITION
Balise	An electronic beacon or transponder placed between the rails as part of the automatic train protection system.

8. Design Requirements for 6/5 Car Sets Stopping Marker

8.1. Location of Platform Stopping Markers

The location of the 6/5 platform stopping marker shall take into account the following factors:

- Obstructions on the platform (structures, drainage covers etc)
- Signal locations and sighting in accordance with the document *PTS-MS-10-SG-STD-00000033: Signal Sighting Standard*
- Balises in the track used for Automatic Train Protection (ATP)
- Track circuits
- Platform length & width

3 car consists are the most common configuration used on the network. Boarding patches and mini ramps/camel humps are located on platforms to line up with the first door on the leading railcar of the 3 car consist. To avoid confusion for users, who are not aware of the type of consist approaching, boarding patches and mini ramps/camel humps are not provided to accommodate the less commonly used 6/5 car consists.

8.2. Signalling & Infrastructure Considerations

The platform 6/5 car stopping marker shall be located such that:

- the ATP balise reading antenna (mounted underneath the train carriage) installed on board is no closer than 2 metres from any fixed or controlled balise
- it is no closer than 8 metres from the signal where ATP is fitted and no closer than 5 metres on other lines

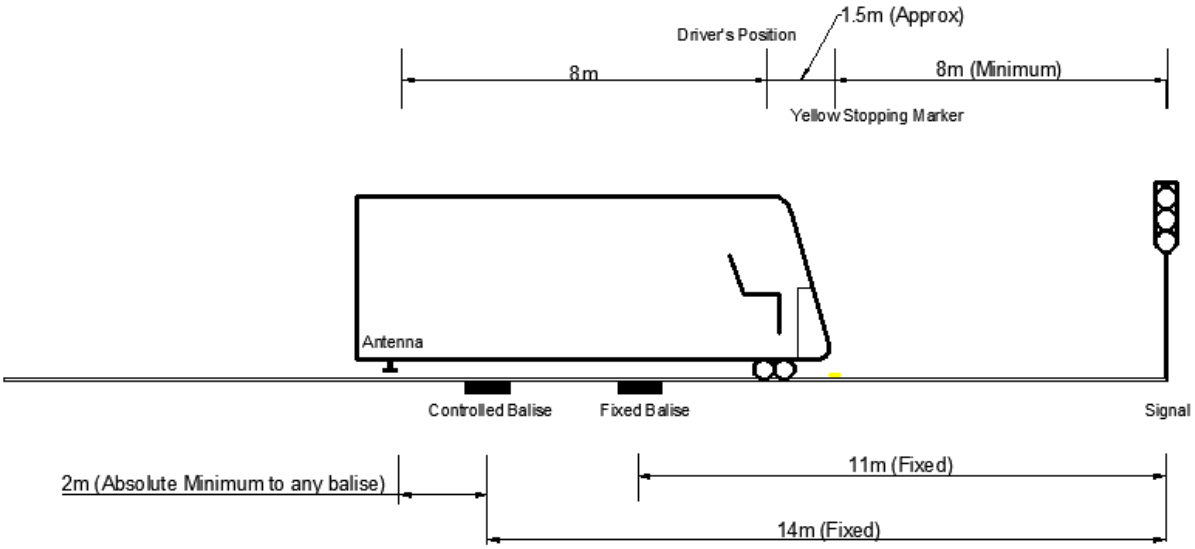

Figure 1

Consideration should also be given to the position of the rear of the train in relation to track detection, particularly if track detection will result in extended level crossing activation.

8.2.1. Design of ATP Equipment (Trackside subsystem and on-board subsystem)

This section applies to the fitment of trackside ATP equipment to previously unfitted lines and fitment of on-board equipment to new rolling stock.

The design of new equipment must take into account the existing condition on the network, including the existing platform stopping points. It is unacceptable for a balise to be positioned such that the operability of the station is compromised with, for example, a 6 - car sets train stopping with imposed limitations on doors opening to the station platform (whereas previously there were no limitations). Where this issue is identified, all infrastructure considerations must be taken into account, including the feasibility of relocation of the platform departure signal (or extending the platform length) to allow for full use of the station platform with ATP in service on that line.

Where ATP equipment is to be fitted to the underside of a new rolling stock type on the AMPRN, the position of the balise reading antenna must be considered in relation to the platform stopping marker design requirements shown in section 8.2. Essentially the design must ensure that the ATP balise reading antenna is no closer than 2 metres from any fixed of controlled balise when the train is positioned at the stopping point for all station where ATP is fitted (or where ATP is intended to be fitted).

9. Design Requirements for 3/2/1 Car Sets Stopping Marker

9.1. Location of Platform Stopping Markers

The location of the 3/2/1 platform stopping marker shall take into account the following factors:

- Obstructions on the platform (structures, drainage covers etc)
- Signal locations and sighting in accordance with the document *PTS-MS-10-SG-STD-00000033: Signal Sighting Standard*
- Track circuits
- Platform length & width and Driver's mirror

The 3 car consists are the most common configuration used on the network. Boarding patches and mini ramps/camel humps are located on platforms to line up with the first door on the leading railcar of the 3 car consist.

Please note:
The 4 car sets stopping point can be either at 3 car sets stopping marker or 6 car stopping marker dependent on the platform length.

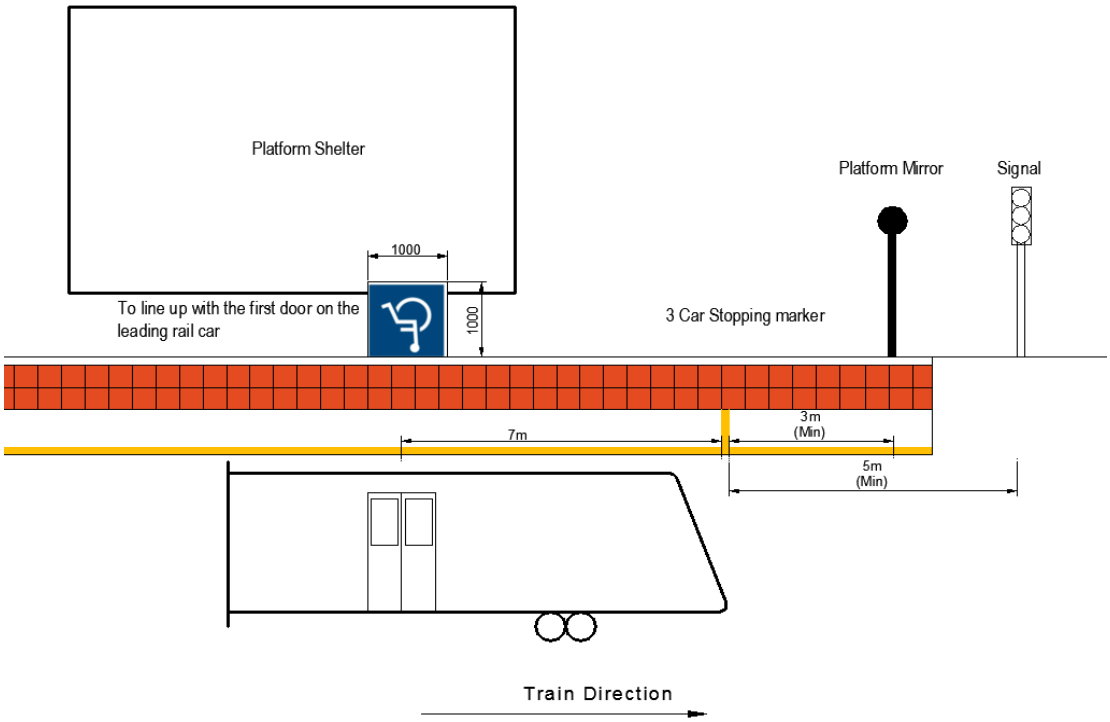

Figure 2

10. Line marking

The platform stopping marker shall be indicated by a 100mm wide line painted in Y17 'Golden Yellow' at the stopping position. The marker shall extend from the track side edge of the Ground Surface Indicators (TGSI'S) to the face of the platform and extend down to the bottom of the coping. Figure 3 shows a typical platform stopping marker.

On the approach side of the platform stopping marker a yellow stenciled number shall be installed indicating the relevant consist i.e. 6 and 5 or 4 3, 2 and single car sets.

The platform stopping marker shall be installed at the location provided by the Platform Marker Registers shown in Appendix 1 (Under development).

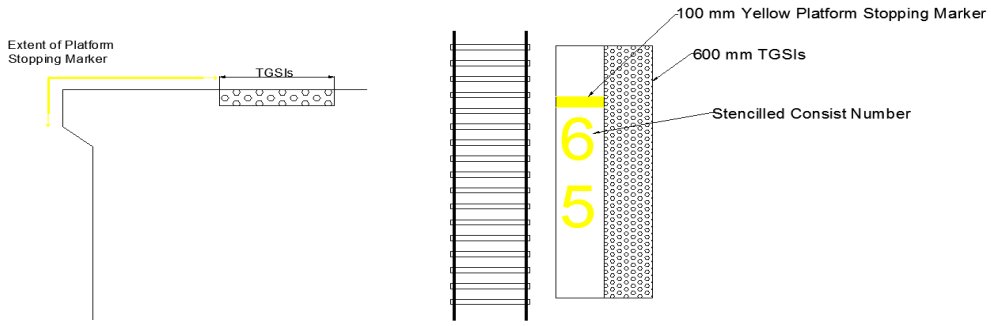

Figure 3

Figure 4

Figure 5

11. Roles and Responsibilities

The location of the platform stopping markers shall be determined by a group consisting of representatives of the following:

- Rail Operations
- Signals & Communications
- DPTI Technical Services (Disability Coordinator)

12. Register of Platform Stopping Markers

A register of platform stopping markers for 6 and 3(TBD) car sets as shown in Appendix 1 shall be maintained to ensure that where markers are removed or obliterated they can be accurately restored to their original position.

Please Note:
Currently the schedule is applicable to only Seaford and Tonsley lines for 6/5 rail car sets. Further development for other lines is under way.

APPENDIX 1 - 6/5 Car Set Register Seaford and Tonsley Lines

STATION	PLATFORM NO.	PLATFORM LENGTH	6 CAR STOPPING POINT (DISTANCE FROM END OF PLATFORM TO MARKER/FENCE)	DISTANCE FROM PLATFORM DEPARTURE SIGNAL / FIXED BALISE TO THE END OF PLATFORM
Seaford Interchange	2	162m	161.5m	15m (Signal 3632)
Seaford Interchange	1	162m	161.5m	15m(Signal 3634)
Seaford Meadows	1	162m	161.5m	17m(Signal 3531)
Seaford Meadows	1	162m	161.5m	33m(Fixed Balise)
Seaford Meadows	2	162m	161.5m	17m(Signal 3533)
Seaford Meadows	2	162m	161.5m	25m(Signal 3436)
Noarlunga Centre	1	183m	182.5m	24m(Signal 3131)
Noarlunga Centre	2	183m	182.5m	36m(Signal 3034)
Noarlunga Centre	3	183m	182.5m	36m(Signal 3032)
Noarlunga Centre	3	183m	182.5m	24m(Signal 3133)
Christie Downs	2	152m	151.5m	30.4m (Signal 2932)
Christie Downs	1	152m	151.5m	27.4m(Signal 27.4m)
Lonsdale	2	156m	155.5m	13m(Signal 2732)
Lonsdale	1	156m	155.5m	120m(Signal 2731)
Hallett Cove Beach	2	154m	153.5m	12m(Signal 2332)
Hallett Cove Beach	1	154m	153.5m	17m(Signal 2331)
Hallett Cove	2	154m	150m	7m(Signal 2132)
Hallett Cove	1	154m	153.5m	13m(Signal 2133)
Marino Rocks	2	142m	135m	1.2m(Signal 1932)
Marino Rocks	1	157m	156.5m	12m(Signal 1931)
Marino	2	156m	155.5m	35.7m(Signal 1834)
Marino	1	156m	155.5m	43.4m (Signal 1833)
Seacliff	1	154m	153.5m	12m(Signal 1731)
Seacliff	2	154m	153.5m	12m(Signal 1732)
Brighton	1	155m	154.5m	12m(Signal 1631)
Brighton	2	155m	154.5m	44.6m(Signal 1633)
Brighton	3	157m	152m	6m(Signal 1634)
Brighton	4	157m	152m	6m(Signal 1632)
Hove*	2	124m	125m	12m(Signal 1532)
Hove	1	124m	123.5m	11m(Signal 1531)
Warradale	1	154.7m	154m	127m(Signal 1431)
Warradale	2	154.7m	154m	137m(Signal 1338)
Oaklands*	2	121m	125m	26m(Signal 1332)
Oaklands	1	121m	120.7m	15m(Signal 1333)
Marion	1	124m	123.5m	155m(Signal 1231)

STATION	PLATFORM NO.	PLATFORM LENGTH	6 CAR STOPPING POINT (DISTANCE FROM END OF PLATFORM TO MARKER/FENCE)	DISTANCE FROM PLATFORM DEPARTURE SIGNAL / FIXED BALISE TO THE END OF PLATFORM
Marion	2	124m	123.5m	40m(Signal 1134)
Ascot Park	2	157m	156.5m	13m(Signal 1034)
Ascot Park	1	157m	156.5m	155m(Signal 1033)
Woodlands Park	1	154m	153.5m	12m(Signal 933)
Woodlands Park	2	154m	153.5m	127m(Signal 932)
Edwardstown	1	154m	153.5m	12m (Signal 831)
Edwardstown	2	154m	153.5m	12m(Signal 832)
Emerson	1	154m	149m	6m(Signal 733)
Emerson	2	154m	153.5m	12m(Signal 732)
Clarence Park	1	154m	153.5m	155m(Signal 731)
Clarence Park	2	154m	153.5m	12m(Signal 634)
Goodwood	1	162m	155m	5m(Signal 414)
Goodwood	1	162m	155m	15m(Signal 531)
Goodwood	2	162m	155m	5m(Signal 446)
Goodwood	2	162m	155m	15m(Signal 541)
Goodwood (Effective length of the platform)**	3	129m	n/a	4m (Signal 436)
Goodwood	3	129m	n/a	16m(Signal 511)
Adelaide Showgrounds	1	162m	161.5m	13m(Signal 411)
Adelaide Showgrounds	2	162m	161.5m	15m(Signal 442)
Adelaide Showgrounds	3	162m	155m	6m (Signal 432)
Adelaide Showgrounds	3	162m	155m	6m (Signal 431)
Mile End	1	135m	134.5m	13m (Signal 211)
Mile End	2	135m	134.5m	>250m (Signal 212)
Mile End	3	135m	134.5m	12m (Signal 231)
Mile End	4	91 m	n/a	>250m (Signal 232)
TONSLEY LINE				
Tonsley	2	123m	122.5m	15m(Signal 1238)
Tonsley	1	123m	122.5m	>50m (End of line/ Fixed Buffer Stop)
Clovelly Park	2	113m	112.5m	16m (Signal 1138)
Clovelly Park	1	113m	112.5m	>150m (Signal 1237)
Mitchell Park	2	123m	122.5m	100m (Signal 1136)
Mitchell Park	1	123m	122.5m	>250m (Signal 1237)

* The 6 car stopping position at Hove and Oaklands will be placed on a sign board due to short length of the platform.

** Effective length of the platform is the length of the platform which can be used safely for passenger loading and unloading.