

The Times

September 2012

A journal of transport timetable history and analysis



with Sean Loop.

TRAIN I.D. : TRAIN TYPE :	Reg. Alt. A705 ICR	
	Arr.	Dep.
GALWAY		06.35
Galway Loop		06.37
Athenry	06.49	06.51
Attymon		06.57½
Woodlawn		07.03
Ballinasloe		07.11
Athlone	07.26½	07.28½
Clonnydonnin		07.36½
Clara		07.44
Tullamore	07.51	07.53
Geashill		08.00½
Portarlington	08.11½	08.13½
Monasterevin		08.18
Cherryville Jctn.		08.21
Kildare		08.23
Newbridge		08.27½
Sallins		08.32½
Hazelhatch		08.39
Inchicore		08.47
DUBLIN Heuston	08.53	

TRAIN I.D. : TRAIN TYPE :	Reg. Alt. A312 6 ICR	
	Arr.	Dep.
DUBLIN Heuston		17.05
Inchicore		17.09
Hazelhatch		17.17½
Sallins		17.24
Newbridge		17.30
Kildare		17.35½
Cherryville Jctn.		17.37½
Monasterevin		17.41½
Portarlington	17.46½	17.48½
Portlaoise		17.57
Ballybrophy		18.09
Lisduff		18.14
Templemore	18.19	18.21
Thurles	18.27½	18.29½
Limerick Jctn.		18.50
Charleville	19.07½	19.09½
Mallow	19.24	19.26
Banteer	19.38½	19.40½
Millstreet	19.50½	19.52½
Rathmore	19.59½	20.06
Killarney	20.23½	20.26½
Farranfore	20.45	20.46
TRALEE	21.01	

TRAIN I.D. : TRAIN TYPE :	Reg. Alt. A806 6 ICR	
	Arr.	Dep.
DUBLIN Heuston		18.30
Inchicore		18.34
Hazelhatch		18.42½
Sallins		18.49
Newbridge		18.55
Kildare		18.59½
Cherryville Jctn.		19.01½
Monasterevin		19.04½
Portarlington	19.09½	19.11
Geashill		19.20½
Tullamore	19.28	19.30
Clara		19.37
Clonnydonnin		19.44½
Athlone	19.54	19.56
Knockcroghery		20.10½
Roscommon	20.17½	20.19½
Castlerea	20.37	20.39
Ballyhaunis	20.51	20.53
Claremorris	21.05	21.07
Manulla Jctn.	21.18½	21.20½
Castlebar	21.26	21.28
WESTPORT	21.45	

**Inside: Tracks to the Field
Tracks to the Track & Field
Crystal ball clouds over**

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On the front cover

Bigger than Sydney's Royal Easter Show! Well— "sort of". The Irish Ploughing Championships attract crowds just as large, but it only runs for 2 to 3 days. Unlike the Royal, car-driving is not discouraged, but public transport by bus and train does take place. The arrangements for public transport are necessarily rather complex, especially when the Championships are held at the traditional location of Athy— as they were in 2011. There is no such a thing as a special train, but many regular trains have their schedules altered to serve stations from which a procession of buses trundles down what are often country lanes to get to the ploughing grounds. In the Championships the hay-burners shown on our cover are the exception, rather than the rule.



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Making tracks to the Ploughing Championships

Geoff Lambert and Wikipedia

The Irish National Ploughing Championships take place each year in the month of September. The 2012 Championships will be held at Heathpark, New Ross, Co. Wexford. The first inter-county ploughing contest took place in 1931 as a result of an argument between two lifelong friends, Denis Allen of Gorey, County Wexford and JJ Bergin of Athy, County Kildare. Each argued that their respective counties had the best ploughmen. This resulted in a challenge being called for. Therefore on Monday 16th of February 1931, the first National Ploughing contest took place in Mr W.K. Hosie's field at Coursetown in Athy. Since then, the National Ploughing Championships has grown in size, year on year. It has expanded from requiring a small field of 26 acres to needing over 700 acres of land today. Within this, the site now requires 220 acres for ploughing, 80 acres for trade stands and exhibition space, 400 acres of car parking and a demonstration area of approximately 25 acres. This dwarfs the Sydney Royal Easter Show in extent, even if not in attendance.

Since its inception, the National Ploughing Championships has become much more than just an annual inter-county competition; it has become an intrinsic part of Irish rural life. In 2009, 2010 and 2011, the Championships returned to their home at Athy. The ploughing site is at Cardenton on the outskirts of Athy. The National Ploughing Championships took place from Tuesday 20th – Thursday 22nd of September 2011. Last year marked the 80th anniversary of the National Ploughing Championships with over 1,000 exhibitors showcasing their products. The event attracted over 180,000 people with visitors coming from all over Ireland and the world

Athy is southwest of Dublin, on the Waterford single-track rail line, which sees only 4 trains per day. But to the north of Athy runs a double track main line which funnels into Dublin trains from Galway, Limerick, Tralee and Cork. A Google Earth image of Athy reveals that 80% of the land use is crop land and pasture and nearly all of it shows the signs of being ploughed regularly. This is the home of the peat bog and it is hard in Google Earth to distinguish bog, from farm, farm from ploughing "arena".

With 400 acres of car parking obviously a lot of people use private transport. The police put out a series of 9 gaily-coloured maps guiding drivers to the site.

The train service from Dublin seems to have been sufficient to bring visitors to



Bus Éireann transfers and the Athy town shuttle services: Regular Clonmel and Kilkenny bus service - N78: Regular bus services operated by Bus Éireann from the Kilkenny and Clonmel areas travel through Athy via the N78. If there is a significant increase in numbers a drop off point in the Kilkenny Industrial Est. will be investigated. A timetable of all services will be available through Bus Éireann.

Train station transfers

Athy Station: Bus Éireann will be providing a bus transfer service from Athy train station from 6.41 am on each morning of the event. There are four appointed times for drop offs and pick ups both in the morning and in the evening. Buses will be utilised for this. The route is as follows: From Athy station on to Leinster Street straight through the town to right turn on to Woodstock Street where passengers will alight on Woodstock Street and walk to the site. Pick up in the afternoon will be from outside the hospital.

Kildare Station: Bus Éireann will be providing a bus transfer service from Kildare station to the site. The service starts from 6.50am from Kildare station with the return service starting at 15.30pm. There will be a number of buses utilised for this service and the route is as follows: Travel from Kildare to Nurney and on to Booley X. Turn right for Athy, right at Geraldine X to Bert X. travel to Cluain Mhuire where passengers disembark and are picked up at the same spot.

Portarlinton Station: Bus Éireann will be providing a bus transfer service from Portarlinton station to the site. The service starts from 6.50am from Portarlinton with the return service from 3.30pm. There will be a number of buses utilised for this service. Route is as follows: Travel from Portarlinton to Monasterevin and on to Kilberry via route 2 to Bert X. Travel to Cluain Mhuire where passengers disembark and are picked up at the same location.

Portarlinton train station to Cardenton, Athy, Co Kildare – services to operate ex Portarlinton rail station between 06:50 and 11:30 with return services operating ex Cardenton in Athy between 15:30 and 18:30

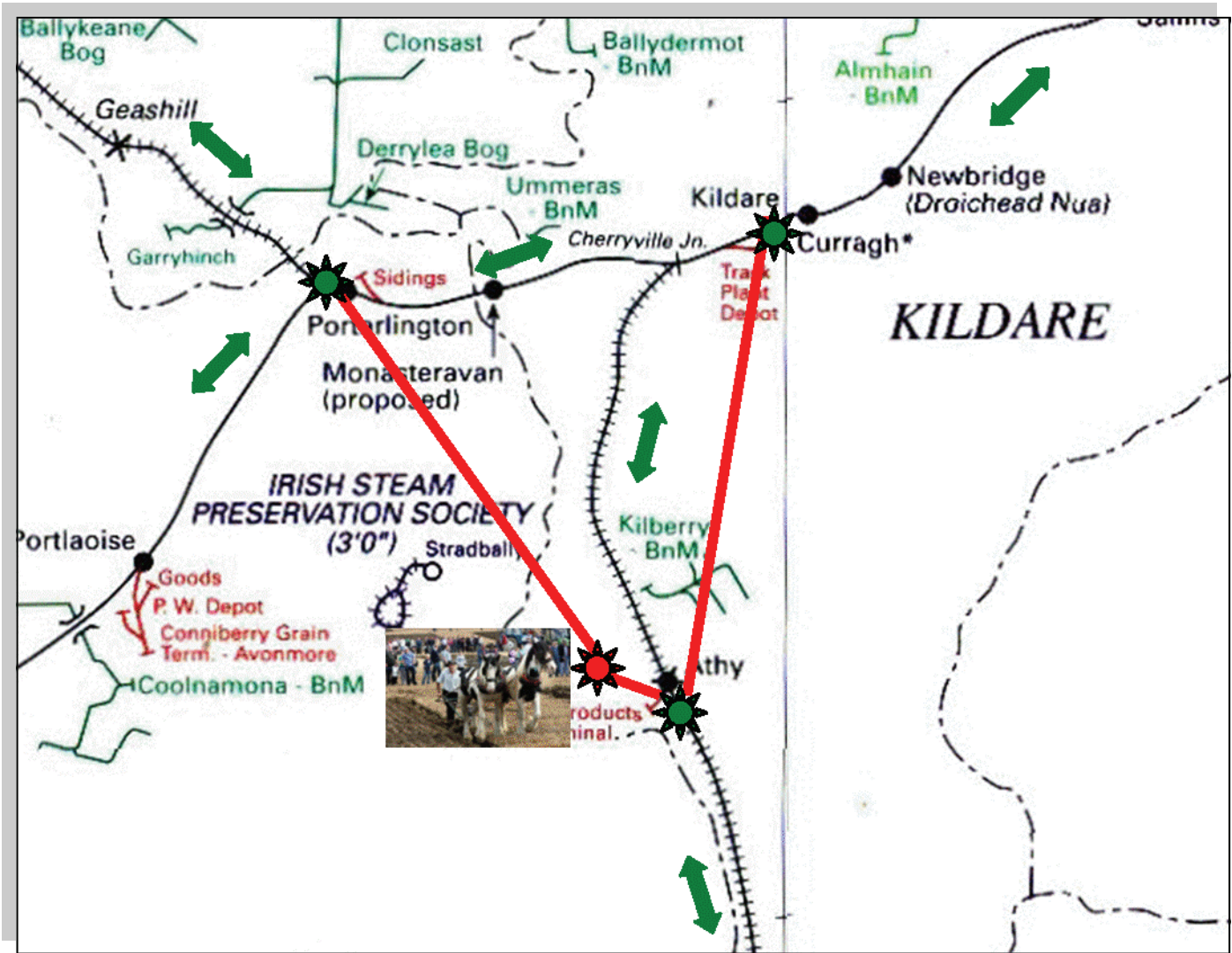
Kildare train station to Cardenton, Athy, Co Kildare – services to operate ex Kildare train station between 06:50 and 11:00 with return services operating ex Cardenton in Athy between 15:30 and 18:30

Athy train station to Cardenton, Athy, Co Kildare :Services to operate ex Athy rail station between 07:15 and 10:00 with return services operating ex Cardenton in Athy from 19:20

Athy town shuttle – shuttle service between Athy train station and the event site in Cardenton, Athy. This shuttle will operate from 9:00-13:00 from Athy to the site and 14:00- 18:30 from Cardenton to Athy station in the evening. The buses will be leaving approximately every 20 minutes.

From Kildare/Portarlinton to Cardenton/ Coursetown, Athy bus only tickets cost €7 single and €10 return for adults. There is a special offer on a child return fare for €7.

From Athy train station to Cardenton/ Coursetown there are special shuttle services operating, they cost €3 single and €5 return for both adults and children.



Athy, but this line was not really convenient for those coming from western towns. These people started out on trains but switched to buses at Portarlinton. The map on page 4 attempts to summarise the many ways of getting to the competition, with green arrows for trains and red lines for the connecting buses.

A number of express trains on the line through Portarlinton ran to altered timings and had an extra Portarlinton stop inserted, as illustrated on our page 5, which shows an extract from the Iarnród Éireann (IE) Weekly Circular No. 3472. This document is itself something of an eye-opener in which we find out that IE times trains to the 1/2 and even 1/4 minute and still measures distances in miles and yards. A number of these Weekly Circulares turned up in a Roseville (NSW) AATTC grab-box, but how they came to travel from Dublin to Roseville is something of a mystery.

A very complex timetable of buses ran to the ploughing fields. These were organised by Barton Transport, Bus Éireann & South Kildare Community Transport. For the most part, these buses connected with trains on nearby line an at Athy station itself. The websites for these services were rather "Irish", so I have tried to summarise how some of the connections were made in the table at the top of page 5. The regular Bus Eireann timetable for Athy is shown at the right on this page.

Some of the connections between buses and trains seem overly long, but I imagine travellers to the Championships take it all in good spirit, as indeed they do for the Royal.

Special timetables are also run by operators for events such as the all-Ireland Ladies Wrestling Championships— but we will have to leave that for another article.

Bus Éireann Table No. **130**

DUBLIN – KILCULLEN – ATHY

MONDAY TO SATURDAY										
SERVICE NUMBER	007	007	130	007	007	130	007	130	007	007
	EXP	EXP	EXP	EXP	EXP	SX	EXP	EXP	EXP	EXP
Halfpenny Bridge dep.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dublin (Busáras)	0900	1130	1315	1330	.....	1530	1730	1755	.....	2030
Naas	0945P	1215P	1405	.....	.....	1630P	1800	1830P	1850	2115P
Kilcullen (Hideout)	1000	1230	1425	.....	.....	1645	1810	1845	1905	2130
Athy	1020	1250	.....	1450	.....	1705	.....	1905	.....	2140

SUNDAY & PUBLIC HOLIDAYS							
SERVICE NUMBER	007	007	007	007	007	007	007
	EXP	EXP	EXP	EXP	EXP	EXP	EXP
Halfpenny Bridge dep.
Dublin (Busáras)	0930	.....	1200	1400	1600	.....
Naas	1010P	.....	1240P	1440	1640P	.....
Kilcullen (Hideout)	1025	.....	1255	1455	1650	.....
Athy	1045	.....	1315	1515	.....	1850

MONDAY TO SATURDAY										
SERVICE NUMBER	130	130	130	130	007	007	007	007	007	007
	SX	SX	SO	.....	EXP	EXP	EXP	EXP	EXP	EXP
Athy dep.	0845	.....	.....	.....	1000	1200	1400	.....	1710	1755
Kilcullen (Hideout)	0705	0755	0805	0935	1015	1215	1415	.....	1725	1810
Naas	0720	0815	0820	1000	1030D	1230D	1430D	.....	1740D	1825D
Dublin (Busáras)	.....	0910	0920	1045	1130	1330	1530	.....	1830	1915

P: - Pick-up stop only. D: - Drop-off stop only. R: - Request stop.
 No services on Christmas Day. See pages 117-118 for details of services on St. Stephen's Day.
 ALL SERVICES PICK-UP (FROM DUBLIN) AND SET-DOWN (TO DUBLIN) AT NEWLANDS CROSS.
 SEE TABLE 4 FOR CARLOW/DUBLIN SERVICES & TABLE 7 FOR KILKENNY/ATHY/DUBLIN SERVICES.
 SX = Saturday excepted.
 SO = Saturday only.
 EXP= Expressway service.

SUNDAY & PUBLIC HOLIDAYS							
SERVICE NUMBER	007	007	007	007	007	007	007
	EXP	EXP	EXP	EXP	EXP	EXP	EXP
Athy dep.	1050	.....	1320	.....	1620	.....
Kilcullen (Hideout)	1110	.....	1340	.....	1640	.....
Naas	1125	.....	1355D	.....	1655D	.....
Dublin (Busáras)	1215	.....	1445	.....	1745	.....

P: - Pick-up stop only. D: - Drop-off stop only. R: - Request stop.
 No services on Christmas Day. See pages 117-118 for details of services on St. Stephen's Day.
 ALL SERVICES PICK-UP (FROM DUBLIN) AND SET-DOWN (TO DUBLIN) AT NEWLANDS CROSS.
 SEE TABLE 4 FOR CARLOW/DUBLIN SERVICES & TABLE 7 FOR KILKENNY/ATHY/DUBLIN SERVICES.
 EXP= Expressway service.

For further information phone Bus Éireann Dublin (01) 8366111,
 or see Homepage: www.buseireann.ie

To/from Portarlington

Special 5.					
Outward			Return		
Cork dep.	5.05		Cardenton dep.	A222 alt 16.30	
Mallow dep.	5.28		Portarlington arr.	17.15	17.40 SO (17.00 ex Heuston)
Limerick Junction dep.	6.09		Limerick Junction arr.	18.32	
Portarlington dep.	7.20	7.30	Mallow arr.	19.05	
Cardenton arr.	8.10		Cork arr.	19.30	
Special 1.					
Outward			Return		
Cork dep.	5.05		Cardenton dep.	A224 alt 17.45	
Mallow dep.	5.28		Portarlington arr..	18.30	18.45 SO (18.00 ex Heuston)
Limerick Junction dep.	6.09		Limerick Junction arr.	19.48	
Portarlington dep.	7.20	7.30	Mallow arr.	20.15	
Cardenton arr.	7.10		Cork arr.	20.50	

THURSDAY 22ND SEPTEMBER, 2011 (CONTD.)

PLOUGHING CHAMPIONSHIPS (CONTD.)

TRAIN I.D. : TRAIN TYPE :	Reg. Alt. A220 MKIV		Reg. Alt. A222 MKIV		Reg. Alt. A224 MKIV		Reg. Alt. A226 MKIV	
	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.	Arr.	Dep.
DUBLIN Heuston		16.00		17.00		18.00		19.00
Inchicore		16.04½		17.04½		18.04½		19.04½
Hazelhatch		16.13		17.13		18.14		19.13
Sallins		16.18½		17.18½		18.20½		19.18½
Newbridge		16.24½		17.24½		18.27½		19.24½
Kildare		16.29		17.29		18.33		19.29
Cherryville Jctn.		16.31		17.31		18.35		19.31
Monasterevin		16.34		17.34		18.39		19.35
Portarlington	16.40½	16.42½	17.39½	17.41½	18.45½	18.47½	19.42½	19.44½
Portlaoise		16.51½		17.50½		18.56½	19.56	19.58
Ballybrophy		17.03½		18.02		19.08½	20.11½	20.12½
Lisduff		17.08½		18.06½		19.13½		20.17½
Templemore		17.13		18.11		19.18	20.23½	20.24½
Thurles	17.20	17.22		18.16½	19.25	19.27	20.32	20.34
Limerick Jctn.	17.44½	17.46½	18.34½	18.36½	19.49½	19.51½	20.56½	20.58½
Charleville		18.05½		18.54½	20.10	20.12	21.18	21.19
Mallow	18.19½	18.21½	19.07½	19.09½	20.26½	20.28½	21.33½	21.35½
Rathpeacon		18.37		19.24		20.44		21.50
CORK	18.46		19.33		20.53		21.59	



Making Tracks to the Olympic Games

By **GORDON DUDMAN**—who helped with the task

The North London Line, is a constituent part of the rail concession known as 'London Overground'. The concession is offered by Transport for London (TfL) as opposed to a rail franchise which is offered by the Department for Transport (DfT). The principal difference between a Concession and Franchise is that TfL specify the train service to be provided along with the fares policy; this to ensure seamless integration with the London Underground and London Bus networks. LOROL (London Overground Rail Operations Limited) holds the current Concession and are responsible for all aspects of train and station operation. In a franchise, the holder has a degree of freedom in which the perimeters set for first and last trains and minimum frequency. They are also free to set their own fares policy.

The service provides an important link from South of the River Thames (Richmond and Clapham Jct; both with important connections to a wide area of Surrey, Sussex and Berkshire) to the Eastern parts of London. Several parts of the route are extensively used by freight; from a wide swathe of Southern England via Clapham Jct towards Willesden and the West Coast Main Line and between Camden Road and Stratford which provides to major ports sitting on England's east coast. Added to this, is Underground's District Line which operates between Gunnersbury and Richmond.

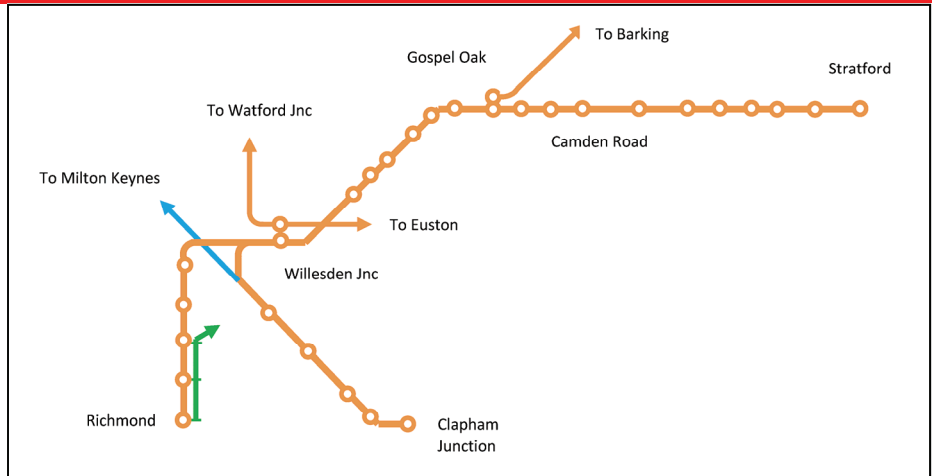


Fig 1 The North London Lines runs from Richmond to Stratford (the home of the Olympic Park). Whilst the West London Line runs from Clapham Junction to Willesden

The route has recently been upgraded and a new fleet of dual voltage 650vDC and 25kv AC Class 378 units have been introduced across the whole LOROL network.

The West London Line only operates on the 650vDC system. The North London Line operates on a mix of voltages over several route sections. Even before the IOC announced on 6th July that London was to host the 2012 summer games, it evident from the Bid Transport Plans that considerable investment would be needed on the North London Line. Prior to the Olympic Bid, the service pattern was 4

trains per Hour between Richmond and Stratford. The journey times were two schedules of 61 minutes and two of 63 minutes. Over the West London Line there were two trains per hour between Clapham Jct and Willesden Jct (High Level). Schedules were 20 minutes to Clapham Jct and 22 minutes to Willesden Jct. The route is shared with a train operated by Southern from

During the morning and evening peak periods, on the West London Line trains gets extended from Willesden Jct to Stratford and a shuttle runs between Camden Road and Stratford, thus providing 6 trains per hour over the eastern end of the route.

The Olympic Bid Transport Plan envisaged 8 trains per hour running all day for the greater part of 3 weeks for the Summer



Fig 2- A Class 378 unit sits at Crystal Palace Croydon to Milton Keynes. This service does not serve Willesden Junction, and operates once per hour. [Sunil Prasannan]

		LO	LO			LO	LO	LO	LO
Stratford Low Level d		09 52	10 0	Richmond		09 57	10 11	10 27	10 41
Hackney Wick		09 56	10 1	Kew Gardens		10 00	10 14	10 30	10 44
Homerton		09 58	10 1	Gunnersbury		10 03	10 17	10 33	10 47
Hackney Central		10 00	10 1	South Acton		10 05	10 19	10 35	10 49
Dalston Kingsland		10 03	10 1	Acton Central		10 08	10 23	10 38	10 53
Canonbury		10 05	10 2						
Highbury & Islington		10 08	10 2	Willesden Jn. High Level		10 14	10 29	10 43	11 00
Caledonian Rd & Bamsbury		10 10	10 2			10 14	10 29	10 44	11 00
Camden Road		10 14	10 2	Kensal Rise		10 17	10 33	10 47	11 03
Kentish Town West		10 16	10 3	Brondesbury Park		10 19	10 35	10 49	11 05
				Brondesbury		10 21	10 37	10 51	11 07
Gospel Oak		10 19	10 3	West Hampstead		10 22	10 38	10 52	11 08
Hampstead Heath		10 20	10 3	Finchley Road & Frognal		10 24	10 40	10 54	11 10
Finchley Road & Frognal		10 23	10 3	Hampstead Heath		10 27	10 43	10 57	11 13
West Hampstead		10 24	10 4	Gospel Oak		10 29	10 45	10 59	11 15
Brondesbury		10 26	10 4						
Brondesbury Park		10 27	10 4	Kentish Town West		10 31	10 47	11 01	11 17
Kensal Rise		10 29	10 4	Camden Road		10 33	10 49	11 03	11 19
Willesden Jn. High Level		10 32	10 4	Caledonian Rd & Bamsbury		10 36	10 52	11 06	11 22
		10 33	10 4	Highbury & Islington		10 39	10 55	11 09	11 25
Acton Central		10 38	10 5	Canonbury		10 41	10 57	11 11	11 27
South Acton		10 42	10 5	Dalston Kingsland		10 44	11 00	11 14	11 30
Gunnersbury		10 45	11 0	Hackney Central		10 46	11 02	11 16	11 32
Kew Gardens		10 47	11 0	Homerton		10 48	11 04	11 18	11 34
Richmond		10 53	11 1	Hackney Wick		10 51	11 07	11 21	11 37
				Stratford Low Level		10 59	11 14	11 28	11 45

Fig 3 – North London Line (Pre-Olympic Bid) Standard hour timetables

Watford Junction				Clapham Junction		10 03	10 05	10 35
Harrow & Wealdstone				Imperial Wharf				
Wembley Central				West Brompton		10 09	10 12	10 42
Willesden Jn. High Level				Kensington Olympia		10 12	10 15	10 45
Shepherds Bush				Shepherds Bush				
Kensington Olympia				Willesden Jn. High Level			10 27	10 57
West Brompton				Wembley Central				
Imperial Wharf				Harrow & Wealdstone		10 29		
Clapham Junction				Watford Junction		10 45		

Fig 4 – West London Line (Pre-Olympic Bid) Standard hour timetables

Games and 10 days for the Paralympic Games. To enable this to happen, some additional signalling would be required over the section of line between Willesden Jct and Camden Road. As part of other rail development plans, changes were already being planned for the section of route between Camden Road and Cannonbury. An extra signal was also required on this section over and above those already planned to ensure we could maintain 6 minute headways.

On the infrastructure front, there was a bottleneck between Camden Road and Cannonbury where there were only platform faces on the No 1 Lines (which only had 650vDC power supply – shown in Red on the plan below). There were parallel running lines to the north, known as the No 2 Lines; these were provided with the overhead 25kv AC power supply (shown in Blue) but no platform faces. Also there was a restrictive single line linking this route back into the North London Line through Cannonbury Junction. The lines shown in green have dual 650vDC and

25kvAC power supplies.

To facilitate the introduction of a new group of services over what is known as the East London Line, Network rail were required to re-model Highbury and Islington to create a northern termini for the East London Line. This resulted in a re-configuration of the No 1 and No 2 lines so that the principal running lines are in the middle and there is a (outer) relief line to both. The revised infrastructure came into full use in February 2012. These physical changes, along with need to make changes to traction supply, mean that an end to end journey time of 60 minutes is now possible.

Well in advance of the infrastructure being changed on the ground, the task was to design a timetable which would deliver 8 trains an hour between Willesden Jct and Stratford. The first challenge was to determine which element of the routes would act as a constraint. The first of these is the District Line between Gunnersbury and Richmond. For the greater part of the day,

this service operates 6 trains an hour, at an even 10 minute intervals from Richmond. This means that it's almost impossible to have trains depart Richmond at 15 minute intervals. The next constraint was the West London Line service from Clapham Junction. It was possible to run trains at 15 minute intervals, but these needed to fit around the Southern service as follows:

The challenge was also to ensure that we did not inadvertently destroy freight pathways over the West London Line. The timetable was built around the crossing moves required at Mitre Bridge Junction between Southbound Southern trains and Eastbound LOROL trains crossing the West London Line to reach the North London Line. Thus the Southbound Southern Service passes Mitre Bridge Junction at 0.14 and, with a small margin for late running; the LOROL service crosses the junction behind it at 0.19. This sets the pattern of departures from Clapham Junction at 0.59; 0.14; 0.29 and 0.44 minutes past each hour.

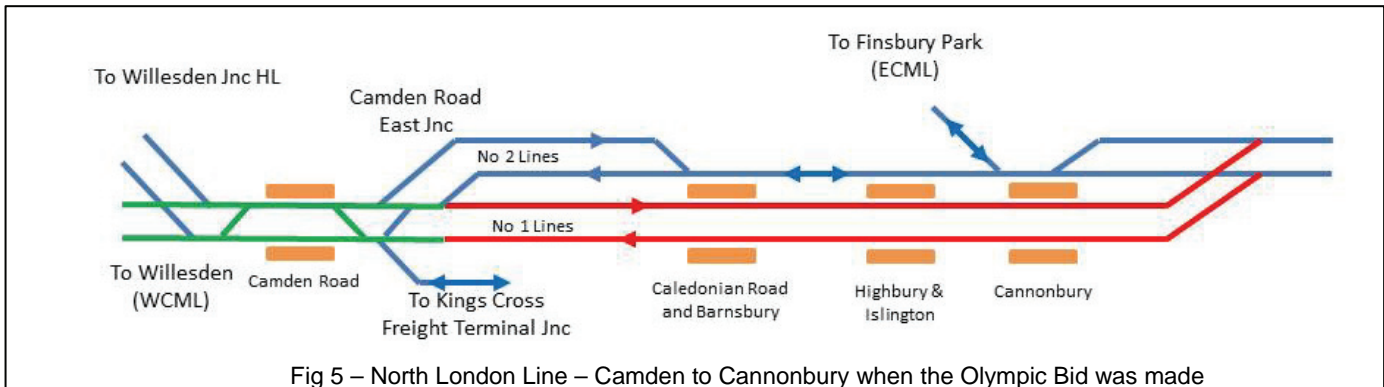


Fig 5 – North London Line – Camden to Cannonbury when the Olympic Bid was made

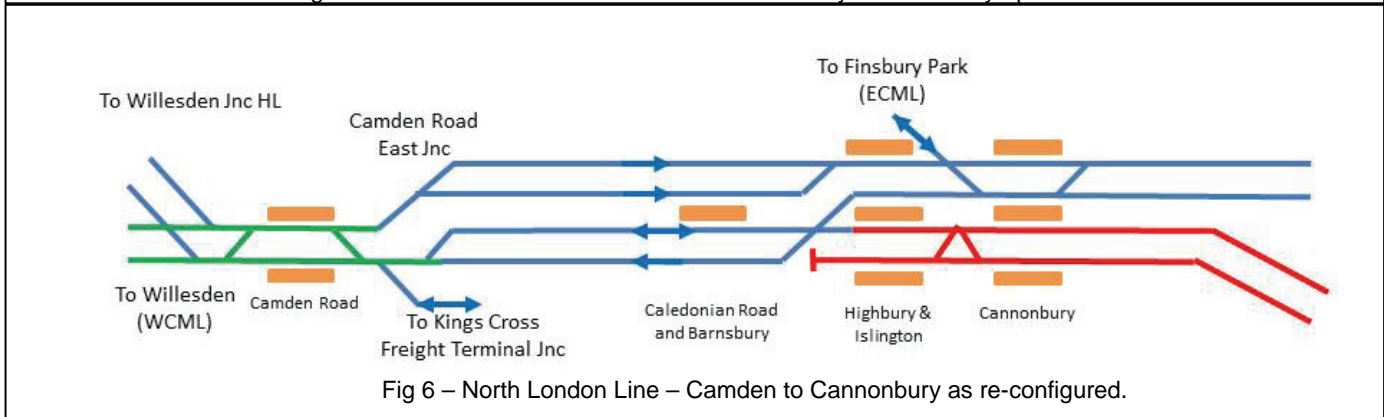


Fig 6 – North London Line – Camden to Cannonbury as re-configured.

The next question was to structure the inbound services from Stratford so that a train arrives at Clapham Junction a few minutes after a departure but with enough time to allow the train crew to change ends and take the same train back out. Could these also be linked to Clapham Junction arrivals at Stratford so that the two services were kept separate? Also the pattern of departures needed to give as near possible parallel moves through the junction at Willesden Junction High level and down the bank to Mitre Bridge and the West London Line. (See Fig. 8 for the complexity of this small part of the route) Putting all these factors together, this then gave an optimum set of departures from Stratford at a clock-face pattern of 0.00; 0.15; 0.30 and 0.45 minutes past each hour from Stratford. Finally, it was a case of fitting in the Services from Richmond. By selecting a pattern of 10 and 20 minute intervals, some robust pathways could be found into and out of Richmond without clashing with any of the District Line Trains. Although this split would also create some uneven service intervals, it had the advantage of continuing to allow some freight train movements to be fitted into the timetable by making use of the Relief Lines between Camden Road and Highbury and Islington. There are 'standard' Class 4 pathways over the Great Eastern Mainline to Stratford

which deliver trains onto the North London Line at 0.59 minutes past each off-peak hour and a combined Class 4 and Class 6 pathway 30 minutes later. Allowing for the time taken to perambulate over the myriad of crossings in the area, this gives an optimum passenger departure at 0.00 and 00.30 with a Class 4 or 6 pathway following. To allow these freights to progress all the way from Stratford to Willesden Junction it was necessary to have at least two 7

minute consecutive gaps so that a train could, if necessary, be leap-frogged using the relief line from Highbury and Islington.

Once all these factors had been played with, and reams and reams of timetables printed and poured over and run through simulation models, the optimum Olympic Timetable was, after 5 weeks work, signed off in early December 2009. (Fig 9) The decision was also taken that this timetable

Fig 7– Southern (West London Line) (Olympic Period) Standard hour timetables

		SN
South Croydon	d	10 07
East Croydon	d	10 10
Selhurst	d	10 13
Thornton Heath	d	10 16
Norbury	d	10 19
Streatham Common	d	10 21
Balham	d	10 28
Wandsworth Common	d	10 30
Wandsworth Road	d	
Clapham Junction	a	10 34
Imperial Wharf	d	10 39
West Brompton	d	10 44
Kensington (Olympia)	d	10 50
Shepherd's Bush	d	10 53
West Hampstead	a	
Gospel Oak	a	
Highbury & Islington	a	
Wembley Central	a	11 08
Harrow & Wealdstone	a	11 13
Watford Junction	a	11 20
Hemel Hempstead	a	11 28
Berkhamsted	a	11 33
Tring	a	11 38
Leighton Buzzard	a	11 47
Bletchley	a	11 54
Milton Keynes Central	a	12 00

		SN
Milton Keynes Central	c	09 13
Bletchley	c	09 17
Leighton Buzzard	c	09 24
Tring	c	09 34
Berkhamsted	c	09 39
Hemel Hempstead	c	09 43
Watford Junction	c	09 52
Harrow & Wealdstone	c	09 59
Wembley Central	c	10 04
Highbury & Islington	c	
Gospel Oak	c	
West Hampstead	c	
Shepherd's Bush	c	10 19
Kensington (Olympia)	c	10 22
West Brompton	c	10 25
Imperial Wharf	c	10 27
Clapham Junction	c	10 33
Wandsworth Road	c	10 34
Wandsworth Common	c	10 37
Balham	c	10 40
Streatham Common	c	10 45
Norbury	c	10 48
Thornton Heath	c	10 51
Selhurst	c	10 53
East Croydon	c	10 57

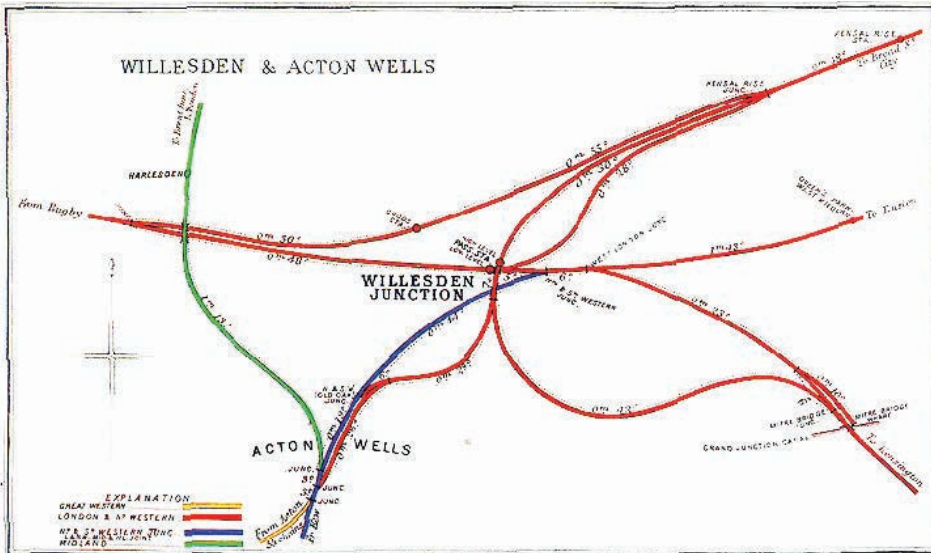


Fig 8 – Willesden Junction as depicted in 1903 by the Railway Clearing House. Trains from Clapham Junction emerge at the bottom left 'To Kensington' and leave at the top right 'To Broad Street'. Whilst trains from Richmond emerge from the bottom centre 'Fr Kew' and also leave at top right

	LO	LO	LO	LO	LO	LO	LO	LO
Stratford	10 00	10 07	10 15	10 22	10 30	10 37	10 45	10 52
Hackney Wick	10 03	10 10	10 18	10 25	10 33	10 40	10 48	10 55
Homerton	10 06	10 13	10 21	10 28	10 36	10 43	10 51	10 58
Hackney Central	10 08	10 15	10 23	10 30	10 38	10 45	10 53	11 00
Dalston Kingsland	10 10	10 17	10 25	10 32	10 40	10 47	10 55	11 02
Canonbury	10 12	10 19	10 27	10 34	10 42	10 49	10 57	11 04
Highbury & Islington	10 16	10 23	10 31	10 38	10 46	10 53	11 01	11 08
Caledonian Rd & Barnsbury	10 18	10 25	10 33	10 40	10 48	10 55	11 03	11 10
Camden Road	10 22	10 29	10 37	10 44	10 52	10 59	11 07	11 14
Kentish Town West	10 24	10 31	10 39	10 46	10 54	11 01	11 09	11 16
Gospel Oak	10 27	10 34	10 42	10 49	10 57	11 04	11 12	11 19
Hampstead Heath	10 29	10 36	10 44	10 51	10 59	11 06	11 14	11 21
Finchley Road & Frognal	10 31	10 38	10 46	10 53	11 01	11 08	11 16	11 23
West Hampstead	10 33	10 40	10 48	10 55	11 03	11 10	11 18	11 25
Brondesbury	10 35	10 42	10 50	10 57	11 05	11 12	11 20	11 27
Brondesbury Park	10 36	10 43	10 51	10 58	11 06	11 13	11 21	11 28
Kensal Rise	10 38	10 45	10 53	11 00	11 08	11 15	11 23	11 30
Willesden Jn. High Level	10 42	10 49	10 58	11 04	11 12	11 19	11 27	11 34
Willesden Jn. Low Level	10 43	10 50	10 59	11 05	11 13	11 20	11 28	11 35
Shepherd's Bush	11 03	11 10	11 17	11 24	11 31	11 38	11 45	11 52
Kensington (Olympia)	11 05	11 12	11 19	11 26	11 33	11 40	11 47	11 54
West Brompton	11 08	11 15	11 22	11 29	11 36	11 43	11 50	11 57
Imperial Wharf	11 11	11 18	11 25	11 32	11 39	11 46	11 53	12 00
Clapham Junction	11 14	11 21	11 28	11 35	11 42	11 49	11 56	12 03
Acton Central	11 17	11 24	11 31	11 38	11 45	11 52	11 59	12 06
South Acton	11 20	11 27	11 34	11 41	11 48	11 55	12 02	12 09
Gunnersbury	11 23	11 30	11 37	11 44	11 51	11 58	12 05	12 12
Kew Gardens	11 26	11 33	11 40	11 47	11 54	12 01	12 08	12 15
Richmond	11 29	11 36	11 43	11 50	11 57	12 04	12 11	12 18

Fig 9 - The 'Olympic' Timetable as well as the basis for the morning and evening weekday peak

	LO	LO	LO	LO	LO	LO	LO	LO
Stratford	09 25	09 35	09 45	09 55	10 05	10 15	10 25	10 35
Hackney Wick	09 28	09 38	09 48	09 58	10 08	10 18	10 28	10 38
Homerton	09 31	09 41	09 51	10 01	10 11	10 21	10 31	10 41
Hackney Central	09 33	09 43	09 53	10 03	10 13	10 23	10 33	10 43
Dalston Kingsland	09 35	09 45	09 55	10 05	10 15	10 25	10 35	10 45
Canonbury	09 37	09 47	09 57	10 07	10 17	10 27	10 37	10 47
Highbury & Islington	09 40	09 50	10 00	10 10	10 20	10 30	10 40	10 50
Caledonian Rd & Barnsbury	09 42	09 52	10 02	10 12	10 22	10 32	10 42	10 52
Camden Road	09 45	09 55	10 05	10 15	10 25	10 35	10 45	10 55
Kentish Town West	09 47	09 57	10 07	10 17	10 27	10 37	10 47	10 57
Gospel Oak	09 50	10 00	10 10	10 20	10 30	10 40	10 50	11 00
Hampstead Heath	09 52	10 02	10 12	10 22	10 32	10 42	10 52	11 02
Finchley Road & Frognal	09 54	10 04	10 14	10 24	10 34	10 44	10 54	11 04
West Hampstead	09 56	10 06	10 16	10 26	10 36	10 46	10 56	11 06
Brondesbury	09 58	10 08	10 18	10 28	10 38	10 48	10 58	11 08
Brondesbury Park	09 59	10 09	10 19	10 29	10 39	10 49	10 59	11 09
Kensal Rise	10 01	10 11	10 21	10 31	10 41	10 51	11 01	11 11
Willesden Jn. High Level	10 05	10 15	10 25	10 35	10 45	10 55	11 05	11 15
Willesden Jn. Low Level	10 06	10 16	10 26	10 31	10 36	10 46	10 56	11 01
Shepherd's Bush	10 26	10 36	10 46	10 56	11 06	11 16	11 26	11 36
Kensington (Olympia)	10 28	10 38	10 48	10 58	11 08	11 18	11 28	11 38
West Brompton	10 30	10 40	10 50	11 00	11 10	11 20	11 30	11 40
Imperial Wharf	10 33	10 43	10 53	11 03	11 13	11 23	11 33	11 43
Clapham Junction	10 40	10 50	11 00	11 09	11 19	11 29	11 39	11 49
Acton Central	10 43	10 53	11 03	11 13	11 23	11 33	11 43	11 53
South Acton	10 46	10 56	11 06	11 16	11 26	11 36	11 46	11 56
Gunnersbury	10 49	10 59	11 09	11 19	11 29	11 39	11 49	11 59
Kew Gardens	10 52	11 02	11 12	11 22	11 32	11 42	11 52	12 02
Richmond	10 55	11 05	11 15	11 25	11 35	11 45	11 55	12 05

Fig 10 - The 'standard' Off-Peak Timetable operated by LOROL

should form the basis of the weekday morning and evening peak period. This would give all the operations' teams the opportunity to experience the basic operation of the timetable in the months leading up to the Summer Games.

Putting together the off-peak timetable for the remainder of the year (Fig 10) was then a relatively easy task; Terminating 2 of the Clapham Junction services at Willesden Junction saves on unit mileage and train-crew costs, but by moving to a clock-face 10 minute interval timetable from Stratford it was possible to provide reasonable connections, on from the same platform, at Willesden Junction.

Disappointingly, in a sign of an increasingly fractured industry, the Southern services over the West London Line have been excluded from the LOROL timetables (Table 59 in the UK National Rail Timetable) and are included instead in a separate set of Southern timetables (Table 186). For reference these have been included below.

Finally, did it all work? The following screen dumps (below) taken from Live Departure Boards, which are fairly representative for those checked over the past week, suggest that indeed, at the time of writing, the timetable developed for the 2012 London Summer Games was working well.

	SN		SN
South Croydon	d	10 07	Milton Keynes Central 10
East Croydon	d	10 10	Bletchley
Selhurst	d	10 13	Leighton Buzzard
Thornton Heath	d	10 16	Tring
Norbury	d	10 19	Berkhamsted
Streatham Common	d	10 21	Hemel Hempstead
Balham	d	10 28	Watford Junction
Wandsworth Common	d	10 30	Harrow & Wealdstone
Wandsworth Road	d		Wembley Central
Clapham Junction 10	a	10 34	Highbury & Islington
Imperial Wharf	d	10 39	Gospel Oak
West Brompton	d	10 44	West Hampstead
Kensington (Olympia)	d	10 47	Shepherd's Bush
Shepherd's Bush	d	10 50	Kensington (Olympia)
West Hampstead	a	10 53	West Brompton
Gospel Oak	a		Imperial Wharf
Highbury & Islington	a		Clapham Junction 10
Wembley Central	a	11 08	
Harrow & Wealdstone	a	11 13	Wandsworth Road
Watford Junction	a	11 20	Wandsworth Common
Hemel Hempstead	a	11 28	Balham
Berkhamsted	a	11 33	Streatham Common
Tring	a	11 38	Norbury
Leighton Buzzard	a	11 47	Thornton Heath
Bletchley	a	11 54	Selhurst
Milton Keynes Central 10	a	12 00	East Croydon

Fig 11 - The 'Southern Off-Peak Timetable operating over the West London Line

Live departures & arrivals

Automatically refresh this page

Camden Road [CMD]

Departing | Arriving

from Camden Road to Station (optional) Update

Due	Destination	Status	Platform	Details
13:28	Stratford (London)	On time	2	Details
13:29	Richmond (London)	On time	1	Details
13:36	Stratford (London)	13:38 2 mins late	2	Details
13:37	Clapham Junction	13:39 2 mins late	1	Details
13:43	Stratford (London)	On time	2	Details
13:44	Richmond (London)	On time	1	Details
13:51	Stratford (London)	13:53 2 mins late	2	Details
13:52	Clapham Junction	13:54 2 mins late		Details

Later trains LAST UPDATED: 13:25 Update now

Live departures & arrivals

Automatically refresh this page

Camden Road [CMD]

Departing | Arriving

from Camden Road to Station (optional) Update

Earlier trains

13:56	Stratford (London)	On time	2	Details
13:59	Richmond (London)	On time		Details
14:06	Stratford (London)	14:08 2 mins late		Details
14:07	Clapham Junction	14:09 2 mins late		Details
14:13	Stratford (London)	On time		Details
14:14	Richmond (London)	On time		Details
14:21	Stratford (London)	14:23 2 mins late		Details
14:22	Clapham Junction	14:24 2 mins late		Details
14:28	Stratford (London)	On time		Details
14:29	Richmond (London)	On time		Details

Later trains LAST UPDATED: 13:25 Update now

Fig 12 - The live departure boards for Camden Road at 13:25 on Saturday 4th August

TID		2027	2019	TID		2L16
Type		375 EMU	378 EMU	Type		378 EMU
Stratford	dep		09:30	Clapham Junction	plat	09:59
	plat		1		arr	2
<i>Channelsea Inc</i>	<i>pass</i>		09/32	<i>Latchmere Inc</i>	<i>pass</i>	10/01
<i>Lea Inc</i>	<i>pass</i>		09/32 ½	Imperial Wharf	dep	10:03½
Hackey Wick	dep		09:35½	West Brompton	dep	10:06½
Homerton	dep		09:38	Kensington Olympia	dep	10:10
Hackney Central	dep		09:40	Shepard's Bush	dep	10:12½
<i>Navarino Road Inc</i>	<i>pass</i>		09/40 ½	North Pole Sig VC818	arr	10:14½
Dalston Kingsland	dep		09:42½		dep	10:15½
Canonbury	dep		09:44½	<i>Mitre Bridge Inc</i>	<i>pass</i>	10/17
<i>Canonbury West Inc</i>	<i>pass</i>		09/46 ½	Willesden Inc High Level	arr	10:19½
Highbury & Islington	dep		09:47		dep	10:21
<i>Westbourne Raod Inc</i>	<i>pass</i>		09/49	<i>Kensal Green Inc</i>	<i>pass</i>	10/22
Caledonian Road & Barnsbury	dep		09:50	Kensal Rise	dep	10:23½
<i>Camden Road East Inc</i>	<i>pass</i>		09/52 ½	Brondesbury	dep	10:25½
Camden Road	dep		09:54	Brondesbury	dep	10:27
<i>Camden Road Inc</i>	<i>pass</i>		09/54 ½	West Hampstead	dep	10:29½
Kentish Town West	dep		09/56½	Finchley Road and Frognall	dep	10:31
Gospel Oak	dep		09:59	Hampstead Heath	dep	10:33½
Hampstead Heath	dep		10:01		mgn	<1>
Finchley Road and Frognall	dep		10:03	Gospel Oak	dep	10:37½
West Hampstead	dep		10:05½	Kentish Town West	dep	10:39½
Brondesbury	dep		10:07	<i>Camden Road Inc</i>	<i>pass</i>	10/41
Brondesbury	dep		10:08½		mgn	<1>
Kensal Rise	dep		10:10½	Camden Road	dep	10:43
<i>Kensal Green Inc</i>	mgn		<1>	<i>Camden Road East Inc</i>	<i>pass</i>	10/44
	<i>pass</i>		10/13	Caledonian Road & Barnsbury	dep	10:46
Willesden Inc High Level	arr		06:00	<i>Westbourne Raod Inc</i>	<i>pass</i>	10:47
	dep		10:15½	Highbury & Islington	dep	10:49
Milton Keynes	dep	09:13		<i>Canonbury West Inc</i>	<i>pass</i>	10/49½
<i>Willesden West London Inc</i>	<i>pass</i>	10/10 ½		Canonbury	dep	10:50½
	mgn	[2]		Dalston Kingsland	dep	10:53
<i>Mitre Bridge Inc</i>	<i>pass</i>	10/14	10/17 ½	<i>Navarino Road Inc</i>	<i>pass</i>	10/54
<i>North Pole Sig VC818</i>	<i>arr</i>	10:15	10:19	Hackney Central	dep	10:55
	<i>dep</i>	10:16	10:20	Homerton	dep	10:57
Shepard's Bush	dep	10:19½	10:23½	Hackey Wick	dep	10:59½
Kensington Olympia	dep	10:22	10:26	<i>Lea Inc</i>	<i>pass</i>	11/00½
West Brompton	dep	10:25	10:28½	<i>Channelsea Inc</i>	<i>pass</i>	11/01
Imperial Wharf	dep	10:27½	10:31½		mgn	<1>
<i>Latchmere Inc</i>	<i>pass</i>	10:30 ½	10/34	Stratford	dep	11:04
	mgn				plat	1
Clapham Junction	arr	10:32½	10:36			
	plat	17	2			

ADDENDUM – Sample WTT times for Clapham Junction and Stratford (East and West Bound)



Crystal Ball clouds over

GEOFF LAMBERT *has been plotting the demise of CountryNet*

The NSW CountryNet train radio system, inherited by ARTC from FreightRail, and alluded to in *The Times* of February 2012, is being phased out, to be replaced by a system known as “ICE” (In Cab Equipment), based on Telstra’s NextG phone system. ARTC estimated that, when the ICE conversion is complete, some 750 ICE radios will be in use. The first conversions took place in early 2010 and, by mid-2010, some 50 units were in use. Soon it will be no longer possible for railfans with scanners to “listen to the trains”. Operators such as Pacific National have their own radio systems (PN’s is named “Aware”) to keep track of their trains. Smaller operators do not have such systems.

CountryNet was based on a mixed system of track-side UHF radio repeater stations on the main lines and OptusSat satellite phones for remote areas. Apart from the Hunter Valley, the UHF system was dispensed with a few years ago and reliance came to rest with OptusSat. This was very expensive.

In 1995 CountryNet was an internal operation. When ARTC took over and “Open Access” was instituted on its NSW lines, it was realised that there needed to be some way for Operators to monitor their trains.

Thus was initiated a “front-end” web-page, designed to allow the Train Operators to see where their trains were. It “concentrated” data from ARTC’s Train Control Centres. The data was provided in the form of XML (Extended Mark-up Lan-

guage) and XGL (Extended Graphic Language) databases, which could be queried by third-party users. It was referred to colloquially as “*The Crystal Ball*”.

The backbone CountryNet was an elegantly-designed radio system for voice communications. It established several “world firsts” in the field. The cab equipment was of ultimate user simplicity—just a few push-buttons. A GPS unit and the radio’s computer handled all the “switching”, including which UHF tower and frequency to use. There is ample and detailed documentation on ARTC CountryNet on the web—just Google the words.

In addition to voice communications, a “remote sensing” ability was piggybacked onto CountryNet to allow trains to be “tracked” as they moved across the system. The tracking system ran over the voice radio in the manner of an SMS message but transactions took place without the crew being aware of them.

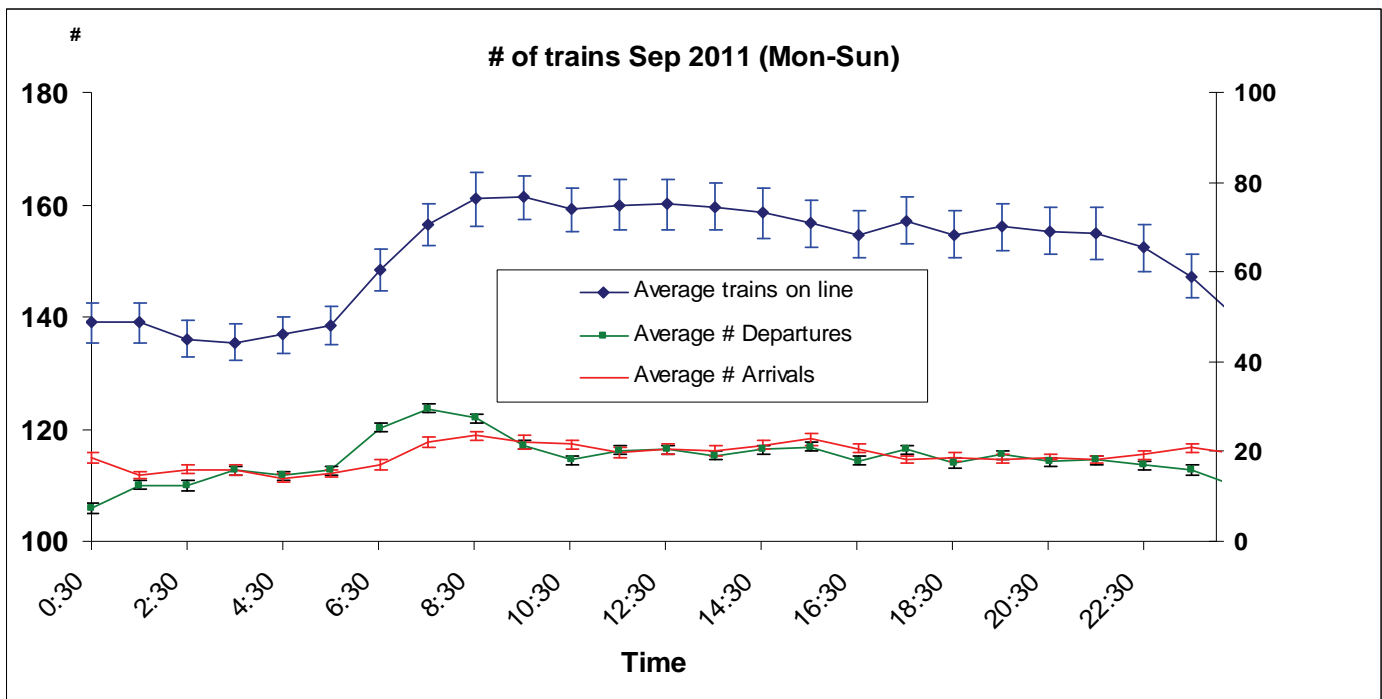
All trains “reported” to CountryNet but they did not do so spontaneously—apart from when the radio was first switched on. After that, Train Control asked for data from them at regular intervals of 5, 10 or 20 minutes. This “concentrated” data was updated from their replies once per minute. Thus the system presented an almost real-time snapshot of trains operating on the system. CountryNet applied to NSW only, although a limited amount of data on the North East Standard Gauge line in Victoria often appeared. Trains entering Victoria were supposed to switch over to the Victo-

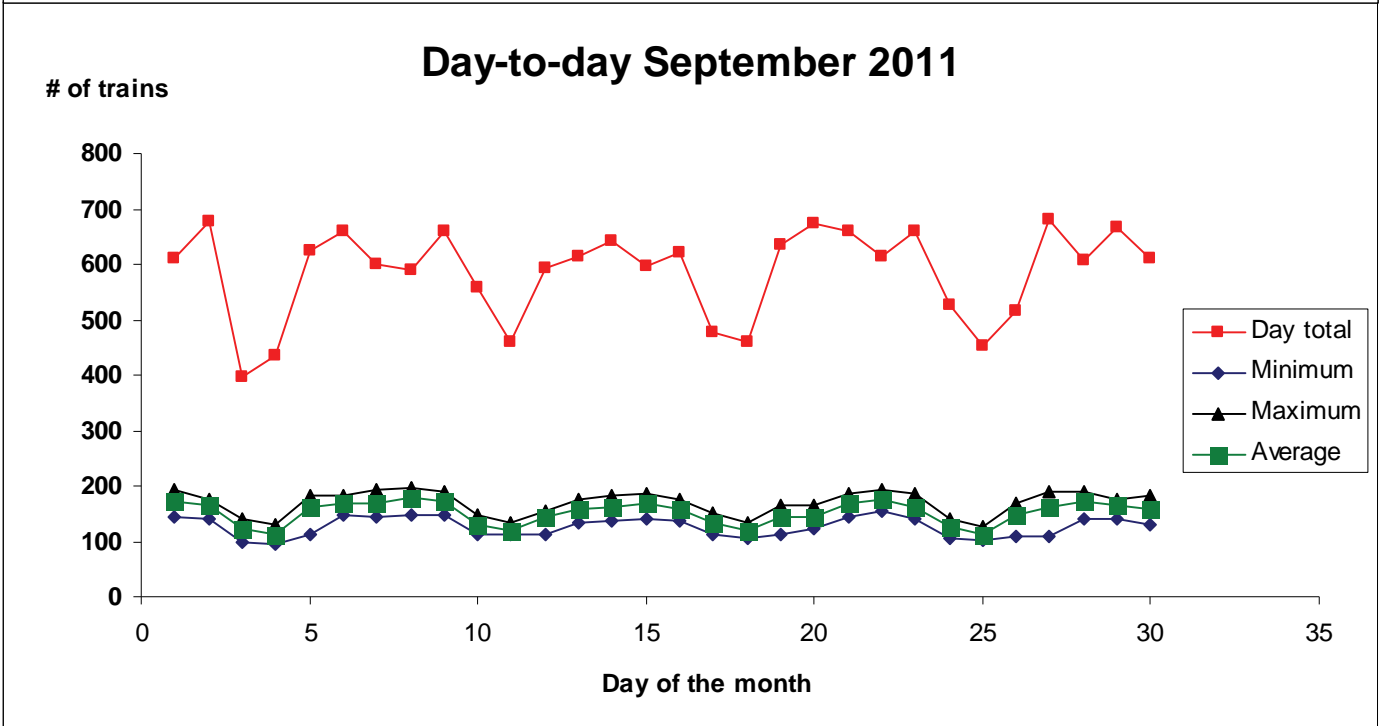
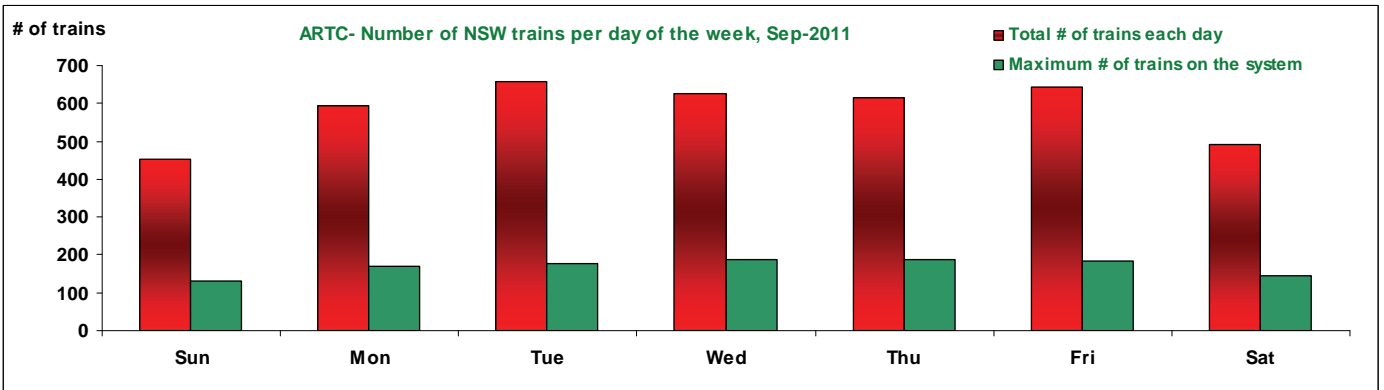


“...GENT HERE WANTS TO KNOW WHAT TIME THE 3.50 FROM EDINBURGH WILL ARRIVE !#”

rian train radio system, but this did not always happen. On occasion, CountryNet could reach out onto the Victorian Western line as far as the Dimboola branches.

Identification was primarily according to a unique locomotive radio identifier. The SMS nature of the messaging system meant that only ½ a byte could be used to describe loco classes and 1½ bytes for the stock number. This allowed for only 16 classes of loco, but ARTC has accredited some 60 classes of locos for its lines. “Post-FreightRail” locos—some 470 of them—were therefore assigned to a single class (“OT”) willy-nilly. Train numbers

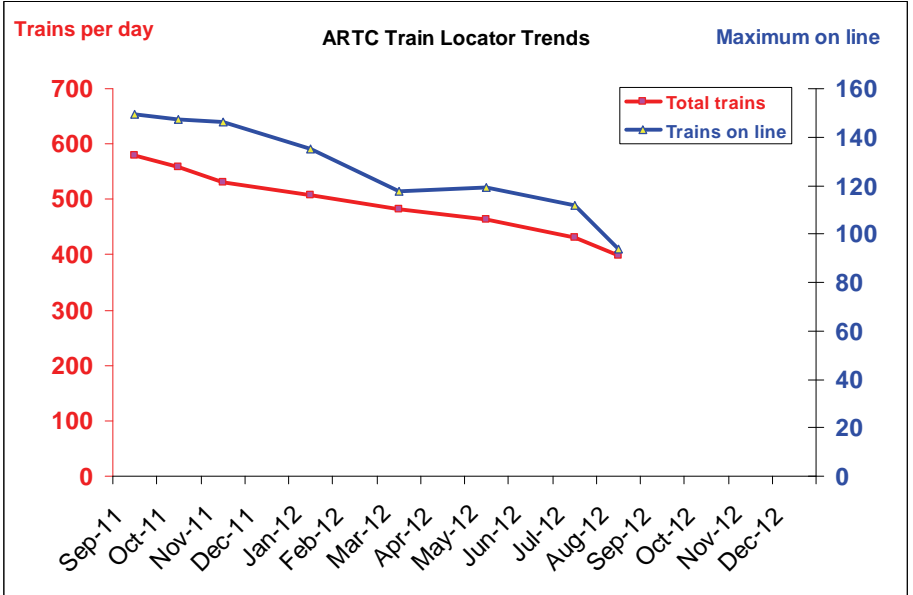




were assigned to the lead loco by Train Control at the start of each journey. Unidentified trains showed up as "Unregistered".

The system had a number of flaws which made really meaningful analyses difficult. Sometimes it failed to receive data from Train Control, particularly Broadmeadow. It deleted trains from its memory when the train locomotive was assigned to a new train. It double-counted some trains apparently because more than one CountryNet radio was active on a train. It was dependent on Train Control personnel entering data consistently—about 10% of trains were "misallocated" their loco numbers. CountryNet UHF coverage was weak and sporadic in some areas.

Although the system was designed to be a snapshot of operations, it could also be queried for all trains which had operated since the start of each day. In theory, it was also possible to query the CountryNet system for any previous day. This was usually difficult because most running records seemed to be archived quickly. A few days from early 2011 and even one from early 2010 persisted, but these disappeared eventually. The running statistics



were used by ARTC to compute its Key Performance Indicators (KPI).

Trains logged

What follows is an analysis of 12 months of operation of CountryNet from September 2011 to August 2012.

In this period, a total of 655 locomotives (including power cars of diesel passenger trains) reported to the system, although CountryNet was already in decline by the start of that period. These locomotives were associated with more than 3,400 different train numbers. The latter figure is

nett of double counting, but does not allow for mis-identified and Unregistered trains.

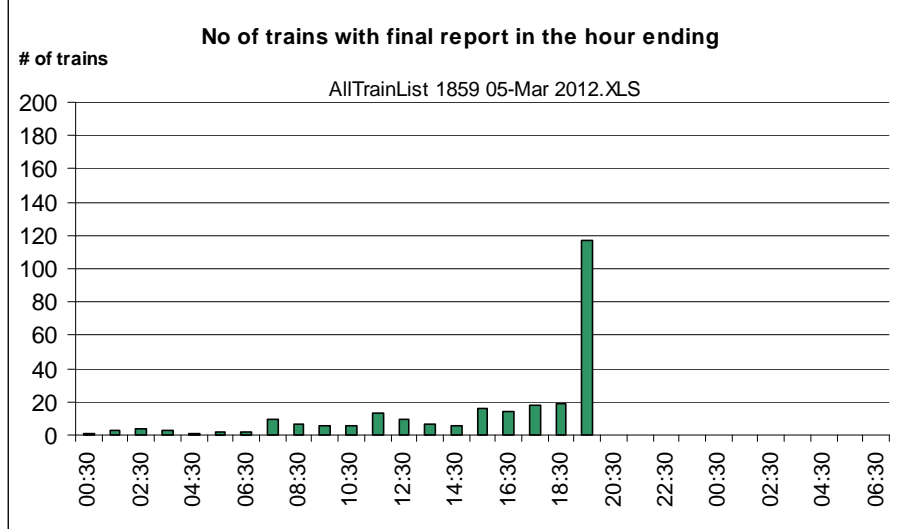
In September 2011, the average number of trains run over a 24 hour period was 586, with the highest number of 672 being recorded on Tuesday 20th September 2011. The average number of trains on-line at any one time was 151. This equates to the average run time of trains of just over 6 hours. This pattern varied over the course of a day, the course of a week and the course of a month.

Chart 1 (bottom, page 12) shows the hour-by-hour pattern of trains on line (left axis) and the number of hourly departures and arrivals (right axis) averaged over the entire month. The error bars are standard errors. It can be seen that the peak number of trains operating occurs at 0830, the result of two hours of trains coming into operation. This can be seen clearly in the “bump” in the Train Departures line. Some of this is due to start up of commuter railcars coming into operation for the morning peak. Thereafter the number of trains declines slowly, although there is another slight “bump” caused by the evening passenger peak. During this month, the number of trains reporting never fell much below 140. This reflects the 24-hour operation of ARTC for all types of trains except passenger and some local trip trains in the Sydney area. The Departures and Arrivals numbers are fairly steady at about 20 trains per hour.

Chart 2 (top, page 13) shows the patterns of train operations segregated by days of the week. The busiest days are usually Wednesday or Thursday. This is a pattern characteristic of modern operations. It differs from the patterns of the past, when Fridays were by far the busiest. The quietest day is Sunday, as it always has been, although the numbers of trains running on Sundays is substantially higher now than in the past. This can be attributed to the operation of coal trains, principally on the Hunter Valley network.

Chart 3 (middle, page 13) shows the variation over the course of the month. The day-of-week pattern becomes more apparent in this view– the troughs in these lines represent Sundays. A feature hard to discern in this chart is that there is a gradual decline in the number of trains operating over the course of the month.

Chart 4 (bottom right, page 13) shows this latter decline over the one year period. Some 29% fewer trains were being recorded in August 2012 compared with September 2011. Over these 12 months, some 174 locomotives (27% of the fleet) were moved off CountryNet. These were (mostly) shifted to ICE radio operation or were scrapped or taken out of service. Hence trains hauled by these locos failed to be recorded over CountryNet. The radio conversions were mainly carried out on



Control Centres	# of trains	Control Boards	# of trains
	254		254
BCC	73	Middle Hunter	7
		Northwest	29
		Ports	15
		Upper Hunter	2
		Coast A	7
		Coast B	5
		Lower Hunter	8
JUN	64	June Branches	2
		June West	21
		Long South	9
		Main South	17
		Main South/ Long S	15
ORA	15	West	15
SYD	102	Sydney	102

No of unique trains identified	172
# of Unregistered trains	88
# of trains with > 1 appearance	5
# of train appearances > once	3
Total # of unique trains so far	257
# of Passenger trains	74
# of trains on untimetabled track	1
# of trains running at latest report	117
# trains post 2nd midnight	0
Locomotives	
No of leading locos listed	264
Locos used on > 1 train	0
# Light Diesel locos	15
Lines	
Lines used (by number)	47
Lines used (by name)	46
Most number of trains per line	27
Line with most trains	GCE
# of trains on each Network	
ARTC/CRN	1
ARTCH	42
ARTCI	70
ARTCL	2
CRNT	40
CRNU	1
PRIVATE	0
RC	102
SMR	2
Unknown	3
	0
	0
Total	263

freight operators' locomotives. It would seem that, although ICE radios are being fitted to RailCorp country trains (soon to be re-badged as "NSW Trains"), the switch will not occur until mid-2013. RailCorp recently issued a new Train Working Procedure concerning ICE radio communications, but this did not mention anything about the GPS-based "tracking" system of ICE. RailCorp's conversion will involve a wholesale drop of about 50 "locomotives" and a consequential drop in the number of trains appearing on CountryNet. RailCorp passenger power cars have a high utilisation rate and are generally used as leading locos for 27 days per month, versus some 15 days per month for all other locomotives which traverse the network. However, the latter number is a considerable underestimate caused by the fact that the majority of freight trains are run by multiple unit locomotives—only the lead loco is supposed to report.

Where did the trains run?

It was possible to analyse the pattern of train operation on a line-by-line and a Train Control Centre basis.

Chart 5 (page 14, right top) is a map from the system which shows the pattern of trains which operated on 5-Mar-2012. This snapshot was taken at 7 PM. It gives the position of each train at the time it "clocked off" the system. The pink boxes show the train numbers. In real-time these boxes could be queried to produce drop-down lists with extra information.

Trains are concentrated on the Hunter Valley lines and in the Sydney area. It will be noted though that there were even trains operating on far-flung rural branch lines. This pattern is borne out by a detailed analysis of train operations at this hour.

Chart 6 (page 14, right middle) shows the situation at 7 PM and shows that 117 trains

had reported to the system in the hour from 1800 to 1900. Trains which had signed off the system prior to 1900 totaled 140, meaning that 257 trains had operated so far on that day.

Chart 7 (page 14, right lower) shows the number of trains under the control of each Train Control centre. Here BCC means Broadmeadow, the other codes are probably self-explanatory. Orange Train Control and Sydney South Train Control are both physically located at Junee. For each Train Control Centre, there are a number of "Control Boards" which handle subsections of territory. It is a peculiar feature of CountryNet that these boards do not communicate with one another, even though they may be located at adjacent desks in Train Control. Instead, trains are passed from Board to Board, *via* CountryNet SMS messages.

From this chart we can confirm the impression gained from Chart 5— that the busiest areas are the Hunter Valley (mostly the "Northwest") and the Sydney area.

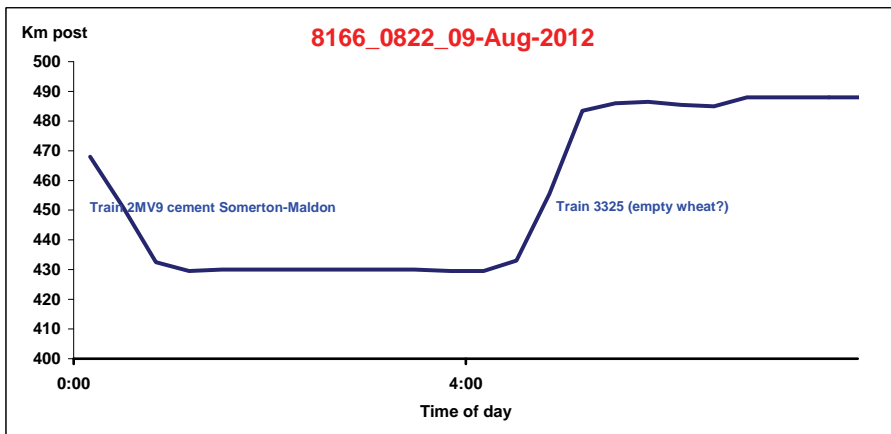
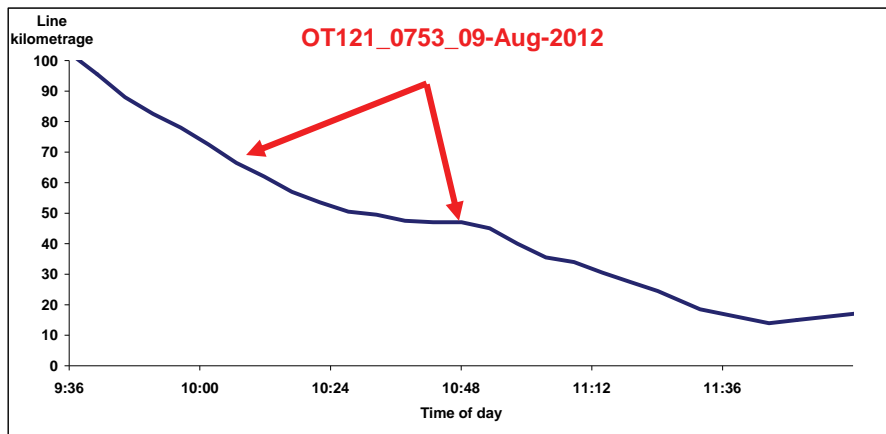
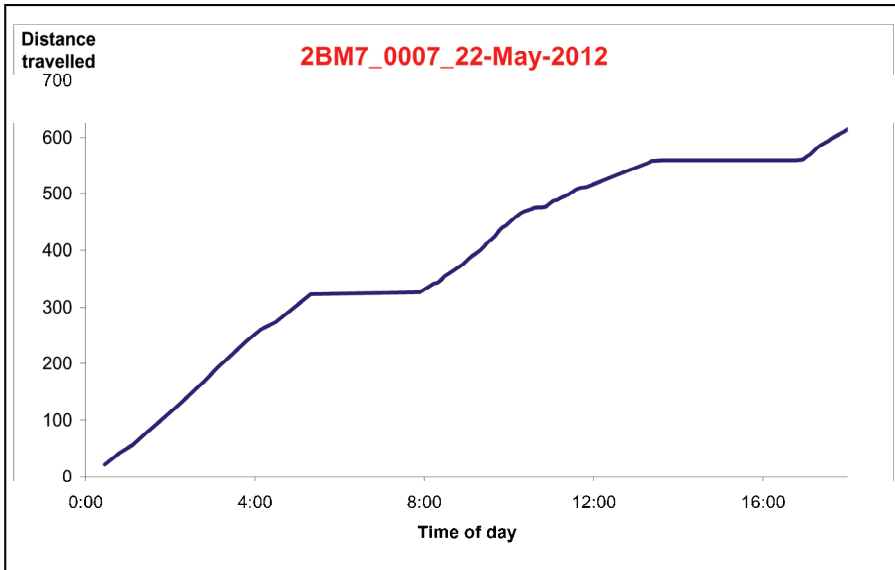
Chart 8 (page 15, left upper) gives a more detailed breakdown of this data. From it, we see that there were 74 passenger trains logged during the day and that a total of 264 locomotives had been in use. Trains had run on 47 out of a total of about 80 line sections. The busiest line section was "GCE", which is the Sydney suburban freight network, with 27 trains on the go.

This table also shows operations segregated by network— principally according to whether the trains were on the ARTC leased network or on the ARTC-operated *Country Regional Network* ("CRN" now run by John Holland but reporting in the same way). This shows that ARTC accounted for 114 trains, CRN accounted for 41 trains and RailCorp ("RC") accounted for 102 trains. The remainder were on other "networks" including the South Maitland Railway ("SMR") or private sidings.

Following specific trains

It was possible to track individual trains or locomotives for their entire journey over a day or sometimes even longer periods. These tracks could be used to construct graphical timetable format records of their running.

Chart 9 (page 16 upper), shows the running of train 2MB7, a QRN Brisbane-Sydney Intermodal train on 22-May-2012, from midnight until 1818. Its first appearance for the day was at Glenreagh just north of Coffs Harbour. It spent a lot of time stationary at Taree (where apparently, the loco was shut down and the radio turned off) and then again at QRN's freight yard at Glenlee where it (presumably) dropped off Brisbane-Sydney traffic and



picked up Sydney-Melbourne traffic. By midnight, it was on the move again and disappeared into the next day at Mittagong.

Chart 10 (page 16, middle) shows another train from this day. This train was listed as OT121, which is a radio number in the CountryNet system and was fitted to locomotive G534, owned by QRN. The chart is an extract from the whole journey, showing the ascent of the Cowan Bank—indicated by the arrows. Such charts give an idea of how heavy grades can slow a train.

Chart 11 (page 16, lower) plots the progress of a locomotive, rather than a train. This loco, 8166, was first used on train 2MV9, a rather unusual train in itself and one that does not appear in the Master Train Plan. This is a Somerton-Maldon (NSW) cement train, which runs weekly in “cement season”. The loco first appeared just south of Cootamundra, where the locomotive was removed from the train. The further progress of 2MV9 was unknown; it was probably allocated an ICE-equipped loco for the remainder of the journey.

Meanwhile, 8166 was attached to a south-bound train 3325, an “intra-Riverina” train—quite possibly a wheat train. It ran as far as Junee, where it was placed on the Griffith line and (apparently) stabled.

Demise

Although still in operation, CountryNet is rapidly being phased out. It is a requirement of ARTC that the new National Train Communications System (NTCS), with its ICE radios be the sole system in use after June 2013.

NTCS reputedly has an equivalent reporting system to that of CountryNet. A screen snapshot from it was published a year or two ago in the technical literature and *The Times* reproduced this screenshot in its February 2012 issue. From this image, it is clear that the NTCS “front end” resembles the CountryNet reporting system very closely.

There have been some teething problems with the ICE radios and these problems have delayed installation. It is not clear whether the target of having 750 of them installed on all locos which use ARTC lines and branches from Brisbane to Kalgoorlie can be met. Conversion is partly dependent on locomotive owners finding the money for the rather expensive radios. Until they do, CountryNet will remain in operation and will provide Operators with train running data.

A monograph on train radio systems in general and on CountryNet in particular will be available to AATTC members after CountryNet is turned off—on current trends probably in mid 2014 (see chart 4) but possibly by the deadline of June 2013.

Thanks to Google and RailPage for their help.



ARTC’s radio tower at Train Control in Broadmeadow. Although impressive, little Train Control information came and went through it. Except for the Hunter Valley, most communications went over land-lines to the UHF radio base stations or to OptusNet’s Ground Station at Belrose in Sydney.