February 2022

HS2

PLANET Framework Model PFMv10a

Assumptions Report

Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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1 Introduction

1.1.1 The PLANET Framework Model (PFM) has been developed by HS2 Ltd as a modelling tool to forecast the demand and economic benefits of the HS2 project. As modelling assumptions are updated and modelling techniques are revised, new versions of the model are released. The current version of PFM is PFMv10a, which has been released following a variety of updates to model inputs.

1.1.2 The modelling techniques and methodology that are used within the PFM is separately described in detail in the PFM Model Description Report.

1.1.3 This document provides a summary of the input modelling and forecasting assumptions used by PFMv10a to generate what is known as the HS2 Reference Case, which forms part of the economic case for the HS2 business case.

1.1.4 Throughout this document, reference will be made to 'Do Minimum' and 'Do Something'. These two expressions can generally be defined as:

- **Do Minimum**: the Do Minimum is the forecast future year scenario in which HS2 has not been constructed. It is a scenario in which currently committed infrastructure projects and expected service level agreements are implemented, providing the Reference Case against which the HS2 scheme is to be compared.
- **Do Something**: the Do Something is the forecast future year scenario in which the HS2 project has been constructed and implemented, along with any resulting changes to conventional rail services.
- **Phasing definition in PFM scenarios**: there are numerous Do Something future year scenarios available for modelling within PFMv10a:
    - **S1 (Phase 2ai)** – a phased opening scenario: The extent of the high-speed network is *Old Oak Common – Birmingham/Crewe/Glasgow,* with 6 services per hour operating from OOC beginning in 2029;
    - **S2 (Phase 2a)** – the extent of the high-speed rail network is *London Euston – Birmingham/Crewe*, with 10 services per hour operating from Euston, beginning in 2034;
    - **S3 (Phase 2b Western Leg)** – this extends the high-speed rail network to Manchester and the connection to the West Coast Mainline via the Golborne link, with 11 services per hour operating from Euston and three services per hour from Birmingham Curzon Street. This phase is assumed to be operational from 2038; and
    - **S4 Phase 2b** – The full high-speed rail network is in place from *London Euston – Birmingham – Manchester and Leeds* and connections to the West Coast, Midland and East Coast Mainlines, with 17 services per hour

operating from Euston and six services per hour from Birmingham Curzon Street. This phase is assumed to be operational from 2040.

1.1.5 The detailed service pattern for each scenario above is set out in the 'Train Service Specifications' section of this report.

1.1.6 The remainder of this document is set out using the following structure:

- **Chapter 2: Forecasting assumptions**: This chapter details the information that has been used to forecast demand for transport for the two modelled forecast years;
- **Chapter 3: Economic appraisal**: This chapter details the information that has been used in the economic appraisal of the project;
- **Chapter 4: Highway and air networks**: This chapter provides details on what has been included in the air and highway networks for two modelled forecast years;
- **Chapter 5: Train service specifications**: This chapter contains an overview of the rail services coded into the PFM in both the Do Minimum and Do Something scenarios; and
- **Chapter 6: Modelling reliability**: This chapter provides details on how the increased reliability of HS2 services is modelled in the forecast Do Something scenarios.

2 Forecasting assumptions

2.1 Forecasting approach

2.1.1 PFMv10a has been developed to model two future years for the PFMv10a Reference Case: the financial years 2029/30 and 2041/42. To model these years, it is necessary to forecast the level of demand for travel in the forecast years. Forecasts of 'Do Minimum' passenger demand are produced by travel mode (rail / air / highway) and journey purpose (Commute / Business / Leisure).

2.1.2 For the PFM, the processes for forecasting demand makes use of the Department for Transport (DfT) modal forecasting procedures for air, highway, and rail:

- Rail demand forecasts are generated in line with DfT's Transport Appraisal Guidance (TAG) using the DfT's Exogenous Demand Growth Estimation (EDGE) forecasting software and the methodology from the Passenger Demand Forecasting Handbook (PDFH);
- Highway demand forecasts are generated using the National Trip End Model in the DfT's TEMPro software; and,
- Domestic air demand forecasts are generated using the DfT's Aviation Model forecasts.

2.1.3 The remaining sections in this chapter outline the input assumptions used by the demand forecasting models to produce 'Do Minimum' demand forecasts for each of these travel modes.

2.2 Rail demand growth

Elasticities

2.2.1 Rail demand growth is generated using the DfT's EDGE software, which is based on current TAG guidance for forecasting rail demand. This uses the Passenger Demand Forecasting Handbook (PDFH) Version 6 demand elasticities for all demand driver generators (DDGs).

Demand drivers

2.2.2 Rail demand growth between the modelled base year and the modelled forecast years is generated by the DfT's EDGE forecasting software, which utilises various DDGs to feed into the future year forecasts of rail demand growth. The rail demand drivers generally fall into two categories:

- Macro-economic drivers, such as: GDP per capita growth; growth in employment; and growth in population; and,
- Costs associated with competing modes of transport.

2.2.3 The base year of PFMv10a is the financial year 2018/19, and so the demand drivers are utilised to calculate the forecast change in demand from the base year in 2018/19 to the forecast years 2029/30 and 2041/42 for PFMv10a.

2.2.4 The demand drivers for the modelling were provided by DfT and were developed in December 2020 using the latest economic forecasts from the Office for Budget Responsibility (OBR) and Centre for Economics and Business Research (CEBR).

2.2.5 The following sections detail the source data and assumptions used for each of these drivers in PFMv10a which uses the PDFHv6 release. Further detail on the demand forecasting for PFMv10a can be found within the 'PFMv10a Forecasting Report'.

Population growth

2.2.6 The growth in population used in PFMv10a is based on Office of National Statistics (ONS) population projections with regional and national shares-based data provided by CEBR. These are obtained from DfT's December 2020 DDGs.

2.2.7 Table 2-1 presents the projected growth of the population for the forecast years from 2018/19.

Table 2-1: Regional and national population growth used in rail demand forecasts

Region	Growth in population from 2018/19	
	2029/30	2041/42
East of England	4%	7%
East Midlands	7%	11%
London	4%	5%
North East	2%	3%
North West	3%	6%
Scotland	2%	2%
South East	2%	4%
South West	6%	10%
Wales	2%	3%
West Midlands	6%	10%
Yorkshire & Humber	3%	5%

Region	Growth in population from 2018/19	
	2029/30	2041/42
Great Britain	4%	6%

Employment growth

2.2.8 The growth in employment used in PFMv10a has been sourced from the OBR EFO Report. Regional/national distributions are based on CEBR forecasts. These are obtained from DfT's December 2020 DDGs.

2.2.9 Table 2-2 presents the predicted growth in employment as used in PFMv10a for the forecast years from 2018/19.

Table 2-2: Regional and national employment growth used in rail demand forecasts

Region	Growth in employment from 2018/19	
	2029/30	2041/42
East of England	5%	11%
East Midlands	7%	10%
London	2%	4%
North East	2%	2%
North West	1%	2%
Scotland	2%	0%
South East	6%	5%
South West	4%	7%
Wales	1%	4%
West Midlands	6%	8%
Yorkshire & Humber	6%	13%
Great Britain	4%	6%

Growth in Gross Domestic Product per capita

2.2.10 As with employment growth, growth in GDP per capita in PFMv10a has been sourced from the OBR EFO Report using the ONS principle forecast numbers for population. Regional and national shares are based on CEBR forecasts. These are obtained from DfT's December 2020 DDGs.

Table 2-3: Regional and national GDP growth used in rail demand forecasts

Region	Growth in GDP per capita from 2018/19	
	2029/30	2041/42
East of England	10%	35%
East Midlands	6%	26%
London	12%	32%
North East	10%	32%
North West	7%	23%
Scotland	15%	40%
South East	16%	43%
South West	9%	27%
Wales	8%	30%
West Midlands	9%	26%
Yorkshire & Humber	7%	25%
Great Britain	10%	32%

National Rail and London Underground Fares

2.2.11 All National Rail fares in PFMv10a are assumed to grow at a rate of RPI+1% per calendar year, except for the period 2014/15-2019/20, when RPI+0% applies, in line with Government's current policy on rail fares. Table 2-4 shows the cumulative growth used in the model from 2018/19 to the forecast years 2029/30 and to 2041/42.

2.2.12 The assumption of RPI+1% has been used for London Underground fares in PFMv10a forecast period, except for 2014/15-2015/16 when the actual increase of RPI+0% applies, and for the period 2017/18-2020/21 in which a nominal fare freeze has been applied.

Table 2-4: Rail fare growth used in rail demand forecasts

	Growth in rail fares from 2018/19	
	2029/30	2041/42
National Rail	10%	24%
LUL	6%	19%

Car ownership

2.2.13 The change in car ownership in PFMv10a has been sourced from the DfT's National Trip End Model (NTEM) in TEMPro version 7.2. This provides forecasts for the number of car-owning households.

2.2.14 Table 2-5 shows the forecast growth in the proportion of car-owning households for a selection of forecast areas.

Table 2-5: Car ownership growth used in rail demand forecasts

	Growth in car ownership from 2018/19	
	2029/30	2041/42
Total Manchester	0%	-3%
Total Birmingham	-2%	-8%
Total Leeds	-2%	-6%
Total London	7%	11%
Total Great Britain	-1%	-4%

Car journey times

2.2.15 The change in average car journey times used in the EDGE model for PFMv10a has been sourced from the DfT's TAG Databook. The assumptions for travel times to London from the rest of Great Britain are shown in Table 2-6. These are provided within DfT's December 2020 DDGs.

Table 2-6: Car journey time growth used in rail demand forecasts (refer to Glossary for abbreviations)

	Growth in car journey times from 2018/19	
	2029/30	2041/42
LTA to LTA	6%	12%
ROSE to LTA	1%	4%
ROSE to ROSE	1%	2%
ROC to LTA	1%	5%
Core centre to core centre	2%	5%
Non-London other	1%	5%

Car cost

2.2.16 This parameter represents the forecast cost of car use, accounting for growth in car fuel prices and projected changes in the fuel efficiency of the vehicle fleet. This method is consistent with a change in the TAG data book introduced in February 2014 to include vehicle efficiency. Previously, the TAG data book had recommended using only car fuel price growth as a proxy for growth in all car costs. These are provided within DfT's December 2020 DDGs.

Table 2-7: Car cost growth used in rail demand forecasts (refer Glossary for abbreviations)

	Growth in car costs from 2018/19	
	2029/30	2041/42
LTA to LTA	-10%	-19%
ROSE to LTA	-12%	-22%
ROSE to ROSE	-12%	-21%
ROC to LTA	-12%	-21%
Core Centre to Core Centre	-12%	-22%
Non-London other	-12%	-22%

Bus and coach fares

2.2.17 Bus and coach fares are based on projections by DfT of bus fare and bus service forecasts, provided within DfT's December 2020 DDGs. Forecast growth from 2018/19 is shown in Table 2-8.

Table 2-8: Bus and coach fare growth used in rail demand forecasts (refer to Glossary for abbreviations)

	Growth in bus and coach fares from 2018/19	
	2029/30	2041/42
LTA to LTA	13%	44%
ROSE to LTA	24%	58%
ROSE to ROSE	24%	58%
ROC to LTA	24%	58%
Core centre to core centre	24%	58%
Non-London other	24%	58%

Bus and coach journey times

2.2.18 The forecast change in average bus and coach journey times has been sourced from the DfT's TAG data book. The change in travel times to London from the rest of Great Britain is shown in Table 2-9. These are provided within DfT's December 2020 DDGs.

Table 2-9: Bus and coach journey time growth used in rail demand forecasts (refer to Glossary for abbreviations)

	Growth in bus journey times from 2018/19	
	2029/30	2041/42
LTA to LTA	10%	21%
ROSE to LTA	2%	5%
ROSE to ROSE	2%	4%

	Growth in bus journey times from 2018/19	
	2029/30	2041/42
ROC to LTA	3%	8%
Core Centre to Core Centre	2%	5%
Non-London other	2%	5%

Bus and coach frequency

2.2.19 The forecast change in average bus and coach frequency is based on projections by DfT of bus fare and bus service forecasts. These are provided within DfT's December 2020 DDGs. The change is shown in Table 2-10.

Table 2-10: Bus and coach frequency growth used in rail demand forecasts (refer to Glossary for abbreviations)

	Growth in bus frequency from 2018/19	
	2029/30	2041/42
LTA to LTA	-1%	-1%
ROSE to LTA	1%	1%
ROSE to ROSE	1%	1%
ROC to LTA	1%	1%
Core centre to core centre	1%	1%
Non-London other	1%	1%

Air passengers

2.2.20 The forecast change in domestic air passengers has been sourced from outputs of DfT's aviation model. These are provided within DfT's December 2020 DDGs. Table 2-11 shows forecasts growth of air passengers by airport.

Table 2-11: Air passenger growth used in rail demand forecasts

Region	Growth in air passengers from 2018/19	
	2029/39	2041/42
Gatwick Airport	2%	14%
Heathrow Airport	60%	73%
Stansted Airport	-8%	34%
Birmingham Airport	17%	76%
Manchester Airport	7%	39%
Southampton Airport	-11%	4%
Cardiff Airport	-36%	-6%

2.3 Rail demand forecasts

Forecast years

2.3.1 The forecast years for PFMv10a are taken as:

- an opening year for the first phase of the scheme – assumed to be 2029/30; and
- a second forecast year of 2041/42 which is 20 years after the point of appraisal.

2.3.2 Using the rail demand drivers detailed in Section 2.2, the EDGE software produces rail growth forecasts for the assumed opening year 2029/30 and the second forecast year 2040/41. These are then assigned through the PFM pivoting process from the Do Nothing (2018/19 demand and supply) to obtain a constrained Do Minimum scenario. The forecasts of rail passenger demand produced by the EDGE forecasting process are unconstrained by the capacity of the rail network. Therefore the Do Nothing to Do Minimum pivoting process produces a constrained Do Minimum scenario to ensure the demand forecasts are constrained by capacity restrictions on the rail network.

2.3.3 The growth from 2018/19 base year is summarised in Table 2-12 for the PLANET Long Distance (PLD) model and in Table 2-13 for the regional PLANET models. These summarise the aggregate growth in each demand matrix. However, the aggregate growth rates will be different for the range of flow types and zone combinations within each of the models.

Table 2-12: Assigned Do Minimum forecast PLANET long distance – growth in rail demand by journey purpose

Journey purpose	Growth in rail demand from 2018/19	
	2029/30	2041/42
Commute	14%	15%
Business	24%	33%
Leisure	19%	28%
Total	20%	26%

Table 2-13: Assigned Do-Minimum forecast regional matrices – growth in rail demand by journey purpose

Regional model	Journey purpose	Growth in rail demand from 2018/19	
		2029/30	2041/42
PLANET South (PS)	Business	16%	27%
	Leisure	14%	24%
	Commute	10%	18%
	Total	11%	19%
PLANET Midlands (PM)	Business	14%	21%
	Leisure	14%	21%
	Commute	15%	13%
	Total	15%	14%
PLANET North (PN)	Business	7%	10%
	Leisure	8%	11%
	Commute	2%	0%
	Total	3%	1%

2.4 Highway demand forecasts

Economic growth

2.4.1 The highway demand forecasts were developed using factors derived from TEMProv7.2. To ensure consistency between these TEMPro-based forecasts and the rail demand forecasts, which used a more recent OBR GDP growth forecast, a GDP elasticity was applied to the matrices to correct for the discrepancy.

2.4.2 PLANET Long Distance Model forecasts based on high and low GDP estimate were used to derive implied arc elasticities for the responsiveness of highway demand to changes in GDP. The derived elasticities are shown in Table 2-14.

Table 2-14: Implied elasticity of highway demand with respect to GDP

Attribute	Purpose		
	Commuting	Business	Other
Implied elasticity	0.087	0.151	0.147

2.4.3 The elasticities shown above were applied to the growth in GDP and global factors were calculated with these values, which are shown in Table 2-15. These values were applied to the forecast matrices to correct for the change in GDP forecast.

Table 2-15: Growth applied to highway demand to correct for change in GDP forecasts

Year	Growth applied to TEMProv7.2 outputs		
	Commuting	Business	Other
2029/30	-0.6%	-1.0%	-1.0%
2040/41	-0.6%	-1.0%	-1.0%

Highway forecasts by purpose

2.4.4 Including the adjustment described above, Table 2-16 shows the highway demand forecasts applied to the base matrices by the three trip purposes.

Table 2-16: Highway demand forecasts for long distance trips

Journey purpose	Growth in highway trips from 2018/19	
	2029/30	2041/42
Commuting	1%	9%
Business	5%	11%
Leisure	6%	14%
Total	**4%**	**12%**

2.5 Air demand forecasts

2.5.1 The PFM Model Description Report provides a detailed description of the DfT aviation model and its components. PFMv10a uses outputs from the most recently published DfT aviation forecasts at the time of model development[1]. The resulting matrix growth used is shown Table 2-18.

Table 2-17: DfT Aviation Matrices – Growth in Domestic Air Passengers (annual domestic trips)

Journey purpose	Growth in domestic air passengers from 2018/19	
	2029/30	2041/42
Business	14%	41%
Leisure	7%	30%
Total	**11%**	**36%**
Note: There is no Air Passenger Commuting Matrix in PFM.		

[1] https://www.gov.uk/government/publications/uk-aviation-forecasts-2017

3 Economic appraisal

3.1 Background

3.1.1 The appraisal of HS2 requires a range of assumptions to compare costs and benefits in accordance with DfT appraisal guidance. This section outlines the assumptions that have been adopted and their sources.

3.1.2 The economic appraisal uses outputs from the different scenarios from the PFM to produce an appraisal of the economic benefits of each phase of the scheme over the remaining construction period and 60 years of operation.

3.1.3 The section describes the assumptions used in the economic appraisal of the scheme.

3.2 Price base

3.2.1 The costs and benefits presented in the appraisal of HS2 are based on 2015/16 prices using the HM Treasury GDP deflator as a measure of inflation.

3.3 Appraisal scenarios

3.3.1 The appraisal of the HS2 scheme requires representation of several phases of the scheme opening at different times as the project is constructed and delivered for operation. As such, the appraisal uses inputs from several modelled scenarios with key assumptions used for the appraisal of Phase 2b WL in PFMv10a are listed below:

- S1: 6 trains per hour (tph) to/from Old Oak Common – December 2029;
- S2: 10tph service to/from London Euston with HS2 network extended to Crewe – December 2034; and
- S3: 11tph service to/from London Euston with HS2 network extended to Manchester and West Coast Mainline connection via the Golborne link – December 2038.

3.3.2 Modelled years in the PFM:

- first forecast modelled year – 2029/30; and
- second forecast modelled year – 2041/42.

3.4 Parameters

Weightings

3.4.1 As per TAG A1.3 guidance, a weighting of two is applied to Wait Time within the appraisal. In addition, a boarding penalty of 30 minutes for each interchange is assumed based on guidance from PDFHv6.

Values of time

3.4.2 The values of time used in the appraisal are assumed to increase with income. The measure of income used is GDP per person (as recommended by TAG Unit A1.3). The appraisal is based on the same GDP and population sources that feed into the PFM demand (choice) model's forecasts, as outlined in Chapter 2.

3.4.3 The inputs to the appraisal are GDP growth forecasts and population growth data taken from DfT's TAG Databook. GDP growth is measured in real terms using the GDP deflators described in Chapter 2. As PfMv10a was developed at a time when TAG Databook June 2021 was in development, the DfT issued a February 2021 Interim Databook, which formed the basis of PFMv10a.

3.4.4 DfT instructed HS2 Ltd to assume VoT growth of 1.5% per year in real terms from 2021 onwards, in anticipation of the values to be included the June 2021 TAG Databook that was not available at the time that PFMv10 was developed.

3.4.5 In October 2015, the Department for Transport published the report 'Understanding and Valuing the Impact of Transport Investment'. The report set out proposals for changing the way time savings are valued within transport, and particularly, to allow the value of time applied to each impact to vary according to the trip distance.

3.4.6 The values of time by distance band are shown in Table 3-1. In line with guidance (TAG Unit A1.3, February Interim 2021), the values of working and non-working time are assumed to increase with income (i.e. GDP per person) with an elasticity of 1.0.

Table 3-1: Values of time by distance band

Purpose/mode	Distance band	Values of time by purpose (£/hr) (2010/11 prices)
Business – Highway driver Business – Highway passenger	0–50km	10.02
	50–75 kms	14.32
	75–100 kms	17.05
	100–125 kms	19.63
	125–150 kms	21.92
	150–175 kms	23.83
	175–200 kms	25.35
	200–225 kms	26.51
	225–250 kms	27.38
	250–275 kms	28.01
	275–300 kms	28.46
	300–325 kms	28.78
	325–350 kms	29.01
	350–375 kms	29.16
	375–400 kms	29.27
	>400 kms	29.32
Business – Rail Passenger	0–50km	10.02
	50–75km	14.43
	75–100 kms	18.41
	100–125 kms	22.63
	125–150 kms	26.77
	150–175 kms	30.56
	175–200 kms	33.80
	200–225 kms	36.40
	225–250 kms	38.40
	250–275 kms	39.89
	>275 kms	40.96
Commuting	All	9.95
Other	All	4.54

Annualisation factors

3.4.7 PFMv10a provides outputs for an average weekday. To undertake an appraisal of HS2, these weekday values are annualised to represent a full year. Table 3-2 shows the annualisation factors that have been derived for each mode and journey purpose for use in PLD.

3.4.8 The factors for rail and air are consistent with the method adopted to de-annualise weekday demand from annual matrices. In the case of highway there is no de-annualisation in the matrix development process and the factors have been sourced from an analysis of NTS.

Table 3-2: Annualisation factors – PLANET Long Distance

Purpose	Rail	Air	Highway
Business	255	313	275
Commuting	264	n/a	282
Other	428	313	361

3.4.9 In addition, there are a set of factors used to annualise information from the regional PLANET models which are given in Table 3-3. The regional PLANET models represent the morning peak period and so higher annualisation factors are used to convert from a three-hour peak period to all day, to all year.

Table 3-3: Annualisation factors – Regional PLANET models

Purpose	7AM to 10 AM	10AM to 4PM	4PM to 7PM	7PM to 7AM	Total (incl. weekend)
Business user	304	539	365	169	1,376
Commuting user	278	86	260	73	697
Other user	303	1,181	602	476	2,562
Business crowding	253	0	304	0	557
Commuting crowding	253	0	237	0	490
Other crowding	253	0	503	0	756

Fares

3.4.10 In accordance with the TAG data book, benefits and costs in the appraisal are presented in real terms, deflated using the GDP deflator. As such the definition of inflation used in the calculation of revenue (RPI) and the definition of inflation used in the rest of the appraisal (GDP deflator) differ.

3.4.11 To define fares growth based on the GDP deflator, revenues are uplifted by the difference between the RPI and GDP deflator indices over time. The difference

between these indices is on average around 0.9% per annum; in effect, this implies that real fares growth defined on the basis of RPI+1% per annum is equivalent to growth of the GDP deflator of +1.9% per annum.

3.4.12 For our modelling, all National Rail and London Underground fares are assumed to grow at a rate of RPI+1% per year between 2018/19 and the second forecast year, except between 2018/19 and 2020/21, when RPI+0% applies.

3.4.13 The regional uni-modal sub-models do not contain a fares matrix, and revenue is therefore calculated in the regional PLANET models based on average fares per kilometre calculated from the MOIRA journeys and revenue matrix that was used to derive the PFM rail demand matrices, as shown in Table 3-6.

Table 3-4: Fares yields

Purpose	Fares £/passenger kilometre (2010/11 prices)		
	PLANET South	PLANET Midlands	PLANET North
Business	0.129	0.109	0.117
Commuting	0.120	0.091	0.103
Other	0.125	0.104	0.106

Ramp-up effects

3.4.14 It is expected that the full benefits of HS2 will be realised after the first few years of operations. To reflect that the full benefits will not be realised immediately, a series of assumptions for factoring user benefits are applied within the appraisal relative to the modelled benefits, as shown in Table 3-5.

Table 3-5: Profile of benefit realisation following each phase opening

Year after opening	Phase One Year	Phase 2a Year	Phase 2bWL Year	Growth adjustment applied to demand and benefits
0	2029	2034	2038	-20%
1	2030	2035	2039	-10%
2	2031	2036	2040	-5%
3 and beyond	2032	2037	2041	0%

Discount rates

3.4.15 In line with TAG Unit A1.1 and the TAG Databook, a series of discount rates are applied from 2021. The annual real discount rates assumed are:

- until 2051/52 inclusive: annual discount rate is 3.5%;

- from 2052/3 until 2096/97: annual discount rate is 3.0%; and
- from 2097/8 the discount factor applied is 2.5%.

Highway factors used in the appraisal

3.4.16 Vehicle operating costs are derived using the approach outlined in TAG Unit A1.3. Fuel consumption is estimated using the following function:

$$L = \frac{(a + b.v + c.v^2 + d.v^3)}{v}$$

3.4.17 Where L = fuel consumption, expressed in litres per kilometre;

v = average speed in kilometres per hour; and,

a, b, c, d are parameters defined for each vehicle category.

3.4.18 The input for speed of highway traffic, v, is taken from the PLD's highway model, which estimates average traffic speed using DfT link type specific volume delay functions and traffic estimates. The vehicle operating cost parameters adopted within the HS2 appraisal are based on the parameters set out in TAG Unit A1.3.

3.4.19 The impacts of road decongestion are assessed in line with TAG Unit A5.4. In the absence of more specific evidence, TAG advises the use of a diversion factor based on results from the DfT's National Transport Model (NTM), which implies that 26% of any change in rail passenger kilometres would be diverted from car kilometres.

Wider impacts

3.4.20 The wider impacts of HS2 that are additional to transport user benefits have been estimated in line with TAG Unit A2.1. The impacts are estimated by using DfT's Wider Impacts in Transport Appraisal (WITA) software. In the case of the output change in imperfectly competitive markets, the TAG data book recommends these are estimated as being equivalent in value to 10% of the business user transport benefits.

Carbon impacts

3.4.21 The impacts of HS2 on emissions of carbon from highway and diesel train use have been appraised using a bespoke model which applies PFM assumptions. These are:

- assumptions for car fuel consumption, car emissions and the value of a non-traded tonne of carbon from the TAG data book;
- train kilometres and highway kilometres from PFM;
- car speeds for long distance and local trips are sourced from DfT's National Transport Model; and

- diesel train energy consumption is sourced from DfT's Rail Emissions Model.

4 Highway and air networks

4.1 Background

4.1.1 Within the PLANET long-distance (PLD) model is a series of networks for the "Do Minimum" and "Do Something" scenarios. This chapter outlines the assumptions made for the air and highway networks, whilst the following chapters outline the assumptions for the rail networks. Air and highway modes are represented in PLD, whereas the short-distance regional models are uni-modal rail models without explicit representation of highway or air modes.

4.2 Do Minimum and Do Something highway networks

4.2.1 Within the PFM, no additional highway schemes are assumed to be added between 2029/30 and 2041/42, hence the highway networks for these years are identical. In addition, they are also identical in the "Do Minimum" and "Do Something" scenarios.

4.2.2 The schemes that are included in the PFMv10a are listed in Table 4-1. Note that the infrastructure schemes include the DfT's list of under-construction and committed Road Investment Scheme Period 1 (RIS1) infrastructure programs.

Table 4-1: Highway schemes included in the PFM Forecast Years

Schemes assumed	
A1 Bramham–Wetherby	A11 Fiveways to Thetford Improvement
A3 Hindhead Improvement	A160 / A180 Improvements, Immingham
A421 Bedford to M1 Junction 13	A465 Dualling Scheme between Abergavenny and Hirwaun
M1 Junctions 25–28 Widening Scheme	A556 Knutsford to Bowdon Environmental Improvement
M25 Junctions 16–23 Widening	M1 Junctions 28–31 Managed Motorways
M25 Junctions 27–30 Widening	M1 Junctions 32–35a Managed Motorway
M27 Junctions 3–4 Widening	M1 Junctions 39–42 Managed Motorway
M42 Junctions 7–9 Hard Shoulder Running	M25 Junctions 23–27 Managed Motorways
M6 Junctions 4–5 Hard Shoulder Running	M25 Junctions 5–7 Managed Motorways
M6 Junctions 8-10A Managed Motorways (Birmingham Box Phase 2)	M60 Junctions 15–12 Lane Gain
M74 Completion	M60 Junctions 8–12 Managed Motorways
M80 Stepps to Haggs	M62 Junctions 18–20 Managed Motorway
A1 Dishforth to Leeming Improvement Scheme (A1 Dishforth to Barton)	M8, M73, M74 Motorway Improvements

Schemes assumed	
A23 Handcross to Warninglid	A453 Widening (M1 Junction 24 to A52 Nottingham)
A46 Newark to Widmerpool Improvement	A494 Drome Ewloe Improvement
M1 Junction 10–13 Improvements	A5–M1 Link (A505 Dunstable Northern Bypass)
M4 Junction 19–20 and M5 Junction 15-17 Managed Motorways	A9 Dualling
M4 Junction 3–2 Bus Lane Suspension Scheme	M3 Junctions 2–4a Managed Motorway
M6 Junctions 5–8 Managed Motorways (Birmingham Box Phase 3)	M4 Junctions 3–12 Managed Motorway
M62 Junctions 25 to 30 Managed Motorway	M54 to M6 / M6 (Toll) Link Road
M6 Junction 10A–13 Managed Motorway	A500 Etruria Valley Widening
A1(M) Junctionn 5–9 Welyn-Baldock	M5 Junctions 4a–6 south of Birmingham
A1(M) Junction n 6–8 Stevenage	M53 Junction 11 – 5 Capacity Improvements
M1 Junction 23a–M1 J24 Smart Motorways	M56 Junctions 6–8
M1 Junctions 13–19 south of Rugby	M6 Junctions 10a–13 Widening
M1 Junctions 24–25 (Long Eaton)	M6 Junctions 5–8w Widening. Birmingham Box Ph3
M20 Junctions 3–5 (Maidstone)	M6 Junctions 16–19 Birmingham – Manchester
M23 Junctions 8 - 10 (Gatwick)	M6 Junctions 13–15 between Birmingham and Manchester
M25 Junction 10–12 SM widening	M6 Junctions 2–4 between Coventry and Birmingham
M25 Junction 14–16 SM Widening (a)	M6 Junctions 21a–26 west of Manchester
M25 Junction 14–16 SM widening (b)	M60 Junctions 1–4 Widening (link to M56 Junction 3 not coded)
M27 Junctions 4 –11 (Southampton)	M60 Junction 24–27 Widening
M3 Junctions 9–14 (Southampton)	M60 Junction 8–12 Widening
M4: Junction 3 (Uxbridge) to Junction 12 (Reading west): upgrading to Smart Motorway, linking Reading to Heathrow	M62 Junction 25 to Junction 30 Widening
M40/M42 interchange: upgrading to Smart Motorway from junction 16 of the M40 and from junction 3 to 3a of the M42	M62 Junctions 10–12 (Manchester)
A1 Leeming to Barton Upgrade to Motorway Standard	A5036 Access to Port of Liverpool
A1 Lobley Hill	M4 Junction 3–12 Widening
A14 Cambridge to Huntingdon	M42 Junction 10 to M69 Junction 1 (1) – A5 Hinckley
A19 Norton to Wynyard	M54 to M6 (Toll) Link – [New Road but upgrade A460]
A21 Tonbridge to Pembury	M60 Junction 8–12 Widening
A5: Hinckley: widening of the section of A5 near Hinckley to dual carriageway where it carries traffic for both the A5 and A47	New junction 11A M1, link road to A5

4.3 Do Minimum and Do Something air networks

4.3.1 The air passenger supply in PFM represents domestic air services wholly within mainland Great Britain, thus excludes services to Northern Ireland, the Channel Islands, Isle of Man and Scottish Islands. Within PFM, the networks are taken directly from the DfT's Aviation Model.

5 Train Service Specifications (TSSs)

5.1 Background

5.1.1 The rail networks within PFM include a representation of a timetable and its associated capacity. The 'Do Minimum' provides a reference against which the 'Do Something' HS2 option is compared.

5.1.2 A summary of the key assumptions used within the PLD sub-model of PFM for the Train Operating Companies (TOC) affected by HS2 are given in this chapter. For each TOC, a summary of the service pattern is presented.

5.1.3 With a few exceptions, the 'Do Minimum' timetable assumptions are based on future committed schemes only. The 'Do Minimum' makes use of information provided by DfT for National Rail services and by Transport for London (TfL) for London Underground Limited (LUL) services. The National Rail and LUL 'Do Minimum' networks are assumed to be identical between 2029/30 (first forecast year model) and 2041/42 (second forecast year).

5.1.4 In PLD these assumptions relate to the average service pattern on weekdays. Information used within the regional PLANET models relates to services during the morning peak period on an average weekday.

5.1.5 **These assumptions are designed only for the purpose of providing a suitable reference case for the appraisal of HS2. Decisions have not yet been taken about train service requirements – or which stock will operate them – in any of the relevant franchises in any of the forecast years, and therefore these service patterns should be considered indicative.**

5.2 TSS development and DfT ownership/sign-off

5.2.1 For each TOC a Train Service Specification (TSS) has been developed in collaboration with DfT. This provides a breakdown of each individual train service, including rolling stock type and station arrival / departure times. HS2 Ltd has developed a tool, the Timetable Database (TTDB), which converts timetable files into PFM EMME transit line coding.

5.3 TSS scenarios

5.3.1 There are numerous scenarios included in the PFMv10a model release. These scenarios are used in conjunction with each other to develop the scheme economic

appraisal supporting the business case. Whilst some conventional TOCs' service provision will change between each of the scenarios, others TOCs remote to the HS2 scheme will not change service patterns when HS2 is introduced.

5.3.2 The following modelling scenarios are included within the PFMv10a model release for undertaking testing of the scheme, though they may not all be used in support of the business case:

- **Do Nothing (Base)**: this scenario represents the train service specification in the 2018/19 base year;
- **Do Minimum (DM)**: in this forecast scenario there is no HS2 scheme and this forms the reference case against which the benefits and revenues of the various HS2 phases are assessed;
- **Do Something (S1-S4)**: a series of forecast scenarios modelling the phased operation of high-speed services as the network is delivered and becomes operational (see Chapter 1). Further details on service specification included in section 5.5.

5.4 Rolling stock capacities

PDFH and PFM crowding penalties

5.4.1 Under PDFH, if there are more passengers than seats, the number of standing passengers can be calculated by assuming all seats are full, and then divided by the standing area to calculate standing passengers per square metre. PDFH then provides the In-Vehicle Time crowding penalties to apply.

5.4.2 In PFM these fixed PDFH recommended crowding penalties (In Vehicle Time multipliers) are used at 100% Load Factor (all seats occupied) and at a specified point on the crowding curve (at 2.5 standing passengers per metre squared). This provides the gradient of crowding curves to apply in PFM.

5.4.3 Each TOC is allocated one of three PDFH crowding curve parameters based on the passenger market of the TOC: London and South East, Regional, or Intercity. These are based on PDFH stated preference research of passengers. Crowding curve parameters are not allocated by rolling stock type, however the capacity of each rolling stock type is used within the crowding penalty calculations.

5.4.4 See PFM Model Description Report for further explanation on the crowding penalty calculations in PFM.

PFM rolling stock capacity assumptions

5.4.5 All vehicle types and their capacities have been supplied from DfT's National Model Framework. In discussion with DfT, it has been established that the standing capacity assumption for the number of passengers standing per square metre varies by rolling stock. Long-distance services typically assume a standing capacity of 0.45 metres per passenger (2.22 passengers per square metre), for regional services it is 0.35 metres per passenger (2.86 passengers per square metre) and for modern metro-style rolling stock (such as the new Thameslink Class 700s) it is 0.25 metres per passenger (4 passengers per metre squared.)

5.4.6 Therefore, it is necessary to use the standing capacities provided from NMF to produce a standing capacity assumption of 2.5 passengers per square metre the PFM / PDFH for each rolling stock type. This was done in consultation with DfT. It should be noted that the total capacity of rolling stock in PFM (seats and standing using 2.5 passengers per square metre) does not limit capacity at this point (i.e. PFM does not apply an absolute capacity limit for each rolling stock type), but is used as the basis for calculating the crowding penalties.

Full Rolling Stock Capacity List

5.4.7 A full list of the vehicle types used in PFM and their seated and total capacities are provided in *Appendix A – Modelled Rolling Stock*.

5.5 High speed

5.5.1 This TOC in PFM represents the proposed HS2 services. As this represents the HS2 scheme, this is only included in the Do-Something scenarios S1 to S4, as set out in the tables below. The calling patterns of the core sections of a split/join service are highlighted in **bold**. Stations with irregular calling patterns are *italicised*.

Table 5-1: High speed service provision – S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HS01	OOC-BCZ	OOC-BIT-BCZ	1tph using Classic Compatible 400m
HS02	OOC-BCZ	OOC-BIT-BCZ	1tph using Classic Compatible 400m
HS03	OOC-BCZ	OOC-BIT-BCZ	1tph using Classic Compatible 400m
HS06	OOC-MAN	OOC-WML-STP-MAN	1tph using Classic Compatible 200m
HS07	OOC-LIV	OOC-CRE-RUN-LIV	1tph using Classic Compatible 200m
HS10	OOC-GLC	OOC-WBQ-WGN-PRE-CAR-GLC	1tph using Classic Compatible 200m

Table 5-2: High speed service provision – S2

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HS01	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Classic Compatible 400m
HS02	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Classic Compatible 400m
HS03	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Classic Compatible 400m
HS04	EUS-MAN	EUS-OOC-SPT-MAN	1tph using Classic Compatible 200m
HS05	EUS-MAN	EUS-OOC-SPT-MAN	1tph using Classic Compatible 200m
HS06	EUS-MAN	EUS-OOC-WML-SPT-MAN	1tph using Classic Compatible 200m
HS07	EUS-LIV	EUS-OOC-CRE-RUN-LIV	1tph using Classic Compatible 200m
HS08	EUS-LIV/LAN	**EUS-OOC-CRE** // CRE-RUN-LIV // CRE-WBQ-WGN-PRE-LAN	1tph using Classic Compatible 400m and splits/joins at Crewe
HS10	EUS-GLC	EUS-OOC-PRE-CAR-GLC	1tph using Classic Compatible 200m
HS18	EUS-MAC	EUS-OOC-STA-SOT-MAC	1tph using Classic Compatible 200m

Table 5-3: High speed service provision – S3

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HS01	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Captive 400m
HS02	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Captive 400m
HS03	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Captive 400m
HS04	EUS-MAN	EUS-OOC-BIT-MIC-MAN	1tph using Captive 400m
HS05	EUS-MAN	EUS-OOC-MIC-MAN	1tph using Captive 400m
HS06	EUS-MAN	EUS-OOC-MIC-MAN	1tph using Captive 400m
HS07	EUS-LIV	EUS-OOC-CRE-RUN-LIV	1tph using Classic Compatible 200m
HS08	EUS-LIV/LAN	**EUS-OOC-CRE** // CRE-RUN-LIV // CRE-WBQ-WGN-PRE-LAN	1tph using Classic Compatible 400m and splits/joins at Crewe
HS10	EUS-GLC/EDB	**EUS-OOC-PRE-CAR** // CAR-GLC // CAR-EDB	1tph using Classic Compatible 400m and splits/joins at Carlisle
HS11	EUS-GLC/EDB	**EUS-OOC-BIT-PRE-CAR** // CAR-GLC // CAR-EDB	1tph using Classic Compatible 400m and splits/joins at Carlisle
HS18	EUS-MAC	EUS-OOC-STA-SOT-MAC	1tph using Classic Compatible 200m
HS21	BCZ-MAN	BCZ-MIT-MAN	1tph using Captive 200m
HS22	BCZ-MAN	BCZ-MIT-MAN	1tph using Captive 200m
HS23a	BCZ-GLC	BCZ-WGN-PRE-LAN-OXN-CAR-LOC-MTH-GLC	1tph alternating between GLC and EDB using Captive 200m
HS23b	BCZ-EDB	BCZ-WGN-PRE-LAN-PNR-CAR-LOC-EDB	

Table 5-4: High speed service provision – S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HS01	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Captive 400m
HS02	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Captive 400m
HS03	EUS-BCZ	EUS-OOC-BIT-BCZ	1tph using Captive 400m
HS04	EUS-MAN	EUS-OOC-BIT-MIC-MAN	1tph using Captive 400m
HS05	EUS-MAN	EUS-OOC-MIC-MAN	1tph using Captive 400m
HS06	EUS-MAN	EUS-OOC-MIC-MAN	1tph using Captive 400m
HS07	EUS-LIV	EUS-OOC-CRE-RUN-LIV	1tph using Classic Compatible 200m
HS08	EUS-LIV/LAN	**EUS-OOC-CRE** // CRE-RUN-LIV // CRE-WBQ-WGN-PRE-LAN	1tph using Classic Compatible 400m and splits/joins at Crewe
HS10	EUS-GLC/EDB	**EUS-OOC-PRE-CAR** // CAR-GLC // CAR-EDB	1tph using Classic Compatible 400m and splits/joins at Carlisle
HS11	EUS-GLC/EDB	**EUS-OOC-BIT-PRE-CAR** // CAR-GLC // CAR-EDB	1tph using Classic Compatible 400m and splits/joins at Carlisle
HS18	EUS-MAC	EUS-OOC-STA-SOT-MAC	1tph using Classic Compatible 200m
HS21	BCZ-MAN	BCZ-MIT-MAN	1tph using Captive 200m
HS22	BCZ-MAN	BCZ-MIT-MAN	1tph using Captive 200m
HS23a	BCZ-GLC	BCZ-WGN-PRE-LAN-OXN-CAR-LOC-MTH-GLC	0.5tph (alternate hour) using Captive 200m
HS23b	BCZ-EDB	BCZ-WGN-PRE-LAN-PNR-CAR-LOC-EDB	
HS12	EUS-LDS	LDS-EM2-OOC-LDS	1tph using Captive 400m
HS13	EUS-LDS	EUS-OOC-BIT-EM2-LDS	1tph using Captive 400m
HS14	EUS-LDS/SHF	**EUS-OOC-EM2** // EM2-LDS // EM2-SHF	1tph using Classic Compatible 400m and splits/joins at HS2 Toton
HS15	EUS-NCL	EUS-OOC-YRK-DAR-NCL	1tph using Classic Compatible 200m
HS16	EUS-NCL	EUS-OOC-YRK-NCL	1tph using Classic Compatible 200m
HS17	EUS-YRK/SHF	EUS-OOC-EM2 // EM2-CHD-SHF // EM2-YRK	1tph using Classic Compatible 400m and splits/joins at HS2 Toton
HS24	BCZ-LDS	BCZ-EM2-LDS	1tph using Captive 200m
HS25	BCZ-LDS	BCZ-EM2-LDS	1tph using Captive 200m
HS26	BCZ-NCL	BCZ-EM2-YRK-DAR-DHM-NCL	1tph using Classic Compatible 200m

5.6 West Coast

5.6.1 This TOC in PFM represents the Avanti West Coast franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the various Do Something scenarios (S1, S2 and S3). For the Do Minimum and Do Something tables, only those services which are changed are included in the tables below.

Table 5-5: West Coast service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
WC001	EUS-BHM	EUS-RUG-COV-BHI-BHM	1tph using a mixture of 390 9/11c with 1 daily extension to/from WVH
WC002	EUS-BHM	EUS-WFJ*-COV-BHI-BHM *board / alight only	1tph using a mixture of 390 9/11c with 3tpd extension to/from SHR using 221 5c
WC003a	EUS-CTR	EUS-MKC-CRE-CTR	1tph EUS-CTR with North Wales extensions. Uses a mix of 221 5/10c
WC003b	EUS-BNG	EUS-MKC-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG	4tpd extension of above using 221 5c
WC003c	EUS-HHD	EUS-MKC-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG-HHD	2tpd extension of above using 221 5c
WC004	EUS-LIV	EUS-STA-CRE-RUN-LIV	1tph using a mixture of 390 9/11c
WC005	EUS-MAN	EUS-CRE-WML-SPT-MAN	1tph using a mixture of 390 9/11c
WC006	EUS-MAN	EUS-SOT-MAC-SPT-MAN	1tph using a mixture of 390 9/11c
WC007	EUS-MAN	EUS-MKC-SOT-SPT-MAN	1tph using a mixture of 390 9/11c
WC008a	EUS-GLC	EUS-WBQ-WGN-PRE-LAN-PNR-CAR-GLC	0.5tph (alternate hour) using a mixture of 390 9/11c
WC008b	EUS-GLC	EUS-WBQ-WGN-PRE-LAN-OXN-CAR-GLC	0.5tph (alternate hour) using a mixture of 390 9/11c
WC009a	EUS-EDB	EUS-MKC-COV-BHI-BHM-SAD-WVH-CRE-WBQ-WGN-PRE-LAN-OXN-CAR-HYM-EDB	0.5tph (alternate hour) using a mixture of 390 9/11c and 221 5/10c
WC009b	EUS-GLC	EUS-MKC-COV-BHI-BHM-SAD-WVH-CRE-WBQ-WGN-PRE-LAN-PNR-CAR-GLC	0.5tph (alternate hour) using a mixture of 390 9/11c
WC010	EUS-BPN	EUS-WBQ-WGN-PRE-BPN	3tpd extension of WC008 using 390 9c

Table 5-6: West Coast service provision – Do Minimum

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
WC002	EUS-BHM	EUS-WFJ*-COV-BHI-BHM *board / alight only	1tph using a mixture of 390 9/11c with 4tpd extension to/from SHR using new 805 5c
WC003a	EUS-CTR	EUS-MKC-CRE-CTR	1tph EUS-CTR with North Wales extensions. Uses a mix of new 805 5/10c
WC003b	EUS-BNG	EUS-MKC-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG	1tpd extension of above using new 805 5c
WC003c	EUS-HHD	EUS-MKC-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG-HHD	4tpd extension of above using new 805 5c
WC003d	EUS-LLD	EUS-MKC-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-DGY-LLD	1tpd extension of above using new 805 5c
WC003e	EUS-WRX	EUS-MKC-CRE-CTR-WRX	1tpd extension of above using new 805 5c
WC003f	EUS-GOB	EUS-MKC-CRE-CTR-WRX-GOB	1tpd extension of above using new 805 5c
WC004	EUS-LIV	EUS-STA-CRE-RUN-LIV	1tph using new 807 7c
WC009a	EUS-EDB	EUS-MKC-COV-BHI-BHM-SAD-WVH-CRE-WBQ-WGN-PRE-LAN-OXN-CAR-HYM-EDB	0.5tph (alternate hour) using a mixture of 390 9/11c only
WC011	EUS-LIV	EUS-STA-CRE-RUN-LPY-LIV	New 1tph future service using 807 7c

Table 5-7: West Coast service provision – S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
WC003a	EUS-CTR	EUS-MKC-STA-CRE-CTR	Additional call at STA
WC003b	EUS-BNG	EUS-MKC-STA-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG	Additional call at STA
WC003c	EUS-HHD	EUS-MKC-STA-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG-HHD	Additional call at STA
WC003d	EUS-LLD	EUS-MKC-STA-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-DGY-LLD	Additional call at STA
WC003e	EUS-WRX	EUS-MKC-STA-CRE-CTR-WRX	Additional call at STA
WC003f	EUS-GOB	EUS-MKC-STA-CRE-CTR-WRX-GOB	Additional call at STA
WC004	EUS-LIV	Path taken by HS2	Removed
WC005	EUS-MAN	Path taken by HS2	Removed

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
WC006	EUS-MAN	Path taken by HS2	Removed
WC008a	EUS-GLC	Path taken by HS2	Removed
WC008b	EUS-GLC	Path taken by HS2	Removed

Table 5-8: West Coast service provision – S2

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
WC001	EUS-BHM	Path taken by HS2	Removed
WC002	EUS-BHM	Path taken by HS2	Removed
WC201	EUS-WVH	EUS-MKC-RUG-COV-BHI-BHM-SAD-WVH	New 1tph using 390 9c with 4tpd extensions to SHR using 805 10c
WC003a	EUS-CTR	EUS-MKC-RUG-NUN-TAM-LTV-STA-CRE-CTR	Extra calls at RUG-NUN-TAM-LTV
WC003b	EUS-BNG	EUS-MKC-RUG-NUN-TAM-LTV-STA-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG	Extra calls at RUG-NUN-TAM-LTV
WC003c	EUS-HHD	EUS-MKC-RUG-NUN-TAM-LTV-STA-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-BNG-HHD	Extra calls at RUG-NUN-TAM-LTV
WC003d	EUS-LLD	EUS-MKC-RUG-NUN-TAM-LTV-STA-CRE-CTR-FLN-PRT-RHL-CWB-LLJ-DGY-LLD	Extra calls at RUG-NUN-TAM-LTV
WC003e	EUS-WRX	EUS-MKC-RUG-NUN-TAM-LTV-STA-CRE-CTR-WRX	Extra calls at RUG-NUN-TAM-LTV
WC003f	EUS-GOB	EUS-MKC-RUG-NUN-TAM-LTV-STA-CRE-CTR-WRX-GOB	Extra calls at RUG-NUN-TAM-LTV
WC007	EUS-MAN	EUS-WFJ-MKC-SOT-MAC-PYT-BML-CHU-SPT-MAN	Extra calls at WFJ-MAC-PYT-BML-CHU and uses 807 7c
WC009a	EUS-EDB	EUS-WFJ-MKC-COV-BHI-BHM-SAD-WVH-CRE-WBQ-WGN-PRE-LAN-OXN-CAR-HYM-EDB	Extra call at WFJ and converted to all use 390 11c
WC009b	EUS-GLC	EUS-WF-MKC-COV-BHI-BHM-SAD-WVH-CRE-WBQ-WGN-PRE-LAN-PNR-CAR-GLC	
WC010	EUS-BPN	Path taken by HS2	Removed
WC011	EUS-LIV	Path taken by HS2	Removed

Table 5-9: West Coast service provision – S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
WC201	EUS-WVH	EUS-MKC-RUG-COV-BHI-BHM-SAD-WVH	Reduced to 390 9c. SHR extensions unchanged.

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
WC009a	EUS-PRE	EUS-WFJ-MKC-COV-BHI-BHM-SAD-WVH-CRE-WBQ-WGN-PRE	Truncated at Preston and reduced to 390 9c.
WC009b			

5.7 London Midland

5.7.1 This TOC in PFM represents the West Midlands Trains franchise. Service provision in this TOC changes in from the Do Nothing to Do Minimum and to the various Do Something scenarios (S1 and S2). For the Do Minimum and Do Something tables, only those services which are changed are included in the tables below.

Table 5-10: London Midland service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LM001b	EUS-MKC	EUS-WFJ-APS-HML-TRI-CED-BLY-MKC	2tph peak only using 350 12c
LM001c	EUS-WFJ	EUS-HRW-BSH-WFJ	2tpd peak only using 350 12c
LM001	EUS-MKC	EUS-WFJ-HML-BKM-TRI-CED-LBZ-BLY-MKC	1tph using 350 4/8c
LM001d	EUS-BLY	EUS-HRW-BSH-WFJ-HML-TRI-CED-LBZ-BLY	1tph peak only using 350 12c
LM002	EUS-LIV	EUS-WFJ-MKC-NMP-LBK-RUG-COV-THL-BHI-BHM-SGB-WVH-PKG-STA-CRE-WSF-HTF-ACB-RUN-LPY-LIV	1tph using 350 4c
LM003	EUS-CRE	EUS-MKC-RUG-NUN-ATH-TAM-LTV-RGL-STA-CRE	1tph using 350 4/8c
LM004	EUS-RGL	EUS-WFJ-HML-LBZ-BLY-MKC-NMP-LBK-RUG-COV-CNL-THL-BKW-HIA-BHI-MGN-BHM-TAB-WSL-BLX-BWN-LAW-CAO-HNF-RGT-RGL	1tph using 350 4/8c
LM005b	EUS-NMP	EUS-HRW-WFJ-KGL-HML-TRI-LBZ-BLY-MKC-NMP	2tph peak only using 350 12c
LM005	EUS-WSL	EUS-LBZ-BLY-MKC-WOL-NMP-LBK-RUG-COV-CNL-THL-BKW-HIA-BHI-MGN-BHM-DUD-AST-WTT-PRY-HSD-TAB-BSC-WSL	1tph using 350 4/12c
LM006a	EUS-TRI	EUS-WMB-HRW-BSH-WFJ-KGL-APS-HML-BKM-TRI	1tph using 350 4/12c
LM006b	EUS-TRI	EUS-HRW-BSH-WFJ-KGL-APS-HML-BKM-TRI	1tph using 350 4/12c
LM007N	BHM-CRE	BHM-SGB-WVH-STA-SNE-SOT-KDG-ASG-CRE	1tph using 350 4c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LM008	HFD-BHM	HFD-LED-CWL-GMV-MVL-WOF-DTW-BMV-UNI-BHM	1tph using 170(5) 4c
LM009	WVH-RGL	WVH-CSY-TIP-DDP-SAD-SGB-SMR-BHM-TAB-WSL-BLX-BWN-LAW-CAO-HNF-RGT-RGL	1tph using 350 4c
LM010	SHR-BHM	SHR-WLN-OKN-TFC-SFN-CSL-WVH-SAD-BHM	1tph using 170(5) 2/4c
LM012	BHI-LIV	BHI-LEH-SCF-ADD-BHM-WVH-STA-CRE-RUN-LPY-LIV	1tph using 350 4c
LM013	BMV-FOK	BMV-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-DUD-AST-GVH-ERD-CRD-WYL-SUT-FOK	1tph using 323 3/6c
LM014	RDC-FOK	RDC-ALV-BTG-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-DUD-AST-GVH-ERD-CRD-WYL-SUT-FOK	1tph using 323 3/6c
LM015	BMV-LTV	BMV-BTG-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-AST-GVH-ERD-CRD-WYL-SUT-FOK-BUL-BKT-SEN-LIC-LTV	1tph using 323 3/6c
LM016	RDC-LTV	RDC-ALV-BTG-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-AST-GVH-ERD-CRD-WYL-SUT-FOK-BUL-BKT-SEN-LIC-LTV	1tph using 323 3c
LM017	KID-DDG	KID-BKD-HAG-SBJ-CRA-ROW-SGB-THW-JEQ-BSW-BMO-ACG-OLT-SOL-WMR-DDG	1tph using 172(3) 3c
LM018a	SAV-SBJ	SAV-STY-WMC-WWW-HNL-DZY-WDE-TLK-EWD-WYT-WTE-SRL-YRD-HLG-SRI-BMO-BSW-JEQ-THW-SGB-LGG-ROW-OHL-CRA-LYE-SBJ	1tph using 172(3) 3c
LM018b	SAV-SBJ	SAV-STY-DDG-WMR-SOL-OLT-ACG-BMO-BSW-JEQ-THW-SGB-LGG-ROW-OHL-CRA-LYE-SBJ	1tph using 172(3) 3c
LM019	WOF-DDG	WOF-DTW-HBY-KID-SBJ-CRA-ROW-SGB-THW-JEQ-BSW-BMO-SMA-TYS-ACG-OLT-SOL-WMR-DDG	1tph using 172(3) 3c
LM020	KID-WTE	KID-BKD-HAG-SBJ-CRA-ROW-SGB-THW-JEQ-BSW-BMO-SRI-HLG-YRD-SRL-WTE	1tph using 172(3) 3c
LM021	WTE-WOS	WTE-SRL-YRD-HLG-SRI-TYS-SMA-BMO-BSW-JEQ-THW-SGB-ROW-CRA-SBJ-HAG-KID-DTW-WOS	1tph using 172(3) 3c
LM022	NUN-LMS	NUN-BEP-BEH-CAA-COV-KNW-LMS	1tph using 172(2) 2c
LM023	WFJ-SAA	WFJ-WFN-GSN-BWO-HWW-PKT-SAA	1tph using 350 4c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LM024	BLY-BDM	BLY-FEN-BWB-WOB-APG-RID-LID-MLB-SWR-KMH-BSJ-BDM	1tph using 230 2c
LM025	SBJ-SBT	SBJ-SBT	4tph using 139 1c

Table 5-11: London Midland service provision – DM

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LM001b	EUS-MKC	EUS-WFJ-APS-HML-TRI-CED-BLY-MKC	Uses new 730 10c
LM001c	EUS-WFJ	EUS-HRW-BSH-WFJ	Uses new 730 10c
LM001	EUS-MKC	EUS-WFJ-HML-BKM-TRI-CED-LBZ-BLY-MKC	Uses new 730 5/10c
LM001d	EUS-BLY	EUS-HRW-BSH-WFJ-HML-TRI-CED-LBZ-BLY	Uses new 730 10c
LM002	EUS-LIV	EUS-WFJ-MKC-NMP-LBK-RUG-COV-THL-BHI-BHM-SGB-WVH-PKG-STA-CRE-WSF-HTF-ACB-RUN-LPY-LIV	Uses new 730 5c
LM003	EUS-CRE	EUS-MKC-RUG-NUN-ATH-TAM-LTV-RGL-STA-CRE	Uses new 730 5/10c
LM004	EUS-RGL	EUS-WFJ-HML-LBZ-BLY-MKC-NMP-LBK-RUG-COV-CNL-THL-BKW-HIA-BHI-MGN-BHM-TAB-WSL-BLX-BWN-LAW-CAO-HNF-RGT-RGL	Uses new 730 5/10c
LM005b	EUS-NMP	EUS-HRW-WFJ-KGL-HML-TRI-LBZ-BLY-MKC-NMP	Uses new 730 10c
LM005	EUS-WSL	EUS-LBZ-BLY-MKC-WOL-NMP-LBK-RUG-COV-CNL-THL-BKW-HIA-BHI-MGN-BHM-DUD-AST-WTT-PRY-HSD-TAB-BSC-WSL	Uses new 730 5/10c
LM006a	EUS-TRI	EUS-WMB-HRW-BSH-WFJ-KGL-APS-HML-BKM-TRI	Uses new 730 5/10c
LM006b	EUS-TRI	EUS-HRW-BSH-WFJ-KGL-APS-HML-BKM-TRI	Uses new 730 5/10c
LM007N	BHM-CRE	BHM-SGB-WVH-STA-SNE-SOT-KDG-ASG-CRE	Uses new 730 5c
LM008	HFD-BHM	HFD-LED-CWL-GMV-MVL-WOF-DTW-BMV-UNI-BHM	Uses new 196 4c
LM009	WVH-RGL	WVH-CSY-TIP-DDP-SAD-SGB-SMR-BHM-TAB-WSL-BLX-BWN-LAW-CAO-HNF-RGT-RGL	Uses new 730 5c
LM010	SHR-BHM	SHR-WLN-OKN-TFC-SFN-CSL-WVH-SAD-BHM	Uses new 196 2/4c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LM012	BHI-LIV	BHI-LEH-SCF-ADD-BHM-WVH-STA-CRE-RUN-LPY-LIV	Uses new 730 5c
LM013	BMV-FOK	BMV-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-DUD-AST-GVH-ERD-CRD-WYL-SUT-FOK	Uses new 730 3/6c
LM014	RDC-FOK	RDC-ALV-BTG-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-DUD-AST-GVH-ERD-CRD-WYL-SUT-FOK	Uses new 730 3/6c
LM015	BMV-LTV	BMV-BTG-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-AST-GVH-ERD-CRD-WYL-SUT-FOK-BUL-BKT-SEN-LIC-LTV	Uses new 730 3/6c
LM016	RDC-LTV	RDC-ALV-BTG-LOB-NFD-KNN-BRV-SLY-UNI-FWY-BHM-AST-GVH-ERD-CRD-WYL-SUT-FOK-BUL-BKT-SEN-LIC-LTV	Uses new 730 6c
LM017	KID-DDG	KID-BKD-HAG-SBJ-CRA-ROW-SGB-THW-JEQ-BSW-BMO-ACG-OLT-SOL-WMR-DDG	Uses new 196 4c
LM018a	SAV-SBJ	SAV-STY-WMC-WWW-HNL-DZY-WDE-TLK-EWD-WYT-WTE-SRL-YRD-HLG-SRI-BMO-BSW-JEQ-THW-SGB-LGG-ROW-OHL-CRA-LYE-SBJ	Uses new 196 4c
LM018b	SAV-SBJ	SAV-STY-DDG-WMR-SOL-OLT-ACG-BMO-BSW-JEQ-THW-SGB-LGG-ROW-OHL-CRA-LYE-SBJ	Uses new 196 4c
LM019	WOF-DDG	WOF-DTW-HBY-KID-SBJ-CRA-ROW-SGB-THW-JEQ-BSW-BMO-SMA-TYS-ACG-OLT-SOL-WMR-DDG	Uses new 196 4c
LM020	KID-WTE	KID-BKD-HAG-SBJ-CRA-ROW-SGB-THW-JEQ-BSW-BMO-SRI-HLG-YRD-SRL-WTE	Uses new 196 4c
LM021	WTE-WOS	WTE-SRL-YRD-HLG-SRI-TYS-SMA-BMO-BSW-JEQ-THW-SGB-ROW-CRA-SBJ-HAG-KID-DTW-WOS	Uses new 196 4c
LM022	NUN-LMS	NUN-BEP-BEH-CAA-COV-KNW-LMS	Uses new 196 4c

Table 5-12: London Midland service provision – S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LM101	EUS-TRI	EUS-WMB-HRW-BSH-WFJ-KGL-APS-HML-BKM-TRI	New 1tph service from released capacity using 730 5/10c
LM102	EUS-BLY	EUS-WFJ-HML-BKM-TRI-CED-LBZ-BLY	New 1tph service from released capacity using 730 5/10c

Table 5-13: London Midland service provision – S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LM102	EUS-BLY	EUS-WFJ-HML-BKM-TRI-CED-LBZ-BLY	Increased to 2tph
LM001b	EUS-NMP	EUS-WFJ-APS-HML-TRI-CED-BLY-MKC-WOL-NMP	2tph EUS-MKC peak only service extended to/from NMP
LM001c	EUS-WFJ	EUS-HRW-BSH-WFJ	Increased from 2tpd to 3tpd
LM001d	EUS-NMP	EUS-HRW-BSH-WFJ-HML-TRI-CED-LBZ-BLY-MKC-WOL-NMP	1tph EUS-BLY peak only service extended to/from NMP
LM010	SHR-BHI	SHR-WLN-OKN-TFC-SFN-CSL-WVH-SAD-BHM-BHI	Extended to/from BHI
LM201	EUS-LTV	EUS-MKC-RUG-NUN-ATH-TAM-LTV	New 1tph peak only service using 730 5c
LM202	EUS-RUG	EUS-WFJ-HML-BKM-LBZ-BLY-MKC-WOL-NMP-LBK-RUG	New 1tph peak only service using 730 10c

5.8 Open access

5.8.1 This TOC in PFM represents the new Lumo Open Access operator. This operator is introduced in the Do Minimum and does not change. Previously this TOC also included the proposed Blackpool North – Euston service, but this service has since been removed.

Table 5-14: Open access service provision – Do Minimum, S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
OA002	KGX-EDB	KGX-SVG-DHM-NCL-MPT-EDB	5tpd using 803 5c.

5.9 East Coast

5.9.1 This TOC in PFM represents the London North Eastern Railway franchise. Service provision in this TOC changes from Do Nothing to Do Minimum and then to the S4 Do Something scenario. In the Do Minimum a new Inter-City Express Programme (IEP) timetable is adopted and in S4 a new amended timetable is adopted. Therefore, for this TOC all services are included in each scenario table.

Table 5-15: East Coast service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EC001a	KGX-EDB	KGX-YRK-DAR-NCL-BWK-EDB	1tph KGX-EDB fast (with extensions below) using 91 loco 10c
EC001b	KGX-ABD	KGX-YRK-DAR-NCL-BWK-EDB-HYM-INK-KDY-LEU-DEE-ARB-MTS-STN-ABD	3tpd extension of KGX-EDB fast using 43 loco 9c
EC001c	KGX-INV	KGX-YRK-DAR-NCL-BWK-EDB-HYM-FKK-STG-GLE-PTH-PIT-KIN-AVM-INV	1tpd extension of KGX-EDB fast using 43 loco 9c
EC001d	KGX-STG	KGX-YRK-DAR-NCL-BWK-EDB-HYM-FKK-STG	1tpd extension of KGX-EDB fast using 43 loco 9c
EC002a	KGX-GLC	KGX-PBO-NNG-DON-YRK-NTR-DAR-DHM-NCL-ALM-EDB-HYM-MTH-GLC	1tpd extension of KGX-EDB slow using 91 loco 10c (EC002 is 1pth)
EC002b	KGX-EDB	KGX-PBO-NNG-DON-YRK-NTR-DAR-DHM-NCL-EDB	0.5tph (alternate hour) using 91 loco 10c (EC002 is 1tph)
EC002c	KGX-EDB	KGX-PBO-NNG-DON-YRK-DAR-DHM-NCL-ALM-EDB	0.5tph (alternate hour) using 91 loco 10c (EC002 is 1tph)
EC003a	KGX-LDS	KGX-PBO-DON-WKF-LDS	1tph using 91 loco 10c
EC003b	KGX-SKI	KGX-PBO-NNG-DON-WKF-LDS-SKI	1tpd additional peak service using 43 loco 9c
EC004a	KGX-LDS	KGX-SVG-GRA-DON-WKF-LDS	1tph using 91 loco 10c
EC004b	KGX-HGT	KGX-SVG-GRA-DON-WKF-LDS-HGT	1tpd extension of EC004 using 43 loco 9c
EC004c	KGX-BDQ	KGX-SVG-GRA-RET-DON-WKF-LDS-BDQ	1tpd extension of EC004 using 91 loco 10c
EC005	KGX-YRK	KGX-SVG-PBO-GRA-NNG-RET-DON-YRK	0.5tph (alternate hour) using 91 loco 10c
EC006	KGX-NNG	KGX-SVG-PBO-GRA-NNG	0.5tph (alternate hour) using 91 loco 10c
EC007	KGX-LCN	KGX-SVG-PBO-GRA-NNG-LCN	1tpd additional peak service using 43 loco 9c

Table 5-16: East Coast service provision – Do Minimum, S1, S2 and S3

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EC010a	KGX-EDB	KGX-YRK-NCL-EDB	1tph KGX-EDB Fast (with extensions below) using 801 9c
EC010b	KGX-ABD	KGX-YRK-NCL-EDB-HYM-INK-KDY-LEU-DEE-ARB-MTS-STN-ABD	3tpd extension for EC010 using 800 10c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EC010c	KGX-INV	KGX-YRK-NCL-EDB-HYM-FKK-STG-GLE-PTH-PIT-KIN-AVM-INV	1tpd extension for EC010 using 800 10c
EC010d	KGX-STG	KGX-YRK-NCL-EDB-HYM-FKK-STG	1tpd extension for EC010 using 800 10c
EC011a	KGX-EDB	KGX-PBO-DON-YRK-DAR-DHM-NCL-BWK-EDB	0.5tph (alternate hour) using 801 9c
EC011b	KGX-GLC	KGX-PBO-DON-YRK-DAR-DHM-NCL-BWK-EDB-HYM-MTH-GLC	1tpd extension for EC011 using 801 9c
EC011c	KGX-EDB	KGX-PBO-DON-YRK-DAR-DHM-NCL-ALM-EDB	0.5tph (alternate hour) using 801 9c
EC012	KGX-LDS	KGX-DON-WKF-LDS	1tph KGX-LDS via DON using 801 9c
EC013a	KGX-LDS	KGX-PBO-WKF-LDS	1tph KGX-LDS via PBO using 801 9c with extensions
EC013b	KGX-BDQ	KGX-PBO-WKF-LDS-SHY-BDQ	6tpd extension of EC013 using 800 9c
EC013c	KGX-SKI	KGX-PBO-WKF-LDS-KEI-SKI	1tpd extension of EC013 using 800 9c
EC013d	KGX-HUD	KGX-PBO-WKF-LDS-DEW-HUD	2tpd extension of EC013 using 800 5c
EC014	KGX-HGT	KGX-SVG-GRA-NNG-RET-DON-LDS-HRS-HGT	0.5tph (alternate hour) using 800 9c
EC015a	KGX-NCL	KGX-SVG-PBO-GRA-NNG-RET-DON-YRK-NTR-DAR-DHM-NCL	1tph using 801 9c with extension below
EC015b	KGX-SUN	KGX-SVG-PBO-GRA-NNG-RET-DON-YRK-NTR-DAR-DHM-NCL-SUN	2tpd extension of EC015 using 801 9c
EC016	KGX-MBR	KGX-PBO-YRK-NTR-MBR	0.5tph (alternate hour) using 800 5c
EC017	KGX-LCN	KGX-SVG-PBO-GRA-NNG-LCN	0.5tph (alternate hour) using 800 5c

Table 5-17: East Coast service provision – S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EC012aD	KGX-HGT	KGX-PBO-DON-WKF-LDS-HRS-HGT	KGX-LDS converted to 1tph with extension. HGT 7tpd using 805 5c
EC012bD	KGX-HUD	KGX-PBO-DON-WKF-LDS-DEW-HUD	KGX-LDS converted to 1tph with extension. HUD 2tpd using 805 5c
EC012cD	KGX-SKI	KGX-PBO-DON-WKF-LDS-SKI	KGX-LDS converted to 1tph with extension. SKI 1tpd using 805 5c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EC012dD	KGX-BDQ	KGX-PBO-DON-WKF-LDS-SHY-BDQ	KGX-LDS converted to 1tph with extension. BDQ 6tpd using 805 5c
EC016D	KGX-MBR	KGX-PBO-GRA-NNG-YRK-NTR-MBR	Additional calls at GRA and NNG
EC017D	KGX-LCN	KGX-SVG-PBO-GRA-NNG-LCN	Frequency increased to 1tph
EC018D	KGX-HUL	KGX-SVG-GRA-NNG-RET-DON-HUL	New 1tph service using 800 5c
EC040D	KGX-NOT	KGX-SVG-PBO-GRA-NOT	New 1tph service using 800 5c
EC041aD	KGX-EDB	KGX-PBO-DON-YRK-NTR-DAR-DHM-NCL-BWK-EDB	5tpd KGX-EDB slow using 801 9c with extensions with BKW call
EC041bD	KGX-ABD	KGX-PBO-DON-YRK-NTR-DAR-DHM-NCL-BWK-EDB-HYM-INK-KDY-LEU-DEE-ARB-MTS-ABD	3tpd KGX-EDB slow using 800 9c extension with BKW call
EC042aD	KGX-EDB	KGX-PBO-DON-YRK-NTR-DAR-DHM-NCL-ALM-BWK-EDB	4tpd KGX-EDB slow using 801 9c with extensions with ALM call
EC042bD	KGX-INV	KGX-PBO-DON-YRK-NTR-DAR-DHM-NCL-ALM-EDB-HYM-FKK-STG-GLE-PTH-PIT-KIN-AVM-INV	1tpd KGX-EDB slow using 800 9c extension with ALM call
EC042cD	KGX-GLC	KGX-PBO-DON-YRK-NTR-DAR-DHM-NCL-ALM-EDB-HYM-MTH-GLC	1tpd KGX-EDB slow using 801 9c extension with ALM call
EC042dD	KGX-STG	KGX-PBO-DON-YRK-NTR-DAR-DHM-NCL-ALM-EDB-HYM-FKK-STG	1tpd KGX-EDB slow using 800 9c extension with ALM call
EC043D	KGX-YRK	KGX-SVG-PBO-GRA-RET-DON-YRK	KGX-NCL(EC15) truncated at YRK

5.10 East Midlands

5.10.1 This TOC in PFM represents the East Midlands Railway franchise. Service provision in this TOC changes from Do Nothing to Do Minimum and to the S4 Do Something scenario only. For the Do Minimum and Do-Something tables, only those services which change are included.

Table 5-18: East Midlands service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EM001	STP-COR	STP-LTN-LUT-BDM-WEL-KET-COR	1tph using 222 5c
EM002	STP-NOT	STP-MHR-LEI-EMD-NOT	1tph using HST 8c
EM003	STP-NOT	STP-LTN-BDM-WEL-KET-MHR-LEI-LBO-BEE-NOT	1tph using 222 5/10c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EM004	STP-SHF	STP-LEI-DBY-CHD-SHF	1tph using 222 7c
EM005	STP-SHF	STP-LEI-LBO-EMD-LGE-DBY-CHD-SHF	1tph using 222 5/10c
EM006	LIV-NRW	LIV-WID-WAC-MCO-MAN-SPT-SHF-CHD-ALF-NOT-GRA-PBO-ELY-TTF-NRW	1tph using 158 4c
EM007	MAT-NCT	MAT-MTB-CMF-WTS-AMB-BLP-DFI-DBY-SPO-LGE-ATB-BEE-NOT-CTO-BUJ-LOW-THU-BSB-FSK-ROL-NCT	1tph using 156 2c
EM008	NOT-WRK	NOT-HKN-NSD-KKB-SPK-MFT-MSW-SHB-LAG-CWD-WWL-WRK	1tph using 156 2c
EM009	NOT-MSW	NOT-BLW-HKN-NSD-KKB-SPK-MFT-MSW	1tph using 156 2c
EM010	CRE-DBY	CRE-ASG-KDG-LPT-SOT-LGN-BYB-UTT-TUT-PEA-DBY	1tph using 156 2c
EM011	LEI-LCN	LEI-SYS-SIL-BWS-LBO-EMD-BEE-NOT-NCT-CLM-SWD-HKM-LCN	1tph using 156 2c
EM012	NOT-SKG	NOT-RDF-BIN-BTF-GRA-RAU-SLR-HEC-SWE-HBB-BSN-WFL-SKG	1tph using 156 2c
EM013	LCN-PBO	LCN-MGM-RKT-SLR-SPA-PBO	6tpd using 156 2c
EM014	NNG-GMB	NNG-CLM-HKM-LCN-MKR-BTB-HAB-GMB	6tpd using 156 2c
EM015	DON-LCN	DON-GBL-SXY-LCN	6tpd using 156 2c

Table 5-19: East Midlands service provision – Do Minimum, S1, S2 and S3

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EM001	STP-COR	STP-LTN-LUT-BDM-WEL-KET-COR	Converted to 2tph and uses 360 8c
EM002	STP-NOT	STP-MHR-LEI-EMD-NOT	Converted to use new 810 5/10c
EM003	STP-NOT	STP-LTN-BDM-WEL-KET-MHR-LEI-LBO-BEE-NOT	Converted to use new 810 5/10c
EM004	STP-SHF	STP-LEI-DBY-CHD-SHF	Converted to use new 810 5/10c
EM005	STP-SHF	STP-LEI-LBO-EMD-LGE-DBY-CHD-SHF	Converted to use new 810 5/10c
EM017	NOT-NRW	NOT-GRA-PBO-ELY-TTF-NRW	EM006 is split into LIV-NOT (TP) and NOT-NRW (EM017)
EM007	MAT-NCT	MAT-MTB-CMF-WTS-AMB-BLP-DFI-DBY-SPO-LGE-ATB-BEE-NOT-CTO-BUJ-LOW-THU-BSB-FSK-ROL-NCT	Converted to 170 3c
EM008	NOT-WRK	NOT-HKN-NSD-KKB-SPK-MFT-MSW-SHB-LAG-CWD-WWL-WRK	Converted to 170 3c
EM009	NOT-MSW	NOT-BLW-HKN-NSD-KKB-SPK-MFT-MSW	Converted to 170 3c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EM010	CRE-DBY	CRE-ASG-KDG-LPT-SOT-LGN-BYB-UTT-TUT-PEA-DBY-LGE-ATB-BEE-NOT	Converted to 170 3c and extended to NOT
EM011	LEI-GMB	LEI-SYS-SIL-BWS-LBO-EMD-EMH-BEE-NOT-NCT-CLM-SWD-HKM-LCN-MKR-BTB-HAB-GMB	Converted to 170 3c and extended to GMB
EM012	NOT-SKG	NOT-RDF-BIN-BTF-GRA-RAU-SLR-HEC-SWE-HBB-BSN-WFL-SKG	Converted to 170 3c
EM013	LCN-PBO	N/A	Combined with EM015
EM014	NNG-GMB	NNG-CLM-HKM-LCN-MKR-BTB-HAB-GMB	Converted to 170 3c
EM015	DON-LCN	DON-GBL-SXY-LCN	Converted to 170 3c and combined with EM013 – 6tpd

Table 5-20: East Midlands service provision – S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EM002	STP-NOT	STP-MHR-LEI-LBO-EMD-NOT	Additional call at LBO and only uses 810 5c
EM003	STP-NOT	STP-LTN-BDM-WEL-KET-MHR-LEI-LBO-EMH-BEE-NOT	Additional call at HS2 Toton (EMH)
EM004	STP-DBY	STP-LEI-DBY	Truncated at DBY and uses 810 5c only
EM005	STP-SHF	STP-LEI-LBO-EMD-LGE-DBY-CHD-SHF	Converted to use 810 5c only
EM007	MAT-NCT	MAT-MTB-CMF-WTS-AMB-BLP-DFI-DBY-SPO-LGE-EMH-ATB-BEE-NOT-CTO-BUJ-LOW-THU-BSB-FSK-ROL-NCT	Additional call at HS2 Toton (EMH)
EM010	CRE-DBY	CRE-ASG-KDG-LPT-SOT-LGN-BYB-UTT-TUT-PEA-DBY-LGE-EMH-ATB-BEE-NOT	Additional call at HS2 Toton (EMH)
EM011	LEI-GMB	LEI-SYS-SIL-BWS-LBO-EMD-EMH-BEE-NOT-NCT-CLM-SWD-HKM-LCN-MKR-BTB-HAB-GMB	Additional call at HS2 Toton (EMH)

5.11 Hull Trains and Grand Central

5.11.1 Hull Trains and Grand Central TOCs represent the Open Access operators currently running services on the ECML. For these TOCs there is a change from Do Nothing to Do Minimum and to the S4 Do Something scenario. In the Do Minimum and Do Something tables, only those services which change are listed.

Table 5-21: Hull Trains / Grand Central service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HT001	KGX-HUL	KGX-GRA-RET-DON-SBY-HOW-BUH-HUL	0.5tph (alternate hour) using 180 5c
GC001	KGX-SUN	KGX-YRK-THI-NTR-EAG-HPL-SUN	5tpd using 180 5c
GC002	KGX-BDI	KGX-DON-PFM-WKK-MIR-BGH-HFX-BDI	4tpd using 180 5c

Table 5-22: Hull Trains / Grand Central service provision – Do Minimum, S1, S2 and S3

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HT001	KGX-HUL	KGX-GRA-RET-DON-SBY-HOW-BUH-HUL	Uses new 802 5c

Table 5-23: Hull Trains / Grand Central service provision – S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
GC001	KGX-SUN	KGX-DON-YRK-THI-NTR-EAG-HPL-SUN	Extra call at DON
GC002	KGX-BDI	KGX-PBO-DON-PFM-WKK-MIR-BGH-HFX-BDI	Extra call at PBO

5.12 Transpennine Express

5.12.1 This TOC in PFM represents the Transpennine Express franchise. Service provision in this TOC changes from Do Nothing to Do Minimum and to the S2 and S3 Do Something scenarios. In the Do Minimum the TOC timetable is updated with capacity and journey time improvements coming from the Transpennine Route Upgrade scheme. For the Do-Something tables, only services which change are included.

Table 5-24: Transpennine Express service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TP001	LIV-NCL	LIV-NLW-MCV-HUD-LDS-YRK-NTR-DAR-DHM-*CLS*-NCL	1tph using 185 3c *with CLS 0.5tph*
TP002	LIV-SCA	LIV-LEG-MCV-HUD-LDS-YRK-MLT-SEM-SCA	1tph using 185 3c
TP003	MAN-HUL	MAN-SYB-MSL-SWT-HUD-DEW-BTL-LDS-GRF-SBY-GBD-BUH-HUL	1tph using 185 3c
TP004	MAN-LDS	MAN-SYB-GNF-MSN-HUD-DHN-MIR-RVN-DEW-BTL-MLY-LDS	1tph using 185 3c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TP005a	MIA-EDB	MIA-MAN-MCO-PRE-LAN-OXN-PNR-CAR-LOC-EDB	0.5tph (alternate hour) using 350 4c
TP005b	MIA-GLC	MIA-MAN-MCO-PRE-LAN-OXN-PNR-CAR-LOC-MTH-GLC	0.5tph (alternate hour) using 350 4c
TP006	MIA-RCC	MIA-MAN-MCO-MCV-HUD-DEW-LDS-YRK-THI-NTR-YRM-TBY-MBR-RCC	1tph using 185 3c
TP007	MIA-NCL	MIA-MAN-MCO-MCV-HUD-DEW-LDS-YRK-NTR-DAR-DHM-NCL	1tph using 185 3c
TP008	MIA-CLE	MIA-MAN-SPT-SHF-MHS-DON-SCU-BTB-*HAB*-GMB-CLE	1tph using 185 3c *with HAB 0.5tph*

Table 5-25: Transpennine Express service provision – Do Minimum and S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TP001	LIV-NCL	LIV-NLW-MCV-HUD-LDS-YRK-NTR-DAR-DHM-*CLS*-NCL-MPT-BWK-EDB	Extended LIV-EDB and uses 802 5c with JT improvements MAN-LDS
TP002	LIV-SCA	LIV-LEG-MCV-HUD-LDS-YRK-MLT-SEM-SCA	Uses new 802 5c with JT improvements MAN-LDS
TP003	MAN-HUL	MAN-HUD-LDS-GRF-SBY-GBD-BUH-HUL	Converted to fast service using 67 loco 6c
TP004	MAN-HUL	MAN-HUD-LDS-GRF-SBY-GBD-BUH-HUL	Converted to fast service using 67 loco 6c
TP005a	MIA-EDB	MIA-MAN-MCO-PRE-LAN-OXN-PNR-CAR-LOC-EDB	Converted to 397 5c
TP005b	MIA-GLC	MIA-MAN-MCO-PRE-LAN-OXN-PNR-CAR-LOC-MTH-GLC	Converted to 397 5c
TP006	MIA-RCC	MIA-MAN-MCO-MCV-HUD-DEW-LDS-YRK-THI-NTR-YRM-TBY-MBR-RCC	Uses new 802 5c with JT improvements MAN-LDS
TP007	MIA-NCL	MIA-MAN-MCO-MCV-HUD-DEW-LDS-YRK-NTR-DAR-DHM-NCL	Uses new 802 5c with JT improvements MAN-LDS and truncated at YRK for East Coast
TP008	MIA-CLE	MIA-MAN-SPT-SHF-MHS-DON-SCU-BTB-*HAB*-GMB-CLE	Unchanged from DM
TP009	LIV-NOT	LIV-LPY-WID-WAC-MCO-MAN-SPT-SHF-CHD-ALF-NOT	New 1tph service using 185 3c. Built from EM LIV-NRW being split
TP010	LIV-GLC	LIV-PRE-LAN-OXN-PNR-CAR-LOC-MTH-GLC	New limited 3tpd service using 397 5c

Table 5-26: Transpennine Express service provision – S2

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TP008	MIA-CLE	MIA-MAN-SPT-HAZ-SHF-MHS-DON-SCU-BTB-*HAB*-GMB-CLE	Additional call at HAZ

Table 5-27: Transpennine Express service provision – S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TP008	MIA-CLE	MIA-MAN-SPT-SHF-MHS-DON-SCU-BTB-*HAB*-GMB-CLE	HAZ call removed so reverts back to DM service
TP010	LIV-GLC	LIV-HUY-EBA-LEY-PRE-LAN-OXN-PNR-CAR-LOC-MTH-GLC	Additional calls at HUY-EBA-LEY to infill for removed NT service

5.13 CrossCountry

5.13.1 This TOC in PFM represents the CrossCountry franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the S2, S3 and S4 Do Something scenarios. For the Do Something tables, only those services which change are included.

Table 5-28: CrossCountry service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XC001	BMH-MAN	BMH-BCU-SOU-SOA-WIN-BSK-RDG-OXF-BAN-LMS-COV-BHI-BHM-WVH-STA-SOT-MAC-SPT-MAN	1tph using 221 5c
XC002a	BRI-MAN	BRI-BPW-CNM-BHM-WVH-STA-SOT-MAC-SPT-MAN	9tpd: BRI-MAN is 1tph core route with all using 221 5c
XC002b	EXD-MAN	EXD-TVP-TAU-BRI-BPW-CNM-BHM-WVH-STA-SOT-MAC-SPT-MAN	1tpd: BRI-MAN is 1tph core route with all using 221 5c
XC002c	PGN-MAN	PGN-TQY-NTA-TGM-DWL-EXD-TVP-TAU-WSM-BRI-BPW-CNM-BHM-WVH-STA-SOT-MAC-SPT-MAN	2tpd: BRI-MAN is 1tph core route with all using 221 5c
XC002d	PLY-MAN	PLY-TOT-NTA-EXD-TVP-TAU-BRI-BPW-CNM-BHM-WVH-STA-SOT-MAC-SPT-MAN	1tpd: BRI-MAN is 1tph core route with all using 221 5c
XC002e	CDF-MAN	CDF-NWP-STJ-PWY-FIT-BRI-BPW-CNM-BHM-WVH-STA-SOT-MAC-SPT-MAN	1tpd: BRI-MAN is 1tph core route with all using 221 5c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XC003a	RDG-NCL	RDG-OXF-BAN-LMS-BHM-DBY-SHF-DON-YRK-DAR-DHM-NCL	6tpd: RDG-NCL is 1tph core route with all using 220 4c
XC003b	SOU-NCL	SOU-SOA-WIN-BSK-RDG-OXF-BAN-LMS-BHM-DBY-SHF-DON-YRK-DAR-DHM-NCL	4tpd: RDG-NCL is 1tph core route with all using 220 4c
XC003c	GLD-NCL	GLD-RDG-OXF-BAN-LMS-BHM-DBY-SHF-DON-YRK-DAR-DHM-NCL	1tpd: RDG-NCL is 1tph core route with all using 220 4c
XC003d	BHM-NCL	BHM-DBY-SHF-DON-YRK-DAR-DHM-NCL	4tpd: RDG-NCL is 1tph core route with all using 220 4c
XC004a	PNZ-ABD	PNZ-SER-CBN-RED-TRU-SAU-PAR-BOD-LSK-PLY-TOT-NTA-EXD-TVP-TAU-BRI-BPW-CNM-BHM-BUT-DBY-CHD-SHF-WKF-LDS-YRK-DAR-DHM-NCL-ALM-BWK-DUN-EDB-HYM-INK-KDY-MNC-LDY-CUP-LEU-DEE-ARB-MTS-STN-ABD	1tpd using 220 4c but represents core route of 1tph South West – Scotland via Leeds
XC004b	PNZ-GLC	PNZ-SER-HYL-CBN-RED-TRU-SAU-PAR-LOS-BOD-LSK-PLY-TOT-NTA-EXD-TVP-TAU-BRI-BPW-CNM-BHM-TAM-DBY-CHD-SHF-WKF-LDS-YRK-DAR-DHM-NCL-MPT-BWK-EDB-HYM-MTH-GLC	2tpd using 220 4c but represents core route of 1tph South West – Scotland via Leeds
XC004c	PLY-GLC	PLY-TOT-NTA-EXD-TVP-TAU-BRI-BPW-CNM-BHM-TAM-DBY-CHD-SHF-WKF-LDS-YRK-DAR-DHM-NCL-BWK-DUN-EDB-HYM-MTH-GLC	5tpd using 220 4c but represents core route of 1tph South West – Scotland via Leeds
XC004d	PLY-EDB	PLY-TOT-NTA-EXD-TVP-TAU-BRI-BPW-CNM-BHM-TAM-DBY-CHD-SHF-WKF-LDS-YRK-DAR-DHM-NCL-ALM-BWK-EDB	4tpd using 220 4c but represents core route of 1tph South West – Scotland via Leeds
XC005a	BHM-LEI	BHM-WTO-CEH-NUN-HNK-NBR-LEI	0.5tph (alternate hour) using 170(1) 2c – provides 1tph BHM-LEI
XC005b	BHM-LEI	BHM-CEH-NUN-HNK-NBR-SWS-LEI	
XC006	BHM-SSD	BHM-CEH-NUN-LEI-MMO-OKM-SMD-PBO-MCH-ELY-CBG-AUD-SSD	1tph using 170(1) 2c
XC007	BHM-NOT	BHM-TAM-BUT-DBY-LGE-ATB-BEE-NOT	1tph using 170(1) 2c
XC008	CDF-NOT	CDF-NWP-CPW-GCR-CNM-UNI-BHM-WNE-TAM-BUT-DBY-LGE-BEE-NOT	1tph using 170(1) 2c

Table 5-29: CrossCountry service provision – Do Minimum and S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XC004a	PNZ-ABD	PNZ-SER-CBN-RED-TRU-SAU-PAR-BOD-LSK-PLY-TOT-NTA-EXD-TVP-TAU-BRI-BPW-CNM-BHM-BUT-DBY-CHD-SHF-WKF-LDS-YRK-	Converted to HST 8c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
		DAR-DHM-NCL-ALM-BWK-DUN-EDB-HYM-INK-KDY-MNC-LDY-CUP-LEU-DEE-ARB-MTS-STN-ABD	
XC004b	PNZ-GLC	PNZ-SER-HYL-CBN-RED-TRU-SAU-PAR-LOS-BOD-LSK-PLY-TOT-NTA-EXD-TVP-TAU-BRI-BPW-CNM-BHM-TAM-DBY-CHD-SHF-WKF-LDS-YRK-DAR-DHM-NCL-MPT-BWK-EDB-HYM-MTH-GLC	Converted to HST 8c
XC005a	BHM-LEI	BHM-WTO-CEH-NUN-HNK-NBR-LEI	Lengthened to 170(1) 3c
XC005b	BHM-LEI	BHM-CEH-NUN-HNK-NBR-SWS-LEI	Lengthened to 170(1) 3c
XC006	BHM-SSD	BHM-CEH-NUN-LEI-MMO-OKM-SMD-PBO-MCH-ELY-CBG-AUD-SSD	Lengthened to 170(1) 3c

Table 5-30: CrossCountry service provision – S2 and S3

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XC003a	RDG-NCL	RDG-OXF-BAN-LMS-COV-BHI-BHM-DBY-SHF-DON-YRK-DAR-DHM-NCL	Re-routed to additionally call at COV and BHI from WC path
XC003b	SOU-NCL	SOU-SOA-WIN-BSK-RDG-OXF-BAN-LMS-COV-BHI-BHM-DBY-SHF-DON-YRK-DAR-DHM-NCL	Re-routed to additionally call at COV and BHI from WC path
XC003c	GLD-NCL	GLD-RDG-OXF-BAN-LMS-COV-BHI-BHM-DBY-SHF-DON-YRK-DAR-DHM-NCL	Re-routed to additionally call at COV and BHI from WC path

Table 5-31: CrossCountry service provision – S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XC003a	RDG-NCL	RDG-OXF-BAN-LMS-COV-BHI-BHM-DBY-SHF-DON-YRK	Truncated at York for HS2 path
XC003b	SOU-NCL	SOU-SOA-WIN-BSK-RDG-OXF-BAN-LMS-COV-BHI-BHM-DBY-SHF-DON-YRK	Truncated at York for HS2 path
XC003c	GLD-NCL	GLD-RDG-OXF-BAN-LMS-COV-BHI-BHM-DBY-SHF-DON-YRK	Truncated at York for HS2 path
XC003d	BHM-NCL	BHM-DBY-SHF-DON-YRK	Truncated at York for HS2 path

5.14 Northern Trains

5.14.1 This TOC in PFM represents the Northern Trains franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the S2, S3 and S4 Do

Something scenarios. For the Do Minimum and Do Something tables, only those services which change are included.

Table 5-32: Northern Trains service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT000	ELP-HSB	ELP-SNT-INE-HSB	3tpd using 158 2c
NT00a	LDS-GOO	LDS-WDS-CFD-GLH-PFM-KNO-WBD-HEL-SNI-RWC-GOO	3tpd using 158 2c
NT001	SKI-LDS	SKI-CEY-SON-KEI-CFL-BIY-SAE-SHY-LDS	2tph using 333 4c
NT002	BDQ-LDS	BDQ-FZH-SHY-LDS	2tph using 333 4c
NT003	ILK-LDS	ILK-BEY-BUW-MNN-GSY-LDS	2tph using 333 4c
NT004	BDQ-ILK	BDQ-FZH-SHY-BLD-GSY-MNN-BUW-BEY-ILK	2tph using 333 4c
NT005	BAU-CLE	BAU-BAV-NHL-GOX-TNA-ULC-HAB-SLL-HLI-GCT-GMB-GMD-NCE-CLE	0.5tph (alternate hour) using 156 2c
NT006	RCD-BBN	RCD-CAS-MIH-MSO-MCV-SFD-SLD-BON-HID-BMC-DWN-BBN	1tph using 150 2c
NT007	RCD-CLH	RCD-CAS-MIH-MSO-MCV-SFD-SLD-BON-HID-BMC-ENT-DWN-BBN-RGW-LHO-WHE-CLH	1tph using 150 2c
NT008	WGW-BBN	WGW-DSY-ATN-WKD-SLD-SFD-MCV-RCD-SMB-LTL-TOD-BYM-RSG-ACR-BBN	1tph using 170(4) 3c
NT009	BPN-HAZ	BPN-LAY-PFY-PRE-LEY-CRL-ADL-BLK-HWI-LOT-BON-SLD-DGT-MCO-MAN-LVM-HTC-SPT-DVN-WSR-HAZ	1tph using 331 4c
NT010	MCV-PRE	MCV-SFD-SLD-BON-LOT-HWI-BLK-ADL-CRL-LEY-PRE	1tph using 319 4c
NT011	BPN-MIA	BPN-LAY-PFY-KKM-PRE-CRL-HWI-LOT-BON-SLD-MCO-MAN-MIA	1tph using 331 4c
NT012	BPN-YRK	BPN-PFY-PRE-BBN-ACR-BYM-HBD-MYT-SOW-HFX-BDI-NPD-LDS-CHF-YRK	1tph using 195 6c
NT013	SOT-MAN	SOT-*KDG*-CNG-MAC-PRB-ADC-PYT-BML-CHU-SPT-HTC-LVM-MAN	1tph using 323 3c *with KDG alternate hour call*
NT014a	BUX-MAN	BUX-DVH-CEF-WBR-FNV-NMN-HAZ-SPT-MAN	1tph using 150 2c
NT015	BUX-MAN	BUX-CEF-WBR-FNV-NMN-DSL-MDL-HAZ-WSR-DVN-SPT-MAN	1tph using 150 2c
NT016	RSH-MAN	RSH-RML-WLY-HYC-HYT-GUI-FRF-GTO-ADK-MAN	1tph using 150 2c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT017	MAN-HDF	MAN-ABY-GUI-FLF-NWN-GDL-HTY-BDB-DTG-GLO-HDF	2tph using 319 4c. In peak frequency increases to 6tph
NT018	CTR-MAN	CTR-MLD-DLM-CUD-GBK-NWI-LTG-PLM-KNF-MOB-ASY-HAL-ALT-NVR-SPT-MAN	1tph using 156 2c
NT019	SOP-ALD	SOP-MEC-BCB-PBL-APB-GST-WGW-DSY-HGF-ATN-WKD-SNN-SLD-MCO-MAN-SPT-CHU-HTH-WML-ALD	1tph using 156 2c
NT020	CRE-MAN	CRE-SDB-HCH-GTR-CEL-ALD-WML-HTH-CHU-SPT-MAN	1tph using 331 4c
NT021	BIF-CAR	BIF-ASK-KBF-FOX-GNR-MLM-SIC-BOC-RAV-DRI-SSC-SEL-SBS-CKL-WTH-PRN-HRR-WKG-FLM-MRY-ASP-WGT-DLS-CAR	0.5tph (alternate hour) using 156 2c
NT022a	LAN-BIF	LAN-CNF-SVR-ARN-GOS-KBK-CAK-ULV-DLT-ROO-BIF	0.5tph (alternate hour) using 156 2c
NT022b	LAN-MCM	LAN-BAR-MCM	1tph using 156 2c
NT023	BIF-MIA	BIF-ROO-DLT-ULV-CAK-KBK-GOS-ARN-SVR-CNF-LAN-PRE-WGN-MCO-MAN-MIA	0.5tph (alternate hour) using 195 2c
NT024a	WDM-MIA	WDM-KEN-OXN-LAN-PRE-WGN-MCO-MAN-MIA	4tpd extensions OXN-WDM using 158 2c
NT024b	OXN-WDM	OXN-KEN-BUD-SVL-WDM	1tph (with above extension) using 158 2c
NT025	DON-SCU	DON-KKS-HFS-TNS-CWE-ALP-SCU	1tph using 155 2c
NT026	NOT-LDS	NOT-ILN-LGM-ALF-CHD-DRO-SHF-MHS-BNY-WKK-LDS	1tph using 195 4c: LDS-SHF via Barnsley fast
NT027	LDS-LCN	LDS-WKK-BNY-MHS-SHF-WRK-RET-GBL-SXY-LCN	1tph using 195 2c: LDS-SHF via Barnsley fast
NT028	LDS-HGT	LDS-BUY-HDY-HRS-WET-PNL-HBP-HGT	2tph using 170(4) 3c
NT029	LDS-KNA	LDS-BUY-HDY-HRS-WET-PNL-HBP-HGT-SBE-KNA	1tph using 170(4) 3c
NT030	LDS-YRK	LDS-HRS-HGT-SBE-KNA-CTL-HMM-POP-YRK	1tph using 195 2c
NT031	LDS-HRS	LDS-BUY-HDY-HRS	4tpd in peak period only using 170(4) 3c
NT032	HUD-CFD	HUD-DHN-MIR-WKK-NOR-CFD	1tph using 155 2c
NT033a	YRK-HUL	YRK-SBY-HOW-GBD-BUH-HUL	0.5tph (alternate hour) using 158 2c
NT033b	YRK-HUL	YRK-CHF-SIE-SBY-HOW-BUH-HUL	0.5tph (alternate hour) using 158 2c
NT034	HUL-SCA	HUL-CGM-BEV-DRF-BDT-FIL-SEM-SCA	1tph using 158 2c
NT035	HUD-LDS	HUD-BGH-HFX-BDI-NPD-BLE-LDS	1tph using 158 4c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT036	WGW-LDS	WGW-DSY-HGF-ATN-WKD-SNN-SLD-SFD-MCV-RCD-SMB-LTL-WDN-TOD-HBD-MYT-SOW-BGH-MIR-DEW-MLY-COT-LDS	1tph using 158 2c
NT037	CTR-LDS	CTR-WBQ-ERL-NLW-MCV-RCD-TOD-HBD-HFX-BDI-NPD-BLE-LDS	1tph using 195 2c
NT038	LDS-SBY	LDS-CRG-GRF-EGF-MIK-SOM-SBY	1tph using 150 2c
NT039	DON-LDS	DON-BYK-AWK-SES-FZW-SNA-WKF-OUT-LDS	1tph using 333 4c
NT040	CRE-LIV	CRE-SDB-HCH-ALD-WML-SYA-MIA-HDG-GTY-EDY-BNA-MAU-MAN-MCO-DGT-ECC-PAT-NLW-ERL-SHJ-LEG-RNH-WHN-HUY-ROB-BGE-WAV-EDG-LIV	1tph using 195 4c
NT041	LIV-MIA	LIV-LPY-WAC-BWD-MCO-MAN-EDY-HDG-MIA	1tph using 195 4c
NT042	LIV-MCO	LIV-MSH-WSA-LPY-HNX-HED-HGN-WID-WAC-PDG-BWD-IRL-URM-DGT-MCO	0.5tph (alternate hour) using 150 2c. LIV-MCO is 2tph overall
NT043	LIV-MCO	LIV-MSH-WSA-LPY-HGN-WID-WAC-BWD-IRL-FLI-URM-HUP-TRA-DGT-MCO	0.5tph (alternate hour) using 150 2c. LIV-MCO is 2tph overall
NT044	LIV-MCO	LIV-MSH-WSA-LPY-HGN-WID-WAC-BWD-GLZ-IRL-FLI-CSR-URM-DGT-MCO	1 using 150 2c. LIV-MCO is 2tph overall
NT045	LIV-WBQ	LIV-EDG-WAV-BGE-ROB-HUY-WHN-RNH-LEG-SHJ-ERL-WBQ	1tph using 319 4c
NT046	LIV-WGN	LIV-EDG-WAV-BGE-ROB-HUY-PSC-ECL-THH-SNH-GSW-BYN-WGN	2tph using 319 4c
NT047	LIV-BPN	LIV-HUY-SNH-WGN-EBA-LEY-PRE-PFY-BPN	1tph using 319 4c
NT048	OMS-PRE	OMS-BCJ-RUF-CSO-PRE	1tph using 150 2c
NT049	BPS-PRE	BPS-BPB-SQU-SAS-AFV-LTM-MOS-KKM-SLW-PRE	1tph using 150 2c
NT050	MAN-SHF	MAN-NMC-CLY-EDL-HOP-BAM-HSG-DOR-SHF	1tph using 170(4) 3c
NT051	WGW-MCV	WGW-HIN-DSY-HGF-ATN-WKD-MSD-SNN-SLD-SFD-MCV	1tph using 150 2c
NT052	SOP-SYB	SOP-MEC-BES-NLN-BCB-PBL-APB-GST-WGW-INC-HIN-WHG-BON-MSS-FNW-KSL-CLI-SLD-SFD-MCV-AHN-SYB	1tph using 150 2c
NT053	MCV-SYB	MCV-AHN-SYB	1tph using 150 2c
NT054	KIR-MCV	KIR-RNF-UPL-ORR-PEM-WGW-INC-HIN-DSY-ATN-WKD-SLD-SFD-MCV	1tph using 150 2c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT055	SHF-HUD	SHF-MHS-CLN-ELR-WOM-BNY-DOD-SLK-PNS-DBD-SPY-SSM-BHS-HOY-BBW-LCK-HUD	1tph using 150 2c
NT056	KNO-LDS	KNO-PFM-GLH-CFD-WDS-LDS	1tph using 195 2c
NT057	KNO-LDS	KNO-PFM-POT-FEA-SHC-WKK-WKF-LDS	1tph using 195 2c
NT058	CNE-PRE	CNE-NEL-BRF-BNC-BUB-RSG-HPN-HCT-ACR-CTW-RIS-BBN-MLH-CYT-PLS-BMB-LOH-PRE	1tph using 150 2c
NT059	LDS-CAR	LDS-SHY-BIY-KEI-SKI-GGV-HLD-LPR-SET-HIR-RHD-DNT-GSD-KSW-APP-LGW-LZB-AWT-CAR	0.5tph (alternate hour) using 158 2c
NT060	LAN-LDS	LAN-CNF-WNN-BEN-CPY-GIG-LPR-HLD-GGV-SKI-KEI-BIY-SHY-LDS	0.5tph (alternate hour) using 158 2c
NT061	SHF-GNB	SHF-DAN-WDH-KIV-KVP-SRO-WRK-RET-GNB	1tph using 150 2c
NT062	SHF-AWK	SHF-MHS-RMC-SWN-MEX-CNS-DON-BYK-AWK	1tph using 150 2c
NT063	SHF-BDT	SHF-MHS-RMC-SWN-MEX-CNS-DON-GOO-BUH-HUL-CGM-BEV-HUT-DRF-NFN-BDT	1tph using 150 2c
NT064	SHF-HUL	SHF-MHS-DON-GOO-BUH-HUL	1tph using 150 2c
NT065	SHF-LDS	SHF-MHS-RMC-SWN-BTD-GOE-THC-MRP-FZW-SNA-WKF-OUT-LDS	1tph using 158 2c. LDS-SHF via Dearne Valley
NT066	SHF-LDS	SHF-MHS-CLN-ELR-WOM-BNY-DRT-WKK-NOR-CFD-WDS-LDS	1tph using 158 2c. LDS-SHF via Barnsley slow
NT067	DAR-SLB	DAR-DND-ALW-EAG-TBY-MBR-RCC-RCE-LGK-MSK-SLB	1tph using 156 2c
NT068	BIA-SLB	BIA-SHD-NAY-HEI-NRD-DAR-DND-ALW-EAG-TBY-MBR-SBK-RCC-RCE-LGK-MSK-SLB	1tph using 156 2c
NT069	CAR-MPT	CAR-HWH-HEX-PRU-MCE-NCL-MAS-CRM-MPT	1tph using 158 2c
NT070	NNT-HEX	NNT-GYP-MTO-MBR-TBY-STK-BIL-SEC-HPL-SEA-SUN-HEW-NCL-MCE-BLO-WYM-PRU-SKS-RDM-CRB-HEX	1tph using 158 2c
NT071	LDS-YRK	LDS-CRG-GRF-EGF-MIK-CHF-YRK	1tph using 195 2c

Table 5-33: Northern Trains service provision – Do Minimum and S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT029	LDS-KNA	LDS-BUY-HDY-HRS-WET-PNL-HBP-HGT-SBE-KNA-CTL-HMM-POP-YRK	Extended to/from York
NT036	WGW-LDS	WGW-DSY-HGF-ATN-WKD-SNN-SLD-SFD-MCV-RCD-SMB-LTL-WDN-TOD-HBD-MYT-SOW-BGH-MIR-RVN-DEW-BTL-MLY-COT-LDS	Extra calls at BTL and RVN to infill removed calls on TP
NT072	MAN-HUD	MAN-SYB-MSL-GNF-MSN-SWT-HUD	New 2tph stopping service using 185 3c. Infills TP becoming express
NT073	HUD-LDS	HUD-DHN-MIR-RVN-DEW-BTL-MLY-COT-LDS	New 1tph stopping service using 185 3c. Infills TP becoming express

Table 5-34: Northern Trains service provision – S2

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT009	BPN-HAZ	N/A	BPN-HAZ and SOT-MAN merged into 1tph BPN-SOT using 323 3c
NT013	SOT-MAN	N/A	
NT201	BPN-SOT	SOT-KDG-CNG-MAC-PRB-ADC-PYT-BML-CHU-SPT-HTC-LVM-MAN-MCO-DGT-SLD-BON-LOT-HWI-BLK-ADL-CRL-LEY-PRE-PFY-LAY-BPN	
NT014a	BUX-MAN	BUX-DVH-CEF-WBR-FNV-NMN-DSL-MDL-HAZ-WSR-DVN-SPT-MAN	Extra calls at DSL, MDL, WSR and DVN

Table 5-35: Northern Trains service provision – S3

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT009	BPN-HAZ	BPN-LAY-PFY-PRE-LEY-CRL-ADL-BLK-HWI-LOT-BON-SLD-DGT-MCO-MAN-LVM-HTC-SPT-DVN-WSR-HAZ	Services converted back into DM of 1tph BPN-HAZ and 1tph MAN-SOT
NT013	SOT-MAN	SOT-*KDG*-CNG-MAC-PRB-ADC-PYT-BML-CHU-SPT-HTC-LVM-MAN	
NT201	BPN-SOT	N/A	
NT014a	BUX-MAN	BUX-DVH-CEF-WBR-FNV-NMN-HAZ-SPT-MAN	Service converted back to DM with DSL, MDL, WSR and DVN calls removed
NT010	MCV-PRE	MCV-SFD-SLD-BON-LOT-HWI-BLK-ADL-CRL	Curtailed at Buckshaw Parkway (Chorley in PFM) due to constraint at Preston

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT011	BPN-MIA	BPN-LAY-PFY-KKM-PRE-LEY-CRL-HWI-LOT-BON-SLD-MCO-MAN-MIA	Extra call at LEY due to NT010 change
NT024a	WDM-MIA	PRE-WGN-MCO-MAN-MIA	4tpd extension cut to run PRE-MIA only
NT024b	OXN-WDM	OXN-KEN-BUD-SVL-WDM	Frequency increased to 1tph to maintain OXN-WDM services
NT047	LIV-BPN	LIV-HUY-SNH-WGN-EBA-LEY-PRE-PFY-BPN	Reduced from 16tpd (1tph) to 13tpd so that in hours of TP LIV-GLC service running this does not run
NT301	MAN-HAZ	MAN-LVM-HTC-SPT-DVN-WSR-HAZ	New 1tph service using 319 4c from released WC Path
NT302	MAN-GBK	MAN-SPT-NVR-ALT-HAL-ASY-MOB-KNF-PLM-LTG-NWI-GBK	New 1tph service using 156 2c from released WC Path

Table 5-36: Northern Trains service provision – S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
NT012	BPN-YRK	BPN-PFY-PRE-BBN-ACR-BYM-HBD-MYT-SOW-HFX-BDI-NPD-LDS-CRG-GRF-EGF-MIK-CHF-YRK	**Extra calls at CRG-GRF-EGF-MIK to replace NT071 removal**
NT026	NOT-LDS	NOT-EMH-ILN-LGM-ALF-CHD-DRO-SHF-MHS-BNY-WKK-LDS	**Extra call at HS2 Toton (EMH)**
NT071	LDS-YRK	N/A	**Service removed due to constraint at York**
NT401	LDS-DON	LDS-WKF-DON	**New 1tph service using 333 4c infill of EC path**

5.15 Chiltern

5.15.1 This TOC in PFM represents the Chiltern franchise. Service provision in this TOC does not change between scenarios.

Table 5-37: Chiltern service provision – All scenarios

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
CH001a	MYB-BMO	MYB-BAN-LMS-WRP-SOL-BMO	1tph using 168 4c with extension below.

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
CH001b	MYB-KID	MYB-BAN-LMS-WRP-SOL-BMO-BSW-ROW-SBJ-KID	3tpd peak only extension of above service. Uses 67 loco 6c.
CH002	MYB-BSW	MYB-HDM-BCS-BAN-LMS-WRW-WRP-DDG-SOL-BMO-BSW	1tph using 168 4c
CH003a	MYB-BAN	MYB-GER-SRG-BCF-HWY-PRR-HDM-BCS-KGS-BAN	10tpd using 168 4c (overall MYB-BAN is 1tph)
CH003b	MYB-SAV	MYB-GER-SRG-BCF-HWY-PRR-HDM-BCS-BAN-LMS-WRW-HTN-CLV-BER-WMC-SAV	6tpd using 168 4c (overall MYB-BAN is 1tph)
CH004	MYB-GER	MYB-WCX-SDH-NLT-WRU-DNM-DGC-GER	1tph using 165 3c
CH005a	MYB-HWY	MYB-WCX-SRU-GER-BCF-HWY	1tph using 165 2c
CH005b	MYB-HWY	MYB-GER-BCF-HWY	2tph peak only using 165 2c
CH006a	MYB-OXF	MYB-HDM-BIT-ISP-OXF	1tph using 168 4c.
CH006b	MYB-OXF	MYB-HDM-BIT-OXP-OXF	1tph using 168 4c
CH007	MYB-AYS	MYB-WRU-DNM-GER-SRG-BCF-HWY-PRR-MRS-LTK-AYS	1tph using 165 3c via Princes Risborough
CH008a	MYB-AYS	MYB-HOH-RIC-CLW-CFO-AMR-GMN-WND-SKM-AYS	1tph using 165 3c via Harrow-on-the-Hill
CH008b	MYB-AVP	MYB-HOH-RIC-CLW-CFO-AMR-GMN-WND-SKM-AYS-AVP	1tph using 165 3c via Harrow-on-the-Hill
CH009	LMS-BMO	LMS-WRW-HTN-LPW-DDG-SOL-BMO	0.5tph (alternate hour) using 165 2c
CH011	PRR-AYH	PRR-MRS-LTK-AYH	2tph peak only using 165 2c

5.16 Great Western

5.16.1 This TOC in PFM represents the Great Western franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the S1 Do Something scenario. For the Do Minimum and Do Something tables, only those services which change are included.

Table 5-38: Great Western service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
GW001a	BRI-PAD	BRI-BTH-CPM-SWI-DID-RDG-PAD	2tph using a mix of 800 5/9c
GW001b	WSM-PAD	WSM-WOR-YAT-NLS-BRI-BPW-PAD	5tpd additional service using 800 5c. When operates PAD-BRI is 3tph
GW002	CDF-PAD	CDF-NWP-BPW-SWI-RDG-PAD	1tph using a mix of 800 5/9c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
GW003a	SWA-PAD	SWA-NTH-PTA-BGN-CDF-NWP-BPW-SWI-RDG-PAD	1tph using a mix of 800 5/9c
GW003b	CMN-PAD	CMN-PBY-LLE-SWA-NTH-PTA-BGN-CDF-NWP-BPW-PAD	1tpd peak only (AM into London then PM out) using 800 9c
GW004a	PNZ-PAD	PNZ-SER-CBN-RED-TRU-SAU-PAR-BOD-LSK-PLY-TOT-NTA-EXD-TVP-TAU-RDG-PAD	0.5tph using 802 5c (PLY-PAD is 1tph)
GW004b	PLY-PAD	PLY-TOT-NTA-EXD-TVP-TAU-RDG-PAD	
GW005a	HFD-PAD	HFD-LED-CWL-GMV-MVL-WOF-WOS-WOP-EVE-MIM-KGM-CBY-HND-OXF-RDG-SLO-PAD	5tpd using 800 5c (WOF-PAD is 1tph)
GW005b	GMV-PAD	GMV-MVL-WOF-WOS-WOP-EVE-MIM-KGM-CBY-HND-OXF-RDG-SLO-PAD	8tpd using 800 5c (WOF-PAD is 1tph)
GW005c	WOF-PAD	WOF-WOS-WOP-EVE-MIM-KGM-CBY-HND-OXF-RDG-SLO-PAD	3tpd using 800 5c (WOF-PAD is 1tph)
GW006	CNM-PAD	CNM-GCR-SHU-STD-KEM-SWI-DID-RDG-PAD	1tph using 800 5c
GW007	BDW-PAD	BDW-HGD-KIT-NBY-THA-THE-RDG-PAD	1tph using 800 5c
GW008	OXF-PAD	OXF-RDG-SLO-PAD	1tph using 800 5c
GW009	NBY-PAD	NBY-RDG-PAD	0.5tph (alternate hour) – uses 387 4c and runs alternate with GW010
GW010	EXD-PAD	EXD-TAU-CLC-WSB-PEW-NBY-RDG-PAD	0.5tph (alternate hour) – uses 800 5c and runs alternate with GW010
GW011	DID-PAD	DID-CHO-GOR-PAN-TLH-RDG-TWY-MAI-SLO-WDT-HAY-STL-EAL-PAD	0.5tph (alternate house) uses 165 2c with DID-OXF 1tph
GW012a	DID-OXF	DID-APF-RAD-OXF	0.5tph (alternate house) uses 165 2c with DID-OXF 1tph
GW012b	DID-BAN	DID-APF-RAD-OXF-TAC-HYD-KGS-BAN	0.5tph (alternate house) uses 165 2c with DID-OXF 1tph
GW013	CDF-PMH	CDF-NWP-STJ-FIT-BRI-KYN-OLF-BTH-BOA-TRO-WSB-WMN-SAL-ROM-SOU-FRM-CSA-FTN-PMS-PMH	1tph using 165 3c
GW014	BSK-RDG	BSK-BMY-MOR-RGP-RDW-RDG	2tph using 165 3c
GW015	NBY-RDG	NBY-NRC-THA-MDG-AMT-THE-RDW-RDG	2tph using 387 4c
GW016	RDH-RDG	RDH-REI-BTO-DPD-GOM-CHL-SFR-GLD-ASH-NCM-FNN-BAW-SND-CRN-WKM-RDG	1tph using 165 3c
GW017	GTW-RDG	GTW-RDH-REI-DPD-GOM-GLD-NCM-BAW-WKM-RDG	1tph using 165 3c
GW018	WSB-SWI	WSB-TRO-MKM-CPM-SWI	0.5tph (alternate hour) using 165 4c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
GW019	WEY-GCR	WEY-UPW-DCW-MDN-CNO-YET-THO-YVP-CLC-BRU-FRO-WSB-TRO-BOA-AVF-FFD-BTH-OLF-KYN-BRI-FIT-BPW-YAE-CDU-GCR	0.5tph (alternate hour) using 165 3c with WSB-GCR 1tph
GW020	WSB-GCR	WSB-TRO-BOA-AVF-FFD-BTH-OLF-KYN-BRI-FIT-BPW-YAE-CDU-GCR	0.5tph (alternate hour) using 165 3c with WSB-GCR 1tph
GW021	WSM-FIT	WSM-WNM-WOR-YAT-NLS-PSN-BMT-BRI-LWH-SRD-FIT	1tph using 165 3c
GW022	TAU-CDF	TAU-BWT-HIG-WSM-WNM-WOR-YAT-NLS-PSN-BMT-BRI-FIT-PWY-STJ-NWP-CDF	1tph using 165 3c
GW023a	PNZ-PLY	PNZ-SER-HYL-CBN-RED-TRU-SAU-PAR-LOS-BOD-LSK-SGM-STS-PLY	7tpd using 165 3c (PNZ-PLY 1tph)
GW023b	PNZ-EXD	PNZ-SER-HYL-CBN-RED-TRU-SAU-PAR-LOS-BOD-LSK-SGM-STS-PLY-IVY-TOT-NTA-TGM-DWL-DWW-EXD	6tpd using 165 3c (PNZ-PLY 1tph)
GW023c	PNZ-CDF	PNZ-SER-HYL-CBN-RED-TRU-SAU-PAR-LOS-BOD-LSK-SGM-STS-PLY-IVY-TOT-NTA-EXD-TAU-BWT-HIG-WSM-WOR-YAT-NLS-BRI-FIT-PWY-STJ-NWP-CDF	3tpd using 165 3c (PNZ-PLY 1tph)
GW024	PGN-EXM	PGN-TQY-TRR-NTA-TGM-DWL-DWW-SCS-EXT-EXD-EXC-SJP-POL-DIG-NCO-TOP-EXN-LYC-LYM-EXM	1tph using 150 2c
GW025	WNC-SLO	WNC-SLO	3tph using 165 3c
GW026	MAI-MLW	MAI-FZP-COO-BNE-MLW	1tph using 150 2c. During peak increases to 3tph
GW027	WEA-GFD	WEA-DRG-CBP-SGN-GFD	2tph using 165 2c
GW028	SER-SIV	SER-LEL-CBB-SIV	2tph using 150 2c
GW029	FAL-TRU	FAL-FMT-PNM-PYN-PRW-TRU	1tph using 150 2c
GW030	LSK-LOO	LSK-COE-SKN-CAU-SDP-LOO	1tph using 150 2c
GW031	GSL-PLY	GSL-CSK-BAS-BFE-SBV-KEY-DOC-DPT-PLY	1tph using 150 2c
GW032	NQY-PAR	NQY-QUI-SCR-ROC-BGL-LUX-PAR	0.5tph (alternate hour) using 150 2c
GW033	BRI-SVB	BRI-LWH-SRD-MTP-RDA-CFN-SML-SHH-AVN-SAR-SVB	1tph using 165 2c

Table 5-39: Great Western service provision – Do Minimum

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
GW012a	DID-OXF	DID-APF-RAD-OXF	Uses new 769 rolling stock
GW012b	DID-BAN	DID-APF-RAD-OXF-TAC-HYD-KGS-BAN	Uses new 769 rolling stock

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
GW016	RDH-RDG	RDH-REI-BTO-DPD-GOM-CHL-SFR-GLD-ASH-NCM-FNN-BAW-SND-CRN-WKM-RDG	Uses new 769 rolling stock
GW017	GTW-RDG	GTW-RDH-REI-DPD-GOM-GLD-NCM-BAW-WKM-RDG	Uses new 769 rolling stock

Table 5-40: Great Western service provision – S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
GW001 to GW011	To/from PAD	Extra Old Oak Common call	All London services additionally call at Old Oak Common

5.17 Crossrail

5.17.1 This TOC in PFM represents the TfL Rail franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the S1 Do Something scenario. In the Do Nothing the services represent the current TfL rail services, whereas in the Do Minimum the Elizabeth Line services are introduced. From scenario S1 onwards an additional call at Old Oak Common is introduced for all Elizabeth Line services.

Table 5-41: Crossrail service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XR001	PAD-HAF	PAD-EAL-WEA-HAN-STL-HAY-HXX-HAF	2tph using 360 5c
XR002	PAD-HAY	PAD-EAL-WEA-HAN-STL-HAY	2tph using 345 9c
XR003	PAD-RDG	PAD-EAL-STL-HAY-WDT-IVR-LNY-SLO-MAI-TWY-RDG	2tph using 387 8c
XR004	LST-SNF	LST-SRA-MYL-FOG-MNP-IFD-SVK-GMY-CTH-RMF-GDP-HRO-BRE-SNF	6tph using 345 7c
XR005	LST-GDP	LST-SRA-IFD-SVK-GMY-CTH-RMF-GDP	Peak only 6tph using 345 7c

Table 5-42: Crossrail service provision – Do Minimum

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XR10aW	ABW-HAF	ABW-WOC-CUS-CWF-WCA-LST-FAR-TCR-BDS-PAD-AML-EAL-WEA-HAN-STL-HAY-HXX-HAF	1tph off peak and 4tph peak using 345 9c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XR11aW	ABW-PAD	ABW-WOC-CUS-CWF-WCA-LST-FAR-TCR-BDS-PAD	4tph off peak and 1tph peak using 345 9c
XR11bW	ABW-RDG	ABW-WOC-CUS-CWF-WCA-LST-FAR-TCR-BDS-PAD-EAL-WEA-STL-HAY-WDT-IVR-LNY-SLO-TAP-MAI-TWY-RDG	4tph peak only using 345 9c
XR012W	ABW-HWV	ABW-WOC-CUS-CWF-WCA-LST-FAR-TCR-BDS-PAD-EAL-WEA-HAN-STL-HAY-HXX-HWV	2tph using 345 9c
XR013W	SNF-PAD	SNF-BRE-HRO-GDP-RMF-CTH-GMY-SVK-IFD-MNP-FOG-MYL-SRA-WCA-LST-FAR-TCR-BDS-PAD	5tph off peak and 12tph peak using 345 9c
XR014W	SNF-HAF	SNF-BRE-HRO-GDP-RMF-CTH-GMY-SVK-IFD-MNP-FOG-MYL-SRA-WCA-LST-FAR-TCR-BDS-PAD-AML-EAL-STL-HAY-HXX-HAF	2tph off peak only using 345 9c
XR015W	SNF-RDG	SNF-BRE-HRO-GDP-RMF-CTH-GMY-SVK-IFD-MNP-FOG-MYL-SRA-WCA-LST-FAR-TCR-BDS-PAD-EAL-HAN-STL-HAY-WDT-LNY-SLO-MAI-TWY-RDG	2tph off peak only using 345 9c
XR016W	SNF-HAF	SNF-BRE-HRO-GDP-RMF-CTH-GMY-SVK-IFD-MNP-FOG-MYL-SRA-WCA-LST-FAR-TCR-BDS-PAD-AML-EAL-WEA-HAN-STL-HAY-HXX-HAF	2tph off peak only using 345 9c

Table 5-43: Crossrail service provision – S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
XR010 to XR016	All	All services through XR core stop at OOC	Additional call at Old Oak Common

5.18 Heathrow Express

5.18.1 This TOC in PFM represents the Heathrow Express franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the S1 Do Something scenario.

Table 5-44: Heathrow Express service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HX001	PAD-HWV	PAD-HXX-HWV	4tph using 332 5c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HX002	HXX-HAF	HXX-HAF	4tph T4 Shuttle using 332 5c

Table 5-45: Heathrow Express service provision – Do Minimum

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HX001	PAD-HWV	PAD-HXX-HWV	Converted to 387 4c
HX002	N/A	Removed	Service replaced by Elizabeth Line services

Table 5-46: Heathrow Express service provision – S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
HX001	PAD-HWV	PAD-OCC-HXX-HWV	Additional call at OOC

5.19 East-West Rail

5.19.1 This TOC in PFM represents the East-West Rail scheme. Service provision in this TOC starts in the Do Minimum and changes in S2. For the Do Something tables, only those services which change are included.

Table 5-47: East-West Rail service provision – Do Minimum and S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EW001	OXF-MKC	OXF-OXP-ISP-BIT-WIW-BLY-MKC	2tph using 185 3c
EW002	OXF-BDM	OXF-OXP-ISP-BIT-WIW-BLY-FEN-WOB-RID-MLB-BSJ-BDM	1tph using 185 3c

Table 5-48: East-West Rail service provision – S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
EW003	AYS-MKC	AYS-AVP-WIW-BLY-MKC	New 1tph service using 185 3c car added from WC path

5.20 Arriva Wales

5.20.1 This TOC in PFM represents what is now called Transport for Wales franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the S1 Do Something scenario. The table for Do Minimum only displays services which change from the Do Nothing.

Table 5-49: Arriva Wales service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
AW001a	MFH-MAN	MFH-JOH-HVF-CLR-CUW-WTL-CMN-PBY-LLE-GWN-SWA-NTH-PTA-BGN-CDF-NWP-CWM-AGV-HFD-LEO-LUD-SHR-CRE-WML-SPT-MAN	0.5tph (alternate hour) using 175 3c, Wales – Manchester is 1tph
AW001b	CMN-MAN	CMN-FYS-KWL-PBY-LLE-GWN-SWA-NTH-PTA-BGN-CDF-NWP-CWM-AGV-HFD-LEO-LUD-CTT-SHR-CRE-WML-SPT-MAN	0.5tph (alternate hour) using 175 3c, Wales – Manchester is 1tph
AW002a	LLD-MIA	LLD-DGY-LLJ-CWB-AGL-RHL-PRT-FLN-SHT-CTR-HSB-FRD-RUE-WBQ-ERL-NLW-MCO-MAN-MIA	0.5tph (alternate hour) using 175 3c, North Wales – Manchester is 1tph with MIA 0.5tph
AW002b	LLD-MAN	LLD-DGY-LLJ-CWB-AGL-RHL-PRT-FLN-SHT-CTR-HSB-FRD-RUE-WBQ-ERL-NLW-MCO-MAN	0.5tph (alternate hour) using 175 3c, North Wales – Manchester is 1tph
AW003	HHD-BHI	HHD-BNG-LLF-PMW-CNW-LLJ-CWB-RHL-PRT-FLN-CTR-WRX-RUA-CRK-GOB-SHR-WLN-TFC-WVH-SGB-BHM-BHI	0.5tph (alternate hour) using 158 4c
AW004	PWL-BHI	PWL-ABH-BPC-CCC-PTM-MFF-PRH-LLC-TAL-TYG-HRL-LDN-PES-LBR-DYF-TLB-LLA-BRM-MFA-FRB-LLW-TNF-TYW-AVY-PHG-DVY-**MCN** //AYW-BRH-DVY // **MCN-CWS-NWT-WLP-SHR-WLN-TFC-WVH-SGB-BHM-BHI**	0.5tph (alternate hour) using 158 4c. Train splits at MCN for PWL and AYW. Runs as 158 2c on splits.
AW005	MST-CNM	MST-MEW-GMG-TDU-SRR-WMI-BGN-PCD-LLR-PYC-CDF-NWP-STJ-CDT-CPW-LYD-GCR-CNM	1tph using 150 2c
AW006	SWA-SHR	SWA-GWN-LLE-BYE-LLH-PTD-PTF-AMF-LLI-FFA-LLL-LLG-LNR-LLV-CYN-SUG-LNW-LLM-GTH-CIM-BHR-LLO-PNY-DOL-LLT-LGO-KNU-KNI-BUK-HPT-BME-CRV-CTT-SHR	Not in PFM but limited 4tpd service using 153 1c
AW007	SHR-CRE	SHR-YRT-WEM-PRS-WTC-WRE-NAN-CRE	0.5tph (alternate hour) using 151 1c
AW008	CDF-HHD	CDF-NWP-CWM-PPL-AGV-HFD-LEO-LUD-CTT-SHR-GOB-CRK-RUA-WRX-CTR-FLN-PRT-RHL-CWB-LLJ-BNG-LPG-BOR-TYC-RHO-VAL-HHD	0.5tph (alternate hour) using 175 2/3c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
AW009	WXC-BID	WXC-WRX-GWE-CYB-CGW-HPE-PNF-BCK-HWD-SHT-NES-HSW-UPT-BID	1tph using 150 2c
AW010	CTR-CRE	CTR-CRE	1tph using 150 2c

Table 5-50: Arriva Wales service provision – Do Minimum

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
AW001a	MFH-MAN	MFH-JOH-HVF-CLR-CUW-WTL-CMN-PBY-LLE-GWN-SWA-NTH-PTA-BGN-CDF-NWP-CWM-AGV-HFD-LEO-LUD-SHR-CRE-WML-SPT-MAN	Uses new 197 3c
AW001b	CMN-MAN	CMN-FYS-KWL-PBY-LLE-GWN-SWA-NTH-PTA-BGN-CDF-NWP-CWM-AGV-HFD-LEO-LUD-CTT-SHR-CRE-WML-SPT-MAN	Uses new 197 3c
AW002a	LLD-MIA	LLD-DGY-LLJ-CWB-AGL-RHL-PRT-FLN-SHT-CTR-HSB-FRD-RUE-WBQ-ERL-NLW-MCO-MAN-MIA	Uses new 197 3c
AW002b	LLD-MAN	LLD-DGY-LLJ-CWB-AGL-RHL-PRT-FLN-SHT-CTR-HSB-FRD-RUE-WBQ-ERL-NLW-MCO-MAN	Uses new 197 3c
AW003	HHD-BHI	HHD-BNG-LLF-PMW-CNW-LLJ-CWB-RHL-PRT-FLN-CTR-WRX-RUA-CRK-GOB-SHR-WLN-TFC-WVH-SGB-BHM-BHI	Uses new 197 5c
AW004	PWL-BHI	PWL-ABH-BPC-CCC-PTM-MFF-PRH-LLC-TAL-TYG-HRL-LDN-PES-LBR-DYF-TLB-LLA-BRM-MFA-FRB-LLW-TNF-TYW-AVY-PHG-DVY-**MCN** //AYW-BRH-DVY // **MCN-CWS-NWT-WLP-SHR-WLN-TFC-WVH-SGB-BHM-BHI**	Uses new 197 2/4c with split
AW005	MST-CNM	MST-MEW-GMG-TDU-SRR-WMI-BGN-PCD-LLR-PYC-CDF-NWP-STJ-CDT-CPW-LYD-GCR-CNM	Uses new 231 4c
AW007	SHR-CRE	SHR-YRT-WEM-PRS-WTC-WRE-NAN-CRE	Converted to 170(1) 2c
AW008	CDF-HHD	CDF-NWP-CWM-PPL-AGV-HFD-LEO-LUD-CTT-SHR-GOB-CRK-RUA-WRX-CTR-FLN-PRT-RHL-CWB-LLJ-BNG-LPG-BOR-TYC-RHO-VAL-HHD	Convert to 67 loco 6c
AW009	WXC-BID	WXC-WRX-GWE-CYB-CGW-HPE-PNF-BCK-HWD-SHT-NES-HSW-UPT-BID	Frequency increased to 2tph using new 230 2c
AW010	CTR-CRE	CTR-CRE	Uses new 230 2c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
AW011	LIV-CTR	LIV-LPY-RUN-FRD-HSB-CTR	New 1tph service using 197 3c

5.21 London Eastern

5.21.1 This TOC in PFM represents the Greater Anglia franchise. Service provision in this TOC changes the Do Nothing to Do Minimum. For the Do-Something tables, only those services which change are included.

Table 5-51: London Eastern service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LE001	LST-NRW	LST-CHM-COL-MNG-IPS-SMK-DIS-NRW	1tph Semi-fast Norwich using 90 loco 10c
LE002	LST-NRW	LST-COL-MNG-IPS-DIS-NRW	1tph fast Norwich using 90 loco 10c
LE003a	LST-IPS	LST-SRA-SNF-CHM-HAP-WTM-KEL-MKT-COL-MNG-IPS	1tph using mixture of 360 4/12c
LE003b	LST-IPS	LST-SNF-CHM-WTM-COL-MNG-IPS	2tph peak only using 360 12c
LE004	LST-CET	LST-SRA-RMF-SNF-CHM-WTM-KEL-MKT-COL-CET	1tph using mixture of 360 4/12c
LE005	LST-CMB	LST-TOM-CHN-BXB-RYN-HWN-HWM-SAW-BIS-SST-ESM-NEW-AUD-GRC-WLF-SED-CBG-CMB	1tph using mixture of 317 4/8c
LE006	LST-CBG	LST-TOM-CHN-BXB-HWN-BIS-AUD-WLF-CBG	1tph using mixture of 317 4/8c
LE007	LST-BTR	LST-SRA-SNF-INT-CHM-WTM-WNY-CES-BTP-BTR	1tph using mixture of 321 4/12c
LE008a	LST-CLT	LST-SRA-SNF-INT-CHM-WTM-COL-WIV-TLS-CLT	1tph using mixture of 360 4/12c
LE008b	LST-CLT	LST-SRA-SNF-INT-CHM-WTM-COL-WIV-TLS-CLT	1tph peak only extra using 360 12c
LE009	LST-HFE	LST-HAC-TOM-PON-BMD-ENL-WLC-CHN-BXB-RYH-SMT-WAR-HFE	2tph using 317 8c
LE010a	LST-SOV	LST-SRA-SNF-BIC-WIC-RLG-HOC-RFD-SIA-PRL-SOV	3tph off peak using 321 4c but in peak becomes 4tph using 321 12c
LE010b	LST-SOV	LST-SRA-SNF-BIC-WIC-RLG-HOC-RFD-SIA-PRL-SOV	
LE011	SMN-WIC	SMN-BUU-ALN-NFA-SOF-BLB-WIC	1tph using 321 4c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LE012	LST-SSD	LST-TOM-BIS-SSD	4tph using 379 8c
LE013	SRA-BIS	SRA-LEB-TOM-NUM-ENL-CHN-BXB-RYN-HWN-HWM-SAW-BIS	1tph using 317 4c
LE014	SRA-BIS	SRA-LEB-TOM-WLC-CHN-BXB-HWN-SAW-BIS	1tph using 317 4c
LE015	NRW-CBG	NRW-WMD-ATL-TTF-BND-ELY-CMB-CBG	1tph using 170(1) 2c
LE016	IPS-CBG	IPS-NMT-SMK-ESW-TRS-BSE-KNE-NMK-DUL-CBG	1tph using 170(1) 2c
LE017	IPS-PBO	IPS-SMK-BSE-ELY-MNE-MCH-WLE-PBO	1tph using 170(1) 2c
LE018	FLX-IPS	FLX-TRM-DBR-WFI-IPS	1tph using 153 1c
LE019	LWT-IPS	LWT-OUS-BCC-BRP-HAS-DSM-SAX-WCM-MES-WDB-IPS	1tph using 156 2c
LE020	CET-COL	CET-COL	1tph using 360 4c
LE021	NRW-SHM	NRW-SAH-HXM-WRT-NWA-GNT-RNR-CMR-WRN-SHM	1tph using 156 2c
LE022	GYM-NRW	GYM-BYA-REE-CNY-BDA-NRW	1tph using 156 2c
LE023	LWT-NRW	LWT-OUN-SYT-HAD-REE-CNY-BDA-BGA-NRW	1tph using 156 2c
LE024	HWC-MNG	HWC-DVC-HPQ-WRB-MIS-MNG	1tph using 321 4c
LE025	CET-SUY	CET-COL-MKT-CWC-BUE-SUY	1tph using 156 2c
LE026	WON-COL	WON-FRI-KBX-TLS-WEE-GRB-ALR-WIV-HYH-CET-COL	1tph using 321 4c

Table 5-52: London Easter service provision – Do Minimum, S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LE001	LST-NRW	LST-CHM-COL-MNG-IPS-SMK-DIS-NRW	New 745 12c
LE002	LST-NRW	LST-COL-MNG-IPS-DIS-NRW	New 745 12c
LE003a	LST-IPS	LST-SRA-SNF-CHM-HAP-WTM-KEL-MKT-COL-MNG-IPS	New 720 10c
LE003b	LST-IPS	LST-SNF-CHM-WTM-COL-MNG-IPS	New 720 10c
LE004	LST-CET	LST-SRA-RMF-SNF-CHM-WTM-KEL-MKT-COL-CET	New 720 5/10c
LE005	LST-CMB	LST-TOM-CHN-BXB-RYN-HWN-HWM-SAW-BIS-SST-ESM-NEW-AUD-GRC-WLF-SED-CBG-CMB	New 720 5/10c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LE006	LST-CBG	LST-TOM-CHN-BXB-HWN-BIS-AUD-WLF-CBG	New 720 5/10c
LE007	LST-BTR	LST-SRA-SNF-INT-CHM-WTM-WNY-CES-BTP-BTR	New 720 5/10c
LE008a	LST-CLT	LST-SRA-SNF-INT-CHM-WTM-COL-WIV-TLS-CLT	New 720 10c
LE008b	LST-CLT	LST-SRA-SNF-INT-CHM-WTM-COL-WIV-TLS-CLT	New 720 10c
LE009	LST-HFE	LST-HAC-TOM-PON-BMD-ENL-WLC-CHN-BXB-RYH-SMT-WAR-HFE	New 720 10c
LE010a	LST-SOV	LST-SRA-SNF-BIC-WIC-RLG-HOC-RFD-SIA-PRL-SOV	New 720 5c off peak and 10c peak
LE010b	LST-SOV	LST-SRA-SNF-BIC-WIC-RLG-HOC-RFD-SIA-PRL-SOV	
LE011	SMN-WIC	SMN-BUU-ALN-NFA-SOF-BLB-WIC	New 720 5c
LE012	LST-SSD	LST-TOM-BIS-SSD	New 745 12c
LE013	SRA-BIS	SRA-LEB-TOM-NUM-ENL-CHN-BXB-RYN-HWN-HWM-SAW-BIS	New 720 5c
LE014	SRA-BIS	SRA-LEB-TOM-WLC-CHN-BXB-HWN-SAW-BIS	New 720 5c
LE015	NRW-SSD	NRW-WMD-ATL-TTF-BND-ELY-CMB-CBG-WLF-AUD-SSD	Extended to Stansted Airport and uses new 755 4c
LE016	IPS-CBG	IPS-NMT-SMK-ESW-TRS-BSE-KNE-NMK-DUL-CBG	Uses new 755 4c
LE017	IPS-PBO	IPS-SMK-BSE-ELY-MNE-MCH-WLE-PBO	Uses new 755 4c
LE018	FLX-IPS	FLX-TRM-DBR-WFI-IPS	Uses new 755 3c
LE019	LWT-IPS	LWT-OUS-BCC-BRP-HAS-DSM-SAX-WCM-MES-WDB-IPS	Uses new 755 3c
LE021	NRW-SHM	NRW-SAH-HXM-WRT-NWA-GNT-RNR-CMR-WRN-SHM	Uses new 755 3c
LE022	GYM-NRW	GYM-BYA-REE-CNY-BDA-NRW	Uses new 755 3c
LE023	LWT-NRW	LWT-OUN-SYT-HAD-REE-CNY-BDA-BGA-NRW	Uses new 755 3c
LE024	HWC-MNG	HWC-DVC-HPQ-WRB-MIS-MNG	Uses new 720 5c
LE025	CET-SUY	CET-COL-MKT-CWC-BUE-SUY	Uses new 755 3c

5.22 ScotRail

5.22.1 This TOC in PFM represents the ScotRail franchise. Service provision in this TOC does not change between scenarios. Due to the network detail that is represented in PFM, only the longer distance Inter-City services are represented. Commuter local routes within Glasgow and Edinburgh are not included in the table below.

Table 5-53: ScotRail service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SR001	EDB-ABD	EDB-HYM-LEU-DEE-ARB-MTS-STN-ABD	Combined to provide 1tph using 43 loco 7c with EDB/GLQ alternate hour
SR002	GLQ-ABD	GLQ-STG-PTH-DEE-ARB-MTS-STN-ABD	
SR003	EDB-INV	EDB-HYM-KDY-PTH-PIT-KIN-AVM-INV	Combined to provide 1tph using 43 loco 6c with EDB/GLQ alternate hour
SR004	GLQ-INV	GLQ-STG-PTH-PIT-KIN-AVM-INV	
SR005	GLQ-ALO	GLQ-BBG-LNZ-CRO-LBT-STG-ALO	1tph using 385 6c
SR006	GLQ-STG	GLQ-BBG-LNZ-CRO-LBT-STG	1tph using 385 3c
SR007	EDB-GLC	EDB-HYM-SLA-KGE-WTA-CUH-KKN-LVG-WCL-ADW-FLD-SHS-HTW-CEA-CRF-HLY-BLH-UDD-GLC	1tph using 385 3/6c
SR008	EDB-GLC	EDB-HYM-LVG-WCL-SHS-BLH-GLC	1tph using 385 3/6c
SR009	EDB-GLQ	EDB-HYM-FKK-CRO-GLQ	2tph using 385 8c
SR010	EDB-GLQ	EDB-HYM-LIN-PMT-FKK-GLQ	2tph using 385 8c
SR011	EDB-HLC	EDB-HYM-EDP-UHA-LSN-BHG-ARM-BKR-DRU-ADR-COA-CBS-BAI-EST-GAR-SLS-CAY-BLG-HST-GLQ-CHC-PTK-HYN-DMR-DBE-DBC-DLR-CDR-CGD-HLC	2tph using 334 3/6c
SR012	EDB-MLN	EDB-HYM-EDP-UHA-LSN-BHG-DRU-ADR-CBS-HST-GLQ-CHC-PTK-HYN-ANL-WES-BRN-HLF-MLN	1tph using 334 3c
SR013	EDB-DBL	EDB-HYM-EDP-FKG-LBT-STG-BEA-DBL	1tph using 385 3/6c
SR014	EDB-DBL	EDB-HYM-EDP-FKG-CMO-LBT-STG-BEA-DBL	1tph using 385 3/6c
SR015	EDB-DEE	EDB-HYM-INK-KDY-MNC-LDY-CUP-LEU-DEE	1tph using 43 loco 7c
SR016	DUN-EDB	DUN-MUB-EDB	0.5tph (alternate hour) using 385 3c
SR017a	CAR-GLC	CAR-GEA-ANN-DMF-SQH-KRK-NCK-AUK-KMK-KLM-STT-DNL-BRR-GLC	All use 156 2c and GLC-CAR is 0.5tph (alternate hour) with 3tpd extending to/from NCL
SR017b	NCL-GLC	NCL-MCE-PRU-HEX-HWH-CAR-GEA-ANN-DMF-SQH-KRK-NCK-AUK-KMK-KLM-STT-DNL-BRR-GLC	

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SR018	GLQ-MLG	**GLQ-DMR-DBC-HLU-GCH-ART-AUI-CNR** // TYL-DAL-LHA-FOC-TAY-CON-OBN // **CNR**-UTY-BRO-RAN-CRR-TUL-RYB-SBR-FTW-BNV-CPA-LHE-LCS-GLF-LCL-BSL-ARG-MRR-MLG	Not in PFM but 3tpd using 158 4c split/join for OBN/MLG
SR019	GLQ-OBN	GLQ-WES-DMR-DBC-HLU-GCH-ART-AUI-CNR-TYL-DAL-LHA-TAY-CON-OBN	Not in PFM but 3tpd using 158 4c

5.23 South Western

5.23.1 This TOC in PFM represents the South Western Railway franchise. Service provision in this TOC changes between the Do Nothing and Do Minimum scenario. Only services which change are listed in the Do Minimum table.

Table 5-54: South Western service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SW001	AON-WAT	AON-BTY-FNH-AHT-AHV-BKO-WOK-WBY-SUR-WAT	2tph using 450 8c
SW002	BSK-WAT	BSK-HOK-WNF-FLE-FNB-BKO-WOK-WYB-WAL-SUR-WAT	2tph using 450 8c
SW003	CSS-WAT	CSS-CSN-TOL-MAL-MOT-RAY-WIM-EAD-CLJ-VXH-WAT	2tph using 455 8c
SW004	DKG-WAT	DKG-LHD-AHD-EPS-EWW-SNL-WCP-MOT-RAY-WIM-EAD-CLJ-VXH-WAT	2tph using 455 8c
SW005	EXD-WAT	EXD-EXC-PIN-CBK-WHM-HON-AXM-CKN-YVJ-SHE-TMC-GIL-TIS-SAL-ADV-BSK-WOK-WAT	1tph using 159 6c with 3tpd split/join at Salisbury to also serve Bristol Temple Meads
SW006	GLD-WAT	GLD-LRD-CLA-HSY-EFF-CSD-OXS-CLG-HYW-SUR-WIM-EAD-CLJ-VXH-WAT	2tph using 455 8c
SW007	GLD-WAT	GLD-LRD-CLA-HSY-EFF-BKA-LHD-AHD-EPS-EWW-SNL-WCP-MOT-RAY-WIM-EAD-CLJ-VXH-WAT	2tph using 455 8c
SW008	HMC-WAT	HMC-THD-SUR-BRS-NEM-RAY-WIM-EAD-CLJ-VXH-WAT	2tph using 455 8c
SW009	POO-WAT	POO-PKS-BSM-BMH-POK-CHR-HNA-NWM-SWY-BCU-BEU-ANF-TTN-SOU-SOA-ESL-SHW-WIN-BSK-FLE-FNB-WAT	1tph using 444 10c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SW010	PMH-WAT	PMH-PMS-FTN-HAV-PTR-HSL-GLD-WOK-WAT	2tph using 444 10c
SW011	PMS-WAT	PMS-FTN-HLS-BDH-HAV-RLN-PTR-LIS-LIP-HSL-GOD-FNC-GLD-WPL-WOK-WAT	1tph using 450 12c
SW012	PMH-WAT	PMH-PMS-FTN-HLS-CSA-PTC-FRM-BOE-HDE-ESL-WIN-MIC-BSK-FNB-WOK-WAT	1tph using 450 8c
SW013	RDG-WAT	RDG-EAR-WTI-WNS-WKM-BCE-MAO-ACT-SNG-VIR-EGH-SNS-FEL-TWI-RMD-CLJ-WAT	2tph using 450 8c
SW014a	YVP-WAT	YVP-YVJ-SHE-TMC-FIL-TIS-SAL-GRT-ADV-WCH-OVR-BSK-WOK-WAT	1tph using 159 6c Peak only YVP-WAT and off peak is SAL-WAT
SW014b	SAL-WAT	SAL-GRT-ADV-WCH-OVR-BSK-WOK-WAT	
SW015	SHP-WAT	SHP-UPH-SUU-KMP-HMP-FLW-TED-HMW-KNG-NBT-NEM-RAY-WIM-EAD-CLJ-VXH-WAT	2tph 455 8c
SW016	WEY-WAT	WEY-DCH-WRM-HAM-POO-PKS-BSM-BMH-BCU-SOU-SOA-WIN-WOK-WAT	1tph 444 10c
SW017	WEY-WAT	WEY-UPW-DCH-MTN-WOO-WRM-HOL-HAM-POO-BMH-POK-CHR-NWM-BCU-SOU-SOA-WIN-BSK-WAT	1tph 444 10c
SW018	WYB-WAT	WYB-ASN-CHY-VIR-EGH-SNS-AFS-FEL-HOU-ISL-SYL-BFD-KWB-CHK-BNI-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	2tph 458 2c
SW019	WNR-WAT	WNR-DAT-SNY-WRY-SNS-AFS-FEL-WTN-TWI-RMD-PUT-CLJ-VXH-WAT	2tph 458 2c
SW020	WOK-WAT	WOK-WBY-BFN-WYB-WAL-HER-ESH-SUR-WIM-EAD-CLJ-VXH-WAT	2tph 458 2c
SW021	WAT-WAT	WAT-VXH-QRB-CLJ-WNT-PUT-BNS-MTL-NSH-RMD-SMG-TWI-STW-TED-HMW-KNG-NBT-NEM-RAY-WIM-EAD-CLJ-VXH-WAT	2tph using 455 8c Kingston loop in PS only
SW022	WAT-WAT	WAT-VXH-CLJ-EAD-WIM-RAY-NEM-NBT-KNG-HMW-TED-STW-TWI-SMG-RMD-NSH-MTL-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	2tph using 455 8c Kingston loop in PS only
SW023	WAT-WAT	WAT-VXH-QRB-CLJ-WNT-PUT-BNS-BNI-CHK-KWB-BFD-SYL-ISL-HOU-WTN-TWI-SMG-RMD-NSH-MTL-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	2tph using 455 8c Brentford loop in PS only
SW024	WAT-WAT	WAT-VXH-QRB-CLJ-WNT-PUT-BNS-MTL-NSH-RMD-SMG-TWI-WTN-HOU-ISL-SYL-BFD-KWB-CHK-BNI-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	2tph using 455 8c Brentford loop in PS only

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SW025	GLD-ACT	GLD-WAN-ASH-AHT-AHV-FML-CAM-BAG-ACT	2tph using 456 4c
SW026	ROM-SAL	ROM-CFR-ESL-SOA-SWG-SDN-SOU-MBK-RDB-ROM-DBG-DEN-SAL	1tph using 156 2c
SW027	SOU-PMS	SOU-SDN-BTE-WLS-SHO-NTL-HME-BUO-SNW-FRM-PTC-CSA-HLS-FTN-PMS	1tph using 450 4c

Table 5-55: South Western service provision – Do Minimum, S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SW003	CSS-WAT	CSS-CSN-TOL-MAL-MOT-RAY-WIM-EAD-CLJ-VXH-WAT	New 701 10c
SW004	DKG-WAT	DKG-LHD-AHD-EPS-EWW-SNL-WCP-MOT-RAY-WIM-EAD-CLJ-VXH-WAT	New 701 10c
SW005	EXD-WAT	EXD-EXC-PIN-CBK-WHM-HON-AXM-CKN-YVJ-SHE-TMC-GIL-TIS-SAL-ADV-BSK-WOK-WAT	JT Improvements to/from London. EXD -10m
SW009	POO-WAT	POO-PKS-BSM-BMH-POK-CHR-HNA-NWM-SWY-BCU-BEU-ANF-TTN-SOU-SOA-ESL-SHW-WIN-BSK-FLE-FNB-WAT	JT Improvements to/from London. BMH -9min // SOA -8min
SW013	RDG-WAT	RDG-EAR-WTI-WNS-WKM-BCE-MAO-ACT-SNG-VIR-EGH-SNS-FEL-TWI-RMD-CLJ-WAT	New 701 10c
SW015	SHP-WAT	SHP-UPH-SUU-KMP-HMP-FLW-TED-HMW-KNG-NBT-NEM-RAY-WIM-EAD-CLJ-VXH-WAT	New 701 10c
SW016	WEY-WAT	WEY-DCH-WRM-HAM-POO-PKS-BSM-BMH-BCU-SOU-SOA-WIN-WOK-WAT	JT Improvements to/from London. WEY -14min // BMH -9min // SOU -8min
SW017	WEY-WAT	WEY-UPW-DCH-MTN-WOO-WRM-HOL-HAM-POO-BMH-POK-CHR-NWM-BCU-SOU-SOA-WIN-BSK-WAT	JT Improvements to/from London. WEY -14min // BMH -9min // SOU -8min
SW018	WYB-WAT	WYB-ASN-CHY-VIR-EGH-SNS-AFS-FEL-HOU-ISL-SYL-BFD-KWB-CHK-BNI-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	New 701 10c
SW019	WNR-WAT	WNR-DAT-SNY-WRY-SNS-AFS-FEL-WTN-TWI-RMD-PUT-CLJ-VXH-WAT	New 701 10c
SW020	WOK-WAT	WOK-WBY-BFN-WYB-WAL-HER-ESH-SUR-WIM-EAD-CLJ-VXH-WAT	New 701 10c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SW021	WAT-WAT	WAT-VXH-QRB-CLJ-WNT-PUT-BNS-MTL-NSH-RMD-SMG-TWI-STW-TED-HMW-KNG-NBT-NEM-RAY-WIM-EAD-CLJ-VXH-WAT	New 701 10c
SW022	WAT-WAT	WAT-VXH-CLJ-EAD-WIM-RAY-NEM-NBT-KNG-HMW-TED-STW-TWI-SMG-RMD-NSH-MTL-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	New 701 10c
SW023	WAT-WAT	WAT-VXH-QRB-CLJ-WNT-PUT-BNS-BNI-CHK-KWB-BFD-SYL-ISL-HOU-WTN-TWI-SMG-RMD-NSH-MTL-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	New 701 10c
SW024	WAT-WAT	WAT-VXH-QRB-CLJ-WNT-PUT-BNS-MTL-NSH-RMD-SMG-TWI-WTN-HOU-ISL-SYL-BFD-KWB-CHK-BNI-BNS-PUT-WNT-CLJ-QRB-VXH-WAT	New 701 10c
SW025	GLD-ACT	GLD-WAN-ASH-AHT-AHV-FML-CAM-BAG-ACT	
SW028	WEY-PMS	WEY-UPW-DCH-MTN-WOO-WRM-HOL-HAM-POO-PKS-BSM-BMH-POK-CHR-HNA-NWM-SWY-BCU-BEU-ANF-TTN-SOU-SDN-BTE-WLS-SHO-NTL-HME-BUO-SNW-FRM-PTC-CSA-HLS-FTN-PMS	New 1tph service using 450 4c
SW029	FNH-GLD	FNH-AHT-ASH-WAN-GLD	New 1tph service using 450 4c

5.24 Southeastern

5.24.1 This TOC in PFM represents the Southeastern franchise. Service provision in this TOC changes between Do Minimum and Do Something scenarios only and the Do Minimum table only displays services which change from the Do Nothing.

Table 5-56: Southeastern service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SE001	STP-STP	STP-SFA-EBD-GRV-SOO-RTR-CTM-GLM-RAI-SIT-FAV-WHI-HNB-BCH-MAR-BSR-RAM-SDW-DEA-WAM-MTM-DVP-FKC-FKW-AFK-EBD-SFA-STP	1tph using 395 6c. HS1 Deal Loop
SE002	STP-STP	STP-SFA-EBD-AFK-FKW-FKC-DVP-MTM-WAM-DEA-SDW-RAM-BSR-MAR-BCH-HNB-WHI-FAV-SIT-RAI-GLM-CTM-RTR-SOO-GRV-EBD-SFA-STP	1tph using 395 6c. HS1 Deal Loop

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SE003	STP-FAV	STP-SFA-EBD-GRV-SOO-RTR-CTM-GLM-RAI-SIT-FAV	1tph using 395 6/12c. HS1
SE004	STP-MAR	STP-SFA-EBD-AFK-CBW-RAM-BSR-MAR	1tph using 395 6/12c. HS1
SE005	STP-MDW	STP-SFA-EBD-GRV-SOO-SDA-MDW	1tph peak only (into London AM) using 395 6c. HS1
SE006	VIC-AFK	VIC-BMS-SMY-SAY-OTF-KMS-BRG-WMA-EML-BMG-MDE-BSD-AFK	1tph using mixture of 465 4c / 465 4c + 466 2c. In peak additional 1tph using 465 4c + 466 2c
SE007	VIC-CBW	VIC-BMS-SAY-OTF-BRG-WMA-MDE-BSD-HBN-HRM-LEN-CHG-AFK-WYE-CIL-CRT-CBW	1tph using mixture of 465 4c / 465 4c + 466 2c.
SE008	SIT-SSS	SIT-KML-SWL-QBR-SSS	2tph using 466 2c
SE009	VIC-SSS	VIC-DMK-BMS-SMY-SAY-FNR-LGF-MEP-SOR-RTR-CTM-GLM-RAI-KML-QBR-SSS	Peak only 1tph (into London AM) using 375 8c
SE010	VIC-DVP	VIC-BMS-LGF-MEP-RTR-CTM-GLM-RAI-NGT-SIT-TEY-FAV-SEG-CBE-BKS-ADM-AYH-SWO-SPH-KSN-DVP	1tph using 375 4/8c
SE011	VIC-DVP	VIC-DMK-BMS-SMY-SAY-FNR-LGF-MEP-SOR-RTR-CTM-GLM-RAI-SIT-FAV-CBE-DVP	1tph using 375 4/8c
SE012	VIC-RAM	VIC-BMS-LGF-MEP-RTR-CTM-GLM-RAI-SIT-FAV-WHI-CSW-HNB-BCH-WGA-MAR-BSR-DMP-RAM	1tph using 375 4/8c
SE013	CHX-DVP	CHX-WAE-LBG-SEV-TON-PDW-MRN-SPU-HCN-PLC-AFK-WHA-SDG-FKW-FKC-DVP	1tph using 375 4/12c
SE014	CHX-TBW	CHX-WAE-LBG-CLD-SEV-HLB-TON-HIB-TBW	1tph using 375 8c
SE015	CHX-ORP	CHX-WAE-LBG-LEW-HGR-GRP-ESD-CIT-PET-ORP	1tph peak only 465 8c
SE016	CHX-RAM	CHX-WAE-LBG-CLD-SEV-TON-PDW-MRN-SPU-HCN-PLC-AFK-WYE-CIL-CRT-CBW-STU-MSR-RAM	1tph using 375 4/12c
SE017	CHX-HGS	CHX-WAE-LBG-ORP-SEV-TON-HIB-TBW-FRT-WAD-SOG-ETC-RBR-BAT-CWU-WLD-SLQ-HGS	1tph using 375 8c
SE018	CHX-HGS	CHX-WAE-LBG-ORP-SEV-TON-HIB-TBW-WAD-BAT-SLQ-HGS	1tph using 375 8c
SE019	CST-HGS	CST-LBG-ORP-SEV-TON-HIB-TBW-FRT-WAD-SOG-ETC-RBR-BAT-CWU-WLD-SLQ-HGS	1tph peak only 375 8c
SE020	CHX-DFD	CHX-WAE-LBG-LEW-BKH-CTN-WWD-WWA-PLU-ABW-BVD-ERH-SGR-DFD	2tph using 465 8c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SE021	CHX-DFD	CHX-WAE-LBG-LEW-BKH-KDB-ELW-FCN-WLI-BXH-BNH-DFD	2tph using 465 8c
SE022	CHX-DFD	CHX-WAE-LBG-HGR-NEH-SID-BXY-CRY-DFD	1tph using 465 8c
SE023	CHX-DFD	CHX-WAE-LBG-HGR-LEE-MTG-NEH-SID-AYP-BXY-CRY-DFD	1tph using 465 8c
SE024	CHX-GRV	CHX-WAE-LBG-NEH-SID-BXY-CRY-DFD-SCG-GNH-SWM-NFL-GRV	2tph using 465 8c
SE025	CST-CST	CST-LBG-DEP-GNW-MZH-WCB-CTN-WWD-WWA-PLU-ABW-BVD-ERH-SGR-CRY-BXY-AYP-SID-NEH-MTG-LEE-HGR-LEW-SAJ-NWX-LBG-CST	2tph Woolwich and Sidcup loop using 465 8c
SE026	CST-CST	CST-LBG-NWX-SAJ-LEW-HGR-LEE-MTG-NEH-SID-AYP-BXY-CRY-SGR-ERH-BVD-ABW-PLU-WWA-WWD-CTN-WCB-MZH-GNW-DEP-LBG-CST	2tph Woolwich and Sidcup loop using 465 8c
SE027	VIC-BMS	VIC-BRX-HNH-WDU-SYH-PNE-KTH-BKJ-SRT-BMS	2tph using 465 4/8c
SE028	VIC-ORP	VIC-BRX-HNH-WDU-SYH-PNE-KTH-BKJ-SRT-BMS-BKL-PET-ORP	2tph using 465 4/8c
SE029	CHX-HYS	CHX-WAE-LBG-LAD-CFB-LSY-NBC-CLK-ELE-EDN-WWI-HYS	2tph using 465 8c
SE030	CST-HYS	CST-LBG-NWX-SAJ-LEW-LAD-CFB-LSY-NBC-CLK-ELE-EDN-WWI-HYS	2tph using 465 8c
SE031	CST-BNH	CST-LBG-DEP-GNW-MZH-WCB-CTN-WWD-WWA-PLU-ABW-BVD-ERH-SGR-BNH	2tph using 465 8c
SE032	CHX-SEV	CHX-WAE-LBG-HGR-GRP-ESD-CIT-PET-ORP-CLD-KCK-DNG-SEV	2tph using 466 4c
SE033	VIC-GRV	VIC-DMK-PMR-NHD-LEW-BKH-KDB-ELW-FCN-WLI-BXH-BNH-DFD-GNH-GRV	2tph using 465 4/8c
SE035	BFR-BKJ	BFR-EPH-LGJ-HNH-WDU-SYH-PNE-KTH-BKJ	2tph peak only (AM to London) using 465 8c
SE036	SOO-TON	SOO-CUX-HAI-SDA-NHE-AYL-MDB-MDW-EFL-WTR-YAL-BEG-PDW-TON	1tph using 466 4c
SE037	SOO-MDW	SOO-CUX-HAI-SDA-NHE-AYL-MDB-MDW	1tph using 466 4c
SE038	GRP-BMN	GRP-SUP-BMN	4tph using 466 4c

Table 5-57: Southeastern service provision – Do Minimum, S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
SE025	CST-CST	CST-LBG-DEP-GNW-MZH-WCB-CTN-WWD-WWA-PLU-ABW-BVD-ERH-SGR-CRY-BXY-AYP-SID-NEH-MTG-LEE-HGR-LEW-SAJ-NWX-LBG-CST	Uses new 707 x2 5c
SE026	CST-CST	CST-LBG-NWX-SAJ-LEW-HGR-LEE-MTG-NEH-SID-AYP-BXY-CRY-SGR-ERH-BVD-ABW-PLU-WWA-WWD-CTN-WCB-MZH-GNW-DEP-LBG-CST	Uses new 707 x2 5c

5.25 London Overground

5.25.1 This TOC in PFM represents the London Overground franchise. Service provision in this TOC changes between the Do Minimum and Do Something scenarios only with the Barking Riverside extension. It should be noted that not all Overground stations are included within the SPG files provided by DfT to HS2 Ltd, but once coded in PFM all London Overground services call at all stations along the route.

Table 5-58: London Overground service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LO001	WFJ-EUS	WFJ-BSH-HDL-HRW-NWB-WIJ-KNL-QPW-EUS	4tph Watford DC line using 710 4c
LO002	BKG-GPO	BKG-WGR-WNP-LER-LEM-WMW-BHO-STO-HRY-CRH-UHL-GPO	4tph GOBLIN line using 710 4c
LO003	DLJ-CLJ	DLJ-HGG-HOX-ZWL-ZCW-QRP-PMR-DMK-CLP-WWR-CLJ	4tph using 378 5c
LO004	CYP-DLJ	CYP-FOH-NXG-ZCW-ZWL-DLJ	4tph using 378 5c
LO005	CYP-HHY	CYP-SYD-FOH-HPA-BCY-NXG-ZCW-ZWL-HOX-HGG-DLJ-CNN-HHY	4tph using 378 5c
LO006	NWX-DLJ	NWX-ZCW-ZWL-HOX-HGG-DLJ	4tph using 378 5c
LO007	WCY-HHY	WCY-NWD-ANZ-PNW-SYD-FOH-HPA-BCY-NXG-ZCW-ZWL-HOX-HGG-DLJ-CNN-HHY	4tph using 378 5c
LO008	SRA-CLJ	SRA-DLK-CMD-GPO-HDH-WHD-KNR-WIJ-WBP-CLJ	4tph using 378 5c
LO009	SRA-RMD	SRA-DLK-CMD-GPO-HDH-WHD-KNR-WIJ-KWG-RMD	4tph using 378 5c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
LO010	ENF-LST	ENF-BHK-EDR-SLV-WHL-BCV-SVS-SMH-SKW-REC-HAC-LST	2tph peak only using 710 4c
LO011	ENF-LST	ENF-BHK-EDR-SLV-WHL-BCV-SVS-SMH-SKW-REC-HAC-LOF-CBH-BET-LST	2tph using 710 4c
LO012	CHN-LST	CHN-TEO-TUR-SBU-EDR-SLV-WHL-BCV-SVS-SMH-SKW-REC-HAC-LOF-CBH-BET-LST	2tph using 710 4c
LO013	CHI-LST	CHI-HIP-WST-WHC-SJS-CPT-HAC-BET-LST	4tph using 710 4c
LO014	UPM-RMF	UPM-EMP-RMF	2tph using 315 4c

Table 5-59: London Overground service provision – Do Minimum and S1

Service Name	Origin-Destination	Calling Pattern	Notes / Rolling Stock
LO002	BGR-GPO	BGR-BKG-WGR-WNP-LER-LEM-WMW-BHO-STO-HRY-CRH-UHL-GPO	Barking Riverside extension

5.26 Thameslink

5.26.1 This TOC in PFM represents the Govia Thameslink Railway franchise. Service provision in this TOC changes from the Do Nothing to Do Minimum and to the S2 Do Something scenario. For the Do Minimum and S2 tables, only those services which change are included.

Table 5-60: Thameslink service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TH001	ECR-MKC	ECR-SRS-TTH-NRB-SRC-BAL-WSW-CLJ-WBP-KPA-WMB-HRW-WFJ-HML-BKM-TRI-LBZ-BLY-MKC	1tph using 377 5c
TH002	SEV-BFR	SEV-BBL-OTF-SHE-EYN-SAY-SMY-BKL-BMS-SRT-RVB-BEC-BGM-CTF-CFT-NHD-PMR-DMK-EPH-BFR	2tph using 700 8c: Part of Thameslink Core
TH003	BTN-BDM	BTN-PRP-HSK-BUG-WVF-HHE-TBD-GTW-ECR-LBG-BFR-CTK-ZFD-STP-SAC-HPD-LTN-LUT-LEA-HLN-FLT-BDM	2tph using 700 12c: Part of Thameslink Core
TH004	EGR-BDM	EGR-DMS-LFD-HUR-OXT-WOH-UWL-RDD-SNR-ECR-LBG-BFR-CTK-ZFD-STP-SAC-HPD-LTN-LUT-LEA-FLT-BDM	2tph peak only 700 12c: Part of Thameslink Core

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TH005	GTW-BDM	GTW-RDH-MHM-CDS-PUR-ECR-LBG-BFR-CTK-ZFD-STP-SAC-HPD-LTN-LUT-LEA-HLN-FLT-BDM	2tph using 700 12c: Part of Thameslink Core
TH006	BTN-CBG	BTN-HHE-BAB-TBD-GTW-ECR-LBG-BFR-CTK-ZFD-STP-FPK-SVG-HIT-LET-RYS-CBG	2tph using 700 12c: Part of Thameslink Core
TH007	MDE-CBG	MDE-WMA-BRG-OTF-SAY-LBG-BFR-CTK-ZFD-STP-FPK-PBR-HAT-WGC-WLW-KBW-SVG-HIT-LET-BDK-AWM-RYS-MEL-STH-FXN-CBG	2tph using 700 8c: Part of Thameslink Core
TH008	HRH-PBO	HRH-LVN-IFI-CRW-TBD-GTW-HOR-SAF-ELD-RDH-MHM-CDS-PUR-ECR-NWD-NXG-LBG-BFR-CTK-ZFD-STP-FPK-SVG-HIT-ARL-BIW-SDY-SNO-HUN-PBO	2tph using 700 8/12: Part of Thameslink Core
TH009	RAI-LUT	RAI-GLM-CTM-RTR-SOO-HGM-GRV-NFL-SWM-GNH-SCG-DFD-SGR-ABW-PLU-WWA-CTN-WCB-MZH-GNW-DEP-LBG-BFR-CTK-ZFD-STP-WHP-MIL-ELS-RDT-SAC-HPD-LTN-LUT	2tph using 700 8c: Part of Thameslink Core
TH010	ORP-LUT	ORP-PET-BKL-BMS-SRT-RVB-BEC-BGM-CTF-CFT-NHD-PMR-DMK-EPH-BFR-CTK-ZFD-STP-KTN-WHP-CRI-HEN-MIL-ELS-RDT-SAC-HPD-LTN-LUT	2tph peak only using 700 8c – linked to below: Part of Thameslink Core
TH011	ORP-KTN	ORP-PET-BKL-BMS-SRT-RVB-BEC-BGM-CTF-CFT-NHD-PMR-DMK-EPH-BFR-CTK-ZFD-STP-KTN	2tph off peak using 700 8c – linked to above: Part of Thameslink Core
TH012	SUO-LUT	SUO-CSH-HCB-MIJ-MTC-STE-TUH-HNH-LGJ-EPH-BFR-CTK-ZFD-STP-KTN-WHP-CRI-HEN-MIL-ELS-RDT-SAC-HPD-LTN-LUT	2tph using 700 8c via Mitcham Junction: Part of Thameslink Core
TH013	SUO-SAC	SUO-CSH-SUC-SIH-MDS-SMO-WBO-WIM-HYR-TOO-STE-TUH-HNH-LGJ-EPH-BFR-CTK-ZFD-STP-WHP-MIL-ELS-RDT-SAC	2tph using 700 8c via Wimbledon: Part of Thameslink Core
TH014	CAT-WGC	CAT-WHS-WHY-KLY-PUR-PUO-SCY-ECR-NWD-LBG-BFR-CTK-ZFD-STP-GPK-NSG-OKL-NBA-HDW-PBR-HAT-WGC	1tph peak only using 700 8c: Part of Thameslink Core
TH015	SEV-WGC	SEV-BBL-OTF-SEH-EYN-SAY-SMY-BKL-BMS-SRT-RVB-BEC-BGM-CTF-CFT-NHD-PMR-DMK-EPH-BFR-CTK-ZFD-STP-FPK-NSG-OKL-NBA-PBR-HAT-WGC	1tph peak only using 700 8c: Part of Thameslink Core
TH016	SUO-TUH	SUO-WSU-SUC-SIH-MDS-SMO-WBO-WIM-HYR-TOO-STE-TUH	2tph peak only using 700 8c
TH017	KGX-KLN	KGX-CBG-WBC-ELY-LTP-DOW-WTG-KLN	2tph using 377 4c
TH018	KGX-PBO	KGX-SVG-SNO-HUN-PBO	2tph peak only using 365 12c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TH019	MOG-GDH	MOG-OLD-EXR-HHY-DYP-FPK-HGY-HRN-AAP-BOP-PAL-WIH-GPK-ENC-GDH	2tph peak only (AM into London) using 717 6c
TH020	MOG-GDH	MOG-OLD-EXR-HHY-DYP-FPK-AAP-BOP-PAL-WIH-GPK-ENC-GDH	2tph peak only (AM into London) using 717 6c
TH021	MOG-HFN	MOG-OLD-EXR-HHY-DYP-FPK-HGY-HRN-AAP-BOP-PAL-WIH-GPK-ENC-GDH-CWH-CUF-BAY-HFN	2tph using 717 6c
TH022	MOG-SVG	MOG-OLD-EXR-HHY-DYP-FPK-AAP-BOP-PAL-WIH-GPK-ENC-GDH-CUF-HFN-WAS-SVG	2tph using 717 6c
TH023	MOG-WGC	MOG-OLD-EXR-HHY-DYP-FPK-HGY-HRN-AAP-NSG-OKL-NBA-HDW-PBR-BPK-WMG-HAT-WGC	2tph using 717 6c
TH024	MOG-WGC	MOG-OLD-EXR-HHY-DYP-FPK-HGY-HRN-AAP-NSG-OKL-NBA-PBR-HAT-WGC	2tph using 717 6c
TH025	VIC-BOG	**VIC-CLJ-ECR-GTW-TBD-CRW-HRH //** BAA-CCH-SOB-EMS-HAV-CSA-PTC-FRM-SNW-SOU // **HRH**-CHH-BIG-PUL-AMY-ARU-FOD-BAA-BOG	1tph using 377 8c. Split/join at HRH for SOU/BOG
TH026	VIC-BOG	**VIC-CLJ-ECR-GTW-TBD-CRW-HRH //** BAA-CCH-HAV-FTN-PMS-PMH // **HRH**-BIG-PUL-ARU-FOD-BAA-BOG	1tph using 377 8c. Split/join at HRH for PMH/BOG
TH027	VIC-TON	VIC-CLJ-ECR-RDH-NUF-GDN-EBR-PHR-LIH-TON	1tph using 377 4c
TH028	VIC-BTN	VIC-GTW-BTN	2tph using 377 12c – Gatwick Express
TH029	VIC-GTW	VIC-GTW	2tph using 377 8c – Gatwick Express
TH030	VIC-BTN	VIC-CLJ-ECR-GTW-HSK-BTN	2tph using 387 12c
TH031	VIC-EBN	**VIC-CLJ-ECR-GTW-HHE //** BUG-HOV-SSE-WRH-WWO-DUR-GBS-ANG-LIT // **HHE**-WVF-PMP-LWS-PLG-HMD-EBN	1tph using 387 8c. Split/join at HHE for LIT/EBN
TH032	VIC-LIT	**VIC-CLJ-ECR-GTW-HHE //** -LWS-PLG-EBN-HMD-PEV-COB-CLL-BEX-SLQ-HGS-ORE // **HHE**-HOV-PLD-SSE-LAC-WRH-WWO-DUR-GBS-ANG-LIT	1tph using 387 12c. Split/join at HHE for LIT/ORE as 4/8c.
TH033	LBG-UCK	LBG-ECR-OXT-HUR-EBT-HEV-CWN-AHS-ERI-COH-BXD-UCK	1tph using 171 2/6c
TH034	VIC-EGR	VIC-CLJ-ECR-SNR-RDD-UWL-WOH-OXT-HUR-LFD-DMS-EGR	2tph using 387 8c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TH035	REI-RDH	REI-RDH	2tph peak only using 377 4c (see TH035)
TH036	VIC-REI	VIC-CLJ-ECR-RDH-REI	2tph off peak using 377 4c (see TH036)
TH037	LBG-BKJ	LBG-SBM-QRP-PMR-EDW-NDL-TUH-WNW-GIP-CYP-BIK-BKJ	2tph using 455 8c
TH038	LBG-CAT	LBG-NWD-ECR-SCY-PUO-PUR-KLY-WHY-WHS-CAT	2tph using 455 8c
TH039	LBG-CAT	LBG-NXG-BCY-HPA-FOH-SYD-PNW-ANZ-NWD-ECR-SCY-PUO-PUR-KLY-WHY-WHS-CAT	2tph peak only using 455 8c
TH040	LBG-TAT	LBG-NWD-ECR-PUR-RHM-CDN-WME-CHP-KND-TAD-TAT	2tph using 455 4c
TH041	LBG-WCY	LBG-SBM-QRP-PMR-EDW-NDL-TUH-STE-SRC-NRB-TTH-SRS-WCY	2tph using 455 8c
TH042	VIC-CAT	VIC-BAK-CLJ-WSW-BAL-SRC-NRB-TTH-SRS-ECR-SCY-PUO-PUR-KLY-WHY-WHS-CAT	2tph using 377 5c
TH043	VIC-HRH	VIC-CLJ-SUO-CHE-EPS-AHD-LHD-DKG-HLM-OLY-WNH-HRH	2tph using 377 8c
TH044	VIC-EPS	VIC-CLJ-BAL-MTC-MIJ-HCB-CSH-SUO-CHE-EWE-EPS	2tph using 377 8c
TH045	VIC-EPS	VIC-CLJ-WSW-BAL-SRC-NRB-TTH-SRS-WCY-WDO-WLT-CSB-SUO-CHE-EWE-EPS	1tph using 455 10c
TH046	VIC-EPD	VIC-BAK-CLJ-WSW-BAL-SRC-NRB-TTH-SRS-WCY-WDO-WLT-CSB-SUO-BLM-BAD-EPD	2tph using 377 8c
TH047	VIC-SUO	VIC-BAK-CLJ-WSW-BAL-SRH-WNW-GIP-CYP-NWD-WCY-WDO-WLT-CSB-SUO	2tph using 377 10c
TH048	VIC-SUO	VIC-CLJ-WSW-BAL-SRC-NRB-TTH-SRS-WCY-WDO-WLT-CSB-SUO	1tph using 377 8c
TH049	VIC-LBG	VIC-BAK-CLJ-WSW-BAL-SRH-WNW-GIP-CYP-SYD-FOH-HPA-BCY-NXG-LBG	2tph using 377 5/10c
TH050	BTN-AFK	BTN-LWS-PLG-EBN-BEX-SLQ-HGS-TOK-RYE-APD-HMT-AFK	1tph using 171 2c
TH051	BTN-LWS	BTN-LRB-MCB-FMR-LWS	2tph peak only using 313 3c
TH052	BTN-ORE	BTN-LRB-MCB-FMR-LWS-GLY-BRK-PLG-HMD-EBN-HMD-PEV-NSB-COB-CLL-BEX-SLQ-HGS-ORE	1tph using 377 4c
TH053	BTN-SEF	BTN-LRB-MCB-FMR-LWS-SEE-NVN-NVH-BIP-SEF	2tph 313 3c

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TH054	LIT-BTN	LIT-ANG-GBS-DUR-WWO-WRH-EWR-LAC-SSE-SWK-FSG-PLD-AGT-HOV-BTN	1tph peak only 313 3c
TH055	PMH-BTN	PMH-PMS-FTN-HAV-EMS-SOB-CCH-BAA-ANG-WRH-LAC-SSE-SWK-PLD-HOV-BTN	1tph using 313 3c
TH056	SOU-BTN	SOU-SOA-ESL-FRM-CSA-HAV-EMS-CCH-BAA-FOD-ANG-GBS-DUR-WWO-WRH-LAC-SSE-SWK-PLD-HOV-BTN	1tph using 377 4c
TH057	WWO-BTN	WWO-WRH-EWR-LAC-SSE-SWK-FSG-PLD-AGT-HOV-BTN	2tph using 313 3c
TH058	HOV-BTN	HOV-BTN	2tph using 313 3c
TH059	BOG-BAA	BOG-BAA	1tph using 377 4c
TH060	BOG-LIT	BOG-BAA-FOD-LIT	1tph using 313 3c
TH061	PMS-LIT	PMS-FTN-HLS-BDH-HAV-WBL-EMS-SOB-NUT-BOH-FSB-CCH-BAA-FOD-LIT	1tph using 313 3c
TH062	RDH-TON	RDH-NUF-GDN-EBR-PHR-LIH-TON	1tph using 377 4c

Table 5-61: Thameslink service provision – Do Minimum and S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TH063	BDM-LIT	BDM-FLT-HLN-LEA-LUT-LTN-HPD-SAC-STP-ZFD-CTK-BFR-LBG-ECR-TBD-HHE-BUG-HSK-PRP-HOV-PLD-SSE-LAC-WRH-WWO-DUR-GBS-ANG-LIT	New peak only 1tph using 700 12c – Thameslink Core

Table 5-62: Thameslink service provision – S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
TH201	WFJ-ECR	WFJ-HRW-WMB-KPA-WBP-CLJ-WSW-BAL-SRC-NRB-TTH-SRS-ECR	New 1tph service using 377 5c. Using WC Path.

5.27 C2C

5.27.1 This TOC in PFM represents the C2C franchise. Service provision in this TOC changes between the Do Nothing and Do Minimum only. This TOC is only represented in PLANET South.

Table 5-63: C2C service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
CC001	FST-GRY	FST-LHS-WEH-BKG-DDK-RNM-PFL-GRY	2tph using 357 4c
CC002	FST-GRY	FST-LHS-WEH-UPM-OCK-CFH-GRY	2tph peak only using 357 4c
CC003	FST-SRY	FST-LHS-WEH-BKG-UPM-WHR-LAI-BSO-PSE-BEF-LES-CHW-WCF-SOC-SOE-TPB-SRY	2tph using 357 4/8c
CC004	FST-SRY	FST-LHS-WEH-BKG-UPM-LAI-BSO-BEF-LES-CHW-WCF-SOC-SOE-TPB-SRY	2tph using 357 4/8c
CC005	FST-SOC	FST-LHS-WEH-BKG-UPM-OCK-CFH-GRY-TIL-ETL-SFO-PSE-BEF-LES-CHW-WCF-SOC	2tph using 357 4/8c
CC006	FST-PSE	FST-LHS-WEH-BKG-DDK-RNM-PFL-GRY-TIL-ETL-SFO-PSE	2tph peak only using 357 8c

Table 5-64: C2C service provision – DM and S1

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
CC001	FST-GRY	FST-LHS-WEH-BKG-DDK-RNM-PFL-GRY	Uses new 720 10c

5.28 MerseyRail

5.28.1 This TOC in PFM represents the MerseyRail franchise. Service provision in this TOC changes between the Do Nothing and Do Minimum.

Table 5-65: MerseyRail service provision – Do Nothing

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
ME001	HNX-SOP	HNX-LPY-CSG-AIG-STM-BRW-LVC-MRF-SDL-BAH-BOT-BNW-SFL-WLO-BLN-HLR-HTO-FBY-FRE-ANS-HIL-BDL-SOP	4tph 507 3/6c
ME002	LVC-KIR	LVC-MRF-SDL-KKD-RIL-FAZ-KIR	4tph 507 3/6c
ME003	LVC-OMS	LVC-MRF-SDL-KKD-WAO-OPK-AIN-ORN-MAG-TWN-AUG-OMS	4tph using 507 3c
ME004	CTR-CTR	CTR-BAC-CPU-HOO-ERA-BOM-BMR-SPI-PSL-BEB-RFY-GNL-BKC-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-BKC-GNL-RFY-BEB-PSL-SPI-BMR-BOM-ERA-HOO-CPU-BAC-CTR	4tph using 507 3c Chester – Liverpool loop

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
ME005	ELP-ELP	ELP-OVE-LTT-HOO-ERA-BOM-BMR-SPI-PSL-BEB-RFY-GNL-BKC-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-BKC-GNL-RFY-BEB-PSL-SPI-BMR-BOM-ERA-HOO-LTT-OVE-ELP	2tph using 507 3c Ellesmere Port – Liverpool loop
ME006	NBN-NBN	NBN-WLG-WLV-BKN-BKP-CNP-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-CNP-BKP-BKN-WLV-WLG-NBN	4tph using 507 3/6c New Brighton – Liverpool loop
ME007	WKI-WKI	WKI-HYK-MNR-MEO-MRT-LSW-BID-BKN-BKP-CNP-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-CNP-BKP-BKN-BID-LSW-MRT-MEO-MNR-HYK-WKI	4tph using 507 3/6c West Kirby – Liverpool loop

Table 5-66: Merseyrail service provision – Do Minimum, S1, S2, S3 and S4

Service name	Origin-Destination	Calling pattern	Notes / Rolling stock
ME001	HNX-SOP	HNX-LPY-CSG-AIG-STM-BRW-LVC-MRF-SDL-BAH-BOT-BNW-SFL-WLO-BLN-HLR-HTO-FBY-FRE-ANS-HIL-BDL-SOP	New 777 4c rolling stock => JT improvements 10%
ME002	LVC-KIR	LVC-MRF-SDL-KKD-RIL-FAZ-KIR	New 777 4c rolling stock => JT improvements 10%
ME003	LVC-OMS	LVC-MRF-SDL-KKD-WAO-OPK-AIN-ORN-MAG-TWN-AUG-OMS	New 777 4c rolling stock => JT improvements 10%
ME004	CTR-CTR	CTR-BAC-CPU-HOO-ERA-BOM-BMR-SPI-PSL-BEB-RFY-GNL-BKC-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-BKC-GNL-RFY-BEB-PSL-SPI-BMR-BOM-ERA-HOO-CPU-BAC-CTR	New 777 4c rolling stock => JT improvements 10%
ME005	ELP-ELP	ELP-OVE-LTT-HOO-ERA-BOM-BMR-SPI-PSL-BEB-RFY-GNL-BKC-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-BKC-GNL-RFY-BEB-PSL-SPI-BMR-BOM-ERA-HOO-LTT-OVE-ELP	New 777 4c rolling stock => JT improvements 10%
ME006	NBN-NBN	NBN-WLG-WLV-BKN-BKP-CNP-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-CNP-BKP-BKN-WLV-WLG-NBN	New 777 4c rolling stock => JT improvements 10%
ME007	WKI-WKI	WKI-HYK-MNR-MEO-MRT-LSW-BID-BKN-BKP-CNP-BKQ-LVJ-MRF-LIV-LVC-LVJ-BKQ-CNP-BKP-BKN-BID-LSW-MRT-MEO-MNR-HYK-WKI	New 777 4c rolling stock => JT improvements 10%

6 Modelling reliability

6.1 Methodology

6.1.1 The approach to modelling reliability in involves adjusting the journey times on all rail services by adding delay minutes to scheduled journey times. The approach considers the improvement in reliability that HS2 can deliver by examining one measure of reliability – Average Minutes Lateness (AML).

6.1.2 PFM uses HS2 Ltd's design assumption that on dedicated HS2 track the average delay will be 0.003 minutes/km; this is equivalent to an average delay of 30 seconds per service between Old Oak Common and Birmingham Curzon Street.

6.1.3 For conventional rail services, an average delay (measured as minutes per km) is calculated for each rail service group. These values are calculated using PEARS data (covering a period from 2010 to 2019), which contain industry approved train delay values. Train miles data for all services (provided by Network Rail) has been used to convert train delay values to a measure per kilometre.

6.1.4 Where HS2 services operate on the conventional rail network, the level of delay per kilometre is assumed to be equivalent to the corresponding West Coast or East Coast Mainline values.

7 Appendix A – Modelled Rolling Stock

Vehicle	Description	Seats	Total capacity
400	'139 1c'	22	65
401	'150 2c'	139	192
402	'150 6c'	417	576
403	'153 1c'	72	97
404	'155 2c'	160	213
405	'156 2c'	162	225
406	'158 2c'	133	187
407	'158 4c'	266	375
408	'158 6c'	532	749
409	'159 6c'	394	601
410	'165 2c'	186	242
411	'165 3c'	279	363
412	'165 4c'	372	484
413	'168 4c'	278	503
414	'170(1) 2c'	111	164
415	'170(1) 3c'	191	275
416	'170(4) 3c'	196	341
417	'170(5) 2c'	111	164
418	'170(5) 4c'	222	328
419	'171 2c'	116	197
420	'171 6c'	464	790
421	'172(2) 2c'	139	234
422	'172(3) 3c'	219	368
423	'175 2c'	134	213
424	'175 3c'	198	316
425	'175 4c'	268	426
426	'180 5c'	278	432
427	'185 3c'	181	300
428	'195 2c'	124	209
429	'195 4c'	248	418
430	'195 6c'	372	627
431	'196 2c'	124	209

Vehicle	Description	Seats	Total capacity
432	'196 4c'	248	418
433	'220 4c'	202	258
434	'221 5c (WC)'	258	310
435	'221 10c (WC)'	516	620
436	'221 5c (XC)'	236	313
437	'221 10c (XC)'	472	625
438	'222 5c'	244	287
439	'222 7c'	379	447
440	'222 10c'	512	618
441	'225 7c'	409	484
442	'230 2c'	114	209
443	'231 4c'	224	309
444	'255 4c'	194	276
445	'313 3c'	232	309
446	'315 4c'	291	397
447	'317 4c'	291	397
448	'317 8c'	582	794
449	'319 4c'	280	378
450	'321 4c'	308	554
451	'321 8c'	616	1,108
452	'321 12c'	834	1,492
453	'323 3c'	289	364
454	'323 6c'	578	729
455	'331 4c'	204	327
456	'331 5c'	284	446
457	'332 5c'	201	318
458	'333 4c'	360	454
459	'334 3c'	183	318
460	'334 6c'	366	636
461	'345 7c'	360	885
462	'345 9c'	450	1,106
463	'350 4c'	234	402
464	'350 8c'	468	803
465	'350 12c'	702	1,206

Vehicle	Description	Seats	Total capacity
466	'357 4c'	281	380
467	'357 8c'	562	760
468	'357 12c'	843	1,140
469	'360 4c'	282	377
470	'360 5c'	340	478
471	'360 8c'	564	754
472	'360 12c'	846	1,130
473	'365 4c'	264	368
474	'365 8c'	528	735
475	'365 12c'	792	1,102
476	'375 4c'	241	351
477	'375 8c'	482	703
478	'375 12c'	723	1,054
479	'377 4c'	238	352
480	'377 5c'	298	461
481	'377 8c'	476	704
482	'377 10c'	596	922
483	'378 5c'	180	432
484	'379 8c'	418	710
485	'385 3c'	226	332
486	'385 6c'	452	664
487	'385 8c'	586	883
488	'387 4c'	223	527
489	'387 8c'	446	1,054
490	'387 12c'	669	1,580
491	'390 9c'	439	505
492	'390 11c'	591	692
493	'395 6c'	349	556
494	'395 12c'	698	1,112
495	'397 5c'	263	425
496	'43 loco 6c'	317	396
497	'43 loco 7c'	392	411
498	'HST 8c'	469	549
499	'444 5c'	369	558

Vehicle	Description	Seats	Total capacity
500	'444 10c'	738	1,116
501	'450 4c'	281	443
502	'450 8c'	562	886
503	'450 12c'	843	1,329
504	'455 4c'	307	415
505	'455 8c'	614	829
506	'455 10c'	768	1,036
507	'456 4c'	348	450
508	'458 10c'	684	1,174
509	'465 4c'	304	448
510	'465 4c + 466 2c'	516	667
511	'465 8c'	696	899
512	'466 2c'	168	218
513	'466 4c'	336	436
514	'507 3c'	210	261
515	'507 6c'	420	521
516	'67 loco 6c'	432	495
517	'700 8c'	416	872
518	'700 12c'	654	1,342
519	'701 10c'	542	1,177
520	'707 5c'	271	663
521	'707 10c'	542	1,326
522	'710 4c'	195	443
523	'717 6c'	312	655
524	'720 10c'	1,145	1,268
525	'720 5c'	544	607
526	'730 3c'	326	364
527	'730 5c'	453	506
528	'745 12c'	752	966
529	'755 3c'	166	219
530	'755 4c'	224	309
531	'769 4c'	280	378
532	'777 4c'	182	257
533	'800 5c (GW)'	326	454

Vehicle	Description	Seats	Total capacity
534	'800 5c (EC)'	302	421
535	'800 9c (GW)'	650	907
536	'800 9c (EC)'	611	852
537	'800 10c (EC)'	604	841
538	'801 5c (EC)'	302	421
539	'801 9c (EC)'	611	852
540	'802 5c (GW)'	326	454
541	'802 5c (HT)'	326	454
542	'802 5c (TP)'	342	477
543	'803 5c (OA)'	302	421
544	'805 5c (WC)'	301	419
545	'805 10c (WC)'	602	839
546	'807 7c (WC)'	453	632
547	'810 5c (EM)'	279	389
548	'810 10c (EM)'	558	777
549	'43 loco 9c'	535	630
550	'90 loco 10c'	610	880
551	'91 loco 10c'	554	653
552	'197 3c'	198	316
553	'197 5c'	330	527
554	'730 6c'	652	728
555	'730 10c'	906	1,012
556	'197 2c'	132	211
701	'HS 200m'	554	635
702	'HS 400m'	1,108	1,270
703	'CC 200m'	548	628
704	'CC 400m'	1,096	1,256

8 Glossary

AML	Average Minutes Lateness
AP	Attraction to Production
ATOC	Association of Train Operating Companies
CA	Car Available
CAA	Civil Aviation Authority
CEBR	Centre for Economics and Business Research
CPI	Consumer Price Index
DfT	Department for Transport
DM	Do Minimum
DS	Do Something
EDGE	Exogenous Demand Growth Estimator
GDP	Gross Domestic Product
HS2	High Speed Two (the project)
HS2 Ltd	High Speed Two Ltd (project sponsor)
IEP	Inter-City Express Programme
IVT	In-Vehicle Time
LTA	London Travel Card Area
LUL	London Underground Ltd
MOIRA	Rail forecasting software and database
NCA	Non-Car Available
NTEM	National Trip End Model (DfT)
NTM	National Transport Model (NTM)
OBR	Office for Budget Responsibility
ONS	Office of National Statistics
ORR	Office of Rail and Road

PA	Production to Attraction
PDFH	Passenger Demand Forecasting Handbook
PFM	PLANET Framework Model
PLD	PLANET Long Distance
PM	PLANET Midlands
PN	PLANET North
PS	PLANET South
PT	Public Transport
RIFF	Rail Industry Forecasting Framework
RPI	Retail Price Index
RTF	Road Traffic Forecasts (DfT)
ROC	Rest of Country
ROSE	Rest of South East
SCM	Station Choice Model
TEMPro	Trip End Model presentation Program (DfT)
TfL	Transport for London
TOC	Train Operating Company
TAG data book	DfT's web-based Transport Appraisal Guidance