

# The Times

September 2015

A journal of transport timetable history and analysis



**Inside: Railways in Victoria, 1885**  
**Behind the Scenes in Train Control**  
**Sydney's School Bus Routes**

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# The Times

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**Editor, The Times** Geoff Lambert 179 Sydney Rd FAIRLIGHT 2094 NSW G.Lambert@iinet.com.au  
A full ATA contact list can be found periodically in Members News, at <http://www.austta.org.au/newsletter.pdf>

## —The Octopus Issue—

<b>ALBERT ISAACS</b>	<b>VR in 1885</b>	<b>3</b>
<b>GEOFF LAMBERT</b>	<b>BEHIND THE SCENES AT SYDNEY TRAIN CONTROL</b>	<b>6</b>
<b>GEOFF LAMBERT</b>	<b>SYDNEY BUSES' SCHOOL BUS ROUTES</b>	<b>11</b>

## In Mission Control at Central



# Railways in Victoria in 1885: the Octopus Act; the over-land journey to Adelaide; other bits and pieces.

by **ALBERT ISAACS**

**R**ECENTLY I WENT TO ONE OF MY bookshelves to find something to read on the train. I selected a book that I probably haven't looked at for a couple of decades, namely *THE AGE ANNUAL; Political & Statistical Register of the Colony of Victoria, 1885*. This 11<sup>th</sup> annual hard-cover almanac was published by David Syme & Co., who, of course, was also responsible for the daily *Age* newspaper. The pencilled price inside the book, A\$30, suggested that I probably purchased my good condition copy in the 1970s or 80s.

Abe books (<http://www.abebooks.com/servlet/SearchEntry>) is a website which shows the stocks of literally thousands of booksellers around the world. For curiosity I looked up *THE AGE ANNUAL* and, at the time of writing (3<sup>rd</sup> August 2015), a Melbourne dealer was advertising an 1877 copy for US\$75.20, but the description indicates that it is in poor condition. My experience suggests that the price offered is about a third of the price that would currently be placed on a copy in the same condition as mine. However, readers interested in *THE AGE ANNUAL* should note that a soft-cover reprint of the 1881 edition was published in 2013, and that many, many copies are listed on the Abe books website, all for prices between US\$13.96 and US\$18.61. (As of 3<sup>rd</sup> August, no copy, original or reprint, was available on eBay.)

Interestingly, a large proportion of *THE AGE ANNUAL* is taken up with the activities of the Victorian colonial parliament. Not only is every bill passed in 1884 listed, but there are lists of how each individual member voted, and the time occupied by each sitting. All the other business of both houses is also chronicled in minute detail, including a complete copy of the speech to open parliament on 10<sup>th</sup> June 1884, by the Acting Governor, Sir William Stawell. There are also extremely detailed lists of the breakdown of all electorates, personnel lists for each government department and thorough inventories of all government spending (including railway balance sheets). *THE AGE ANNUAL* also includes the other types of things that one expects to find in an almanac including: Sunrise & Sunset tables and a table of eclipses; information regarding the monarchy and the home government, and that of all other Australasian colonies; detailed information re the various banks; judicial information; customs, stamp and succes-

sion duties; listings of educational establishments; the various courts; advice for the cultivation of flower gardens and kitchen gardens, etc.; livestock returns; Millers', Cornfactors and Produce Dealers' records; notable events for the year; rainfall – the list goes on and on.

Obviously, *The Times* readers are more interested in transport and, thus, would be intrigued by the number of acts appertaining to rail and tram that were passed in the colony in 1884. Foremost amongst these is the well-known and notorious *Octopus Act* (48 Victoriae, No. 821-12<sup>th</sup> December, 1884) which listed nearly 70 new railway lines to be constructed (virtually all of which were actually built) [see our illustration]. The Hon. Thomas Bent, Minister of Railways, and later Premier, has often been accused of taking bribes regarding where new rail lines were to be built – not only was this the catalyst for the large number of lines listed as the tentacles of the *Octopus Act*, but it also led to the still-well-known description of the Minister – BENT BY NAME; BENT BY NATURE!

Amongst the other acts of interest are the following which have accompanying illustrations: 48 Victoriae, No. 790-1<sup>st</sup> September, 1884, a comparatively pedestrian (pardon the pun) financial appropriation; 48 Victoriae, No. 788-21<sup>st</sup> July, 1884, which delivers monies for the construction of the cable tramway system, that was to open some four years' later; 48 Victoriae, No. 815-12<sup>th</sup> December, 1884, which allows the Melbourne Tramway and Omnibus Company Limited to build new lines not yet authorised; 48 Victoriae, No. 819-12<sup>th</sup> December 1884, which allows for the establishment of municipal tramway trusts (which is interesting because the first of these, the Prahran and Malvern Tramway

Trust, was not set up until 1907, some 23 years later [and it didn't begin operations until as late as 1910]); 48 Victoriae, No. 818-12<sup>th</sup> December 1884, which amended the act relating to the Rosstown Junction Railway, certainly one of Victoria's most unusual lines.

One of the most intriguing pages in *THE AGE ANNUAL* is p.129 which is headed "Overland Journey" and that deals with the way to get from Melbourne to Sydney and from Melbourne to Adelaide, using overland routes. Firstly, one assumes that these lists appeared in *THE AGE ANNUAL* in previous editions and that the original versions of the Melbourne-Sydney journey, that is prior to the connection of the Victorian and N.S.W. railway systems in 1883, would have been nearly as convoluted as the suggested Adelaide journey. Secondly, one must presume that when the Victorian and S.A. systems were joined in 1887, the complicated Melbourne-Adelaide journey in the 1884 *AGE ANNUAL* was replaced by a timetable for the through train. Thirdly, and most importantly, *THE AGE ANNUAL* does not include any mention whatsoever of the journey by ship between Melbourne and Adelaide in particular, but also between Melbourne and any other Australasian colony. Prior to through railways, the overwhelming majority of travel between the colonies' capitals would have been by ship – not only would this have been much quicker than the suggested overland journeys, but it wouldn't have required any change of vehicle. Further, the amenities on most steam ships would have been far superior to those on most of the trains, coaches and steamers suggested for the alternative journey. Sure, there may have been a few people in 1884 that didn't like sea journeys and were

## MELBOURNE TRAMWAYS TRUST ACT.

*An Act to facilitate the Borrowing of Money by the Melbourne Tramways Trust for the Construction of Tramways.*

(48 Victoriae, No. 788—21st July, 1884.)

This Act is to be read together with the Tramway and Omnibus Company's Act of 1883, and authorises the company to borrow money for the construction of tramway works in Melbourne on debentures.

## SUPPLY 1884-5, NO. 1.

*An Act to apply out of the Consolidated Revenue the sum of £1,054,095 to the service of the year 1884-5.*

(48 Victoriae, No. 789—21st July, 1884.)

## RAILWAYS LOAN ACCOUNT, 1881.

*An Act to apply out of "The Railway Loan Account, 1881," and "The Victorian Loan and Debenture Redemption Account, 1883," certain sums of money for Permanent-way Material, Rolling Stock, and other works.*

(48 Victoriae, No. 790—1st September, 1884.)

The first schedule of this bill authorises the expenditure of £156,092 in rolling stock, plant, rails, and surveys, and the second £80,000 on rolling stock.

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therefore seeking some sort of alternative, but the lack of any mention of shipping suggests that the "Overland Journey" page was put in as a bit of a gimmick. Also, don't forget that those who wouldn't travel by ship may also have been intimidated by the four hours that had to be spent on a steamer between Meningie and Milang.

As well as involving no less than six changes of vehicle, the Melbourne-Adelaide journey of 602.5 miles (969.6 km.) took four days, compared with the railway journey that was to come in just two years later, which was of just 483 miles (777.3 km.) and involved no more than one overnight journey. The through fare quoted for the 1884 journey of £6/8/9 (\$12.88 not factoring in inflation) compares with the following fares for the rail journey as quoted in my copy of the January 1897 *Bradshaw's Guide to Victoria* – £2/5/0 (\$4.50) second class single, £3/15/0 (\$7.50) first class single, £3/7/6 (\$6.75) second class return and £5/12/6 (\$11.25) first class return. To put these fares into context, according to the South Australian

Advertiser for 22<sup>nd</sup> September 1885 (accessed on <http://trove.nla.gov.au/ndp/del/article/36314043>) the Adelaide Steamship Company had just increased its Adelaide-Melbourne single fares from £5/5/0 (\$10.50) to £6/0/0 (\$12.00).

The rail journey to Sydney is also fascinating, in a number of ways! Intriguingly, the stoppers in both directions are shown first, with the expresses being demoted to virtual footnote status. More importantly, one will note that on the northbound journey passengers changed from broad to standard gauge trains at Albury, but southbound the change was made at Wodonga – this was the situation for the short period from the opening of the line in 1883 until 1886 – from then, until 1962, the change in both directions was made at Albury.

One will also note a reference to "Sydney time". Up until the introduction of standard time in Australia in February 1892, each colonial rail system kept the Local Mean Time (or solar time) of its capital city. As Sydney Time was 25 minutes ahead of

Melbourne, this meant that Albury was also 25 minutes ahead of Wodonga. For some years, the clock at Albury station had three hands: an hour hand; a minute hand showing Sydney time; and a minute hand showing Melbourne time. (I assume that the hour hand kept Sydney time, but that's just speculation on my part.)

*THE AGE ANNUAL* also includes a list of all Victorian railway stations and fares, but I haven't included it here because, obviously, it's comparable to similar lists in railway timetables of the same era.

For more information from a similar time, one may refer to my article on the V.R.'s Working Time Table for 1<sup>st</sup> March 1889, in *The Times* of September, which can be accessed by hard copy or via the web at <http://www.austta.org.au/The%20Times%20September%202011.pdf>.

A final thought – I suppose that *THE AGE ANNUAL* has yet again reminded me that you don't have to only look in railway publications for information about railways – it may turn up in all sorts of places!

82		THE AGE ANNUAL.		83	
<b>TRAMWAY COMPANY'S ADDITIONAL BRANCHES.</b>					
An Act to authorise the Melbourne Tramway and Omnibus Company Limited to Construct Tramway Branches in the Cities of Melbourne and Collingwood and in the Borough of St. Kilda, and to amend the Melbourne Tramways and Omnibus Company's Act, 1883, and for other purposes.					
(48 Victoria, No. 815—12th December, 1884.)					
The branches to be constructed are specified in this Act, and the termini of the lines on which a fare not exceeding 3d. for a single journey may be charged.					
<b>HOSPITALS AND CHARITABLE INSTITUTIONS.</b>					
An Act to amend "An Act for Hospitals and Charitable Institutions," and for other purposes.					
(48 Victoria, No. 816—12th December, 1884.)					
Justices of the Peace may order payment to such institutions for the maintenance of inmates when there is any personal or real property from which it can be recovered, and compulsory payment by executors or administrators shall be binding on infants.					
<b>EXPIRING LAWS.</b>					
An Act to continue various Expiring Laws.					
(48 Victoria, No. 817—12th December, 1884.)					
Schedule gives a list of the Acts to be continued.					
<b>ROSTOWN JUNCTION RAILWAY.</b>					
An Act to amend the "Rostown Junction Railway Act, No. 61," and for other purposes.					
(48 Victoria, No. 818—12th December, 1884.)					
Section 5 of the original Act repealed, and another substituted for it.					
<b>TRAMWAY LINES.</b>					
An Act to provide for the Construction of Tramway Lines, with the consent of the Municipal Authorities.					
(48 Victoria, No. 819—12th December, 1884.)					
Any municipality may, with the consent of the Governor in Council, authorise the construction of private tramways, and all existing tramways situated in any road or street in the municipality shall be removable and removed on an order to that effect.					
<b>GAME PROTECTION.</b>					
An Act to amend "An Act to Protect Game."					
(48 Victoria, No. 820—12th December, 1884.)					
This is the only amending clause in the Act:—"No person shall at any time kill or attempt to kill or destroy any game or native game with any device or instrument known as a swivel or punt gun, or with any gun other than such guns as are habitually raised at arm's length and fired from the shoulder; and any person offending against the provisions of this section shall be liable to a penalty not exceeding £20."					
<b>NEW RAILWAY LINES.</b>					
An Act to authorise the construction of certain Lines of Railways by the State, and for other purposes.					
(48 Victoria, No. 821—12th December, 1884.)					
The Third Section of this Act describes the lines to be constructed under its authority, which, with length of each, is, approximately, as follows:—					
		Miles.			
First Schedule.—Avoca and Ararat line .. .. .		38.07			
Second Schedule.—Bacchus Marsh and Gordon line .. .. .		27.20			
Third Schedule.—Bacchus Marsh Junction and Newport line .. .. .		4.90			
Fourth Schedule.—Ballarat East and Buninyong line .. .. .		2.96			
Fifth Schedule.—Ballarat Cattle Yards Branch line .. .. .		13.15			
Sixth Schedule.—Ballarat Racecourse and Springs Railway .. .. .		39.00			
Seventh Schedule.—Birregurra and Cape Otway line .. .. .		19.71			
Eighth Schedule.—Camperdown and Ocella River line .. .. .		43.03			
Ninth Schedule.—Camperdown to Terang and Warrambool line .. .. .		7.98			
Tenth Schedule.—Colong and Smeaton line .. .. .		32.01			
Eleventh Schedule.—Cresswick and Daylesford line .. .. .		32.01			
<b>THE AGE ANNUAL.</b>					
Lines.					
Twelfth Schedule.—Dandenong and Leonora line .. .. .		69.78			
Thirteenth Schedule.—Dimboola and South Australian Border line .. .. .		63.18			
Fourteenth Schedule.—Fitzroy and Whittless line .. .. .		23.82			
Fifteenth Schedule.—Frankston and Crib Point line .. .. .		7.91			
Sixteenth (A) Schedule.—Kororoit line .. .. .		0.75			
Sixteenth Schedule.—Frankston Cemetery line .. .. .		29.90			
Seventeenth Schedule.—Hamilton and Coleraine line .. .. .		49.80			
Eighteenth Schedule.—Heald and Bairnsdale line .. .. .		13.13			
Nineteenth Schedule.—Horsham and Natimuk line .. .. .		24.20			
Twentieth Schedule.—Inglewood and Danely line .. .. .		15.58			
Twentieth (A) Schedule.—Kerang and Swan Hill line .. .. .		47.79			
Twenty-first Schedule.—Koroit and Belfast line .. .. .		10.03			
Twenty-second Schedule.—Koroit and Peshawari line .. .. .		16.56			
Twenty-third Schedule.—Koroit and Warrambool line .. .. .		15.67			
Twenty-fourth Schedule.—Kyneton and Redondale line .. .. .		15.22			
Twenty-fifth Schedule.—Lancasterfield and Kilmore line .. .. .		10.50			
Twenty-sixth Schedule.—Leonora and Fort Albert line .. .. .		9.63			
Twenty-seventh Schedule.—Lilydale and Healesville line, via Yarra Flats .. .. .		11.75			
Twenty-eighth Schedule.—Lal Lal and Rensington line .. .. .		9.60			
Twenty-ninth Schedule.—Maffra and Briagolong line .. .. .		11.00			
Thirtieth Schedule.—Maldon and Launceston line .. .. .		12.95			
Thirty-first Schedule.—Moe and Narracon line .. .. .		31.25			
Thirty-second Schedule.—Mount Morice and Forest line .. .. .		18.47			
Thirty-third Schedule.—Murdoch and Bradwood line .. .. .		18.90			
Thirty-fourth Schedule.—Murtoa and Warracknabeal line .. .. .		12.88			
Thirty-fifth Schedule.—Myrtleford and Bright line .. .. .		7.95			
Thirty-sixth Schedule.—Numurkah and Colran line .. .. .		9.53			
Thirty-seventh Schedule.—Ondit and Bevan line .. .. .		8.25			
Thirty-eighth Schedule.—Ringswood and Fern Tree Gully line .. .. .		13.85			
Fortieth Schedule.—Sale and Stratford line .. .. .		19.96			
Forty-first Schedule.—Searsdale and Linton line .. .. .		34.90			
Forty-second Schedule.—Shepparton and Dookie line .. .. .		12.94			
Forty-third Schedule.—St. James and Yarrowonga line .. .. .		71.17			
Forty-fourth Schedule.—Tatura and Edoua line .. .. .		10.16			
Forty-fifth Schedule.—Terang and Mortlake line .. .. .		5.00			
Forty-sixth Schedule.—Wandong, Heatcote, and Sandhurst line .. .. .		25.23			
Forty-seventh Schedule.—Warragul and Neerim line .. .. .		13.13			
Forty-eighth Schedule.—Wedderburn Station and Wedderburn line .. .. .		60.96			
Forty-ninth Schedule.—Wodonga and Talangatta line .. .. .		2.69			
Fiftieth Schedule.—Yackandandah and Beechworth line .. .. .		6.29			
Fifty-first Schedule.—Yea and Mansfield line .. .. .		0.93			
Fifty-second Schedule.—Appleton and Healdsburg line .. .. .		1.92			
Fifty-third Schedule.—Brigiton and Fennie Point line .. .. .		10.55			
Fifty-fourth Schedule.—Barnley to Junction with Outer Circle line .. .. .		2.38			
Fifty-fifth Schedule.—Fitzroy Branch line .. .. .		—			
Fifty-sixth Schedule.—Hawthorn and New line .. .. .		—			
Fifty-seventh Schedule.—Lal Lal Racecourse line .. .. .		—			
Fifty-eighth Schedule.—Outer Circle, Oakleigh to Richmond and Appleton line .. .. .		—			
Fifty-ninth Schedule.—Royal Park and Clifton Hill line .. .. .		—			
Sixtieth Schedule.—Murray Bridge Temporary line .. .. .		—			
Sixty-first Schedule.—Portland Pier line .. .. .		—			
Sixty-second Schedule.—Murray Bridge line .. .. .		—			
Sixty-third Schedule.—Flinders-street Viaduct line .. .. .		—			
Sixty-fourth Schedule.—Windsor Sliding .. .. .		—			
Sixty-fifth Schedule.—Doveton and Maresfield Sliding .. .. .		—			
Sixty-sixth Schedule.—Hawthorn and Lilydale, additional line between Hawthorn and Camberwell .. .. .		—			
Sixty-seventh Schedule.—Sums voted for different lines, £290,000 .. .. .		—			
The remainder of this Act, which only extends to sixteen sections in the whole is chiefly taken up with the powers of the commissioners, the breadth of lines, bye-laws to be in force, and other matters of detail. Nothing in this Act is to affect or in any manner to alter Acts Nos 55 or 260.					
<b>TRADES UNIONS.</b>					
An Act for the Legislation of Trades Unions.					
(48 Victoria, No. 822—12th December, 1884.)					
The registrar for the time being appointed under the Friendly Societies Act, 1877, to be registrar under this Act. Should any one of the purposes for which such a trade union is registered be unlawful the registration of such union shall be void. Rules are to be registered, and a copy of them shall be delivered to every person on demanding such, on					

OVERLAND JOURNEY

TO AND FROM MELBOURNE AND SYDNEY.

MELBOURNE TO SYDNEY.

MELBOURNE TO ALBURY. Leave 6.15 a.m., arrive 1.50 p.m. (Sydney time, 2.15 p.m.); also at 2.55 p.m., arrive 11.25 p.m. (Sydney time, 11.50 p.m.), Sundays excepted. Fares—1st class, 32s.; second class, 21s. 2d.

ALBURY TO SYDNEY. Leave 3 p.m. (Saturdays excepted), arrive 7 a.m. Fares—1st class, 76s. 3d.; second class, 52s.

An "express" train, first class only, leaves Melbourne (Saturdays and Sundays excepted) for Albury at 4.55 p.m., arrive 10.50 p.m. Leaves Albury at 11.45 p.m., arrives at Sydney 1.45 p.m. next day. Sleeping berths may be secured at Spencer-street at 10s. and 12s. 6d. each.

SYDNEY TO MELBOURNE.

SYDNEY TO WODONGA. Leave 8.30 p.m. (Sundays excepted), arrive 2.25 p.m. next day. Fares—1st class, 77s. 3d.; 2nd class, 52s. 8d.

WODONGA TO MELBOURNE. Leave 2.30 p.m., arrive at 10.5 p.m.; also at 6.10 a.m., arrive 2.10 p.m. Leaves Albury at 5.45 a.m. Fares—1st class, 31s.; 2nd class, 20s. 6d.

An "express" train, first class only, leaves Sydney (Saturdays and Sundays excepted) for Wodonga at 5 p.m., arrives 7.20 a.m. (Melbourne time, 6.55 a.m.) Leaves Wodonga (Sundays and Mondays excepted) at 7.20 a.m., arrives at Melbourne at 12.52 p.m. Sleeping cars attached to all night trains leaving Sydney.

MELBOURNE TO SYDNEY, AND VICE VERSA, THROUGH FARES.

First class single, £4 1s.; second class single, £3 0s. 8d. First class return, £6 1s. 6d.; second class return, £4 11s. Children under 12 years of age pay half-fare; under 3 years, free.

Holders of single tickets can break their journey, but the through journey must be completed within seven days. Return tickets available for two months. The journey cannot be broken on return tickets.

TO AND FROM ADELAIDE AND MELBOURNE.

MELBOURNE TO ADELAIDE.

	Miles.
MELBOURNE TO CASTERTON (Railway). Daily (Sundays excepted). Leave Melbourne 7 p.m., due Casterton 7.45 a.m. next day. Fares—1st class, 44s. 9d.; 2nd class, 29s. 9d.	271½
CASTERTON TO NARRACOORTE (Coach). Daily (Mondays excepted). Leave 9 a.m., arrive at Narracoorte 9.30 a.m. following day. Fare, 30s.	76
NARRACOORTE TO KINGSTON (Railway). Daily. Leave 11 a.m., due at Kingston 2 p.m. Fares—1st class, 8s. 10d.; 2nd class, 5s. 6d.	53
KINGSTON TO MENINGIE (Coach). Daily. Leave 4.45 p.m., due at Meningie 5.30 a.m. next day. Fare, 28s.	98
MENINGIE TO MILANG (Steamer, across Lake). Daily. Leave 6 a.m., due at Milang 10 a.m. Fare, 10s.	40
MILANG TO STRATHALBYN (Coach). Leave 1.30 p.m., due at Strathalbyn 3 p.m. Fare, 2s. 6d.	13
STRATHALBYN TO ADELAIDE (Railway). Daily. Leave at 3.25 p.m., due at Adelaide, 6.19 p.m. Fares—1st class, 7s. 2d.; 2nd class, 4s. 6d.	51
Through fare, £6 8s. 9d.	602½
Passengers for Narracoorte and Adelaide stay one night at Penola.	

ADELAIDE TO MELBOURNE.

	Miles.
ADELAIDE TO STRATHALBYN (Railway) Daily. Leave Adelaide 6.50 a.m., due Strathalbyn 9.25 a.m. Fares—1st class, 7s. 2d.; 2nd class, 4s. 6d.	51
STRATHALBYN TO MILANG (Coach). Leave Strathalbyn 10 a.m., due at Milang 11.30 a.m. Fare, 2s. 6d.	13
MILANG TO MENINGIE (Steamer, across Lake). Daily. Leave Milang 12 noon, due Meningie 4 p.m. Fare, 10s.	40
MENINGIE TO KINGSTON (Coach). Daily. Leave Meningie 4 p.m., due at Kingston 6 a.m. following day. Fare, 28s.	98
KINGSTON TO NARRACOORTE (Railway). Daily. Leave Kingston 7 a.m., due at Narracoorte 10 a.m. Fares—1st class, 8s. 10d.; 2nd class, 5s. 6d.	53
NARRACOORTE TO CASTERTON (Coach). Daily. Leave 10.30 a.m., due at Casterton 11.30 p.m. next day. Fare, 30s.	76
CASTERTON TO MELBOURNE (Railway). Daily (Sundays excepted). Leave 9.30 a.m., due in Melbourne 10.46 p.m. Fares—1st class, 44s. 9d.; 2nd class, 29s. 9d.	271½
Through Journey ADELAIDE TO MELBOURNE (64) sixty-four hours. Through fare—1st class, £6 8s. 9d.	602½
Passengers for Melbourne leaving Adelaide on Fridays lose one day at Penola. On Saturdays train leaves Adelaide at 4.15 p.m. in lieu of 6.50 a.m.	

# Behind the scenes at Sydney Train Control

DAILY TELEGRAPH , SMH and GEOFF LAMBERT

**PEAK HOUR**— A FIRST TIME look into RailCorp's Management Centre or the hub of RailCorp's operations located at central station. The Main screen many meters long shows train locations on lines from the Hunter to the south coast including the city tracks.

**ITS POURING IN SYDNEY** and half a million people are about to board their morning train, expecting to get to work without a hitch.

There is a buzz at the RailCorp's Rail Management Centre at Central as a team of 30 staff are about to endure the exhausting and hectic morning peak.

Dwarfed by a 20m-long screen projecting the entire metropolitan rail network, the staff will watch every train live as it runs into town. The 36 LCD rear projection screens, which are displaying the Train Location System, also show every train's progress, with a red font appearing if it is late-running [1 character red: > 3 mins late; 2 characters red: 5 mins late; all red: 10 minutes late—Ed.]

RailCorp's acting operating officer Tony Eid is watching as staff monitor 258 computer screens on their desks.

"It is going to be difficult with this weather," says Mr Eid, preparing for the worst. "Wet weather conditions mean our drivers will drive to the conditions and passengers will be slow to board and alight. We've got no problems with that, we just want everyone to get to work."

The peak period kicks off about 7.30am. At 7.34am trains are forced to slow down after reports of a dog near the rail line between Blacktown and Seven Hills. Then the key moment of the morning takes place. A driver at Arncliffe reports his train has compressor problems and won't be able to cope with the steep track near Como.

RMC Manager Warwick Taylor, who has been at RailCorp for more than 40 years, raises his voice to a colleague on the phone: "Pull it out, get it out." The train is taken to nearby Mortdale and pulled out of service. Trains behind it are being diverted to avoid delays, but there are already red fonts appearing on the screen.

At 7.52am Mr Eid is quietly confident. He explains: "We either put 1000 passengers out of whack now, or 20,000 later if more trains are delayed, so it's an easy decision. Right now it is not about on-time running, it is about keeping the trains running."

Just after 8am a guard calls in from

Wynyard with bad water leaks on the train. The team at the RMC wait, each holding a phone and watching the train pull in to Central live on CCTV. "Come on, come on, get it out of there, don't let him dwell," says Mr Eid.

There are more minor delays through the eastern suburbs line, with six trains all running late as a result of the earlier compressor issue. At 8.47am trains at Central, Town Hall and Wynyard are unloading up to 1600 passengers every three minutes.

In the end, the morning peak results in 93.4 per cent on-time running - below the state government's target of 95 per cent.

"Across the network it has been a great morning for passengers," Mr Eid says. "The trains didn't stop and they wouldn't have noticed the delays."

\* -Daily Telegraph, 21-Jul-2011

**T**rain Control offices have been around for a long time; the first in the British style of railway seems to have been set up by the Lancashire & Yorkshire in the late 19th Century, to control its coal traffic. The first Train Control office in Australia was the Sydney-Thirroul office established in 1914. By 1942, there were 10 Telephone Train control Offices in NSW. For Sydney itself, a Traffic Trouble office came into existence in 1934 (picture below). In late December 1949, the *Sydney Morning Herald* visited and reported:

*This has been a record Christmas for us," Railways spokesman said last night.*

*During the 11 days ended last night we carried more than 400,000 people-about 8,000 more than last year.*

*A traffic control officer said that an intricate system of control was used to ensure free running of trains throughout the State. The central nerve of the city's rail traffic is the 'Traffic Trouble' officer, who sits in a room high above Central Railway Station.*

*He sits at a desk equipped with three telephones, a microphone, and a loud-speaker. From the loud-speaker come the voices of stationmasters of all the stations in the metropolitan area. They report all trains that are running late and the Control officer gives instructions on what train schedules are to be rearranged to ensure the system works, smoothly.*

*Rows of switches, each ringing a bell in the offices of key stations throughout the metropolitan area, can be thrown quickly. This saves the time taken in ordinary dialling.*

*His work is strenuous, for if trouble occurs the whole finely balanced system can be thrown out of alignment. A dozen stations may be competing for his attention over the loud-speaker.*

*He works a 6-hour day, six days a week. Men are on duty 24 hours a day every day of the year. In adjoining rooms are officers controlling the movements of all steam trains on the main lines north, south, west, and Illawarra. As a train reaches a station its arrival is reported through a telephone connected to a loudspeaker in the controller's office. He plots its position on a graph showing the movements of all trains in his section.*





**Train Control in 1949, with a well-thumbed copy of the WTT close at hand.**

Where trains are delayed he decides which trains shall be held up and which shall have the right of way. A goods train controller decides how many goods trains will be necessary to lift the freight on hand. These are then plotted on the graph to fit in with passenger train schedules.

Traffic Trouble was merged into Telephone Train Control (TTC) in 1991 and moved to the First Floor at Central. Over the next decade, TTC underwent many changes and upgrades into the computer age and was considered to be World's Best Practice for this kind of thing

Train Control was absorbed into a new Rail Management Centre on 15-Dec-2002. The purpose of the RMC was to amalgamate a number of previously separate train control groups into a single geographic location.. Specifically, these were:

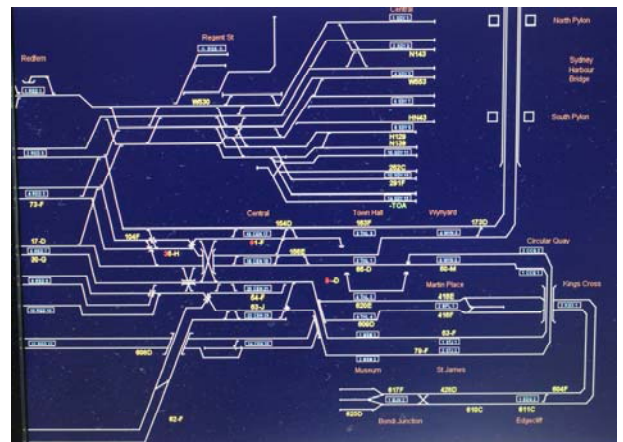
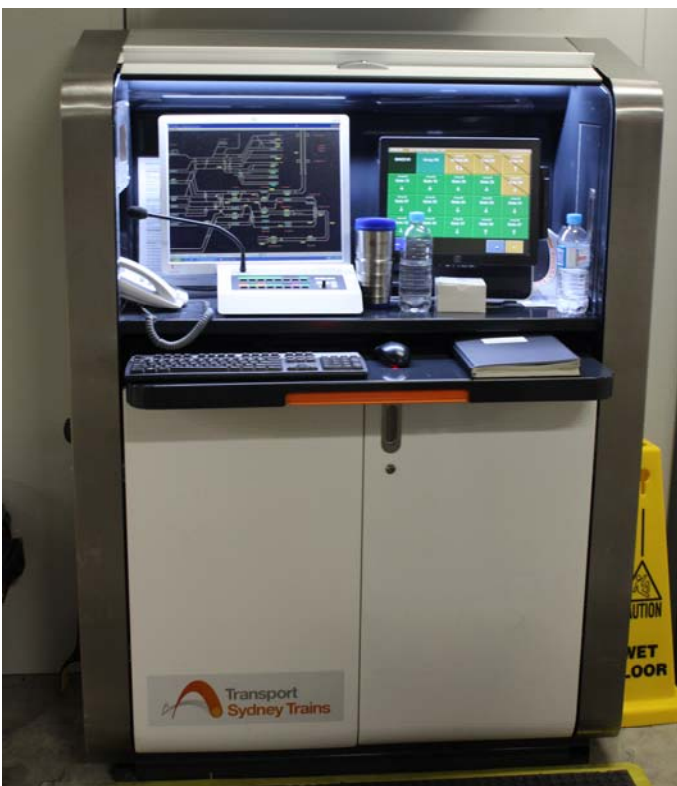
- Train Control
- Mechanical Control (defects)
- Security Control
- Passenger Information
- Stations Operation Coordinator
- Electric Train Running (Train Crewing Coordinator)
- RIC coordinator

To these, the following seem to have been added in recent years

- Phone app provider interface desk (my name for it)
- Incident Control

By the time the first TOC manuals were produced, (about 2006), the boards were listed as follows:

- Main
- Illawarra
- South Coast Control
- Sydney North Control



Next departures Sydney services				Intercity services		Regional services		
						09:39		
<b>T1 Berowra</b> All services Platform: 16 Depart: 16 min Next service: 16 min Platform: 16 min	<b>T1 Epping</b> All services Platform: 18 Depart: 18 min Next service: 18 min Platform: 18 min	<b>T1 Hornsby</b> All services Platform: 16 Depart: 16 min Next service: 16 min Platform: 16 min	<b>T1 Penrith</b> All services Platform: 18 Depart: 18 min Next service: 18 min Platform: 18 min	<b>T2 Macarthur</b> All services Platform: 23 Depart: 23 min Next service: 23 min Platform: 23 min	<b>T3 Glenfield</b> All services Platform: 19 Depart: 19 min Next service: 19 min Platform: 19 min	<b>6 10:18 Lithgow</b> All services Platform: 6 Depart: 6 min Next service: 6 min Platform: 6 min	<b>6 9:45 Newcastle</b> All services Platform: 12 Depart: 12 min Next service: 12 min Platform: 12 min	<b>9 11:41 Grafton</b> All services Platform: 1 Depart: 1 min Next service: 1 min Platform: 1 min
<b>T3 Liverpool</b> All services Platform: 22 Depart: 22 min Next service: 22 min Platform: 22 min	<b>T4 Bondi Jctn</b> All services Platform: 24 Depart: 24 min Next service: 24 min Platform: 24 min	<b>T4 Waterfall</b> All services Platform: 25 Depart: 25 min Next service: 25 min Platform: 25 min	<b>City via Town Hall</b> All services Platform: 17 Depart: 17 min Next service: 17 min Platform: 17 min	<b>City via Museum</b> All services Platform: 21 Depart: 21 min Next service: 21 min Platform: 21 min	<b>6 10:10 Port Kembla</b> All services Platform: 25 Depart: 25 min Next service: 25 min Platform: 25 min	<b>6 9:57 Moss Vale</b> All services Platform: 23 Depart: 23 min Next service: 23 min Platform: 23 min	<b>6 12:12 Canberra</b> All services Platform: 2 Depart: 2 min Next service: 2 min Platform: 2 min	



- Sydney West Control
- Sydney Goods
- Outer

Changes occurred in subsequent years, mostly associated with the take-over of the regional main lines by ARTC. At first, ARTC Train controllers took over the Sydney South Board, which controlled lines south of Macarthur. In November 2005, this Board was physically transferred to Junee Train Control. More recently, following their acquisition by ARTC, control of most of the former “Suburban Goods Lines” has also moved to Junee. The current control map is shown on page

10 — ARTC controls the dotted lines..

Train Control does not actually **control** any trains in the sense that the signal boxes control trains. The system still relies on 35 boxes to control the Sydney Trains area—most notably (in order of number of panels):

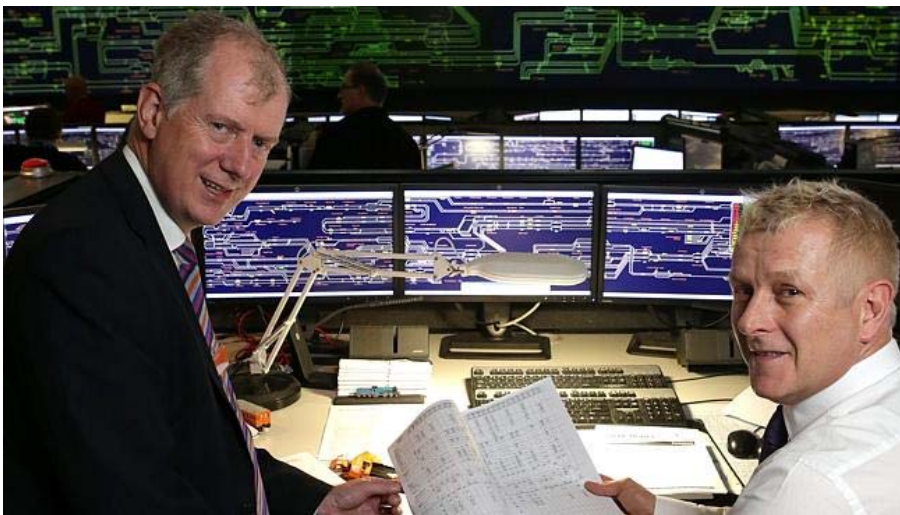
- Sydenham (9)
- Homebush (8)
- Strathfield (7)
- Sydney (6)
- Wollongong (4)

The main room is dominated by the 20-metre long rear-projection system displays from the Phoenix Train Control System,

above which are a number of TV screens, including news media screens to keep in touch with possible events which would influence train running (above). Each “Board” is a “workstation panel” - a U-shaped desk with a multi screen extract of the relevant section of the system which they control (floor plan on p 10), plus extra computer screens which can run many programs available on the Sydney Trains Intranet—including both graphical and tabular working timetables. A Windows log-on screen to these systems is visible in the middle of the photograph on our page 2. The train control display screens are run off Sydney Trains “Train Location System” (TLS). This is the core of the supervisory control.

Despite this being a control room dominated by electronic visual displays, in the manner of Mission Control in Houston, it is, like the latter scattered with heaps of paper documentation. Working Timetables lie open on desks and graphical versions are draped over chairs or on ledges. The two men in the photo at left are consulting a Freight SWTT.

Outside, in the entrance foyer with its single-person security airlock, is a whiteboard with the most recent on-time statistics for both Sydney Trains and NSW Trains (lower left, opposite page). At one end of the main room, there is a display case of historic artefacts, including a collection of Working Timetable





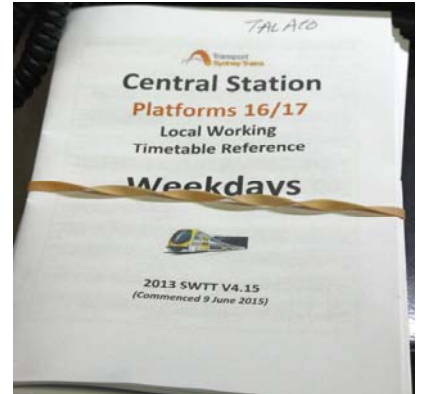


WEEKLY SUMMARY	PLAN	ACTUAL	STATUS
92	92	91.1%	✗
<b>SUNDAY</b>	SYD TRAINS	NSW TRAINS	
	% NA	% NA	
<b>MONDAY</b>	95.9%	88.2%	✗
<b>TUESDAY</b>	96.4%	94.8%	✗
<b>WEDNESDAY</b>	98.0%	85.9%	✗
<b>THURSDAY</b>	99.0%	88.2%	✗
<b>FRIDAY</b>	94.2%	89.4%	✗
<b>SATURDAY</b>	% NA	% NA	

Appendices opposite page, right).

**Meanwhile—downstairs**

Access to the TLS has been available outside the RMC for some years, mainly in small platform offices at most stations and which were not usually visible to the public. In a recent policy change, said to have been implemented to leverage staff out into the open and put them among the public, these interfaces (said to cost \$100,000 each) have been “rolled out” (literally) into concourses and on to platforms, where they are now in full view of rubber-neckers. A typical unit and its display are shown on page 7 (middle). These units are gradually appearing at stations throughout the system. These days, one doesn’t have to visit Train Control to watch the train running. All of this is also available to running staff who have I-pads for the purpose. This includes guards on the trains—but not drivers, who have only “this little scrap of paper”, as one driver told me recently.



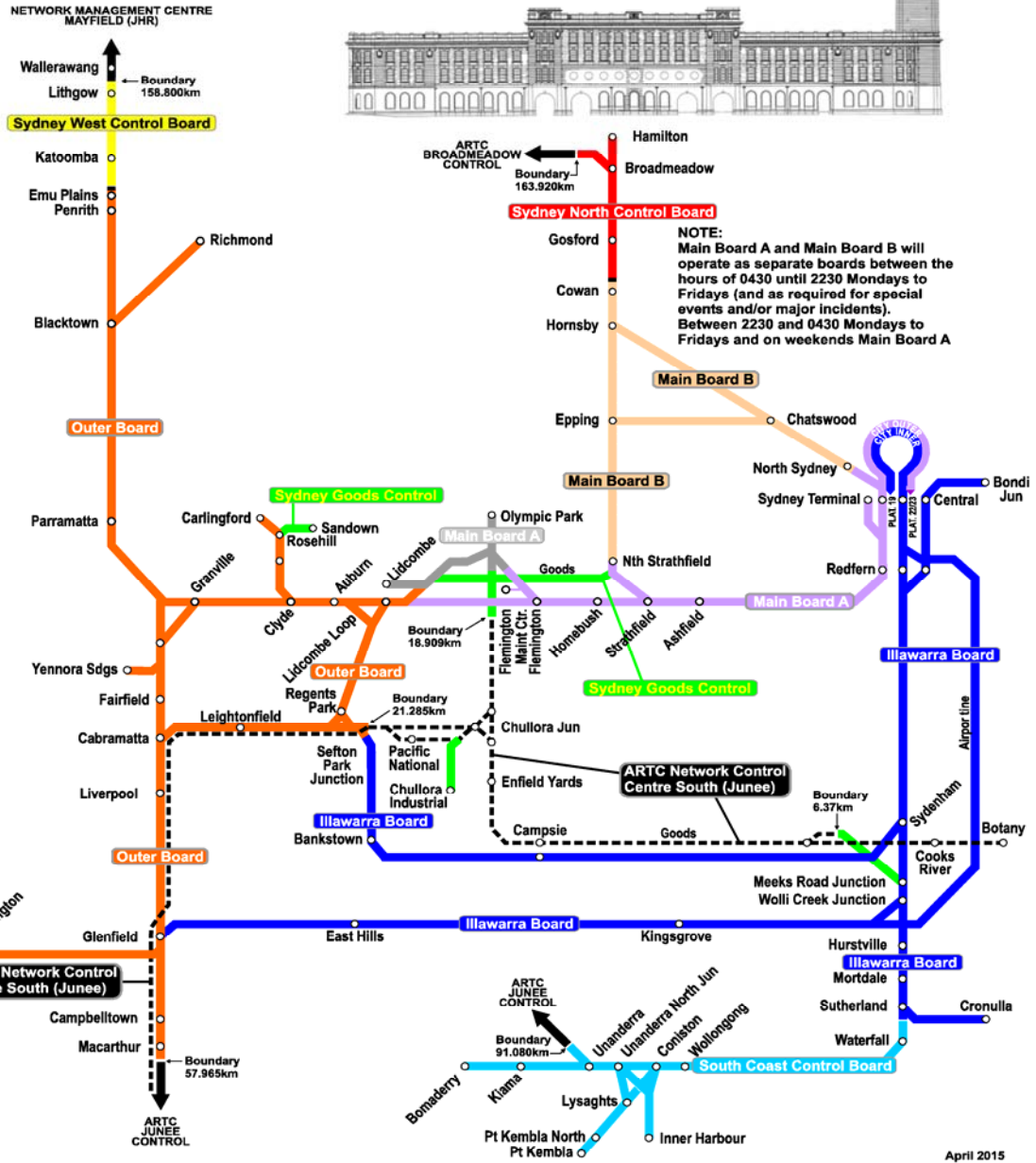
Another (possible) new thing I found lying on these desks were booklets labelled “Local Working Timetable Reference—These appear to be platform-specific versions of what used to be called “Yard Working” books. They appear to be similar in form to a “Stables & Starts” diagram.

the main concourse—also shown on page 7 (bottom). Although criticised for a lack of detailed arrival information, these appear to be an improvement on anything that has gone before.

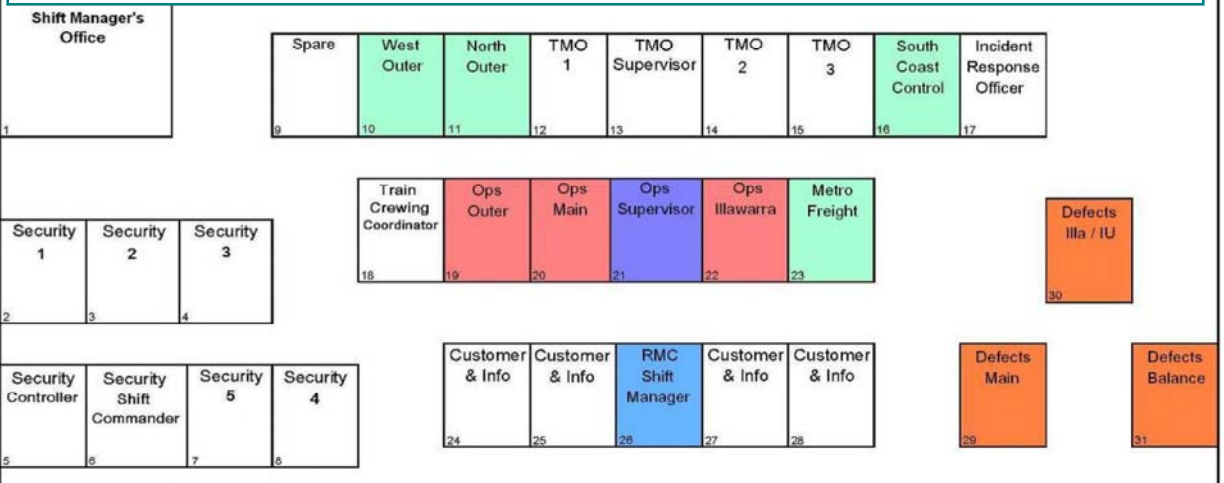
These changes pretty much coincided with the introduction of a giant display board in

Thanks to my anonymous referees for vetting this article.

# Rail Management - Areas controlled by Train Control Boards Centre Sydney



April 2015



# Sydney Buses' School Bus Routes

## GEOFF LAMBERT

### G TFS FEEDS ARE WONDERFUL

Regular readers of the ATA magazines will have noticed increasing mention of them through 2015. At the time I first discovered them, the Sydney GTFS feeds were undergoing rapid change and I was just in time to download the very last Sydney Buses feed before it was merged into the Greater Sydney Area feed containing all transport modes. ATA Secretary Michael Smith pointed out to me at the time that one set of the Sydney Buses feed that did not get transferred over to the Greater Sydney feed was the Sydney Buses' School Bus feed. This is now gone forever and nobody seems to have an archive copy—certainly not Transport for NSW (TfNSW). Details of every School Bus route, including maps and trips can still, however, be conjured up from the TfNSW web-site (see page 12), but not the whole shebang at once. I was lucky to get the very last shebang.

In the GTFS feeds, School Buses were coded as route type 712, as opposed to type 700 for non-school routes. The UNSW buses are coded as 700, but I have included them here as though they were 712. The map on our back cover was created after about an hours work with the Sydney Buses GTFS, Excel and Google Earth. There are 764 routes shown on this map. The feed and the map show some intriguing statistics (Table in top left of map).

For every route, there is one route number, one route name, at least one shapefile, at least one "head-sign" and any number of "trips".

**Route number:** While the numbering system appears to be historically-based, some route numbers seem to be have drawn out of a hat because some routes with the same "number" occur in widely separated parts of Sydney. Bus routes

coded "712" generally have route numbers in the 560-799 range, which allows for 240 separate routes. Only 128 numbers (digits) are actually used to construct the 764 route numbers. Thus quite a number of routes have alphabetical suffixes—as many as 20 (routes 692a-s, with 60 trips in all). There may be an historical or current reason for this—these route numbers might have been used in the past and/or by Private Operators—can anyone say? In some cases, different suffixes are used for inbound and outbound trips. Some trips on the Northern Beaches have suffixes at the end of the alphabet, rather than at the beginning.

It is not clear to me whether students are allowed to pick and choose their routes should more than one be feasible for them. I suppose they must.

**Route name:** The route name will be for the convenience of Sydney Buses or the app designer- what would a mug punter make of "732bSeaf-seap-stce-mcgh", for instance?

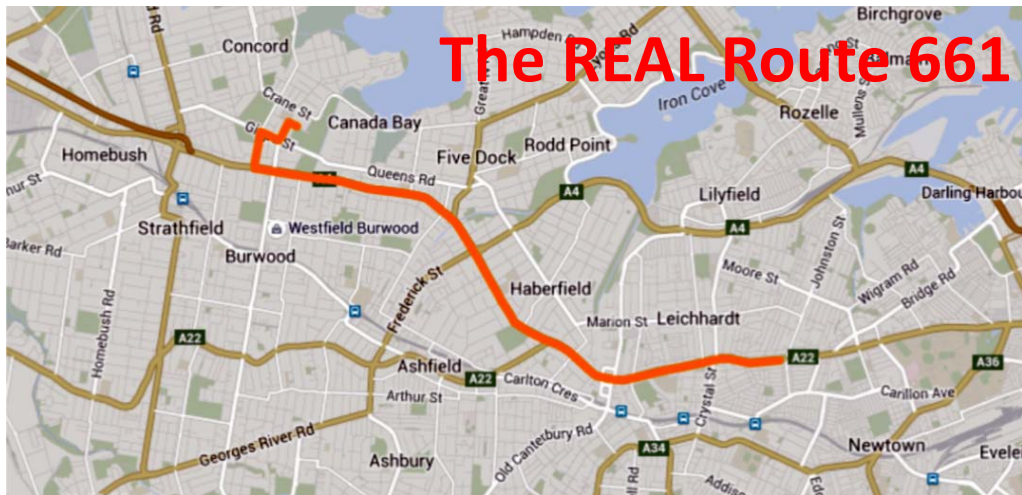
**Route shapefile:** Shapefiles specify the route on the ground. The school bus shapefiles have about 71,000 entries—which is the same thing as stating that the number of "twists and turns" or GPS dots on the map is 71,000. The average number of GPS points on a "712" route is 92, compared with 231 for a "700" route. This, means—more or less—that a "700" route is six times the length of a "712" route. What looks, at first glance, to be isolated dots, are really isolated, short routes— a small collection of dots. While there are 764 different school bus routes listed, there are 2611 "shape files". Often this is because a bus is forced to take a different route inbound and outbound—because of one-way streets for instance. Sometimes, however, the trips with the same route number really are scattered along different streets, by trip.

**Trips:** Each day Sydney Buses School buses make 1614 trips. Many routes have only 1 round trip per day. Some have only a single-unidirectional trip per day. In the GTFS system, each trip has a unique number. Trips are coded as "0" and "1" for "inbound" and "outbound" services respectively. This generally means "going to school" and "coming home from school". There is a great imbalance here—only 35% of trips are coded as "inbound". This compares with "regular bus trips where the inbound:outbound ratio is almost exactly 50:50. As mentioned above, sometimes routes will have different route numbers and different shapes for inbound and outbound trips—but this cannot be the whole story. Perhaps it is sociological as with Shakespeare's schoolboy who dawdles on the way to school.

**Trip Head-sign:** The head-sign is for the convenience of the student. In common parlance, it is the "destination" or "terminus". There are 364 different head-signs for School Buses, but only 115 among all other Sydney bus routes—another indication of the school bus route octopus' tentacles. I have seen buses with head-signs reading "Wonderland" or "North Pole" - the latter at Christmas. Observers will realise that head-signs should be read with caution and that students have to use their wits when a bus appears in front of them. The bus below, pictured at Artarmon Public School, with the head-sign a simple "SCHOOL" and carrying the route number 661, is really a 661h. The display should be technically capable of showing 661h. "Pure" Route 661 is actually a once per day inbound service to Concord High School—its route map is overleaf. That's a long way from Artarmon. On some systems, icons of animals have been substituted for head-signs and route numbers—even for High Schools. Does this tell us something about the state of education in those places?

Thanks to Michael Smith for his insights.





## Sydney Buses School Bus Routes by route number and name

560	Ryde Depot-Newington College	604b	Moorefield GHS - Rockdale Stn	612f	M'bra - Scots/Cranbrook/Kamb/Rose Bay Sec.Coll
560b	Balmaln - Newington College	604c	St Clares - Mascot	612h	Chris Bros Lewisham-Undercliffe
561	West Ryde Stn-Riverside GHS	604d	Brigidine Convent - Mascot	612i	St Marouns-Casimir College-Bexley/William
562	Hunters Hill HS-Balm/Balm HS	604e	Glenaeon Snr - Chatswood Stn	613	Campsie Stn - Christian Bros Lewisham
563	Hunters Hill HS - Five Dock	604g	East Ryde - Marist Sisters Woolwich	613a	shrb - kamb - cran - scot - mjct
564	Hereford & Glebe Pt Rds - Holy Cross	604h	Mascot - Marcellin - Brigidine	613b	Mr'bra - Scot/Cranbrook/Kambala/SHRB
565	Hereford & Glebe Pt Rds-Hunters Hill HS	604j	C.Bros Wav - St Clares - Mascot	613c	Edgecliff - Sydney High
567a	Our Lady of Lebanon - Ryde	605	Trinity Grammar - Ashfield Stn	613d	Bondi Jct - Yeshiva Coll
568	West Ryde - Marist Sisters Woolwich	605a	Milsons Pt - Glenaeon - Chats. Stn	613e	Syd Girls - Syd Boys - Edgecliff
570	Meadowbank Stn-Marist Sisters Woolwich.	605b	Chiswick-Drumm-Holy X	614	Strathfield Stn (South) - St.Patricks Strathfiels
571	Marist Sisters-Riverview-Chatswood	605c	Ryde Depot-Holy X Riverside-Chiswick	614a	Burwood Rd-Strath.GHS Homebush BHS Homebush PS
572a	St.Pats Dundas - MacArthur G.H.S.	605d	Killarney Hts HS - Willoughby Girls	614b	Georges River -Strath.GHS Homebush BHS Homebush PS
574	Holy Cross - St.Charles - Bowden St	605e	Willoughby PS - McClelland St & Eastern Valley Way	614c	Mr'bra - R'wick N HS - C Bros Wav
575	Meadowbank Stn-Ryde Secondary-Holy X-St.Charles	606	Rose Bay PS - BJI	614d	PHH - Wav College
576	Macarthur G.H.S. - Spurway St	606b	Chatswood Stn-Willoughby GHS	614e	Mascot - Waverley Coll
579a	West Ryde Stn - St. Pats.Dundas	606c	Willoughby GHS-East Roseville	614f	Wat Bay - C Bros Wav - R'wick highs
579c	St.Pats Dundas - Ryde	606d	Milsons Pt-East Roseville	614g	Sacred Heart (Rose Bay) - Maroubra Jct
580	Rydalmere - Cumberland H.S.	606e	East Lindfield - Crows Nest	614h	Randwick High Schools - BJI
580a	Cumberland H.S. - Pemberton St	606f	Ryde Depot-Holy X Riverside-Chiswick	614j	BJI - R'wick Highs
581a	St.Michaels-West Ryde Stn	607	Rockdale Stn - James Cook HS	614k	Randwick High - BJI
582	Ryde PO-St.Mike-W.Ryde Prim	607a	P'wood - Daceyville PS - Mascot	614l	BJI - Randwick High
587	Rydalmere P.S. - Rydalmere	607b	Nth Sydney GHS-East Lindfield	614m	Rosebank College - Five Dock Shops
588a	Marsden HS-Carlingford Stn	607c	Redlands-East Lindfield	615	Summer Hill Stn - Trinity Grammar C'bury GHS
590a	Riverside GHS-Nth Ryde	607d	Milsons Pt-Nth.Syd.BHS-East Lindfield	615a	Rosebank College - Croydon Pk
590b	North Ryde - Riverside GHS	607e	King & Botany - Daceyville PS	615b	K'gove Nth HS - Belmore Stn
591c	Riverside GHS-Twin & Lane Cove Rd	608	Rosebank College - Strathfield Station	615c	St.Patricks Strathfield-Belfield
592	Nth Ryde-Riverside GHS	608a	Redfern - Alexandria Park School	615d	Santa Sabina Convent-Belmore Stn
594	West Ryde - Riverside GHS	608b	Nth Syd Stn - Boundary & Griffith	615e	St.Patricks Strathfield-Belmore Stn
595	Holy Cross-Wigram & Glebe Pt Rds	608c	R'wick Highs - Bunnerong & Franklin	615f	Canterbury GH-Burwood Stn
596	Abbotsford-Riverside GHS	609	Chifley PS - PHH	615g	Cranbrook - Scots College - BJI
597	Riverside GHS-Chiswick	609b	Rodd Point-St Patricks Strath	615h	Maroubra Jct - Randwick High
598a	Gladstone Park - Riverside Girls High	609c	Haberfield - 5 Dock - St.Pats - Homebush PS	616a	Mr'bra - R'wick Highs - Brigidine
598b	Riverside Girls-Balm	609d	Bethlehem Coll-H'stone Pk Stn	616b	Strath GHS - Strathfield Stn
599	Ryde Secondary coll -St Charles-W.Ryde	609e	St Pats Strathfield-B'wood Stn-Fivedock	616c	Eastlakes - Mascot PS
600	Holy X-W.Ryde	609f	Rosebank Coll-B'wood Stn- Pemberton & Arthur	617	Drummoyne-B'wood PS St.Patricks
600a	Forest Lodge Sch-Toxteth Rd Glebe	610	Sydney Highs - Central/R'way Sq	617a	St.Marthas-St.Patricks S'field - Drummoyne
600b	Eastgardens to Waverley Demonstration	611	Sydney Highs - Wyn - Mill Pt	617b	R'wick Highs - Sth Maroubra
601	Castlecrag - East Roseville Prim	611b	Rosebank College - Five Dock Shops	617c	R'wick Highs - Sth Maroubra
602	St.FinbarsSans Souci PS-The Grand Pde	611c	Pmatta & Dhousie - Bwood Schls	618	Mascot PS - Sydney Highs
602a	OLSH - Mascot	611e	Burwood GH - Leich T Hall	618a	Sydney Highs - Mascot
602b	Milsons Pt- Nbge	612	Earlwood - Christian Bros Lewisham	618b	Santa Sabina - Drummoyne
602c	St Philip Neri - Neutral Bay Jct	612a	Kingsgrove Depot - Christian Bros Lewisham	619	Santa Sabina - Five Dock Shops
602d	East Roseville - St Philip Neri	612b	Earlwood - Domremy Hunters Hill HS	619a	Milsons Point - Burns Bay + Penrose via lcli
603	Dolls Pt - Marist Kogarah	612c	Dover Heights - Sydney High	620	St.Patricks S'field - Five Dock
603a	Castlecrag - Nth Sydney Girls	612d	Rwkj -Bondi Jct - Sacred Heart Rose Bay	621	Ryde-Marist Bros-Monte Sant'Angelo-Milsons Pt
603b	North Syd boys high - North Syd Station	612e	Maroubra - Scots - Cranbrook		
603c	Castlecove PS - Castlecrag				
603d	Castlecrag - Castlecove PS				
604	Rockdale Stn - Moorefiels GHS				
604a	Killarney Hts High - Cammaray				

- 622 Concord Hospital to Marist Sisters Woolwich
- 623 EIC - Cran/Kamb/SHRB/Vauc HS
- 623a M'ville Shops-E'wood-K'grove Nth HS
- 623b Marrickville HS-Earlwood-Kingsgrove
- 623c Cremorne - Mosman Primary
- 624 Omnibus Rd - St.Scholasticas Glebe
- 624a Cremorne Whf - Middle Harbour PS
- 624b Moriah College - Watsons Bay
- 624c SCEGGS - Quay
- 624d Cranbrook - Edgecliff Inter
- 624e Sacred Heart (Rose Bay)-Edgecliff Inter
- 624f Rose Bay Sec.Coll. - Kings Cross
- 624g EIC - Cran/R B Whf/Kamb/SHRB/RBSC
- 624h Ermington - Marsden High
- 625 Sydney Grammar - Watsons Bay
- 625a Moriah College - Watsons Bay
- 625b Watsons Bay to Rose Bay Sec.College
- 625c Middle Harbour PS - Cremorne Whf
- 625d Newington - Concord High
- 626 Milsons Pt - Neutral Bay PS
- 626a Olympic Park Wharf - Concord High
- 627 Chris Bros L'sham - Kingsgrove Stn
- 627c Scots Coll Prep - Dover Rd Rose Bay
- 628 Christian Bros.Lewisham - Belfield
- 628a Christian Bros.Lewisham - Belfield
- 628b Clifton Gardens - Mosman PS
- 628c cant - st scholasticas
- 629 Christian Bros.Lewisham - B'wood & G.River Rd
- 630 Chatswood - Nth Sydney Boys
- 630a Lane Cove Shops - Nth Sydney Boys
- 630b Spit bridge - Nth Sydney Station
- 630c Chatswood - Nth Sydney Boys
- 630d Dover Rd Rose Bay - Moriah Coll
- 630e Watsons Bay - Dover Rd - Moriah
- 630f Chatswood - Mowbray PS
- 630g Botany - South Sydney High
- 631 Railway Square - St.Scholasticas Glebe
- 631a Sth Syd High - Botany
- 631b Marist Bros P'wood - Gard & Bot Rds
- 632 Chatswood-L.Cove PO-St.Ignatius
- 632a Sth Syd High - Sth Botany
- 632b Chatswood - St Ignatius Riverview
- 633 Balmain - St.Scholasticas Glebe
- 633a N'wood-Nt Sydney - Milsons Pt
- 633b Balmain High School - QVB
- 633c Sacred Hrt Rose Bay - BJI
- 633d Milsons Point - Lane Cove Library
- 633e BJI - Rose Bay Sec. College
- 633f Rose Bay Sec. Coll. - Queen & Oxford
- 633g Blackwattle Campus - Balmain
- 634 Chatswood - Gardeners & Buffalo Rds
- 634a Cressy Rd - East Ryde - Chatswood
- 634b Balmain High School - QVB (via Vic Rd)
- 634c QVB - Balmain High
- 635 Abbotsford/Five Dock - Christian Bros.Lewisham
- 635a Mvill HS - Bunn & Heffron
- 635b Pengilly St & Sofala Av-St.Michaels-Lane Cove PS
- 635c Hunters Hill High - Lane Cove
- 635d Marist Pwood - Mville High
- 636 Concord Shops-Abbotsford-Christian Bros.Lewisham
- 636a Mosman PS/HS - Musgrave St Wharf
- 636b Riverside GHS - Meadowbank
- 636c Discovery Cove - OLSH
- 636d Pindari & Euryalus - Mosman High
- 637 Haberfield Shops - Concord HS
- 637a Middle Harbour PS - Balmoral
- 637b Concord HS - Five Dock Shops
- 637c Marcellin/Brigidine - Matraville
- 637d Domremy Clge - Five Dock - L'hardt Town Hall
- 637e P'wood Marist-Maloney & Evans Sts
- 637f St.Scholasticas - Five Dock Shops
- 637g La Per- OLSH
- 637h Millenium Crt - M'rbra Jct PS
- 637j Gard Rd Inf - Botany - St Gabriels
- 637k Daceyville PS - Matraville
- 637m Ryde Secondary - Putney Primary - Gladesville
- 638 Concord HS - Chiswick
- 638a OLSH - Botany - Discovery Cove
- 638b Dis.Cove - Sth Bot - Sth Syd High - MJct
- 639 Brig R'Wick/Sacred Hrt R'wick - Clovelly
- 639a St.Michaels-Lane Cove PS-Chatswood
- 639b Milsons Pt - Zoo
- 639c Abbotsford-Christian Bros.Lewisham
- 640 Ryde-West Ryde Stn-Marsden-C'land HS
- 640a Waverley College - Pagewood
- 641 Wynyard - Queenwood Junior
- 641b Mosman - Queenwood/Q'wood Jnr
- 641c Milsons Pt - Balmoral
- 641d Chatswood - Queenwood
- 641e Lane Cove - Queenwood/Q'wood Jnr
- 642a Ryde Depot - Marist Sisters Woolwich
- 642b Miller & Carlow - Milsons Pt
- 643 Gard & Bot - Pwood Marist
- 643a Randwick High Schools - Railway Sq.
- 643b Milsons Pt - Spit Jct (Brady St)
- 644 R'wick Highs - Eastlakes
- 644b Marist Bros-Mosman PS-Mosman Jct
- 644c St Leonards Stn - Spit Jct
- 645 Balmain - Fort St HS
- 645a Fort St HS - Balmain
- 645b Castlecrag - Queenwood Jnr
- 645d Balmain HS - Canterbury Station
- 645e East Lindfield - Redlands
- 646 C'bury Stn/Dulwich Hill shops - L'hardt HS
- 646a Sydney French Schl-Watsons Bay
- 646b Mosman Jct & High - Balmoral Hts
- 646c EIC - BJI - Sydney French School
- 647 Mosman Marist - Milson Pt
- 647a Ryde-Eastwood-St.Patrick's Dundas
- 648 Tempe High-Earlwood
- 648a Milsons Pt - Nth Balgowlah
- 649 Blessed Sacrement Mosman - Beauty Pt
- 649a Beauty Pt Prim - Queenwood - Neutral Bay Jct
- 649b Queenwood Jnr - Mosman PS
- 650 Mosman HS - Lane Cove Shops
- 650a Nth.Sydney BHS - Zoo
- 650b Queenwood - Lane Cove Shops
- 650c Zoo-St.Ignatius Riverview
- 650d ST Ignatius - Crows Nest
- 650e Parramatta - OLMC - Macquarie BHS
- 651 Nth Sydney Boys - St Leonards
- 651a Mowbray Rd -St Ignatius Riverview
- 651b Warringah Mall to St. Ignatius Riverview
- 652 Parramatta - St.Patrics Dundas
- 652a Lane Cove West - Milsons Pt
- 653a St.Pius Enmore-Tempe
- 653c St.Pius Enmore-Tempe - Rockdale
- 654 Ross Smith Pde - Drumoyne
- 656 Queenwood - Chatswood
- 657 St.Patricks - Rhodes Stn
- 657a Wav Jnr/Wav Coll - Malabar
- 657b St Clares - Matraville Hotel
- 657c Mosman High - Redlands - Chatswood
- 657d Willoughby Girls - Balmoral
- 657e Nth Sydney Boys - Chatswood
- 657f PHH - M. Jct Schls/Marcellin/Brigidine
- 658a Strathfield GHS - Concord Hospital
- 658b Homebush BHS - Concord Hospital
- 658c Kingsford - Marcellin Senior
- 658d Wav Jnr Coll - Matraville
- 658e Gard & Botany - R'wick Highs
- 659 th - rlsq - glhs
- 659a Leichhardt HS - Glebe HS - Millers Pt
- 659b St.Scholasticas - P'matta Rd & Dalhousie St
- 659c Glebe HS - Town Hall (City)
- 659d Chatswood - Mosman Jct
- 659e Nth Sydney Stn - Mosman Jct
- 659f Chatswood - Mosman PS & High
- 659g Perry St at Bunn.Rd - Marcellin Senior
- 659h Watsons Bay - Emanuel Randwick
- 659j Moriah College - Bondi Junc
- 659k Mils Pt - SCEGGS Jnr - Musgrave St
- 659m Pagewood - Bondi Jct
- 659n Rwick Girls - K'ford
- 659p Willby GHS - elmo
- 660 Rosebank College - Concord Hospital
- 660a BJI - Rose Bay Sec. College
- 660b Narreburn - Cammeray PS
- 660e Rose Bay Sec. Coll. - Vaucluse Primary
- 660f Dover Heights to Mt Sinai College
- 660g Willby GHS - Lane Cove
- 661 Concord Hospital - Burwood & P'matta Rds
- 661a Johnston St (Annandale) - Concord HS
- 661b St Marys C'cord - H'bush Stn
- 661c Rosebank Clge - Homebush Stn
- 661d P'matta & Broughton-H'bush BH
- 661g Cran/Scot - R'wick Jct
- 661h Cnest - Will GHS - Artarmon PS
- 661i Artarmon & Tindale - Will GHS
- 661j Artarmon PS - Willoughby PS - Crows Nest
- 662 St.Patricks Strathfield - Burwood & Parramatta Rd
- 662a Artarmon PS - Will GHS - Lane Cove
- 662b St Marys C'cord - C'cord Shps
- 662c Cran/Scot - Mbra Jct
- 662d H'bush Stn - Rosebank Clge
- 662h Campsie Stn - Christian Bros Lewisham
- 663 Drummoyne - Concord HS
- 663a Homebush BHS - Cabarita Junction
- 663b Chatswood - Cammeray
- 663c Neutral Bay PS-Northbridge Jct
- 663d Will GHS - St Thomas Sch - Cammeray
- 664 Queenwood - Milson Pt
- 664a Ashfield Boys High - B'way Enfield
- 664c Concord High - Burwood Westfield
- 664d St.Patricks Strathfield - Burwood & Parramatta Rd
- 664e Corneys Ave Concord - Holy X College Ryde
- 665 Concord HS - Burwood Stn/Mortlake
- 665a Holy Cross - Fivedock
- 665b Edgecliff Inter - Scots Coll
- 665c Scots prep-Scots College - Edgecliffe
- 665d Neutral bay PS - Milsons Pt
- 665e Cranbrook - BJI
- 666 Holy X & St Charles Ryde - Five Dock
- 666a Crows Nest - St Philip Neri
- 666c Greenwich Infants- Osborne Park
- 666d St.Philip Neri - Blaxlands Corner
- 667 Concord High- Mortlake
- 667a R'wick Highs - Gard & Bot Rds
- 667b Nth.Sydney Demo Schl - Milsons Pt
- 667c R'wick High Schools-Gard & Botany Rds
- 667d Mils Pt - Nth Syd Demo - Crows Nest
- 667e Gard & Bot - Marcellin/Brigidine
- 668 Lovell & North Rds - MacQ.Uni-Riverside GHS
- 669 Campsie Stn - Christian Bros Lewisham
- 669a Nth Sydney Dem - Wstncrft Stn
- 669c Christ.Bro.Lewisham-Campsie Stn
- 669d Christ.Bro.Lewisham-Earlwood
- 670 Leic.H School to Newtown Bridge
- 670a Randwick High - Waterloo
- 670b Brigidine - Sydney Park St Peters
- 670c RwkH - Waterloo
- 670d Blackwattle Campus - Lhardt Market
- 670f Epping BHS-Eastwood PS-Ryde
- 671b sggh - rock - wilh - cams
- 671c Northbridge Jct - Willoughby GHS
- 671d Willoughby GHS - Wynyard
- 671e Lane Cove West - Miller & Falcon Sts
- 672 Bexley Rd & William St - Canterbury

	BHS				
672a	Ashfield Stn - Trinity Grammar Summer Hill	687a	Bankstown Hospital - K'gove & C'bury Rds	699d	Marcellin Senior - Maroubra Jct
672c	Bexley Rd & William St - Canterbury BHS	687b	Campsie PS-Orissa St Campsie	700	Gladesville - Hunters Hill High
672d	De La Salle - Bethlehem College - Rodd Pt	687d	North Sydney Girls High - St Leonards Station	701	Milsons Pt - Nweena - DY
672e	De La Salle-Earwood-Rockdale	687e	Sth Head Cemetery - Moriah Coll	701a	Hunters Hill high - West Ryde
672f	Lane Cove West - Milsons Pt	687f	Sydney Grammer - BJI	702	Hunters Hill HS-Boronia Pk-Gladesville
672g	R'wick Highs - Railway Sq	688	Campsie Stn - Canterbury PS	703	Badajoz & Quarry Rds-Holy X-Marist Sisters
672h	R'wick Highs - Railway Sq	688a	Epping Stn - Nth Sydney Boys	703a	Malvina HS-East Ryde-Nth Ryde Golf
672j	Mosman High - Milsons Pt	688b	Epping Stn - Pittwater & Epping Rds	704	Marist Sisters Woolwich-East Ryde
672k	Balmoral - Milsons Pt	688c	Milsons Point - Epping Stn	705	Monash Rd - Holy Spirit & Nth Ryde Public
673	Kippax St - R'wick Highs	689	Burwood Stn - Concord HS - Strathfield GHS	706	Hunters Hill H.S - Macquarie Centre
673a	Marist Bros Kogarah - Earwood	689a	Strathfield GHS - Burwood Rd & Gipps St	707	Macquarie Uni - Riverside GHS
673b	Eddy Ave - R'wick Highs(Express)	689b	Epping & Pittwater - Epping High/Stn	708	Marsden High - Parramatta
673c	Crows Nest/Chatswood - Will Girls	689c	Rose Basy Sec.College - BJI	709	OLMC-Macarthur GHS-Belmore & Bett.
673d	Milsons Pt - Chatswood	689d	Woollahra Dem - North Bondi	710	N'been PS- Mater Maria
673e	Nth.Sydney GHS - Chatswood	690	Epping High - Epping Station	710a	Milsons Pt - Warringah Mall
673f	R'wick Highs - Quay	690a	Earwood - Domremy College Five Dock	710b	Cumberland High -Eastwood-Ryde
674a	K'grove Stn - C'bury GHS & BHS- Trinity Grammar	690c	John St Pyrmont - Ultimo HS	710c	Narrabeen - Narrabeen Primary
674b	Trinity Grammar - Kingsgrove Stn	690d	PLC Croydon - Drummoyne	711	Careel Head Rd - M Maria - Nbeen Schs
674c	Ramsgate - Miranda	690f	Domremy College - Campsie Stn	711a	Eastwood Stn - Carlingford Stn - Marsden High
675	Willoughby PS - Chatswood	690g	BJI - Christian Bros Waverley	712a	James Ruse-Eastwood-Ryde
675b	Canterbury BHS-Belmore Stn	690h	Burwood Girls - Croydon Pk	713	Eastwood - Jenkins & Pennant Hills Rds
676	Dulwich Hill Shops - Canterbury PS	690j	Epping Boys - Epping Stn	714	Neutral Bay PS-Nth.Balg-B'vale Depot
676a	Rockdale Stn-Moorefield GHS	690k	R'wick Girls Highs - Birrell & Carrington	714a	Marist Sisters. Woolwich - Quarry & Arthur Sts
676b	Canterbury PS-Dulwich Hill	690m	Rose Bay Sec.Coll.- Clovelly	715	Milsons Pt - Bantry Bay
676c	Elizabeth & Wellington - R'wick Highs	690p	BJI - Rose Bay Secondary	715a	Eastwood - Marist Sisters Woolwich
677	Nth Sydney Dem - McMahons Pt	691	Bexley PO - Kingsgrove HS	716	St Lukes-Manly High- Manly- Bluff
677a	Rockdale Stn - Endeavour HS - Miranda Stn	691a	Nth Sydney Boys & Girls - Epping Stn	716a	Ryde - Epping BHS
677b	Endeavour High-Rockdale Stn	691c	Drummoyne PS - Chiswick	717	Marsden High-Ermington P.S.-Eastwood Stn
677c	C. Bros Wav - M'bra Jct	692	Nth Sydney Stn - Nth Sydney Girls	718	North Rocks & Loyalty Rds - Mt St Benedicts
677d	Moriah College	692a	Belmore Stn - Kingsgrove Stn	719	Wheeler Hts - Manly HS
678	Brighton PS - Rockdale Stn	692b	G'hills & L'pol Rds - K'gve High	719a	Parramatta-Macquarie BHS-St.Patricks
678a	Endeavour High - Kogarah	692c	Canterbury & Tincombe Rd-Kingsrove High	719c	S'forth - Balg BH - Manly HS
678b	Endeavour HS - Ramsgate & Rocky Pt Rds	692d	Drummoyne - Burwood Post Office	720	Allambie-B Hill Schls-St Johns Nweena
678e	Taren Pt Rd and Toorak Av-Rockdale Stn	692e	Nth Sydney Stn - Nth Sydney Girls	720a	Rydalmere-Cumberland HS
678f	R'wick Highs - Albion & McPherson	692f	Campsie Stn - Kingsgrove Nth High	721	St.Patricks-Telopea-St.Kevins-Eastwood-Eastwood PS
679	Moate Ave & Bay St-Moorefield GHS	692h	St Ursulas - Croydon Pk	722	Avalon-Tay Pt-Pitt Hse-Bvale Shops
680	De La Salle - Liverpool Rd & Wallis Ave	692i	K'gve Primary - Campsie Stn	722a	DY - Ox Fall Grm- Mack GH- Balg Boys
680a	Fort St HS - Ashfield BHS - S'field Stn (Sth)	692j	La Perouse - Marcellin/Brigidine	722b	Avalon - Tays Pt - Pwater Hse
680b	Strathfield GHS - Liverpool Rd & Frederick St	692k	K'gve High - Rockdale Stn	722c	Manly - Balg Boys
680c	R'wick Highs - Bondi Beach	692m	D'moyne PS - Burwood Stn	722d	DY - Ox Fall Grm- Mack GH- Balg Boys
680d	R'wick Highs/Brig/Wav Coll - bonb-nobo	692n	Rosebank College - Canterbury Station	722e	Marist Sisters Woolwich - Five Dock
680e	Dover Hts - Moriah College	692q	Earwood Coles - B'wood Girls	723	B'vale Depot-All Hts-Skyline- Cromer HS
680f	BJI - Yeshivah Coll	692s	C'bury & Beamish - K'gve High	723a	MacArthur GHS-Stewart & King Sts Ermington
680g	yesh - osol	693	Georges River Rd & Brighton Ave - K'gove HS/PS	724	St Patricks Dundas - Eastwood - Ryde
681	BJI - Wav Coll/Rose Bay Se.Coll	693a	Concord HS - Drummoyne	725	Eastwood - Marist Sisters Woolwich
681a	St Clares Wav - Sth Head Cem	693b	Drum. P.S to Drum. Civic Centre	726	Parramatta East PS-Parramatta
682	St Patricks Strathfield - Burwood Stn	693c	South Sydney High - La Perouse	726a	Parramatta East PS-Parramatta
682a	Mascot Primary-Rose Bay Secondary College	693d	Brigidine - Malabar	727	Busaco Rd - Eastwood
682b	Rose Bay Sec Coll - R'wick Jct	693e	Eddy Ave - St Spyridon - Matraville H.S.	728	Epping Stn - OLHC - Epping Primary
683	Bethlehem CollegeAshfield Boys - Strathfield Stn	693f	Domremy Five Dock - Burwood Stn	729	Marsden High-Ermington P.S.-Eastwood Stn
683a	Broadway Enfield- St.Patricks Strathfield	694	Concord West - Domremy College	730a	St Patricks Dundas - Eastwood
683b	St.Pats.Coll-Ashfield Stn	694a	Epping Boys - Macquarie Centre	731	LCove Public - Lane Cove West Public
683c	Strathfield GHS - David & L'pool Rd Burwood	694b	La Per - Syd Highs	731a	Seaf - Bluff - Balg & S'forth Schls
683d	Discovery Cove - Sth Sydney HS - Maroubra	694c	Mville HS - La Per	732	St Aug - Balgowlah Hts - Manly Wharf
683e	Rose Bay Sec.Coll. - Bondi Jct	695	OLHC Epping - North epping	732a	Gladesville - Church + Morrison Rd Putney
684	Watsons Bay - Reddam House	695a	Domremy College - Belmore	732b	Seaf-seap-stce-mcgh
684a	Bexley Rd & William St-K'grove HS	695b	Belmore - Domremy Five Dock	733	Hunters Hill High - St Ignatius
684d	Homebush PS - Strath.Stn	695c	Nth.Sydney GHS - Lane Cove West	734	West Ryde - Chatswood
684f	cams-bexn-kihs-stur-sggh	695d	Milsons Pt - Lane Cove West	735	Villa Maria - Woolwhich Wharf
684g	St.Ursulas-Kingsgrove Depot	696	Concord Shops - Domremy College	736	DY-S Maris-Mach GH-Manly & F'water HS
684h	S'field Stn (Sth) - St.Pats-H'bush HS-H'bush PS	696a	Lane Cove & Lorna Ave-Marist Sisters	736a	Manly - Cromer HS - Cromer PS- Coll Plat PS
685	Marcellin Senior - Pagewood	696b	Maroubra Jct - Maroubra Bay Public	736b	St Pauls - S Maris - DY - Nweena
686	Nth Sydney Schools - Denistone East	697	Domremy College - Campsie Stn	736c	FHS - BHHS - STEM - MANW
687	Rose Bay Sec.Coll - B'vue Hill PS - BJI	698	Mar Jct - St Brigettes	736d	Harbord & Nth Curl Curl Schls
		698a	Chifley-Mbar Cath/Chifley PS		
		698c	Marcellin Snr-Matraville (Moorina Ave)		
		698d	M'bar PS - M'ville Hotel		
		698e	Pwood Marist - La Per		
		698g	La Per - Sth Sydney High		
		699a	Kingsgrove Depot - Domremy College		
		699b	Maroubra Bay PS - Maroubra Jct		
		699c	St.Brigettes - Maroubra Jct		

736e	St Gerrards - Carlingford high - Epping Stn	752d	StPaul's - S Maris - N'weena	777	Cromer Primary - Whlr Hts
737	Milsons Pt-Manly Wharf (Via Balg.Hts)	753	F Forest - St Lukes - Stella Maris	777a	Mount St Benedicts - Westfield Nth Rocks
737a	StPaul's- S.Maris- N'weena	753a	Primrose Av - B Bay - F Forest PS	778	Stella Maris - D.Why - Collaroy Plat.
737b	Manly - Balg & Sforth Schls	753b	Mill drive - Nth rocks Prim	778a	Oxford Falls Grammar - Seaforth
737c	Blessed Sacrament-Seaforth	753c	Christ The King North Rocks - Farnell Ave	778b	Baulkham HHS to Westfield Nth Rocks
737d	Nth.Syd.GHS - Manly Wharf	754	F Forest - B Hill Schs - St Johns N'weena	779	Manly High - Dee Why - Pwater Hse
737e	Murray Farm Prim - Don Moore Comm Centre	754a	Harbord - B Hill HS - Ox Falls Gram - Frstway	779a	Murray Farm Public & James Ruse to Parramatta Stn
737g	SCEGGS-Manly Wharf (Via Balg.Hts)	754b	F Forest - St Aug - S Maris - St Pauls	780	Coll. Plat - Mackellar & Pitt Hse - Nub Jct
737h	Mackellar Girls - W. Mall - Brookvale Oval	754c	Lane Cove West - Lane Cove Primary	781	Queenwood - Collaroy
737j	Queenwood-Seaforth	754d	Cromer HS - B Hill Schls - F Forest	781a	Nth Nbeen PS - Mona Vale Hosp
738	B'vale - Harbord Schls	754f	Forest & B Hill HS - Bvale	781b	Statham & North Rocks Rd to Baulkham Hills H.S.
738a	C. Plat- D.Why Schls-Freshwater- Balg. Boys	754g	Manly HS - St Johns - F Forest	782	M Vale - C Plat - Cromer Hts
738b	St Pauls - Stella Maris - Dee Why - N'Veena	754j	Frenchs Forest to Stella Maris	782a	Nweena - Cromer HS - Nbeen - M Maria
738c	Marist Sisters- Church + Morrison Rd Putney	755	M Vale - Mackellar GHS	782b	Mackella GH - Nbeen
739	Wingala - Harbord Schls - Manly	755a	Parramatta Stn - MacArthur Girls High	782c	Mount St Benedicts - Mill drive
739a	St Lukes - Manly & Fwater HS - Manly	755b	M Maria - DY - Coll Plat - S Maris	782d	Narrabeen - St Lukes
739b	Freshwater high Senior Campus - Manly	755c	Cromer HS - Brookvale	783	F Forest - Pwater Hse
739c	Balgowlah Boys - Manly - Q'cliff Bridge	756	Westfield North Rocks - St Patricks	783a	Mona Vale - Newport PS
739d	Epping Stn - Muirfield high & baulkalm Hills	756a	McCarrs Ck - M Vale Schs	783b	Balg BH - S Maris - St Aug - N Nbeen
739e	St Augustines - Manly	757	Careel Hd Rd - M Vale Schs	783c	P'water HS - Mater Maria
740	Sforth - N Balg - Mack GH	757a	McCarrs Ck-PwaterHS- Mona Vle Schs	784	Careel Hd Rd - Pwater HS - Mona Vle Schs
740a	Manly - Manly West PS - S'forth Inf	757b	M Maria - M Vale Schs - Church Pt	784a	Manly High - Mona Vale
740c	St Lukes - Manly & Fwater HS - Ban Bay	757c	Christ of King School - Westfield North Rocks	784b	Pwtr Hse - Nbeen/M Vale Schs - Bjoey HS
740d	Sacred Heart Mosman- Balgowlah Shops	757d	Nth N'been PS - Pwater HS	784c	Mackellar GHS - Mona Vale
741	Seaforth - North Balg - Manly - St Aug	758	Epping Stn - Mt St Benedicts	784d	St Pauls - S Maris - Mona Vale
741a	St Kierans - Seaforth	759	Carlingford High - Epping Stn	784e	Narrabeen HS - Mona Vale
741b	Stella Maris - Manly Vale -Nth Balg - Seaf	759a	Mona Vale PS - W'wood	784f	Pwtr Hse - Nbeen/M Vale Schs - Bjoey HS
742	Manly-Manly & Fwater HS-Manly West PS	760	Avalon-M Vle & Nbeen Schs-St Luke-Manly PS	785	Bvale - Pwater Hse - DY - M Maria
742a	Bvale - Skyline - St Kierans	760a	Manly - St Lukes - Pwater HS - Nweena	785a	Avalon - Mona Vale Hosp - Mater Maria
742b	St Lukes-Manly HS- St Aug-Skyline	760b	Coll Plat - Pwater Hse - St Josephs	785d	Cromer - DY - M Maria - Mona Vale Schs
742c	St Pauls - Manly - Skyline	760c	Cromer HS - Coll Plat	785e	Cromer Heights - Pittwater High
742e	Mackellar Girls to Beacon Hill	760d	Baker & Pennant Hills - St Patricks	785f	Warringah Mall - Pittwater High
742f	Ryde Depot - Marist Brothers Eastwood	760f	Manly - St Lukes - Pwater HS - Nweena	785g	Beacon Hill - Pittwater High
743	Skyline - Stella Maris - ST Pauls	761	St Patrick's - Westfield North Rocks	787	Harbord - N Curl Curl - DY - Newport
743a	Manly - Manly West PS - Bvale Schls	762	Parramatta Stn - James Ruse High	787b	Pittwater HS - Newport-
743b	Eastwood - Ryde Secondary College	762a	Wingala - N Curl Curl PS	788	Q'wood Sch - St Aug - Avalon
744	Manly - Mackellar GH	763	Dee Why - Dee Why PS	788a	P'water HS - Avalon - Bjoey HS
744a	Milsons Pt- Manly Wharf	763a	Mack GH - N Curl Curl - Dee Why	788b	Bjoey HS - Avalon PS - DY
744b	Eastwood - Ryde Secondary college	763b	St Johns Nweena - Nweena	788c	Mona Vale Schs - Avalon
744c	Nth.Syd.GHS-Manly Wharf	763c	Carlingford High - Carlingford Station	788d	Mater Maria - Avalon
744d	Manly Vale Primary - MacKellar Girls High	764	Carlingford High - Epping Station	788e	Manly HS - Avalon
744e	Mackellar Girls - Manly Vale Public	764a	Oxford Falls Grammar - Balg Shops	788f	Mackellar GH - Avalon
745	Bvale - B Hill & Forest HS - F Forest	766	Oxford Falls Grammer F Forest PS - Seaforth	788g	Narrabeen HS - Central Railway
745a	All Hts-St Kierans-Mack GH-Manly Vale PS	768	Sforth - St Lukes - Roseby Prep	788h	Avalon - Stella Maris - St Paul's
745b	Eastwood - Ryde Secondary (Express)	769a	F Forest - DY Schs - St Aug	788k	P'water HS - Careel Head
745e	Balg BH - Skyline	769b	Sforth - F Forest	789	Bilgola Plat - Mater Maria
746	Coll Plat - St Lukes - Manly	769c	Mackellar Girls - Skyline Shops - F Forest	789c	St Lukes - Bilgola Plat - Avalon
746b	St Rose - Cromer PS - Nweena PS - DY	769d	Oxford Falls Grammer - Manw	789d	Pittwater HS - Taylors Point
746c	Wheeler Hts - S Maris - St Paul's	769e	Manly HS - Eastern Valley Way Sunnyside Cres	789e	Milsons Point - Avalon
746d	Manly & Fwater HS - St Aug - Coll Plat	769g	F Forest - DY Schs - St Aug	790	Palm Bch-Avalon PS-N'port PS-N'been HS
746e	N'been PS - St Josephs - Mona V Hosp	769h	F Forest - DY Schs - St Aug	790a	Balg BH - St Kierans - St Aug - Avalon
746f	St Aug - Coll Plat	769k	F Forest - DY Schs - St Aug	790b	Pittwater House - Avalon
747	St Pauls - Manly PS - S Maris - Whlr Hts	770	Milsons Pt - Clontarf	790c	Mater Maria - Palm Beach
747a	St Pauls - Manly PS - S Maris - Whlr Hts	770a	Manly Wharf - Glenaeon Senior	790d	Pitwater Park - Barren High
747b	St Pauls - Manly PS - S Maris - Whlr Hts	771	Manly - Vic Cross - Milsons Pt - C Nest	791	Avalon-B Plat-Clareville-Loquat Valley Schl
747c	St Pauls - Manly PS - S Maris - Whlr Hts	771a	Avalon - Mlsn Pt	791a	Avalon - A'lon PS - B Plat - Avalon
748	St Pauls - S Maris - Coll Plat	772	Baulkham Hills High- Beecroft Stn	791b	Loquat Valley-Palm Beach
748a	FHS-BHHS-Whlr Hts & Coll Pit PS- Warr Mall	772a	Avalon - Milsons Point	791c	Bjoey HS - avap
748b	Mater Maria - Coll Plat	772b	Harbord - Manly - Balg - Milsons Pt	791z	Bilgola Plateau Prim - Avalon
748c	Mackellar-St Aug- Coll Plat	772c	Manly - Balg - Milsons Pt	792a	Bjoey HS-Stokes Pt-Avalon Schs
749	Milsons Pt - Manly - N Curl Curl	772d	crhs - croh	793	Avalon - Whale Bch - Avalon Schs
750	B'vale - Allambie Hts PS- St Augustine's	773	All Hts - Bvale - Nweena - B Hill HS - Cromer	793z	Avalon Primary - Whale Beach - Avalon Primary
751	James Ruse High - Parramatta Stn	773b	F Forest - B Hill - St Aug - FHS - Whl Hts	795	Avalon PS - M Regina - Avalon
752	Freshwater High - N'weena	774	N'been HS - Collaroy	799a	F Forest - DY Schs - St Aug
752a	Mackellar Girls - N'weena - Cromer	774a	Epping Stn - James Ruse High	890	Quay - Uni of NSW
752b	Muirfield High - Parramatta	775	Bluff - Manly HS - Cromer HS - St Lukes	891	Eddy Av/Rail Sq - Uni of NSW
		775a	James Ruse High - Epping Stn	892	Quay - Eddy - Uni ( High St)
		775b	Nbeen HS - Neut Bay Jct	895	Uni of NSW - Railway Sq.
		775d	St Kierans - Brookvale		

## SYDNEY BUSES SCHOOL BUS ROUTES

	School	Non-School	Total	% of total
# of routes	764	291	1055	72%
# of trips	1614	32460	34074	5%
Trips per route	2.1	112	32	7%
Inbound	589	16203	16792	4%
Outbound	1026	16255	17281	6%
# of points	71000	172430	243430	29%
Points per route	93	593	231	40%
# of headsigs	346	115	461	75%

