South Australian
HERITAGE COUNCIL

SUMMARY OF STATE HERITAGE OBJECT

REGISTER ENTRY

Entry in the South Australian Heritage Register in accordance with the *Heritage Places Act 1993*

NAME: **Weighbridge, Islington Railway Workshops** **PLACE NO.: 14686-01**

Object intrinsically related to Fabrication Shop, Islington Railway Workshops (SHP14686)

ADDRESS: **Churchill Road, Kilburn, SA, 5084**

CT 6179/405 AL144 DP95846 Hundred Yatala

Figure 1. The Weighbridge Platform, Islington Railway Workshops

Source: Heritage South Australia, 2017

Confirmed in the South Australian Heritage Register 6 December 2018

STATEMENT OF HERITAGE SIGNIFICANCE

Statement of Heritage Significance (Place) – Fabrication Shop (SHP 14686)

The following Statement of Heritage Significance dates from the time of entry of the Fabrication Shop Islington Railway Workshops SHP 14686 on the South Australia Heritage Register on 9 February 1995. A minor modification to the Summary of State Heritage Place was endorsed by the South Australian Heritage Council on 17 May 2017 when it was found that the original date for the operation of the Islington Workshops, 1892, was inaccurate. The correct date for the establishment of the Workshops is 1883.

The South Australian railways were fundamental to the history and development of South Australia. After their establishment in 1883, these workshops played a fundamental role in the operation and development of the railways. Also, at the time of its establishment in 1883 and after its rejuvenation in 1925-27, this complex was amongst the most significant industrial complexes in South Australia and responsible for the production of large and complicated machinery. The workshops played a particularly important role in producing war materials during World War II. The alterations to the complex from time to time reflected those affecting the railways generally.

Statement of Heritage Significance (Object)

The weighbridge is a rare example of an early twentieth century railway weighbridge and is intrinsically related to the heritage significance of the Fabrication Shop (SHP 14686) and the manufacturing and maintenance operations of the Islington Railway Workshops. South Australian Railways was a leading manufacturer of locomotives and rolling stock in South Australia, and it was in the Fabrication Shop SHP 14686 where initially steam locomotives from 1885 and then wood and steel carriages from 1925 were manufactured and maintained. The weighbridge located on the adjacent railway lines was a critical component in both the manufacture and maintenance of both locomotives and carriages.

Before a locomotive or carriage was sent from the Islington Railway Workshops, the load over each wheel and the axels had to be correctly balanced to prevent damage to the locomotive, carriage and/or tracks from occurring. As a consequence, the weighbridge played a significant role in the success of the Islington Railway Workshops and its contribution to heavy industry and the social and economic development of South Australia in the twentieth century. The weighbridge is one of only a few remaining examples of early twentieth century railway weighbridges in South Australia.

RELEVANT CRITERIA (under section 16 of the *Heritage Places Act 1993*)

Include only the criteria the place meets.

(a) it demonstrates important aspects of the evolution or pattern of the State's history

The weighbridge is closely associated with the manufacturing and maintenance operations of the Islington Railway Workshops and is intrinsically related to the Fabrication Shop (SHP 14686). The South Australian Railways (SAR) was a leading manufacturer of locomotives and carriages, and it was in the Fabrication Shop (SHP 14686) that first locomotives and then later carriages were manufactured and maintained. The weighbridge was a critical end-stage component of the manufacturing and maintenance processes, as the load over the wheels and axels had to be correctly balanced to prevent damage to the locomotive, carriage and/or tracks due to "hammer blow". As a consequence, the weighbridge played a significant role in the success of the Islington Workshops and its contribution to heavy industry and the social and economic development of South Australia in the twentieth century. While there were once a number of weighbridges at the Islington Workshops, the nominated weighbridge is the only one remaining. In addition, the weighbridge is one of only a few remaining examples of early twentieth century railway weighbridges in South Australia. It is also only one of two known examples of this type of weighbridge in Australia.

SITE PLAN

NAME: **Weighbridge, Islington Railway Workshops** **OBJECT: 14686-01**

Weighbridge, Islington Railway Workshops, Churchill Road, Kilburn

Legend **N ↑**

Current location of the Weighbridge

Fabrication Shop, Islington Railway Workshops (SHP 14686), State Heritage Place the nominated object is associated with.

Parcel boundaries

COMMENTARY ON THE LISTING

Description and notes with respect to a place entered in the South Australian Heritage Register in accordance with the *Heritage Places Act 1993*

Physical Description

The weighbridge is comprised of eight metal boxes and an adjacent platform that sits over a pit. The platform is comprised of a timber and metal floor and a pair of rails (figure 1). The rails are installed in short sections, and the pit houses a portion of the weighbridge's workings. The boxes are rectangular-shaped and have an arched dual analogue readout; the outer boxes in the run weigh up to 20tons each, while the inner boxes in the run only weigh up to 18tons. A locked door on the front of each box provides access to its interior workings. Each box is connected to its neighbour by a metal rod that attaches to a triangular-shaped sprocket mounted on the side of the box. A wheel at the beginning of the line is connected to the first weigh box. The manufacturer's plate was removed from each box at some unspecified point in time.

The weighbridge has not been used for some time and is covered in dirt, dust and pigeon guano. Some of the boxes have also been graffitied. Parts of the timber on the adjacent platform have been damaged by white ants. It is unclear if the weighbridge still works.

Extent of Listing

The elements intrinsic to the weighbridge include:

- the metal weigh boxes and their contents,
- the connections between the boxes,
- the wheel and connection between it and the weigh box,
- timber and metal floor of weighbridge
- the rail lines associated with the weighbridge that traverse the timber and metal floor, and
- the fittings and fixtures associated with the object under the floor and in the pit.

The elements not intrinsic to the weighbridge include:

- any components of Building 136, in which the object is currently located, that are not a part of the weighbridge.
- the rail lines that lead to and from the weighbridge

History of the Place

History of Islington Railway Workshops

The Islington Railway Workshops (Islington Workshops) comprise an extensive complex of buildings built on a large site located to the north of Adelaide. The Islington Workshops played a significant role in the first railway boom of the 1880s, when many new rail lines were built into the wheat-growing areas of the South Australian interior and the production of rolling stock grew considerably. The Islington Workshops supported the state's mineral boom at that time, and also built a rail link to connect with the line from Broken Hill, situated across the border in western New South Wales, which was used to transport rich mineral yields to Port Pirie in South Australia. The great extent of rail way development in this period has led it to being described as a 'rail-led boom'.[1]

The South Australia Railway's (SAR) workshops were originally located in the Adelaide railway yard on North Terrace. The limitations of the Adelaide yard meant that engine and rolling stock maintenance was 'extravagantly expensive'[2], and that insufficient space was available to upgrade the buildings and appliances required for maintenance activites. Consequently, the site at Islington was selected for new railway workshops, and the first buildings were completed and occupied in 1883. The initial development phase of the Islington Workshops was undertaken in line with the site plan devised by South Australian Railways Locomotive Engineer William Thow.

William Thow was an English railway engineer who was appointed to the position of SAR Locomotive Engineer in 1876. During his twelve year tenure with SAR, Thow attempted to modernise and rationalise the locomotive stock, and was responsible for introducing the 4-6-0'R' class engine that formed the basis of continued locomotive development in South Australia until the 1920s. Thow also provided direction to the Engineer-in-Chief's department on the design of the buildings, while T Roberts, Thows' replacement as Locomotive Engineer in 1888, designed the internal layouts and supervised the construction of the building extensions. During the 1890s, the Islington Workshops was recongised for its labour saving layout, modern equipment and elaborate buildings.[3] The first locomotive to be built at the Islington Workshops began service on 9 September 1898, although others built overseas were modified at the Islington Workshops from 1885.[4] The work of improving and later building locomotives at the Islington Workshops took place in the Fitting and Erecting Shops also known as the Loco Workshops (Fabrication Shop SHP 14686).[5]

The Islington Workshops underwent a major redevelopment in the mid to late 1920s under the guidance of Chief Commissioner, William Alfred Webb and his Chief Mechanical Engineer, Frederick James Shea. Webb, a North American railwayman with over thirty years' experience, was appointed as Chief Commissioner in 1923. Shea, a Victorian railway engineer, was previously involved in modernising the Victorian Railways prior to accepting his appointment with SAR, also in 1923. Webb

and Shea totally reorganised the Islington Workshops into a larger complex of modern, streamlined, electric-powered workshops, enabling SAR to become a leading manufacturer of locomotives and other rolling stock. Track layout and buildings were rationalised to create efficient north-south workflow. As a consequence of the redevelopment, the Islington Workshops was able to make a greater contribution to the development of heavy industry in South Australia at that time.[6] During the redevelopment of the workshops the Loco Workshops (Fabrication Shop SHP 14686) became by 1925 the Steel Car Erecting Shop, Steel Car Machine Shop and Paint Shop (figure 2).[7] In 1929 the building housed the Steel Car Assembly Shop, Wood Car Assembly Shop and Upholstering Shop, reverting back to be only the Steel Car Shop by 1956. During this time carriages rather than locomotives were both manufactured and maintained in the workshop.[8]

Figure 2. Fabrication Shop SHP 14686

Source: Heritage South Australia

From the 1920s to the 1950s, SAR – with their largest and most important workshops at Islington – were closely integrated with the economic, industrial and social life of South Australia. Additionally, the Islington Workshops also played a significant role in the development of the labour movement, and in unemployment relief during the Great Depression. Heavy locomotives, initially steam and later diesel were fabricated at the Islington Workshops. They also fabricated a great variety of carriage, freight and wagon cars, as well as specialty cars such as the Infant Welfare car in the 1950s and deluxe passenger cars for The Overland Express. Rolling stock commissioned by other states, including Victoria, as well as many non-rail vehicles were also made at the Islington Workshops. In addition to manufacture, the Workshops were also involved in repairs and maintenance. In 2018, the Islington Workshops continue to be used for railway purposes, albeit with a large portion of the site to the North and South redeveloped as a retail precinct.[9]

Weighbridges at Islington Railway Workshops

Railway weighbridges or balancing tables as they are also known were used during manufacture and maintenance of locomotives and rolling stock to ensure that the load was correctly balanced across the wheels and axels. The process was particularly important with regard to steam locomotives, as incorrect balancing resulted in the production of a vertical force, known as a hammer blow in the UK and dynamic augment in the USA that damaged both the tracks and the locomotive.[10]

There were a number of weighbridges or balancing tables installed at the Islington Workshops. The first recorded balancing table was noted to be in operation in 1904 and had the capacity to weigh up to 60ton.[11] Two years later, *The Register* noted the purchase of a pair of 4-ft balancing tables to weigh the 5-ft 3-in and 3-ft 6-in gauge engines at the Islington Workshops.[12] At least one of these three weighbridges was a Pooley machine.[13] There is little further reference to weighbridges or balancing tables at the Islington Workshops until 1934, when *The Mail* noted there was a 16-table electric weighbridge with the capacity to weigh 20ton in operation.[14]

It is difficult to determine which, if any, of the weighbridges described by the Adelaide press is the nominated weighbridge. Given that the weighbridge has 8 scales with 2 dials each recording up to 20tons making 16 tables it is likely that it is the weighbridge described in 1934 (figure 1). However, there is no apparent electrical connection. It is also unclear when the weighbridge was initially installed at the Islington Workshops. Although, if electric it seems likely that it was added to the workshops' facilities as a part of the 1920s site redevelopment undertaken by Webb and Shea. A very similar weighbridge was installed at the Launceston Railway Workshops in 1938 (figure 3). At that time, the Launceston weighbridge was noted as being only the fourth of its type in Australia, the other three were located in Adelaide, Sydney and New Castle.[15]

Figure 3. Weighbridge at the Launceston Railway Workshop (Invermay Rail Heritage Precinct, Launceston)

Source:
https://www.google.com.au/search?q=sydney+pooley++railway+weighbridge&biw=1680&bih=910&tbm=isch&source=iu&ictx=1&fir=VWCECgdxvW5qdM%253A%252CVwnsSpb9YG5M0M%252C_&usg=__TEPqLgbTXtpQAfn_kWmMthe8vtw%3D&sa=X&ved=0ahUKEwiD2PaZs9TZAhUEQLwKHW1XAp4Q9QEIKTAA#imgrc=w-YUd8SoNrckjM:&spf=1520226181561

The Launceston weighbridge was manufactured by Henry Pooley & Son Ltd, a well-known UK-based scale and weighing machine manufacturer.[16] Pooley's products were so popular, that in 1912, *The Sun* stated that all the railway weighbridges used in Australia were by Henry Pooley & Son Ltd.[17] However, while the name Henry Pooley & Son Ltd was still in use in Australia in the late 1930s, the company had been absorbed by another well-known Birmingham-based scale and weighing machine manufacturer, WT Avery Ltd, in 1913.[18] A product very similar to the Pooley and Islington Workshops weighbridge was featured in the 1906 Avery catalogue.[19]

The nominated weighbridge was originally located on tracks nearby rather than within the current shed. It was most likely moved to its current location sometime after the mid-1950s when Building 136 was extended. A c1929 image of the area where the weighbridge is currently located, depicts a shed containing most likely the Bertram heavy car wheel lathe. If not the lathe then the equipment is unlikely to be a weighbridge as the shed's indicative footprint and that of the weighbridge do not match.[20] Further, a site plan dated November 1925 indicates the position of an engine weighbridge and a railway truck weighbridge on two separate sets of tracks to the south of the workshops' buildings.

The weighbridge was an important aspect of the manufacturing and maintenance processes carried out at the Islington Workshops. Once work was completed on each locomotive and carriage, they were weighed to ensure that the load was evenly balanced across each axel and the wheels. The weighbridge weighed the load carried over each wheel individually, allowing adjustments to be made to the springs and/or the load as required.[21]

Chronology

1851: Plans to create a State-owned railway in South Australia.

1860s: Mining of copper ore in South Australia.

1878: Three tenders were opened on Tuesday at the office of the Engineer-in-Chief for the galvanized iron sheds to be erected at Islington for the new railway rolling-stock expected from New Zealand.

1878: New carriage shed and workshops to be built at Islington, including workmen's cottages.

1882: Architectural plan for 'Carriage and Wagon Works' at Islington, stamped Chief Engineers Office, South Australia.

1883: New railway workshops built at Islington. Layout designed by South Australian Railways (SAR) Locomotive Engineer William Thow. Transfer of operations from the Adelaide yard to Islington begins.

1885 Loco Workshops at Islington Railway Workshops in operation (Fabrication Shop SHP14686).

1890: The nation-wide Maritime Strike commences in Adelaide and involves transport workers.

1891: Completion of the transfer of all machinery and workers from the North Adelaide Locomotive Workshops to new workshops at Islington.

1898 First locomotive built at Islington Railway Workshops begins service in South Australia.

1904: Weighbridge with a weighing capacity of 60 ton is in operation at Islington Workshops.

1906: A pair of 4-ft balancing tables are purchased for Islington Workshops.

1923: WA Webb is appointed Chief Commissioner of the South Australian Railways. Webb introduces radical new operating practices based on modernisation and efficiency, and appoints Frederick Shea as Chief Mechanical Engineer.

1924: Demolition of old buildings and construction commences at the new workshops at Islington

1925 The Loco Workshops are reconfigured to become the Steel Car Erecting Shop (Fabrication Shop SHP 14686). Two weighbridges are noted on the site plan and are in operation on the tracks to the south of the Fabrication Shop (SHP 14686).

1927: Completion of the newly remodelled workshops at Islington.

1930: WA Webb resigns and returns to the United States.

1934: A 16-table electric weighbridge is in operation at IRW.

1940-45: Islington Workshops used as a munitions factory during World War II.

1949: First diesel cars introduced by South Australian Railways.

1951: New diesel engine built at Islington is part of a parade in Adelaide to celebrate the jubilee of Federation.

1954: Centenary of the South Australian Railways.

c mid-1950s **Building 136 extended and the weighbridge is most likely moved to its present location.**

1962-74: The 'South Australian Railways closed approximately ninety stations and sidings to goods traffic and reduced maintenance on several lines'.[22]

2013-2014 Large portions of the Islington Railway Workshops are demolished to make way for the development of a new retail precinct.

May 2014 The opening of the Churchill Centre.

References

Anon, 'The Locomotive Workshops at Islington', *The Register*, 25 February 1892, p.6.

Anon, 'A Day at Islington. A Magnificent Plan. Labour-Saving Machinery', The South Australian Register 28 June 1904, p.7.

Anon, 'Machinery for Islington', The South Australian Register 26 January 1906, p.4.

Anon, 'The Correct Balance', *The Sun* 23 April 1912, p.7.

Anon, 'Screw or Engine', The Mail 25 August 1934, p.2.

Anon, 'Improved Running of Locomotives', *Advocate* 27 October 1938, p.9.

Avery Ltd, W&T (1906), 'Weighbridges, Weighting Apparatus, Testing Machinery for Engineers', (Avery: Birmingham).

Burgess, HT ed. (1907), *The Cyclopedia of South Australia*, vol. 1, (Adelaide: Cyclopedia Company).

Department of the Environment and Energy, 'Launceston Railway Workshops', *Register of the National Estate*, http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=keyword%3Dweighbridge%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=17890 accessed 22 August 2017.

Donovan, P and O'Neil, B (1992), *the Long Haul: Australian National 1978-1988*, (Adelaide, Focus Books).

Donovan and Associates, 1992 *Railway Heritage of South Australia* vols 1&2, National Trust of South Australia.

Marshall, D, Brassil, T, Doyle, H 2012 *Heritage Assessment Of The Former Islington Railway Workshops, Front Fence & Building 171*, Report for the Heritage Policy Unit, SA Department of Environment, Water and Natural Resources

Masson, J, 'Memorable Jamestown Days' http://www.johnnyspages.com/jamestown.htm

[accessed 2 March 2017].

Meridian Engineers Pty Ltd, 'Engineering through Innovation Product Information – Rail', (Meridian Engineers Pty Ltd).

Morgan, D, 'Research Notes IRW Central Buildings' (Adelaide: State Heritage Unit).

Thow, William (1884), untitled plan of the Islington Railway Workshops, in DEWRN file.

Shea, Frederick James (1925), 'Islington Workshops', plan showing layout of the Islington Railway Workshops in DEWNR file.

South Australian Railways (1929), 'Railway Workshops Islington', (Adelaide: South Australian Railways).

South Australian Railways (1959), 'Visit To SA Railway Workshops Islington', (Adelaide: South Australian Railways).

Walker, JD (1990), 'Thow, William (1842-1926)', *Australian Dictionary of Biography*, ANU, http://adb.anu.edu/biography/thow-william-8801/text1535, accessed 12 December 2016.

Victorian Heritage (2006), 'Newport Railway Workshops (former)', (Melbourne: Victorian Heritage Database Report)

SITE DETAILS

Weighbridge, Islington Railway Workshops
Churchill Road, Kilburn, SA, 5084

OBJECT NO: 14686-01

DESCRIPTION OF PLACE:		Eight metal boxes an adjacent platform comprised of a timber and metal floor and a pair of segmented rails.
DATE OF COMPLETION:		C1920s
SA HERITAGE REGISTER STATUS:	**Description:**	Provisionally entered 7 June 2018 Nominated (as part of Building 136), 25 June 2013
CURRENT USE:	**Description:**	Disused
PREVIOUS USE(S):	**Description:**	Weighbridge used in the manufacture and maintenance of locomotives and rolling stock.
	Dates:	C1920s-unknown
MANUFACTURER:	**Name:**	Most likely Henry Pooley and Son Ltd/ WT Avery Ltd.
	Dates:	C1920s
LOCAL GOVERNMENT AREA:	**Description:**	City of Port Adelaide Enfield
LOCATION:	**Street Name:**	Churchill Road
	Town/Suburb:	Kilburn
	Post Code:	5084
LAND DESCRIPTION:	**Title Type:**	CT 6179/405
	Lot No.:	AL144
	Plan No.:	DP95846
	Hundred:	Yatala

PHOTOS

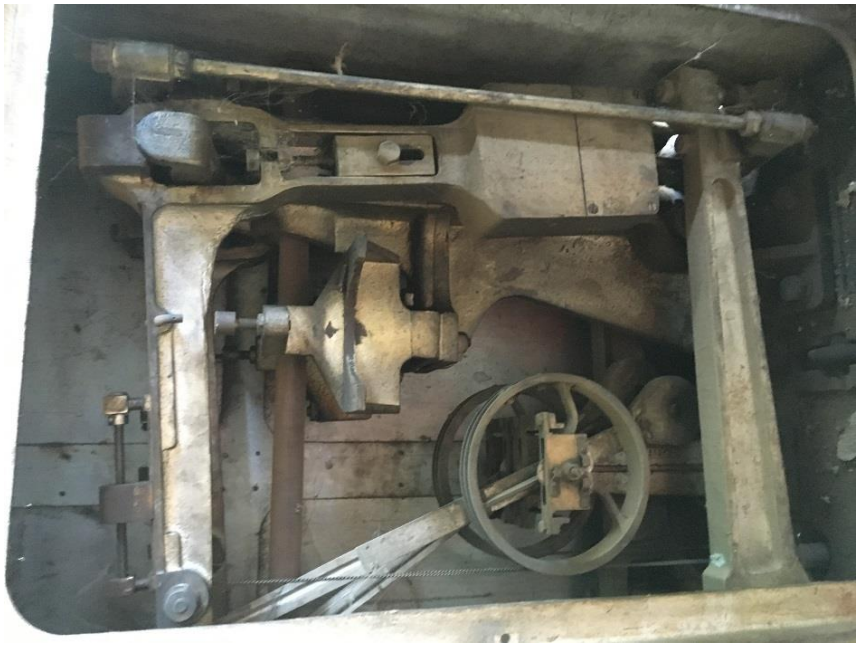
Weighbridge, Islington Railway Workshops **OBJECT NO: 14686-01**
Churchill Road, Kilburn, SA, 5084

Weighbridge, Islington Railway Workshops

Source: Heritage South Australia, 2017

Weighbridge, Islington Railway Workshops. Note the triangular sprockets.

Source: Heritage South Australia, 2017



Weighbridge internal workings

Source: Heritage South Australia, 2017

Example of a similar weighbridge in the W&T Avery Ltd 1906 Catalogue

Source: W&T Avery 'Weighbridges. Weighing Apparatus. Testing Machinery. For Engineers.', p.18.

Example of a similar weighbridge at the Launceston Railway Workshop (Invermay Rail Heritage Precinct, Launceston). The weighbridges at Launceston and Adelaide were described in the *Advocate* as being two of only four of this type in Australia.

Source:
https://www.google.com.au/search?q=launceston+railway+workshop+weighbridge+image+vulcan+foundry&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwiQrPWQrezVAhWEJJQKHUrTAvMQsAQIJQ&biw=1920&bih=940#imgrc=1VN7yB-zeJrIsM:&spf=1503456843357

The weighbridge at Steamtown Railway Heritage Centre, Peterborough

Source: https://www.flickr.com/photos/82134796@N03/17191895046/in/photostream/

[image 2015]

[1] D Morgan, 'Research Notes IRW Central Buildings' (Adelaide: State Heritage Unit).
[2] 'The Locomotive Workshops at Islington', *The Register* 25 February 1892, p.6.
[3] JD Walker (1990), 'Thow, William (1842-1926)', *Australian Dictionary of Biography*, ANU, http://adb.anu.edu.au/biography/thow-william-8801/text1535, accessed 12 December 2016. D Morgan, 'Research Notes IRW Central Buildings' (Adelaide: State Heritage Unit).
[4] Donovan & Associates (1992), *Railway Heritage of South Australia*, vol. 2, (Adelaide: National Trust of South Australia), p.258.
[5] 'The Locomotive Workshops at Islington', *Register* 25 February 1892, p.6. William Thow (1884), untitled plan of the Islington Railway Workshops, in DEWRN file.
[6] D Morgan, 'Research Notes IRW Central Buildings' (Adelaide: State Heritage Unit).
[7] Frederick James Shea (1925), 'Islington Workshops', plan showing layout of the Islington Railway Workshops in DEWNR file.
[8] South Australian Railways (1929), 'Railway Workshops Islington', (Adelaide: South Australian Railways), p.3. South Australian Railways (1959), 'Visit To SA Railway Workshops Islington', (Adelaide: South Australian Railways), pp.3,6.
[9] D Morgan, 'Research Notes IRW Central Buildings' (Adelaide: State Heritage Unit).
[10] https://en.wikipedia.org/wiki/Hammer_blow
[11] 'A Day at Islington. A Magnificent Plan. Labour-Saving Machinery', *The Register* 28 June 1904, p.2.
[12] 'Machinery for Islington' *The Register* 26 January 1906, p.4.
[13] HT Burgess ed. (1907), *The Cyclopedia of South Australia*, vol. 1, (Adelaide: Cyclopedia Company), p.378.
[14] 'Screw or Engine', *The Mail* 25 August 1934, p.2.
[15] 'Improved Running of Locomotives', *Advocate* 27 October 1938, p.9.
[16] 'Improved Running of Locomotives', *Advocate* 27 October 1938, p.9.
[17] 'The Correct Balance', *The Sun* 23 April 1912, p.7.
[18] http://www.gracesguide.co.uk/Henry_Pooley_and_Son, accessed 22 August 2017.
[19] W&T Avery Ltd (1906), 'Weighbridges, Weighting Apparatus, Testing Machinery for Engineers', (Avery: Birmingham), p.18.
[20] 'Railway Workshop Islington', January 1929.
[21] 'A Day at Islington. A Magnificent Plan. Labour-Saving Machinery', *The Register* 28 June 1904, p.2.
[22] (Donovan and O'Neil, The Long Haul, p. 34)