

A close-up, low-angle photograph of a wooden escalator. The wooden steps with their characteristic raised edges lead upwards from the bottom left towards the top right. To the right of the steps is a polished metal handrail with several circular fasteners or rivets. The lighting is warm and directional, creating strong highlights and deep shadows that emphasize the textures of the wood and metal.

Escalation Sensation

Wooden Escalators at Wynyard
and Town Hall Railway Stations

Written, researched and compiled from interviews conducted in December 2016 & January 2017 by:

Art of Multimedia

Australian Technology Park
Locomotive Workshop Suite 3015
2 Locomotive Street, Eveleigh NSW 2015

Historical Report

Historian: Mark Dunn
Design and Layout: Jason Stevenson

Film

Producer: Beata Kade
Director: Artur Kade
Creative Direction and Editing: Jason Stevenson
Script and Interviews: Rebecca Hawcroft
Cameraman: Jerry Retford, Daniel Marsh and Greg Marsh
Sound: Jerry Retford
Production Assistant: Catherine Neasbey

Phone: 02 9209 4309
Email: info@artofmultimedia.com.au
Website: artofmultimedia.com.au

For:

Sydney Trains

477 Pitt Street
HAYMARKET NSW 2000

Project Manager: Arul Gnanasuntharam, Gretta Logue
Phone: 02 9219 1807
Email: SHeritage@transport.nsw.gov.au
Website: www.sydneytrains.info/about/heritage

The authors of this report would like to acknowledge the assistance of Mr Arul Gnanasuntharam and Ms Gretta Logue of Sydney Trains, Mr Ray Davis, Mr Andrew Grant, Mr Bill Phippen, Mr Tony Brassil, the staff of Sydney Trains and Transport for NSW, the Otis Elevator Company (in particular Mr Graham Worthington), Australian Railway Historical Society (NSW) and Guide Dogs Australia who agreed to be interviewed for the oral history film that accompanies this report.

Photographic Contributions: Art of Multimedia, Australian Railway Historical Society (NSW), Brooklyn Museum, New York, Carnegie Library of Pittsburg, Chris Fox 'Interloop' 2017, Wynyard Station, Sydney, @foxprojects, Fairfax Syndication, Gretta Logue, Images for Business, John Tipper, National Film and Sounds Archive of Australia (NFSA), National Library of Australia, National Museum of Australia, NSW State Archives and Records, Otis Elevator Company Archives, State Library of NSW, Sydney Trains, Transport for NSW, © TfL from the London Transport Museum | www.ltmuseum.co.uk/collections/collections-online

The booklet acknowledges the research and historic content contained in the following report: Significance International (Andrew Grant), Significance Assessment for Town Hall Timber Escalators Nos. 1 & 2 and Wynyard Escalators Nos. 1, 2, 3 & 4, prepared for Sydney Trains in February 2016.

This report is dedicated to:

Vinesh ('Vinnie') Pathman,

Sydney Trains Mechanical Engineer - Lifts and Escalators. (1976-2016)

Published March 2017

Contents

Introduction	3
Development of Escalator Technology	4
How an Escalator Works	8
Australia's First Escalators	10
Sydney's Underground Railway	14
Wynyard and Town Hall Escalators	20
Overhauls and Upgrades	28
Closing the Loop	34
The Daily Rumble	38
Safety Concerns	42
Escalator Retirement	44
Legacy	50



Figure 1: Wynyard Station, York Street entrance escalators, 1931. (Source: Sydney Trains)

Introduction

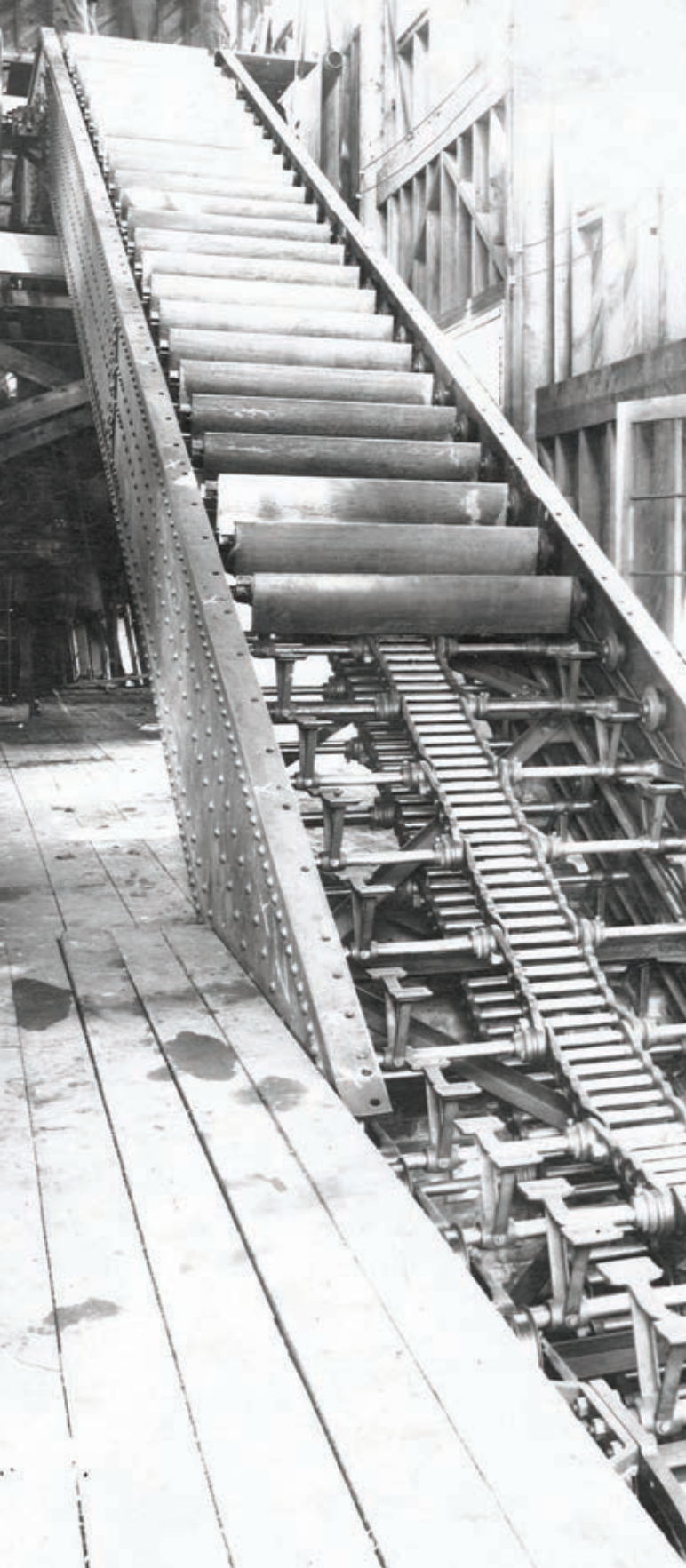
Town Hall and Wynyard Stations represent a major second phase in Sydney's early 20th Century underground railway system.

The initial phase of construction delivered St James and Museum Stations in 1926 - the first underground stations in Australia. The second phase, completed in 1932 along with the opening of the Sydney Harbour Bridge, included the two deepest underground stations of the time: Town Hall and Wynyard.

The NSW Railways adopted escalators for these deep stations to meet the growing needs of a modern Sydney. Wooden escalators were installed as innovative machinery which could move large numbers of passengers quickly in peak hours between street, concourse and platforms. The new underground station interiors were heavily influenced by the London Underground and the New York subways. This, along with the 'modern' escalator, was a signal that Sydney was on par with the latest railway technology and design from around the world.

Even after replacements in the 1950s, and multiple overhauls and upgrades in subsequent years, wooden escalators continued to operate here, two of the busiest stations on the network. Over the years they became a 'must-see' for Sydney visitors, and were much loved by regular users.

This booklet outlines the history of the wooden escalators in Town Hall and Wynyard Stations, tracing the development and design of escalator technology in Australia and overseas. It also captures lasting memories and the final days of operation prior to their retirement in 2017.



Development of Escalator Technology

Escalators are now a ubiquitous component of modern life, being in common use in department stores, shopping centres, office towers, airports and railway stations.

They are a form of mass transit without which modern cities would struggle to cope. Although they have not always been so common.

Changes in mass rail transportation and consumerism during the height of the Industrial revolution coincided with the idea for the escalator.

In Paris, Aristide Boucicault's Bon Marché department store opened in 1852, followed by Macy's in New York in 1860, which set a new standard for large scale, general shopping stores.²

The expansion and increasing sophistication of shopping emporiums to serve a growing middle class in Europe, America and Australia led them to adopt developments that would streamline customer experience and movement, such as elevators and moving stairways. As a result some of the first commercial escalators installed were in department stores.

The first practical step towards the escalator was in 1859. American inventor, Nathan Ames, patented the 'Improvement in Stairs'; a triangular arrangement of steps on a continuous loop around three guiding wheels. It was not until 1892 however that a recognisable forerunner to the modern escalator was invented by American, Jesse Reno.

Figure 2: First commercial escalator installed at the Otis factory at Yonkers, New York in 1899. (Source: Courtesy of the Otis Elevator Company)

1 Evening News, 12 August 1893, p.2.

2 Significance Assessment for Town Hall Timber Escalators Nos. 1 & 2 and Wynyard Escalators Nos. 1, 2, 3 & 4, prepared for Sydney Trains by Significance International (Andrew Grant), February 2016, p.13.

It was referred to as an 'endless conveyor' or 'continous elevator' and was a precursor to the escalator. Its design was an inclined, ramp-like conveyor belt system on which a series of inclined footpads were attached.

Reno, working in New York, had tried unsuccessfully to sell his invention for use in the city's subway in 1896. He did however manage to have one installed at Coney Island amusement park in the Autumn of the same year.

The success of Reno's design was recognised four years later in 1900, when one was used at the elevated New York subway line for the 59th Street Station on Third Avenue.

This was the first time a moving stairway was used in a railway setting, and marked the beginning of a transformation of passenger movement.³

George Wheeler, working simultaneously in Chicago with the Jeffery Manufacturing Company, aimed his moving stairway squarely at railroad companies for use in elevated, or underground railways where elevators were not desirable.⁴

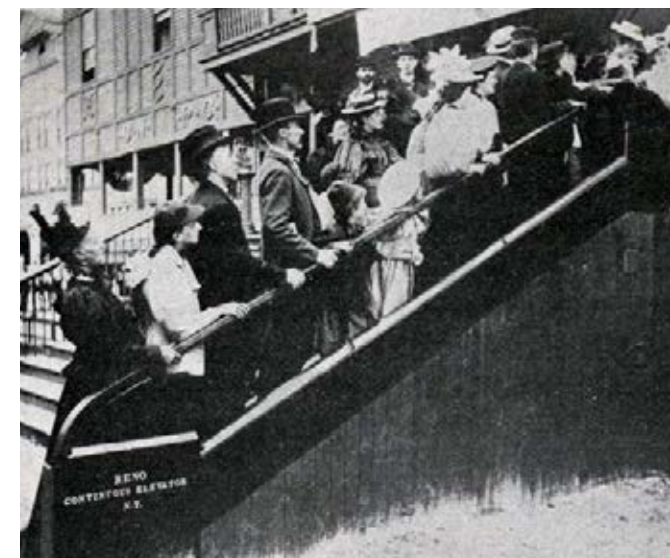


Figure 3: The continous elevator at Coney Island's amusement park in New York, installed by Reno in 1896 was a major attraction. (Source: The Street Railway Review Vol VI 1896 (page 759) supplied by the Carnegie Library of Pittsburgh)

3 Significance Assessment for Town Hall Timber Escalators Nos. 1 & 2 and Wynyard Escalators Nos. 1, 2, 3 & 4, prepared for Sydney Trains by Significance International (Andrew Grant), February 2016, p.11.

4 Evening News, 12 August 1893, p.2.

5 Otis, About Escalators, <http://www.otisworldwide.com/pdf/AboutEscalators.pdf>.



Figure 4: Two workmen stand on the double spiral. (Source: © TfL from the London Transport Museum collection). In March 1993 the remains of this walkway were found at the bottom of the lift shaft in Holloway Station, and are now in the care of London's Transport Museum depot at Acton.

Wheeler, who had also patented a moving stairway, sold the rights to Charles Seeberger, who in turn attracted the attention of the Otis Elevator Company. The American firm Otis, had started installing freight elevators from 1853 and passenger elevators from 1857, before diversifying into escalators in 1900.

The entry of Otis into the escalator market precipitated the development of the modern escalator. The first commercial escalator was installed at the Otis factory in Yonkers New York in 1899. The next year Otis, in partnership with Seeberger, showcased their new escalator at the 1900 Paris Exposition, for which they won first prize.

Experimental prototypes were conceived for railway stations such as the first and only 'spiral' Reno escalator installed at London's Holloway Road Station in 1906. This was the earliest moving stair on the London Underground, but operated for just one day before it was deemed unsafe and was removed from service.



Figure 5: Escalator at the Paris Exposition, 1900. (Source: Otis Elevator Company Archives)

By 1911, the London Underground's first proper escalator at Earl's Court Station was installed. These operated from new passageways beneath the surface platforms down to the deeper platforms.

Famously "Bumper" Harris, a one-legged engineer, rode the escalators on the first day of operation to reassure passengers of their safety.

One of the problems faced by the early designers was the transition point from the moving stairway to the landing platform at the top or bottom. An early design had incorporated a V-shaped shunt or "passenger diverter", at the top to force users to exit left and right of the V and a side entry

at the bottom. However this awkward design meant users had to pivot with one foot as they entered and left the escalator while also retaining a straight foot on the escalator, resulting in a difficult and dangerous exit.

This design was soon abandoned for one of Seeberger's own designs that introduced flat steps and a section of flat running at the top and bottom of the escalator to allow passengers to adjust to the escalator's motion.⁶

However, the point at which the steps disappeared under the landing was still a danger zone, which caught clothing easily. To overcome this, Reno, who had been surpassed in his other designs, introduced raised wooden cleats on each step, which in turn ran through a comb at the landing point.

The first designs of this style were still problematic as passengers remained nervous of being caught in the large comb plate. However by combining Reno's cleats and comb plate, with Seeberger's steps, Otis standardised their design and eliminated much of the risk of clothing being caught.⁷

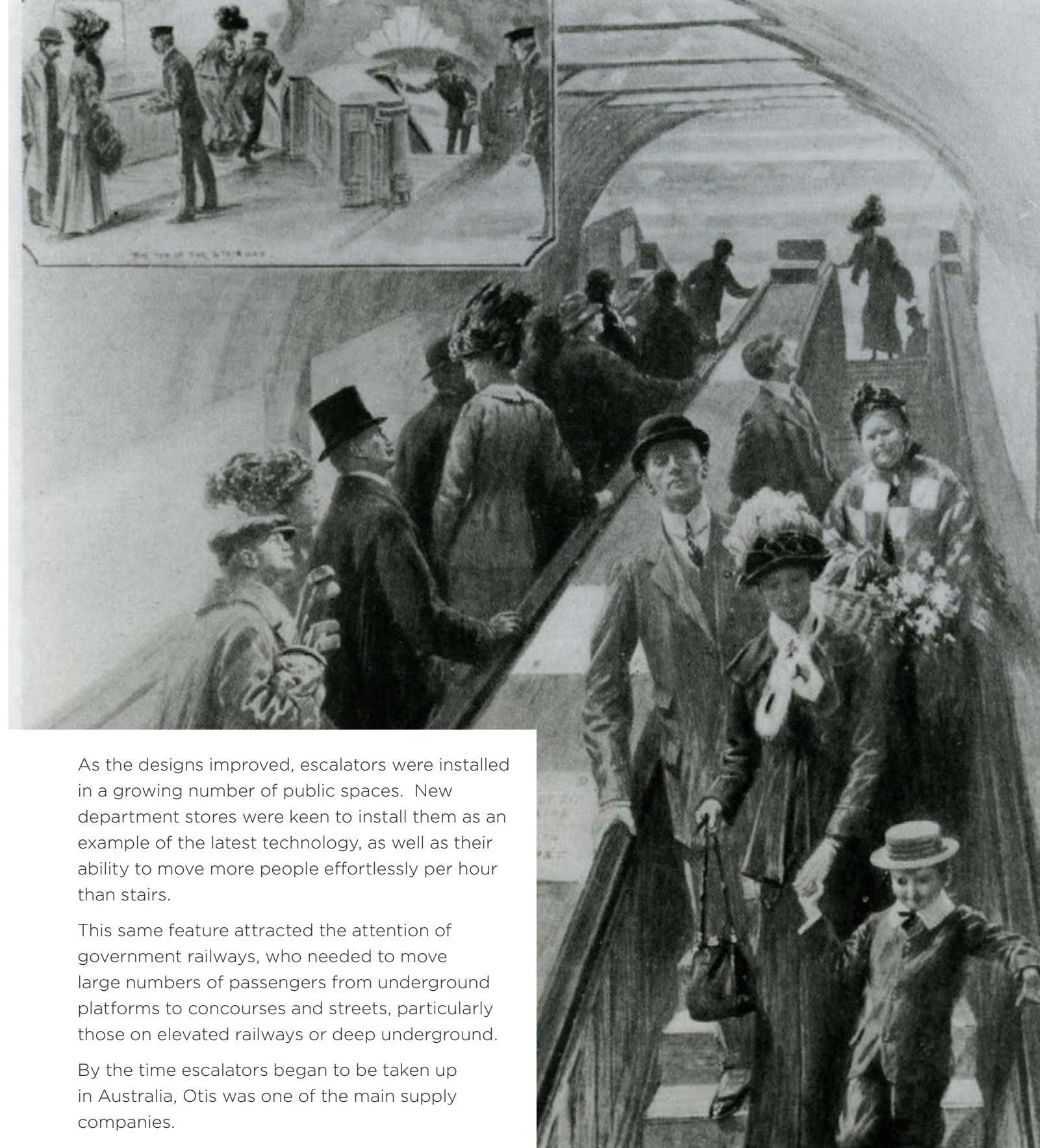
Their first escalator to incorporate both features was unveiled in 1921 and was known as the L-type. The same model was installed later at Town Hall and Wynyard Stations.

Otis also modified the early forms of handrail, most of which were made of solid rubber with a tension driven chain drive. The older handrail had often left user's hands dirty from grease picked up by the chain.

Otis' improvements eliminated the need for a lubricated chain by linking the handrail drive to the main escalator motor and, by extending the handrail beyond the point where the treads disappear at the landing plate, they provided extra stability for passengers entering and alighting from the escalators.⁸

⁶ Koolhaas, R, Elements of Architecture: Escalators, Venice Architecture Biennale, Venice, Italy, 2014, p.24.

⁷ Otis, About Escalators, <http://www.otisworldwide.com/pdf/AboutEscalators.pdf> accessed 2-12-16. Also Koolhaas, p.24.



As the designs improved, escalators were installed in a growing number of public spaces. New department stores were keen to install them as an example of the latest technology, as well as their ability to move more people effortlessly per hour than stairs.

This same feature attracted the attention of government railways, who needed to move large numbers of passengers from underground platforms to concourses and streets, particularly those on elevated railways or deep underground.

By the time escalators began to be taken up in Australia, Otis was one of the main supply companies.

Figure 6: Step type escalator, Earl's Court Station, London England. (Source: © TfL from the London Transport Museum collection)

⁸ Otis, About Escalators, <http://www.otisworldwide.com/pdf/AboutEscalators.pdf>

How an Escalator Works

An escalator is essentially a conveyor with three basic components: moving handrails, stairs and a power unit, all supported with a steel truss.

They are reversible when required and have a motor that runs at a constant speed even when the escalators are fully loaded.

The steps and risers of a typical escalator are set on a triangular strut attached to rollers, guided by rails and moved by the drive chain.

Each step is hinged at the back. The struts and rollers work within the guide rails to hold the steps in a horizontal position as they move up or down the incline. The rails are positioned to hold the steps at the required angle for travel until the top or bottom of each escalator, where the rails converge together and force the steps back into a flat pattern, allowing passengers to alight safely.

The steps then proceed under the landing before rounding the sprocket wheel and travelling back down the chain line to reappear at the opposite end for continual travel. Handrails are powered via the same motor with a belt attached to pulleys spaced evenly along the steel truss of the escalators that keep the handrail running at the same speed as the steps.⁹

Escalators are driven by electric motors connected to gearboxes and wheel shafts. A heavy duty roller chain drives the step chain in a continuous loop around a sprocket gear wheel at the top and bottom of the escalator. The step chain, one on each side of the escalator, moves the steps and a tensioned handrail drive chain moves the handrails at the same speed.¹⁰

Figure 7: View of an Otis escalator, showing the circuit of steps. The driving mechanism is located within the structure of the upper landing, 1903. (Source: Otis Elevator Company Archives)

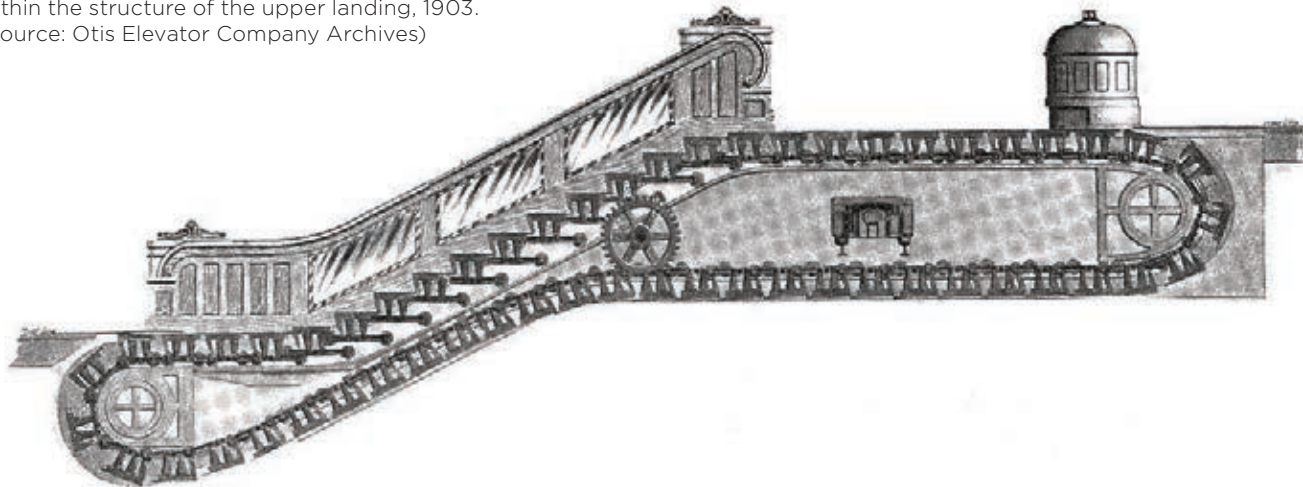


Figure 8: A flat step escalator under construction in Otis factory at Yonkers New York showing the completed treads and risers, 1899. (Source: Otis Elevator Company Archives)

⁹ Grant, Significance Assessment, pp.66-68.

¹⁰ Pers Comm. Tony Brassil, Escalation Sensation Interviews 20 December 2016.

Australia's First Escalators

In September 1909, Mark Foy's new emporium known as the "Piazza", opened in Liverpool Street, Sydney.

The new store boasted all the modern design features of its time including a moving staircase "upon which one may step, and without further exertion, be landed on the upper floor".¹⁵

Referred to as the 'Escalier Hoquart' in the newspaper reports, it was based on a design by Edouard Louis Hocquart, a French inventor, who had the patent on the latest improvements to traveling staircases at the time of installation.¹¹

Installed by The Standard Waygood Co, who also installed the emporium's lifts, the moving staircase was recorded as the first installed in Australia and probably the first in the Southern Hemisphere.¹²

As the moving staircase was based on a French design, there had been a suggestion for a French engineer to be brought to Sydney to assist with installation, but Waygood's own engineer, Gordon Bennett, was able to install and get the stairway working.¹³

Despite the innovation of Mark Foy's moving stair, the novelty soon wore off. Frequent breakdowns and mechanical issues culminated in its removal after only five years (c1914).¹⁴

Regardless, the ability of escalators to move large numbers of shoppers around a department store was still an advantage over stairs and elevators. Their adoption by the railways was already underway.

Prior to the development of the underground railway in Sydney and the construction of the Harbour Bridge, Milsons Point interchange was one of the busiest stations on the network.



Figure 9: Postcard showing Mark Foy's 'Piazza' store in Sydney's Liverpool, Castlereagh & Elizabeth Streets. This was the site of the first 'moving staircase' in Australasia installed by 'The Standard-Waygood Company' in 1909, later removed around 1914. (Source: National Museum of Australia)

Figure 10: Milsons Point Station escalators in the course of installation by Waygood-Otis, 1924. The truss work is in place, with bracing for the escalators themselves also visible. (Source: State Archives and Records NSW ID 12685_a007_a00704_8722000084r)

The North Shore train line headed down via Lavender Bay to its terminus where it met the cross harbour ferries and local tram services.

In 1914, as planning for the new harbour crossing began, Milsons Point was chosen as the location for the bridge's northern pylons and the Dorman Long workshops during its construction. A new, temporary Milsons Point train station would be required.

The temporary arrangement meant that trains terminated in Lavender Bay and connected to the ferry terminal, with trams and bus services terminating on the cliff above in Glenn Street.

There was a significant height difference to connect the trams with trains and ferries below, so it was a logical place for J.J.C Bradfield's new escalator technology.

A set of three L-Type Otis escalators were installed for passengers, as well as a lift and stairway.¹⁶ The escalators were installed by Waygood-Otis (Australasia), Otis having amalgamated with R. Waygood and Company in 1914.

When the escalators began operation in July 1924, they were the only set in Sydney at the time (Mark Foy's having removed their set in c1914) and the second largest set of escalators in the world.

¹¹ Sydney Morning Herald, 15 September 1909, p.4.

¹² Art and Architecture, Vol.6 No.5, 1909.

¹³ Sydney Morning Herald, 19 September 1909, p.4.

¹⁴ Pers Comm Andrew Grant, Escalation Sensation Interviews 20 December 2016

¹⁵ Sydney Morning Herald, 15 September 1909, p. 4 (in Significance International (Andrew Grant), Significance Assessment for Town Hall Timber Escalators Nos. 1 & 2 and Wynyard Escalators Nos. 1, 2, 3 & 4, prepared for Sydney Trains, February 2016: page 18)

¹⁶ Grant, Significance Assessment, p.20



Figure 12: Lavender Bay train and ferry terminal c1930. (Source: Australian Railway Historical Society (ARHS))



Figure 11: Commuters make their way from trams in Glen Street to the Milsons Point Station. The escalators can be seen on the right hand side, heading down from the overhead walkway. (Source: Sydney Mail NSW : 1912 - 1938, 30 July, page 13 National Library of Australia)

They were instructing North Sydney in the new outdoor sport-lessons in escalating. The North Sydney citizen stepped on gingerly. He stepped off oozing with astounded pride-the complete Escalator!... North Sydney escalated up and down with a smile of dreamy bliss, a sort of quivering ecstasy.¹⁷

Those at the Bank Street Station on the London Underground, installed just two months before, were the largest at the time. Running a total of 10.6m from the bottom to the top of the cliff, the Milsons Point escalators were claimed to have a capacity of between 9,000 and 10,000 people per hour.

The Milsons Point escalators, with their ability to move large numbers of passengers quickly, were a symbol of the modern transformation of the city rail network that was then underway. The curiosity experienced amongst Sydney shoppers at the opening of Mark Foy's in 1909 was relived at Milsons Point, with newspapers full of reports and photos of the new escalators in action.

In its report on the opening of the new station The Sun asked its readers "Do you Escalate?" reporting that, at both top and bottom, police and train guards and officials were helping people on and off the escalator:

The Sun called those first commuters the "Joy Riders", and commented that they rode the escalators as if they had been doing it all their lives. Commuters craned their necks from the platforms to see them in use, with at least one Joyrider telling the newspaper, they would never forget the thrill of the first time they rode it.¹⁸

These escalators operated until the opening of the Harbour Bridge in 1932 when the station was relocated to its current position within the bridge approaches.

After the closure of the old station, the escalators were dismantled and placed in storage in anticipation of future use within the network.

Despite the early removal of the Mark Foy's machines, the technology continued to improve as did the adoption of escalators by various department stores.



Figure 13: The Sydney Mail captures the excitement of new escalator novelty at Lavender Bay. (Source: 'The Escalator Season', The Sydney Mail, Wednesday 6 August 1924: page 32)

Farmer's department store announced they were installing four new escalators in their George Street store in December 1927 with a capacity of 270 people per minute.

By September 1932, Building Magazine, in an article on the first escalators in Melbourne at the Manchester Unity Building, noted there were already sixteen escalators in Sydney.¹⁹

These were joined in 1934 by Anthony Horden's Department Store and finally in 1937 by David Jones, who claimed the largest single bank of escalators in the southern hemisphere at the time in their new Elizabeth Street store, the last one of which was not removed until 2001.²⁰

As each new set was installed, the newspaper coverage revived the interest in the technology and their role in modernizing the city.



Figure 14: Police and guards assist commuters alight at the bottom of the new escalators. (Source: National Library of Australia Digitised newspaper, item 17597330, Sydney Mail 30 July 1924, page 13)

¹⁷ The Sun, 28 July 1924, p.7.

¹⁸ The Sun, 28 July 1924, p.7.

¹⁹ Building: the magazine for the builder, architect, property owner and merchant, Vol 51, 12 September 1932, p.70.

²⁰ The Argus (Melbourne), 14 December 1927, p.34; Sydney Morning Herald 13 December 1927, 26 October 1934, 27 November 1937.



Sydney's Underground Railway

In 1911, J.J.C. Bradfield had proposed an underground city railway and harbour crossing as part of a broader rail network for Sydney.

Bradfield, the son of an engineer and a qualified engineer himself, had started his career with the Queensland railways in 1889, before moving to Sydney in 1891 to take up a position as a draughtsman for the NSW Public Works. By 1909 he had been promoted to Assistant Engineer and had already presented a number of papers and lectures on the need for and design of a harbour crossing.

In February 1912, he presented evidence to a Parliamentary Standing Committee for Public Works on a proposed suspension bridge linking the two sides of the harbour, which he later modified to a cantilever and then an arch design.²¹

With the plan approved by the Public Works Committee in 1913, Bradfield was appointed Chief Engineer, Metropolitan Railway Construction and headed overseas to Europe and America on a fact finding mission. He was particularly interested

in the electrified railway system and also bridge, station and locomotive design.

On his return he presented the Report on the Proposed Electric Railways for the City of Sydney to the State Government, outlining his discoveries and conclusions. Amongst the innovations he had witnessed was the increasing use of escalators, specifically of the Otis Elevator Company, at stations in England, Europe and America.

Bradfield had seen the escalators installed at Earl's Court, and the latest installations at Paddington, Charing Cross and Oxford Circus stations.

With the escalator steps being 4 feet wide, and able to take three people per step per second, Bradfield estimated a potential total of 10,800 people being moved in an hour, increasing further still as people became used to them and began walking on them rather than standing still.²²

Figure 15: Bradfield's proposal for the city electric railways and new harbor crossing. (Source: Sydney Trains)

He noted:

The escalators work very satisfactorily, and in busy hours of the day are crowded with passengers.²³

Bradfield's transport plan for Sydney included an electrified, double track city loop with stations at Town Hall, Wynyard, Circular Quay, St James and Liverpool Street (Museum), with lines to the North Shore and northern beaches, eastern suburbs and Sydney's northwest.

In 1924, Bradfield outlined his plan in his Engineering doctoral thesis at the University of Sydney, titled "The city and suburban electrical railways and the Sydney Harbour Bridge".

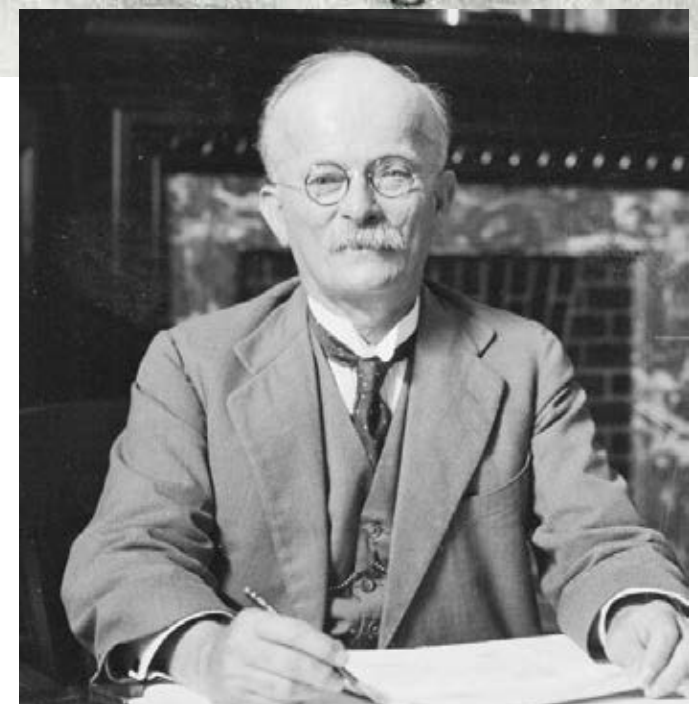


Figure 16: J. J. C. Bradfield, Chief Engineer, Metropolitan Railway Construction, 1934. (Source: National Library of Australia (NLA) Object 157610232)

²¹ Spearitt, P. 'Bradfield, John Job Crew (1867-1943), Australian Dictionary of Biography, National Centre of Biography, ANU, <http://adb.anu.au/biography/bradfield-john-job-crew-5331/text9011>, published first in hardcopy 1979, accessed online 6 January 2017.

²² Bradfield, J. J. C., Report on the Proposed Electric Railways for the City of Sydney, NSW Government Printer, Sydney, 1916, p.18

²³ Bradfield, J. J. C., Report on the Proposed Electric Railways for the City of Sydney, NSW Government Printer, Sydney, 1916, p.18.



Figure 17: Wynyard Station under construction in Wynyard Park in May 1928. (Source: Sydney Trains)

Bill Phippen, manager of the Railway Resource Centre, Australian Railway Historical Society (NSW) explains that:

When John Bradfield designed the city railway system and the whole transport system for Sydney, it was about moving people and clearly trains and the carriages, and the lines and the tunnels were very important. But it was a total solution. And moving people from the trains, out through the stations, and to the city, to their places of work was part of it. And escalators were a very real part of getting people efficiently from the trains.²⁴

Legislation to enable the city loop works was passed in 1915 but World War I delayed the start until 1918, with the first section of viaduct from Central Station to the Goulburn Street portal.

The construction works for the city underground caused major disruption and concern especially through Hyde Park which required large scale cut and cover excavations. Despite this, modernizing the city's infrastructure was followed with keen interest and excitement.

The first section of the project completed was between Central and St James, with the line and its two new modern station buildings opening in December 1926.²⁵

These were the first underground railway stations in Australia. The interwar station buildings were designed by Government Architect George McRae and together with Bradfield brought modernity to the NSW Railways.

Local media at the time said St James Station would rival Piccadilly.²⁶ The opening attracted tens of thousands of patrons to "examine Bradfield's super Christmas box".²⁷

The station's art deco interiors resonated strongly with the London Underground. Each station was colour coded with a banded feature tile to help passengers identify where they were on the

network. Museum station had maroon and St James green.

Museum and St James Station however did not include escalators, as they were too shallow underground. Access was via modest station entry buildings and then down a series of ramps and stairways to the concourse level, before stairs to the platforms below.

The Central-Town Hall-Wynyard section of the line progressed to correspond with the opening of the Harbour Bridge in 1932, and was much deeper in level. Work on those stations began in late 1925.

²⁴ Bill Phippen, Interview Escalation Sensation, 20 December 2016.

²⁵ ARHS Sydney's Railways, in Fraser, D., (ed), Sydney From Settlement to City: An Engineering History of Sydney, Engineers Australia (Sydney Division), 1989, p.87.

²⁶ Queensland Time (Ipswich), 24 May 1924 pg 7.

²⁷ Lester Firth (September 1993): Conservation Study and Policy Guidelines. St. James Station for State Rail: 10.



Figure 18: Concourse level at Wynyard Station near completion in 1932. (Source: State Archives and Records)

Both stations were designed to take multiple lines with each serving the city loop line as well as North Shore lines. At Town Hall station there was also provision for platforms and tunnels at a deeper level to serve a proposed eastern suburbs line. By mid-1927 excavations for both stations were well underway, with the tunnels between both also under construction.

The interiors of the new stations continued the architectural language of the existing underground station: art deco detailing, colour coded wall tiles (yellow for Town Hall and blue for Wynyard) and high quality finishes and features.

In August 1928, the Metropolitan Railway Construction Branch of the Public Works

Department called for tenders to manufacture, supply, deliver and erect a total of eight escalators at the new Town Hall and Wynyard stations.²⁸

At the time it was anticipated that escalators would be installed in the York Street entrance to Wynyard and at Town Hall to serve the lower level platforms, where four were planned. By 1930 the tender for the escalators had been accepted, and as tunnelling continued, the stations were nearing their final phase of construction, with detailed plans of finishing, tiling, ventilation, lighting and water supply complete.²⁹

As Wynyard Station progressed, work also started on a new railway headquarters which were over the station. Railway House (also called Transport

House) was to consolidate all the railway departments that had previously been at Central in a new, office building reflecting the growing confidence of the modern railways.

Designed by the Railway Department architects in association with H.E. Budden and Mackay, the building was clad in green terracotta tiles in the same colour scheme adopted for Sydney's ferries, buses and trams.³⁰

Once Town Hall and Wynyard Stations were complete in 1932, attention turned to the building of Railway House which was finished in 1935.

There were two Transport Houses in Sydney, one in York Street over Wynyard Station as the main office for the Department of Railways, and

a second in Macquarie Street, which acted as the head office of Roads and Tramways.

At Macquarie Street, Waygood-Otis also installed a wooden escalator in 1938 when the building opened, running from the Phillip Street entrance up to the registration hall of the building.

However, unlike Wynyard, there was only ever a single escalator and it was a very narrow example, less than a third of the width of its railway contemporaries.

28 Grant, Significance Assessment, p.30.

29 New South Wales Railway Commissioners Annual Report 1926-1932.

30 Ferson, M & Mary Nilsson (eds), Art Deco in Australia: Sunrise over the Pacific, Craftsman House, Sydney, 2001, p.86



Wynyard and Town Hall Escalators

As with Milsons Point Station, the contract for the escalators at Town Hall and Wynyard was once again awarded to Waygood-Otis.

Waygood-Otis (Australasia) had established a factory in 1924 in Rosebery, an industrial suburb in Sydney's south. As part of their winning tender, they combined locally produced and imported components from their home company in England, to manufacture and install five 'first generation' escalators, three at Wynyard and two at Town Hall.

Although the original tender had specified eight escalators, at the time of the opening of the stations it was deemed that five would be sufficient, with a bank of three to serve at the York

Street entrance to Wynyard and another two to access platforms at Town Hall. These were the Otis L-Type escalators, all with wooden treads and timber panelling encasing the steel working mechanism.

The placing of the escalators at each station was determined in part by the location of the platforms in relation to the concourse. For maximum efficiency, escalators needed to run a minimum of, and preferably further, than 25 feet or 7.6 metres.

The configuration of Wynyard Station had platforms above and below the main concourse of the station and due to this layout, neither set of platforms required escalators to access them, with stairs deemed sufficient.



Figure 19: Installing the escalator trusses at Wynyard, August 1930. (Source: Sydney Trains)

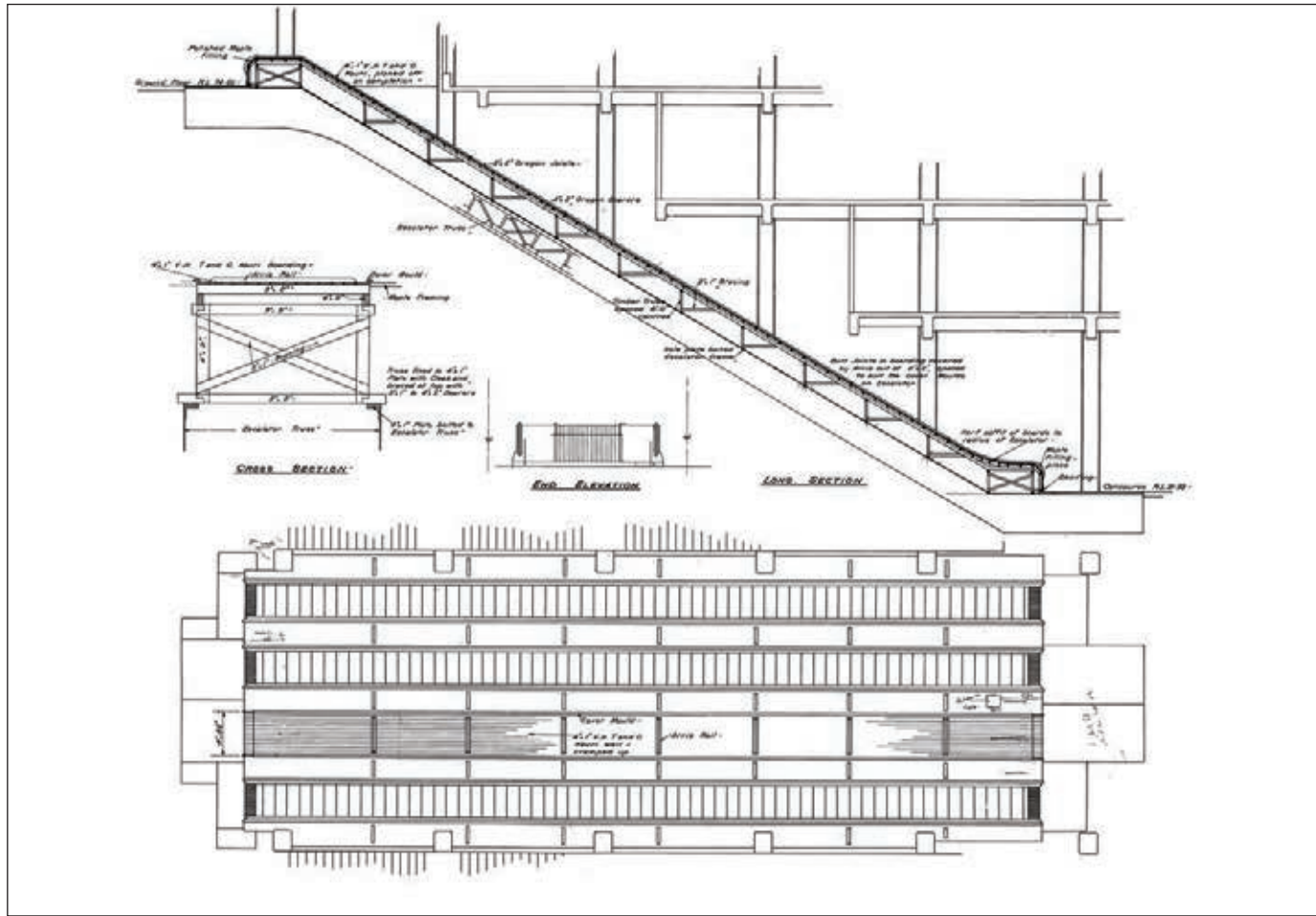


Figure 20: Plan of the general arrangement of the Wynyard escalators with the temporary cover over Escalator No.3 shown. Plan No. 10.C.640 (Source: Sydney Trains)

The bank of three escalators from the York Street entrance were designed so that a fourth could be added in the future. These escalators also served as the foyer to Transport (Railway) House and were integral to the connection physically and spatially between the station and the railway headquarters.

Industrial Heritage Specialist, Tony Brassil, observed that:

The two are inexorably linked. And the idea was always that the entrance, when somebody entered through that portal, they entered into the railways, into an architectural environment, a stylistic environment that was modern and up-to-date, and stylish; something to be proud of.³²

At Town Hall, escalators were necessary to serve the lowest level of platforms, then being Platform 6. Their rise equalled 11.5 metres. The design could accommodate four escalators, but only two were originally installed in a criss-cross formation. None were installed to access the station or concourse from the street level as it was too shallow.

By mid-1931, the Wynyard escalators were in place and had undergone their trial runs, with those at Town Hall almost complete.³³

The escalators at both Wynyard and Town Hall were known as heavier 'Railway' L Type escalators, differentiating them from 'Store' type which was a lighter version used in department stores.

Each L-Type railway set had steps 4 feet 8¼ inches (1.4m) wide, made of kauri pine, travelling at a rate



Figure 21: Wynyard Station escalators fully installed and ready for testing in 1931. Note the covered section where future capacity for a fourth escalator was provided. (Source: Sydney Trains)



Figure 22: York Street entrance escalators to Wynyard Station just prior to the opening of the station in 1932. The station finishes are now complete. Note the set of stair either side of the escalator bank, which provided extra capacity for peak hours and as a back-up exit in case of emergency. (Source: State Archives and Records NSW 12685_a007_a00704_8722000031r)



Figure 23: View of the Town Hall escalators from the concourse to platform 6 in a crossover pattern just prior to the station opening in 1932. (Source: State Archives and Records NSW. 12685_a007_a00704_8735000046r)

³² Tony Brassil, Industrial Heritage Specialist. Interview Escalation Sensation, 20 December 2016.

³³ New South Wales Railway Commissioners Annual Report 1926-1932.



Figure 24: Going down at Wynyard, while others come up. A morning peak hour shot of Wynyard in action in 1948. Note the sign to encourage passengers to keep to the left. (Source: State Archives and Records NSW 17420_a014_a014000660)

of between 90 and 100 feet per minute (27-30 m/minute).

The design of the entry and exit from the escalators allowed for the wooden cleats of each step to enter the comb horizontally after running flat for the equivalent of three steps, making them easier and safer to travel on than earlier versions.³⁴

The running engines were situated in a motor room at the top of each set at Wynyard and the bottom at Town Hall, reflecting the internal layout and available room at each station.

Once installed, the dark varnished Queensland Maple casement contributed a sleek modern art deco design element to the station; especially those at Wynyard given their parallel arrangement. They weren't just machines, they were architectural machines.

Both stations opened to the public on the 28 February 1932, three weeks before the opening of the Harbour Bridge. Escalators were once again a feature of news reporting.

The Sydney Morning Herald remarked on the spaciousness and the fine appointments at each

³⁴ Building: the magazine for the builder, architect, property owner and merchant, Vol 51, 12 September 1932, p.53.



Figure 25: 'Please stand on the right of the escalator', by Fougasse, 1944. Escalator etiquette of standing to the one side so other passengers can pass was reinforced with signage. In the London Underground passengers are encouraged to stand on the right a legacy of the early side partition exit, however Australians are requested to stand on the left following the road rules. (Source: © TfL from the London Transport Museum collection)

station and that:

The rapidly moving escalators are one of the features of both stations: for a small boy having a day in town with his mother they will be a source of almost endless joy.³⁵

On opening it was reported that many children did indeed avoid the railway guards and spent much of the day riding the escalators up and down. Wynyard's escalators were particularly impressive, with a vertical rise of 13.16m, they had the largest rise of any escalators in Australia at the time.

³⁵ Sydney Morning Herald, 29 February 1932, p.9.



Figure 26: 'Brightest London is best reached by Underground', by Horace Taylor, 1924. (Source: © TfL from the London Transport Museum collection)

“The escalator door is always open”

- Otis Elevator Company

.....

“The operation is simplicity itself; the visitor steps onto the stair, and without moving the feet again, is conveyed to the first floor as if by magic”

- The Magnet, Vol. 1, No.2, p. 15

.....

“Don't wait, escalate!”

- Le Courrier Australien, 4 August 1950. p. 8

.....

“... the most radical architecture has been the most popular and the least noticed...”

- Weiss, S and Leong, S, The Harvard Guide to Shopping, Taschen, USA, 2002: p. 335

.....

“Where escalators move, merchandise moves”

- The Sunday Herald, 4 June 1950, p. 9

.....

“As an instrument of smoothness, the escalator triggered a vast new domain of construction”

- Weiss, S and Leong, S, The Harvard Guide to Shopping, Taschen, USA, 2002: p. 335

Overhauls and Upgrades

After eight years of use, in 1940, the escalators at both Wynyard and Town Hall required a major service.

In order to allow for ongoing use during peak periods, where each escalator was operating at capacity, all maintenance had to occur between morning and afternoon peaks or on weekends. Each escalator was temporarily withdrawn from service to allow this to happen with the least disruption to commuters.

During the planning of overhaul works at York Street, the escalator's use was recorded by the Chief Electrical Engineer for the Passenger Services Committee of the Metro Suburban Service for the Railways.

At Wynyard, during off peak times and at night only two of the three escalators were used, with one running up and one down. However, in peak times all three were put in service, running in the direction of the heaviest load, all going up in the morning and all down in the afternoon. Passengers travelling in the opposite direction to the peak flow were required to use the stairs.³⁶

On the morning of 6 March 1940 between 6am and 10am, a total of 9,328 people used the up escalators during this period, with a single up escalator between 6am and 7am, two up escalators from 7am until 8.45am and three between 8.45am and 9.15am to handle the last of the peak, before dropping back to a single escalator from 9.30am.

The highest period of use was from 8.30am until 9am, when 3,814 passengers rode across all three escalators.³⁷



³⁶ Report of the Metro Suburban Services Passenger Committee, 1936-1948, Report of Chief Electrical Engineer, 14 February 1940 Re: Condition of Escalators at Wynyard and Town Hall Stations, SRNSW Series 15867 Item 19, No.20
³⁷ Report of the Metro Suburban Services Passenger Committee, 1936-1948, Report of Chief Electrical Engineer, 14 February 1940 Re: Condition of Escalators at Wynyard and Town Hall Stations, SRNSW Series 15867 Item 19, No.20

Figure 27: Morning peak hour at Wynyard in 1948. Notice that all three escalators are in the up mode, with those passengers wishing to descend to the concourse doing so via the stairs. (Source: State Archives and Records NSW 17420_a014_a014000661)



Figure 28: The Wynyard escalators at the morning peak hour in 1953. One escalator is running down, whilst the other two run up to York Street (the escalator on the near side is out of the frame in this photograph). Note the instructions to stand on the left. (Source: John Tipper, Collecting Books and Magazines)

Similar figures were recorded for the evening peak with a total of 9,061 going down the escalators to the station, confirming Wynyard as one of the busiest railway stations on the Sydney network.

In response to the Chief Engineer's Report in 1940, the Passenger Committee for Metro Suburban Services recommended that a fourth escalator be installed in the space left for it at Wynyard.

This would lift the passenger capacity overall, as well as allowing a back-up during any maintenance works. Despite the recommendations, Australia's involvement in World War II meant that the railway budget for domestic upgrades was not available at this time.

With the end of World War II in 1945 and the return to prosperity by the early 1950s, work to implement some of the recommendations from the 1940 Passenger Committee report could proceed.

Having maintained their working relationship with NSW Railways since the installation of the first escalators at Milsons Point, Waygood-Otis was commissioned to design and replace all the escalators. With the railways as one of their largest customers for escalators in Australia, their new factory at Bankstown, which opened in 1957, dedicated 25 per cent of its entire workshop area to the Railway contracts.³⁸

However, unlike many of their other customers, mainly department stores, Waygood-Otis were not involved in the maintenance of the railway escalators, with all works instead being done by the railways themselves.

For Waygood-Otis, this meant that the usually lucrative maintenance contract was not available, instead they were required to train the railway engineers and maintenance crews how to work on the escalators.

Another oddity of this contract was that despite most escalators installed in the post war period having aluminium steps, the railways insisted on wooden treads arguing that they were easier to maintain (as wooden steps could be repaired individually by a carpenter if required) and that they were less dangerous should a passenger fall.

Between 1952 and 1957, the escalators at both stations were completely replaced. The first to be replaced was No.3 at Town Hall, which had been the last one to have been installed in 1937.

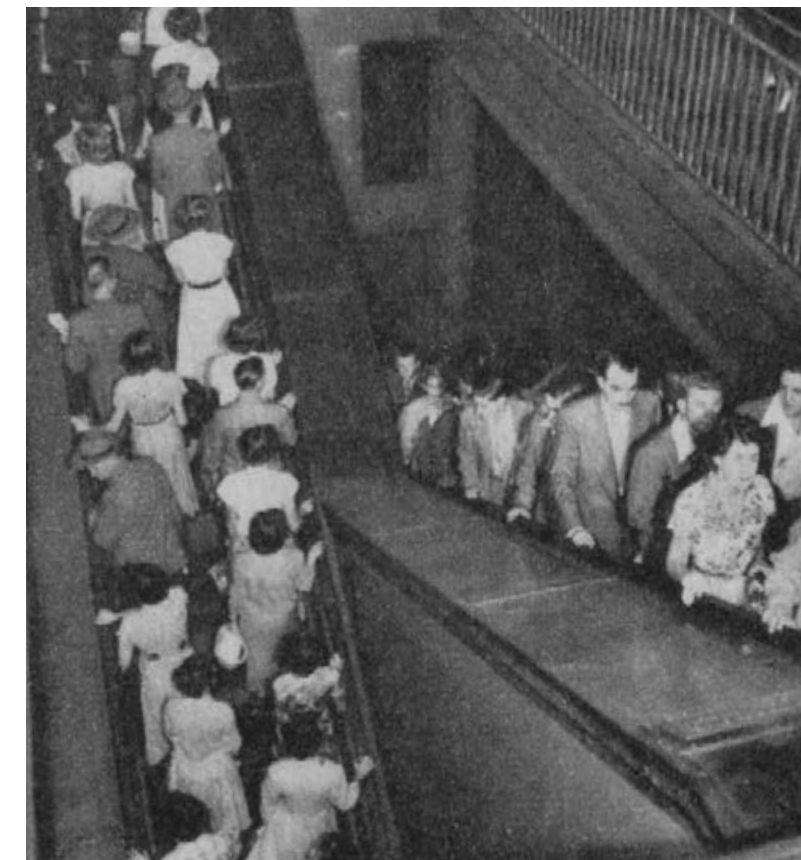


Figure 29: Town Hall escalators fully loaded in action in 1953 at morning peak hour. At two people per stair, these escalators could move thousands of commuters from the platforms every hour. (Source: John Tipper, Collecting Books and Magazines)

³⁸ Significance International (Andrew Grant), Significance Assessment for Town Hall Timber Escalators Nos. 1 & 2 and Wynyard Escalators Nos. 1, 2, 3 & 4, prepared for Sydney Trains, February 2016: page 100

In September 1937, a third escalator (known as Escalator No.3) was installed at Town Hall down to Platform 6. This was to cope with increased passenger traffic after Bankstown trains, which had previously terminated at St James, were rerouted to Town Hall.

The new escalator was one of the former Milson Point escalators, reconfigured from the light store type to the heavy railway type, to fit into Town Hall. This was the only one of the 1924 Milsons Points escalators to be taken out of storage and re-used. After replacement in 1952, it was again replaced in 1971 with a modern metal machine.

The remaining two were kept in Public Works storage for any future use or for spare parts, however were later disposed of.³⁹

Following this, Town Hall No.1 was replaced in July 1956 and Town Hall No.2 replaced in December 1956.

At Wynyard the fourth escalator at the York Street entrance, as proposed in 1940, was finally installed in May 1956, with the other three replaced separately in December 1956, then July and December 1957.

This new fourth escalator was designated as No.3 at Wynyard, with the old No.3 being renumbered No.4 representing their place in the bank from right to left.⁴⁰

This work completely replaced the old L-Type escalators with what was from then referred to as 48SA type escalators.

The installation of the new 1950s escalators, undertaken by Waygood-Otis engineers, was a time consuming and complicated process. Rather than re-using components from the original 1930s escalators, the 1950s work replaced all the component parts: trusses, motors, steps, decking,

balustrades, step chains and other sections.

Their heavy engineering meant that although they were more robust than other contemporary versions, such as those in shopping centres and office buildings, they were also more difficult to install, with the steps units themselves weighing up to 38kg, compared to 15kg for aluminium versions. The large scale motor and gear box were also oversized to handle the load.

Further difficulties were encountered as the stations were now operational and replacing the escalators meant major disruption to services. Given the space restrictions at Town Hall, the escalators needed to be dismantled in the station and removed before the new ones could be bought in, assembled and installed on site.

Ray Davis, who has worked for NSW railways since 1978 in the lifts and escalator section, notes that:

They were designed as a heavy duty escalator. They'd be about three times the size, unlike what you see in a modern day escalator. One of the unique features is the motor and gear box is outside the escalator framework. In a modern day escalator everything's inside the truss work. The step chain...is about three times the size you'd see in a modern escalator. The steps are much heavier than a modern escalator.⁴¹



Figure 30: York Street exit in April 1966 showing the new 48SA escalator machines in use. (Source: State Archives and Records)



Figure 31: Town Hall platform escalators in 1960. (Source: State Archives and Records)

³⁹ Report of the Metro Suburban Services Passenger Committee, 1936-1948, Report of Chief Electrical Engineer, 14 February 1940 Re: Condition of Escalators at Wynyard and Town Hall Stations, SRNSW Series 15867 Item 19, No.20.

⁴⁰ Grant, Significance Assessment, p.39

⁴¹ Ray Davis, Interview Escalation Sensation, 20 December 2016..



Closing the Loop

Railway architecture took a confident step into modernism with the opening of Circular Quay Station in 1956, finally closing the city circle loop.

The station was designed to accommodate escalators to access the elevated platforms from concourse/street level. Even though wood was being installed at the same time at Wynyard and Town Hall stations, aluminium steps and balustrades were installed at Circular Quay.

Aluminium suited the aesthetics and design of the modern Circular Quay Station, however it was effectively the same Otis escalator machines underneath the steps and cladding as installed at Wynyard and Town Hall.

During the same period, the Martin Place Station design was being finalised as part of the new Eastern Suburbs Railway. Again, escalators were integral to the station design for passenger movement from concourse down to the platforms and up to the gallery level.

The delay in the opening of Martin Place until 1979, meant metal Otis escalators were the modern design preference, leaving Town Hall and Wynyard as the only wooden examples in Sydney railway stations.⁴²

Figure 32: Circular Quay Station under construction, 1956. (Source: Australian Railway Historical Society (ARHS))



Figure 33: New Otis escalators installed at Circular Quay station. (Source: Australian Railway Historical Society (ARHS))

It was clear from the 1950s onwards that the wooden railway escalators, particularly at Wynyard Station, were regarded as something special by the public even though escalators were common place in the city. Country school excursions often included a trip to Wynyard to ride the escalators⁴³ and even as part of the Centenary of the Railway in 1955 a small exhibition at Wynyard included a working model of the escalators.

⁴² Grant, Significance Assessment, p.102.

⁴³ Western Herald, 16 December 1955, p.3.



Figure 34: Max Dupain photo of the new 1979 escalators installed at Martin Place Station. (Copyright: Cement Concrete and Aggregates Australia, Supplied: State Library of NSW).

The Daily Rumble

Due to the expected daily traffic, the escalators installed to the railways specifications were heavier and more durable than those found in department stores and later in offices around Sydney. As a result they were far more reliable, reducing the need for major refits or replacements.

When Ray Davis joined the Railways in 1978 the escalators had had minimal maintenance since they were first installed in the 1950s.⁴⁴

The only major work were some modifications to the shaft bearings on No. 1 escalator at Town Hall, and the replacement of eleven steps after a severe incident in April 1957. A step got jammed in the mechanisms and tore through the landing comb after which inspections discovered the chain drive was tight on one side and had caused the steps to skew and jam.⁴⁵ Luckily, as this had occurred at 5.13am, no passengers were injured.

In 1980, the securing bolts for a step came loose on the same No.1 escalator at Town Hall, causing the step to fall out and get caught in the truss below. The escalator continued to run, with the exposed gap of the missing step eventually reappearing at the bottom landing before it was shut off.

Like in 1957, the incident occurred at 3am and no passengers were hurt. As a result, new safety switches were designed and installed to prevent a similar incident happening.⁴⁶

The ongoing maintenance was undertaken by railway staff trained by Otis, with Otis engineers only required on rare occasions, or to make



Figure 35: Four motors powering the escalators behind the scenes in 2016. (Source: Transport for NSW)

particular parts that the railways could not produce themselves.

As Ray Davis explains:

The day to day maintenance on them was mainly lubrication, keeping the chains lubricated, the gear boxes filled up, cleaning the landing trays underneath. A lot of rubbish and debris comes through the steps, so to reduce any fire hazard they are cleaned daily.⁴⁷

Minor maintenance was ongoing at each individual escalator, with the majority of work being to replace broken wooden cleats or replace damaged steps, maintain the driving chains and clear obstructions.

Daily safety inspections were also essential as were the occasional replacement of parts of motors and gearboxes.

In 1983, 66 steps were replaced at Town Hall on No.1 escalator when it was discovered the steel braces were broken as a result of fatigue, and a major refit was undertaken in 1985 with the step chains at both Town Hall and Wynyard being rebuilt and replaced by railway staff.

In 1991, the wooden cleats were replaced at Wynyard. They had been extensively worn down with exposed screws which presented trip hazards.

It was at this time that the proposal to replace the wooden steps with metal ones was first seriously raised. With the considered cost of the

replacement of the steps estimated at \$3 million for just one escalator, the replacement was postponed while the funding was secured.⁴⁸

In 1993 and 1994, with the re-cleating completed, all the escalators in the system underwent a major overhaul and refit. The full refit was carried out gradually over a period of five years, with work completed on all 48SA type escalators, 28 on the Eastern Suburbs Railway which were 15 years old, two at Town Hall that were 24 years old and the six wooden escalators at Wynyard and Town Hall that were over 38 years old.⁴⁹

A team of over thirty workers were employed by the railways to work on the maintenance of all their lifts and escalators in the city underground and Eastern Suburbs Railway system throughout this period.

44 Ray Davis, Interview Escalation Sensation, 20 December 2016.

45 Maintenance Files, Town Hall Escalator No.1, 07/1170, Sydney Trains.

46 Maintenance Files, Town Hall Escalator No.1, 07/1170, Sydney Trains.

47 Ray Davis, Interview Escalation Sensation, 20 December 2016.

48 Files, Wynyard Escalator No.4, 07/0002, Sydney Trains

49 Grant, Significance Assessment, p.48.



Figure 36: Crew from the Lift and Escalator Section in 1990s at Town Hall Station: Teto Alvarez, Paul Stevens, Anthony Garay, Vince Thompson, Doug Vaughan and Andrew Cox. (Source: Sydney Trains)



Figure 37: Ray Davis doing maintenance work at Town Hall, 2006. (Source: Sydney Trains)



Figure 38: Town Hall escalator under repair in the 1980s. (Source: Sydney Trains)



Figure 39: Step chain replacement. (Source: Sydney Trains)



Figure 40: Crew from the Lift and Escalator Section dealing with an urgent escalator problem at Town Hall Station over the Christmas holidays in the 1990s. L-R: Fitters Mal Green, Kevin Taylor and senior foreman Martin King. (Source: Sydney Trains)

As part of the safety overhaul all the escalators at Wynyard and Town Hall Stations were modified with the addition of a handrail drive, with a sprocket wheel and chain running the handrails separate to the main return sprocket at the bottom of each escalator.

It was also during this period that tenders were called to replace the wooden escalator steps with aluminium steps, to bring the system into line with industry standards. However, as in 1991, funding was not secured.

In 1998, the escalators were given a safety upgrade. Safety switches were installed to enable quick stopping in case of emergency and skirt brushes fitted to the sides of the balustrades.⁵⁰

This ongoing maintenance had extended the lifespan of the escalators by up to twenty years. Howard Collins, Chief Executive of Sydney Trains recognises that:

The reason why we've still got those wooden escalators at Town Hall and Wynyard I think is a testament to the fact that these things were built to a really high standard that Sydney Trains and previous employees kept these things going with a sort of love and care almost.⁵¹

In 2012, the maintenance of the escalators was sub-contracted out of the railway system to KONE.⁵² Unlike previous contracts where Waygood-Otis had trained railway staff to deal with specific issues concerning the escalators, this time the railways staff trained the contractors on how to manage unique issues presented by the wooden escalators and how to manufacture bespoke pieces.

Concurrently, the in-house escalator repair workshops located at Prince Alfred Siding of Central Station were disbanded by 2014.

⁵⁰ Ray Davis, Interview Escalation Sensation, 20 December 2016.

⁵¹ Howard Collins, Chief Executive, Sydney Trains, Interview Escalation Sensation, 20 December 2016.

⁵² Ray Davis, Maintenance Delivery Officer, Sydney Trains, Interview Escalation Sensation, 20 December 2016.

Safety Concerns

London's underground had been one of the early adopters of the wooden escalators from 1911 and by the start of the 1980s still had over 150 in service.⁵³

In November 1987, a fire in Kings Cross station, London resulted in the deaths of 31 people, with another 60 injured. The fire had started when a commuter had dropped a match after lighting a cigarette on a wooden escalator.⁵⁴

The match had managed to fall through a gap between steps and the running board, igniting a build-up of debris and grease beneath the escalator. The fire had spread rapidly, racing up the incline of the escalator trapping people on the underground platforms.

Howard Collins, who had worked on the London Underground as Chief Operating Officer before taking up the position of Chief Executive of Sydney Trains in 2013, remembered that:

The Kings Cross fire really did change the view about wooden escalators...it's good to remove most things which have a flammable content or could burn underground out from that environment.⁵⁵

The disaster led to an industry wide safety review of wooden escalators, including those within the Sydney Trains system. In London, work began almost immediately on the removal and replacement of their wooden escalators with the last taken out of Greenford Station in 2014. In Sydney, David Jones also removed their last wooden escalator in 2001.



Figure 41: Wynyard Escalators 2016 in the last months of service. The distinctive timber panelling was a well-loved feature of the escalators and an element of the heritage that was included in the interpretation of the new escalators. (Source: Sydney Trains)

Daily cleaning and four yearly major overhauls, often criticised as being over-zealous, had likely been responsible for avoiding a similar disaster at Wynyard or Town Hall. However, recommendations were made to introduce fire-resistant lubricants, install fire sprinklers and remove all possible fuel sources.⁵⁶

Despite the safety measures taken, the larger gaps between comb plates and treads of the wooden escalators, still presented a risk.

The risk of snagged clothing was especially prevalent at the top landing where the steps run under the landing plates. The most common incidents were the heels of women shoes

becoming lodged between the wooden cleats on the steps, which had been a concern for some time. Women's Weekly warned its readers in 1957 that:

The fashionable spike heels with the threepenny-piece tend to destroy the pleasure of escalator riding. The older style wooden escalators with the deep grooves are proper heel-traps.⁵⁷

Although serious injuries were rare, their reporting raised concerns about public safety, in particular the safety of guide dogs and their handlers using the wooden escalators.

Jaci Armstrong, policy advisor for Guide Dogs Australia points out in 2017 that:

Access to public transport infrastructure and systems is essential for people who are blind or vision-impaired, particularly as they don't drive...and they are particularly reliant on safe and reliable public transport.⁵⁸

It was especially a risk for guide dogs around peak times, when dogs and their handlers could be swept along onto the escalators before they realised the risk:

The wooden escalators...pose significant risk to guide dogs and handlers, primarily because ... paws will get stuck in the [wooden] teeth.⁵⁹

53 Howard Collins, Interview Escalation Sensation, 20 December 2016.
54 <http://www.railwaysarchive.co.uk/docsummary.php?docID=75> accessed 11 January 2017.
55 Howard Collins, Interview Escalation Sensation, 20 December 2016.
56 Grant, Significance Assessment, p.49.

57 The Australian Women's Weekly, 17 July 1957, p.26.
58 Jaci Armstrong, Interview Escalation Sensation, 20 December 2016.
59 Jaci Armstrong, Principal Policy Advisor, Guide Dogs Australia, Interview Escalation Sensation, 20 December 2016.

Escalator Retirement

Both Town Hall and Wynyard Stations are listed on the Railcorp Section 170 Heritage and Conservation Register for their historic significance.

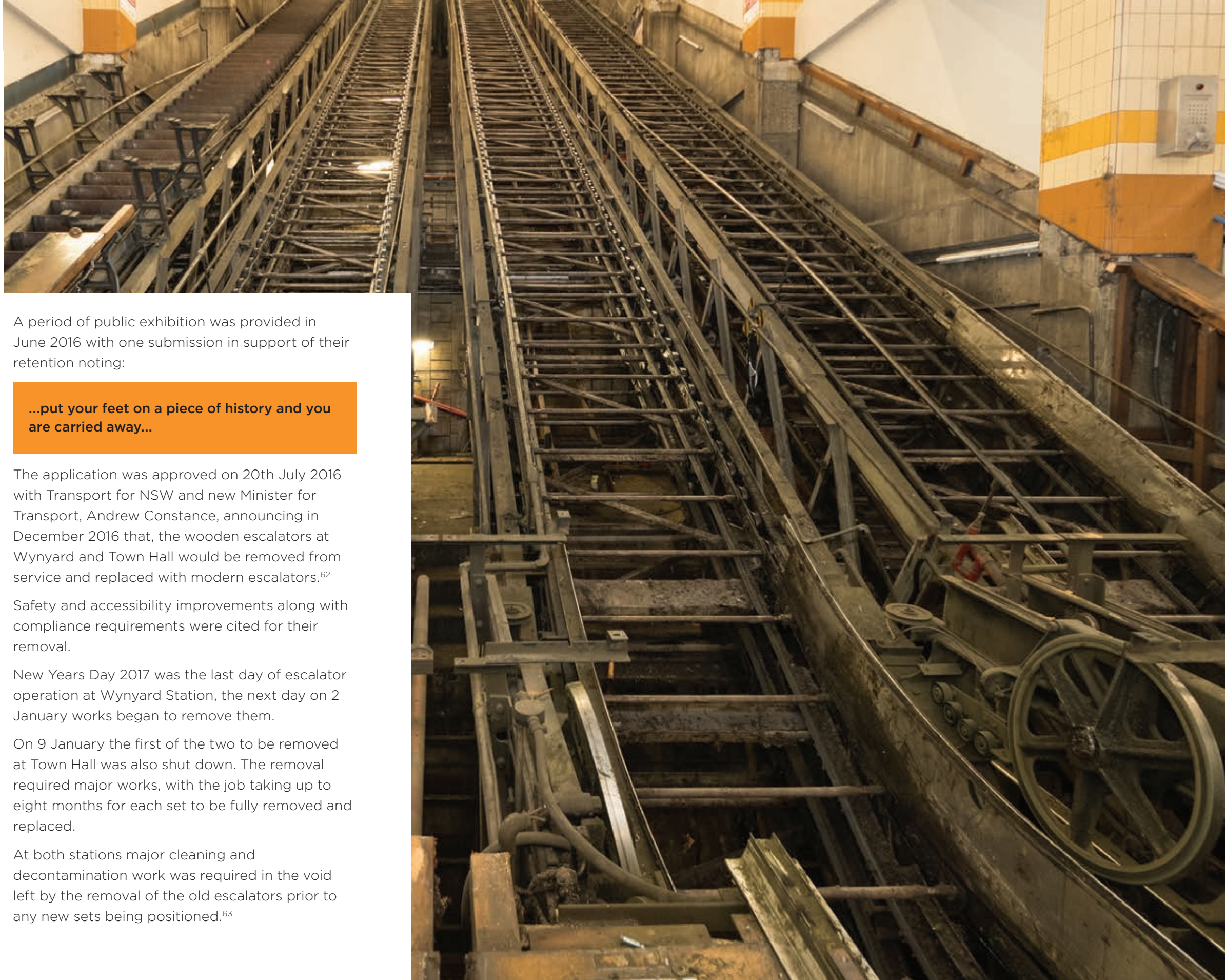
As the wooden escalators were part of this listing, any decisions to replace them had to consider the identified heritage values.

Guide Dogs NSW-ACT and Vision Australia, supported by some local members, pressed the then Minister for Transport, the Honourable Gladys Berejiklian, for the machines to be replaced in 2013.⁶⁰

The Railways continued to review and upgrade the machines performance to meet standards and safety codes, they also began investigating a prototype aluminium step in 2014, which was hoped, could be retrofitted to the existing machines.

The then Minister committed to Guide Dogs NSW-ACT and Vision Australia that the prototype would be fitted at Town Hall, while the Wynyard escalators would be replaced after 2015 when the Wynyard Walk access to Sussex Street and the Barrangaroo precinct development was completed.⁶¹

By June 2015 the government moved to replace the escalators rather than retro fitting them as part of the Station Upgrade works. As Wynyard Station had an additional State Heritage Register listing associated with Transport House, Transport for NSW submitted an application on 3 June 2016 to the Heritage Division of NSW to have the escalators removed.



A period of public exhibition was provided in June 2016 with one submission in support of their retention noting:

...put your feet on a piece of history and you are carried away...

The application was approved on 20th July 2016 with Transport for NSW and new Minister for Transport, Andrew Constance, announcing in December 2016 that, the wooden escalators at Wynyard and Town Hall would be removed from service and replaced with modern escalators.⁶²

Safety and accessibility improvements along with compliance requirements were cited for their removal.

New Years Day 2017 was the last day of escalator operation at Wynyard Station, the next day on 2 January works began to remove them.

On 9 January the first of the two to be removed at Town Hall was also shut down. The removal required major works, with the job taking up to eight months for each set to be fully removed and replaced.

At both stations major cleaning and decontamination work was required in the void left by the removal of the old escalators prior to any new sets being positioned.⁶³

60 http://23.101.218.132/prod/parlment/hanstrans.nsf/V3ByKey/LA20130820?Open&refNavID=HA8_15

61 Maintenance Files, Town Hall Escalator No.1, 07/1170, Sydney Trains.

62 Sydney Morning Herald, 22 July 2016. <https://www.transport.nsw.gov.au/projects/wynyard-station-upgrade>

63 Michael Childs, Senior Project Manager Transport for NSW, Interview Escalation Sensation, 30 January 2017.

Figure 42: Wynyard escalator trusses after the removal of the wooden steps, balustrade and decking in January 2017. (Source: Transport for NSW)



Figure 43: Escalator landings during demolition at Wynyard Station. (Source: Transport for NSW)

Each station required a different construction approach to match the site specific challenges and limitations. Rob Wallace, the Program Manager for the Town Hall work explained that:

The delivery of the escalator replacement project is quite a complex project as the environment that it currently sits in [Town Hall] has limited access to actually remove the escalators, and also the amount of customers in the live environment means that we have to really study the operational impact and stage it.⁶⁴

Wallace notes that the space dictates the way the operation can proceed:

Town Hall Station is situated in a box structure underground and due to the complexities of the platforms being stacked on top of each other it's a very difficult operation to bring ... a brand new escalator into that space.⁶⁵



Howard Collins further points out that:

For escalator removal, it is a bit of keyhole surgery. You can't take it all out at once. You're deep underground; removing materials, making sure that it's done safely is an important thing.⁶⁶

At Town Hall, the confined space meant that the components were delivered to the platforms via the railway, with each component custom made to fit the available space and then assembled by hand on site.

With more space at Wynyard, and with the escalators positioned away from the platforms access was easier. Michael Childs, Senior Project Manager for the Wynyard Station Upgrade project says:

The first six weeks is really the removal process, which is the removal of all the finishes, the salvage, and then the main structure removal. Then we move into decontamination and fixings. And then about four months in, we've got the escalator construction, so the four new escalators...are installed over a few months.⁶⁷

The new escalators are more reliable and fully compliant to modern safety standards.

Figure 44: Void left after removing all four escalators from the York Street entry at Wynyard Station. (Source: Transport for NSW)

64 Rob Wallace, Program Delivery Manager of Station Projects (Town Hall), Interview Escalation Sensation, 20 December 2016

65 Rob Wallace, Interview Escalation Sensation, 20 December 2016.

66 Howard Collins, Interview Escalation Sensation, 20 December 2016.

67 Michael Childs, Senior project Manager transport New South Wales, Interview Escalation Sensation, 30 January 2017.



Figure 45: New escalators installed at Wynyard Station in 2017 with metal steps and wood-like decking reminiscent of the historic machines. (Source: Transport for NSW)

Legacy

To understand the rarity of the machines, Sydney Trains commissioned an international comparative study on the remaining wooden escalators of metro and subway systems around the world.⁶⁸

The 2016 study found only forty wooden escalators remained in the world, in either an operational or static condition. Of the machines still in operation, the majority were the L-Type 'department store' escalators at Macy's department store, New York City. A public campaign contributed to them being retained and refurbished in 2014.

Other early wooden escalators were purpose-built for pedestrian river underpasses; with an impressive example still in operation at Sint-Annatunnel in Antwerp, Belgium.

Of the operational wooden 'railway' examples only seven were found; six of them being the ones at Town Hall and Wynyard in Sydney. Their retirement and removal in 2017 representing the end of this technology in Australia, leaving the last known operational example in a railway station in San Jose Station in Buenos Aires, Argentina.

Other examples that remain in the Australian, United States, Great Britain and the Moscow underground are either in museums or conserved as a static display (e.g. Transport House in Macquarie Street) and no longer operational.⁶⁹

Public submissions made after the announcement of their proposed removals at Town Hall and Wynyard uncovered mixed views on their place in the Sydney commuter experience.

Gretta Logue, a heritage advisor with Sydney Trains found that:



Figure 46: Chris Fox 'Interloop' 2017 Wynyard Station, Sydney
Photography: Josh Raymond

... some customers absolutely love them. They have a very special place in their hearts and minds. They are reminiscent of a past era, and that experience of travelling up the escalator is something to behold.⁷⁰

Part of the significance was the sensation of the escalators themselves, rather than their fabric. Gretta Logue noted:

Part of the social significance of the wooden escalators is the sensation. The sensation you get as you approach the escalators. The warmth of the wood, the hum of the motors and then the vibration as you travel up the escalators. When you put your foot on the treads, you're transported to another time.⁷¹

Their significance and the public response led to treads, steps, Otis plates, timber decking and motors being salvaged and relocated to the Sydney Trains heritage store for future interpretation.

In addition, Sydney artist Chris Fox was commissioned to create a sculpture to evoke the memories of the escalators amongst travellers.

His impressive sculptural work, incorporating 244 of the wooden treads from Wynyard and four of the Otis step plates, was installed at Wynyard in December 2017.

At Wynyard, Michael Childs commented that:

...the old escalators are fairly unique, we needed to be quite careful in how we were going to treat this particular site...we're doing some interpretation works as part of the upgrade...the (new) escalators are going to be in a very similar configuration as the originals, and although they won't have timber treads, they will have imitation timber panelling between the escalators that will evoke...some kind of link back to the old timber escalators.⁷²

Installation of Otis wooden escalators in the 1930s is emblematic of early 20th Century railway engineering and design confidence.

They were an innovative people-moving technology adopted by Bradfield to bring an

ambitious transport plan to Sydney. They proved to be an integral part of his underground railway system.

Despite metal alternatives, replacement in the 1950s was again with Otis wooden step machines. This hints at the beginnings of affection for the wooden escalators. Once installed, the robust 1950s Otis escalators were well maintained by dedicated railway staff that extended the machine's working life considerably.

While in operation the escalators moved thousands of Sydney commuters and visitors each day, right up until their retirement in 2017. After rumbling reassuringly for over 60 years, at the end of their working life they were some of the rarest and much-loved escalators in the world.

⁶⁸ Grant, Significance Assessment, Appendix F.

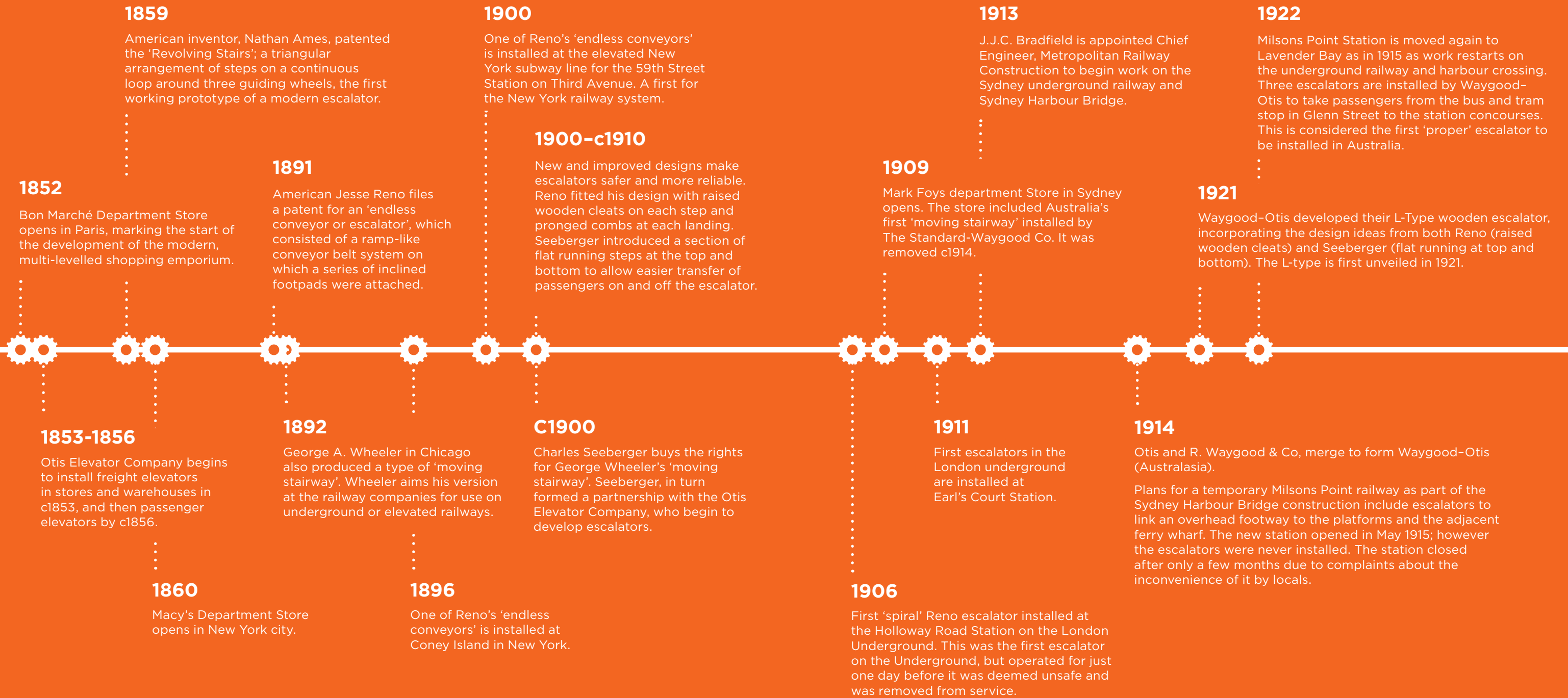
⁶⁹ For a complete list of current and former wooden escalators, refer to Significance Assessment for Town Hall Timber Escalators Nos. 1 & 2 and Wynyard Escalators Nos. 1, 2, 3 & 4, prepared for Sydney Trains by Significance International (Andrew Grant), February 2016.

⁷⁰ Gretta Logue, Heritage Specialist, Sydney Trains, Interview Escalation Sensation, 20 December 2016.

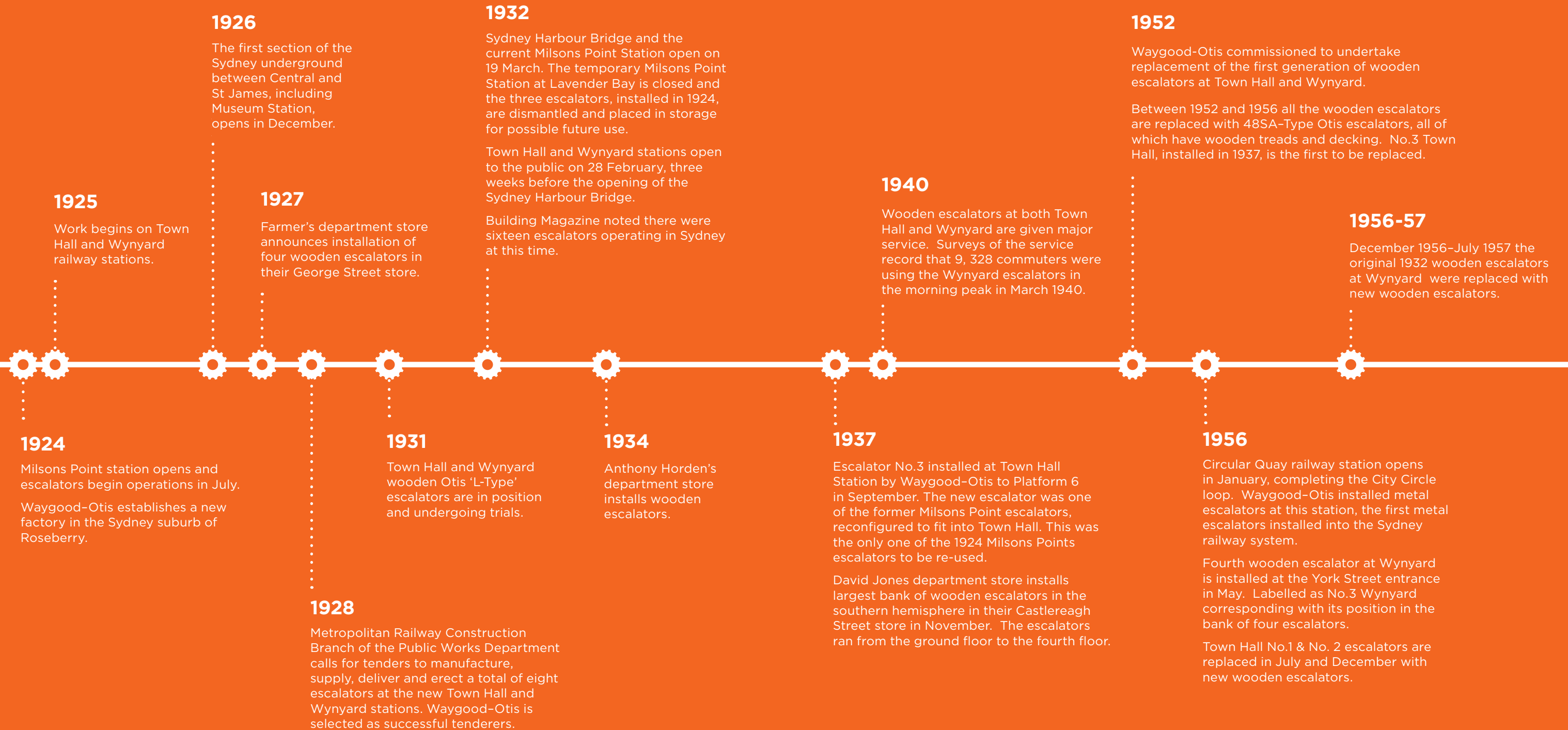
⁷¹ Gretta Logue, Interview Escalation Sensation, 20 December 2016.

⁷² Michael Childs, Senior Project Manager Transport for NSW, Interview Escalation Sensation, 30 January 2017

Escalator Development Chronology



Escalator Development Chronology



Escalator Development Chronology

1957

Waygood-Otis open new factory in Bankstown. Twenty five per cent of the factory is dedicated to railway contracts.

1985

Step chains for escalators at both Town Hall and Wynyard are replaced by railway maintenance staff.

1993-94

All escalators in the Sydney Trains network, including the wooden examples at Town Hall and Wynyard undergo a major service and refit.

1983

66 steps were replaced at Town Hall on No.1 escalator when it was discovered the steel braces were broken as a result of fatigue, and a major refit was undertaken.

1991

Wooden cleats on escalators at Wynyard are assessed and many replaced after found to be worn so much that screw heads in the cleats were exposed.

2001

David Jones removed the last of their wooden escalators, leaving those at Town Hall and Wynyard as the only working examples in Australia.

2016

NSW State Government announces that the wooden escalators at Town Hall and Wynyard are to be removed and replaced with modern, metal escalators. Safety concerns and accessibility improvements are cited as reasons for their removal.

1980

The securing bolts for a step came loose on No.1 escalator at Town Hall, causing the step to fall out and get caught in the truss below.

1987

A fire in the wooden escalators at the London Kings Cross Station results in deaths of 31 people and another 60 injured. This initiated the removal of wooden escalators from the London Underground and a review of those in Sydney.

2012

The escalators at Wynyard undergo a major service.

2014

Last wooden escalators are removed from the London underground at Greenford station.

2017

Work begins to remove the Wynyard wooden escalators on 2 January.
Work begins to remove the first Town Hall wooden escalators on 9 January.
Chris Fox 'Interloop' sculpture using 244 treads of the Wynyard Wooden escalators and four Otis step plates is installed above the new escalators at Wynyard in December.

1979

Eastern Suburbs Railway opens with 48SA Otis metal escalators installed. Some of which still remain in 2018.

1998

Wooden escalators have safety switches installed to enable quick stopping in case of emergency.



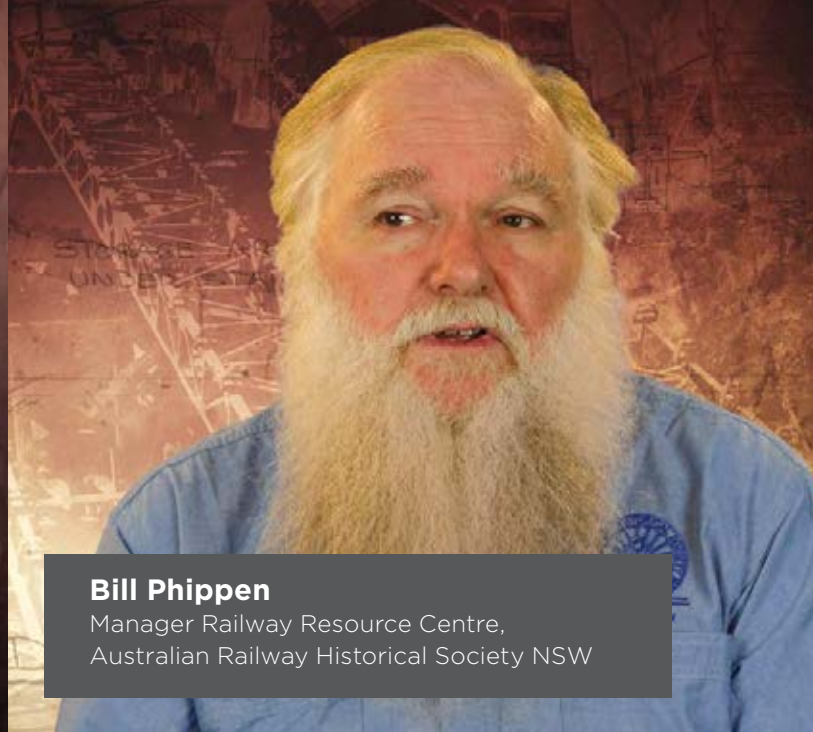
Figure 47: Chris Fox 'Interloop' 2017 Wynyard Station, Sydney Photography: Josh Raymond



Andrew Grant
Transport Heritage Consultant,
Significance International



Ray Davis
Maintenance Delivery Officer,
Sydney Trains



Bill Phippen
Manager Railway Resource Centre,
Australian Railway Historical Society NSW



Gretta Logue
Heritage Specialist,
Sydney Trains

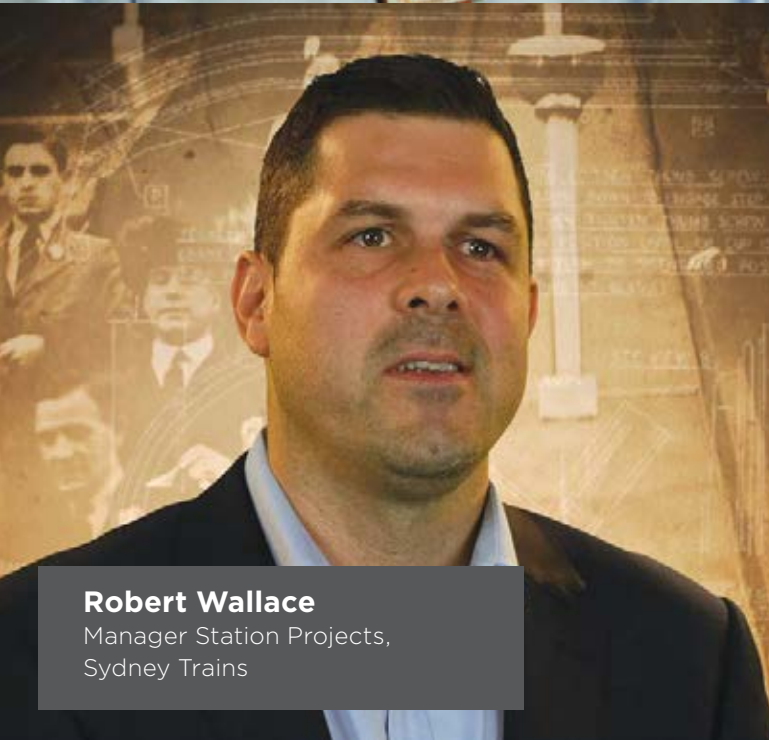


Howard Collins OBE
Chief Executive,
Sydney Trains

NSW GOVERNMENT | **Transport for NSW** | **Transport Sydney Trains**



Jaci Armstrong
National Policy Advisor,
Guide Dogs Australia



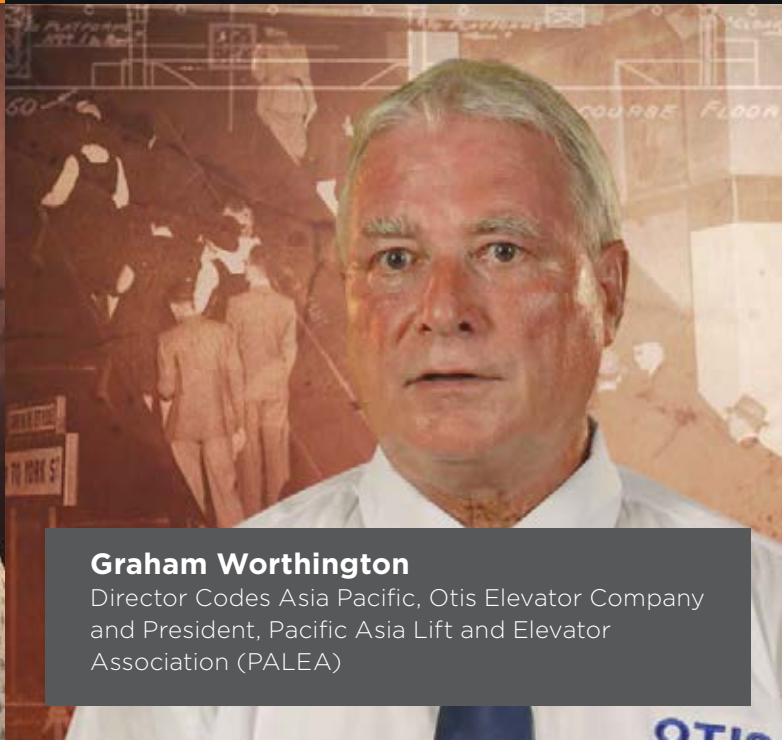
Robert Wallace
Manager Station Projects,
Sydney Trains



Michael Childs
Senior Project Manager,
Transport for NSW



Tony Brassil
Industrial Archaeologist,
Extent Heritage



Graham Worthington
Director Codes Asia Pacific, Otis Elevator Company
and President, Pacific Asia Lift and Elevator
Association (PALEA)



Transport
for NSW

