

Passenger and freight train operators

The list below shows passenger and freight train operators.

Figure 3.1 Franchised passenger train operators

Owning / holding group	Franchise	
Arriva	Arriva Trains Wales	
First Group Plc	First Great Western	
	First Great Western Link	
	First ScotRail	
First Group / Keolis	TransPennine Express	
Go Ahead Group / Go-Via	Southern	
	Thameslink	
M40 Trains John Laing Plc	Chiltern Railways	
National Express Group	c2c	
	Central Trains	
	Gatwick Express	
	London Eastern Railway	
	Midland Mainline	
	Silverlink	
	Wessex Trains	
	West Anglia Great Northern	
	Sea Containers Group	Great North Eastern Railway
	Serco-NedRailways	Merseyrail Electrics 2002
Northern Rail		
SRA	South Eastern Trains	
Stagecoach Plc	Island Line	
	South West Trains	
Virgin Rail Group Ltd	Virgin Cross Country	
	Virgin West Coast	

Figure 3.2 Other passenger operators

Eurostar (UK) Ltd
Grand Central (Potential future operator)
Heathrow Express Ltd
Hull Trains Ltd
London Underground Ltd
NEXUS

Figure 3.3 Freight operators

Advenza Freight Ltd
Direct Rail Services Ltd
English Welsh & Scottish Railway Ltd
English Welsh & Scottish Railway International Ltd
Fastline Ltd
Freightliner Ltd
Freightliner Heavy Haul Ltd
GB Railfreight Ltd

Capacity bottlenecks

Figure 4.4 below shows the peak level utilisation of capacity on the network. Each route is split into sections. The splits occur where there is a change of capacity caused by a change in the number of tracks or headway, or a significant change in traffic level. The capacity used in the peak hour for train movements, in the direction of peak flow, is calculated by summing the capacity used by each passenger and freight train. This is equal to the planning headway, plus the differential in time taken to traverse the section between that train and the following train, if the latter is a faster train. The capacity used is expressed as a number of minutes per hour, and this is converted into a percentage of an hour. On four track sections, the capacity of the busier line is shown.

The map is a guide to the relative utilisation of different parts of the network, since actual utilisation depends on the exact ordering of trains and the length of the sections chosen. This high-level analysis therefore helps to point us toward areas that need to be explored further.

Our initial analysis concentrates on timetable solutions to overcome capacity constraints. Only in those cases where a timetable solution does would not provide sufficient capacity to meet our customers' needs and where performance would be compromised, are physical route enhancements considered. These solutions are currently developed only where an external funding source is identified.

Figure 3.4 Map showing capacity utilisation in Winter 2004

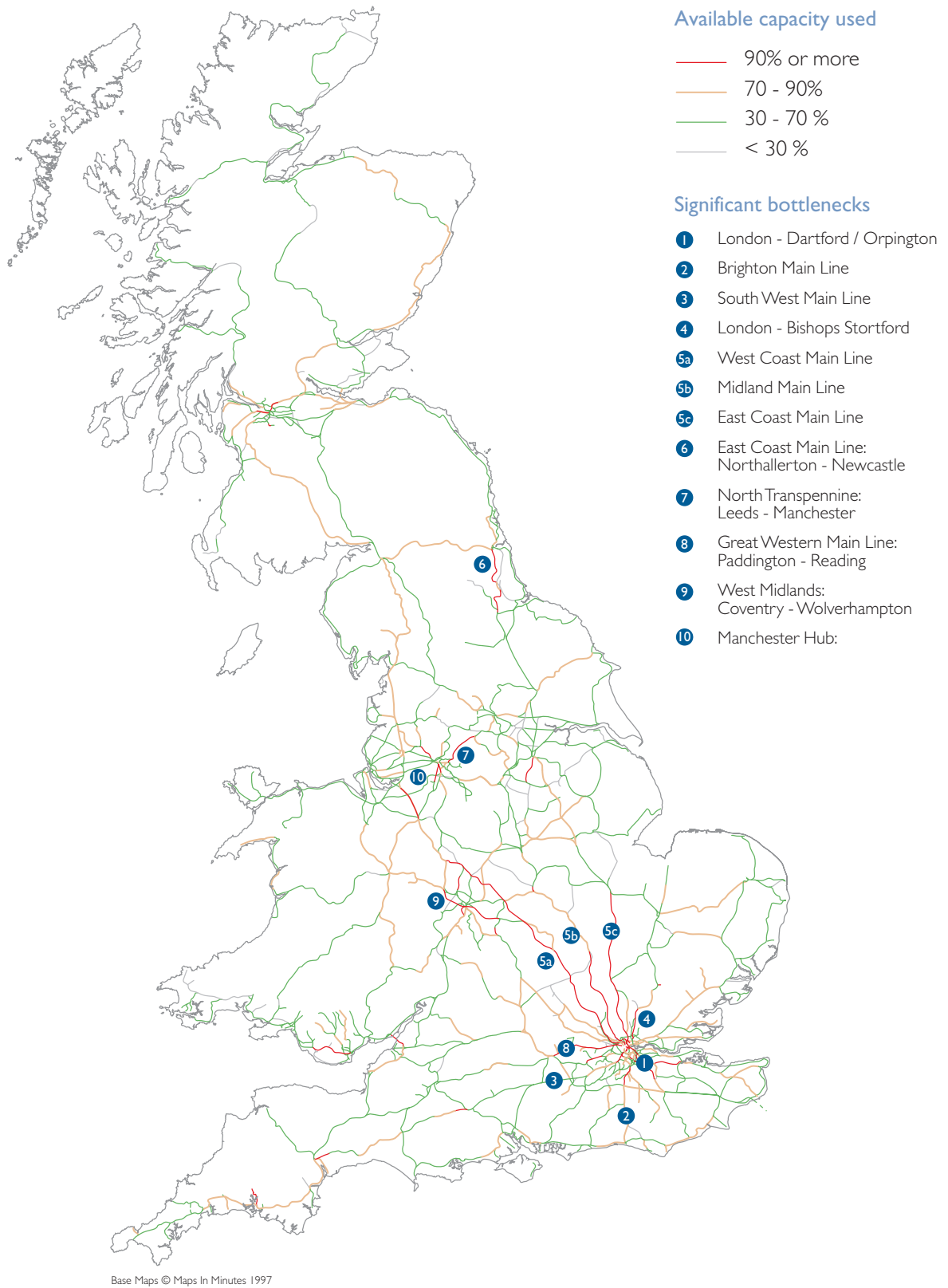


Figure 3.5 Significant bottlenecks with potential solutions

Map ref	Location / Problem	Possible solutions	Action
1	London – Dartford / Orpington: Bottlenecks in the Charing Cross – London Bridge area and around a number of other two track sections and flat junctions reduces overall capacity and operational flexibility over these routes.	There are a number of short and long term solutions ranging from changing the timetable to optimising the use of existing infrastructure, to major infrastructure enhancements at key locations, such as those proposed as part of the Thameslink Programme, to increase the overall capacity of the line.	A revised timetable has been developed in conjunction with the SRA as part of the Integrated Kent Franchise process. In addition to introducing domestic services running on the CTRL, this aims to simplify some of the crossing movements at critical parts of the network, allowing the potential for capacity improvements through optimised network utilisation and improved reliability of service provision.
2	Brighton Main Line: There are several points on the Brighton Main Line at which capacity is constrained, preventing the operation of additional trains. Capacity at Victoria station presents a particular constraint which is complicated by the close relationship between the mainline and underground stations.	There are a number of possible solutions ranging from changing the timetable to optimise the use of existing infrastructure, combining timetable changes with limited infrastructure upgrades, to major infrastructure enhancements at key locations to increase the overall capacity of the line.	A revised timetable is being developed and station capacity review undertaken in conjunction with the SRA as part of the RUS process. This will aim to simplify some of the crossing movements at constrained parts of the network, therefore improving performance and allowing the potential for additional capacity through optimised network utilisation.
3	South West Main Line: The route out of Waterloo is running at capacity during peak times, and additional services or seating to address current overcrowding and forecast growth cannot be provided.	Options to provide additional capacity to address overcrowding are currently focused on train lengthening and timetable optimisation.	Longer train operation is the likely and preferred solution to the capacity issue, particularly on the South West suburban area. A radically revised timetable has been implemented in December 2004. It has not released any significant network capacity but has provided additional on train capacity on certain routes targeting local demand.
4	London – Bishops Stortford: The mix of fast and stopping trains on this predominantly double track route, constrains development of services, including the aspiration for an all-day 15-minute service to Stansted Airport.	Additional services could be accommodated through a range of options from changes in the timetable to providing additional track and signalling, especially on the Lea Valley section of the route and additional platforms at Liverpool Street station.	The timetable will be reviewed as part of the RUS process (and work being undertaken by the British Airport Authority). An improvement in capacity is likely to be driven by the decision to build a second runway at Stansted Airport.

Map ref	Location / Problem	Possible solutions	Action
5	WCML, MML, ECML: At their southern end these three main lines will be running at high levels of utilisation (even after the upgrade in the case of WCML) because of continued growth of passenger and freight trains.	See text below.	See text below.
5a	WCML: See 5	Short / medium term: Increasing route capacity through route upgrade and timetable specification.	We are implementing the West Coast Main Line Route Modernisation, which will provide an increase in capacity.
5b	MML: See 5	Short / medium term: Significant changes to the timetable structure to improve use of current capacity. Minor infrastructure upgrades could also create additional capacity between Bedford and Leicester.	The route is covered in the pilot RUS study which the SRA undertook.
5c	ECML: See 5	Short / medium term: Analysis suggests that a number of solutions are possible including changes to the timetable and a series of schemes to improve performance and capacity.	The SRA is planning to publish its ECML Strategy for consultation in Spring 2005 with the final document published later in the summer.
5	WCML, MML, ECML	Long term: A new high-speed route could relieve each of these lines by providing additional capacity, and by allowing a greater segregation of traffic of differing speeds.	The SRA is studying this option for possible long term implementation.
6	ECML: Northallerton-Newcastle The high levels of utilisation are caused by the current traffic pattern, with significant variation in speeds between passenger and freight trains.	Analysis suggests that a number of solutions are possible including changes to the timetable and a series of schemes to improve performance and capacity.	The SRA is planning to publish its ECML Strategy for consultation in Spring 2005 with the final document published later in the summer.
7	Trans-Pennine The mix of freight and passenger trains consumes much of the available capacity on the routes across the Pennines.	Possible solutions include timetable changes, and development of alternative routes allowing diversion of some freight trains.	Options for the route will be examined in detail in a RUS during 2005.

Map ref	Location / Problem	Possible solutions	Action
8	Paddington – Reading: The current pattern of services constrains the ability to run additional trains to cater for forecast growth.	Re-timetabling of trains, together with remodelling at Reading would allow an increase in the throughput of trains.	Options for extra seating capacity to alleviate overcrowding are being developed as part of the integration of the Thames and Great Western franchises. The SRA, Network Rail and Reading Borough Council are considering plans to renew Reading station.
9	Coventry – Wolverhampton: The mix of traffic along this double track route consumes all available capacity and constrains growth.	A significant revision of the timetable structure would provide some relief. Options for train lengthening exist and have the potential for increases in passenger capacity on most services.	An improved timetable will be introduced between Coventry and Birmingham in December 2005. We have implemented the new platforms at Wolverhampton and Birmingham New Street. We are working with SRA and Centro in a joint timetable development group to identify a sustainable timetable structure for the Coventry – Birmingham – Wolverhampton corridor that would deliver increased capacity and improved performance.
10	Manchester: Stockport to Salford Crescent / Bolton At Manchester, conflicts occur between east-west services on the Trans-Pennine route, and services entering Manchester from the south. The greatest constraint is at Manchester Piccadilly, exacerbated by the large number of through services that cross the station throat or use the busy through platforms (13 and 14). Capacity is insufficient to support additional traffic.	The Greater Manchester Strategic Rail Study (whose partners included the SRA, Railtrack, Greater Manchester Passenger Transport Executive (GMPTE), Manchester International Airport and the Highways Agency) identified a range of measures that could be provided, including infrastructure schemes. However, these would require substantial external funding and are thus unlikely to be progressed in the short to medium term. Some limited localised opportunities for additional services may exist if significant alterations to the structure of the timetable are made to reduce the number of conflicting moves and / or the mix of traffic. In most cases capacity requirements could be met by train lengthening (supported where necessary by platform lengthening).	During 2005 the North West RUS will look at how existing capacity is best used and options for increasing capacity, where required. We are working with SRA, Manchester International Airport and GMPTE to develop options for an additional platform at Manchester Airport.

Network capability

The capability of the network determines the speed and type of trains that can operate. Capability is defined as a function of the assets as well as operating instructions used to ensure safety. It is described by the following measures, which are detailed in the maps and tables below:

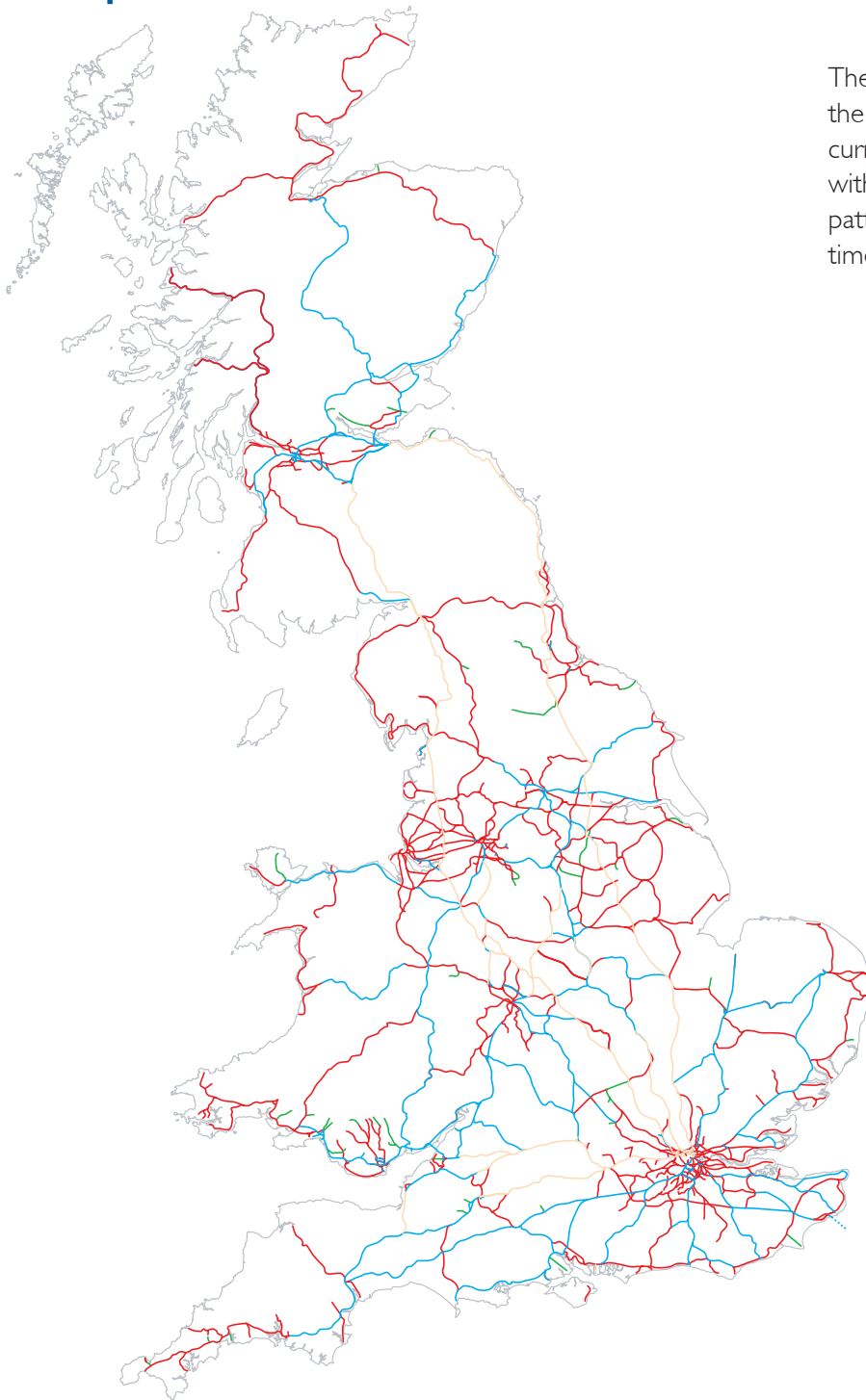
- **linespeed:** the maximum speed that at which it is safe for trains to travel;
- **loading gauge:** the maximum dimensions of vehicles and load that routes can carry, as determined by the clearances to structures and passing trains;
- **axle load:** the maximum axle load that the route can carry, as determined by the strength of underline bridges;
- **electrification:** the extent of the network for electrically hauled trains.

We also show a map of the route classification which aids the development and application of appropriate track and structures engineering stewardship regimes on each group of routes, across the network.

The Regulator's target for network capability measures is for no functionality reduction, against 1 April 2001, subject to contractual and safety procedures such as network change.

Our maintenance and renewal activities are expected to maintain the capability of the network. Enhancements may result in increased capability. Also, there are circumstances where we can legitimately make permanent reductions in capability, but only by complying with contractual and safety procedures.

Linespeeds

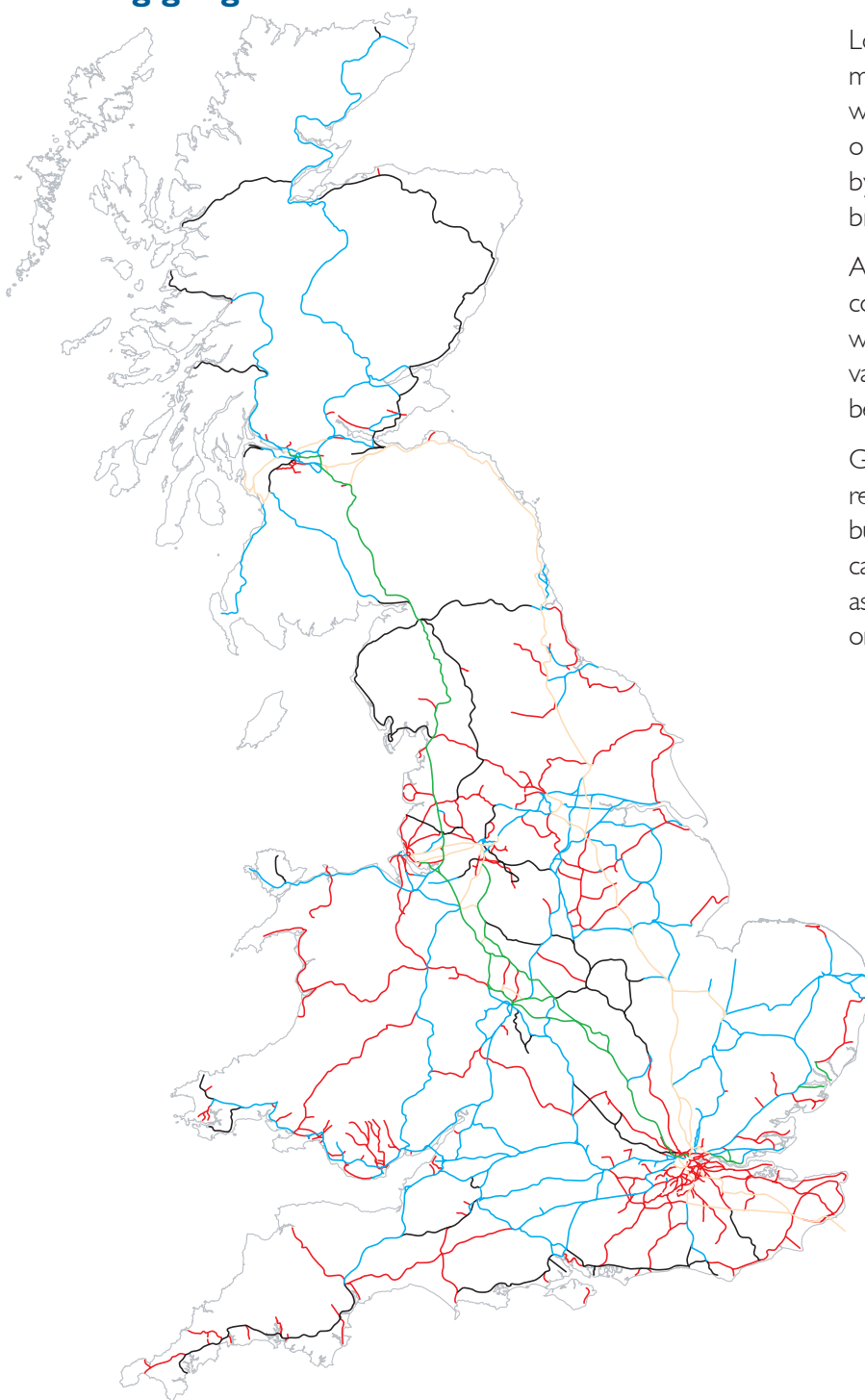


The current linespeeds shown on the map and the types of trains currently in operation, together with their timetable and stopping patterns, produce actual journey times for rail services.

- Up to 35 mph
- 40-75 mph
- 80-105 mph
- 110-125 mph

Figure 3.6 Line speeds (km of track in each speed band)		
Line speed	1 April 2005	2008
km of track up to 35 mph	4163	4161
km of track 40-75 mph	16927	16848
km of track 80-105 mph	7650	7411
km of track 110-125 mph	2741	3068
Total	31482	31489

Loading gauge



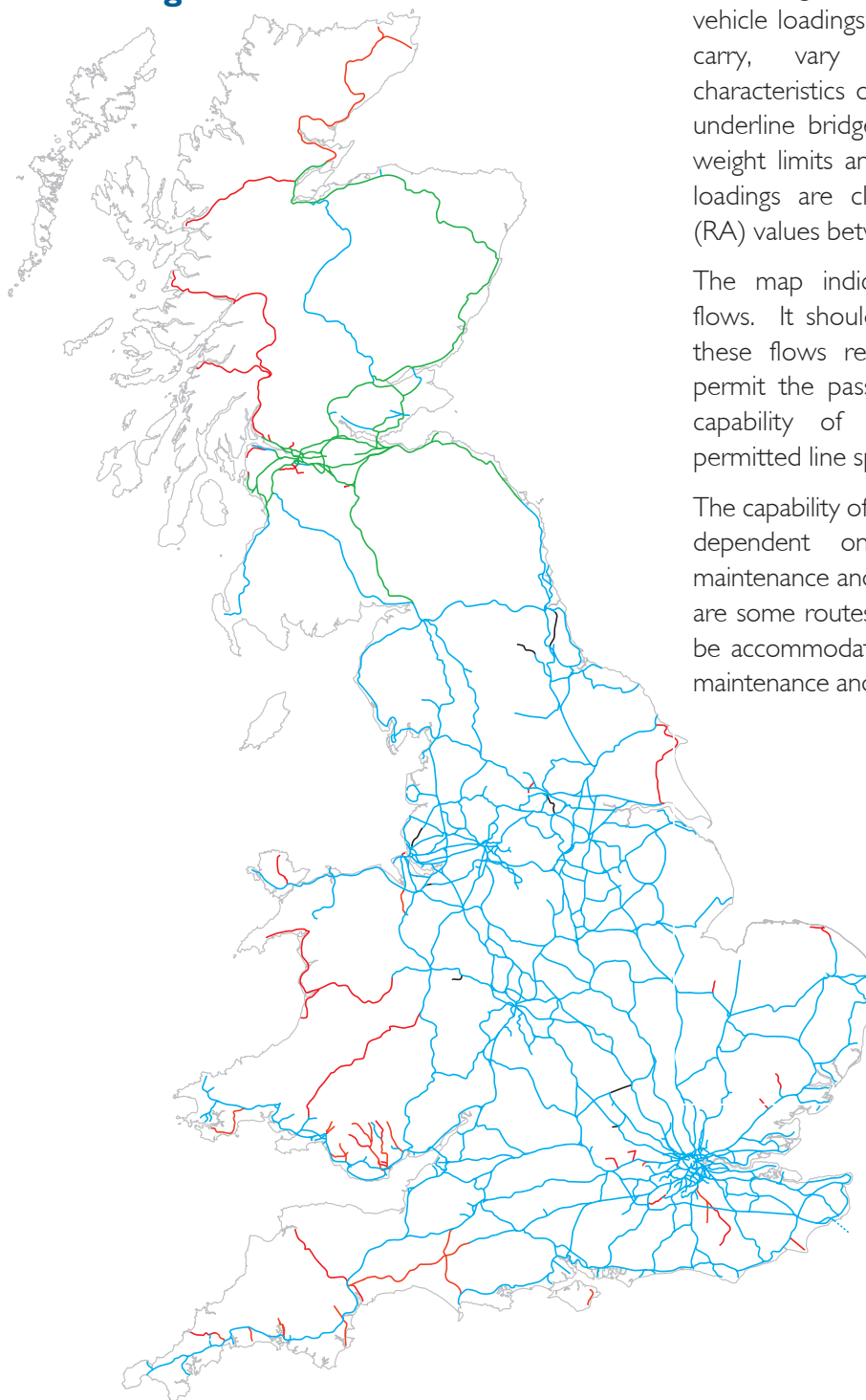
Loading gauge stipulates the maximum height, length and width of a vehicle that can travel on the network. The size varies by route, primarily because of bridge and tunnel clearances.

All passenger-carrying vehicles are constructed to a similar height and width, although their length can vary, most carriages are usually between 20m and 23m long.

Generally, there are few gauging restrictions on passenger vehicles, but for freight vehicles, the capability of the network in ascending order of size is shown on the map.

Figure 3.7 Loading gauge (km of route by loading gauge)		
Loading gauge	1 April 2005	2008
km of route W6	4955	4961
km of route W7	2794	2794
km of route W8	5648	5541
km of route W9	1714	1646
km of route W10 or above	1005	1180
Total	16116	16122

Axle weights



Axle weight limits and equivalent distributed vehicle loadings which the current network can carry, vary according to engineering characteristics of each route, particularly of the underline bridge and viaduct structures. Axle weight limits and equivalent distributed vehicle loadings are classified into Route Availability (RA) values between 1 and 10.

The map indicates current permitted traffic flows. It should be noted that in some cases these flows require operating restrictions to permit the passage of traffic heavier than the capability of structures at the maximum permitted line speed for the route.

The capability of track on a route to carry traffic is dependent on its construction and the maintenance and renewal regime in place. There are some routes where an increase in traffic can be accommodated only with a prior increase in maintenance and renewal activity.

- Up to RA 6
- RA 7-9
- RA 10
- Unclassified/routes currently not in use

Figure 3.8 Permitted axle weights (km of track by axle weight band)		
Axle weights	1 April 2004	2008
km of track up to 20.3 tonnes (RA1-6)	2531	2538
km of track 20.4–24.1 tonnes (RA 7-9)	26317	26317
km of track 24.2–25.4 tonnes (RA10)	2634	2634
Total	31482	31489

Electrification

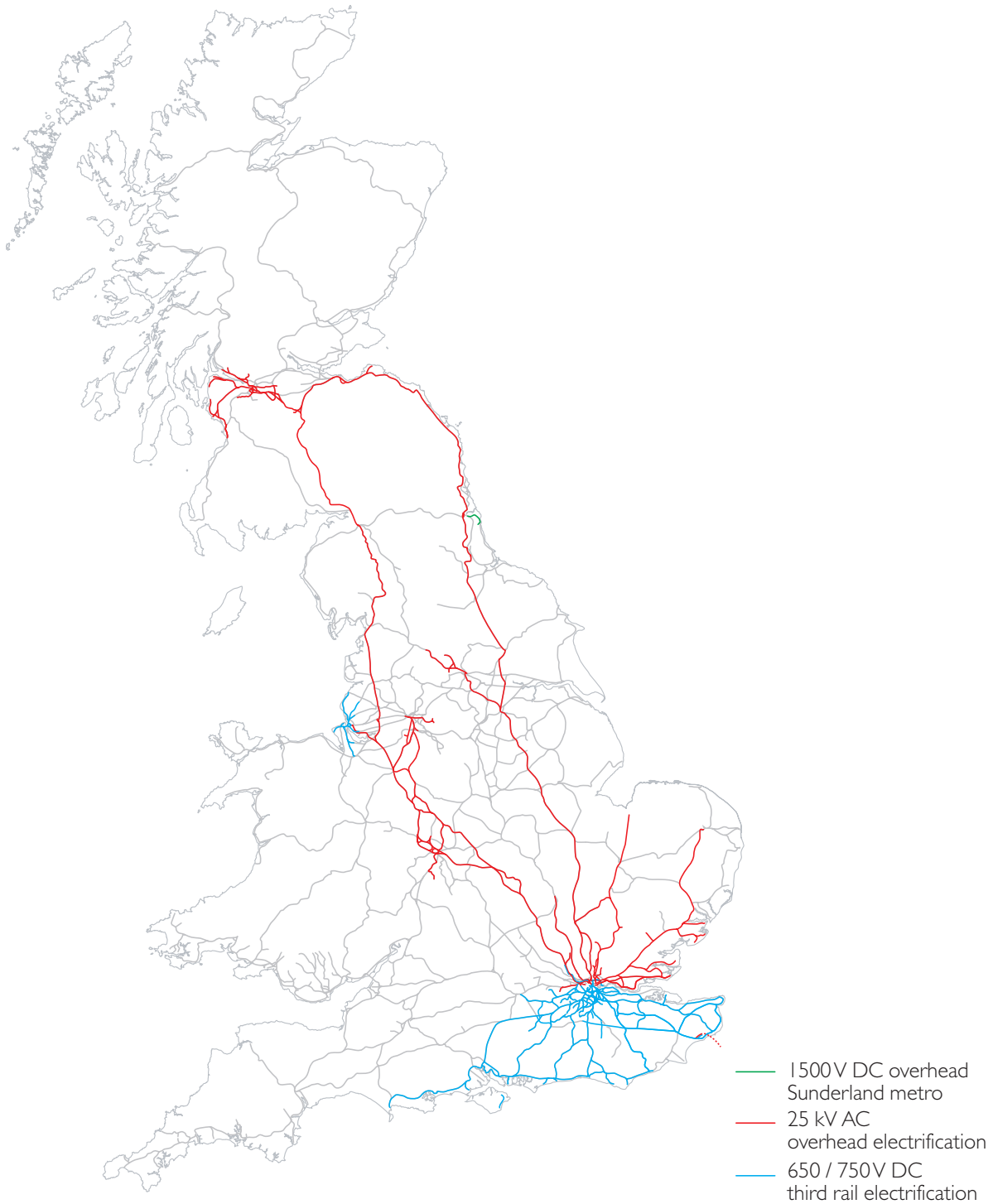
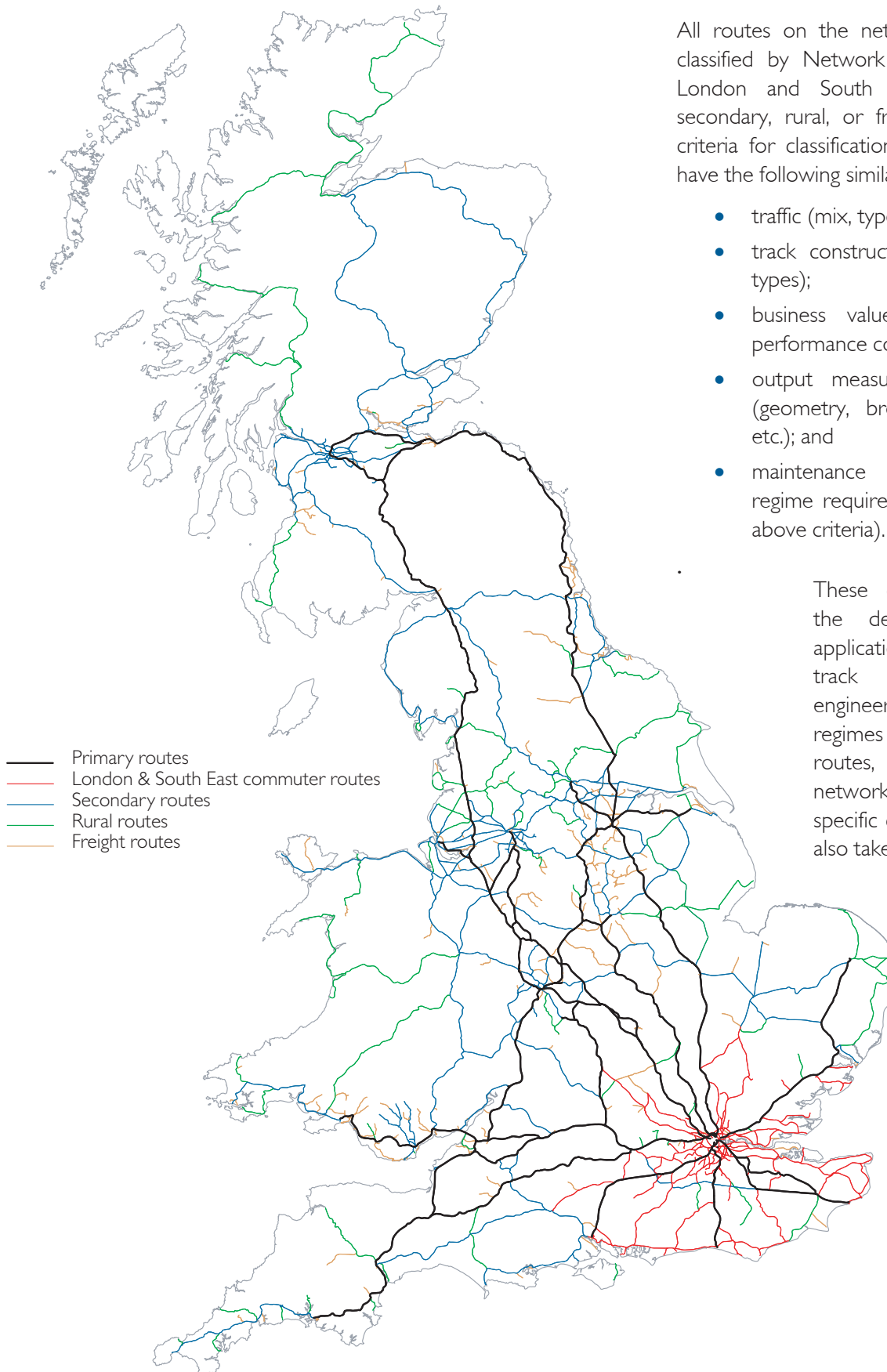


Figure 3.9 Electrification (km of electrified track)		
Electrification	1 April 2005	2008
km of 25kV AC overhead line	7759	7759
km of 25kV AC overhead line and DC third rail	35	35
km of 650/750V DC third rail	4497	4497
km of 1500V DC overhead line	28	28
Total	12319	12319

Classification of routes



All routes on the network have been classified by Network Rail as primary, London and South East commuter, secondary, rural, or freight only. The criteria for classification are that routes have the following similarities:

- traffic (mix, type, tonnage);
- track construction (component types);
- business value (track access, performance costs etc.);
- output measure requirements (geometry, broken rails, TSRs etc.); and
- maintenance and renewal regime requirements (driven by above criteria).

These classifications aid the development and application of appropriate track and structures engineering stewardship regimes on each group of routes, across the network. However, specific circumstances are also taken into account.

Figure 3.10 Route classification

Index of stations

Station name	Route number
Abbey Wood	1
Aber	15
Abercynon North	15
Abercynon South	15
Aberdare	15
Aberdeen	24
Aberdour	24
Aberdovey	14
Abererch	14
Abergavenny	14
Abergele & Pensarn	22
Aberystwyth	14
Accrington	23
Achanalt	25
Achnasheen	25
Achnashellach	25
Acklington	8 (Northern)
Acle	7
Acocks Green	17
Acton Bridge	18 (Northern)
Acton Central	6
Acton Main Line	13
Adderley Park	17
Addiewell	26
Addlestone	3
Adisham	1
Adlington	18 (Northern)
Adlington	20
Adwick	8 (Northern)
Aigburth	21
Ainsdale	21
Aintree	21
Airbles	26
Airdrie	26
Albany Park	1
Albrighton	17
Alderley Edge	20
Aldermaston	12
Aldershot	3
Aldrington	2
Alexandra Palace	8 (Southern)
Alexandra Parade	26
Alexandria	26
Alfreton & Mansfield Parkway	19
Allens West	9
Allerton	20
Alness	25
Alnmouth	8 (Northern)

Station name	Route number
Alresford	7
Alsager	18 (Northern)
Althome	7
Althorpe	11
Altnabreac	25
Alton	3
Altrincham	20
Alvechurch	17
Ambergate	19
Amberley	2
Amersham	16
Ammanford	14
Ancaster	11
Anderston	26
Andover	4
Anerley	2
Angel Road	5
Angmering	2
Annan	26
Anniesland	26
Ansdell & Fairhaven	20
Appleby	23
Appledore	1
Appleford	13
Appley Bridge	20
Apsley	18 (Southern)
Arbroath	24
Ardgay	25
Ardlui	25
Ardrossan Harbour	26
Ardrossan South Beach	26
Ardrossan Town	26
Ardwick	20
Argyle Street	26
Arisaig	25
Arlesey	8 (Southern)
Armathwaite	23
Arnside	23
Arram	10
Arrochar & Tarbet	25
Arundel	2
Ascot	3
Ascott-under-Wychwood	13
Ash	3
Ash Vale	3
Ashburys	20
Ashchurch	13
Ashfield	26
Ashford	3
Ashford International	1
Ashley	20
Ashtead	2
Ashton-under-Lyne	20

Station name	Route number
Ashurst	2
Ashurst New Forest	3
Ashwell & Morden	5
Askam	23
Aslockton	19
Aspatria	23
Aspley Guise	18 (Southern)
Aston	17
Atherstone	18 (Southern)
Atherton	20
Attadale	25
Attenborough	19
Attleborough	5
Auchinleck	26
Audley End	5
Aughton Park	21
Aviemore	25
Avoncliff	4
Avonmouth	13
Axminster	4
Aylesbury	16
Aylesford	1
Aylesham	1
Ayr	26
Bache	21
Baglan	13
Bagshot	3
Baildon	10
Baillieston	26
Balcombe	2
Baldock	5
Balham	2
Balloch	26
Balmossie	24
Bamber Bridge	23
Bamford	11
Banavie	25
Banbury	17
Bangor	22
Bank Hall	21
Banstead	2
Barassie	26
Barbican	2
Bardon Mill	9
Bare Lane	23
Bargeddie	26
Bargoed	15
Barking	6
Barlaston	18 (Northern)
Barming	1
Barmouth	14
Barnehurst	1
Barnes	3

Station name	Route number
Barnes Bridge	3
Barnetby	11
Barnham	2
Barnhill	26
Barnsley	11
Barnstaple	12
Barnt Green	17
Barrhead	26
Barrhill	26
Barrow Haven	11
Barrow Upon Soar	19
Barrow-in-Furness	23
Barry	15
Barry Docks	15
Barry Island	15
Barry Links	24
Barton-on-Humber	11
Basildon	6
Basingstoke	3
Bat & Ball	1
Bath Spa	13
Bathgate	24
Batley	10
Battersby	9
Battersea Park	2
Battle	1
Battlesbridge	7
Bayford	8 (Southern)
Beaconsfield	16
Bearley	17
Bearsden	26
Bearsted	1
Beasdale	25
Beaulieu Road	3
Beaulieu	25
Bebington	21
Beccles	7
Beckenham Hill	1
Beckenham Junction	1
Bedford	19
Bedford St Johns	18 (Southern)
Bedhampton	3
Bedminster	13
Bedworth	17
Bedwyn	12
Beeston	19
Bekesbourne	1
Belle Vue	20
Bellgrove	26
Bellingham	1
Bellshill	26
Belmont	2
Belper	19

Station name	Route number
Beltring	1
Belvedere	1
Bempton	10
Ben Rhydding	10
Benfleet	6
Bentham	23
Bentley	3
Bentley	8 (Northern)
Bere Alston	12
Bere Ferrers	12
Berkhamsted	18 (Southern)
Berkswell	17
Bemey Arms	7
Berry Brow	11
Berrylands	3
Berwick	2
Berwick-upon-Tweed	8 (Northern)
Bescar Lane	20
Bescot Stadium	17
Betchworth	3
Bethnal Green	5
Betws-Y-Coed	22
Beverley	10
Bexhill	2
Bexley	1
Bexleyheath	1
Bicester North	16
Bicester Town	13
Bickley	1
Bidston	21
Biggleswade	8 (Southern)
Billbrook	17
Billericay	7
Billingham	9
Billingshurst	2
Bingham	19
Bingley	10
Birchgrove	15
Birchington-on-Sea	1
Birchwood	20
Birkbeck	2
Birkdale	21
Birkenhead Central	21
Birkenhead Hamilton Square	21
Birkenhead North	21
Birkenhead Park	21
Birmingham International	17
Birmingham Moor Street	17
Birmingham New Street	17
Birmingham Snow Hill	17
Bishop Auckland	9
Bishopbriggs	24

Station name	Route number
Bishops Stortford	5
Bishopstone	2
Bishopton	26
Bitterne	3
Blackburn	23
Blackheath	1
Blackhorse Road	6
Blackpool North	20
Blackpool Pleasure Beach	20
Blackpool South	20
Blackrod	20
Blackwater	3
Blaenau Ffestiniog	22
Blair Atholl	25
Blairhill	26
Blake Street	17
Blakedown	17
Blantyre	26
Blaydon	9
Bleasby	19
Bletchley	18 (Southern)
Bloxwich	17
Bloxwich North	17
Blundellsands & Crosby	21
Blythe Bridge	19
Bodmin Parkway	12
Bodorgan	22
Bognor Regis	2
Bogston	26
Bolton	20
Bolton-on-Deame	11
Bookham	3
Bootle	23
Bootle New Strand	21
Bootle Oriol Road	21
Bordesley	17
Borough Green & Wrotham	1
Borth	14
Bosham	2
Boston	11
Botley	3
Bottesford	19
Bourne End	13
Boumemouth	3
Boumville	17
Bow Brickhill	18 (Southern)
Bowes Park	8 (Southern)
Bowling	26
Boxhill & Westhumble	2
Bracknell	3
Bradford Forster Square	10
Bradford Interchange	10

Station name	Route number
Bradford-on-Avon	4
Brading	3
Braintree	7
Braintree Freeport	7
Bramhall	18 (Northern)
Bramley	10
Bramley	13
Brampton	7
Brampton	9
Branchton	26
Brandon	5
Branksome	3
Braystones	23
Bredbury	20
Breich	26
Brentford	3
Brentwood	7
Bricket Wood	18 (Southern)
Bridge of Allan	24
Bridge of Orchy	25
Bridgend	13
Bridgeton	26
Bridgwater	13
Bridlington	10
Brierfield	23
Brigg	11
Brighouse	10
Brighton	2
Brimsgate	5
Brinnington	20
Bristol Parkway	13
Bristol Temple Meads	13
Brithdir	15
British Steel Redcar	9
Briton Ferry	13
Brixton	1
Broad Green	20
Broadbottom	20
Broadstairs	1
Brockenhurst	3
Brockholes	11
Brockley	2
Brockley Whins	9
Bromborough	21
Bromborough Rake	21
Bromley Cross	20
Bromley North	1
Bromley South	1
Bromsgrove	17
Brondesbury	6
Brondesbury Park	6
Brookmans Park	8 (Southern)
Brookwood	3

Station name	Route number
Broome	14
Broomfleet	10
Brora	25
Brough	10
Broughty Ferry	24
Broxbourne	5
Bruce Grove	5
Brundall	7
Brundall Gardens	7
Brunstane	24
Brunswick	21
Bruton	12
Bryn	20
Buckenham	7
Buckley	22
Bucknell	14
Bugle	12
Builth Road	14
Bulwell	19
Bures	7
Burgess Hill	2
Burley Park	10
Burley-in-Wharfedale	10
Burnage	20
Burneside	23
Burnham	13
Burnham-on-Crouch	7
Burnley Barracks	23
Burnley Central	23
Burnley Manchester Road	23
Burnside	26
Burntisland	24
Burscough Bridge	20
Burscough Junction	23
Bursledon	3
Burton Joyce	19
Burton-on-Trent	19
Bury St Edmunds	5
Busby	26
Bush Hill Park	5
Bushey	18 (Southern)
Butlers Lane	17
Buxted	2
Buxton	20
Byfleet & New Haw	3
Bynea	14
Cadoxton	15
Caergwrle	22
Caerphilly	15
Caersws	14
Caldicot	13
Caledonian Road & Barnsbury	6

Station name	Route number
Calstock	12
Cam & Dursley	13
Camberley	3
Camborne	12
Cambridge	5
Cambridge Heath	5
Cambuslang	26
Camden Road	6
Camelon	24
Canley	17
Canning Town	6
Cannock	17
Canonbury	6
Canterbury East	1
Canterbury West	1
Cantley	7
Capenhurst	21
Carbis Bay	12
Cardenden	24
Cardiff Bay	15
Cardiff Central	15
Cardiff Queen Street	15
Cardonald	26
Cardross	26
Carfin	26
Cark & Cartmel	23
Carlisle	18 (Northern)
Carlton	19
Carluke	26
Camarthen	14
Carmyle	26
Camforth	23
Carnoustie	24
Carntyne	26
Carpenders Park	18 (Southern)
Cambridge	25
Carshalton	2
Carshalton Beeches	2
Carstairs	26
Cartsdyke	26
Castle Bar Park	13
Castle Cary	12
Castleford	10
Castleton	20
Castleton Moor	9
Caterham	2
Catford	1
Catford Bridge	1
Cathays	15
Cathcart	26
Cattal	10
Causeland	12
Cefn-y-Bedd	22

Station name	Route number
Chadwell Heath	7
Chafford Hundred	6
Chalfont & Latimer	16
Chalkwell	6
Chandlers Ford	4
Chapel-en-le-Frith	20
Chapelton	12
Chapelton	11
Chappel & Wakes Colne	7
Charing	1
Charing Cross	26
Charlbury	13
Charlton	1
Chartham	1
Chassen Road	20
Chatham	1
Chathill	8 (Northern)
Cheadle Hulme	20
Cheam	2
Cheddington	18 (Southern)
Chelford	20
Chelmsford	7
Chelsfield	1
Cheltenham Spa	13
Chepstow	13
Cherry Tree	23
Chertsey	3
Cheshunt	5
Chessington North	3
Chessington South	3
Chester	22
Chester Road	17
Chesterfield	19
Chester-le-Street	8 (Northern)
Chestfield & Swalecliffe	1
Chetnole	4
Chichester	2
Chilham	1
Chilworth	3
Chingford	5
Chinley	11
Chippenham	13
Chipstead	2
Chirk	14
Chislehurst	1
Chiswick	3
Cholsey	13
Chorley	20
Chorleywood	16
Christchurch	3
Christ's Hospital	2
Church & Oswaldtwistle	23
Church Fenton	10

Station name	Route number
Church Stretton	14
Cilmeri	14
City Thameslink	2
Clacton	7
Clandon	3
Clapham	23
Clapham High Street	2
Clapham Junction	3
Clapton	5
Clarboston Road	14
Clarkston	26
Claverdon	17
Claygate	3
Cleethorpes	11
Cleland	26
Clifton	20
Clifton Down	13
Clitheroe	23
Clock House	1
Clunderwen	14
Clydebank	26
Coatbridge Central	26
Coatbridge Sunnyside	26
Coatdyke	26
Cobham & Stoke	
D'abernon	3
Codsall	17
Cogan	15
Colchester	7
Colchester Town	7
Collingham	11
Collington	2
Colne	23
Colwall	17
Colwyn Bay	22
Combe	13
Commondale	9
Congleton	18 (Northern)
Conisbrough	11
Connel Ferry	25
Cononley	10
Conway Park	21
Conwy	22
Cooden Beach	2
Cookham	13
Cooksbridge	2
Coombe	12
Copplestone	12
Corbridge	9
Corkerhill	26
Corkickle	23
Corpach	25
Corrour	25

Station name	Route number
Coryton	15
Coseley	17
Cosford	17
Cosham	3
Cottingham	10
Cottingley	10
Coulsdon South	2
Coventry	17
Cowden	2
Cowdenbeath	24
Cradley Heath	17
Craigendoran	26
Cramlington	8 (Northern)
Craven Arms	14
Crawley	2
Crayford	1
Crediton	12
Cressing	7
Cressington	21
Creswell	19
Crewe	18 (Northern)
Crewkerne	4
Crews Hill	8 (Southern)
Crianlarich	25
Criccieth	14
Cricklewood	19
Croftfoot	26
Crofton Park	1
Cromer	7
Cromford	19
Crookston	26
Cross Gates	10
Crossflatts	10
Crosshill	26
Crossmyloof	26
Croston	23
Crouch Hill	6
Crowborough	2
Crowhurst	1
Crowle	11
Crowthorne	3
Croy	24
Crystal Palace	2
Cuddington	20
Cuffley	8 (Southern)
Culham	13
Culrain	25
Cumbernauld	26
Cupar	24
Curriehill	24
Custom House	6
Cuxton	1
Cwmbach	15

Station name	Route number
Cwmbran	14
Cynghordy	14
Dagenham Dock	6
Daisy Hill	20
Dalgety Bay	24
Dalmally	25
Dalmarnock	26
Dalmeny	24
Dalmuir	26
Dalreoch	26
Dalry	26
Dalston	23
Dalston Kingsland	6
Dalton	23
Dalwhinnie	25
Danby	9
Danescourt	15
Danzev	17
Darlington	8 (Northern)
Damall	11
Darsham	7
Dartford	1
Darton	11
Darwen	20
Datchet	3
Davenport	20
Dawlish	12
Dawlish Warren	12
Deal	1
Dean	4
Dean Lane	20
Deansgate	20
Deganwy	22
Deighton	10
Delamere	20
Denby Dale	11
Denham	16
Denham Golf Club	16
Denmark Hill	1
Dent	23
Denton	20
Deptford	1
Derby	19
Derby Road	7
Derker	20
Devonport	12
Dewsbury	10
Didcot Parkway	13
Digby & Sowton	12
Dilton Marsh	4
Dinas	15
Dinas Powys	15
Dingle Road	15

Station name	Route number
Dingwall	25
Dinsdale	9
Dinting	20
Disley	20
Diss	7
Dockyard	12
Dodworth	11
Dolau	14
Doleham	1
Dolgarrog	22
Dolwyddelan	22
Doncaster	8 (Northern)
Doncaster	8 (Southern)
Dorchester South	3
Dorchester West	4
Dore	11
Dorking	2
Dorking (Deepdene)	3
Dorking West	3
Dormans	2
Dorridge	17
Dove Holes	20
Dover Priory	1
Dovercourt	7
Dovey Junction	14
Downham Market	5
Drayton Green	13
Drayton Park	8 (Southern)
Drem	8 (Northern)
Driffield	10
Drigg	23
Droitwich Spa	17
Dronfield	11
Drumchapel	26
Drumfrochar	26
Drumgelloch	26
Drumry	26
Duddeston	17
Dudley Port	17
Duffield	19
Duirinish	25
Duke Street	26
Dullingham	5
Dumbarton Central	26
Dumbarton East	26
Dumbreck	26
Dumfries	26
Dumpton Park	1
Dunbar	8 (Northern)
Dunblane	24
Dunbridge	4
Duncraig	25
Dundee	24

Station name	Route number
Dunfermline Queen Margaret	24
Dunfermline Town	24
Dunkeld & Birnam	25
Dunlop	26
Dunrobin Castle	25
Dunston	9
Dunton Green	1
Durham	8 (Northern)
Durrington-on-Sea	2
Dyce	25
Dyffryn Ardudwy	14
Eaglescliffe	9
Ealing Broadway	13
Earlestown	20
Earley	3
Earlsfield	3
Earlswood	2
Earlswood	17
East Boldon	9
East Croydon	2
East Didsbury	20
East Dulwich	2
East Farleigh	1
East Garforth	10
East Grinstead	2
East Kilbride	26
East Malling	1
East Tilbury	6
East Worthing	2
Eastbourne	2
Eastbrook	15
Easterhouse	26
Eastham Rake	21
Eastleigh	3
Eastrington	10
Eccles	20
Eccles Road	5
Eccleston Park	20
Edale	11
Eden Park	1
Edenbridge	1
Edenbridge Town	2
Edge Hill	20
Edinburgh	24
Edinburgh Park	24
Edmonton Green	5
Effingham Junction	3
Eggesford	12
Egham	3
Egton	9
Elephant & Castle	2
Elgin	25

Station name	Route number
Ellesmere Port	21
Elmers End	1
Elmstead Woods	1
Elmswell	5
Elsecar	11
Elsenham	5
Elstree & Borehamwood	19
Eltham	1
Elton & Orston	19
Ely	5
Emerson Park	7
Emsworth	2
Enfield Chase	8 (Southern)
Enfield Lock	5
Enfield Town	5
Entwistle	20
Epsom	2
Epsom Downs	2
Erdington	17
Eridge	2
Erith	1
Esher	3
Essex Road	8 (Southern)
Etchingham	1
Etruria	18 (Northern)
Euxton Balshaw Lane	18 (Northern)
Evesham	13
Ewell East	2
Ewell West	3
Ewenny Road	15
Exeter Central	12
Exeter St Davids	12
Exeter St Thomas	12
Exhibition Centre	26
Exmouth	12
Exton	12
Eynsford	1
Failsworth	20
Fairbourne	14
Fairfield	20
Fairlie	26
Fairwater	15
Falconwood	1
Falkirk Grahamston	24
Falkirk High	24
Falls of Cruachan	25
Falmer	2
Falmouth Docks	12
Falmouth Town	12
Fambridge	7
Fareham	3
Farnborough	3
Farnborough North	3

Station name	Route number
Farncombe	3
Farnham	3
Farningham Road	1
Farnworth	20
Faringdon	2
Fauldhouse	26
Faversham	1
Faygate	2
Fazakerley	21
Fearn	25
Featherstone	10
Felixstowe	7
Feltham	3
Feniton	4
Fenny Stratford	18 (Southern)
Fernhill	15
Ferriby	10
Ferrieside	14
Ffairfach	14
Filey	10
Filton Abbey Wood	13
Finchley Road & Frognal	6
Finsbury Park	8 (Southern)
Finstock	13
Fishbourne	2
Fishersgate	2
Fishguard Harbour	14
Fiskerton	19
Fitzwilliam	8 (Northern)
Five Ways	17
Fleet	3
Flimby	23
Flint	22
Flitwick	19
Flixton	20
Flowery Field	20
Folkestone Central	1
Folkestone Harbour	1
Folkestone West	1
Ford	2
Forest Gate	7
Forest Hill	2
Formby	21
Forres	25
Forsinard	25
Fort Matilda	26
Fort William	25
Four Oaks	17
Foxfield	23
Foxton	5
Frant	1
Fratton	3
Freshfield	21

Station name	Route number
Freshford	4
Frimley	3
Frinton	7
Frizinghall	10
Frodsham	22
Frome	12
Fulwell	3
Furness Vale	20
Furze Platt	13
Gainsborough Central	11
Gainsborough Lea Road	11
Garelochhead	25
Garforth	10
Gargrave	23
Garrowhill	26
Garscadden	26
Garsdale	23
Garston	18 (Southern)
Garston	21
Garswood	20
Gartcosh	26
Garth	14
Garth (Mid-Glamorgan)	15
Garve	25
Gathurst	20
Gatley	20
Gatwick Airport	2
Georgemas Junction	25
Gerrards Cross	16
Gidea Park	7
Giffnock	26
Giggleswick	23
Gilberdyke	10
Gilfach Fargoed	15
Gillingham (Kent)	1
Gillingham (Dorset)	4
Gilshochill	26
Gipsy Hill	2
Girvan	26
Glaisdale	9
Glan Conwy	22
Glasgow Central	26
Glasgow Queen Street	24
Glasshoughton	10
Glazebrook	20
Gleneagles	24
Glenfinnan	25
Glengamock	26
Glenrothes with Thornton	24
Glossop	20
Gloucester	13
Glynde	2
Gobowen	14

Station name	Route number
Godalming	3
Godley	20
Godstone	1
Goldthorpe	11
Golf Street	24
Golspie	25
Gomshall	3
Goodmayes	7
Goole	10
Goostrey	20
Gordon Hill	8 (Southern)
Goring & Streatley	13
Goring-by-Sea	2
Gorton	20
Gospel Oak	6
Gourock	26
Gowerton	14
Goxhill	11
Grange Park	8 (Southern)
Grange-over-Sands	23
Grangetown	15
Grantham	8 (Southern)
Grateley	4
Gravelly Hill	17
Gravesend	1
Grays	6
Great Ayton	9
Great Bentley	7
Great Chesterford	5
Great Coates	11
Great Malvern	17
Great Missenden	16
Great Yarmouth	7
Green Lane (Birkenhead)	21
Green Road	23
Greenbank	20
Greenfaulds	26
Greenfield	10
Greenford	13
Greenhithe	1
Greenock Central	26
Greenock West	26
Greenwich	1
Gretna Green	26
Grimsby Docks	11
Grimsby Town	11
Grindleford	11
Grosmont	9
Grove Park	1
Guide Bridge	20
Guildford	3
Guseley	10
Gunnersbury	6

Station name	Route number
Gunnislake	12
Gunton	7
Gwersyllt	22
Gypsy Lane	9
Habrough	11
Hackbridge	2
Hackney Central	6
Hackney Downs	5
Hackney Wick	6
Haddenham & Thame Parkway	16
Haddiscoe	7
Hadfield	20
Hadley Wood	8 (Southern)
Hag Fold	20
Hagley	17
Hairmyres	26
Hale	20
Halesworth	7
Halewood	20
Halifax	10
Hall Green	17
Hall i' th' Wood	20
Hall Road	21
Halling	1
Haltwhistle	9
Ham Street	1
Hamble	3
Hamilton Central	26
Hamilton West	26
Hammerton	10
Hampden Park	2
Hampstead Heath	6
Hampton	3
Hampton Court	3
Hampton Wick	3
Hampton-in-Arden	17
Hamstead	17
Hamworthy	3
Hanborough	13
Handforth	20
Hanwell	13
Hapton	23
Harlech	14
Harlesden	18 (Southern)
Harling Road	5
Harlington	19
Harlow Mill	5
Harlow Town	5
Harold Wood	7
Harpden	19
Harrietsham	1
Harringay	8 (Southern)

Station name	Route number
Harringay Green Lanes	6
Harrington	23
Harrogate	10
Harrow & Wealdstone	18 (Southern)
Harrow-on-the-Hill	16
Hartford	18 (Northern)
Hartlebury	17
Hartlepool	9
Hartwood	26
Harwich International	7
Harwich Town	7
Haslemere	3
Hassocks	2
Hastings	1
Hatch End	18 (Southern)
Hatfield	8 (Southern)
Hatfield & Stainforth	11
Hatfield Peverel	7
Hathersage	11
Hattersley	20
Hatton	17
Havant	3
Havenhouse	11
Haverfordwest	14
Hawarden	22
Hawarden Bridge	22
Hawkhead	26
Haydon Bridge	9
Haydons Road	2
Hayes	1
Hayes & Harlington	13
Hayle	12
Haymarket	24
Haywards Heath	2
Hazel Grove	20
Headcorn	1
Headingley	10
Headstone Lane	18 (Southern)
Heald Green	20
Healing	11
Heath High Level	15
Heath Low Level	15
Heaton Chapel	20
Hebden Bridge	10
Heckington	11
Hedge End	3
Hednesford	17
Heighington	9
Helensburgh Central	26
Helensburgh Upper	25
Hellifield	23
Helmsdale	25
Helsby	22

Station name	Route number
Hemel Hempstead	18 (Southern)
Hendon	19
Hengoed	15
Henley-in-Arden	17
Henley-on-Thames	13
Hensall	10
Hereford	14
Herne Bay	1
Herne Hill	1
Hersham	3
Hertford East	5
Hertford North	8 (Southern)
Hessle	10
Heswall	22
Hever	2
Heworth	9
Hexham	9
Heyford	17
Heysham Port	23
High Brooms	1
High Street	26
High Wycombe	16
Higham	1
Highams Park	5
Highbridge & Burnham	13
Highbury & Islington	6
Hightown	21
Hildenborough	1
Hillfoot	26
Hillington East	26
Hillington West	26
Hillside	21
Hilsea	3
Hinchley Wood	3
Hinckley	19
Hindley	20
Hinton Admiral	3
Hitchin	8 (Southern)
Hither Green	1
Hockley	7
Hollingbourne	1
Hollinwood	20
Holmes Chapel	20
Holmwood	2
Holton Heath	3
Holyhead	22
Holytown	26
Homerton	6
Honeybourne	13
Honiton	4
Honley	11
Honor Oak Park	2
Hook	3

Station name	Route number
Hooton	21
Hope	11
Hope	22
Hopton Heath	14
Horley	2
Hornbeam Park	10
Hornsey	8 (Southern)
Horsforth	10
Horsham	2
Horsley	3
Horton-in-Ribblesdale	23
Horwich Parkway	20
Hoscar	20
Hough Green	20
Hounslow	3
Hove	2
Hoveton & Wroxham	7
How Wood	18 (Southern)
Howden	10
Howwood	26
Hoylake	21
Hubberts Bridge	11
Hucknall	19
Huddersfield	10
Hull	10
Humphrey Park	20
Huncoat	23
Hungerford	12
Hunmanby	10
Huntingdon	8 (Southern)
Huntly	25
Hunts Cross	20
Hurst Green	2
Hutton Cranswick	10
Huyton	20
Hyde Central	20
Hyde North	20
Hykeham	11
Hyndland	26
Hythe	7
IBM	26
Ifield	2
Ilford	7
Ilkley	10
Ince	20
Ince & Elton	22
Ingatstone	7
Insch	25
Invergordon	25
Invergowrie	24
Inverkeithing	24
Inverkip	26
Inverness	25

Station name	Route number
Invershin	25
Inverurie	25
Ipswich	7
Irlam	20
Irvine	26
Isleworth	3
Islip	13
Iver	13
Ivybridge	12
James Street	21
Jewellery Quarter	17
Johnston	14
Johnstone	26
Jordanhill	26
Kearney	1
Kearsley	20
Keighley	10
Keith	25
Kelvedon	7
Kemble	13
Kempston Hardwick	18 (Southern)
Kempton Park	3
Kemsing	1
Kemsley	1
Kendal	23
Kenley	2
Kennett	5
Kennishead	26
Kensal Green	18 (Southern)
Kensal Rise	6
Kensington Olympia	2
Kent House	1
Kentish Town	19
Kentish Town West	6
Kenton	18 (Southern)
Kents Bank	23
Kettering	19
Kew Bridge	3
Kew Gardens	6
Keyham	12
Keynsham	13
Kidbrooke	1
Kidderminster	17
Kidsgrove	18 (Northern)
Kidwelly	14
Kilburn High Road	18 (Southern)
Kildale	9
Kildonan	25
Kilgetty	14
Kilmarnock	26
Kilmaurs	26
Kilpatrick	26
Kilwinning	26

Station name	Route number
Kinbrace	25
Kingham	13
Kinghom	24
Kings Cross Thameslink	2
Kings Langley	18 (Southern)
Kings Lynn	5
Kings Norton	17
Kings Nympton	12
Kings Park	26
Kings Sutton	17
Kingsknowe	24
Kingston	3
Kingswood	2
Kingussie	25
Kintbury	12
Kirby Cross	7
Kirk Sandall	11
Kirkby	21
Kirkby Stephen	23
Kirkby-in-Ashfield	19
Kirkby-in-Furness	23
Kirkcaldy	24
Kirkconnel	26
Kirkdale	21
Kirkham & Wesham	20
Kirkhill	26
Kirknewton	24
Kirkwood	26
Kirton Lindsey	11
Kiveton Bridge	11
Kiveton Park	11
Knaresborough	10
Knebworth	8 (Southern)
Knighton	14
Knockholt	1
Knottingley	10
Knucklas	14
Knutsford	20
Kyle of Lochalsh	25
Ladybank	24
Ladywell	1
Laindon	6
Lairg	25
Lake	3
Lakenheath	5
Lamphey	14
Lanark	26
Lancaster	18 (Northern)
Lancing	2
Landywood	17
Langbank	26
Langho	23
Langley	13

Station name	Route number
Langley Green	17
Langley Mill	19
Langside	26
Langwathby	23
Langwith Whaley Thorns	19
Lapford	12
Lapworth	17
Larbert	24
Largs	26
Lawrence Hill	13
Layton	20
Lazonby & Kirkoswald	23
Lea Green	20
Lea Hall	17
Leagrave	19
Lealholm	9
Leamington Spa	17
Leasowe	21
Leatherhead	2
Ledbury	17
Lee	1
Leeds	10
Leicester	19
Leigh	2
Leigh-on-Sea	6
Leighton Buzzard	18 (Southern)
Lelant	12
Lelant Saltings	12
Lenham	1
Lenzie	24
Leominster	14
Letchworth	5
Leuchars	24
Levenshulme	20
Lewes	2
Lewisham	1
Leyland	18 (Northern)
Leyton Midland Road	6
Leytonstone High Road	6
Lichfield City	17
Lichfield Trent Valley	18 (Southern)
Lidlington	18 (Southern)
Limehouse	6
Lincoln Central	11
Lingfield	2
Lingwood	7
Linlithgow	24
Liphook	3
Liskeard	12
Liss	3
Lisvane & Thornhill	15
Little Kimble	16
Little Sutton	21

Station name	Route number
Littleborough	10
Littlehampton	2
Littlehaven	2
Littleport	5
Liverpool Central	21
Liverpool Lime Street	20
Livingston North	24
Livingston South	26
Llanaber	14
Llanbedr	14
Llanbister Road	14
Llanbradach	15
Llandaf	15
Llandanwg	14
Llandecwyn	14
Llandeilo	14
Llandovery	14
Llandrindod	14
Llandudno	22
Llandudno Junction	22
Llandybie	14
Llanelli	14
Llanfairfechan	22
Llanfairpwll	22
Llangadog	14
Llangammarch	14
Llangennech	14
Llangynllo	14
Llanishen	15
Llanrwst	22
Llansamlet	13
Llanwrda	14
Llanwrtyd	14
Llwyngwril	14
Llwynypia	15
Loch Awe	25
Loch Eil Outward Bound	25
Lochailort	25
Locheilside	25
Lochgelly	24
Lochluichart	25
Lochwinnoch	26
Lockerbie	18 (Northern)
Lockwood	11
London Blackfriars	2
London Bridge	2
London Cannon Street	1
London Charing Cross	1
London Euston	18 (Southern)
London Fenchurch Street	6
London Fields	5
London Kings Cross	8 (Southern)
London Liverpool Street	7

Station name	Route number
London Marylebone	16
London Paddington	13
London Road (Brighton)	2
London Road (Guildford)	3
London St Pancras	19
London Victoria	1
London Waterloo	3
Long Buckby	18 (Southern)
Long Eaton	19
Long Preston	23
Longbeck	9
Longbridge	17
Longcross	3
Longfield	1
Longniddry	8 (Northern)
Longport	18 (Northern)
Longton	19
Looe	12
Lostock	20
Lostock Gralam	20
Lostock Hall	23
Lostwithiel	12
Loughborough	19
Loughborough Junction	2
Lowdham	19
Lower Sydenham	1
Lowestoft	7
Ludlow	14
Luton	19
Luton Airport Parkway	19
Luxulyan	12
Lydney	13
Lye	17
Lymington Pier	3
Lymington Town	3
Lympstone Commando	12
Lympstone Village	12
Lytham	20
Macclesfield	18 (Northern)
Machynlleth	14
Maesteg	15
Maghull	21
Maiden Newton	4
Maidenhead	13
Maidstone Barracks	1
Maidstone East	1
Maidstone West	1
Malden Manor	3
Mallaig	25
Malton	10
Malvern Link	17
Manchester Airport	20
Manchester Oxford Road	20

Station name	Route number
Manchester Piccadilly	20
Manchester Victoria	20
Manea	5
Manningtree	7
Manor Park	7
Manor Road	21
Manorbier	14
Manors	8 (Northern)
Mansfield	19
Mansfield Woodhouse	19
March	5
Marden	1
Margate	1
Market Harborough	19
Market Rasen	11
Markinch	24
Marks Tey	7
Marlow	13
Marple	20
Marsden	10
Marske	9
Marston Green	17
Martin Mill	1
Martins Heron	3
Marton	9
Maryhill	26
Maryland	7
Maryport	23
Matlock	19
Matlock Bath	19
Mauldeth Road	20
Maxwell Park	26
Maybole	26
Maze Hill	2
Meadowhall	11
Meldreth	5
Melksham	4
Melton	7
Melton Mowbray	19
Menheniot	12
Menston	10
Meols	21
Meols Cop	20
Meopham	1
Merstham	2
Merthyr Tydfil	15
Merthyr Vale	15
Metheringham	11
Metro Centre	9
Mexborough	11
Micheldever	3
Micklefield	10
Middlesbrough	9

Station name	Route number
Middlewood	20
Midgham	12
Milford	3
Milford Haven	14
Mill Hill	23
Mill Hill Broadway	19
Millbrook (Hants)	3
Millbrook (Beds)	18 (Southern)
Milliken Park	26
Millom	23
Mills Hill	20
Milngavie	26
Milnrow	20
Milton Keynes Central	18 (Southern)
Minffordd	14
Minster	1
Mirfield	10
Mistley	7
Mitcham Junction	2
Mobberley	20
Monifieth	24
Monks Risborough	16
Montpelier	13
Montrose	24
Moor Park	16
Moorfields	21
Moorgate	8 (Southern)
Moorside	20
Moorthorpe	11
Morar	25
Morchard Road	12
Morden South	2
Morecambe	23
Moreton (Dorset)	3
Moreton (Merseyside)	21
Moreton-in-Marsh	13
Morfa Mawddach	14
Morley	10
Morpeth	8 (Northern)
Mortimer	13
Mortlake	3
Moses Gate	20
Moss Side	20
Mossley	10
Mossley Hill	20
Mosspark	26
Moston	20
Motherwell	26
Motspur Park	3
Mottingham	1
Mouldsworth	20
Moulsecomb	2
Mount Florida	26

Station name	Route number
Mount Vernon	26
Mountain Ash	15
Muir of Ord	25
Muirend	26
Musselburgh	8 (Northern)
Mytholmroyd	10
Nafferton	10
Nailsea & Backwell	13
Nairn	25
Nantwich	14
Narbeth	14
Narborough	19
Navigation Road	20
Neath	13
Needham Market	7
Neilston	26
Nelson	23
Neston	22
Netherfield	19
Nethertown	23
Netley	3
New Barnet	8 (Southern)
New Beckenham	1
New Brighton	21
New Clee	11
New Cross	1
New Cross Gate	2
New Cumnock	26
New Eltham	1
New Hay	20
New Holland	11
New Hythe	1
New Lane	20
New Malden	3
New Mills Central	20
New Mills Newtown	20
New Milton	3
New Pudsey	10
New Southgate	8 (Southern)
Newark Castle	19
Newark North Gate	8 (Southern)
Newbury	12
Newbury Racecourse	12
Newcastle	8 (Northern)
Newcraighall	24
Newhaven Harbour	2
Newhaven Town	2
Newington	1
Newmarket	5
Newport (Essex)	5
Newport (S Wales)	13
Newquay	12
Newstead	19

Station name	Route number
Newton	26
Newton Abbot	12
Newton Aycliffe	9
Newton for Hyde	20
Newton St Cyres	12
Newton-le-Willows	20
Newtonmore	25
Newton-on-Ayr	26
Newtown	14
Ninian Park	15
Nitshill	26
Norbiton	3
Norbury	2
Normans Bay	2
Normanton	10
North Berwick	8 (Northern)
North Camp	3
North Dulwich	2
North Llanrwst	22
North Queensferry	24
North Road	9
North Sheen	3
North Walsham	7
North Wembley	18 (Southern)
North Woolwich	6
Northallerton	8 (Northern)
Northampton	18 (Southern)
Northfield	17
Northfleet	1
Northolt Park	16
Northumberland Park	5
Northwich	20
Norton Bridge	18 (Northern)
Norwich	7
Norwood Junction	2
Nottingham	19
Nuneaton	18 (Southern)
Nunhead	1
Nunthorpe	9
Nutbourne	2
Nutfield	1
Oakengates	17
Oakham	19
Oakleigh Park	8 (Southern)
Oban	25
Ockendon	6
Ockley	2
Old Hill	17
Old Roan	21
Old Street	8 (Southern)
Oldfield Park	13
Oldham Mumps	20
Oldham Werneth	20

Station name	Route number
Olton	17
Ore	1
Ormskirk	21
Orpington	1
Orrell	20
Orrell Park	21
Otford	1
Oulton Broad North	7
Oulton Broad South	7
Outwood	8 (Northern)
Overpool	21
Overton	4
Oxenholme Lake District	18 (Northern)
Oxford	13
Oxshott	3
Oxted	2
Paddock Wood	1
Padgate	20
Paignton	12
Paisley Canal	26
Paisley Gilmour Street	26
Paisley St James	26
Palmers Green	8 (Southern)
Pangbourne	13
Pannal	10
Pantyyfynnon	14
Par	12
Parbold	20
Park Street	18 (Southern)
Parkstone	3
Parson Street	13
Partick	26
Parton	23
Patchway	13
Patricroft	20
Patterton	26
Pear tree	19
Peckham Rye	1
Pegswood	8 (Northern)
Pemberton	20
Pembrey & Burry Port	14
Pembroke	14
Pembroke Dock	14
Penally	14
Penarth	15
Pencoed	13
Pengam	15
Penge East	1
Penge West	2
Penhelig	14
Penistone	11
Penkridge	17
Penmaenmawr	22

Station name	Route number
Penmere	12
Penrhiwceiber	15
Penrhyndeudraeth	14
Penrith	18 (Northern)
Penryn	12
Pensarn	14
Penshurst	1
Pentre-Bach	15
Pen-y-Bont	14
Penychain	14
Penyffordd	22
Penzance	12
Perranwell	12
Perry Barr	17
Pershore	13
Perth	25
Peterborough	8 (Southern)
Petersfield	3
Petts Wood	1
Pevensey & Westham	2
Pevensey Bay	2
Pewsey	12
Pilning	13
Pinhoe	4
Pitlochry	25
Pitsea	6
Pleasington	23
Plockton	25
Pluckley	1
Plumley	20
Plumpton	2
Plumstead	1
Plymouth	12
Pokesdown	3
Polegate	2
Polesworth	18 (Southern)
Pollokshaws East	26
Pollokshaws West	26
Pollokshields East	26
Pollokshields West	26
Polmont	24
Polsloe Bridge	12
Ponders End	5
Pontarddulais	14
Pontefract Baghill	10
Pontefract Monkhill	10
Pontefract Tanshelf	10
Pontlottyn	15
Pontyclun	13
Pont-y-Pant	22
Pontypool & New Inn	14
Pontypridd	15
Poole	3

Station name	Route number
Poppleton	10
Port Glasgow	26
Port Sunlight	21
Port Talbot Parkway	13
Portchester	3
Porth	15
Porthmadog	14
Portlethen	24
Portslade	2
Portsmouth & Southsea	3
Portsmouth Arms	12
Portsmouth Harbour	3
Possilpark & Parkhouse	26
Potters Bar	8 (Southern)
Poulton-le-Fylde	20
Poynton	18 (Northern)
Prees	14
Prescot	20
Prestatyn	22
Prestbury	18 (Northern)
Preston	18 (Northern)
Preston Park	2
Prestonpans	8 (Northern)
Prestwick International Airport	26
Prestwick Town	26
Priesthill & Darnley	26
Princes Risborough	16
Prittlewell	7
Prudhoe	9
Pulborough	2
Purfleet	6
Purley	2
Purley Oaks	2
Putney	3
Pwllheli	14
Pyle	13
Quakers Yard	15
Queens Park	26
Queens Park (London)	18 (Southern)
Queens Road Peckham	2
Queensborough	1
Queenstown Road	3
Quintrel Downs	12
Radcliffe	19
Radlett	19
Radley	13
Radyr	15
Rainford	20
Rainham (Kent)	1
Rainham (Essex)	6
Rainhill	20
Ramsgate	1

Station name	Route number
Ramsgreave & Wilpshire	23
Rannoch	25
Rauceby	11
Ravenglass	23
Ravensbourne	1
Ravensthorpe	10
Rawcliffe	10
Rayleigh	7
Raynes Park	3
Reading	13
Reading West	13
Rectory Road	5
Redbridge	3
Redcar Central	9
Redcar East	9
Reddish North	20
Reddish South	20
Redditch	17
Redhill	2
Redland	13
Redruth	12
Reedham	2
Reedham	7
Reigate	3
Renton	26
Retford	8 (Southern)
Rhiwbina	15
Rhosneigr	22
Rhyl	22
Rhymney	15
Ribblehead	23
Rice Lane	21
Richmond	3
Rickmansworth	16
Riddlesdown	2
Ridgmont	18 (Southern)
Riding Mill	9
Rishton	23
Robertsbridge	1
Roby	20
Rochdale	20
Roche	12
Rochester	1
Rochford	7
Rock Ferry	21
Rogart	25
Rolleston	19
Roman Bridge	22
Romford	7
Romiley	20
Romsey	4
Roose	23
Rose Grove	23

Station name	Route number
Rose Hill Marple	20
Rosyth	24
Rotherham Central	11
Roughton Road	7
Rowlands Castle	3
Rowley Regis	17
Roy Bridge	25
Roydon	5
Royston	5
Ruabon	14
Rufford	23
Rugby	18 (Southern)
Rugeley Town	17
Rugeley Trent Valley	18 (Northern)
Rugeley Trent Valley	18 (Southern)
Runcorn	18 (Northern)
Runcorn East	22
Ruskington	11
Ruswarp	9
Rutherglen	26
Ryde Esplanade	3
Ryde Pier Head	3
Ryde St Johns Road	3
Ryder Brow	20
Rye	1
Rye House	5
Salford Central	20
Salford Crescent	20
Salfords	2
Salhouse	7
Salisbury	4
Saltaire	10
Saltash	12
Saltburn	9
Saltcoats	26
Saltmarshe	10
Salwick	20
Sandal & Agbrigg	8 (Northern)
Sandbach	20
Sanderstead	2
Sandhills	21
Sandhurst	3
Sandling	1
Sandown	3
Sandplace	12
Sandwell & Dudley	17
Sandwich	1
Sandy	8 (Southern)
Sankey	20
Sanquhar	26
Sarn	15
Saundersfoot	14
Saunderton	16

Station name	Route number
Sawbridgeworth	5
Saxilby	11
Saxmundham	7
Scarborough	10
Scotscalder	25
Scotstounhill	26
Scunthorpe	11
Sea Mills	13
Seaburn	9
Seaford	2
Seaforth & Litherland	21
Seaham	9
Seamer	10
Seascale	23
Seaton Carew	9
Seer Green	16
Selby	10
Selhurst	2
Sellafield	23
Selling	1
Selly Oak	17
Settle	23
Seven Kings	7
Seven Sisters	5
Sevenoaks	1
Severn Beach	13
Severn Tunnel Junction	13
Shalford	3
Shanklin	3
Shaw & Crompton	20
Shawford	3
Shawlands	26
Sheerness-on-Sea	1
Sheffield	11
Shelford	5
Shenfield	7
Shenstone	17
Shepherds Well	1
Shepley	11
Shepperton	3
Shepreth	5
Sherborne	4
Sherburn-in-Elmet	10
Sheringham	7
Shettleston	26
Shieldmuir	26
Shifnal	17
Shildon	9
Shiplake	13
Shipley	10
Shippea Hill	5
Shipton	13
Shirebrook	19

Station name	Route number
Shirehampton	13
Shireoaks	11
Shirley	17
Shoeburyness	6
Sholing	3
Shoreham	1
Shoreham-by-Sea	2
Shortlands	1
Shotton	22
Shotts	26
Shrewsbury	14
Sidcup	1
Sileby	19
Silecroft	23
Silkstone Common	11
Silver Street	5
Silverdale	23
Silvertown & London City Airport	6
Singer	26
Sittingbourne	1
Skegness	11
Skewen	13
Skipton	10
Slade Green	1
Slaithwaite	10
Slateford	24
Sleaford	11
Sleights	9
Slough	13
Small Heath	17
Smallbrook Junction	3
Smethwick Galton Bridge	17
Smethwick Rolfe Street	17
Smitham	2
Smithy Bridge	10
Snaith	10
Snodland	1
Snowdown	2
Sole Street	2
Solihull	17
Somerleyton	7
South Acton	6
South Bank	9
South Bermondsey	2
South Croydon	2
South Elmsall	8 (Northern)
South Greenford	13
South Gyle	24
South Hampstead	18 (Southern)
South Kenton	18 (Southern)
South Merton	2
South Milford	10

Station name	Route number
South Ruislip	16
South Tottenham	6
South Wigston	19
Southall	13
Southampton	3
Southampton Airport Parkway	3
Southbourne	2
Southbury	5
Southeast	2
Southend Central	6
Southend East	6
Southend Victoria	7
Southminster	7
Southport	21
Southwick	2
Sowerby Bridge	10
Spalding	11
Spean Bridge	25
Spital	21
Spondon	19
Spooner Row	5
Spring Road	17
Springburn	26
Springfield	24
Squires Gate	20
St Albans	19
St Albans Abbey	18 (Southern)
St Andrews Road	13
St Annes-on-the-Sea	20
St Austell	12
St Bees	23
St Budeaux Ferry Road	12
St Budeaux Victoria Road	12
St Columb Road	12
St Denys	3
St Erth	12
St Germans	12
St Helens Central	20
St Helens Junction	20
St Helier	2
St Ives	12
St James' Park	12
St James Street	5
St Johns	1
St Keyne	12
St Leonards Warrior Square	2
St Margarets	3
St Margarets	5
St Mary Cray	1
St Michaels	21
St Neots	8 (Southern)

Station name	Route number
Stafford	18 (Northern)
Stafford	18 (Southern)
Staines	3
Stallingborough	11
Stalybridge	10
Stamford	19
Stamford Hill	5
Stanford-le-Hope	6
Stanlow & Thornton	22
Stansted Airport	5
Stansted Mountfitchet	5
Staplehurst	1
Stapleton Road	13
Starbeck	10
Starcross	12
Staveley	23
Stechford	17
Steeton & Silsden	10
Stepps	26
Stevenage	8 (Southern)
Stevenston	26
Stewartby	18 (Southern)
Stewarton	26
Stirling	24
Stockport	20
Stocksfield	9
Stocksmoor	11
Stockton	9
Stoke Mandeville	16
Stoke Newington	5
Stoke-on-Trent	18 (Northern)
Stone	18 (Northern)
Stone Crossing	1
Stonebridge Park	18 (Southern)
Stonegate	1
Stonehaven	24
Stonehouse	13
Stoneleigh	3
Stourbridge Junction	17
Stourbridge Town	17
Stowmarket	7
Stranraer	26
Stratford	7
Stratford-upon-Avon	17
Strathcarron	25
Strawberry Hill	3
Streatham	2
Streatham Common	2
Streatham Hill	2
Streethouse	10
Strines	20
Stromeferry	25
Stroud	1

Station name	Route number
Stroud	13
Sturry	1
Styal	20
Sudbury	7
Sudbury & Harrow Road	16
Sudbury Hill Harrow	16
Sugar Loaf	14
Summerston	26
Sunbury	3
Sunderland	9
Sundridge Park	1
Sunningdale	3
Sunnymeads	3
Surbiton	3
Sutton	2
Sutton Coldfield	17
Sutton Common	2
Sutton Parkway	19
Swale	1
Swanley	1
Swanscombe	1
Swansea	13
Swanwick	3
Sway	3
Swaythling	3
Swinderby	11
Swindon	13
Swineshead	11
Swinton	11
Swinton	20
Sydenham	2
Sydenham Hill	1
Syon Lane	3
Syston	19
Tackley	17
Tadworth	2
Taffs Well	15
Tain	25
Talsarnau	14
Talybont	14
Tal-y-Cafn	22
Tame Bridge	17
Tamworth	18 (Southern)
Taplow	13
Tattenham Corner	2
Taunton	12
Taynuilt	25
Teddington	3
Tees-Side Airport	9
Teignmouth	12
Telford Central	17
Templecombe	4
Tenby	14

Station name	Route number
Teynham	1
Thames Ditton	3
Thatcham	12
Thatto Heath	20
The Hawthorns	17
The Lakes	17
Theale	12
Theobalds Grove	5
Thetford	5
Thirsk	8 (Northern)
Thornaby	9
Thorne North	10
Thorne South	11
Thornford	4
Thornliebank	26
Thornton Abbey	11
Thornton Heath	2
Thornthorpe	26
Thorpe Bay	6
Thorpe Culvert	11
Thorpe-le-Soken	7
Three Bridges	2
Three Oaks	1
Thurgarton	19
Thurnscoe	11
Thurso	25
Thurston	5
Tilbury Town	6
Tile Hill	17
Tilehurst	13
Tipton	17
Tir-Phil	15
Tisbury	4
Tiverton Parkway	12
Todmorden	10
Tolworth	3
Ton Pentre	15
Tonbridge	1
Tondu	15
Tonfanau	14
Tonypandy	15
Tooting	2
Topsham	12
Torquay	12
Torre	12
Totnes	12
Tottenham Hale	5
Totton	3
Town Green	21
Trafford Park	20
Treforest	15
Treforest Estate	15
Trehafod	15

Station name	Route number
Treherbert	15
Treorchy	15
Trimley	7
Tring	18 (Southern)
Troed-Y-Rhiw	15
Troon	26
Trowbridge	4
Truro	12
Tulloch	25
Tulse Hill	2
Tunbridge Wells	1
Turkey Street	5
Tutbury & Hatton	19
Twickenham	3
Twyford	13
Ty Croes	22
Ty Glas	15
Tywyn	14
Tyndrum Lower	25
Tyseley	17
Tywyn	14
Uckfield	2
Uddingston	26
Ulceby	11
Ulleskelf	10
Ulverston	23
Umberleigh	12
University	17
Uphall	24
Upholland	20
Upminster	6
Upper Halliford	3
Upper Holloway	6
Upper Tyndrum	25
Upper Warlingham	2
Upton	22
Upwey	3
Umston	20
Uttoxeter	19
Valley	22
Vauxhall	3
Virginia Water	3
Waddon	2
Wadhurst	1
Wainfleet	11
Wakefield Kirkgate	10
Wakefield Westgate	8 (Northern)
Walkden	20
Wallasey Grove Road	21
Wallasey Village	21
Wallington	2
Wallyford	8 (Northern)
Walmer	1

Station name	Route number
Walsall	17
Walsden	10
Waltham Cross	5
Walthamstow Central	5
Walthamstow Queens Road	6
Walton	21
Walton-on- Thames	3
Walton-on-Naze	7
Wanborough	3
Wandsworth Common	2
Wandsworth Road	2
Wandsworth Town	3
Wanstead Park	6
Warblington	2
Ware	5
Wareham	3
Wargrave	13
Warminster	4
Warnham	2
Warrington Bank Quay	18 (Northern)
Warrington Central	20
Warwick	17
Warwick Parkway	17
Water Orton	17
Waterbeach	5
Wateringbury	1
Waterloo	21
Waterloo East	1
Watford	16
Watford High Street	18 (Southern)
Watford Junction	18 (Southern)
Watford North	18 (Southern)
Watlington	5
Watton-at-Stone	8 (Southern)
Waun-gron Park	15
Wavertree Technology Park	20
Wedgwood	18 (Northern)
Weeley	7
Weeton	10
Welham Green	8 (Southern)
Welling	1
Wellingborough	19
Wellington	17
Welshpool	14
Welwyn North	8 (Southern)
Welywn Garden City	8 (Southern)
Wem	14
Wembley Central	18 (Southern)
Wembley Stadium	16
Wemyss Bay	26
Wendover	16

Station name	Route number
Wennington	23
West Allerton	20
West Brompton	2
West Byfleet	3
West Calder	26
West Croydon	2
West Drayton	13
West Dulwich	1
West Ealing	13
West Ham	6
West Hampstead	6
West Hampstead Thameslink	19
West Horndon	6
West Kilbride	26
West Kirby	21
West Malling	1
West Norwood	2
West Ruislip	16
West Runton	7
West St Leonards	1
West Sutton	2
West Wickham	1
West Worthing	2
Westbury	12
Westcliff	6
Westcombe Park	1
Westenhanger	1
Wester Hailes	24
Westerfield	7
Westerton	26
Westgate-on-Sea	2
Westhoughton	20
Weston Milton	13
Weston-super-Mare	13
Wetheral	9
Weybridge	3
Weymouth	3
Whaley Bridge	20
Whalley	23
Whatstandwell	19
Whifflet	26
Whimble	4
Whinhill	26
Whiston	20
Whitby	9
Whitchurch (Hants)	4
Whitchurch (Salop)	14
Whitchurch (Cardiff)	15
White Hart Lane	5
White Notley	7
Whitecraigs	26
Whitehaven	23

Station name	Route number
Whitland	14
Whitley Bridge	10
Whitlocks End	17
Whitstable	1
Whittlesea	5
Whittlesford	5
Whitton	3
Whitwell	19
Whyteleafe	2
Whyteleafe South	2
Wick	25
Wickford	7
Wickham Market	7
Widdrington	8 (Northern)
Widnes	20
Widney Manor	17
Wigan North Western	18 (Northern)
Wigan Wallgate	20
Wigton	23
Wildmill	15
Willesden Junction High Level	6
Willesden Junction Low Level	18 (Southern)
Williamwood	26
Willington	19
Wilmcote	17
Wilmslow	20
Wilnecote	17
Wimbledon	3
Wimbledon Chase	2
Winchelsea	1
Winchester	3
Winchfield	3
Winchmore Hill	8 (Southern)
Windermere	23
Windsor & Eton Central	13
Windsor & Eton Riverside	3
Winnersh	3
Winnersh Triangle	3
Winsford	18 (Northern)
Wishaw	26
Witham	7
Witley	3
Witton	17
Wivelsfield	2
Wivenhoe	7
Woburn Sands	18 (Southern)
Woking	3
Wokingham	3
Woldingham	2
Wolverhampton	17
Wolverton	18 (Southern)

Station name	Route number
Wombwell	11
Wood End	17
Wood Street	5
Woodbridge	7
Woodgrange Park	6
Woodhall	26
Woodham Ferrers	7
Woodhouse	11
Woodlesford	10
Woodley	20
Woodmansterne	2
Woods Moor	20
Wool	3
Woolston	3
Woolwich Arsenal	1
Woolwich Dockyard	1
Wootton Wawen	17
Worcester Foregate Street	17
Worcester Park	3
Worcester Shrub Hill	17
Workington	23
Worksop	11
Worle	13
Worplesdon	3
Worstead	7
Worthing	2
Wrabness	7
Wraysbury	3
Wrenbury	14
Wressle	10
Wrexham Central	22
Wrexham General	14
Wye	1
Wylam	9
Wylde Green	17
Wymondham	5
Wythall	17
Yalding	1
Yardley Wood	17
Yarn	9
Yate	13
Yatton	13
Yeoford	12
Yeovil Junction	4
Yeovil Pen Mill	4
Yetminster	4
Ynyswen	15
Yoker	26
York	8 (Northern)
Yorton	14
Ystrad Mynach	15
Ystrad Rhondda	15

Glossary

AC	Alternating Current
AHB	Automatic Half Barrier
AMP	Asset Maintenance Plan
AOCL	Automatic Open Crossing Locally Monitored
ASC	Area Signalling Centre
ATP	Automatic Train Protection
ATR	Automatic Train Reporting
ATW	Arriva Trains Wales
BAA	British Airports Authority
BG3	Bridgeguard 3
BML	Brighton Main Line
BTP	British Transport Police
CBI	Computer Based Interlocking
CET	Controlled Emission Toilet
CIS	Customer Information System
CSR	Cab Secure Radio
CTRL	Channel Tunnel Rail Link
CTRL (DS)	Channel Tunnel Rail Link Domestic Services
CWR	Continuously Welded Rail
DC	Direct Current
DDA	Disability Discrimination Act
DLR	Docklands Light Railway
DMU	Diesel Multiple Unit
DOO	Driver Only Operation
DRS	Direct Rail Services
ECML	East Coast Main Line
ELLX	East London Line Extension
EPS	Enhanced Permissible Speed
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
EWS	English Welsh and Scottish Railway
F2N	Felixstowe to Nuneaton
FGW	First Great Western
FNW	First North Western
FOC	Freight Operating Company
FTN	Fixed Telecoms Network

G&SW	Glasgow and South Western
GBRf	Great Britain Railfreight Limited
GE	Great Eastern
GMPTE	Greater Manchester Passenger Transport Executive
GN	Great Northern
GNER	Great North Eastern Railway
GSM-R	Global System for Mobile Communications for Railways
GWML	Great Western Main Line
HMRI	Her Majesty's Railway Inspectorate
HST	High Speed Train
HV	High Voltage
IECC	Integrated Electronic Control Centre
IKF	Integrated Kent Franchise
IOS	Incremental Output Statement
LMD	Light Maintenance Depot
LNE	London North Eastern
LNW	London North Western
LUL	London Underground Limited
MML	Midland Main Line
NLL	North London Line
NLU	National Logistics Unit
NTP	North Trans-Pennine
NWML	North Wales Main Line
OHL/ OLE/ OHLE	Overhead Line Electrification Equipment
ORR	Office of Rail Regulation
PETS	Public Emergency Telephone System
PPM	Public Performance Measure
PSB	Power Signal Box
PSR	Public Service Requirement
PSR	Permanent Speed Restriction
PTE	Passenger Transport Executive
RA	Route Availability
RCF	Rolling Contact Fatigue
RETB	Radio Electronic Token Block
ROF	Royal Ordnance Factory
RPA	Regional Planning Assessment
RUS	Route Utilisation Strategy
S&C	Settle and Carlisle line
S&C	Switches & Crossings

SEMMMS	South East Manchester Multimodal Study
SPT	Signal Post Telephone
SPT	Strathclyde Passenger Transport
SRA	Strategic Rail Authority
SSI	Solid State Interlocking
SWML	South West Main Line
SWT	South West Trains
TASS	Tilt Authorisation & Speed Supervision
TD	Train Describer
TDM	Time Division Multiplexer
TEN	Trans European Network
TfL	Transport for London
TOC	Train Operating Company
TPE	Transpennine Express
tph	Trains per hour
TSR	Temporary Speed Restriction
TWA	Transport and Works Act
UPS	Uninterruptible Power Supply
VoG	Vale of Glamorgan
WAGN	West Anglia Great Northern Railway
WARM	West Anglia Route Modernisation
WCML	West Coast Mail Line
WCRM	West Coast Route Modernisation
WLL	West London Line

Project development phases

Investment projects are managed in discrete phases shown below. These phases are defined in the Guide to Railway Investment Projects. They reflect the significant business and technical milestones in the project's development and delivery.

Figure 3.11 Project Development (phases 1-5)

<p>Phase 1 Output definition</p>	<p>Establishes the scope of the investment in terms of the incremental network capability required by the investment's "client". This is described in terms such as journey time, capacity, loading gauge etc. It may also require the scoping of asset renewal.</p> <p>The key product from output definition is the development remit, supported by a high-level business case.</p>
<p>Phase 2 Pre-feasibility</p>	<p>Ensures that asset condition, safety or standards requirements are identified and included in the scope of the investment.</p> <p>Ensures that investment is aligned with organisational strategy and contributes to targets.</p> <p>Identifies the constraints on the network that prevent the delivery of the client's outputs and defines the incremental capability that must be delivered by the investment.</p> <p>Provides confirmation that the outputs can be economically delivered by addressing the identified constraints.</p> <p>The key product from pre-feasibility is the functional specification, supported by a revised high-level business case, project safety strategy and strategic risk review.</p>
<p>Phase 3 Option selection</p>	<p>Develops options for addressing the identified constraints and delivering the required incremental network capability.</p> <p>Assesses the options and selects the most appropriate one, together with confirmation that the outputs can be economically delivered.</p> <p>The key products from option selection are the option selection report and project design specification, supported by preliminary business cases for each identified option.</p>
<p>Phase 4 Single option development</p>	<p>Develops the selected single option to the point of engineering scope freeze and in sufficient detail to allow finalisation of the business case and scheduling of implementation resources.</p> <p>The key product from single option refinement is the reference design, supported by an outline business case for the option and proposals for obtaining necessary approvals, consents and possessions.</p>
<p>Phase 5 Detailed design</p>	<p>Produces a complete and robust engineering design that allows risks, costs, timescales, resources and benefits to be fully understood prior to commitment to implement.</p> <p>The key product from design is the completed design, supported by a finalised business case, the project safety case, necessary approvals and consents. All possessions are booked and resourced, acceptance and maintenance criteria are established and an implementation plan is in place.</p>

Figure 3.12 Project Implementation (phases 6-8)

<p>Phase 6 Construction, test and tommission</p>	<p>Delivers the asset change / renewal to the appropriate specification and provides confirmation that the asset and system work in accordance with their design and that they deliver the incremental network capability. The key products from construction, test & commission are the changed asset and test certificates.</p>
<p>Phase 7 Scheme handback</p>	<p>Transfers asset responsibility, from the project contractor back to the operator and maintainer. It also brings the asset into beneficial use. The key products from scheme handback are works acceptance and handback certificates.</p>
<p>Phase 8 Project close out</p>	<p>Ensures that the project is closed out in an orderly manner with updated asset management information, capitalised assets, settled contractual accounts and any contingencies and warranties are put in place. Logging up and other funding arrangements finalised and assumed business benefits are captured in the Business Plan. The key products from project close out are the project completion report, safety completion certificate, lessons learned report and post implementation review.</p>