

DfT Modelling Issues and Engagement Plan

June 2011



Croxley Rail Link DfT Modelling Issues and Engagement Plan - updated 13 June 2011

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Introduction

- An inception meeting with DfT was held on 7th April 2011 to discuss Croxley Rail Link
- Part of the meeting discussed modelling issues and the refresh of the modelling framework, which is currently underway
- For several issues, DfT suggested early clarification of the proposed approach to ensure it meets DfT requirements, namely:
 - PM peak model - Page 3
 - Crowding of rail services - Page 7
 - Car availability and mode split modelling - Page 8
 - Car access/PnR - Page 10
- DfT also requested an engagement strategy for modelling and appraisal - Page 12

- **This is an updated version following a meeting with DfT on 23 May 2011.**

PM peak model (1)

- To date, modelling has focussed on weekday AM and IP, with annualisation factors used to reflect demand and benefits across a full year
- Explicit modelling of additional time periods could provide more robust estimates of annual demand and benefits
 - Development of a PM model would (largely) complete the understanding of demand and benefits across a full weekday
 - Development of weekend models would provide the associated information for Saturdays and Sundays.
- Some data to develop PM models is available. However, development of weekend models is not possible within the timeframe of the BAFB process (would necessitate wholesale development of new public transport and highway models, with major data collection required)
- Thus the focus here is the case for developing a PM model

PM peak model (2)

- Modelling the PM peak explicitly will reflect the difference in demand and benefits that can occur between the AM and PM peaks
- Demand
 - Much of the demand data is being refreshed and data does exist to derive PM matrices for all PT modes
- Benefits
 - All PT modes provide a comparable level of service in the AM and PM peaks (frequency and journey time) - see slide on next page
 - The benefits in the PM peak will not be materially different from the AM peak
- OD vs PA/tours
 - Demand data is configured as simple origin - destination trips and thus aggregation of peaks reflects consistent behaviour
 - Separate modelling of peaks can lead to inconsistent behaviour (ie route and mode)

PM peak model (3)

Bus headways	AM peak	PM peak
320 NB	30 mins	30 mins
321 NB	15 mins	15-20 mins
320 SB	30 mins	30 mins
321 SB	15 mins	15-20 mins
10 NB	12-15 mins	15 mins
10 SB	12-15 mins	15 mins
W30 Circular	15 mins	15 mins
724 NB	60 mins	60 mins
724 SB	60 mins	60 mins

Rail services to London		
LM services	TPH	Average Journey Time
AM Peak IB	6.3	00:20
PM Peak IB	6.0	00:20
AM Peak OB	6.0	00:18
PM Peak OB	6.0	00:19
Met Line services	TPH	Average Journey Time
AM Peak IB	7.0	00:43
PM Peak IB	6.7	00:45
AM Peak OB	6.3	00:44
PM Peak OB	7.0	00:41

PM peak model (4)

■ Proposed approach

- Continue with AM peak (and Interpeak) modelling only
- Assume benefits are the same between AM and PM peaks
 - More detailed evidence will be provided to demonstrate this, with sensitivity analysis in the CBA where there are uncertainties around this.
 - Any review will consider highway times and the associated bus times, as well as the rail times (LUL, London Midland), commensurate with the emerging contribution to the case for Croxley (rail vs bus, rail vs car)
- For the TUBA process, we will transpose the derived PM demand matrices and add them to the AM demand matrices and calculate overall peak benefits (based on AM costs). This will reflect any differences in trip patterns between the AM and PM peak periods, improving the robustness of the CBA process (compared to simply factoring the AM only benefits analysis).
- The combination of Peak and Interpeak TUBA results will reflect a 12hr weekday period (7am-7pm)
- Annualisation factors will then be estimated, based on observed data, to factor the 12hr weekday benefits to an annual basis

Crowding of rail services

- Peak LM services between Watford Junction and London Euston are very crowded
 - Croxley Rail link offers the opportunity to travel into London on a seat
- However, explicit modelling of crowding is very complex and the marginal impact on crowding levels from CRL is likely to be small
- Proposed approach is to ‘pre-load’ the crowding penalty between Watford and London for the AM peak based on observed train loadings:
 - As part of the London Midland (LM) HLOS work for DfT, SDG had access to detailed LM train loading and capacity information
 - This could be used to derive average load factors and a crowding penalty from PDFH
 - DfT and LM permissions are being sought to use this data for Croxley
- Thus model times between Watford and London:
 - Met Line assumed uncrowded and hence actual journey time
 - LM services have crowding penalty applied to actual journey time to get perceived travel time
- As part of this approach, we will:
 - review and confirm assumptions around there being no material change to demand and hence crowding levels on Met and LM services arising from CRL
 - Disaggregate the relative contribution to the case for CRL between actual time and (perceived) crowding time

Car availability and (main) mode split modelling (1)

■ From surveys

- 78% of bus users had no car available (from 2008 SDG bus survey)
- 58% of Watford Met users had no car available to access the station (from 2010 SDG station user survey)
- 20% of Watford Junction users have no car *in the household* (from 2001 LATS survey), but no direct question on car availability for the journey being made

■ It is likely that:

- Many rail users are accessing central London, for which car is not a realistic choice
- Number of zone pairs with material car and PT users likely to be small, making robust calibration difficult
- These are presumptions at present and we will review and confirm these

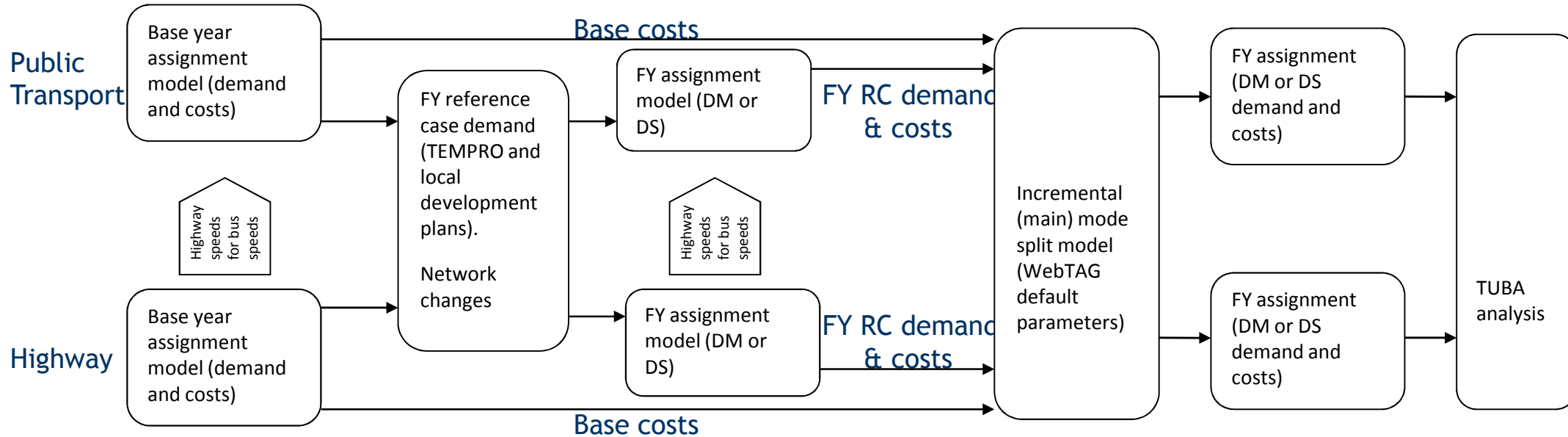
■ Past experience indicates level of transfer from car will be modest

Car availability and (main) mode split modelling (2)

- As an alternative to local calibration, we propose to use default values from DfT sources (adjusted if appropriate through realism and sensitivity testing):
 - WebTAG (Unit 3.10.3C, section 1.11) value of 0.01 to 0.06, depending on purpose and range (based on application of respective θ values to λ values for destination choice)
 - VaDMA indicates central value of 0.04 (consistent with WebTAG)
- Test results by realism tests of elasticities:
 - PT fares
- Sensitivity testing to understand scale and scope of possible car to rail transfer and implications for business case
- Model will be applied incrementally with change in PT costs and assuming no change in car costs
 - reflects the absence of any direct impact on the highway network
 - decongestion and station access impacts are unlikely to be material
- Model will be used to forecast car to PT transfer only

Car availability and (main) mode split modelling (3)

Model structure



Notes:

- PT model will be segmented by Business, Commuting and Other purposes. Highway model is single purpose only; splits will be applied from RSI data for use in the mode split model.
- Base is 2010, with forecast years of 2016 (opening) and 2031
- Process is done for DM and DS, each pivoting off Base.

Assumptions

- The change in highway costs will not be materially different between DM and DS scenario, negating the need for iteration and convergence in the mode split model.
- The need for full highway modelling will be kept under review, given the potential for insignificant change.

Car access/PnR (1)

■ Some rail users use car to access the station

- Watford Met: 9% PnR and 7% KnR
- Watford Junction: 10% PnR and 14% KnR (all rail users)
- Watford High Street: negligible

■ Car parking

- Watford Met has a 70 spaces station car park, with on-street parking increasing the effective local parking capacity (the passenger survey indicated station related demand of another 50% on top of the formal car park, indicating demand for c105 spaces in total)
 - The alternative station at Ascot Road will have around 200 spaces, but with minimal on-street parking nearby.
 - Watford Hospital stop will not have a formal car park.
- Watford Junction has 750 spaces
- Watford High Street has no station car park

Car access/PnR (2)

- Watford Junction and Watford High Street will have no change to parking provision
- Ascot Road will replace Watford Met, providing an additional c100 spaces for use

- Impacts:
 - Existing PnR/KnR users of Watford Met will transfer to Ascot Road
 - Some additional demand at Ascot Road

- Given the scale of car access to rail, we will review the option of splitting demand matrices between car and non-car access, and reflect this in the assignment process
 - Non-car access will be (largely) walk catchments
 - Car access will have the option to switch between stations
 - We will review the likelihood of switching between access mode (notably from car to walk access)

Engagement strategy (1)

Engagement strategy focused around modelling and appraisal programme and when draft reports will become available.

Task	Sub-task	Week beginning																		
		02-May	09-May	16-May	23-May	30-May	06-Jun	13-Jun	20-Jun	27-Jun	04-Jul	11-Jul	18-Jul	25-Jul	01-Aug	08-Aug	15-Aug	22-Aug	29-Aug	05-Sep
	Week no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Create PT network model	Review zoning	█																		
	Integrate bus, rail and LUL networks	█	█																	
	Review network model parameters			█																
	Update rail data (NRTS and 2010 LENNON data)	█	█	█																
	Update LUL data with Watford Met user survey		█	█																
	Rebuild bus matrices		█	█																
	Create integrated PT demand matrices				█															
	Collate observed demand data (counts etc)				█	█														
	Validate 2008 Base PT model (AM/IP)					█	█													
	PT LMVR report						█	█												
Updated highway model	Model update	█	█	█	█															
	Highway LMVR report				█	█														
Mode split model	Implement highway vs PT mode split model					█	█													
	Demand model report							█	█											
Forecasting	Update TEMPRO growth data					█	█													
	Review local development assumptions							█	█											
	Forecast DM									█	█									
DfT liaison	Suitability assessment																			
	DfT meetings				█							█	█							
Model application	Model application for BAFB													█	█	█	█	█	█	
	Develop CBA process																			
CBA	Apply CBA process to scheme forecasts																			
	CBA report									█	█									
BAFB submission																				

Engagement strategy (2)

- We would request face-to-face meetings at key points:
 - Clarification of key elements - 23rd May
 - Review of draft PT and highway LMVRs - week of 4th July
 - Demand model report - week of 1st August
 - Forecasting report (methodology only) - week of 1st August
 - CBA report (methodology only) - week of 1st August
- These can be supplemented (or replaced) where required by (pre-arranged) phone discussions on discrete points
- Draft reports will be provided at least 5 working days before meetings

Control Sheet

Project/Proposal Name:	Croxley Rail Link
Document Title:	Modelling Issues and DfT Engagement Plan
Client Contract/Project Number:	
SDG Project/Proposal Number:	22281105

ISSUE HISTORY

Issue No: v2	Date: 13/06/2011	Details: Final draft sent to DfT
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