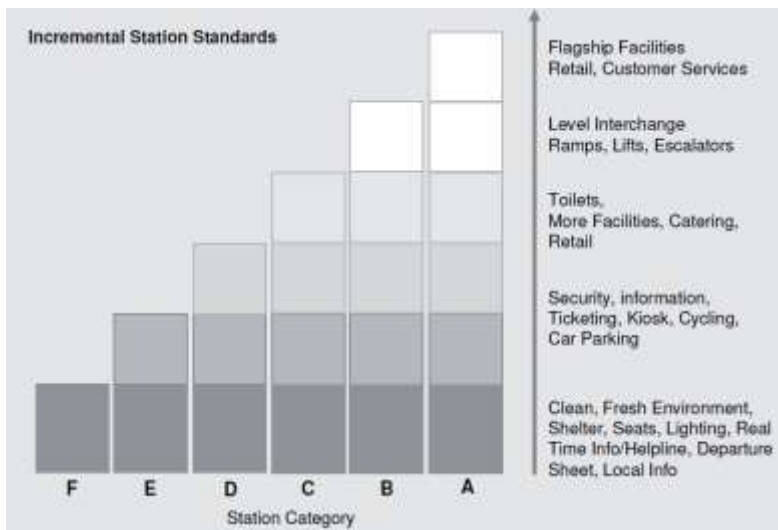


Station Facilities

- The Better Rail Stations Review (independent report for DfT - November 2009) proposed incremental minimum standards for six categories of station.
- Some of the rural stations have little or no parking, which may limit their potential catchment.



Group	Name	NDL Stations in this group	Example non-NDL stations
A	National Hub	None	Central London termini
B	Regional Interchange	Gatwick Airport, Guildford, Reading	Basingstoke, East Croydon, Woking
C1	Important Feeder (city or busy junction)	Redhill	Dorking, Epsom, Kingston
C2	Important Feeder (other busy railheads)	Wokingham	Bracknell, Farnborough, Godalming, Oxted
D	Medium Staffed	Earley, Reigate, Winnersh	Caterham, Hersham, London Road Guildford
E	Small Staffed	Ash, Crowthorne, North Camp, Winnersh Triangle	Ashted, Tattenham Corner
F1	Small Unstaffed (basic)	Deepdene, Dorking W, Farnborough N, Sandhurst	Banstead
F2	Small Unstaffed (very small)	Betchworth, Blackwater, Chilworth, Gomshall, Shalford, Wanborough	Boxhill & Westhumble

Station Facilities

Source: National Rail website, accessed December 2014

Station	SFO	Better Stations Category	Waiting Rooms	Ticket Office Counters	Ticket Office Hours	Ticket Machines	Cycle Storage Description	Cycle Spaces	Parking Spaces	Retail Offer
Reading	FGW	B	2	9	0515-2245	16	Stands	344	1,275	Boots, WHSmith, café, fast food
Earley	SWT	D	1	Unknown	0605-1325	1	Lockers and stands	64	0	
Winnersh Triangle	SWT	E	No	1	0600-1100	1	Lockers and stands	19	123	
Winnersh	SWT	D	No	1	0600-1130	1	0	4	0	
Wokingham	SWT	C2	No	2	0545-2035	5	Stands	74	414	Café
Crowthorne	FGW	E	No	Unknown	0645-1030	0	Lockers and stands	29	42	
Sandhurst	FGW	F1	No	0	N/A	1	Stands	10	0	
Blackwater	FGW	F2	No	0	N/A	2	Wheel Racks	33	100	
Farnborough N	FGW	F1	No	0	N/A	1	Stands	8	5	
North Camp	FGW	E	No	1	0630-1300	2	Stands	34	62	
Ash	SWT	E	No	1	0640-1145	2	Stands	10	20	
Wanborough	SWT	F2	No	0	N/A	1	Stands	6	10	
Guildford	SWT	B	2	5	0610-2200	9	Compound	320	657	M&S, WHSmith, Upper Crust, cafés
Shalford	FGW	F2	No	0	N/A	1	Stands	10	30	
Chilworth	FGW	F2	No	0	N/A	0	Wheel Racks	17	0	
Gomshall	FGW	F2	No	0	N/A	0	Stands	18	30	
Dorking West	FGW	F1	No	0	N/A	0	Stands	20	0	
Deepdene	FGW	F1	No	0	N/A	1	Stands	26	0	
Betchworth	FGW	F2	No	0	N/A	0	Wheel Racks	22	0	
Reigate	TSGN	D	No	1	0610-1945	2	Stands	30	70	
Redhill	TSGN	C1	2	3	0550-2235	5	Two-tier	160	367	Food/Coffee on platform
Gatwick	TSGN	B	3	8	0000-0000	17	Unknown	Unknown	1900	WHSmith, café, fast food, bureau de change

Summary: Transport Baseline

- There is significant potential to improve North Downs Line which currently offers modest journey times and a frequency of two trains per hour for busier stations or one train every two hours for rural stations.
- The line serves key commuter and leisure markets, provides good opportunities to connect to main line radial routes. The line could play a more prominent role in providing for trips to Gatwick and perhaps to Heathrow with direct rail access from Reading.
- Gatwick and Reading are by far the busiest stations on the route, followed by Guildford, Redhill and Wokingham. These stations are all served by non-North Downs Line services, which account for the vast majority of traffic.
- Stations between Guildford and Redhill have relatively low patronage as they are located in rural areas; the area between Guildford and Reading is more built-up with stations located in low density suburban areas.
- On average, station usage on the North Downs Line grew by 4.2% p.a. in the period 2004-14. This is slightly higher than the Surrey average (3.7%) but lower than the England average (6.0%).
- Overall demand growth has been driven by the growth of larger stations – rural stations show a faster *rate* of growth but this has a relatively small effect on overall patronage.
- Travelling the full extent of the North Downs Line (between Reading and Redhill or Gatwick) is comparatively slow by rail, however journey times between Reading and Guildford are competitive with car, even before taking into account congestion or parking costs.

Operational Baseline

Network

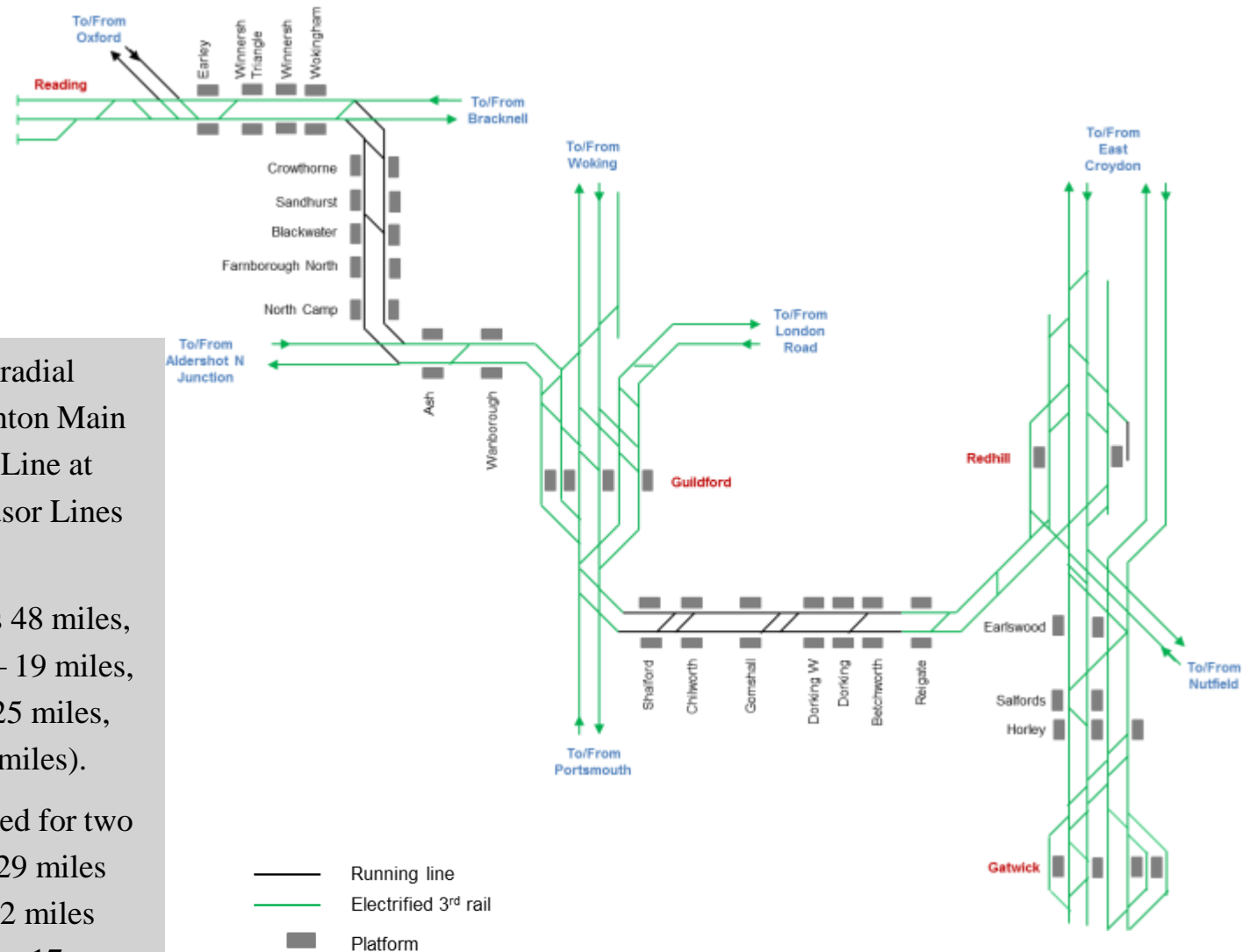
Line Speeds

Capacity Constraints

Rolling Stock

Network

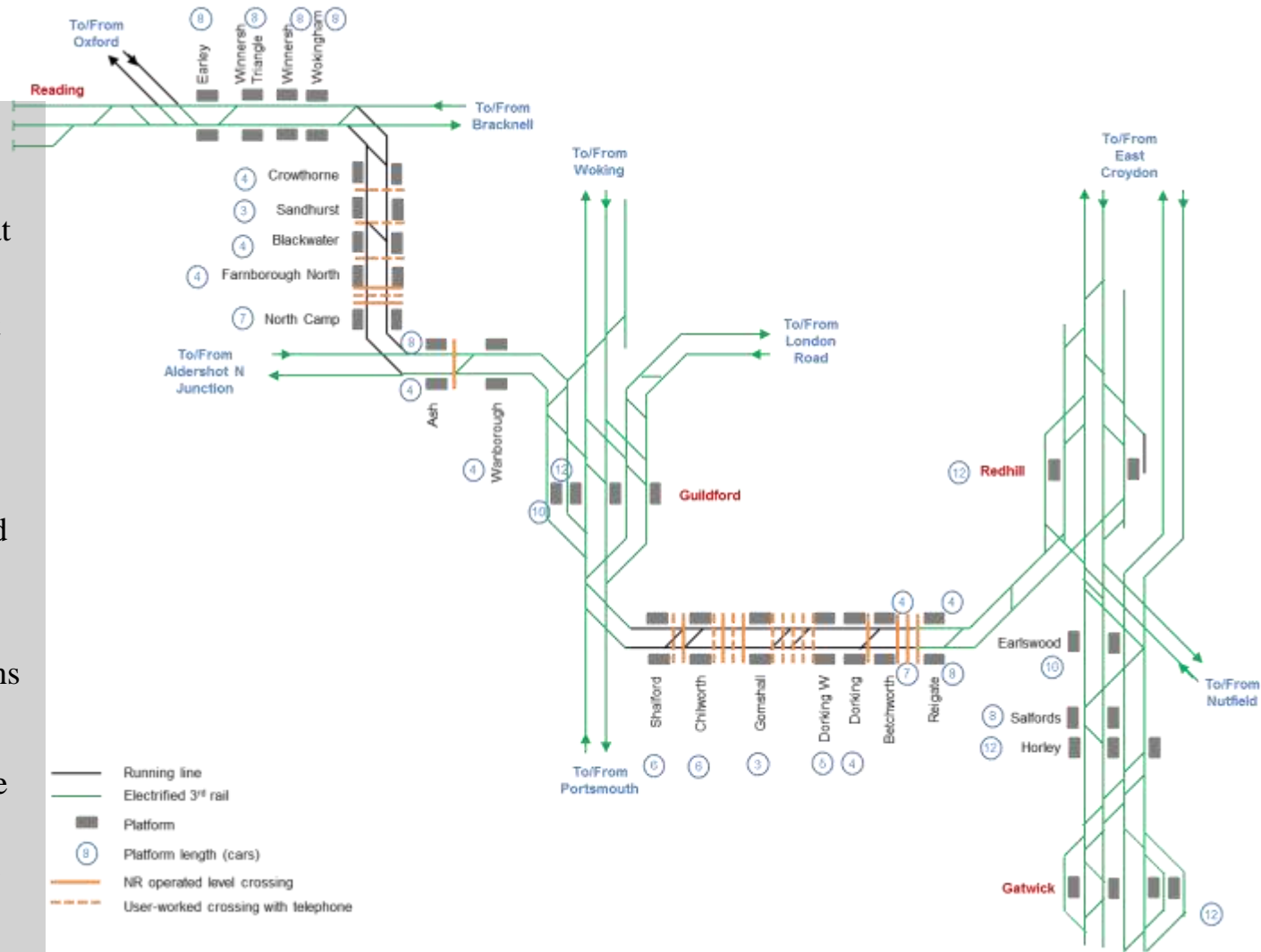
- The NDL crosses three radial routes to London (Brighton Main Line, South West Main Line at Guildford and the Windsor Lines routes to Waterloo).
- The total route length is 48 miles, (Reading to Guildford – 19 miles, Guildford to Redhill – 25 miles, Redhill to Gatwick – 4 miles).
- The line is non-electrified for two main sections totalling 29 miles (Wokingham and Ash 12 miles and Shalford and Reigate 17 miles). Other sections are third rail electrified.



Source: Southern Quail Maps

Network

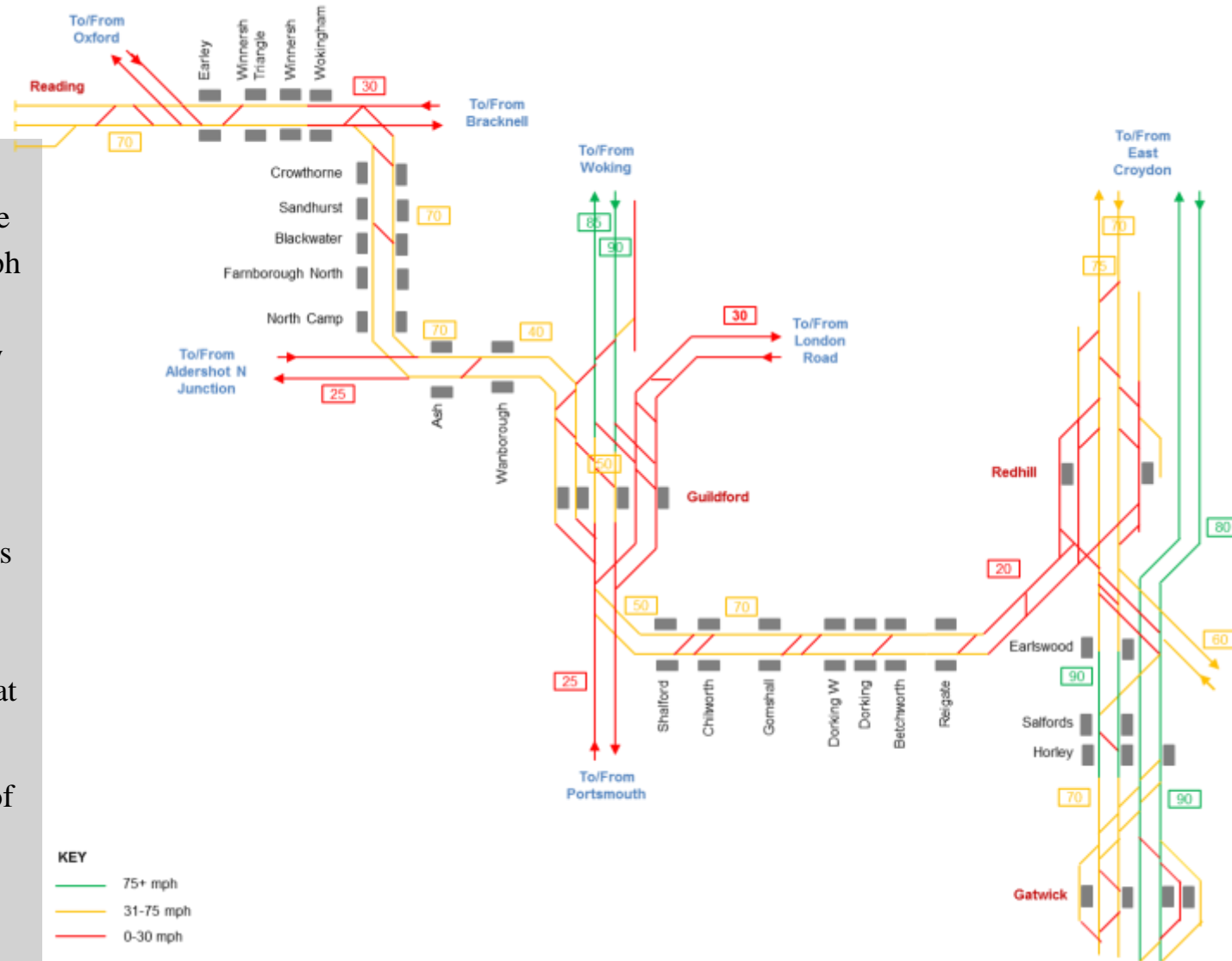
- There are 10 level crossings on the route with automatic barriers at road crossings and 12 user-worked crossings at footpaths.
- Crossings present a potential issue if service frequencies are increased – down time for the crossings will increase with possible implications on road traffic.
- Platforms along the route vary in length significantly from 12 car to 3 car. The current rolling stock is 3 car to meet the shortest platforms.



Source: Southern Quail Maps

Linespeeds

- Some of the longer sections of the route have linespeeds of 50 to 70mph which is sufficient for a stopping service but may be restrictive for a semi-fast service.
- At all of the intersection locations the line speed is slower however this can be justified as the train will always be stopping at these major stations.
- There are some section of 30, 40, 50 mph which, with appropriate infrastructure works, could be raised to reduce overall journey times.

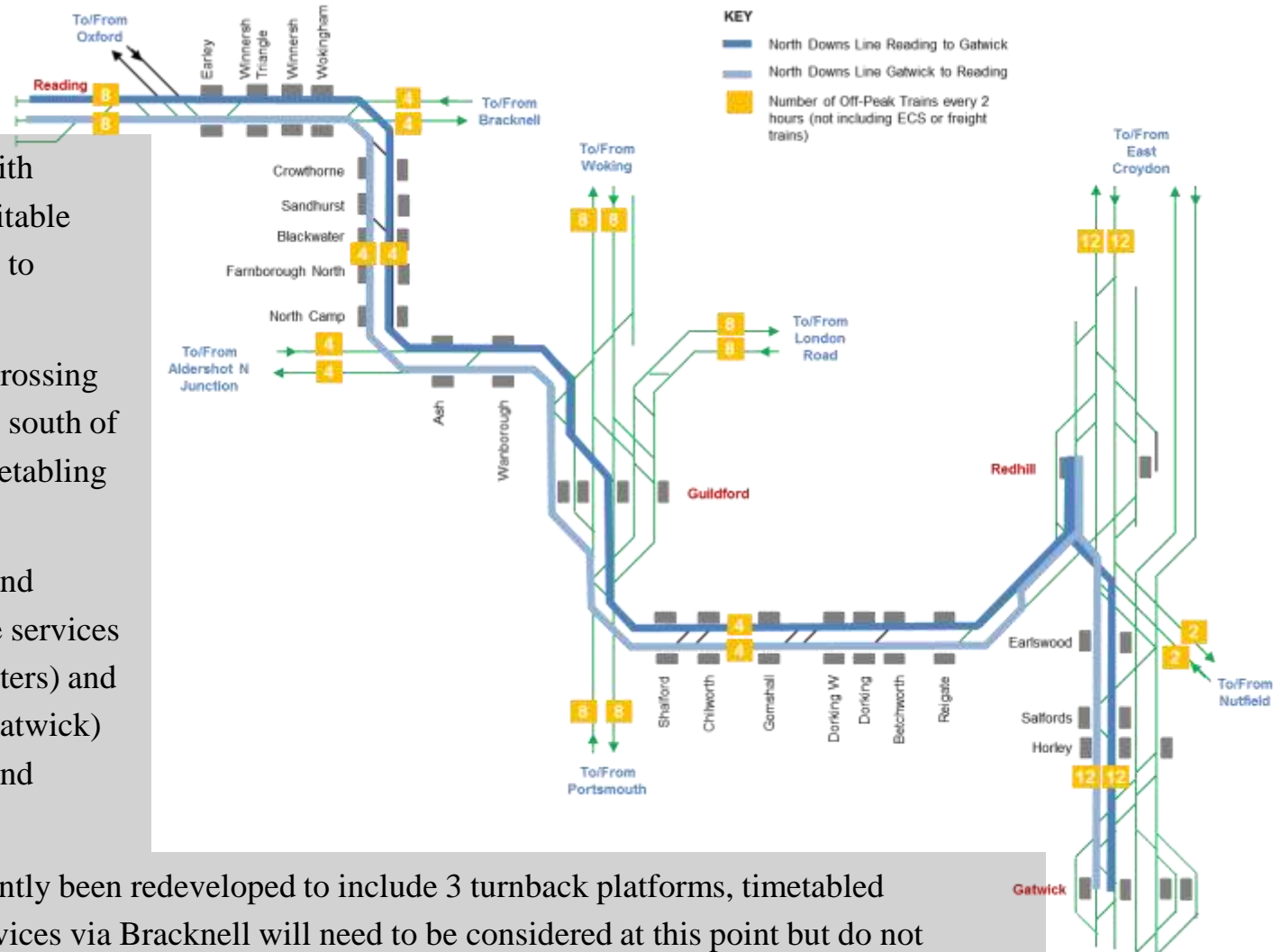


Source: Network Rail Sectional Appendix

Capacity Constraints

Source: Network Rail Working Timetable

- The route is two track with Guildford as the only suitable location for fast services to overtake.
- The flat junction move crossing the Portsmouth mainline south of Guildford presents a timetabling constraint.
- Redhill has constraints and conflicting moves where services turnback (as Redhill starters) and turnround (on route to Gatwick) and interact with BML and Tonbridge services.
- Reading station has recently been redeveloped to include 3 turnback platforms, timetabled interactions with the services via Bracknell will need to be considered at this point but do not present a significant capacity constraint.
- Platform capacity is available at Gatwick to turnback services.



Rolling Stock Comparison

Class	Traction	Fleet size / formation	Age (years)	Operators	Max Speed (mph)	Simulated NDL Journey Time (stopping service)
165/166	Diesel	48 x 2-car 48 x 3-car	22 – 24	FGW, Chiltern	75 – 90	92
450	DC electric (third rail)	127 x 4-car	11	South West Trains	100	86.5
350	AC electric (overhead)	87 x 4-car	9	London Midland / First Trans Pennine	100 – 110	82.5

Class 165



Class 350



Class 450



Class 165



Class 350



Class 450



Summary: Operational Baseline

- The North Downs Line is non-electrified for two main sections totalling 29 miles - other sections are third rail electrified.
- The route is two track with Guildford as the only suitable location for fast services to overtake.
- There are 10 level crossings on the route with automatic barriers at road crossings and 12 user-worked crossings at footpaths.
- Platforms along the route vary in length significantly from 12 car to 3 car. The current rolling stock is 3 car to meet the shortest platforms.
- Some of the longer sections of the route have linespeeds of 50 to 70mph which is sufficient for a stopping service but may be restrictive for a semi-fast service. There are some section of 30, 40, 50 mph which, with appropriate infrastructure works, could be raised to reduce overall journey times.
- Key operational constraints are identified as Level crossings, Platform lengths, Capacity at Guildford and Redhill-Gatwick.
- There is scope for increased line speeds, potential for 'in-fill' electrification, and there are planned improvements at Guildford, Redhill and Gatwick stations.
- AC electrification potentially offers faster journey times, but DC electrification will minimise costs and provide more opportunities for inter-working with other routes. Availability and cost of suitable rolling stock may be a key issue.

Overview

Key Conclusions of the Baseline Review

- The North Downs Line serves a **large and growing catchment area**.
 - 63,000 more people and 34,000 new jobs by 2031
- The line has **multiple roles**:
 - Orbital route connecting with lines into London
 - Links key economic centres in the South East
 - Suburban commuting links (including education)
 - Important leisure market
 - Connects rural communities
 - Airport access
- Potential for improvement – relatively **modest journey times and frequencies** with two trains per hour for busier stations or one train every two hours for rural stations.
- The North Downs Line **can play a stronger supporting role in the development of a successful regional economy** by:
 - improving commuter links, growing the leisure market and providing better opportunities to connect to main line radial routes.
 - better providing for trips to Gatwick and Heathrow with rail access from Reading.

Conditional Outputs for the North Downs Line

Development Objectives for Rail



Source: Surrey Rail Strategy

Requirements for Conditional Outputs

Rail development objectives

Global competitiveness

Economic growth

Environment

Population growth

Key themes

Travel opportunities
Travel choices
Connections
Improved rail access
for employment
Accessibility
Ease of travel
Alternative to car

Requirements for Conditional Outputs

Rail journey times

Rail connectivity

Rail quality of service

Proposed Conditional Outputs

1. Reduce rail journey times on the North Downs Line

- Between Interchange Hubs and Commuter Towns, to/from Gatwick Airport, to/from London

2. Improve connectivity for stations on the North Downs Line

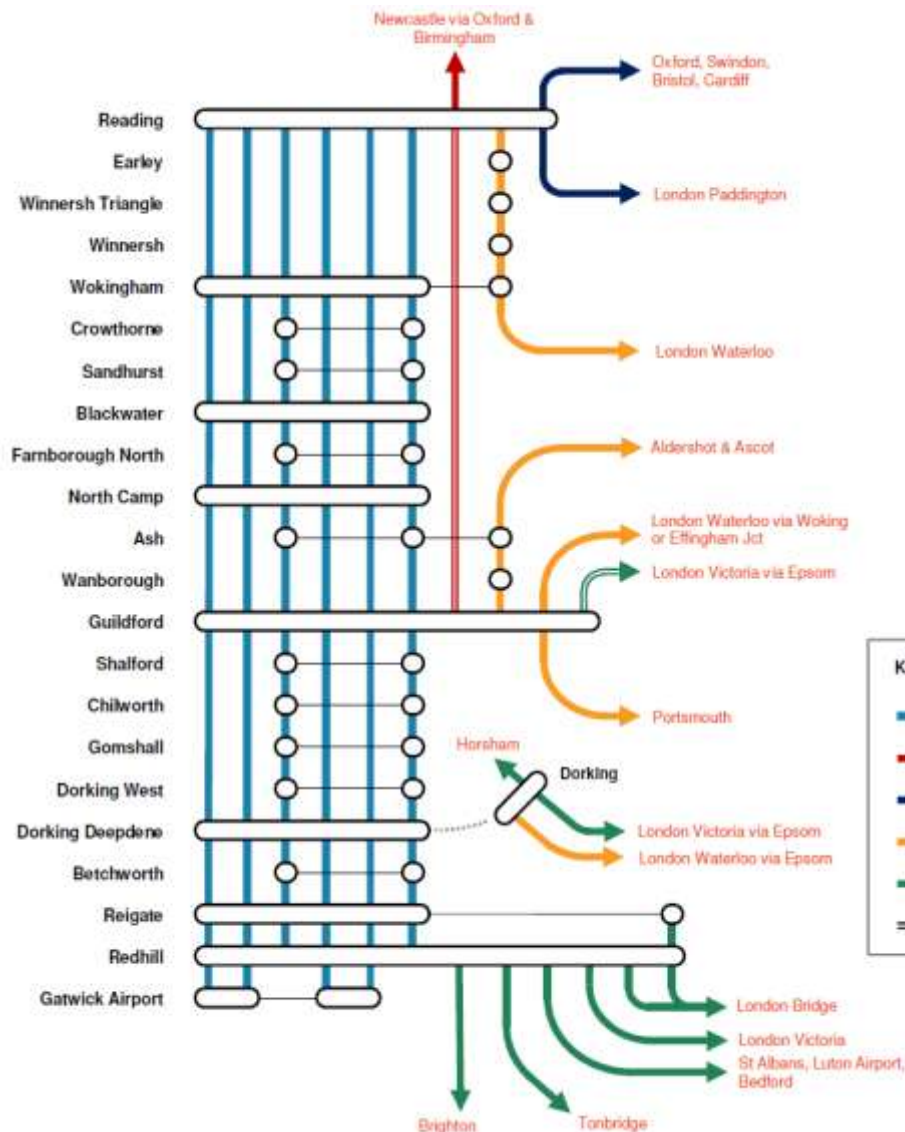
- Enhance service frequencies between Interchange Hubs, Commuter Towns, Rural Stations
- Maintain at least existing service frequencies for rural stations
- Maximise opportunities for peak time travel at all station types
- Provide new connections at strategically important locations on the North Downs Line

3. Improve quality of rail service on North Downs Line

- Provide sufficient capacity for peak travel demand
- Deliver enhancements to rolling stock quality
- Enhance the quality of stations and station access

Base Option

Wessex Route Study Proposals – Base Option



- Proposed increase in frequency from two to three trains per hour:
 - two semi-fast trains an hour between Reading and Gatwick Airport.
 - a stopping service between Reading and Redhill.
- Each existing station receives at least one train per hour

Source: Network Rail 'Wessex Route Study' November 2014

Wessex Route Study Proposals – Base Option

	£m Present Value (2010)
Costs	
Investment costs	0.0
Operating costs	59.7
Revenue	-27.8
Other Impacts (Broad Transport Budget)	-0.04
<u>Total Costs</u>	<u>31.8</u>
Benefits	
Rail User Benefits	64.5
Non-User Benefits	2.1
Indirect Taxation Impacts	-3.4
<u>Total Quantified Benefits</u>	<u>63.3</u>
NET PRESENT VALUE	31.4
BENEFIT COST RATIO	2.00

Source: Network Rail 'Wessex Route Study' November 2014

Wessex Route Study Proposals – Base Option

- Issues and constraints:
 - The enhanced frequency would be aided by additional platforms and layout changes on the west side of Guildford. However, the timetabling of the third stopping service across Guildford requires an ***extended stop at Guildford*** station to allow other services to overtake.
 - The third stopping service can only be timetabled as far as Redhill and this can ***only be achieved during off-peak hours*** as a result of network capacity constraints within Network Rail's Sussex Route in the Redhill area.

Source: Network Rail 'Wessex Route Study' November 2014

Wessex Route Study Proposals – Further Opportunities Identified

- **Timetable and linespeed improvements**
 - Alterations to the operational layout at Guildford to reduce layover time.
 - Reducing signal headways and improving linespeeds.
 - Providing additional infrastructure in the Redhill area to allow additional services to operate in the peak.
 - Implement upgrades to level crossings .
- **Electrification**
 - Overhead (AC) or ‘in-fill’ third-rail (DC) electrification has been identified as a potential option, delivering journey time improvements of up to 10 minutes.
 - The electrification proposal will be considered as part of the Network Rail Electrification Strategy – due to be published in draft for consultation in February 2015.

