

Wheelchairs, Scooters and Victorian Railway Infrastructure

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Australian Codes on spatial provisions for wheelchairs do not reflect contemporary wheelchair designs or scooter usage. For railway infrastructure, the Victorian Government must decide what proportion of the wheelchair and scooter using population is to be catered for: 80% as underpins the current Codes, 90% as appears to underpin current Commonwealth wheelchair and scooter research, or some other percentage. This decision should be influenced by the inconsistency of excluding outdoor-sized wheelchairs and scooters from outdoor settings such as railway infrastructure. For scooters, executing the decision is hindered by the absence of suitable Australian and International data enabling determination of spatial requirements for scooters. These are critical issues for the current Victorian Government's railway crossing safety project because, if pedestrian mazes are too small, wheelchair and scooter users may resort to roadways to cross railways.

Railway stations and crossings and associated facilities are required under the Commonwealth Disability Discrimination Act (DDA) to be accessible by persons with a disability, including therefore people who rely upon wheelchairs and scooters for mobility.

This raises the issue about the way in which railway infrastructure should be accessible for people who use wheelchairs and scooters, including provision of adequate circulation space.

As identified in the Taskforce Report to the Victorian State Minister for Transport: 'Wheelchair Safety at Rail Level Crossings'¹, the only quasi-statutory documents that provide guidance on accessibility are Australian codes AS1428.1² and AS1428.2³. Of these, only AS1428 is mandatory, but only to the extent that it is called up by the Building Code of Australia (BCA) or, in effect, to the extent that it is used as a reference in any complaint before the Human Rights and Equal Opportunity Commission under the DDA.

Research to date

The circulation space requirements in AS1428 are based on Australian research carried out 20 years ago⁴. However, the sample size was very small and only included wheelchairs. The time since then has seen the advent and increasing use of electric scooters and a proliferation in the types of wheelchairs used.

Australian research on the size of wheelchairs and scooters was also carried out approximately ten years ago⁵. Its sample size was much larger, but the data did not include turning circle information, nor sufficient other dimensions for formulation of circulation space sizes.

A major Australian study has recently been conducted for the Commonwealth Government⁶, and statistical and spatial analyses have been completed. The results when they are released will bear directly upon circulation space requirements at railway stations, crossings and associated facilities. The

purpose of the Commonwealth research was to inform the development of the new Premises Standard under the Disability Discrimination Act (DDA) and, more particularly, to inform the revised AS1428.1 that will be called up by the Premises Standard through the BCA.

With regard to the Commonwealth research, the net sample size obtained was approximately 500. If one applies the proportion of scooters derived from ABS figures cited in the Taskforce Report, the inferred sample size obtained for scooters is very small and, if not all of the measurements of these included turning circle data, the sample would be too small for confidence. Without turning circle information for scooters, it is impossible to ascertain manoeuvring space requirements for scooters.

It is possible to carry out extensive wheelchair and scooter industry research to ascertain dimensional and turning circle characteristics of scooters. However, such data is unsuitable for establishing circulation space requirements for scooters because industry data does not reflect the proportion of different types of scooters used; does not indicate the dimensional variations amongst scooters due to accessories and adaptations; and does not indicate the anthropometrics of scooter drivers (this also applies to wheelchairs).

Equally importantly, without conducting scooter-driving trials to establish margins that need to be incorporated in minimum space formulations, any data by itself for stationary scooters would be of very little value in establishing circulation space requirements.

Railway crossings

The Taskforce Report has noted that the DDA Transport Standard appears not to address railway crossings. If this is the case, it need not, and many would argue should not deter the Victorian Government from proceeding as if the Standard does address railway crossings.

The Transport Standard calls up the 1993 version of AS1428.1. In other words, it ostensibly provides for 80% of the wheelchair-using population. Not only have the wheelchair characteristics of the wheelchair-using population changed, and been augmented by a scooter-using population over the past twenty years, the demographic profile of the wheelchair and scooter using population has also been changing as also noted in the Taskforce Report.

The DDA Transport Standard will therefore probably cater for far less than 80% of the current wheelchair and scooter using population and represent an inappropriate basis upon which to formulate the minimum spatial requirements for wheelchairs and scooters.

The DDA Transport Standard is a landmark document, but Governments should not assume that it is adequate in all respects. The minimum spatial requirements for wheelchairs and scooters that are invoked by the Standard is one such instance.

The Commonwealth Government research was conducted after the establishment of the DDA Transport Standard and was predicated upon a 90th percentile sized wheelchair and scooter, which presumably means that it was intended to identify circulation spaces that cater for 90% of the wheelchair and

scooter using population. If this were the intention, then it would be appropriate for railway stations, crossing and associated facilities to also cater for 90%, not 80% of the population.

Policy decision

In identifying the particular proportion of the wheelchair and scooter using population to be catered-for, the requirements of minimum sized circulation spaces at railway stations, crossing and associated facilities must be established in terms of the intended percentage to be included, not in terms of percentiles. This is because, for complex entities such as occupied wheelchairs and scooters, there is no equivalence between a percentile value and the percentage included⁷. For example, Bails' A80 wheelchair⁸ actually corresponds with only 60% or less of his sample⁹, and the 80th percentile dimensions found by Seeger et al also correspond with a similarly reduced percentage inclusion.

A policy decision is therefore required of the State Government as to what percentage is to be catered for.

If the Victorian Government adopts a policy of 80%, on the assumption that this is what is provided for by AS1428.1, and if it wishes to use results from the Commonwealth research that was related variously to a 90th percentile and 90% inclusion, the Commonwealth data would need to be re-analysed for the 80% inclusion, or whatever other percentage inclusion the Government decides to adopt. Another series of manoeuvring trials would also be required in terms of the 80% or other percentage inclusion.

Given that scooters cannot manoeuvre within as small a space as wheelchairs, because they are not able to rotate about a point between their drive wheels as can wheelchairs, setting a policy that adequately embraces scooters will be challenging.

Outdoor Wheelchairs and Scooters

The typical rationale behind a percentile reference is that a certain percentage of the population should be catered for and conversely, that society cannot afford to cater for more than that. In other words, cannot afford to cater for the largest occupied wheelchairs and scooters.

For scooters in buildings, the argument that at least a small number of them, the largest ones, should not be catered-for may appear persuasive. Some scooters are clearly intended as outdoor vehicles, being large or having large turning circles. To expect indoor spaces to cater for "outdoor" scooters is probably unreasonable, although in reality the matter is nowhere near as simple as this.

For outdoor spaces, by which term infrastructure such as railway stations, crossing and associated facilities can reasonably be denoted, the argument for excluding outdoor scooters seems less persuasive. If a person chooses a scooter for outdoor commuting without expectation that they can necessarily access indoor spaces, it would seem arbitrary to deny them access to outdoor spaces. The same argument applies to wheelchairs used for outdoor mobility.

In determining the percentage of the wheelchair and scooter using population to be catered for in infrastructure such as railway stations, crossing and associated facilities, the validity of applying policies that may be appropriate for indoor spaces to outdoor spaces should be considered. It is on this basis that appropriate minimum circulation space requirements can be established, and compliance with the DDA optimised.

Safety and size of pedestrian mazes and refuges at railway crossings

In terms of the Victorian Government initiative on railway crossings safety, the circulation space requirements for wheelchairs and scooters may appear to be peripheral. However, if circulation spaces are inadequate, not only would this compromise equity of access under the DDA generally, it would also compromise safety because people in wheelchair and scooters who find that they cannot negotiate a pedestrian maze could resort to a vehicle crossing point instead of the pedestrian crossing point.

References

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- ² Australian Standard 1428.1-2001: 'Design for access and mobility, Part 1: General requirements for access: New building work'. Standards Australia.
- ³ Australian Standard 1428.2-1992: 'Design for access and mobility, Part 2: Enhanced and additional requirements for access: Buildings and facilities'. Standards Australia
- ⁴ Bails, J H, of Public Buildings Department of South Australia. *A80 Wheelchair and variance* Detailed report No 22, In 'Project report on the Field testing of AS1428.1-1977', Part 2, Vol 5. (1983). Prepared for the Australian uniform Building regulations Co-Ordinating Council
- ⁵ Seeger, B R, Costi, J J, Hartridge M, of Rehabilitation Engineering. "Final report of Consultancy on Wheelchair User Requirements" 1994 Prepared for the national Accessible Transport Committee, Commonwealth Department of Transport
- ⁶ Hunarch Consulting.
- ⁷ Hunter R.A. 'Occupied Wheelchairs and Scooters: Percentiles, percentage inclusion, representatives and most-compact spaces'. February, 2003. <http://www.users.bigpond.vic.au/owsrsch>
- ⁸ The term "A80 wheelchair" was used by Bails, and is cited in AS1428.1, to denote the shape and size of a wheelchair that is 'representative of 80% of all "adult wheelchairs then in use'.
- ⁹ Hunter R A. Op. cit.