NSW GOVERNMENT

Guide Dogs.

Transport for NSW and Guide Dogs

Principles and guidance for good design

Directional tactile ground surface indicators on Sydney Metro

June 2021 | Version: 1

Contents

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Date: June 2021
Version: 1
Reference: A9168309
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1 Introduction

This principles and guidance document (Guideline) has been developed in collaboration between Guide Dogs NSW/ACT and the Transport for NSW Social and Economic Policy team.

Guide Dogs NSW/ACT, offers a broad range of services, alongside their Guide Dogs, to people who are blind or have low vision to help them achieve independence and their goals in life. In addition to providing individual support, equipment and training, Guide Dogs NSW/ACT has significant access advisory and advocacy experience. Guide Dogs NSW/ACT has particular interest in accessible and inclusive design for people who are blind or have low vision, and the implementation of these practices in public services and facilities.

Facilitating independent travel for people with vision impairment includes not only navigating transport journeys and precincts themselves, but also infrastructure elements and the non-tangible service elements such as interactions with customer service staff. The technical information used to develop this Guideline is based on experience, user centred design and feedback from people who are blind or have low vision.

The Guideline has been developed to describe the user's navigational requirements and how this is then complemented by the layout of directional tactile ground surface indicators (TGSIs).

Stakeholder engagement with representatives from Blind Citizens Australia and Vision Australia also occurred to ensure that the principles and designs contained within the Guideline are consistent with the experiences of people who are blind or have low vision. It was critical that the development process and stakeholder engagement was accessible and that the Guideline is provided in an accessible format for people who are blind or have low vision.

To aid further understanding, two-dimensional tactile images were created to help explain the basic principles within the Guideline for people who are blind or have low vision (as shown below in Photos 1 and 2). The use of the two-dimensional tactile images proved to be useful for the understanding of directional TGSI installations especially within complex environments in relation to their position in the precinct.

This method could be an additional means to help validate station and transport precinct designs with end users for future projects.

Being an accessible document, this Guideline is therefore developed for screen reader technology, contains images labelled with alternative text and considers visual elements with good luminance contrast. The Guideline also contains detailed descriptions of images and figures to assist in interpretation by people who are blind or have low vision.

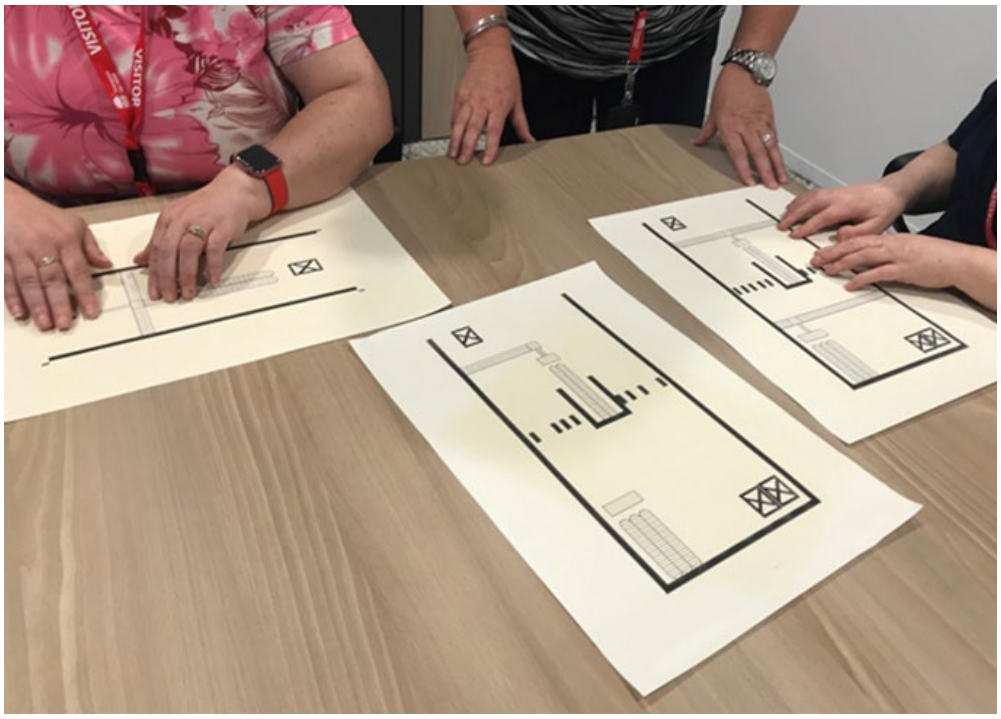


Photo 1 Two-dimensional tactile image maps being tested by people with vision impairment.

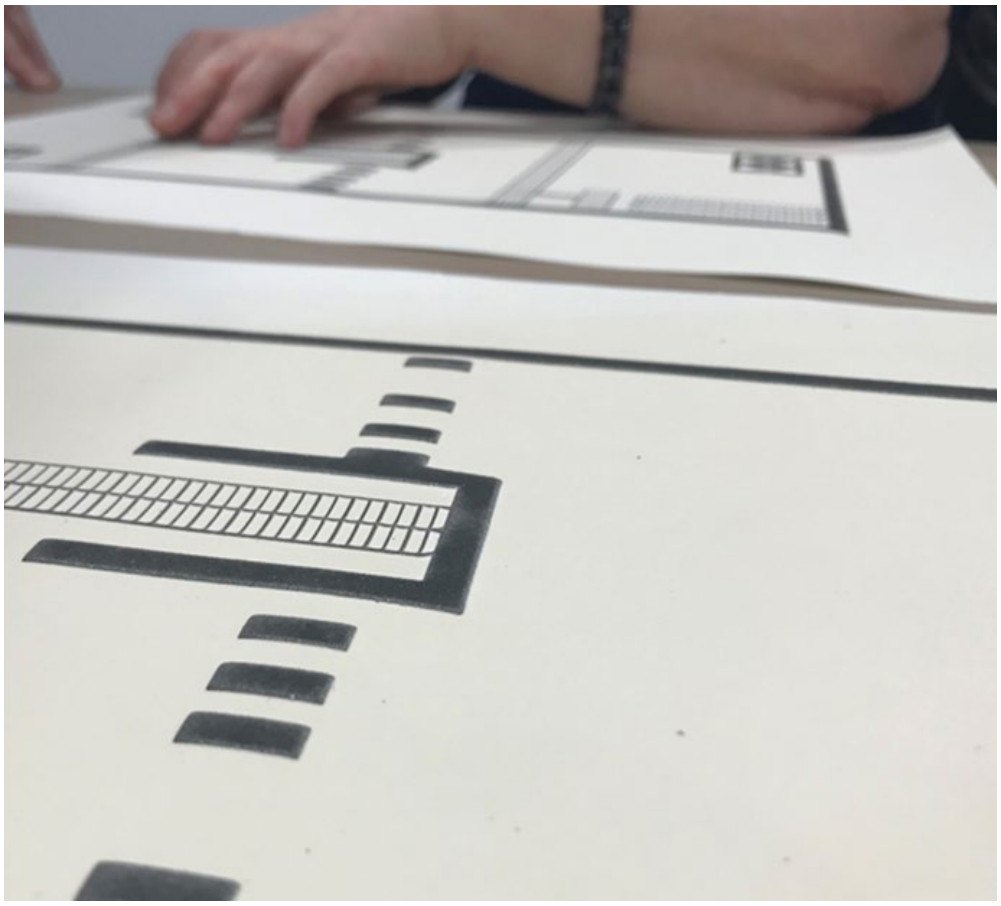


Photo 2 Up close image of a two-dimensional tactile map with raised elements.

1.1 Purpose

The Guideline was developed in response to requests from projects for guidance on the most functional design and positioning of TGSIs, including directional TGSIs. It also incorporates lessons learnt from Sydney Metro North West. The Guideline aims to inform infrastructure design and delivery teams on best practice principles and key considerations when developing directional TGSI layout plans in transport precincts.

The Guideline builds upon the principles, design and placement requirements as specified in *AS/NZS 1428.4.1:2009 (Design for access and mobility. Part 4.1: means to assist the orientation of people with vision impairment – Tactile ground surface indicators)*. The Guideline also builds upon the requirements and guidelines developed by Transport Social and Economic Policy for the broader application of TGSIs across all modes of transport within NSW.

The Guideline is intended to be applied to new Sydney Metro train stations. However, the principles within should also be adopted for other transport sites where appropriate. The Guideline describes typical scenarios as examples that can be used to assist projects.

The examples provided are not intended to be prescriptive. Each location needs to be assessed on a case-by-case basis.

Complex designs should be validated through user engagement and consultation for functionality and appropriateness with organisations that provide services for people who are blind or have low vision, such as Guide Dogs.

In most situations, the use of directional TGSIs can be minimised through appropriate design of unobstructed and unhindered shorelines. Even though directional TGSIs are used as a navigational cue for people with vision impairment, they cannot always be a solution to mitigate poor design.

Directional TGSIs are just one means of providing direction for people who are blind or have low vision. When navigating transport precincts, people may utilise aural cues, lighting and other cues within the environment, in conjunction with TGSIs. These can be used when there is an absence of other cues in the built environment.

Care should be taken to minimise the use of TGSIs in the built environment. Overuse can be confusing for users and can cause discomfort for people using wheelchairs or other mobility devices.


M

2 Glossary of terms

- **AS/NZS**
  Australian Standard/New Zealand Standard.
- **Directional tactile ground surface indicators (Directional TGSIs)**
  A series of raised bars which are installed on the ground or floor surface. Directional TGSIs provide directional orientation to help navigate through an area, to an object or to a service such as a bus stop boarding point.
- **Gate array**
  A bank of ticket fare gates that are installed at transport locations for revenue protection.
- **Path of travel**
  A common path of travel that is utilised by all customers, including those with disability, from a principal pedestrian entrance to the boarding point of a service.
- **Principal pedestrian entry.**
  The most commonly used entrance by all users to the transport facility.
- **Shoreline**
  An uninterrupted structure in the built environment that provides a natural navigation and orientation cue. For example, this could be achieved by an uninterrupted building line.
- **Tactile ground surface indicators (TGSIs).**
  TGSIs are tactile and visual cues, installed on the ground or floor surface that may help people who are blind or have low vision orientate themselves within a space.

  Orientation relates to a person being aware of where they are, where they are going and where they have been.

  In Australia, there are two types of TGSIs; warning and directional. The design specifications of tactile ground surface indicators are as required under *AS/NZS 1428.4.1:2009 (Design for access and mobility. Part 4.1: means to assist the orientation of people with vision impairment – Tactile ground surface indicators)*.
- **Vertical transport**
  The means offered for users to travel between floors or levels in a building or built environment. Typical vertical transport options include lifts, escalators and stairs.

- **Warning tactile ground surface indicators (Warning TGSIs)**
  A series of raised truncated domes which are installed on the ground or floor surface. Warning TGSIs can alert people to approaching hazards such as stairs and when used in conjunction with directional TGSIs may indicate a change in direction.
- **Wide gate**
  A ticket fare gate that has a larger opening compared to standard gates. The wide gate is the accessible entry point for customers with mobility devices or assistance animals and customers travelling with prams and luggage etc. Generally, the wide gate allows for bidirectional travel by users.

3 Basic principles

In its simplistic form, the directional TGSI arrangement in the absence of other cues, should assist a person to navigate the journey:

- from the principal pedestrian entry;
- through the wide gates;
- to the preferred vertical transport option; and
- on to the platform.

This journey also needs to work in reverse for a customer leaving a station. As such, the navigation and TGSI design should be verified for both entry and exit scenarios.

In Sydney Metro and other limited staffing environments, it may also be appropriate to direct to key help and information points along the journey.

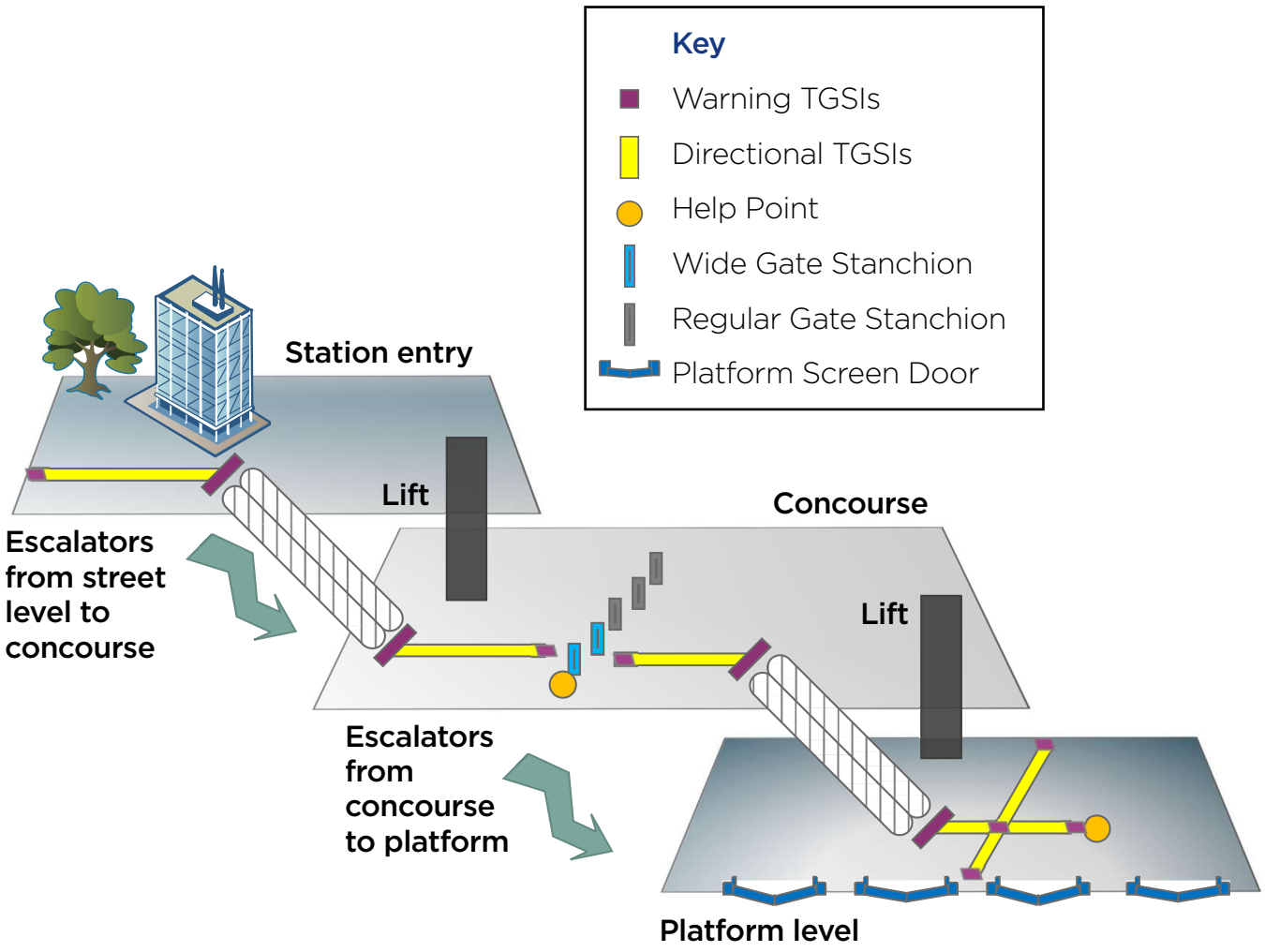


Figure 1 Typical station journey from street to concourse to platform level.

3.1 Shorelines

- A shoreline is an uninterrupted structure in the built environment that provides a natural navigation and orientation cue. In most cases, this may be an unobstructed wall or building line that enables a user to follow this structure to reach a specific location, destination or to intersect with another cue in the environment such as TGSIs.
- Shorelines need to be permanent and not include retail shopfronts, openings or doors. For example, a shopfront with concertina doors may provide a shoreline when the retail shop is closed however does not provide an adequate shoreline for all times of the day when the store is open.
- If there is an absence of a permanent unobstructed shoreline, directional TGSIs can be used to assist in navigation for people who are blind or have low vision.
- Where no shorelines exist, the directional TGSIs can be installed along a clear access path. It should be the most direct path that avoids cueing areas, retail openings and merchandise stands.
- Even if shorelines exist, there may be some circumstances where it may still be appropriate to install directional TGSIs. For example, where large crowds or commuter numbers make it difficult to locate the shoreline.

See **Figure 2** and **Figure 3** in Appendix A on typical examples of shorelines and relevant TGSI arrangements.

3.2 General arrangements for TGSIs

- The general design principles for the specifications and dimensional requirements of *AS/NZS 1428.4.1:2009* still apply for both directional and warning TGSIs.
- The directional TGSI layout should be the most direct path and should minimise turns and deviations along the path of travel.
- The path of travel should avoid shop entrances, people queuing, moveable obstructions or open shop fronts.
- Where platform screen doors exist:
    - Warning TGSIs are not required on the platform edge as the screen doors and walls act as a barrier;
    - Directional TGSIs are not required running parallel to the tracks as the screen doors and walls act as a natural shoreline.

See **Figure 4** and **Figure 5** in Appendix A on typical examples of general TGSI arrangements.

4 Station environments

The following design examples and scenarios are based on the Basic Principles outlined in Section 3 and take into account the most intuitive, safe and direct route that would be taken by the user.

- The directional TGSI layout design should be minimal and avoid unnecessary deviations and turns which can cause disorientation and confusion.
- For most users, where there is a choice in vertical transport options, people who are blind or have low vision prefer stairs and escalators over lifts. This should be prioritised in the directional TGSI layout design.
- Where there are both stair and escalator options, the most direct path should be prioritised.
- Where lifts are the **only option for all users**, then it would be considered appropriate to provide directional TGSIs to this facility.

4.1 Station entries and concourses

4.1.1 Locating the entry

- Directional TGISs are needed to signify the entry point to the transport facility where no other cues exist.
- The path of travel should ensure that it either leads to or directs from a pedestrian footpath linkage in the public domain, footpath or streetscape.
- Directional TGSIs are required to intersect the path of travel to signify the entry in the direction of travel.
- Directional TGSIs in the streetscape may require coordination and consent with relevant land owners.
- It might be appropriate to consider linkages to other interchange facilities within the precinct. For example, travelling from a nearby bus stop to the station entry and reverse.

See **Figure 6** in Appendix A for a typical station entry where TGSIs intersect the path of travel in the precinct.

4.1.2 Finding the vertical transport option

People who are blind or have low vision usually prefer stairs and escalators over lifts.

Stairs and escalators should be prioritised in the directional TGSI layout design.

- For stairs and escalators, *AS/NZS 1428.4.1:2009* layout is required for warning TGSIs. Directional TGSIs should lead to these points.

When lifts are the **only** option for all users:

- The directional TGSIs should connect to the call button panel.
- For locations with multiple lifts that service different locations or that have complex lift configurations, it is advisable to consult with organisations that provide services for people who are blind or have low vision.

See **Figure 7** in Appendix A which demonstrates a TGSIs path of travel that leads customers to the escalators as the preferred means of access.

4.1.3 Wide gates

The path of travel to wide gates should be the most direct route. The path should avoid shop entrances, people queuing, moveable obstructions or open shop fronts. Design should consider both entry and exit scenarios.

When directing to or from wide gates the operational context of the location needs to be considered.

For example, some considerations include:

- Tidal flow of all gates in operation throughout the day.
- Cross-flow of other pedestrians particularly during peak periods.
- The bi-directional operation of wide gates.
- Whether wide gates are co-located or separated.

It might be appropriate that a wide gate is located on either side of a permanent shoreline in the gate array.

It might also be appropriate that wide gates are split to be positioned in locations that provide the straightest or most direct path of travel from entry to the vertical transport option.

The general design and layout of directional TGSIs for wide gates should:

- Lead to or from wide gates taking the most direct path of travel.
- For safety reasons, end in a block of warning tactiles 300mm from the gate stanchions. This is required on both sides of the wide gate to be legible when both entering and exiting.
- Lead to or from the wide gate to the most appropriate vertical transport option where required, noting the prioritisation of stairs and escalators.

See **Figure 3** and **Figure 8** in Appendix A on examples for arrangements related to wide gates and TGSI installations.

4.1.4 Multiple entries, floors and mezzanine levels

Where stations are complex, for example over several levels, the basic principles will still apply, for example using the most direct path of travel and shorelines where present.

- It may not be required to direct to all potential entries or exits if they all lead to or from the same location. For example where there are multiple street entries from the same footpath to a common concourse.
- For locations with multiple floors, due to the complexity of the journey and navigation required, consultation with organisations that provide services for people who are blind or have low vision may be needed on the functionality of the design or to validate the most appropriate solution.
- Mezzanine levels should consider the connectivity with adjoining floors. The overall TGSI arrangement on mezzanine floors needs consider the end-to-end journey for customers that are transitioning through these floors in both directions. For example, the TGSI layout connecting the entry concourse to the platform, via the mezzanine, should also consider the path in reverse from the platform to the exit.

See **Figure 9** and **Figure 10** in Appendix A that demonstrates TGSI arrangements at general mezzanine levels and locations with multiple entries.

4.2 Platform levels

On platform levels, directional TGSIs generally assist in locating the most direct and appropriate access path to exit the station when alighting from a train.

Where platform screen doors exist:

- Warning TGSIs are not required on the platform edge as the platform screen doors and walls act as a barrier.
- Directional TGSIs are not required running parallel to the tracks as the screen doors and walls act as a natural shoreline.
- Directional TGSIs on the platform level should terminate at the platform screen wall and not terminate at the platform screen door. This is the same for both island and side platform configurations.

Directional TGSIs should be linked with the TGSI arrangement used to locate the vertical transport option on the platform level. This assists a user entering the platform to locate the general boarding area and when disembarking from the train, locating the exit.

For side platforms, the access path and TGSI design may involve the use of tunnels or paths from the vertical transport option that lead to the different platforms.

See **Figure 5**, **Figure 11** and **Figure 12** in Appendix A for general platform TGSI arrangements for island and side platforms and access via tunnels.

4.3 Help Points

In Sydney Metro and other limited staffing environments, it may also be appropriate to direct to key help and information points (Help Points) along the journey with directional TGSIs. Help Points should be installed at consistent locations across all stations where possible.

Due to the operational staffing model at Sydney Metro locations, independent access to Help Points is needed at wide gates and on platform levels.

Help Points located in other areas may need further consideration depending on the complexity of the location and the availability of other facilities.

The following are considerations for directional TGSI layouts related to Help Points:

- The same basic principles apply when directing to Help Points such as using shorelines, navigating along the most direct path and avoiding deviations.
- Where a Help Point is positioned on a permanent shoreline or is consistently located within close proximity to the wide gate on entry and exit, there may not be a need for a branch of directional TGSIs to the Help Point. Note that directional TGSIs may still be required to the wide gate.
- It is not necessary to direct users to all Help Points at the station. This reduces unnecessary TGSI installations which are potentially confusing for all users.
- The directional TGSIs for Help Points may be integrated with the directional TGSIs for platforms or vertical transport options. This arrangement reduces unnecessary additional TGSI installations.
- It may be appropriate to reduce the width of directional TGSIs to the Help Point to 300mm when integrated.

See **Figure 5** in Appendix A for a general TGSI layout leading to a Help Point on the platform integrated with other TGSI arrangements.

5 Principles in practice

The images below are examples of how the principles may apply in practice. They also demonstrate how the consideration for the placement of elements such as wide gates can have an impact on navigation and the subsequent directional TGSI design.

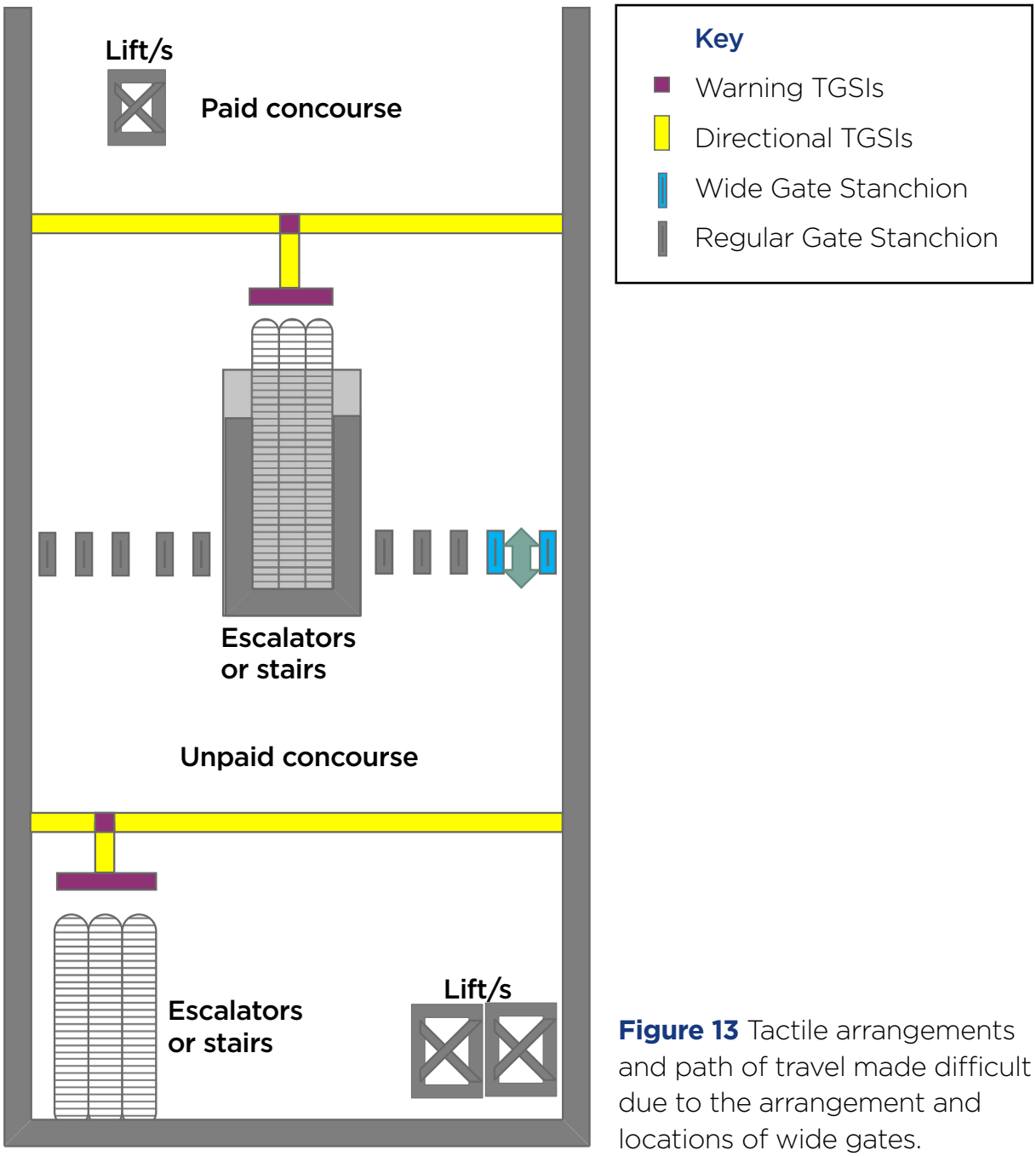


Figure 13 Tactile arrangements and path of travel made difficult due to the arrangement and locations of wide gates.

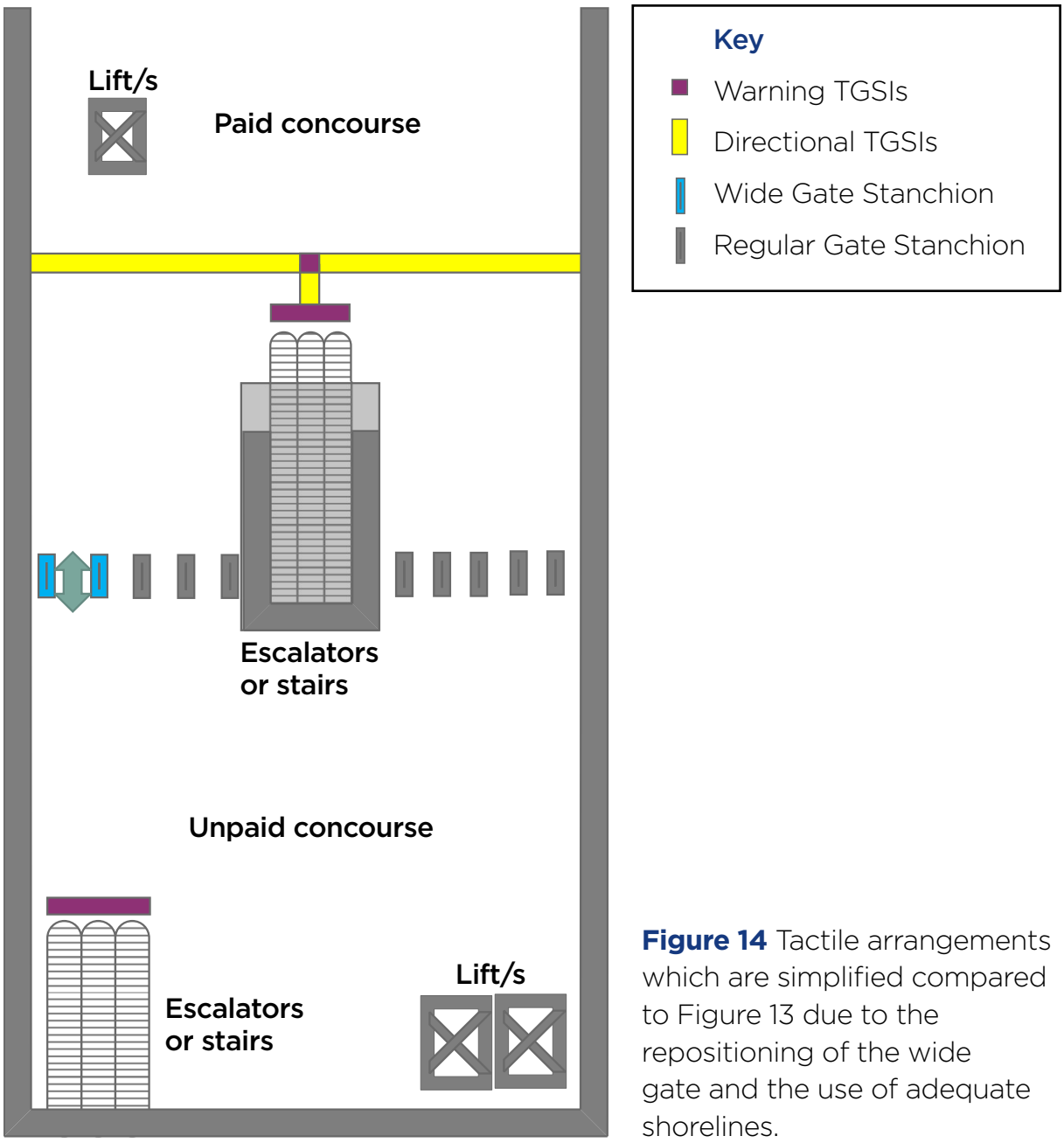


Figure 14 Tactile arrangements which are simplified compared to Figure 13 due to the repositioning of the wide gate and the use of adequate shorelines.

There will be complex scenarios and design options. The Guideline will not cover all of the different arrangements that may arise.

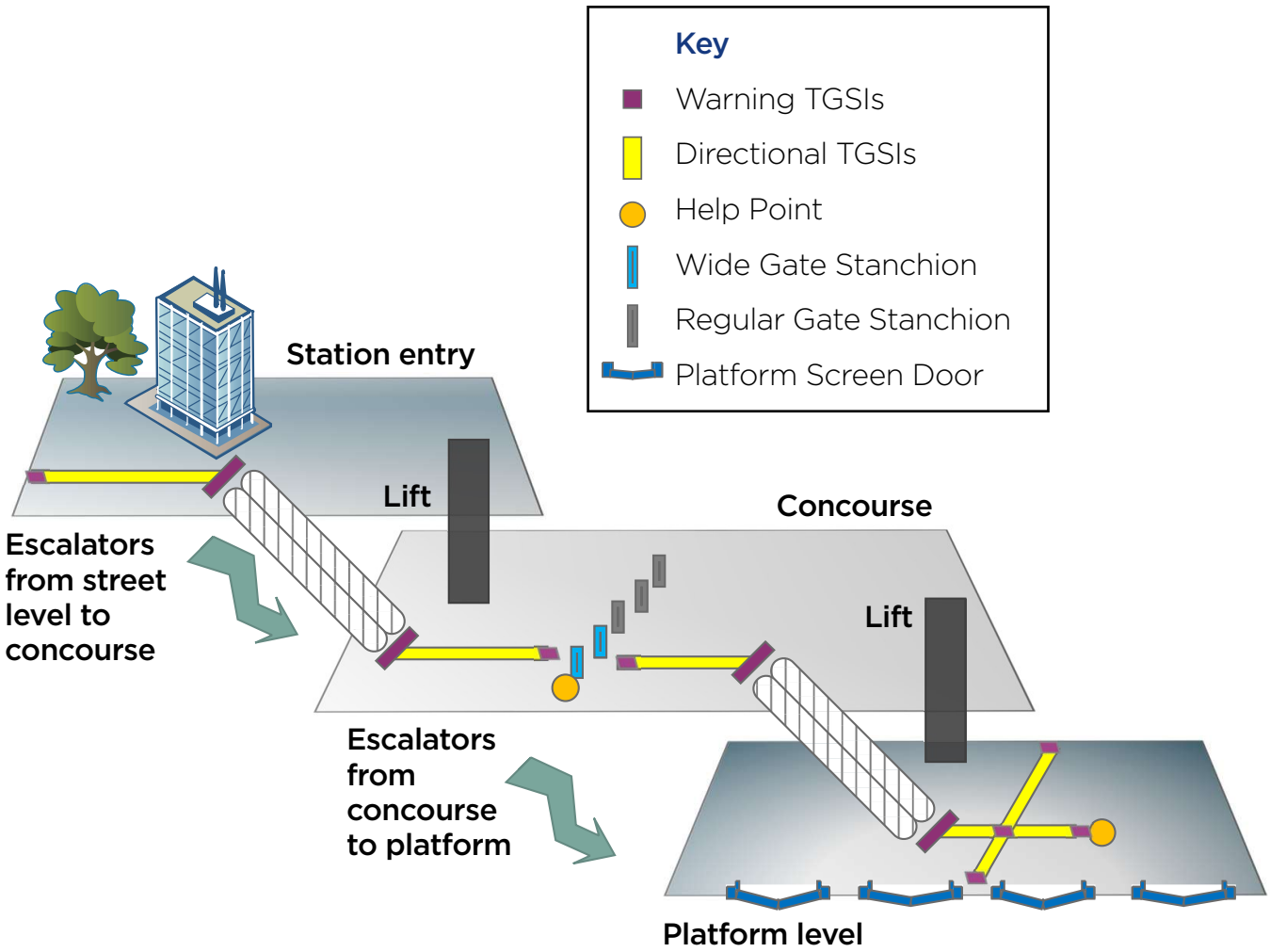
The information contained within this Guideline is intended to provide guidance by using typical scenarios to assist in establishing design principles. As previously mentioned, the information and images are not intended to be prescriptive. Each location needs to be assessed on a case-by-case basis.

In complex situations, consultation with organisations like Guide Dogs that provide orientation and mobility services for people who are blind or have low vision is critical to ensuring designs meet the needs of all users.

Appendix A – Figures

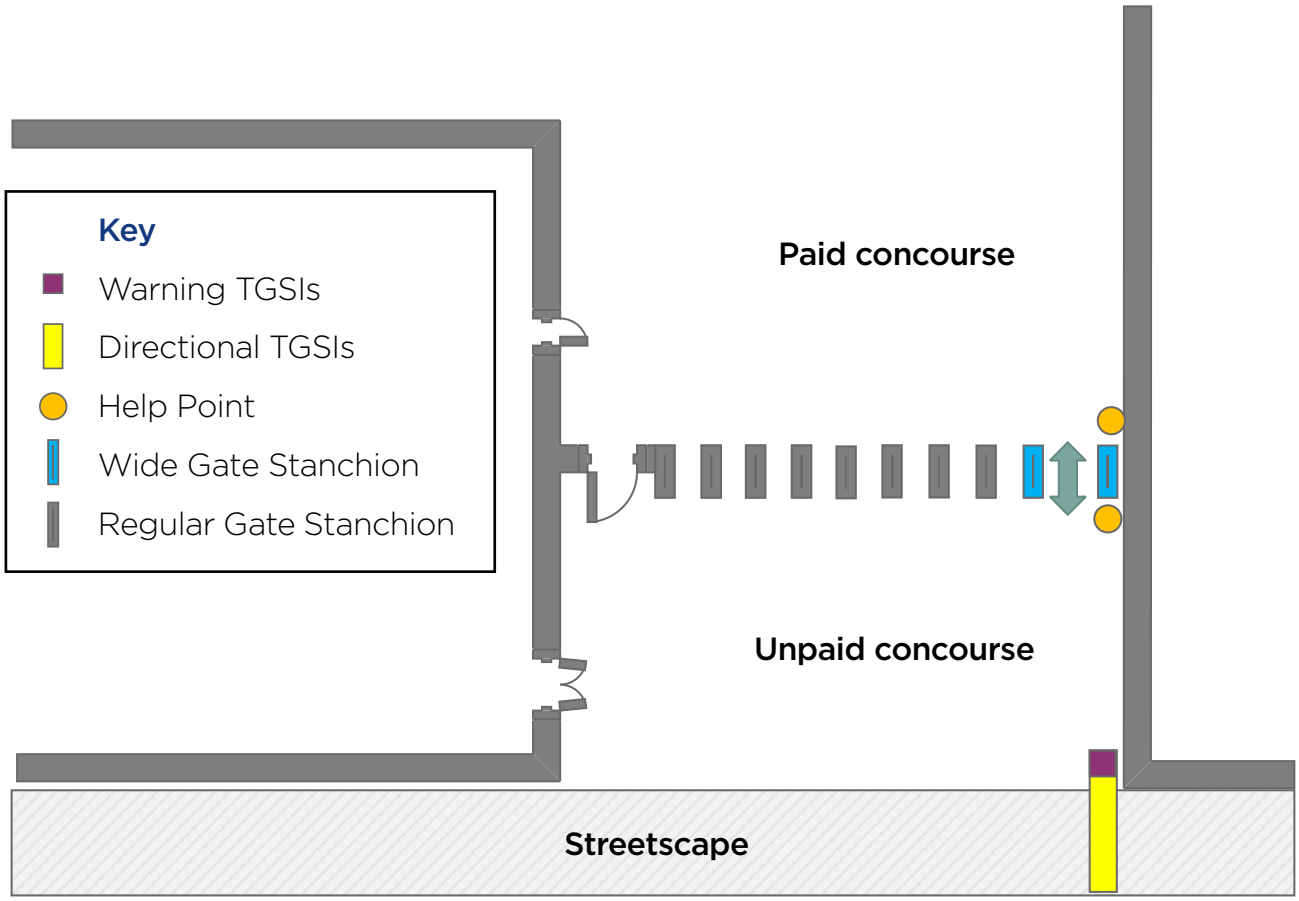
A.1 Figure 1

Typical station path of travel using TGSIs to navigate from street entry, down to the concourse, and on to the platform level, via escalators or stairs.



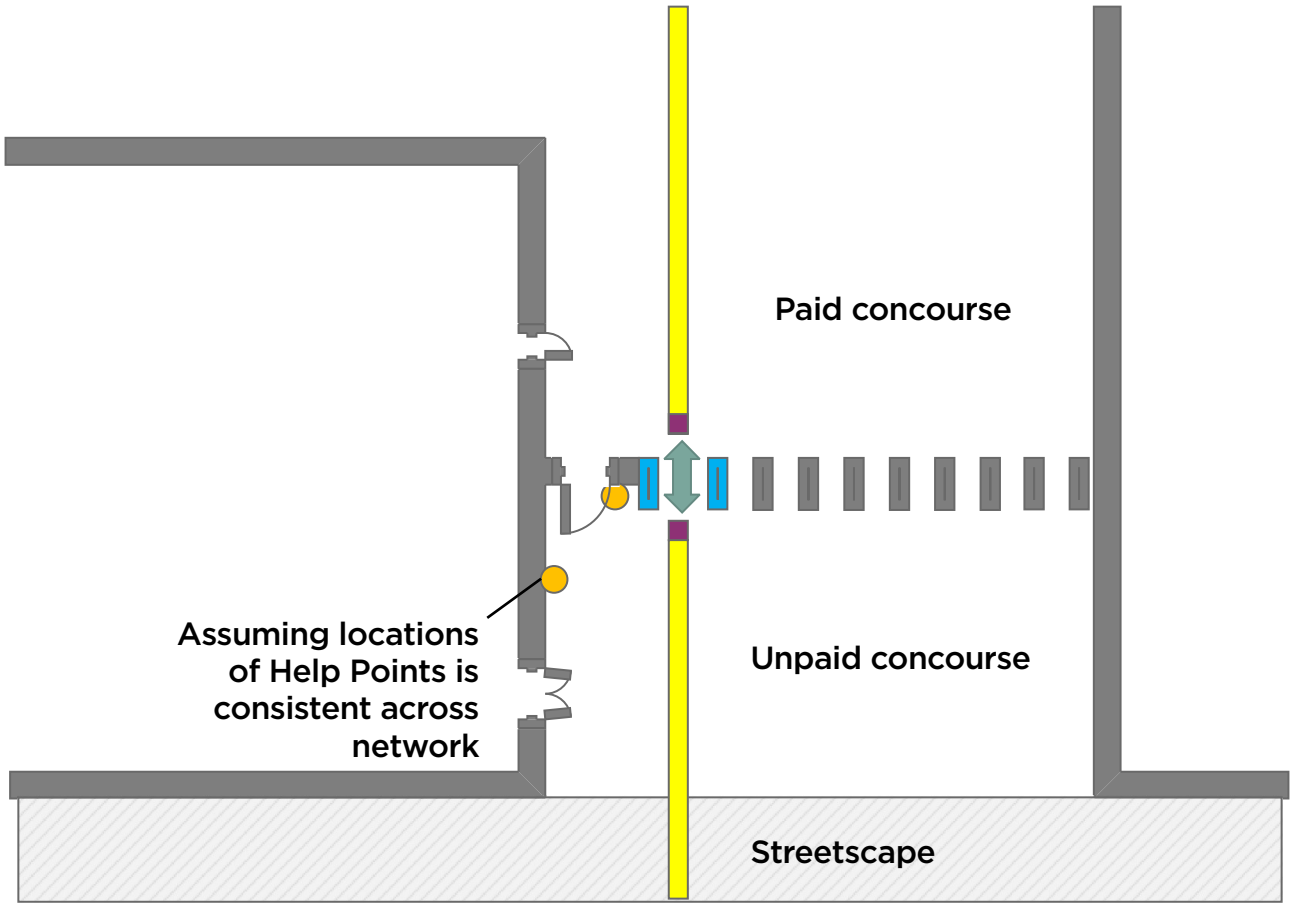
A.2 Figure 2

Path of travel following directional TGSIs from street level footpath into the station entrance, navigating via the right shoreline to the wide gate and beyond into the paid concourse.



A.3 Figure 3

Simple path of travel from street level footpath into the concourse, utilising TGSIs directly to the wide gate on the left of the gate array and through into the paid concourse.

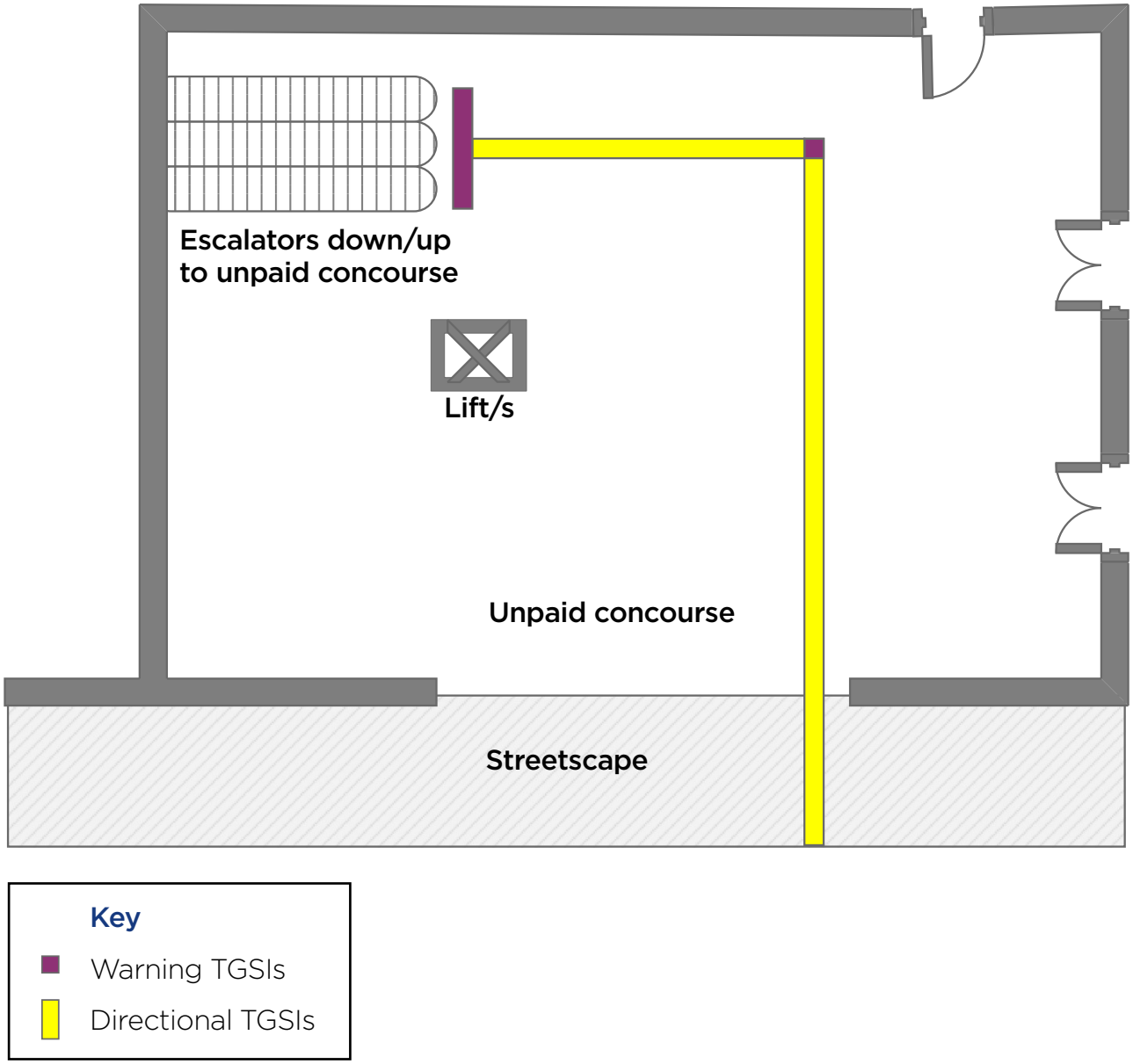


Key

- Warning TGSIs
- Directional TGSIs
- Help Point
- Wide Gate Stanchion
- Regular Gate Stanchion

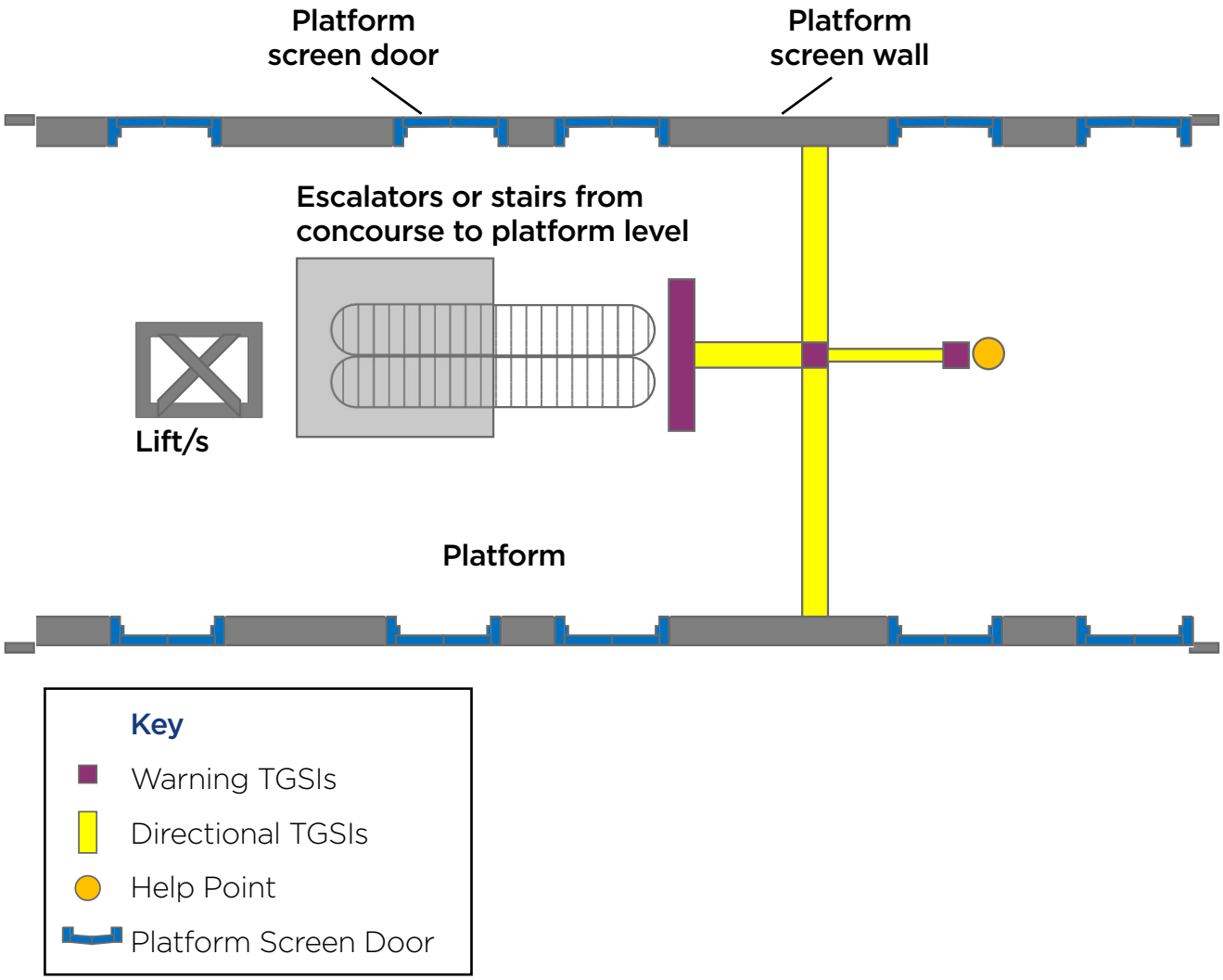
A.4 Figure 4

Simple path of travel from the street level footpath into the unpaid concourse of the station that utilises TGSIs to indicate the most direct path to the escalators.



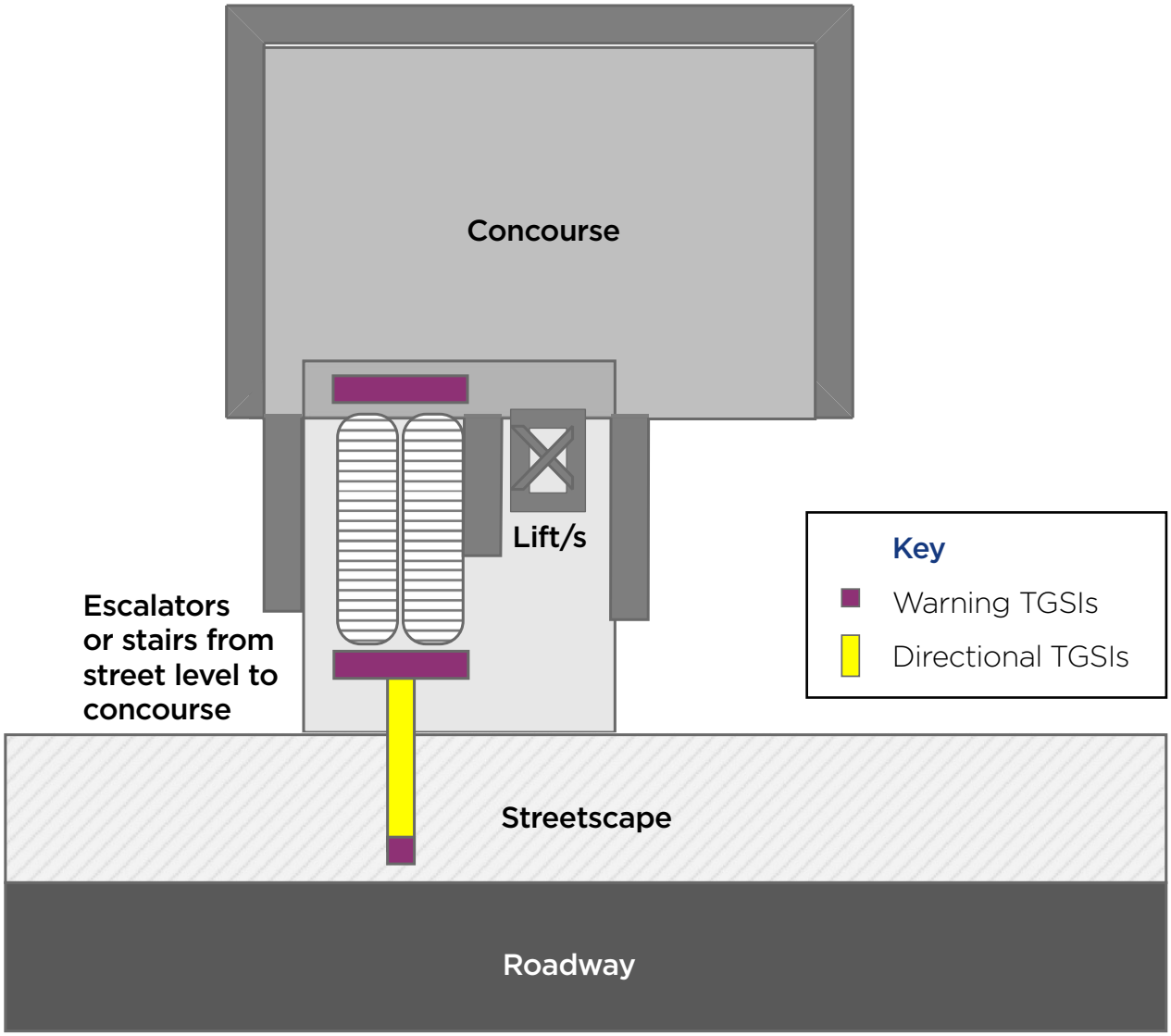
A.5 Figure 5

Typical platform arrangement with directional TGSIs leading from escalators or stairs to the platform screen walls and the help point.



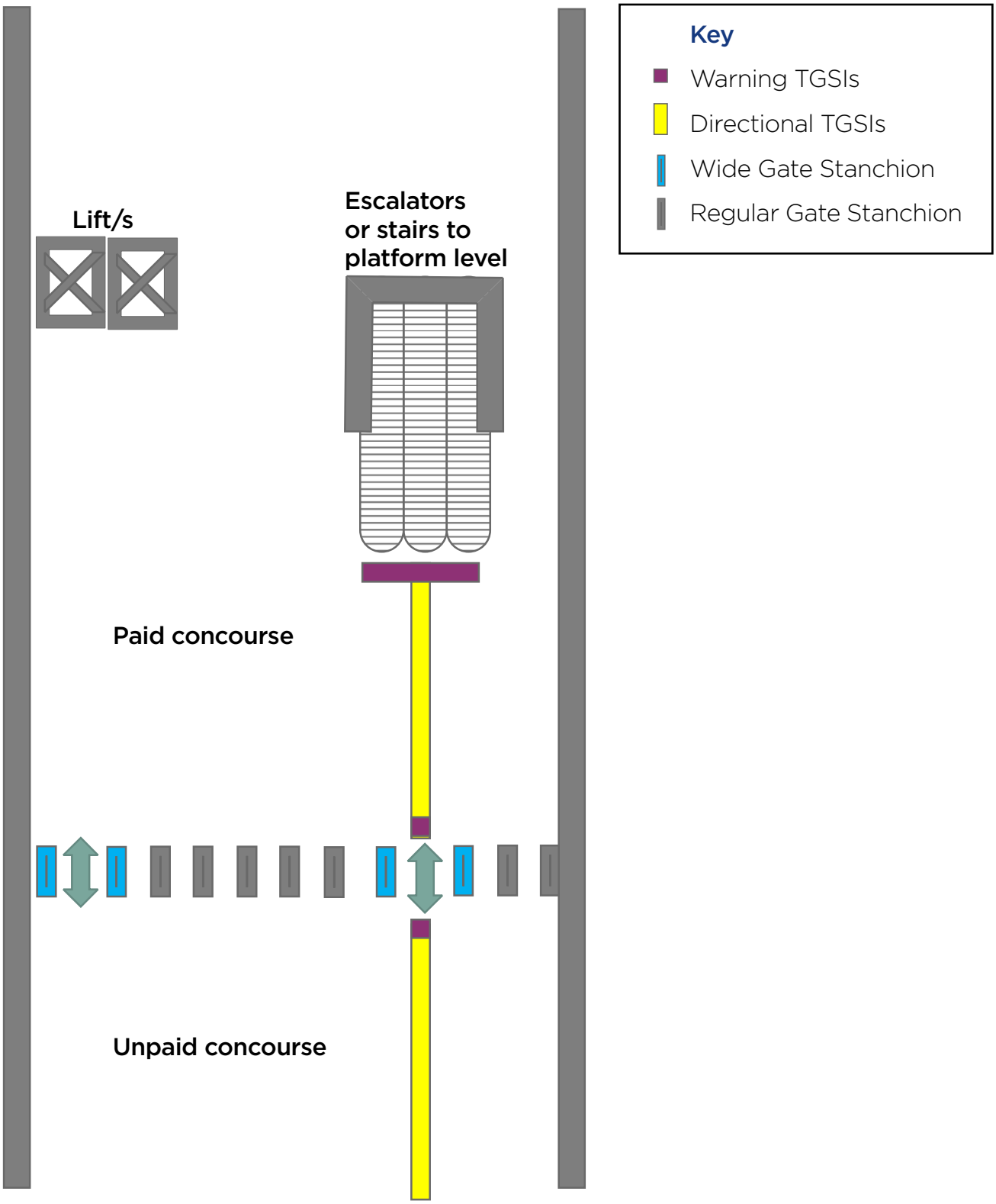
A.6 Figure 6

Typical arrangement for TGSIs to signify the station entry and travel to the concourse.



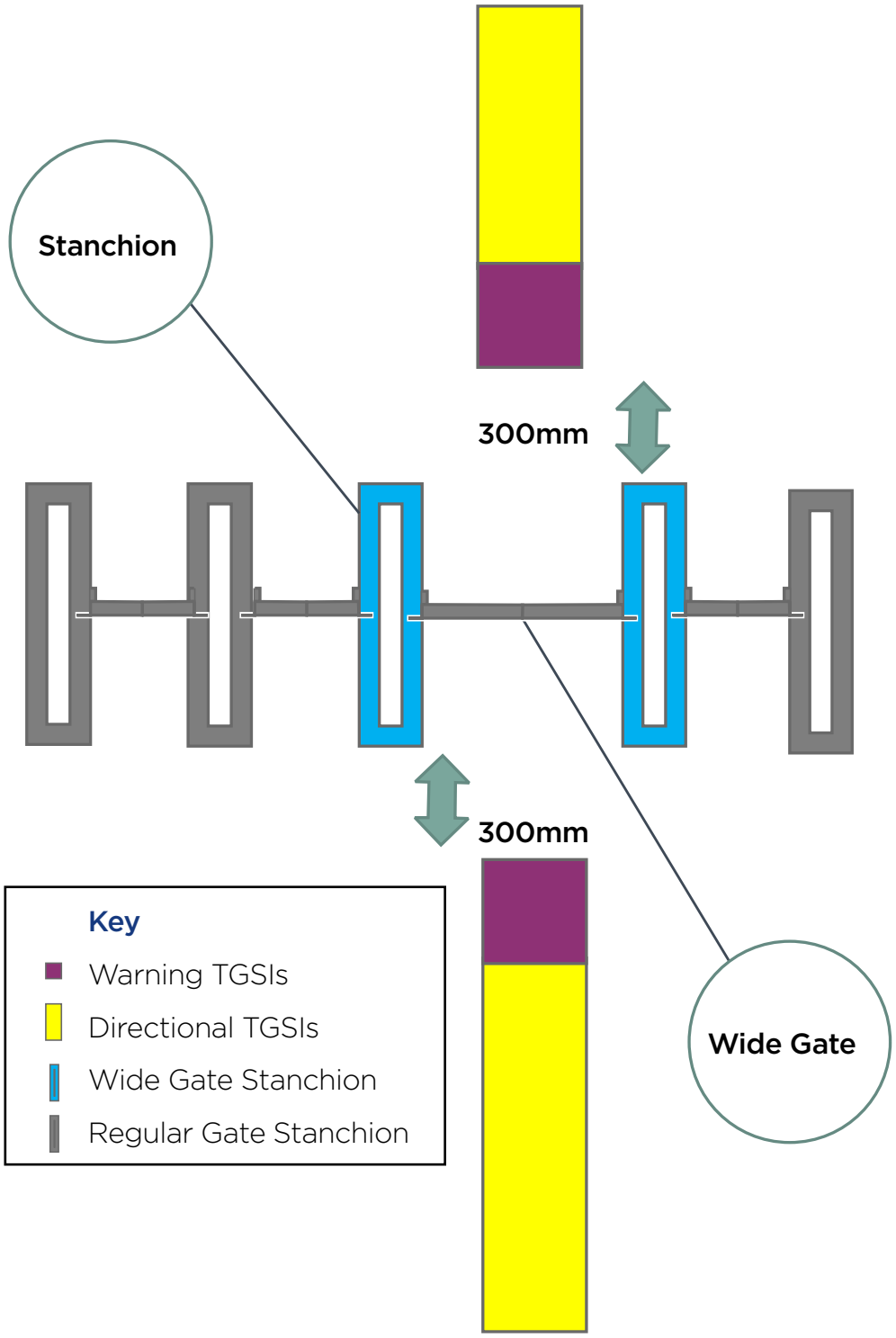
A.7 Figure 7

A typical TGSI path of travel that directs customers to the preferred vertical transport method of stairs or escalators versus lift access for people who are blind or have low vision.



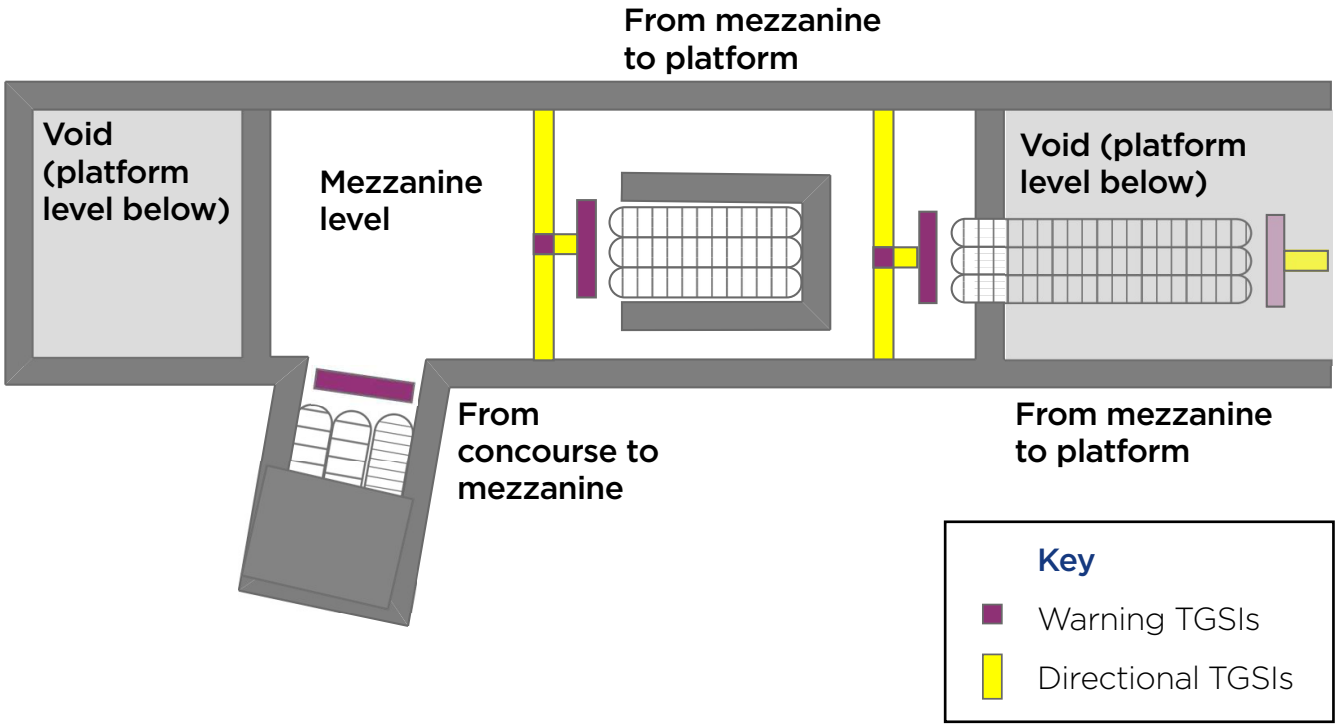
A.8 Figure 8

Typical TGSI arrangement at either side of the wide gate that terminate 300mm from the stanchions for user safety.



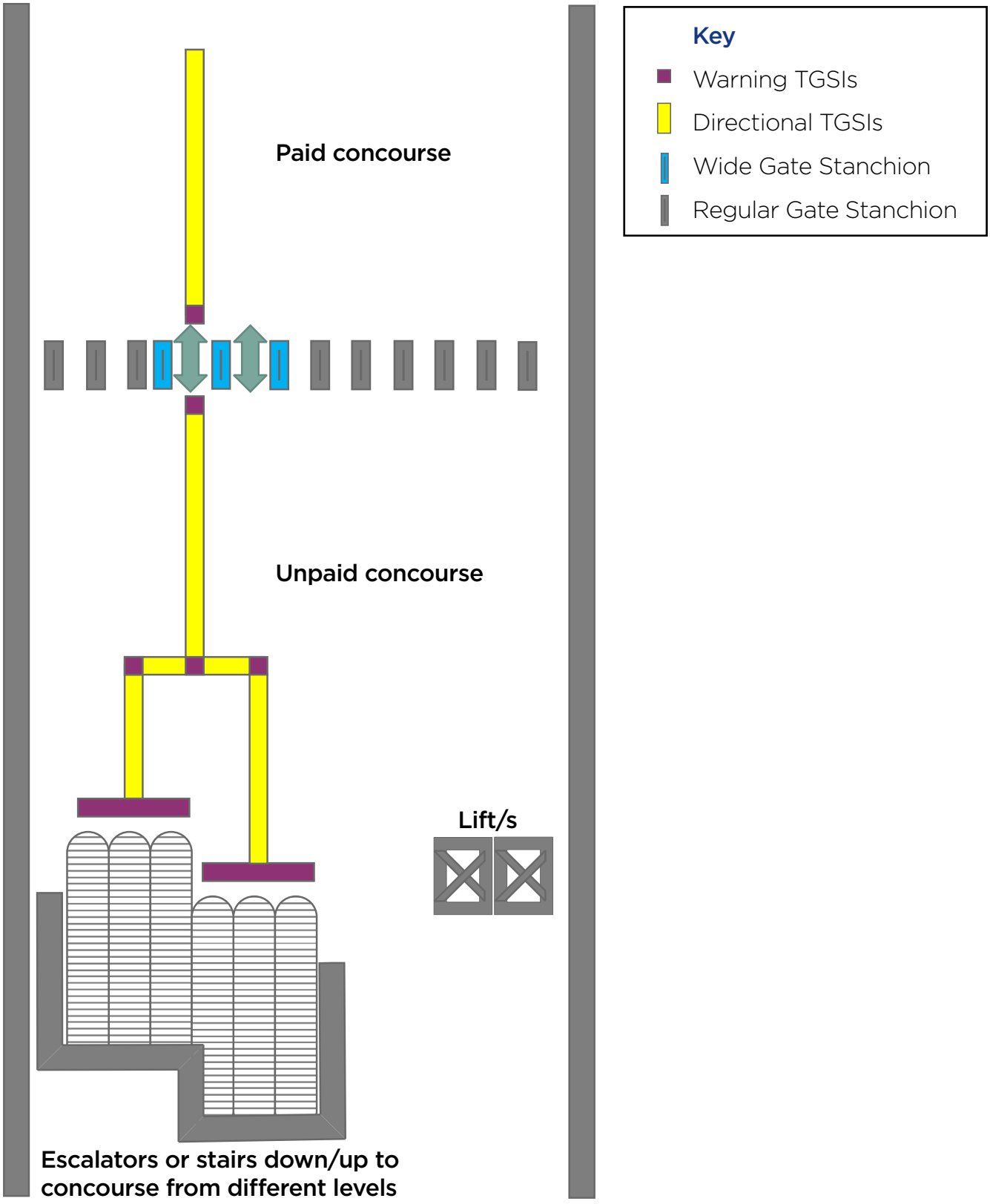
A.9 Figure 9

Mezzanine level layout with minimal directional TGSI usage due to availability of walls suitable for shorelines.



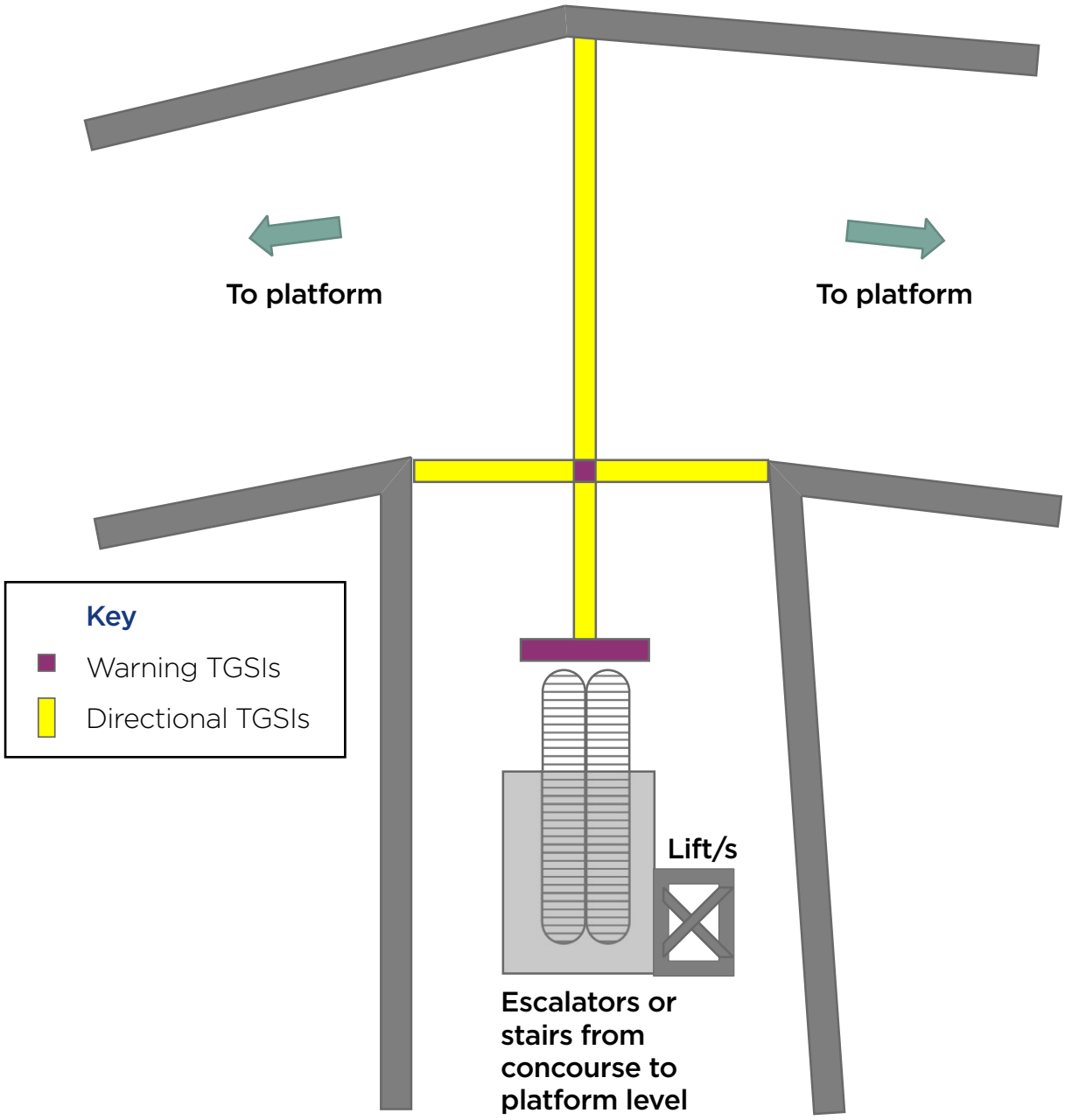
A.10 Figure 10

Split entry concourse with TGSIs leading from both entries and merging prior to the wide gate and into the paid concourse.



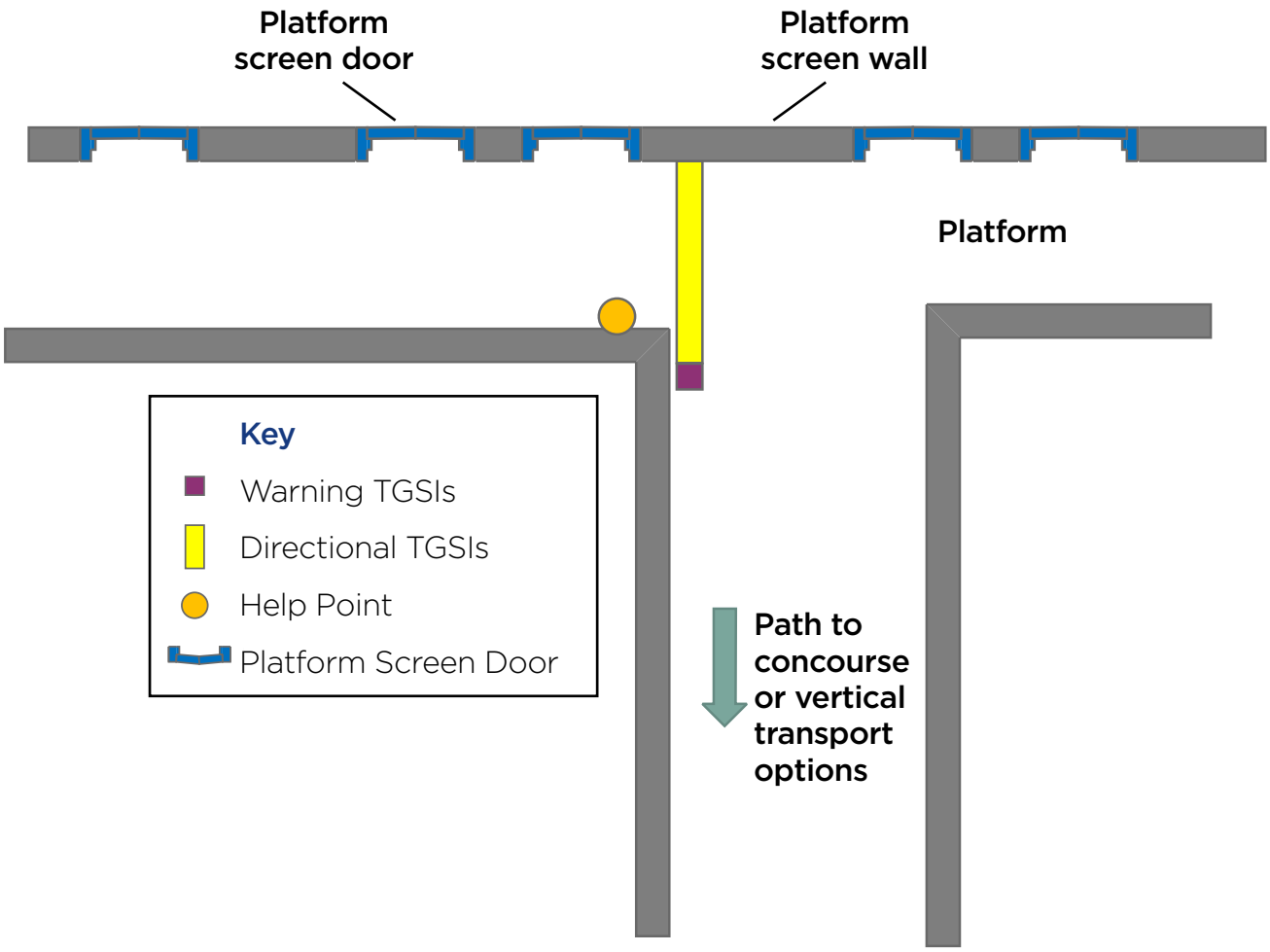
A.11 Figure 11

General tunnel arrangement with TGSIs leading away from escalators or stairs from the concourse to the tunnel shorelines leading to the platforms.



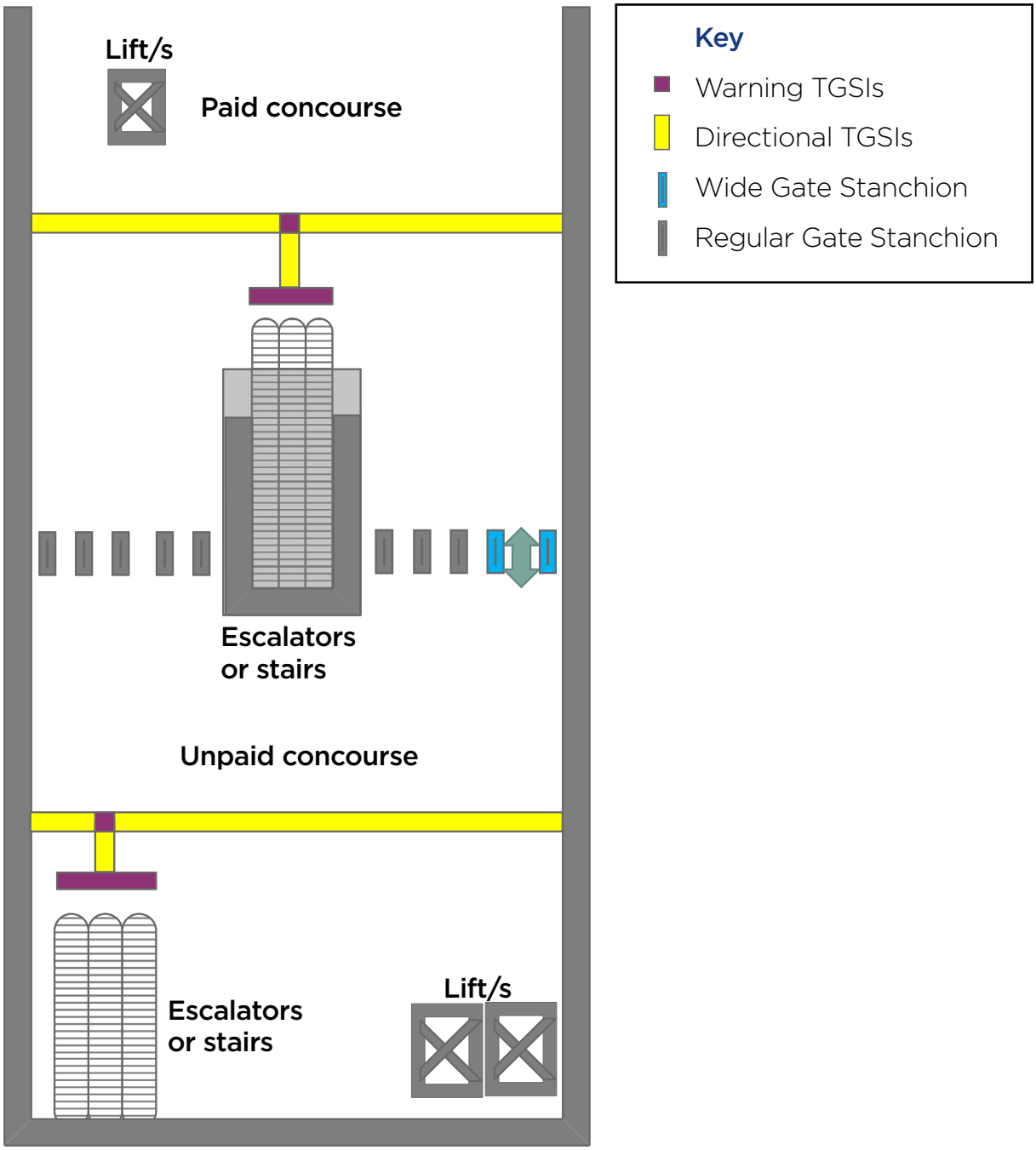
A.12 Figure 12

General arrangement for TGSIs inside platforms where the entry is via an access path or tunnel. Note the directional TGSIs on the platform level should terminate at the platform screen wall and not the doorway.



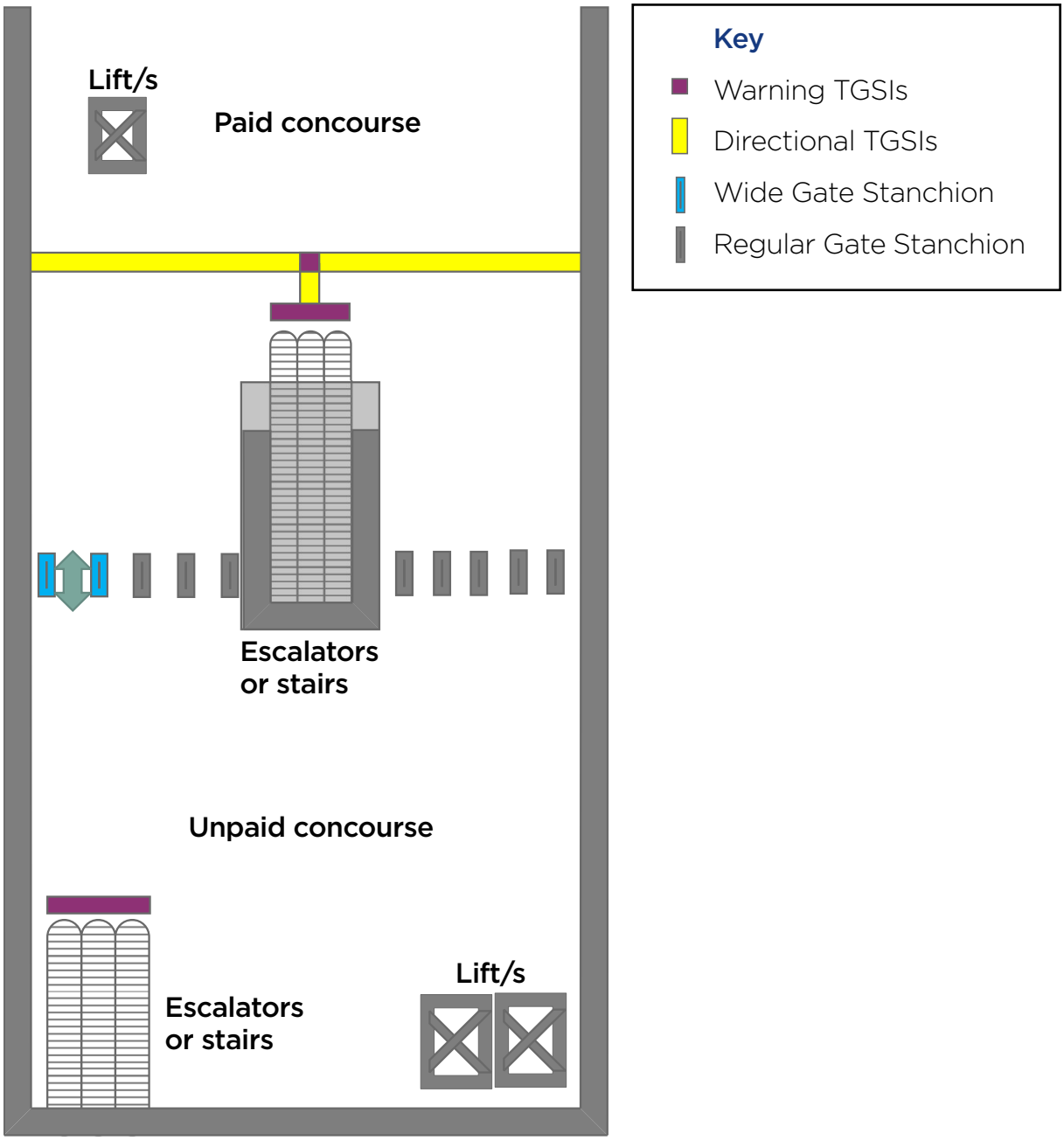
A.13 Figure 13

TGSI arrangements and path of travel made difficult due to the arrangement and locations of wide gates. Refer to **Figure 14** which demonstrates a simplified path of travel by moving the wide gate.



A.14 Figure 14

TGSI arrangements which are simplified compared to **Figure 13** due to the repositioning of the wide gate and the use of adequate shorelines.



Appendix B - Detail descriptions of figures for people who are blind or have low vision

Please note, this section may not be relevant for all readers. This section has been included to assist people who are blind or have low vision in further understanding the figures contained within this Guideline.

Notes

- For improved screen reader user experience, directional TGSIs and warning TGSIs will be referred to as directional tactiles and warning tactiles respectively.
- The design of directional tactiles can work with both escalators or stairs. In this section we refer to escalators only.
- When directional tactiles pass through a wide gate, they terminate with a 300mm pad of warning tactiles both before and after the gate - keeping the gate itself clear of tactiles. For more information, refer to **Figure 8** detailed description.

It is critical that people who are blind or have low vision not only understand the design principles and tactiles layout contained within the Guideline but that they can also have the same level of access to every element within the document. Consequently, additional detailed descriptions of the images and figures have been created to assist with image and design interpretation for people who are blind or have low vision.

The two-dimensional tactile images used to validate the design principles assisted with the functional interpretation of design and layout but these two-dimensional images will not be included in the Guideline. Therefore, it is necessary to provide additional detailed descriptions of the figures contained within the Guideline for people who are blind or have low vision.

B.1 Figure 1 Detail description

- **Overview**
  Map laid out in a rectangular shape (positioned horizontally) showing three levels and running from left to right diagonally: from station entry on street level, descending down to the unpaid concourse, via a set of escalators, travelling through the stanchions of the gate array into the paid concourse, then descending again down to platform level and arriving at the platform screen walls. Past each escalator is a lift which arrives close to the foot of the escalators on the level below.
- The suggested journey is shown using directional tactiles to navigate. A strip of warning tactiles can be found at both the top and bottom of each set of escalators.
- Returning to the starting point of warning tactiles on street level; the journey follows a path of directional tactiles to a set of escalators leading down to the concourse level.
- At the foot of the same escalators, the path continues along directional tactiles leading in a straight line to the wide gates of the right of the gate array, next to which is a help point on the right.
- Directly after the wide gate, a straight path of directional tactiles continue to the top of a set of escalators, leading down to the platform level.
- At the foot of the same escalators, the directional tactiles lead to a block of warning tactiles which have paths of directional tactiles leading off to;
  - left to the platform screen wall (not visible),
  - straight ahead to the help point, and
  - right to the platform screen wall.
- **Return to Figure A.1**

B.2 Figure 2 Detail description

- **Overview**
  Map laid out in a rectangular shape (positioned horizontally), with the footpath at the station entry on street level running along the length of the bottom of the map, on the right-hand side is the entrance of the unpaid concourse. Moving up to the middle of the map, the gate array can be found, comprising of several gates, running from left to right between the two boundary walls. There is a wide gate on either side, with the left being a maintenance gate. This then leads into the paid concourse at the top of the rectangle. There are two doorways on the left-hand boundary wall, one in the unpaid and the other in the paid concourse, both of which open into the concourse.

- Returning to the bottom of the map at the streetscape entry footpath, there are directional tactiles at the far right of the entry running across the footpath into the unpaid concourse, and terminate with a block of warning tactiles, just inside the start of the boundary wall.
- The right boundary wall is unobstructed and can act as a shoreline to the wide gate of the gate array directly ahead, and beyond through the paid concourse. There are two help points positioned on either side of the right wide gate stanchion, one in the paid, the other in the unpaid concourse.
- **Return to Figure A.2**

B.3 Figure 3 Detail description

- **Overview**
  Map laid out in a rectangular shape (positioned horizontally), with the footpath at the station entry on street level running along the length of the bottom of the map, towards the right hand-side is the entrance of the unpaid concourse. Moving up to the middle of the map, the gate array can be found, comprising of several gates, running from left to right between the two boundary walls. There is a maintenance gate on the far left, which opens into the unpaid concourse, and next to it is the wide gate through which the directional tactiles navigate through. There are two doorways on the left-hand boundary wall, one in the unpaid and the other in the paid concourse, both of which open into the concourse. There are two help points in the unpaid concourse, one on the left between the door and the maintenance gate, and the other in-between the maintenance gate and the first wide gate stanchion. Beyond the gate array is the paid concourse at the top of the rectangle.
- Returning to the bottom of the map at the streetscape entry footpath, there are directional tactiles at the far left of the entry running across the footpath, straight into the unpaid concourse, leading directly to the wide gate of the gate array, and continuing into the paid concourse in a straight line.
- **Return to Figure A.3**

B.4 Figure 4 Detail description

- **Overview**
  Map laid out in a rectangular shape (positioned horizontally), with the footpath at the station entry on street level running along the length of the bottom of the map. In the middle is the entrance of the unpaid concourse and positioned in the top left of the map is the foot of the escalators down or up to the unpaid concourse. The lift is positioned next to the escalators on the left. On the right-hand side of the level, are

two doorways and a third on the back wall on the right-hand side, all of which open into the concourse.

- Returning to the bottom of the map at the streetscape entry footpath; there are directional tactiles at the far right of the entry running across the footpath, straight into the unpaid concourse, leading directly to a block of warning tactiles indicating a change of direction. Turning left, directional tactiles, ending in a strip of warning tactiles lead to the top of the escalators.
- **Return to Figure A.4**

B.5 Figure 5 Detail description

- **Overview**
  Map of the platform level laid out in a rectangular shape (positioned horizontally), with the foot of the escalators, from concourse level, positioned in the middle of the map. Running along the top and bottom are platform screen walls with several platform screen doors on each side. The lift is positioned to the rear of the escalators void, on the left of the map.
- Starting at the middle of the map at the strip of warning tactiles at the bottom of the escalators, there are directional tactiles which lead straight to a block of warning tactiles which have paths of directional tactiles leading off to;
  - Both the left and right, reaching the platform screen walls on either side, between two of the platform screen doors, and
  - Straight ahead to the help point.
- **Return to Figure A.5**

B.6 Figure 6 Detail description

- **Overview**
  Map laid out in a square shape, with the roadway running along the length of the bottom of the map, directly above this, running parallel, is the footpath and then the station entry, with escalators on the left of the entrance area and a lift on the right, both sandwiched between two boundary walls. The concourse level can be seen at the top of the map which is where the escalators descend to.
- Returning to the bottom of the map at the streetscape entry footpath; there is a block of warning tactiles next to the roadway and in direct line with the escalators, with directional tactiles leading to a strip of warning tactiles at the top of the escalators, there is another strip at the bottom on the concourse level.
- **Return to Figure A.6**

B.7 Figure 7 Detail description

- **Overview**
  Map of the concourse laid out in a rectangular shape (positioned vertically), with boundary walls on the left and right. The lower third of the map is the unpaid concourse, while the top two-thirds is the paid concourse. The two areas are separated by a gate array comprising of several gates, spanning the width between the left and right boundary walls, with a wide gate on the left boundary wall. To allow a straight line of travel, the other wide gate has been positioned a few gates in to align with the top of the escalators in the paid concourse.
- There are two lifts at the top left of the map, they can be accessed by using the left wall as a shoreline, through the wide gate into the paid concourse.
- Directional tactiles can be followed, which are in a straight line to the escalators, through the wide gate positioned a few gates in from the right boundary wall, these lead to the strip of warning tactiles strip at the top of the escalators which travel down to the platform level.
- **Return to Figure A.7**

B.8 Figure 8 Detail description

- **Overview**
  Diagram of a gate array laid out in a rectangular shape (positioned vertically), showing two regular gate stanchions on the left then two wide gate stanchions, then another regular gate stanchion, thus two regular gates, one wide gate then another regular.
- There are directional tactiles approaching the wide gate from both sides of the concourse, and each terminating with a block of warning tactiles, which are positioned 300mm from the wide gate stanchions.
- **Return to Figure A.8**

B.9 Figure 9 Detail description

- **Overview**
  Map of the mezzanine level laid out in a thin rectangular shape (positioned horizontally). The level itself is between two voids through to the platform below, the left-hand side void is behind a wall while the right-hand side void houses the escalators descending to the platform. The mezzanine is accessed via escalators descending from the concourse, which open out on the bottom left-hand side of the level. To the right, there are escalators in the middle of the map which descend to the platform. Further to the right is the second set of escalators descending in the void.

- Turning right from the concourse escalators the directional tactiles can be found shortly after. The first directional tactiles lead to the left, to a block of warning tactiles which indicate a change of direction;
    - Right, with directional tactiles terminating with a strip of warning tactiles at the top of escalator down to the platform, or
    - Straight ahead to the far boundary wall.
- Moving past the first set, the second block of escalators down to the platform can be found at the far right of the level. This layout of tactiles is the same formation as the previous set.
- **Return to Figure A.9**

B.10 Figure 10 Detail description

- **Overview**
  Map of the concourse laid out in a rectangular shape (positioned vertically), with boundary walls on the left and right. The lower two-thirds of the map is the unpaid concourse, while the top third is the paid concourse. The two areas are separated by a gate array comprising of several gates, with two wide gates towards the middle on the left, and in direct line with two sets of escalators from different levels, which can be found at the bottom of the map. The sets of escalators are positioned side by side and with the left-hand set sitting slightly further ahead into the concourse. To the right of these, and next to the right-hand wall are two lifts.
- Returning to the bottom of the map, a strip of warning tactiles can be found in front of each of the sets of escalators, followed by directional tactiles leading straight ahead to another block of warning tactiles to indicate a direction change. Off these, short strips of directional tactiles lead to a block of warning tactiles in the centre, indicating another change of direction to a strip of directional tactiles lead through the left-hand side wide gate and into the paid concourse.
- **Return to Figure A.10**

B.11 Figure 11 Detail description

- **Overview**
  Map of the platform level laid out in a rectangular shape (positioned vertically), with the foot of the escalators, from concourse level, positioned in the bottom middle of the map. The lift is positioned next further back along the escalator void wall on the right. There are two boundary walls on either side that extend halfway up the map, the area then opens out into the platform tunnels which run to both the left and right.

- Starting at the bottom middle of the map at the bottom of the escalators; there is a strip of warning tactiles then directional tactiles lead straight to a block of warning tactiles which have paths of directional tactiles leading off to;
    - Both the left and right, reaching the corners of the boundary walls on either side, from there the tunnels walls can be used as a shoreline through the tunnel to the platforms.
    - And straight ahead to the far wall of the tunnel which can also act as a shoreline to the platforms.
- **Return to Figure A.11**

B.12 Figure 12 Detail description

- **Overview**
  Map of the platform level laid out in a rectangular shape (positioned horizontally), with a path leading up the map, from the concourse or vertical transport options, and opening out both sides into the platform tunnel, with the platform screen walls at the very top of the map. There are several platform screen doors positioned along the screen wall.
- Starting at the middle of the map at the bottom, the left-hand side wall can act as a shoreline until reaching a block of warning tactiles adjacent to the end of the wall before the tunnel opening. A strip of directional tactiles lead directly across the tunnel to the screen wall and arrive in-between two platform screen doors.
- **Return to Figure A.12**

B.13 Figure 13 Detail description

- **Overview**
  Map of the concourse laid out in a rectangular shape (positioned vertically), with boundary walls on the bottom, left and right. The bottom half of the map is the unpaid concourse, while the top is the paid concourse. The two areas are separated by a set of escalators descending to the platform arriving towards the top of the map; and the gate array comprising of several gates, extending either side to the boundary walls, with a wide gate on the far right. There is a lift positioned top left of the map, and another two in the bottom right corner, close to another set of escalators in the bottom left-hand corner of the map descending from street level.
- Starting at these bottom escalators, a strip of warning tactiles can be found, with a short strip of directional tactiles leading off to another block of warning tactiles. Directional tactiles then extend to the left

and right walls. The right-hand wall can then be used as a shoreline to navigate to and through the wide gate and again to another strip of directional tactiles running from wall to wall which are positioned above the escalators to the platform. A block of warning tactiles, positioned in front, indicate a change of direction, to be followed off to the left via a short strip of directional tactiles and to another strip of warning tactiles, after which is the escalators to navigate to the platform level.

- **Return to Figure A.13**

B.14 Figure 14 Detail description

- **Overview**
  Map of the concourse laid out in a rectangular shape (positioned vertically), with boundary walls on the bottom, left and right.
  The bottom half of the map is the unpaid concourse, while the top is the paid concourse. The two areas are separated by a set of escalators descending to the platform arriving towards the top of the map; and the gate array comprising of several gates, extending either side to the boundary walls, with a wide gate on the far left. There is a lift positioned top left of the map, and another two in the bottom right corner, close to another set of escalators in the bottom left-hand corner of the map descending from street level.
- Starting at these bottom escalators, a strip of warning tactiles can be found, after which the left wall can be used as a shoreline to reach the wide gates and again after to navigate to a strip of directional tactiles which extend to the other boundary wall. Mid way along and positioned directly in front of the escalators is a block of warning tactiles, indicating a change of direction to the right. There is then a short strip of directional tactiles leading to a strip of warning tactiles at the top of the escalators down to the platform level.
- **Return to Figure A.14**

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